The Administrator’s Guide for Trend Micro is intended to provide in-depth information about the main features of the software. You should read through it prior to installing or using the software.

For technical support, please refer to the Technical Support and Troubleshooting chapter for information and contact details. Detailed information about how to use specific features within the software are available in the online help file and online Knowledge Base at Trend Micro’s Web site.

Trend Micro is always seeking to improve its documentation. If you have questions, comments, or suggestions about this or any Trend Micro documents, please contact us at docs@trendmicro.com. Your feedback is always welcome. Please evaluate this documentation on the following site:

http://www.trendmicro.com/download/documentation/rating.asp
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Appendix H: Application Control Protocol List

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Welcome to the Trend Micro™ InterScan™ Web Security Virtual Appliance 5.5 Administrator's Guide. This guide provides detailed information about the InterScan Web Security Virtual Appliance (IWSVA) configuration options. Topics include how to update your software to keep protection current against the latest risks, how to configure and use policies to support your security objectives, configuring scanning, configuring URL blocking and filtering, and using logs and reports.

This preface describes the following topics:

- **IWSVA Documentation**
- **Audience**
- **Document Conventions**
- **About Trend Micro**
IWSVA Documentation

In addition to the Trend Micro™ InterScan Web Security Virtual Appliance Administrator’s Guide, the documentation set for IWSVA includes the following:

- **Installation Guide**—This guide helps you get “up and running” by introducing IWSVA, assisting with installation planning, implementation, and configuration, and describing the main post-upgrade configuration tasks. It also includes instructions on testing your installation using a harmless test virus, troubleshooting, and accessing Support.

- **Online Help**—The purpose of online help is to provide “how to’s” for the main product tasks, usage advice, and field-specific information such as valid parameter ranges and optimal values. Online Help is accessible from the IWSVA Web console.

- **Readme file**—This file contains late-breaking product information that is not found in the online or printed documentation. Topics include a description of new features, installation tips, known issues and, release history.

The latest versions of the Installation Guide, Administrator’s Guide and readme file are available in electronic form at:

http://www.trendmicro.com/download/

- **Knowledge Base**—The Knowledge Base is an online database of problem-solving and troubleshooting information. It provides the latest information about known product issues. To access the Knowledge Base, open:

  http://kb.trendmicro.com

- **TrendEdge**—A program for Trend Micro employees, partners, and other interested parties that provides information on unsupported, innovative techniques, tools, and best practices for Trend Micro products. The TrendEdge database contains numerous documents covering a wide range of topics.

  http://trendedge.trendmicro.com
Audience

The IWSVA documentation is written for IT managers and system administrators working in enterprise environments. The documentation assumes that the reader has in-depth knowledge of networks schemas, including details related to the following:

- HTTP, HTTPS, FTP and other Internet protocols used by an enterprise
- VMware ESX administration experience when installing on VMware ESX and Microsoft Hyper-V experience when installing on Hyper-V

The documentation does not assume the reader has any knowledge of antivirus or Web security technology.

Document Conventions

To help you locate and interpret information easily, the IWSVA documentation uses the following conventions.

<table>
<thead>
<tr>
<th>CONVENTION</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>ALL CAPITALS</td>
<td>Acronyms, abbreviations, and names of certain commands and keys on the keyboard</td>
</tr>
<tr>
<td>Bold</td>
<td>Menus and menu commands, command buttons, tabs, options, and ScanMail tasks</td>
</tr>
<tr>
<td>Italics</td>
<td>References to other documentation</td>
</tr>
<tr>
<td>Monospace</td>
<td>Examples, sample command lines, program code, Web URL, file name, and program output</td>
</tr>
<tr>
<td><strong>Note:</strong></td>
<td>Configuration notes</td>
</tr>
<tr>
<td><strong>Tip:</strong></td>
<td>Recommendations</td>
</tr>
</tbody>
</table>
### About Trend Micro

Trend Micro, Inc. is a global leader in network antivirus and Internet content security software and services. Founded in 1988, Trend Micro led the migration of virus protection from the desktop to the network server and the Internet gateway—gaining a reputation for vision and technological innovation along the way.

Today, Trend Micro focuses on providing customers with comprehensive security strategies to manage the impacts of risks to information, by offering centrally controlled server-based virus protection and content-filtering products and services. By protecting information that flows through Internet gateways, email servers, and file servers, Trend Micro allows companies and service providers worldwide to stop viruses and other malicious code from a central point, before they ever reach the desktop.

For more information, or to download evaluation copies of Trend Micro products, visit our award-winning Web site:

http://www.trendmicro.com

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#### TABLE 0-1. Document Conventions

<table>
<thead>
<tr>
<th>CONVENTION</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>WARNING!</td>
<td>Reminders on actions or configurations that should be avoided</td>
</tr>
</tbody>
</table>

---
Introducing Trend Micro™ InterScan™ Web Security Virtual Appliance

This chapter introduces the Trend Micro™ InterScan™ Web Security Virtual Appliance (IWSVA) and how it helps to ensure your organization's gateway security.

Topics in this chapter include the following:

• Web Traffic Security Risk Overview starting on page 1-2
• Hardware Specifications starting on page 1-4
• What’s New starting on page 1-6
• Main Features starting on page 1-7
Web Traffic Security Risk Overview

Web traffic exposes corporate networks to many potential security risks. While most computer viruses enter organizations through messaging gateways, Web traffic is a common infection vector for new security risks. For example, “mixed risks,” which take advantage of multiple entry points and vulnerabilities using HTTP to spread.

![IWSVA Summary screen displays security risk information](image)

Significant assessment, restoration, and lost productivity costs associated with outbreaks can be prevented. IWSVA is a comprehensive security product that identifies and protects multiple Internet protocols, including HTTPS, HTTP, and FTP traffic in enterprise networks from viruses and other risks.

In addition to content-based antivirus scanning, IWSVA also helps with other network security issue:

- Monitor and enable block/allow policies for any of several hundred Internet applications that may be misused by employees.
• Web Reputation scrutinizes URLs before you access potentially dangerous Web sites, especially sites known to be phishing or pharming sites.
• URL filtering feature can allow, block, block with override, warn but allow, or monitor access to Web sites with content prohibited by your organization.
• HTTPS decryption feature allows encrypted traffic to pass through IWSVA scanning and filtering policies as “normal” HTTP traffic and verifies certificates from HTTPS servers.
• Applets and ActiveX security helps to reduce the risk of malicious mobile code by checking digital signatures at the HTTP/HTTPS gateway, and monitoring applets running on clients for prohibited operations. With Applets and ActiveX security modules and URL Filtering now included in the IWSVA, these come at no extra cost to you.

Smart Search Support

The search field above the left menu allows users to find the features they need quickly, without navigating through the menu.

To use the Smart Search function:

1. Go to any page in IWSVA Web console.
2. In the Smart Search search field above the left-hand menu, begin to type the name of the feature to be located. (See Figure 1-2)
3. Select the appropriate feature from the options provided in the drop-down list.
4. Press Enter.

The page of your request feature displays.

Note: Smart Search is an instance-level feature. Passive nodes in High Availability environments will not be searched unless the administrator is logged into the passive member.
Hardware Specifications

For a complete description of the minimum IWSVA server requirements and to install for a basic evaluation, see the Installation Guide.

The minimum requirements specified provide enough resources to properly evaluate the product under light traffic loads. The recommended requirements specified provide general production sizing guidance.

For more detailed sizing information, refer to the IWSVA Sizing Guide at:

http://trendedge.trendmicro.com/pr/tm/te/web-security.aspx

Search for “sizing guide.”

**Minimum Requirements:**

- Single 2.0 GHz Intel™ Core2Duo™ 64-bit processor supporting Intel VT™ or equivalent
- 2GB RAM
- 12GB of disk space (IWSVA automatically partitions the detected disk space as required)
- Monitor that supports 1024x768 resolution with 256 colors or higher
Introducing Trend Micro™ InterScan™ Web Security Virtual Appliance

**Recommended Requirements:**

- Dual 2.8 GHz Intel Core2Duo 64-bit processor or equivalent for up to 4000 users
- Dual 3.16 GHz Intel QuadCore™ 64-bit processor or equivalent for up to 9500 users
- 4GB RAM is recommended to support up to 4000 users
- 8GB RAM is recommended to support up to 9500 users
- 300GB of disk space or more for log intensive environments. IWSVA automatically partitions the detected disk space as per recommended Linux practices

For more information on capacity sizing, refer to the IWSVA 5.5 Sizing Guide at:
http://trendedge.trendmicro.com/pr/tm/te/web-security.aspx

**Compatible Directory Servers for End-User Authentication**

- Microsoft Active Directory™ 2003 and 2008
- Linux OpenLDAP Directory 2.2.16 or 2.3.39
- Sun™ Java System Directory Server 5.2 (formerly Sun™ ONE Directory Server)

**Integration with ICAP 1.0-compliant Caching Devices**

Cache servers help moderate Web traffic congestion and save bandwidth. The “retrieve once, serve many” method employed by cache servers permits integration with third-party applications such as virus scanning through IWSVA. An open protocol, Internet Caching Acceleration Protocol (ICAP), allows seamless coupling of caching and virus protection. IWSVA works with cache servers that support the ICAP 1.0 standard.

**X-Authenticated ICAP Headers Support**

IWSVA supports X-Authenticated ICAP Headers that are provided by supported ICAP clients, such as NetCache (5.6.2R1+) and Blue Coat (SGOS 4.2.1.1+). The X-Authenticated Headers come in two forms: X-Authenticated-User and X-Authenticated-Groups. The advantage of using X-Authenticated Headers is two-fold: first, it reduces LDAP query overhead in IWSVA and second, it allows ICAP clients to provide LDAP searches on LDAP servers with different schemas.
What’s New

The following features are new in this release.

Application Control

The Application Control feature provides a security technology that automates the discovery of popular Internet applications and allows administrators to control them using policies. See details at: Application Control Overview on page 5-2.

Application Traffic Statistics and Reporting

The Application Control real-time traffic tab shows bandwidth used by inbound and outbound traffic as well as the number and type of concurrent application connections. Details on which applications are being by specific end-users is available in the reporting section of the product. See details at: Application Control Traffic Statistics Overview on page 5-8.

HTTP Inspection

HTTP Inspection allows administrators to identify behavior and filter web traffic according to HTTP methods, URLs, and headers. It also allows them to create filters or use default filters to identify web traffic, as well as import and export filters. After the traffic is identified, IWSVA can control it according to policy settings that determine the appropriate actions for specific traffic. For example, an HTTP Inspection policy could prevent users from posting content on social networking or webmail sites while still allowing them to read content. See details at: HTTP Inspection Overview on page 8-4.

Password Override Action for Blocked URL Filtering Categories

The “blocked with override” feature allows administrators to set a category of URLs to be blocked and then allow certain users to override the block action by typing a password. See details at: URL Filtering Actions on page 10-3.
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Time Limit Action for URL Filtering
Along with the Allow, Block, Monitor, and Warn actions available for URL Filtering policies, there is a new Time Limit action that sets a time quota for selected URL categories, limiting the amount of Web browsing for that category. See more at: URL Filtering Actions on page 10-3.

Time Quota Extension for URL Filtering Time Limit Action
If the time limit action is used for URL Filtering policies, there may be a need to allow a time extension for browsing. In that case, the Time Quota Extension feature allows administrators to add time for users to browse, if needed. For more information, see: URL Filtering Time Quota Extension on page 10-14.

Main Features
The following IWSVA features help you maintain Internet gateway security.

HTTP Malware Scanning
IWSVA scans the HTTP traffic flow to detect viruses and other security risks in uploads and downloads. HTTP scanning is highly configurable—for example, you can set the types of files to block at the HTTP gateway and how IWSVA scans compressed and large files to prevent performance issues and browser timeouts. In addition, IWSVA scans for many types of spyware, grayware, and other risks.

HTTPS Decryption
IWSVA closes the HTTPS security loophole by decrypting and inspecting encrypted content. You can define policies to decrypt HTTPS traffic from selected Web categories. While decrypted, data is treated the same way as HTTP traffic to which URL filtering and scanning rules can be applied.
Web Reputation

Web Reputation guards end-users against emerging Web threats. It can improve the Web surfing experience by enhancing Web filtering performance. Because a Web Reputation query returns URL category information (used by the URL Filtering module), IWSVA no longer uses a locally stored URL database.

Web Reputation also assigns reputation scores to URLs. For each accessed URL, IWSVA queries Web Reputation for a reputation score and then takes the necessary action, based on whether this score is below or above the user-specified sensitivity level.

IWSVA enables you to provide feedback on infected URLs, which helps to improve the Web Reputation database. This feedback includes product name and version, URL, and virus name. (It does not include IP information, so all feedback is anonymous and protects company information.) IWSVA also enables you to monitor the effectiveness of Web Reputation without affecting existing Web-access policies. Results are located in the URL Blocking Log and the Summary page (Security Risk Report tab).

For more Web Reputation information, see Specifying Web Reputation Rules on page 8-36 and Web Reputation Settings on page 8-37.

High Availability

IWSVA supports high availability (HA) for service redundancy, providing active/passive failover in Transparent Bridge mode to ensure continuity in demanding business environments. HA in IWSVA is easily deployed through the Deployment Wizard and managed through the new cluster management feature. See High Availability Overview on page 3-2 for more information.

FTP Scanning

In addition to scanning FTP uploads and downloads, IWSVA can also block specified file types at the FTP gateway. To prevent performance issues, the FTP scanning module supports special configurations for compressed files and large files. Spyware and grayware scanning is also supported.
IWSVA FTP scanning can be deployed onto your environment in conjunction with another FTP proxy server, or IWSVA can act as an FTP proxy. To help ensure the security of Trend Micro™ InterScan™ Web Security Virtual Appliance, several security-related configurations are available to control access to IWSVA and its ports.

**URL Filtering**

With the URL Filtering option in IWSVA, you can set policies based on categories of URLs, such as “Adult”, “Gambling,” and “Financial Services.” When a user requests a URL, IWSVA first looks up the category for that URL and then allows, denies, or monitors access to the URL based on the policies you have set up. You can also define a list of approved URLs that will not be filtered.

**Content Caching**

Web content caching is the caching of Web objects (for example, HTML pages, images) to reduce bandwidth usage, server load, and perceived lag. A Web cache stores copies of objects passing through it. Subsequent duplicate requests may be satisfied from the cache if certain conditions are met. The Content Cache capability provides users who access the Web through IWSVA with a quicker experience while saving bandwidth. See Using the Content Cache on page 8-40 for details.

**IP Address, Host Name and LDAP-based Client Identification**

IWSVA supports configuring policies for HTTPS decryption, HTTP virus scanning, Applets and ActiveX security, URL filtering, Application Control, and access quotas. The scope of policies can be configured using client IP address, host name or LDAP user or group name.

**Hyper-V Installation Support**

IWSVA now supports installation on Microsoft® Hyper-V® 2.0 with Windows Server 2008 R2 or later. The IWSVA installation for Hyper-V platforms supports forward proxy mode, WCCP mode, ICAP mode, and reverse proxy mode. See Appendix F of the IWSVA Installation Guide for more information.
Notifications

IWSVA can issue several types of notifications in response to program or security events. Administrator notifications are sent through email to the designated administrator contacts. User notifications are presented in the requesting client’s browser. Both administrator and user notifications can be customized.

To work with network management tools, IWSVA can also issue several types of notifications as SNMP traps. IWSVA sends traps for security risk detections, security violations, program and pattern file updates, and service disruptions.

Because IntelliTrap is considered a type of security risk, it uses the same notifications as HTTP Malware Scanning.

Real-time Statistics and Alerts

IWSVA provides dynamic statistics where the administrator can view the “real-time” information about the IWSVA system. Real-time statistics are displayed as graphs and tables in the System Dashboard tab of the Summary page. These statistics include the following:

- Hard Drive
  Hard drive statistics are static and are only updated when you open the Summary page.
- Bandwidth
- Concurrent Connections
- CPU Usage
- Physical Memory Usage

For more information, see Real-time Statistics on page 13-2.

Optionally, IWSVA can be configured to send information to Trend Micro’s Advanced Reporting and Management (ARM) for InterScan Web Security products for central logging, reporting, and policy management. ARM provides high-performance reporting with many additional report types and advanced features such as report drill-down, activity monitoring, dynamic dashboarding, and much more.
Logs and Reports

IWSVA includes many pre-configured reports to provide a summary of your gateway security status. Reports can be run for a specific time period and customized to only provide information about clients that you are interested in. The following lists the main report classes:

- Violation event reports
- Traffic reports
- Spyware/grayware reports
- Cleanup reports
- URL filtering category reports
- Individual user reports

Reports are generated from log information in the database. IWSVA writes log information to text-only logs, text and database logs, or database-only logs.

Reports can be generated on demand or scheduled on a daily, weekly, or monthly basis. Log and report data can be exported to comma-separated value (CSV) files for further analysis. To prevent logs from consuming excessive disk space, a scheduled task deletes older logs from the server.

For more information, see Reports, Logs, and Notifications on page 13-1.

Optionally, IWSVA can be configured to send information to Trend Micro’s Advanced Reporting and Management for InterScan Web Security (ARM) product for central logging, reporting, and policy management. ARM provides high-performance reporting with many additional report types and advanced features such as report drill-down, activity monitoring, dynamic dashboarding and much more.

Syslog Support

To provide enterprise-class logging capabilities, IWSVA allows sending logs using the syslog protocol (default UDP port 514) to multiple external syslog servers in a structured format.
Integration with Cisco WCCP

IWSVA supports Web Cache Communication Protocol (WCCP) version 2, a protocol defined by Cisco Systems. See your Cisco product documentation for more information on the protocol.

The following are the benefits gained when IWSVA supports WCCP:

- Transparency of deployment without endpoint configuration
- High availability and load balancing between multiple IWSVA systems
- Automated load balancing re-configuration when adding or removing IWSVA appliances
- Support Cisco router, switch, and firewall implementations of the protocol

The WCCP implementation for IWSVA is compatible with Cisco routers, switches, PIX firewalls, and ASA security devices.

Trend Micro recommends using the following Cisco IOS versions when configuring WCCP with IWSVA:

- 12.2(0) to 12.2(22). Avoid using releases 23 and above within the 12.2 family
- 12.3(10) and above. Avoid using releases 0-9 in the 12.3 family
- IOS 15.1(1)T3 or above

Trend Micro recommends using version 7.2(3) and above for the Cisco PIX firewall and avoiding version 7.2(2).

Non-Cisco devices that support WCCP version 2 have not been explicitly tested by Trend Micro. Therefore, interoperability cannot be guaranteed.

Reverse Proxy Support

IWSVA is usually installed close to clients to protect them from Internet security risks. However, IWSVA also supports being installed as a reverse proxy to protect a Web server from having malicious programs uploaded to it. As a reverse proxy, IWSVA is installed close to the Web server that it protects. IWSVA receives client requests, scans all content and then redirects the HTTP requests to the real Web server.

For more information, see Reverse Proxy on page 6-9.
Support for Multiple Trend Micro™ InterScan™ Web Security Virtual Appliance Installations

The method to fully administer multiple IWSVA devices from a single console is done through Trend Micro Control Manager (TMCM) and/or through Advanced Reporting and Management (ARM) for InterScan Web Security product family. TMCM provides the ability to manage multiple Trend Micro products and allows you to activate multiple IWSVA units from a central console. ARM provides centralized logging, reporting, and policy management for multiple IWSVA units and is only dedicated to the IWSVA products.

Advanced Reporting and Management Integration

Trend Micro Advanced Reporting and Management (ARM) provides a high-performance, off-box reporting solution. ARM is based on new advanced database technology, which greatly enhances the current InterScan Web Security product reporting capabilities and provides advanced features, such as dynamic dashboard, drill-down reporting, custom reporting and real-time, problem-solving capabilities.

Command Line Interface

IWSVA provides a native Command Line Interface (CLI) to perform system monitoring, system administration, debug, troubleshooting functions and more through a secure shell or a direct console connection.

IWSVA’s CLI uses industry standard syntax to provide a familiar interface for configuring the appliance. For security, IWSVA allows administrators to access the CLI through the console or an SSH connection only. You can enable this feature in the IWSVA Web console.
Deployment Wizard

The contents of this chapter help to guide you through the deployment process as you configure InterScan Web Security Virtual Appliance (IWSVA) for your network.

Topics in this chapter include the following:

- Overview of the Deployment Wizard on page 2-2
- Mode Selection on page 2-2
- Mode-specific Settings on page 2-15
- Network Interface on page 2-27
- Static Routes on page 2-34
- Product Activation on page 2-35
- System Time Settings on page 2-38
- Summary on page 2-39
- Results on page 2-40
- Post Deployment on page 2-41
Overview of the Deployment Wizard

The Deployment Wizard and the change password dialog box both display automatically at first login.

**Note:**
1. If you are using a pop-up blocker, the Deployment Wizard and the password change dialog box will not appear.
2. Trend Micro recommends changing your admin password when prompted at first logon before using the Deployment Wizard.

The Deployment Wizard walks you through the deployment process. It is invoked automatically the first time administrators log into the IWSVA Web console. It can be manually invoked from Administration > Deployment Wizard at any time to review or change settings.

**FIGURE 2-1. Deployment Wizard flow**

Mode Selection

IWSVA can be deployed in different modes, depending on your network security needs. For more information on which mode to select, see the Deployment Primer in Chapter 2 of the *IWSVA Installation Guide*. 
The Deployment Wizard allows you to configure IWSVA in one of seven modes.

- Transparent Bridge Mode on page 2-3
- Transparent Bridge Mode - High Availability on page 2-5
- Forward Proxy Mode on page 2-9
- Reverse Proxy Mode on page 2-10
- ICAP Mode on page 2-11
- Simple Transparency Mode on page 2-13
- Web Cache Coordination Protocol (WCCP) Mode on page 2-14

**Transparent Bridge Mode**

IWSVA acts as a bridge between network devices such as routers and switches. IWSVA scans passing HTTP and FTP traffic without the need to modify browser or network settings. This is the easiest deployment mode with traffic scanned in both directions.

![Figure 2-2: Transparent Bridge Mode](image)
Transparent Bridge Mode and Transparent Bridge Mode - High Availability are also the only deployment modes that allow for the Application Control reporting and policies to function. For these reasons, Trend Micro strongly recommends deploying the product in one of these modes to realize maximum visibility and protection for Internet traffic.

The additional dependency for this deployment mode is two network interface cards per transparent bridge segment protected with IWSVA. Trend Micro recommends the following network cards be used to ensure maximum compatibility:

- Broadcom NetXtreme Series
- Intel Pro/1000 PT Dual Port Server Adapter
- Intel Pro/1000 MF Dual Port Fiber

**Note:** For more information on setting up IWSVA in Transparent Bridge mode, see Network Configuration and Load Handling on page 6-11.

**To deploy IWSVA in Transparent Bridge mode:**

1. Go to Administration > Deployment Wizard.

   **Note:** The Deployment Wizard launches automatically the first time an administrator logs in.

2. Click Start on the Welcome page.

3. Click the **Transparent Bridge Mode** radio button on the Deployment Mode page.

4. Click Next.

5. Go to Network Interface on page 2-27 to continue.

   **Note:** Transparent Bridge Mode for a single node requires no mode-specific settings. For more information on setting up IWSVA, see Network Configuration and Load Handling on page 6-11.
Transparent Bridge Mode - High Availability

The IWSVA High Availability (HA) solution currently supports active/passive pairs utilizing the Transparent Bridge mode. To deploy an IWSVA cluster, each IWSVA unit must use a separate management interface.

The Transparent Bridge Mode - High Availability for HA deployment requires at least the four following network interfaces cards (NICS) for cluster deployment:

- Two for bridge data interfaces
- One for the HA interface
- One for the separate management interface

**Note:** For more information about high availability and cluster management, see *High Availability and Cluster Management for Transparent Bridge Mode* starting on page 3-1.

**FIGURE 2-3.** Transparent Bridge Mode - High Availability

**Note:** IWSVA only supports two HA nodes in a single HA cluster.

Using the Deployment Wizard, you can either:

- Create a New Cluster on page 2-6
- Join an Existing Cluster on page 2-8
About Cluster IP Addresses

The Cluster IP address is the floating IP address of the management port of the cluster. Users access this IP address through the Web console or the CLI to manage the cluster. The floating IP address floats in the cluster. If a switchover occurs, the floating IP address of cluster (the cluster IP address) always points to the parent device.

About Weighted Priority Election

Enabling Weighted Priority Election allows the device with the highest weight to always be selected as the parent member. Disabling the Weighted Priority Election process means the current parent member remains the parent member even when a new cluster member with a higher weight is added into the cluster.

The weight is the user-defined priority of the member in the cluster. If two members have the same weight assigned, there will still be one parent and one child, but the selection of the parent member is based on an internal algorithm. If you enable Weighted Priority Election, cluster members are prohibited from having equal weights.

Create a New Cluster

To create a new cluster:

1. Go to Administration > Deployment Wizard.

   **Note:** The Deployment Wizard launches automatically the first time an administrator logs in.

2. Click Start on the Welcome page.
3. Click the Transparent Bridge Mode - High Availability option on the Deployment Mode page.
4. Click the New Cluster option.
5. Click Next.
6. Set the Cluster settings, which include:
   a. Type a cluster name.
   b. Type an (optional) cluster description.
c. Type the Cluster IP address. See About Cluster IP Addresses on page 2-6 for details.

d. Select Enable or Disable from the Weighted Priority Election drop-down list.

**Note:** For more information on Weighted Priority Election, see About Weighted Priority Election on page 2-6.

- If enabled, the HA pair launches an election to choose the maximum-weighted machine.
- If disabled, the HA pair only launches an election when the current active (primary) machine is not available.

**Note:** The HA mode displays as Active/Passive and the Deployment mode always shows Bridge to indicate Transparent Bridge Mode - High Availability.

e. Using the information in the Interface Status section, select the HA Interface from the drop-down list (eth0, eth1, eth2, eth3, etc.)

Active and passive IWSVs are connected directly though the HA or “Heartbeat” interface. The interface, labeled H in the interface status graphic, has two functions:

- Active and passive virtual appliances send a package per second to notify each other they are up and running.
- The interface is used in the synchronization process.

See Figure on page 2-29 and Table 2-2 on page 2-29 for more information on using the Interface Status graphic. Also see Determining the Status of the Interfaces on page 2-28.

f. Enter the Weight value. (Default 128)

- The member with the higher weighting has higher priority and becomes the parent member.

7. Click **Next**.

8. Set up the Network Interface on page 2-27 to continue the deployment.
Join an Existing Cluster

To join an existing cluster:

1. Go to Administration > Deployment Wizard.

   Note: The Deployment Wizard launches automatically the first time an administrator logs in.

2. Click Start on the Welcome page.
3. Click the Transparent Bridge Mode - High Availability option on the Deployment Mode page.
4. Click the Join a Cluster option.
5. Click Next.
6. Set the Cluster settings, which include:
   a. Using the information in the Interface Status section, select the HA Interface from the drop-down list (eth0, eth1, eth2, eth3, etc.)
      Active and passive IWSVAs are connected directly though the HA or “Heartbeat” interface. The interface, labeled H in the interface status graphic, has two functions:
      • Active and passive virtual appliances send a package per second to notify each other they are up and running.
      • The interface is used in the synchronization process.
      See Figure on page 2-29 and Table 2-2 on page 2-29 for more information on using the Interface Status graphic. Also see Determining the Status of the Interfaces on page 2-28.
   b. Enter the Weight value. (Default 64)
7. Click Next. A progress bar displays, showing connection to the existing cluster.
8. Review the cluster information page that displays after connecting to the cluster and click Next.
9. Set up the Network Interface on page 2-27 to continue the deployment.
Forward Proxy Mode

IWSVA can act as an upstream proxy for network clients. Client browser settings must be configured to redirect traffic to IWSVA. IWSVA scans HTTP and FTP traffic and there is no separate need for another dedicated proxy server. Content is scanned in both the inbound and outbound directions. However, the Application Control reports and policies will not function in proxy mode because IWSVA only sees the HTTP, HTTPS, and FTP protocols.

Forward Proxy Mode also provides the following additional capabilities:

• Forwards all traffic to another upstream proxy server
• Participates in a proxy chain configuration with other proxy servers and supports X-Forwarded-For functionality

**Note:** For more information on setting up IWSVA in Forward Proxy mode, see Network Configuration and Load Handling on page 6-11.

**Figure 2-4. Forward Proxy Mode**
To deploy IWSVA in Forward Proxy Mode:

1. Go to Administration > Deployment Wizard.

   Note: The Deployment Wizard launches automatically the first time an administrator logs in.

2. Click Start on the Welcome page.
3. Click the Forward Proxy Mode radio button on the Deployment Mode page.
4. Click Next.
5. Go to Mode-specific Settings on page 2-15 to continue.

Reverse Proxy Mode

In this deployment mode, IWSVA is deployed in front of a Web server. IWSVA scans HTTP and FTP content from the clients that are uploaded to a web server as well as content that is downloaded from the Web server to the clients and helps secure the Web server.

Note: For more information on setting up IWSVA in Reverse Proxy mode, see Network Configuration and Load Handling on page 6-11.
To deploy IWSVA in Reverse Proxy Mode:

1. Go to Administration > Deployment Wizard.

   **Note:** The Deployment Wizard launches automatically the first time an administrator logs in.

2. Click **Start** on the Welcome page.
3. Click the **Reverse Proxy Mode** radio button on the Deployment Mode page.
4. Click **Next**.
5. Go to **Mode-specific Settings on page 2-15** to continue.

### ICAP Mode

In this deployment mode, IWSVA acts as an ICAP server and accepts ICAP connections from an ICAP v1.0 compliant cache server (acting as a client to IWSVA). Cache servers can help reduce the overall bandwidth requirements and reduce latency by serving cached content locally. IWSVA scans and secure all content returned to the cache server and to the end-user clients.
Note: To enable and configure ICAP mode, see Network Configuration and Load Handling on page 6-11 and Setting Up IWSVA ICAP on page 2-43.

FIGURE 2-6. ICAP Mode

Deploying IWSVA in ICAP Mode in the Deployment Wizard

To deploy IWSVA in ICAP mode:

1. Go to Administration > Deployment Wizard.
   
   **Note:** The Deployment Wizard launches automatically the first time an administrator logs in.

2. Click Start on the Welcome page.
3. Click the ICAP Mode radio button on the Deployment Mode page.
4. Click Next.
5. Go to Mode-specific Settings on page 2-15 to continue.
Simple Transparency Mode

IWSVA’s Forward Proxy Mode supports simple transparency with popular Layer 4 load balancing switches and provides HTTP scanning without the need to modify the client's browser settings.

**Note:** For more information on setting up IWSVA in Simple Transparency mode, see Network Configuration and Load Handling on page 6-11.

---

**FIGURE 2-7.** Simple Transparency Mode

**To deploy IWSVA in Simple Transparency Mode:**

1. Go to Administration > Deployment Wizard.

   **Note:** The Deployment Wizard launches automatically the first time an administrator logs in.

2. Click Start on the Welcome page.
3. Click the **Simple Transparency Mode** radio button on the Deployment Mode page.
4. Click **Next**.
5. Go to **Mode-specific Settings on page 2-15** to continue.

**Web Cache Coordination Protocol (WCCP) Mode**

IWSVA works with Cisco’s WCCP protocol to provide content scanning for Web and FTP traffic without the need to modify client configurations and allows redundancy and saleability to be designed into the architecture without additional hardware.

![WCCP Mode Diagram](image)

**FIGURE 2-8. WCCP Mode**

**Note:** For more information on setting up your WCCP server for use with IWSVA, see **Network Configuration and Load Handling on page 6-11** and your Cisco product documentation.
To deploy IWSVA in WCCP Mode:

1. Go to Administration > Deployment Wizard.

   **Note:** The Deployment Wizard launches automatically the first time an administrator logs in.

2. Click **Start** on the Welcome page.
3. Click the **WCCP Mode** radio button on the Deployment Mode page.
4. Click **Next**.
5. Go to **Mode-specific Settings on page 2-15** to continue.

### Mode-specific Settings

Some deployments modes have settings that are unique to that mode. The second step in deployment Wizard allows you to configure those settings. Transparent Bridge Mode has no mode-specific settings.

<table>
<thead>
<tr>
<th>MODE</th>
<th>MODE-SPECIFIC SETTINGS</th>
<th>PAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transparent Bridge</td>
<td>None</td>
<td>N/A</td>
</tr>
<tr>
<td>Transparent Bridge for HA</td>
<td>New:</td>
<td>New:</td>
</tr>
<tr>
<td></td>
<td>• Cluster settings</td>
<td>2-6</td>
</tr>
<tr>
<td></td>
<td>• Weighted Priority</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Election (Y/N)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• HA Interface</td>
<td>Existing:</td>
</tr>
<tr>
<td></td>
<td>• Weight</td>
<td>2-8</td>
</tr>
<tr>
<td></td>
<td>Existing:</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• HA Interface</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Weight</td>
<td></td>
</tr>
<tr>
<td>Forward Proxy</td>
<td>Proxy settings</td>
<td>2-16</td>
</tr>
<tr>
<td>Reverse Proxy</td>
<td>Proxy settings</td>
<td>2-16</td>
</tr>
</tbody>
</table>
Proxy Settings

Proxy settings must be configured if you are installing in the following modes:

- Forward Proxy, Standalone Mode - See Standalone Proxy Mode Settings on page 2-16
- Forward Proxy, Upstream Proxy Mode - See Upstream Proxy (Dependent) Mode Settings on page 2-18
- Reverse Proxy Mode - See Reverse Proxy Settings on page 2-19

Forward Proxy Mode

Depending on your network configuration, you can either specify:

- Standalone Proxy Mode Settings on page 2-16
- Upstream Proxy (Dependent) Mode Settings on page 2-18

Standalone Proxy Mode Settings

To configure the proxy settings for Standalone Mode:

1. Select the Forward Proxy mode radio button on the Deployment Mode page.
   See Forward Proxy Mode on page 2-9 for details.
2. Click Next.

<table>
<thead>
<tr>
<th>MODE</th>
<th>MODE-SPECIFIC SETTINGS</th>
<th>PAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>ICAP</td>
<td>ICAP settings</td>
<td>2-20</td>
</tr>
<tr>
<td>Simple Transparency</td>
<td>Transparency settings</td>
<td>2-23</td>
</tr>
<tr>
<td>WCCP</td>
<td>WCCP settings</td>
<td>2-23</td>
</tr>
</tbody>
</table>
3. Follow the configuration recommendations in Table 2-1.

### Table 2-1. Standalone settings in Forward Proxy Mode

<table>
<thead>
<tr>
<th><strong>Configuration Parameter</strong></th>
<th><strong>Details</strong></th>
<th><strong>Recommended Value</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>HTTP Listening port</td>
<td>This is the port that IWSVA listens on to receive connections</td>
<td>8080</td>
</tr>
<tr>
<td>Enable upstream proxy (check box)</td>
<td>Enable / disable upstream proxy</td>
<td>Leave unchecked if you do not use another proxy device upstream of IWSVA.</td>
</tr>
<tr>
<td>Enable guest account</td>
<td>Guest mode provides a secondary proxy port that uses the Guest Policy and simplifies deployment without the need to authenticate guests before giving them access to the Internet. In order to enable Internet connectivity to network users who are not in the LDAP directory and apply guest policies, this setting opens a guest port for Web clients to communicate with IWSVA.</td>
<td>Enable and accept the default port of 8081 if you want to support the secondary Guest proxy port. The Guest port can be changed if needed.</td>
</tr>
<tr>
<td>Anonymous FTP over HTTP</td>
<td>The email address passed to FTP sites</td>
<td>Change to an appropriate address</td>
</tr>
</tbody>
</table>

4. Click Next.

5. Set up the Network Interface on page 2-27 to continue the deployment.
Upstream Proxy (Dependent) Mode Settings

To configure the Proxy Settings for Upstream Mode:

1. Select the **Forward Proxy mode** radio button on the Deployment Mode page. See **Forward Proxy Mode on page 2-9** for details.
2. Click **Next**.
3. Follow the configuration recommendation in **Table 2-2**.

**Table 2-2. Upstream Proxy (Dependent) settings in Forward Proxy Mode**

<table>
<thead>
<tr>
<th>Configuration Parameter</th>
<th>Details</th>
<th>Recommended Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>HTTP Listening port</td>
<td>This is the port that IWSVA listens on to receive connections</td>
<td>8080</td>
</tr>
<tr>
<td>Enable upstream proxy (check box)</td>
<td>Enable / Disable upstream proxy</td>
<td>Check (enable)</td>
</tr>
<tr>
<td>Proxy Server</td>
<td>IP address of the upstream proxy server</td>
<td>Type in the value of the upstream proxy server</td>
</tr>
<tr>
<td>Port</td>
<td>Port of the upstream proxy server</td>
<td>Type in the port number of the upstream proxy server</td>
</tr>
</tbody>
</table>
4. Click Next.

5. Set up the Network Interface on page 2-27 to continue the deployment.

**Reverse Proxy Settings**

To configure the Proxy Settings for Reverse Proxy Mode:

1. Select the Reverse Proxy mode radio button from the Deployment Mode page. See Reverse Proxy Mode on page 2-10 for details.

2. Click Next.

---

**TABLE 2-2. Upstream Proxy (Dependent) settings in Forward Proxy Mode**

<table>
<thead>
<tr>
<th><strong>CONFIGURATION PARAMETER</strong></th>
<th><strong>DETAILS</strong></th>
<th><strong>RECOMMENDED VALUE</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Enable guest account</td>
<td>Guest mode provides a secondary proxy port that uses the Guest Policy and simplifies deployment without the need to authenticate guests before giving them access to the Internet. In order to enable Internet connectivity to network users who are not in the LDAP directory and apply guest policies, this setting opens a guest port for Web clients to communicate with IWSVA.</td>
<td>Enable and accept the default port of 8081 if you want to support the secondary Guest proxy port. The Guest port can be changed if needed.</td>
</tr>
<tr>
<td>Anonymous FTP over HTTP</td>
<td>The email address passed to FTP sites</td>
<td>Change to an appropriate address</td>
</tr>
</tbody>
</table>
3. Follow the configuration recommendation in Table 2-3/.

<table>
<thead>
<tr>
<th>CONFIGURATION PARAMETER</th>
<th>DETAILS</th>
<th>RECOMMENDED VALUE</th>
</tr>
</thead>
<tbody>
<tr>
<td>HTTP Listening port</td>
<td>This is the port that IWSVA listens on to receive connections for reverse proxy.</td>
<td>80</td>
</tr>
<tr>
<td>Protected Server</td>
<td>This is the IP address of the Web server IWSVA is protecting.</td>
<td>Type in the IP address of the protected server</td>
</tr>
<tr>
<td>Port</td>
<td>This is the SSL port of the Web server IWSVA is protecting.</td>
<td>Type in the SSL port number of the server being protected</td>
</tr>
<tr>
<td>Enable SSL Port (check box)</td>
<td>Enable / Disable SSL.</td>
<td>Leave disabled unless required. Check to enable.</td>
</tr>
</tbody>
</table>

4. Click Next.
5. Set up the Network Interface on page 2-27 to continue the deployment.

**ICAP Settings**

Deploying in ICAP Mode requires addition configuration settings.

IWSVA can return four optional headers from the ICAP server whenever a virus is found or information about users and groups. These headers are not returned by default for performance reasons, because many ICAP clients do not use these headers. They must be enabled in the IWSVA Web console.

- **X-Virus-ID**: Contains one line of US-ASCII text with a name of the virus or risk encountered. For example:

  X-Virus-ID: EICAR Test String
• **X-Infection-Found:** Returns a numeric code for the type of infection, the resolution, and the risk description.

For more details on the parameter values, see:

http://www.icap-forum.org/documents/specification/draft-stecher-icap-subid-00.txt

• **X-Authenticated - User:** If enabled, IWSVA requests the username sent in the X-Authenticated-User ICAP header. The username obtained from the ICAP header allows IWSVA to identify of the user issuing the request if you configure IWSVA to use the user/groupname method of user identification.

• **X-Authenticated - Group:** If enabled, IWSVA requests the group membership information sent in the X-Authenticated-Groups ICAP header if you configure IWSVA to use the user/groupname method of user identification. If disabled, IWSVA queries LDAP for the group membership information.

**Note:** Some ICAP clients do not offer the recursive group membership search. For example, if a user belongs to group A, and group A belongs to group B, the ICAP client only sends group A information in the header. If you require recursive group membership information, Trend Micro recommends disabling the x_authenticated_groups header.

**To configure the ICAP settings:**

1. Select the **ICAP mode** radio button from the Deployment Mode page of the Deployment Wizard.

   See **ICAP Mode on page 2-11** for details.

2. Click **Next**.
3. Follow the configuration recommendations in *Table 2-4*.

**TABLE 2-4. ICAP Mode-specific Settings**

<table>
<thead>
<tr>
<th>CONFIGURATION PARAMETER</th>
<th>DETAILS</th>
<th>RECOMMENDED VALUE</th>
</tr>
</thead>
<tbody>
<tr>
<td>HTTP Listening port</td>
<td>This is the port that IWSVA listens on to receive connections for ICAP.</td>
<td>1344</td>
</tr>
<tr>
<td>Enable X-Virus-ID ICAP header (check box)</td>
<td>Enable / Disable ICAP details about malware detected being recorded.</td>
<td>Enable</td>
</tr>
<tr>
<td>Enable X-Infection-Found ICAP header (check box)</td>
<td>Enable / Disable ICAP details about malware detected and passing details back to the ICAP device.</td>
<td>Enable</td>
</tr>
<tr>
<td>Enable X-Authenticated-User ICAP header</td>
<td>Enable / Disable ICAP details about username information.</td>
<td>Enable</td>
</tr>
<tr>
<td>Enable X-Authenticated-Groups ICAP Header</td>
<td>Enable / Disable ICAP details about group membership information.</td>
<td>Enable</td>
</tr>
</tbody>
</table>

4. Click **Next**.

5. Set up the **Network Interface** on page 2-27 to continue the deployment.

**Note:** Complete all steps in the Deployment Wizard to deploy in ICAP mode. After receiving a successful deployment message, configure the IWSVA ICAP set up as shown in *Setting Up IWSVA ICAP* on page 2-43.
Simple Transparency Settings

Simple Transparency Mode requires mode-specific settings.

To configure mode-specific settings for Simple Transparency Mode:

1. Select the Simple Transparency mode radio button from the Deployment Mode page.
   See Simple Transparency Mode on page 2-13 for details.

2. Click Next.

3. Enter the following settings on the Simple Transparency Settings page. (See Table 2-5.)

4. Click Next.

5. Set up the Network Interface on page 2-27 to continue the deployment.

WCCP Settings

WCCP Mode requires mode-specific settings.

To configure mode-specific settings for WCCP Mode:

1. Select the Web Cache Coordination Protocol (WCCP) mode radio button from the Deployment Mode page.
   See Web Cache Coordination Protocol (WCCP) Mode on page 2-14 for details.

2. Click Next.
3. Enter the following settings on the WCCP Settings page. (See Table 2-6.)

**Table 2-6. WCCP Mode-specific Settings**

<table>
<thead>
<tr>
<th>CONFIGURATION PARAMETER</th>
<th>DETAILS</th>
<th>RECOMMENDED VALUE</th>
</tr>
</thead>
<tbody>
<tr>
<td>HTTP Listening port</td>
<td>This is the port that IWSVA listens on to receive connections.</td>
<td>80</td>
</tr>
<tr>
<td>Router IP address</td>
<td>Detail which router or switch to communicate with via WCCP</td>
<td>Type in the router or switch IP address</td>
</tr>
<tr>
<td>Password</td>
<td>Password for WCCP authentication</td>
<td>Type in the password for the WCCP authentication</td>
</tr>
<tr>
<td>Auto-negotiate</td>
<td>Provides automatic negotiation of the forwarding method and the assignment method.</td>
<td>Select Enable (default.)</td>
</tr>
</tbody>
</table>

**Note:** If you select Enable, the Forwarding and Assignment Methods parameters are grayed out since they are automatically configured. After the Deployment Wizard finishes, you can see the values of the auto-negotiated parameters at: Administration > Network Configuration > WCCP.

- If the route supports L2/GRE as a forwarding method, IWSVA should select L2 when the router and IWSVA are in the same network segment. (This takes performance into account.)

- If one route supports L2/GRE as forwarding method, IWSVA should select GRE when the router and IWSVA are not in the same network segment.

- If one route supports HASH/MASK as assignment method, IWSVA should select MASK. (This takes performance into account.)
The WCCP forwarding method determines how intercepted traffic is transmitted from the WCCP server (IOS) to the WCCP client.

Select the Generic Routing Encapsulation (GRE) or Layer 2 (L2) as the WCCP forwarding method.

**Note:**
- GRE forwarding, which is the default forwarding method, encapsulates the intercepted packet in an IP GRE header with a source IP address of the WCCP server (IOS) and a destination IP address of the target WCCP client. This has the effect of a tunnel, allowing the WCCP server (IOS) to be multiple Layer 3 hops away from the WCCP client.
- L2 forwarding simply rewrites the destination MAC address of the intercepted packet to equal the MAC address of the target WCCP client. L2 forwarding requires that the WCCP server (IOS) is Layer 2 adjacent to the WCCP client.

**Assignment method**

WCCP provides packet distribution through two algorithms, Hash tables and Mask/value sets.

Select Hash tables or Mask/value sets as the WCCP assignment method.

With hash assignment, the router runs a value in the header of the packet it is redirecting through a hashing function.

With mask assignment, each router/switch in the service group has a table of masks and values that it uses to distribute traffic across the proxy appliances in the service group.
4. Click **Next**.

5. Set up the **Network Interface on page 2-27** to continue the deployment.

### TABLE 2-6. WCCP Mode-specific Settings (Continued)

<table>
<thead>
<tr>
<th>Configuration Parameter</th>
<th>Details</th>
<th>Recommended Value</th>
</tr>
</thead>
</table>
| Service Group           | Standard or Dynamic | • **Standard**—Well-known services, also referred to as static or standard services, have a fixed set of characteristics that are known by both IOS and WCCPv2 client devices.  
• **Dynamic**—Dynamic services are initially only known to the WCCPv2 clients within the service group. |

**Note:** For example, a single well-known (standard) service called web-cache has a Service ID is 0. This service redirects all TCP traffic with a destination port of 80.

The characteristics of a dynamic service are initially only known to the WCCPv2 clients within the service group. The characteristics of the service group are communicated to the IOS devices by the first WCCPv2 client device to join the service group.

| Unique Service ID       | Identifies service groups Default:  
• Standard service = 0  
• Dynamic service = 80 | Range:  
• Standard = 0-50  
• Dynamic = 51-255 |

| Anonymous FTP over HTTP | The email address passed to FTP sites. | Type in an appropriate email address |
Network Interface

All modes need the relevant network interface settings configured. Some modes require slightly different information than other modes. The following procedures call out the different settings needed.

Network interface settings include:
- Host Information on page 2-27
- Data Interface on page 2-30
- Separate Management Interface on page 2-32
- Miscellaneous Settings on page 2-33

Host Information

All modes require the host information to be entered. Before starting this procedure, be sure you have:
- Selected your deployment mode
- Configured any mode-specific settings

To enter the host information:

1. Using the Deployment Wizard, select the appropriate deployment mode radio button and click Next.
2. Set any mode-specific settings and click Next.
3. Type the applicable Fully Qualified Domain name (FQDN) for the IWSVA host.

Note: A fully qualified hostname is required. Trend Micro recommends creating a DNS entry for the IWSVA server's hostname in their DNS server.

4. Continue to the section about the Interface Status starting on page 2-27.

Interface Status

IWSVA provides a graphical representation of the physical Ethernet ports on the IWSVA server to simplify the configuration of the network ports. The Interface Status graphic shows the status and function of the available interfaces.
Use Figure to interpret the status and function of the Ethernet ports used for configuration purposes in the Interface Status section.

**Determining the Status of the Interfaces**

IWSVA is a software virtual appliance that can be installed on all types of hardware. As such, the network information displayed in IWSVA’s Web UI may not directly relate to the physical network interfaces installed in the server running IWSVA. For example, if the server came with two network interfaces installed on the motherboard and then an additional four-port Ethernet card was installed in the server to increase the network interfaces available, the IWSVA Web UI may display the first network port as Eth0 when it is actually mapped to physical network interface Eth2 on the new Ethernet card.

In order to positively identify the IWSVA Web UI network interface to the physical network interface, IWSVA provides a command line interface (CLI) command to display the real time status of the physical network interfaces and the Interface Status graphic in the Deployment Wizard.

By using the `show network interfaces status` CLI command from the IWSVA console, you can quickly see the link status of the physical interface. In the example below, you can see that Eth0 and Eth1 is up with a physical link connection.

```
enable# show network interfaces status

Network interface link status [press 'q' to quit]
  eth0: up
  eth1: up
```

**FIGURE 2-9. “show network interfaces status” CLI command**

<table>
<thead>
<tr>
<th>Interface Status</th>
<th>D: Data</th>
<th>H: High Availability</th>
<th>N: Management</th>
</tr>
</thead>
</table>

**FIGURE 2-10. Interface Status**
Figure 2-10 depicts the interface status information displays in the Deployment Wizard. Table 2-2 defines the icons used in the interface status graphic.

**TABLE 2-2. Interface Status Icons**

<table>
<thead>
<tr>
<th>CALLOUT</th>
<th>POINTS TO</th>
</tr>
</thead>
<tbody>
<tr>
<td>M</td>
<td>Management interface</td>
</tr>
<tr>
<td>D</td>
<td>Data interface</td>
</tr>
<tr>
<td>H</td>
<td>HA or Heartbeat Interface</td>
</tr>
<tr>
<td><img src="eth0.png" alt="Image" /></td>
<td>Link not detected. Could be an empty port, cable may be loose or broken, or the peer machine may be down.</td>
</tr>
<tr>
<td><img src="eth0.png" alt="Image" /></td>
<td>Link ok</td>
</tr>
<tr>
<td><img src="eth1.png" alt="Image" /></td>
<td>Link error</td>
</tr>
<tr>
<td><img src="eth1.png" alt="Image" /></td>
<td>Link disabled</td>
</tr>
</tbody>
</table>

**About Interface Mapping**

Trend Micro recommends mapping the interfaces with physical interfaces before configuring or modifying your interface settings.

After rebooting IWSVA, the numbering for unused interfaces may change, however the occupied interfaces (for data, management, or HA) will not change.

Before dissolving a cluster, interfaces might be mapped as shown in *Table 2-7.*
After dissolving a cluster, joining a cluster, or rebooting, the interface mapping might change as shown in Table 2-8.

**TABLE 2-7. Original Interface Mapping**

<table>
<thead>
<tr>
<th>PHYSICAL INTERFACE</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
</tr>
</thead>
<tbody>
<tr>
<td>RELATIVE INTERFACE</td>
<td>eth1</td>
<td>eth2</td>
<td>eth0</td>
<td>eth3</td>
</tr>
<tr>
<td>PURPOSE</td>
<td>D (internal)</td>
<td>H</td>
<td>D (external)</td>
<td>M</td>
</tr>
</tbody>
</table>

**TABLE 2-8. Changed Interface Mapping**

<table>
<thead>
<tr>
<th>PHYSICAL INTERFACE</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
</tr>
</thead>
<tbody>
<tr>
<td>RELATIVE INTERFACE</td>
<td>eth2</td>
<td>eth1</td>
<td>eth0</td>
<td>eth3</td>
</tr>
<tr>
<td>PURPOSE</td>
<td>(unused)</td>
<td>(unused)</td>
<td>D (external)</td>
<td>M</td>
</tr>
</tbody>
</table>

**Data Interface**

The Data Interface supports end-user Internet traffic to and from the internal network. Use the following procedure to configure the host name and IP settings for the data (bridge or proxy) interfaces.

**WARNING!** Do NOT configure the data interface and the management interface in the same network subnet. If they are in the same network segment, the IWSVA internal firewall will prevent proper forwarding of HTTP and FTP traffic.
Before starting this procedure, be sure you have:

- Selected your deployment mode
- Configured any mode-specific settings
- Configured the IWSVA host information

**To configure the Data Interface settings:**

1. Continue working from the **Network Interface** page of the Deployment Wizard.
2. Configure the Data Interface settings:
   a. **All modes except Transparent Bridge mode**: Select the appropriate Ethernet port from the **Ethernet Interface** drop-down list for the data interface.
      
      The dynamic Interface Status graphic displays your selection.

   b. **Transparent Bridge Mode and Transparent Bridge Mode - High Availability only**: Select the appropriate Ethernet ports from the drop-down lists for the Internal and External interfaces.

      The Interface Status graphic displays your selection.

   c. Select the IP address type from the drop-down list:
      - **Static IP address** - to configure IP settings for the interface manually.
      - **Dynamic IP address (DHCP)** - to have a DHCP server assign IP settings to the interface.

   d. Enter the IP address and Netmask.

   e. Check the **Enable Ping** check box to allow the connection to be checked with the ping utility.

   f. **(Optional) Transparent Bridge Mode and Transparent Bridge Mode - High Availability only**: Click the check box to enable the VLAN ID (1-4094)

      **Note:** The HA parent unit and the HA child unit have separate, unique VLAN ID settings.

   g. Do one of the following:
      - Continue with the deployment mode settings, if you are setting up IWSVA for the first time or
3. If needed, set up Data Interface access control list. See Configuring Internet Access Control Settings on page 6-13.

4. Continue to the section about Separate Management Interface starting on page 2-32.

Separate Management Interface

The separate management interface offers administrators an independent interface to log into the IWSVA device, either through the Web console or via SSH.

Enabling and disabling the separate management interface is done by setting the values and enabling them through the Network Settings page of the Deployment Wizard.

Note: The separate management interface must be enabled for HA environments.

Before starting this procedure, be sure you have:

- Selected your deployment mode
- Configured any mode-specific settings
- Configured the IWSVA host information
- Configured the Data Interface information

To setup the separate management interface:

2. Check the check box for the Enable Management Interface.
3. Select an Ethernet interface from the drop-down list.
4. Enter a Static IP address for the management interface device.
5. Enter the Netmask for the management interface device.
6. Check the Enable Ping check box to allow the connection to be checked with the ping utility.
7. Do one of the following:
   - Continue with the deployment mode settings, if you are setting up IWSVA for the first time or
• Click **Next** and click through the remaining screens if you have already setup your deployment mode and are just adding the separate management interface.

**Miscellaneous Settings**

The Miscellaneous Settings section allows you to obtain the dynamic information from DHCP or enter static information for:

- Gateway IP address
- Primary DNS server IP address
- Secondary DNS server IP address

Before starting this procedure, be sure you have:

- Selected your deployment mode
- Configured any mode-specific settings
- Configured the IWSVA host information
- Configured data and management interface information

**To configure the Miscellaneous settings:**

1. Continue working from the **Network Interface** page of the Deployment Wizard.
2. Scroll to the **Miscellaneous Settings** section.
3. Do one of the following:
   - Check the **Obtain from DHCP** check box to have IWSVA obtain the dynamic Gateway, Primary, and Secondary DNS information OR
   - Type in the Gateway, Primary, and Secondary DNS information if it is static.

**TABLE 2-9.  Miscellaneous Settings information**

<table>
<thead>
<tr>
<th>PARAMETER</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gateway</td>
<td>For static IP address configuration of the network device, type in the applicable IP address used as the gateway for this IWSVA installation.</td>
</tr>
<tr>
<td>Primary DNS</td>
<td>For static IP address configuration of the network device, type in the applicable IP address used as the primary DNS server for this IWSVA installation.</td>
</tr>
</tbody>
</table>
4. Click **Next**.
5. Continue to the section on **Static Routes starting on page 2-34**.

**Note:** If you are joining an existing cluster, continue with the section on **Summary starting on page 2-39**.

### Static Routes

Static routes allow IWSVA to overcome problems routing traffic to and from network segments beyond the next router hop to which IWSVA connects. Static routes allow you to manually control the router connection used to send traffic to the Internet or back to the end users.

For example, if IWSVA updates patterns with an internal ActiveUpdate (AU) server through a different router, a static route should be added for AU server.

**Note:** If you bind a static route to an interface, the router port must be in the same network segment as the interface.

Before starting this procedure, be sure you have:

- Selected your deployment mode
- Configured any mode-specific settings
- Configured the network interface information

---

**TABLE 2-9.  Miscellaneous Settings information (Continued)**

<table>
<thead>
<tr>
<th>PARAMETER</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Secondary DNS</td>
<td>For static IP address configuration of the network device, type in the applicable IP address used as the secondary DNS server for this IWSVA installation.</td>
</tr>
</tbody>
</table>
To configure settings for Static Routes:

1. From the Static Routes page in the Deployment Wizard, go to the Settings section and configure the following:
   - Network ID
   - Netmask
   - Router
   - Interface

2. Click Add to List.
   The static route displays in the Static Routes list.

3. Add additional static routes.

4. Click Next.

5. Continue to Product Activation starting on page 2-35.

Product Activation

After completion of the registration process, performed during deployment, you must activate (or enable) your software. Trend Micro products do not scan traffic or enforce policy settings unless a valid Activation Code is entered.

To receive your Activation Code, you must enter your registration key with the Trend Micro Product Registration server.

About Licenses

A license to the Trend Micro software usually includes the right to product updates, pattern file updates, and basic technical support (“Maintenance”) for one (1) year from the date of purchase only. After the first year, Maintenance must be renewed on an annual basis according to Trend Micro’s Maintenance Fee pricing.

A Maintenance Agreement is a contract between your organization and Trend Micro, regarding your right to receive technical support and product updates in consideration for the payment of applicable fees. When you purchase a Trend Micro product, the License Agreement you receive with the product describes the terms of the Maintenance Agreement. The Maintenance Agreement expires but your License Agreement will not.
Note: The Maintenance Agreement expires but your License Agreement will not. If the Maintenance Agreement expires, your system will continue scanning, but you will not be able to update the virus pattern file, scan engine, or program files (even manually). Nor will you be entitled to receive technical support from Trend Micro.

Typically, ninety (90) days before the Maintenance Agreement expires, you will start to receive email notifications, alerting you of the upcoming discontinuation. You can update your Maintenance Agreement by purchasing renewal maintenance from your reseller, Trend Micro sales, or on the Trend Micro Online Registration URL: https://olr.trendmicro.com/registration/

Third-party Licensing Agreements
Access third-party licensing agreements in the following directory:
/usr/share/doc

Registering Online
Registration must take place prior to activating the product.

There are several ways to register IWSVA:

- To register if you are a new customer: on page 2-36
- To register if you are a registered user: on page 2-37

To register if you are a new customer:

1. Click the Trend Micro Product Registration Server link in your product at Administration > Product License.
2. In the Enter Registration Key screen, use the Registration Key that came with your product (Trend Micro Enterprise Protection DVD or License Certificate).
3. Click Continue, and then I CONFIRM.
   The Confirm Product Information screen appears.
4. Click Continue with Registration to confirm all the product information.
5. Next, type all the required contact information in the fields provided and click Submit.
6. From the Confirm Registration Information screen, click **Edit** to update your contact information and click **OK** to continue.
   The Activation Code screen appears. Your Activation Code will be sent to your registered email address.

7. Click **OK** to finish.

**To register if you are a registered user:**

1. Click the **Trend Micro Product Registration Server** link in your product at Administration > Product License.

2. Type your Logon ID and password in the fields provided, and then click **Login**.
   You will be prompted to change your password the first time you log on.

3. In the My Products screen, click **Add Products** and type the Registration Key.

4. To edit your company profile, click **View/Edit Company Profile**.
   Your Activation Code appears on the next screen.

5. To receive a copy of your Activation Code at your registered email address, click **Send Now**.

---

**Note:** For maintenance renewal, contact Trend Micro sales or your reseller. Click Check Status Online at Administration > Product License to update the maintenance expiration date on the Product License screen manually.

---

**About Activation Codes**

An Activation Code is required to enable scanning and product updates. You can activate IWSVA during Setup or anytime thereafter. Register IWSVA during installation to receive an Activation Code.

---

**Note:** After registering IWSVA, you will receive an Activation Code via email. An Activation Code has 37 characters (including the hyphens) and looks like:

```
xx-xxxx-xxxxx-xxxxx-xxxxx-xxxxx-xxxxx
```

A Registration Key has 22 characters (including the hyphens) and looks like:

```
xx-xxxx-xxxx-xxxx-xxxx
```
• You automatically receive an evaluation Activation Code if you download IWSVA from the Trend Micro Web site.
• You can use a Registration Key to obtain an Activation Code online.

You can find an evaluation Registration Key on the Trend Micro Enterprise Protection DVD. Use this key to obtain an Activation Code. You will get an evaluation Activation Code by email when you download IWSVA from the Web.

Before starting this procedure, be sure you have:
• Selected your deployment mode
• Configured any mode-specific settings
• Configured the network interface information
• Configured the static routes

To activate IWSVA:
1. Go to the Product Activation page in the Deployment Wizard.
2. Type the Activation Code for IWSVA.
3. Click Next.

System Time Settings
System Time and Time Zone settings allow you to:
• Use the current system time
• Synchronize with your NTP server
• Enter the date and time manually
• Select your time zone

Before starting this procedure, be sure you have:
• Selected your deployment mode
• Configured any mode-specific settings
• Configured the network interface information
• Configured the static routes
• Entered product activation information
To set the system time and time zone settings:

2. Select from one of the following options:
   - Current system time - keep the time already set on the system
   - Synchronize with NTP server -
   - Manually - Set the date and time manually
3. Set the appropriate time zone.
   - Select your continent from the drop-down list.
   - Select your city (or a city near you with the same time as your location) from the drop-down list.
4. Click Next.

Summary

The Summary page displays your IWSVA configuration settings so you can verify them. If you seen an error, click the Back button and return to appropriate page. You can return to this page any time you need to view a summary of your settings.

To submit your deployment mode information.

2. Review the following settings:
   - Host name
   - HTTP Listening port number
   - Anonymous FTP over HTTP contact email address
   - HA Interface (High Availability mode only)
   - Data Interface settings
   - Management Interface settings
   - Miscellaneous settings
   - Static Route Settings
   - Product Activation
   - System Time Settings
3. If your settings are incorrect, click Back and correct the information on the appropriate screen.

4. If your settings are correct, click the Submit button.
   Clicking Submit saves your settings. These settings can be edited after the results display by accessing Administration > Deployment Wizard.

5. Continue with the section about Results starting on page 2-40.

Results

The results page will let you know if your settings were entered successfully and that IWSVA has been deployed. It will also indicate if your settings were not accepted.

The system checks deployment settings at the time of entry, before you move from one page in the Deployment Wizard to the next. Successful results are the most common outcome.

Deployment Status

This messages displays if your IWSVA deployment was successful with a status bar that reflects the on-going deployment your mode settings.

“Congratulations! Your appliance has been set up and deployed.”

You will be redirected to <IWSVA Web Console IP address> shortly. It may take several minutes for the system to implement the new configuration changes and to restart before allowing you to log in.”

Note: Trend Micro recommends you apply the latest software and/or OS updates for IWSVA as soon as you receive this message. For more information, see Chapter 4 Updates starting on page 4-1.

Even if your deployment is successful, you could receive a message indicating a problem accessing the Web console. The message contains a suggestion on how to fix the problem. See the sample below.

“You designated DHCP protocol to configure the IWSVA network interface, which prohibits the Deployment Wizard from finding the Web console IP address
automatically. The IP address and port number can be obtained from the IWSVA server display.”

**Post Deployment**

After the Deployment Wizard is successfully configured, IWSVA will automatically reboot.

After IWSVA reboots, Trend Micro recommends you update IWSVA as soon as possible. See Updates on page 4-1 for details.

Also:

- If you deployed in Transparent Bridge mode, see LAN-bypass Function on page 2-41 for details on failopen NIC support.
- If you deployed in ICAP mode, see Setting Up IWSVA ICAP on page 2-43 for details on setting up an ICAP-compliant cache server to work with IWSVA.

**LAN-bypass Function**

The LAN-bypass function allows the customer to install a Trend Micro supported fiber or Gigabit network interface card (NIC) into the supported server platform to allow the network traffic to be by-passed on specific error conditions.

**Note:** IWSVA only supports LAN-bypass functionality in Transparent Bridge Mode.

Setup the by-pass function in one of three settings:

- **Auto**—Bypass is OFF when the system is in a normal state; Bypass mode is ON when system detects an abnormal state such as kernel panic issue or when power is cut off from the IWSVA unit
- **On**—Always bypass traffic
- **Off**—Never bypass traffic
Note: When the LAN-bypass function is set to ON, the data interface is not available. However, the customer can still access IWSVA via the separate management interface, if configured.

The LAN-bypass function supports two port Silicom cards:
• SD: PXG2BPFI-SD, PXG2BPI-SD
• Non-SD: PEG2BPFIID, PEG2BPI

Enabling the LAN-bypass Function
The following procedure allows you to change the default settings for the LAN-bypass feature. Examples of when to change the parameters can include:
• Installing a new LAN-bypass card
• Selecting NICs supporting LAN bypass for the data interface
• Changing the default LAN-bypass mode

If you select one of the supported NICs that can perform hardware bypass in the Deployment Wizard, it will be enabled with the AUTO setting. Under the AUTO setting, the IWSVA monitors the critical services and OS kernel for crashes. If it detects an unrecoverable error, it will open the NIC into “fail open” or bypass mode.

Use the `show network lanbypass` command to check LAN bypass status on IWSVA.

**To display/enable/disable/change the LAN-bypass service on the IWSVA unit:**

1. Login to the CLI interface.
2. Execute one of the following commands in Table 2-10.

<table>
<thead>
<tr>
<th>TABLE 2-10. LAN-bypass CLI Commands</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>COMMAND</strong></td>
</tr>
<tr>
<td>show network lanbypass</td>
</tr>
</tbody>
</table>
The LAN bypass card configuration is saved at: /etc/lanbypass.conf. Migration updates the mapping table to import or export the LAN bypass configuration.

**Setting Up IWSVA ICAP**

Perform these configuration steps if you are running IWSVA with an ICAP handler.

1. **Setting up an ICAP 1.0-compliant Cache Server** on page 2-44
2. **Flushing Existing Cached Content from the Appliance** on page 2-51

**Note:** The ICAP setup procedures below apply to the ICAP versions listed under **X-Authenticated ICAP Headers Support** on page 1-5. They are provided for your convenience; consult the native documentation for complete information.

---

**TABLE 2-10. LAN-bypass CLI Commands (Continued)**

<table>
<thead>
<tr>
<th>COMMAND</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>configure network</td>
<td></td>
</tr>
<tr>
<td>lanbypass on</td>
<td>Always bypasses traffic. After running this command, all traffic will be</td>
</tr>
<tr>
<td></td>
<td>bypassed by LAN-bypass card. Administrators may not be able to access the</td>
</tr>
<tr>
<td></td>
<td>IWSVA device from the network data interface. The system will not adjust the</td>
</tr>
<tr>
<td></td>
<td>LAN bypass status at any time.</td>
</tr>
<tr>
<td>configure network</td>
<td></td>
</tr>
<tr>
<td>lanbypass off</td>
<td>Never bypasses traffic. The system will not adjust the LAN bypass status</td>
</tr>
<tr>
<td></td>
<td>at any time.</td>
</tr>
<tr>
<td>configure network</td>
<td></td>
</tr>
<tr>
<td>lanbypass auto</td>
<td>The system will auto-adjust the LAN bypass status. For example, when system</td>
</tr>
<tr>
<td></td>
<td>starts and stops, the bypass will be turned off and turned on. When system</td>
</tr>
<tr>
<td></td>
<td>is in an abnormal state (such as kernel panic), the bypass will be turned</td>
</tr>
<tr>
<td></td>
<td>on. After recovery, the bypass will be turned off automatically.</td>
</tr>
</tbody>
</table>
Setting up an ICAP 1.0-compliant Cache Server

Configure an ICAP client (for example, Network Appliance NetCache appliance/Blue Coat Port 80 Security Appliance cache server/Cisco ICAP server) to communicate with the ICAP server.

See the appropriate process for your ICAP client:

- To set up ICAP for NetCache Appliance: on page 2-44
- To set up ICAP for the Blue Coat Port 80 Security Appliance: on page 2-46
- To set up Cisco CE ICAP servers: on page 2-49

To set up ICAP for NetCache Appliance:

1. Log onto the NetCache console by opening http://{SERVER-IP}:3132 in a browser window.
2. Click the Setup tab, then click ICAP > ICAP 1.0 on the left menu.
3. Click the General tab, then select Enable ICAP Version 1.0.
4. Click Commit Changes.

Note: An error message “icap: This service is not licensed.” appears if you have not provided the required ICAP license key for NetCache.

5. Enter an ICAP license key:
   a. Click the Setup tab, and then click System > Licenses in the left menu. The System Licenses screen opens.
   b. Type your license under the ICAP license section.
   c. Click Commit Changes.
6. Select the Service Farms tab on the ICAP 1.0 screen, then click New Service Farm to add ICAP servers. Assign the service farm name in the Service Farm Name field.
   • For response mode, select RESPMOD_PRECACHE in the Vectoring Point field.
   • For request mode, select REQMOD_PRECACHE in the Vectoring Point field.
7. Select Service Farm Enable.
8. In the **Load Balancing** field, choose the proper algorithm to use for load balancing (if you have more than one ICAP server in the service farm). Clear **Bypass on Failure**.

**Note:** Disable **Bypass on Failure** if your priority is to limit virus propagation within your network. Otherwise, enable **Bypass on Failure** to guarantee an unblocked connection to the Internet.

9. Under the **Consistency** field, choose **strong** from the drop-down menu and leave the **lbw Threshold** field empty.

**Note:** For multiple ICAP servers within a service farm with **strong** consistency selected, make sure that all ICAP servers have identical intscan.ini and other configuration files and the same virus pattern. The service farm will not work properly if the ICAP servers have different configurations.

10. Under the **Services** text box (for response mode), type:

    icap://{ICAP-SERVER-IP}:1344/RESP-Service on

where **ICAP-SERVER-IP** is the IP address of IWSVA ICAP for response mode.

   a. For multiple IWSVA ICAP server services, type the additional entries for response mode:

       icap://{ICAP-SERVER1-IP}:1344/resp on
       icap://{ICAP-SERVER2-IP}:1344/resp on

11. Under the **Services** text box (for request mode), type

    icap://{ICAP-SERVER-IP}:1344/REQ-Service on

where **ICAP-SERVER-IP** is the IP address of IWSVA ICAP for request mode.

   a. For multiple IWSVA ICAP server services, type the additional entries for request mode:

       icap://{ICAP-SERVER1-IP}:1344/REQ-Service on
       icap://{ICAP-SERVER2-IP}:1344/REQ-Service on

12. Click **Commit Changes**.

13. Click the **Access Control Lists** tab, then select **Enable Access Control Lists**.
14. Type “icap (Service Farm name of the ICAP Server) any” in HTTP ACL.

15. Click Commit Changes.

16. To configure scanning FTP over HTTP traffic, go to Access Control List and add “icap (service farm name)” into the FTP ACL field.

**To set up ICAP for the Blue Coat Port 80 Security Appliance:**

1. Log onto the Web console by typing https://(SERVER-IP):8082 in the address bar of your Web browser.

   **Note:** The procedure for setting up ICAP on a Blue Coat appliance might vary depending on the product version.

2. Select Management.

3. Type the logon user name and password, if prompted.

4. Click ICAP in the left menu, then click the ICAP Services tab.

5. Click New.

   The Add ICAP Service screen opens.

6. In the ICAP service name field, type an alphanumeric name. Click Ok.

7. Highlight the new ICAP service name and click Edit.

   The Edit ICAP Service name screen opens.

8. Type or select the following information:

   a. The ICAP version number (that is, 1.0)

   b. The service URL, which includes the virus-scanning server host name or IP address, and the ICAP port number. The default ICAP port number is 1344.

      - Response mode:
        icap://(ICAP-SERVER-IP):1344

      - Request mode:
        icap://(ICAP-SERVER-IP):1344/REQ-Service

     where **ICAP-SERVER-IP** is the IP address of IWSVA ICAP.

   c. The maximum number of connections (ranges from 1-65535). The default value is 5.
d. The connection time-out, which is the number of seconds the Blue Coat Port 80 Security Appliance waits for replies from the virus-scanning server. The range is an interval from 60 to 65535. The default time-out is 70 seconds.

e. Choose the type of method supported (response or request modes).

f. Use the default preview size (bytes) of zero (0).

g. Click **Sense settings** to retrieve settings from the ICAP server (recommended).

h. To register the ICAP service for health checks, click **Register** under the **Health Check Options** section.

9. Click **Ok**, then click **Apply**.

---

**Note:** You can edit the configured ICAP services. To edit a server configuration again, select the service and click **Edit**.

10. Add the response or request mode policy.

   The Visual Policy Manager requires the Java 2 Runtime Environment Standard Edition v.1.3.1 or later (also known as the Java Runtime or JRE) from Sun™ Microsystems, Inc. If you already have JRE on your workstation, the Security Gateway opens a separate browser window and starts the Visual Policy Manager. The first time you start the policy editor, it displays an empty policy.

   If you do not have JRE on your workstation, a security warning window opens. Click **Yes** to continue. Follow the instructions.

**To add the response mode policy:**

1. Select **Management**.

   Type the logon user name and password if prompted.

2. Click **Policy** on the left menu, then click the **Visual Policy Manager** tab.

3. Click **Start**. If the **Java Plug-in Security Warning** screen appears, click **Grant this session**.

4. On the menu bar, click **Edit > Add Web Content Policy**. The **Add New Policy Table** screen opens.

5. Type the policy name under the **Select policy table name** field. Click **OK**.
6. Under the **Action** column, right-click **Bypass ICAP Response Service** and click **Set**. The **Add Object** screen opens. Click **New** and select **Use ICAP Response Service**. The **Add ICAP Service Action** screen opens.

7. Choose the ICAP service name under the **ICAP Service/Cluster Names** field. Enable **Deny the request** under the **On communication error with ICAP service** section. Click **OK**, then click **OK** again.

8. Click **Install Policies**.

**To add the request mode policy:**

1. Follow Step 1 through Step 5 in the previous procedure.

2. Under the **Action** column, right-click **Deny** and click **Set**. The **Add Object** screen opens. Click **New** and select **Use ICAP Request Service**. The **Add ICAP Service Action** screen opens.

3. Choose the ICAP service name under the **ICAP Service/Cluster Names** field.

4. Enable **Deny the request** under the **On communication error with ICAP service** section.

5. Click **OK** and then **OK** again.

6. Click **Install Policies**.

7. Configure both the request and response mode ICAP services.

To check the current policy, go to the Policy screen, click the **Policy Files** tab, and then click **Current Policy**.

![FIGURE 2-11. Install Policies screen](image-url)
To set up Cisco CE ICAP servers:

IWSVA supports Cisco ICAP servers (CE version 5.1.3, b15). All ICAP settings are performed through a command line interface (CLI); there is no user interface associated with the Cisco ICAP implementation.

1. Open the Cisco CE console.
2. Type `config` to enter the configuration mode.
3. Type `icap?` to display a list of all ICAP-related commands.
4. Create a response modification service, by typing:
   
   ```
   icap service RESPMOD SERVICE NAME
   ```
   
   This takes you into the ICAP service configuration menu. Type `?` to display a list of all available commands. Type the following commands:
   
   ```
   server icap://ICAP SERVER IP:1344/resp (to assign a server type)
   vector-point respmod-precache (to assign the proper vector point type)
   error-handling return-error (to assign the proper error-handling type)
   enable (to enable the ICAP multiple server configuration)
   ```

5. Type `exit`.

6. Create a request modification service, by typing
   
   ```
   icap service REQUESTMOD SERVICE NAME
   ```
   
   This command takes you into the ICAP service configuration menu. Type `?` to display a list of all available commands. Issue the following commands:
   
   ```
   server icap://ICAP SERVER IP:1344/REQ-Service (to assign a server type)
   vector-point reqmod-precache (to assign the proper vector point type)
   error-handling return-error (to assign the proper error-handling type)
   enable (to enable the ICAP multiple server configuration)
   ```

7. Type `exit`.

8. For additional configuration steps, type the following:
   
   ```
   icap append-x-headers x-client-ip (to enable X-client headers for reports)
   icap append-x-headers x-server-ip (to enable X-server headers for reports)
   icap rescan-cache ISTag-change (to turn on ISTAG rescan for updates)
   ```
icap bypass streaming-media (to exclude streaming media from ICAP scanning)
icap apply all (to apply all settings and activate ICAP type)
show icap (to display current ICAP configuration at root CLI menu)

Configuring Virus-scanning Server Clusters

For the Blue Coat Port 80 Security Appliance to work with multiple virus-scanning servers, configure a cluster in the Security Gateway (add the cluster, and then add the relevant ICAP services to the cluster).

To configure a cluster using the Web console:

1. Select Management.
   Type the logon user name and password if prompted.
2. Click ICAP on the left menu, then click the ICAP Clusters tab.
3. Click New.
   The Add ICAP Cluster screen opens.
4. In the ICAP cluster name field, type an alphanumeric name and click Ok.
5. Highlight the new ICAP cluster name and click Edit.
   The Edit ICAP Cluster name screen opens.
6. Click New to add an ICAP service to the cluster.
   The Add ICAP Cluster Entry screen opens. The pick list contains a list of any services available to add to the cluster. Choose a service and click Ok.
7. Highlight the ICAP cluster entry and click Edit.
   The Edit ICAP Cluster Entry name screen opens. In the ICAP cluster entry weight field, assign a weight from 0-255. Click Ok, click Ok again, and then click Apply.

Deleting a Cluster Configuration or Entry

You can delete the configuration for an entire virus-scanning server cluster, or you can delete individual entries from a cluster.
To delete a cluster configuration using the Web console:

1. Select Management.
   Type the logon user name and password if prompted.
2. Click ICAP on the left menu, then click the ICAP Clusters tab.
3. Click the cluster you want to delete. Click Delete, then click Ok to confirm.

Flushing Existing Cached Content from the Appliance

There is a potential risk of infection from content cached to the NetCache appliance, Blue Coat Port 80 Security Appliance, or the Cisco ICAP servers before IWSVA ICAP started scanning HTTP traffic. To safeguard against this possibility, Trend Micro recommends flushing the cache immediately after configuring IWSVA ICAP. All new requests for Web content are then served from the Internet and scanned by IWSVA ICAP before caching. Scanned content is then cached on the NetCache appliance, Blue Coat Port 80 Security Appliance, or the Cisco ICAP servers. The NetCache appliance, the Blue Coat Port 80 Security Appliance, or the Cisco ICAP servers serve future requests for the same Web content by your network users. Because the request is not sent to the Internet, download time is accelerated.

To flush the cache in NetCache:

1. Click the Utilities tab, then click Cache Objects on the left menu.
2. Click Flush under the Flush the Cache section.

To flush the cache in the Blue Coat Port 80 Security Appliance:

1. Select Management.
   Type the logon user name and password if prompted.
2. Click Maintenance.
3. Click the Tasks tab and click Clear. Click OK to confirm.

To flush the cache in the Cisco ICAP server:

1. Telnet to Cisco CE.
2. At the root CLI menu, type cache clear.
3. Press Enter.

Verifying that InterScan Web Security Virtual Appliance is Listening for ICAP Requests

To verify that IWSVA is listening on the correct port, use PuTTY to access IWSVA via SSH as the “admin” user.

Once logged in as the “admin” user, issue the CLI command show network connections all to show all active network connections through IWSVA. There should now be a TCP port access available on port 1344.

Sample of command and output:

```
enable# show network connections all
Active Internet connections (servers and established)
Proto Recv-Q Send-Q Local Address               Foreign Address
State
tcp 0 0 0.0.0.0:9091 0.0.0.0:* LISTEN
tcp 0 0 127.0.0.1:8005 0.0.0.0:* LISTEN
tcp 0 0 0.0.0.0:1812 0.0.0.0:* LISTEN
tcp 0 0 0.0.0.0:22 0.0.0.0:* LISTEN
tcp 0 0 0.0.0.0:5432 0.0.0.0:* LISTEN
tcp 0 0 10.204.170.156:22 10.204.170.158:2665 ESTABLISHED
udp 0 0 0.0.0.0:514 0.0.0.0:*
udp 0 0 0.0.0.0:21273 0.0.0.0:*
udp 0 0 0.0.0.0:35739 0.0.0.0:*
udp 0 0 0.0.0.0:7068 0.0.0.0:*
udp 0 0 0.0.0.0:17437 0.0.0.0:*
udp 0 0 0.0.0.0:22688 0.0.0.0:*
udp 0 0 0.0.0.0:9911 0.0.0.0:*
udp 0 0 0.0.0.0:30138 0.0.0.0:*
udp 0 0 0.0.0.0:60733 0.0.0.0:*
udp 0 0 127.0.0.1:9925 127.0.0.1:9925 ESTABLISHED
udp 0 0 0.0.0.0:36946 0.0.0.0:*
udp 0 0 0.0.0.0:41560 0.0.0.0:*
udp 0 0 0.0.0.0:29294 0.0.0.0:*
udp 0 0 0.0.0.0:12655 0.0.0.0:*
udp 0 0 0.0.0.0:38390 0.0.0.0:*
```
### Understanding the Differences between Request Mode and Response Mode

**ICAP Request Mode:** When a new request is received, the request is sent to the scanning server to ensure it is a valid access request.

**ICAP Response Mode:** When the new request is valid, any returned content is scanned.
It is possible to use only one scanning vector; however, this reduces the ability to scan all appropriate traffic by 50%.

**Triggering a Request Mode Action**

The steps outlined below are specifically for the triggering of a request mode action through IWSVA which further triggers a Damage Cleanup Services (DCS) attempt. (This is possible only if a DCS server is used and IWSVA has registered to the DCS server successfully):

1. Log into a client that is passes traffic through IWSVA.
2. Open a Web browser and open the site www.goodclup.com/caiink/t1.exe

The outbound URL is passed to InterScan Web Security Suite and is blocked. If a DCS server is used and IWSVA has registered to the DCS server successfully, as Damage Cleanup Services is still configured to perform an automatic cleanup, the workstation also has an automatic remediation attempt performed against it.

**Triggering a Response Mode Action**

The steps outlined below are specifically for the triggering of a response mode action through IWSVA.

1. Log into a client that is passes traffic through IWSVA.
2. Open a Web browser and open the site www.eicar.org.
3. Click on the button labeled **AntiMalware Testfile**.
4. Scroll to the bottom of the page where it details **Download area using the standard protocol http**.
5. Select the **eicar.com.txt** file to download.

The outbound URL is valid, thus the request mode allowed the URL to pass. The response of the traffic — the actual download triggers InterScan Web Security to block the download from occurring.
High Availability and Cluster Management for Transparent Bridge Mode

This chapter discusses how High Availability functions in Transparent Bridge mode and how to use the Cluster Management interface.

Topics in this chapter include the following:

• High Availability Overview on page 3-2
• About Cluster Management on page 3-10
High Availability Overview

IWSVA provides native High Availability (HA) to ensure business continuity using active/passive pairs deployed in Transparent Bridge mode.

**Note:** The IWSVA HA solution currently only supports active/passive pairs in “Transparent Bridge mode for High Availability.” It only supports two HA nodes in one HA cluster. Redundancy among multiple IWSVAs deployed in the other supported deployment modes is handled externally to the IWSVA. Specifically, load balancers support redundancy in any of the proxy modes. The Cisco WCCP device can manage traffic to redundant IWSVAs in WCCP mode. The ICAP client can manage traffic to redundant IWSVAs in ICAP mode.

The four terms to describe HA cluster members are:

- **Active member**—The IWSVA unit providing real-time content scanning.
- **Passive member**—The IWSVA unit in passive standby mode.
- **Parent member**—The IWSVA unit responsible for accepting all configuration changes and synchronizing the policy and configuration with the child member.
- **Child member**—The IWSVA unit that is receiving the policy and configuration changes in the background.

HA switchover can be automatic (failover) or manual.

For failover:

- IWSVA’s HA service monitors the critical services of the IWSVA application and the underlying OS for failures. If an abnormality occurs on the active unit, the HA service switches from the active node to the passive node automatically.
- Some of the administrator's HA management operations—like joining of a node or the shutdown of the parent—can trigger an automatic switchover. HA handles this type of switchover gracefully and automatically.

For manual switchover:

- Administrators can manually force an HA switch over using the Web console on the parent node.
**High Availability and Cluster Management for Transparent Bridge Mode**

**Note:**
1) HA disables the LAN By-pass feature. It is not required with HA.
2) HA requires the enabling of the Spanning Tree Protocol (STP). This prevents the creation of Layer 2 loops in the network.
3) If the switch used by the HA solution supports Rapid Spanning Tree Protocol (RSTP), then this requires that STP be disabled on the IWSVA to provide faster switching.
4) Enabling STP/RSTP requires disabling the PortFast Bridge Protocol Data Unit (BPDU) guard on both switches because BPDU disables the ports on the switches and prevents HA from functioning.

**About Active/Passive Pairs**

The active/passive pair can be connected directly together or through a dedicated switch. The active/passive pair requires two private IP addresses and a private reserved subnet for proper configuration. These private IP addresses are reserved for the HA function’s internal use and are used for HA heartbeat information and data synchronization. No user devices are allowed on this private subnet.

IWSVA uses a cluster IP address for the active/passive pair, which is used for managing the HA cluster. This cluster management IP address floats between the two HA units and is always associated with the active member of the HA pair.

The active node scans HTTP, HTTPS, and FTP traffic. The passive node works as a standby device which does not scan traffic in normal conditions. The passive node can become the active node if an abnormal condition occurs in the active node, such as:

- Data link failure
- OS kernel panic
- Critical services of the IWSVA application fail

IWSVA triggers a failover when the active unit goes down, whether it is caused by a heartbeat down, application down, or system down condition. When a failed unit is brought back online, a user-defined policy determines which unit becomes the newly elected active unit. Administrators can configure the election policy to allow the passive unit to remain as the active unit (normal mode), or configure the election policy with node weighting to always allow a specific HA member to regain control as the active unit.
The HA Agent Handles Status Changes

The IWSVA device that joins the cluster as the first member becomes the active parent node by default.

If the Weighted Priority Election feature is not enabled, the second IWSVA device that joins an existing cluster becomes the passive child node by default.

If the Weighted Priority Election feature is enabled, and a second IWSVA device joins an existing cluster with a higher weighting than the first cluster member, that higher weighted, second machine becomes the active parent member and the original member becomes the passive child member.

Failover vs. Switchover

Failover occurs when the active node crashes or fails to handle traffic normally. IWSVA automatically switches over to the passive standby machine in the cluster and elects the new machine to be the active member.

Switchover occurs when a manual role change is forced through the parent's web management interface—allowing the original child/passive unit to become the new parent/active unit.

HA Agent and Interfaces

The HA Agent can be configured with the following management features:

- About the Deployment Wizard on page 3-4
- About the Application Health Monitor on page 3-5
- About Central Management on page 3-6
- About Cluster Management on page 3-10

About the Deployment Wizard

Use the Deployment Wizard to access the following operations:

- Creating a Cluster on page 3-5
- Joining a Cluster on page 3-5
Creating a Cluster

A new HA cluster is created through the Deployment Wizard interface. When a new HA cluster is created, the management system configures the HA Agent with the desired policy settings and stores it on the parent member. Parent members are the only units that can be actively configured. A child member receives regular updates from the parent member to stay synchronized with the latest configuration and policy information. See step-by-step instructions for creating a cluster at Create a New Cluster on page 2-6.

Joining a Cluster

When HA members are added to the HA cluster, the Deployment Wizard captures and configures each member with the appropriate network and weight information to setup the parent and child members.

The member with the higher weighting becomes the parent member. This allows you to manually elect the machine that will become the primary active unit.

The HA Agent is responsible for synchronizing the information between the cluster members and for initiating the failover or switchover.


About the Application Health Monitor

The Application Health Monitor is a separate service that monitors the IWSVA application and operating system health. It also communicates all necessary information with the HA Agent to allow rapid failover between the active and passive members.

Link Loss Detection

The parent node monitors the Layer 2 switch connection for failures. If network connectivity is lost on the data port, a switchover is automatically generated to allow a rapid failover to the passive standby member.
The `linkloss_timeout` parameter controls the amount of downtime for the link loss detection. When the timer value set in the `linkloss_timeout` parameter is reached, the failover process is initiated.

The Health Monitor configuration file allows you to configure the `linkloss_timeout` value. The default is 10 seconds. It is located at in the Health Monitor configuration file at: `/etc/iscan/intscan.ini`.

```
[monitor]
linkloss_timeout=10
```

### About Central Management

The Central Management feature is used to manage the two HA nodes as a single device. This allows configuration changes to take place on the parent unit and be automatically synchronized with the child unit.

**Note:** Central Management only applies to the active/passive pair scenario. It cannot be used for single devices.

The Central Management automatically synchronizes configuration information between the parent and child members every five minutes. Administrators can also manually trigger synchronization by clicking the “Synchronize Now” button on the title bar of the IWSVA Web console Summary page accessed through the parent node.

IWSVA supports two synchronization mechanisms:

- **Automatic synchronization**—The parent node runs a scheduled task every five minutes to synchronize policies and configurations to the child node.

- **Manual synchronization**—Users can force a synchronization by clicking **Synchronize Now** on the **Administration > IWSVA Configuration > Summary** page of the Web console of the parent node.
Synchronization button displays when logged into the parent node.

Users cannot perform a manual switchover if the configurations on the two nodes are not synchronized. If the configurations are not synchronized during a switchover attempt, IWSVA displays a warning message instructing you to manually synchronize the two members first.

For automatic failovers, the switchover happens immediately without a forced synchronization, and any configuration changes made since the last completed synchronization are lost.

**Synchronizing Nodes Manually**

Synchronization from the parent member to the child member occurs every five minutes. Administrators can manually trigger an immediate synchronization between the cluster members from the Cluster Management page.

**To manually synchronize two nodes:**

1. Go to the Summary page in the parent member Web console.
2. Click Synchronize Now at the top of the Summary page. (See Figure 3-1.)
3. Click OK in the confirmation to immediately synchronize your policies and deployment settings from the parent member to the child member.
Centrally Managed and Non-centrally Managed Features

Some features may be managed centrally, while others require administrators to log into the Web console of the parent or child node. See Table 3-1 for details.

**Table 3-1. Centrally Managed vs. Non-centrally Managed Features**

<table>
<thead>
<tr>
<th>Cluster-level Settings Available through the Parent Node</th>
<th>Instance-level Settings Available through the Parent or Child Node</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enable/disable HTTP/HTTPS/FTP traffic (on Summary page)</td>
<td>Summary</td>
</tr>
<tr>
<td></td>
<td>• System Dashboard /Virus/Malware/URL/Spyware/Security Risk Report</td>
</tr>
<tr>
<td>All HTTP/HTTPS policies and settings (under HTTP/HTTPS section)</td>
<td>Reports (features and data)</td>
</tr>
<tr>
<td></td>
<td>• Includes HTTPS certifications</td>
</tr>
<tr>
<td></td>
<td>• Real-time reports</td>
</tr>
<tr>
<td></td>
<td>• Scheduled reports data</td>
</tr>
<tr>
<td>All FTP policies and settings (under FTP section)</td>
<td>Logs (features and data)</td>
</tr>
<tr>
<td></td>
<td>• Log query</td>
</tr>
<tr>
<td></td>
<td>• Log deletion</td>
</tr>
<tr>
<td>Report Settings</td>
<td>Updates (manual update)</td>
</tr>
<tr>
<td>• Scheduled Report Settings</td>
<td></td>
</tr>
<tr>
<td>• Report Templates</td>
<td></td>
</tr>
<tr>
<td>• Configuration</td>
<td></td>
</tr>
<tr>
<td>Log Settings</td>
<td>Test database connection feature (under Administration &gt; IWSVA Configuration &gt; Database Connection)</td>
</tr>
<tr>
<td>• Syslog Configuration</td>
<td></td>
</tr>
<tr>
<td>• Log Settings</td>
<td></td>
</tr>
</tbody>
</table>
### Table 3-1. Centrally Managed vs. Non-centrally Managed Features (Continued)

<table>
<thead>
<tr>
<th>Cluster-level Settings Available through the Parent Node</th>
<th>Instance-level Settings Available through the Parent or Child Node</th>
</tr>
</thead>
<tbody>
<tr>
<td>Update Settings</td>
<td>Interface Configuration for data port and management port</td>
</tr>
<tr>
<td>• Scheduled Update Settings</td>
<td>• Hostname</td>
</tr>
<tr>
<td>• Connection Settings</td>
<td>• IP address and net mask</td>
</tr>
<tr>
<td></td>
<td>• Port for data interface or management interface</td>
</tr>
<tr>
<td>Notification settings</td>
<td>TMCM Registration</td>
</tr>
<tr>
<td>• Notification page</td>
<td></td>
</tr>
<tr>
<td>• Threshold Alert Settings on Summary page</td>
<td></td>
</tr>
<tr>
<td>• SMTP settings</td>
<td></td>
</tr>
<tr>
<td>• SNMP settings under Administration &gt; Network</td>
<td></td>
</tr>
<tr>
<td>Configuration &gt; SNMP Settings</td>
<td></td>
</tr>
<tr>
<td>Policy deployment settings (under Administration &gt; Policy Deployment)</td>
<td>DCS Registration</td>
</tr>
<tr>
<td>Quarantine Management (under Administration &gt; Quarantine Management)</td>
<td>System patch</td>
</tr>
<tr>
<td>System Time</td>
<td>Update OS</td>
</tr>
<tr>
<td>Network Settings (Except Hostname, IP, net mask, and port)</td>
<td>Support</td>
</tr>
<tr>
<td>• Enable Ping for each interface</td>
<td></td>
</tr>
<tr>
<td>• DNS</td>
<td></td>
</tr>
<tr>
<td>• Default Gateway</td>
<td></td>
</tr>
<tr>
<td>• Static Routes</td>
<td></td>
</tr>
</tbody>
</table>

**Note:** DHCP is removed in HA
### TABLE 3-1. Centrally Managed vs. Non-centrally Managed Features (Continued)

<table>
<thead>
<tr>
<th>Cluster-level Settings Available through the Parent Node</th>
<th>Instance-level Settings Available through the Parent or Child Node</th>
</tr>
</thead>
<tbody>
<tr>
<td>Web Console settings (under Administration &gt; Network Configuration &gt; Web Console)</td>
<td></td>
</tr>
<tr>
<td>Remote CLI settings (under Administration &gt; Network Configuration &gt; Remote CLI)</td>
<td></td>
</tr>
<tr>
<td>User accounts (under Administration)</td>
<td></td>
</tr>
<tr>
<td>Configuration backup/restore</td>
<td></td>
</tr>
<tr>
<td>Product License</td>
<td></td>
</tr>
</tbody>
</table>

#### DEPLOYMENT WIZARD CONFIGURATIONS

<table>
<thead>
<tr>
<th>System time</th>
<th>Data Interface and Management Interface</th>
</tr>
</thead>
<tbody>
<tr>
<td>Deployment Mode</td>
<td>• Hostname</td>
</tr>
<tr>
<td>Static Routes</td>
<td>• IP address and net mask</td>
</tr>
<tr>
<td>Data Interface &amp; Management Interface</td>
<td>• Port number</td>
</tr>
<tr>
<td>• DNS</td>
<td></td>
</tr>
<tr>
<td>• Default gateway</td>
<td></td>
</tr>
<tr>
<td>• Static Router</td>
<td></td>
</tr>
<tr>
<td>• Enable PING</td>
<td></td>
</tr>
</tbody>
</table>

### About Cluster Management

The Cluster Management screen is located at Administration > IWSVA Configuration > Cluster Management and is used to configure the HA cluster. The cluster settings are saved in the cluster configuration file and used by the Central Management feature and the HA Agent to create the HA policies and failover priorities.
Changing the weight values of the cluster members allow manual parent/active member selection, but may also cause a switchover to occur. See About Weighted Priority Election on page 2-6 for details.

Cluster Configuration

Cluster configurations are settings that are replicated cluster-wide and every HA member is configured with the same cluster configuration information. The Central Management and Cluster Management components use cluster information to provide rapid failover without loss to critical policy and configuration information.

The cluster configuration file, cluster.ini, is stored in the /etc/iscan folder and is used to store the HA cluster settings. You can configure the following elements of a cluster through the Web console Cluster Management page:

- **Cluster Name**—The name of the cluster
- **Cluster Description**—The description of the cluster
- **Cluster IP Address**—The floating management IP address of the cluster is always associated with the active node
- **Weighted Priority Election**—Enable or disable (default)
- **Cluster Members**—The list of the nodes belonging to the HA cluster with login access provided to child node.

**Note:** For this version of IWSVA, the following items are not configurable:
- Cluster Deployment Mode—Always Transparent Bridge mode.
- HA Mode—Always active/passive.

Node Configuration

Node configuration settings are applied to a specific HA member and are not cluster-wide settings. These node-specific settings are never synchronized between the HA members. Node specific settings include the following:

- **Hostname**—The name of the node
- **Role**—Either parent or child
• **IP Address**—The IP address used on the heartbeat port. If this is empty, a new IP will be negotiated between the cluster members and written to the IP address parameter.

• **Weight**—The weight of the node. Valid values are 1-255. The higher the weight, the greater the chance the node will be selected to act as the parent node.

• **Status**—Status of the node. Green is up, red is down.

• **Last Synchronization**—Gives the date and time of the last successful synchronization.

• **Synchronization Status**—Green is successful, red is failed. If failed, a reason displays in the tooltip.

Cluster Logs and Notifications

The HA cluster logs and records the following events:

• Creating a cluster

• Dissolving or breaking apart an existing cluster

• Adding a member to a cluster

• Changing the configuration of a cluster

• Removing a member from a cluster

• Changing the role of a cluster member

• Performing manual synchronization

• Failing over

• Detecting an abnormality

Cluster notifications are issued when:

• Abnormalities are detected

• A failover occurs

• A member is restored

• A failover or switchover cannot be performed
Accessing the Cluster

To access the parent node:

Administrators can access the parent member's Web management interface through one of two IP addresses:

- Parent member's management IP address and port number
- Cluster IP address and port number

Example:

http://<parent management IP address>:<portnumber>
http://<cluster IP address>:<portnumber>

To access the child node:

Administrators can log into the Web management console of the child node two ways:

- Through the link on the Cluster Management page (Administration > IWSVA Configuration > Cluster Management > Login button for child node)
- Through the management port IP address of the child node

Example:

http://<child node IP address>:<portnumber>

To protect against accidental configuration, all cluster-level features are hidden or blocked in the child member's Web management interface. (Compare the parent node left menu in Figure 3-2 with the child node left menu in Figure 3-3.) Only the child member applicable configuration parameters that apply specifically to the child member are exposed and configurable through the child member's Web management interface. Table 3-1 gives a detailed list of child-level settings and features.
FIGURE 3-2. Parent Node Cluster Management Page has Child Node Login Access

If administrators need to change cluster-level settings while logged into the child member, they can simply login to the parent member through the “Login” button posted beside the parent member on the Cluster Management screen.

IWSVA HA uses single sign-on technology to pass authentication credentials between cluster members so typing a password to access other members are not necessary.
High Availability and Cluster Management for Transparent Bridge Mode

FIGURE 3-3. Child node Cluster Management page with access to the parent node.

Note: CLI commands for centrally managed features are not available on the child node.

Cluster Management Web Console Page

From the Cluster Management page at Administration > IWSVA Configuration > Cluster Management, administrators can configure the following:

- Deleting a Child Member from a Cluster on page 3-15
- Dissolving a Cluster on page 3-16
- Performing a Manual Switchover on page 3-17
- Synchronizing Nodes Manually on page 3-7
- Modifying a Cluster on page 3-17

Deleting a Child Member from a Cluster

If you delete a child node from a cluster, the cluster still exists with the parent node as the only member. Another node can be added later as a child node.
To delete a child node:
1. Go to Administration > IWSVA Configuration > Cluster Management in the parent member Web console.
2. Go the Cluster Member section of the page.
3. Click the delete icon ( ) in the child row to delete the child member.
4. Click OK to confirm the deletion. A progress bar displays.
5. If, after a few second, if the deletion has not completed, click your browser’s Refresh button.
   The child member no longer displays in the Cluster Member list and the former child node will return to Forward Proxy mode.

Dissolving a Cluster
Dissolving an HA cluster breaks apart the HA cluster and occurs after the child member and parent member have been deleted. Dissolving an HA cluster returns the active HA member to a standalone IWSVA device operating in Transparent Bridge mode.

To dissolve a cluster:
1. Go to Administration > IWSVA Configuration > Cluster Management in the parent member Web console.
2. Delete the child member of the cluster as shown in Deleting a Child Member from a Cluster on page 3-15.
3. In the Cluster Member section of the page, click the delete icon ( ) to delete the parent member.
4. Click OK to confirm the dissolution. A progress bar displays.
   a. If, after five minutes, if the dissolution has not completed, click your browser’s Refresh button.
      The parent member become a standalone IWSVA unit in Transparent Bridge mode and the Cluster Management page no longer displays.
Performing a Manual Switchover

Administrators can manually switch the parent/child roles of the two members in an HA cluster. After a successful switchover, the original parent member becomes the child member and goes into passive mode. The original child member becomes the parent member and goes into active mode.

**Note:** Administrators can only perform a manual switchover if the Weighted Priority Election process is disabled. To perform a switchover with Weighted Priority Election mode enabled, administrators must modify the weight of each member to trigger an HA switchover. See Modifying a Cluster on page 3-17 for details on changing the weight value for a cluster member.

To perform a manual switchover with Weighted Priority Election mode disabled:

**Note:** If IWSVA is performing a synchronization, either a manually or a scheduled synchronization, the Synchronized Status shows “Syncing …”, and manual switchovers are prevented. This applies to switchovers when the Weight Priority Election mode is disabled (by switching roles) or if attempting to change the weight value of a node with the Weighted Priority Election mode enabled. Automatic failovers still occur even if synchronization is in progress, reverting to the policies and deployment settings that existed after the most recent successful synchronization.

1. Go to Administration > IWSVA Configuration > Cluster Management in the parent node Web console.
2. In the Cluster member section, click Switch Roles.
3. Click OK in the confirmation to switch roles and be re-logged into the new parent node.

Modifying a Cluster

The Cluster Management page allows administrators to view cluster settings, modify cluster settings, and to switch roles between parent and child servers.
Table 3-2 shows the Cluster Settings displayed on the Cluster Management page.

### TABLE 3-2. Cluster Settings

<table>
<thead>
<tr>
<th><strong>VALUE</strong></th>
<th><strong>DESCRIPTION</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Cluster Name</td>
<td>This is the name assigned to the cluster when it was first created in the Deployment Wizard. (Modifiable)</td>
</tr>
<tr>
<td>HA Mode</td>
<td>Active/Passive (Not modifiable)</td>
</tr>
<tr>
<td>Cluster IP Address</td>
<td>The floating IP address used to log into the cluster from the Web console or CLI. This IP address remains the same, even after a switchover occurs. (Modifiable)</td>
</tr>
<tr>
<td>Description</td>
<td>Displays the (optional) description entered when the cluster was added through the Deployment Wizard. (Modifiable)</td>
</tr>
<tr>
<td>Deployment Mode</td>
<td>Currently, this parameter always displays &quot;Bridge&quot; because IWSVA HA clusters are only supported in Transparent Bridge mode. (Not modifiable)</td>
</tr>
<tr>
<td>Weighted Priority Election</td>
<td>Displays either Enabled or Disabled. (Modifiable)</td>
</tr>
<tr>
<td>Switch Roles</td>
<td>Allows administrators to switch roles between parent and child members.</td>
</tr>
<tr>
<td>Refresh</td>
<td>Updates the status of cluster members</td>
</tr>
</tbody>
</table>

This Cluster Members section of the Cluster Management page displays the cluster members (parent and child members), gives status details, and allows login access to the child node.
Table 3-3 shows the parameters displayed for both parent and child nodes.

### TABLE 3-3. Cluster Member Settings

<table>
<thead>
<tr>
<th>PARAMETER</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hostname</td>
<td>Displays the server name</td>
</tr>
<tr>
<td>Role</td>
<td>Displays either Parent or Child</td>
</tr>
<tr>
<td>IP Address</td>
<td>Displays the IP address of the device.</td>
</tr>
<tr>
<td>Weight</td>
<td>Displays the weight entered when the cluster was configured. (Default: parent 128/child 64- Modifiable)</td>
</tr>
<tr>
<td>Status</td>
<td>Displays the following icons:</td>
</tr>
<tr>
<td></td>
<td><img src="image" alt="Up status" /> Up status</td>
</tr>
<tr>
<td></td>
<td><img src="image" alt="Down status" /> Down status</td>
</tr>
<tr>
<td>Last Synchronized</td>
<td>Displays the date and time (hours: minutes: seconds) when the child server was last synchronized with the parent.</td>
</tr>
<tr>
<td>Synchronization Status</td>
<td>Displays the following:</td>
</tr>
<tr>
<td></td>
<td><img src="image" alt="N/A" /> N/A</td>
</tr>
<tr>
<td></td>
<td><img src="image" alt="Successful" /> Success</td>
</tr>
<tr>
<td></td>
<td><img src="image" alt="Failed" /> Failed. If failed, an information tool tip displays the reason why the synchronization failed.</td>
</tr>
<tr>
<td>Dissolve</td>
<td>Displays an icon ( ) to delete the child member. The icon only displays for the parent member if the child member has been deleted. Deleting the parent member dissolves the whole cluster.</td>
</tr>
</tbody>
</table>
To modify cluster settings:

1. Go to Administration > IWSVA Configuration > Cluster Management.
2. Click the Modify link by the Cluster Settings heading.
3. In the Cluster Settings page, modify the following parameters as needed:
   - **Cluster Name**—Displays the name assigned to the cluster when it was first created in the Deployment Wizard. (Modifiable)
   - **Description**—Displays the (optional) description, if any, entered when the cluster was added through the Deployment Wizard. (Modifiable)
   - **Floating IP Address**—Displays the floating management (or cluster) IP address used to log into the cluster from the Web console or CLI. The floating IP address is always associated with the active node in the cluster. (Modifiable)
   - **Weighted Priority Election**—Displays either Enabled or Disabled. If the Weighted Priority Election value is set to enable, the HA pair launches an election to choose the maximum weighted machine. If the Weighted Priority Election value is set to disable, the HA pair only launches an election when the current active (or primary) machine is not available. (Modifiable)
   - **HA Mode**—Active/Passive (Display only)
   - **Deployment Mode**—Currently, this parameter always displays “Bridge” because IWSVA HA clusters are only supported in Transparent Bridge mode. (Display only)
4. Click Save.

To change the weight value of a node:

Note: The Weighted Priority Election mode must be set to Enable to perform the following procedure. (To enable the Weight Priority Election mode, see To modify cluster settings on page 3-20, Step 3.) Roles can be switched manually if the Weighted Priority Election is disabled. See Performing a Manual Switchover on page 3-17 for details.

1. Go to Administration > IWSVA Configuration > Cluster Management.
2. In the Cluster Members section, click the weight value to be changed.
3. In the Weight screen, change the weight value to reflect the appropriate value. (1-255, higher value = higher priority.)
4. Click **Save**.

If you change a child member’s weight value to be greater than the parent member’s weight value, and the Weighted Priority Election has been enabled, roles for the two members will be switched.
Updates

Because new malicious programs and offensive Web sites are developed and launched daily, it is imperative to keep your software updated with the latest pattern files and engines, as listed on the Updates Schedule page on the InterScan™ Web Security Virtual Appliance (IWSVA) Web console.

Topics in this chapter include the following:

- Product Maintenance on page 4-2
- About ActiveUpdate on page 4-3
- Proxy Settings for Updates on page 4-3
- Updatable Program Components on page 4-4
- Manual Updates on page 4-10
- Scheduled Updates on page 4-12
- Maintaining Updates on page 4-13
- Controlled Virus Pattern Releases on page 4-14
Product Maintenance

From time to time, Trend Micro might release a patch for a reported known issue or an upgrade that applies to your product. To find out whether there are any patches available, visit the following URL:

http://downloadcenter.trendmicro.com

Clicking the link for IWSVA takes you to the Update Center page for IWSVA.

Enter the following search criteria:

- **Category:** Internet Gateway
- **Product:** InterScan Web Security Virtual Appliance
- **Version:** Current product version

Patches are dated. If you find a patch that you have not applied, open the readme document to determine whether the patch applies to you. If so, follow the upgrade instructions in the readme.

Renewing Your Maintenance Agreement

Trend Micro or an authorized reseller provides technical support, virus pattern downloads, and program updates for one (1) year to all registered users, after which you must purchase renewal maintenance.

If your Maintenance Agreement expires, scanning is still possible, but virus pattern and program updates stop. To prevent this, renew the Maintenance Agreement as soon as possible.

To purchase renewal maintenance, contact the same vendor from whom you purchased the product. A Maintenance Agreement, extending your protection for a year, is sent by post to the primary company contact listed in your company’s Registration Profile.

To view or modify your company’s Registration Profile, log into the account at the Trend Micro online registration Web site:

https://olr.trendmicro.com/registration

To view your Registration Profile, type the Logon ID and Password created when you first registered your product with Trend Micro (as a new customer), and click Login.
About ActiveUpdate

ActiveUpdate is a service common to many Trend Micro products. ActiveUpdate connects to the Trend Micro Internet update server to enable downloads of the latest pattern files and engines.

ActiveUpdate does not interrupt network services, or require you to reboot your computers. Updates are available on a regularly scheduled interval that you configure, or on demand.

Updating From the IWSVA Web Console

If you are not using Trend Micro Control Manager for centralized administration of your Trend Micro products, IWSVA polls the ActiveUpdate server directly. Updated components are deployed to IWSVA on a schedule you define, such as the following:

- Minutes (15, 30, 45, 60)
  These 15-minute interval updates only apply to virus, spyware, phish, URL Filtering page analysis, and IntelliTrap patterns.
- Hourly
- Daily
- Weekly
- On demand (manually)

Note: Trend Micro recommends hourly updates of the pattern files and daily and weekly updates of engines. All updates include the following patterns: virus, spyware, phish, URL Filtering page analysis, and IntelliTrap patterns.

Proxy Settings for Updates

If you use a proxy server to access the Internet, you must enter the proxy server information into the IWSVA Web console before attempting to update components. Any proxy information that you enter is used for the following:

- Updating components from Trend Micro's update servers
- Product registration and licensing
To configure a proxy server for component and license updates:

1. Open the IWSVA Web console and click Updates > Connection Settings.
2. Select “Use a proxy server for pattern, engine, license updates and Web Reputation queries” to specify a proxy server or port.
3. If your proxy server requires authentication, type a user ID and password in the fields provided.
   Leave these fields blank if your proxy server does not require you to authenticate.
4. In the Pattern File Setting section, type the number of pattern files to keep on the IWSVA device after updating to a new pattern (default and recommended setting is three pattern files).
   Keeping old pattern files on your server allows you to roll back to a previous pattern file in the event of an incompatibility with your environment; such as excessive false positives. When the number of pattern files on the server exceeds your configuration, the oldest pattern file is automatically deleted.
5. Click Save.

---

Note: In transparent bridge mode, the IWSVA has an internal interface and an external interface. To ensure updates function properly, the configuration of the ActiveUpdate proxy and server settings must be done on the same side. If IWSVA is deployed with other proxy servers, the next hop proxy settings for the ActiveUpdate proxy and server should be the same server on the same side of the interface.

---

Updatable Program Components

To ensure up-to-date protection against the latest risks, there are several components you can update:

- Pattern files—These files are: Virus, phish spyware/grayware, URL filtering page analysis, IntelliTrap, and IntelliTrap Exceptions. These files contain the binary “signatures” or patterns of known security risks. When used in conjunction with the scan engine, IWSVA is able to detect known risks as they pass through the Internet gateway. New virus pattern files are typically released at the rate of several per week, while the Phish and grayware/spyware pattern files are updated less frequently.
• **Virus scan engine**—This module analyzes each file’s binary patterns and compares them against the binary information in the pattern files. If there is a match, the file is determined to be malicious.

• **URL Filtering Engine**—IWSVA utilizes the Trend Micro URL Filtering Engine to perform URL categorization and reputation rating based on the URL data supplied from the cloud-based Smart Protection Network. Trend Micro recommends using the default setting of a weekly update check to ensure that your installation has the most current URL Filtering Engine.

**Virus Pattern File**

The Trend Micro scan engine uses an external data file, called the virus pattern file, to keep current with the latest viruses and other Internet risks such as Trojans, mass mailers, worms, and mixed attacks. New virus pattern files are created and released several times a week, and any time a particularly pernicious risk is discovered.

All Trend Micro antivirus programs using the ActiveUpdate feature (see About ActiveUpdate starting on page 4-3 for details) can detect whenever a new virus pattern is available at the server, and can be scheduled to automatically poll the server every hour, day, week, and so on, to get the latest file. Virus pattern files can also be manually downloaded from the following Web site:

http://www.trendmicro.com/download/pattern.asp

There, you can find the current version, release date, and a list of the new virus definitions included in the file.

**How it Works**

The scan engine works together with the virus pattern file to perform the first level of detection, using a process called pattern matching. Because each virus contains a unique binary “signature” or string of tell-tale characters that distinguishes it from any other code, the virus experts at TrendLabs capture inert snippets of this code to include in the pattern file. The engine then compares certain parts of each scanned file to the data in the virus pattern file looking for a match.

Pattern files use the following naming format:

`lpt$vpn.###`
where ### represents the pattern version (for example, 400). To distinguish a given pattern file with the same pattern version and a different build number, and to accommodate pattern versions greater than 999, the IWSVA Web console displays the following format:

```
roll number.pattern version.build number (format: xxxxx.###.xx)
```

- **roll number**—This represents the number of rounds when the pattern version exceeds 999 and could be up to five digits.
- **pattern version**—This is the same as the pattern extension of lpt$vpn.### and contains three digits.
- **build number**—This represents the patch or special release number and contains two digits.

If multiple pattern files exist in the same directory, only the one with the highest number is used. Trend Micro publishes new virus pattern files on a regular basis (typically several times per week), and recommends configuring a hourly automatic update on the Updates > Schedule screen. Updates are available to all Trend Micro customers with valid maintenance contracts.

**Note:** There is no need to delete the old pattern file or take any special steps to “install” the new one.

### Phish Pattern File

As new “phishing” scams that attempt to steal personal data through counterfeit versions of legitimate Web sites are discovered, Trend Micro collects their URLs and incorporates the information into the Phish pattern file. The Phish pattern file is saved in `/etc/iscan/phishB.ini` and contains an encrypted list of known phishing URLs.

### Page Analysis Pattern

URL filtering page analysis pattern is used by the URL filtering engine to perform local page analysis and adjust the final reputation score of a visited Web page. If the result of the analysis indicates that the Web page contains malicious content, IWSVA automatically decreases its reputation score and returns the revised score to the reputation server.
The URL filtering page analysis pattern file is stored in the following directory:

/etc/iscan/Ctx#####.###

Spyware/Grayware Pattern File
As new hidden programs (grayware) that secretly collect confidential information are written, released into the public, and discovered, Trend Micro collects their tell-tale signatures and incorporates the information into the spyware/grayware pattern file. The spyware/grayware pattern file is stored in the following directory:

/etc/iscan/ssaptn.###

where ### represents the pattern version. This format distinguishes a given pattern file with the same pattern version and a different build number. It also accommodates pattern versions greater than 999. The IWSVA Web console displays the following format:

roll number.pattern version.build number (format: xxxxx.###.xx)

- roll number—This represents the number of rounds when the pattern version exceeded 999 and could be up to five digits.
- pattern version—This is the same as the pattern extension of ssaptn.### and contains three digits.
- build number—This represents the patch or special release number and contains two digits.

IntelliTrap Pattern and IntelliTrap Exception Pattern Files
IntelliTrap detection uses a scan option in the Trend Micro's virus scanning engine with IntelliTrap pattern (for potentially malicious files) and IntelliTrap Exception pattern (as an allowed list). IWSVA uses the IntelliTrap option and patterns available for detecting malicious compressed files, such as bots in compressed files. Virus writers often attempt to circumvent virus filtering by using different file compression schemes. IntelliTrap provides a heuristic evaluation of compressed files to help reduce the risk that a bot or any other malicious compressed file might cause to a network.

IntelliTrap pattern tmblack.### and IntelliTrap exception pattern tmwhite.### are saved in the /etc/iscan/ directory.
Scan Engine

At the heart of all Trend Micro antivirus products lies a proprietary scan engine. Originally developed in response to the first computer viruses the world had seen, the scan engine today is exceptionally sophisticated. It is capable of detecting Internet worms, mass-mailers, Trojan horse risks, network exploits and other risks, as well as viruses. The scan engine detects the following types of risks:

- “in the wild,” or actively circulating
- “in the zoo,” or controlled viruses that are not in circulation, but are developed and used for research and “proof of concept”

In addition to having perhaps the longest history in the industry, the Trend Micro scan engine has also proven in tests to be one of the fastest—whether checking a single file, scanning 100,000 files on a desktop machine, or scanning email traffic at the Internet gateway. Rather than scan every byte of every file, the engine and pattern files work together to identify not only tell-tale characteristics of the virus code, but the precise location within a file where the virus would hide. If a virus is detected, it can be removed and the integrity of the file restored.

To help manage disk space, the scan engine includes an automatic clean-up routine for old viruses, spyware, and IntelliTrap pattern files as well as incremental pattern file updates to help minimize bandwidth usage.

In addition, the scan engine is able to decode all major internet encoding formats (including MIME and BinHex). It also recognizes and scans common compression formats, including Zip, Arj, and Cab. Most Trend Micro products also allow administrators to determine how many layers of compression to scan (up to a maximum of 20), for compressed files contained within a compressed file.

It is important that the scan engine remains current with the latest risks. Trend Micro ensures this in two ways:

- Frequent updates to the scan engine’s data file, called the virus pattern file, which can be downloaded and read by the engine without the need for any changes to the engine code itself.
- Technological upgrades in the engine software prompted by a change in the nature of virus risks, such as the rise in mixed risks like Italian Job.

In both cases, updates can be automatically scheduled, or an update can be initiated on demand.
The Trend Micro scan engine is certified annually by international computer security organizations, including the International Computer Security Association (ICSA).

**About Scan Engine Updates**

By storing the most time-sensitive virus information in the virus pattern file, Trend Micro is able to minimize the number of scan engine updates, while at the same time keeping protection up-to-date. Nevertheless, Trend Micro periodically makes new scan engine versions available. New engines are released, for example, when:

- New scanning and detection technologies have been incorporated into the software
- A new, potentially harmful virus is discovered that cannot be handled by the current engine
- Scanning performance is enhanced
- Support is added for additional file formats, scripting languages, encoding, and/or compression formats

To view the version number for the most current version of the scan engine, visit:

[http://www.trendmicro.com](http://www.trendmicro.com)

**Web Reputation Database**

The Web Reputation database resides in the cloud with rest of the Trend Smart Protection Network servers. When a user attempts to access a URL, IWSVA retrieves information about this URL from the Web Reputation database and stores it in the local cache. Having the Web Reputation database in the cloud and building the local cache with this database information reduces the overhead on IWSVA and improves performance.

The following are the information types the Web Reputation database can retrieve for a requested URL:

- Web category
- Pharming and phishing flags used by anti-pharming and anti-phishing detection
- Web Reputation scores used to block URL access, based on a specified sensitivity level (see Specifying Web Reputation Rules on page 8-36)

The Web Reputation database is updated with the latest categorization of Web pages.
If you believe the reputation of a URL is misclassified or you want to know the reputation of a URL, please use the link below to notify Trend Micro:

http://SiteSafety.trendmicro.com

Incremental Updates of the Pattern Files and Engines

ActiveUpdate supports incremental updates of the latest pattern and engine files. Rather than downloading the entire file each time, ActiveUpdate can download only the portion of the file that is new and append it to the existing file. This efficient update method can substantially reduce the bandwidth needed to update your antivirus software, deploy pattern, and engine files throughout your environment.

Component Version Information

To know which pattern file, scan engine, or application build you are running, click Summary in the main menu. The version in use is shown in the Current Version column on the System Dashboard tab.

Manual Updates

The effectiveness of IWSVA depends upon using the latest pattern and engine files. Signature-based virus and spyware/grayware scanning works by comparing the binary patterns of scanned files against binary patterns of known risks in the pattern files. Trend Micro frequently releases new versions of the virus pattern and spyware pattern in response to newly identified risks. Similarly, new versions of the Phish pattern are released as new phishing URLs are identified.

New versions of the Trend Micro scan engine are updated as performance is improved and features added to address new risks.

Note: If Internet connections on your network pass through a proxy server, you need to configure your proxy information. Click Updates > Connection Settings from the main menu and enter your proxy server information.
To update the engines and pattern files:

1. Click **Summary** on the main menu and make sure the **System Dashboard** tab is active.
2. Click **Update**.
3. For all of the components listed in the Manual Update screen, click one of the following:
   - **Update All**—Updates all components
   - **Update**—Updates only the selected component

   If IWSVA is already using the latest version of the component and no update is available, no component is updated. Forcing an update (by clicking **Update**) is not necessary unless the components on the IWSVA device are corrupt or unusable.

**Forced Manual Updates**

IWSVA provides an option to force an update to the pattern file and the scan engine when the version on IWSVA is greater than or equal to its counterpart on the remote download server (normally IWSVA would report that no updates are available). This feature is useful when a pattern file or scan engine is corrupt and you need to download the component again from the update server.

To force an update of a pattern file or scan engine:

1. Click **Updates > Manual** on the main menu. Alternatively, clicking **Update** in the System Dashboard screen to display the Manual Update screen.
2. For all of the components listed, click **Update** to update only the selected component(s)

   A message box appears if the version of the pattern file or scan engine on IWSVA is greater than or equal to the counterpart on the remote download server. If the pattern file on IWSVA is older than the one on the remote download server, the newer pattern file is downloaded.
3. Click **OK** in the message box to start the forced update.
Scheduled Updates

IWSVA can perform scheduled updates for the following pattern files:

- Virus
- Spyware
- URL page analysis
- Phish Pattern
- IntelliTrap

Likewise, IWSVA can perform scheduled updates for the Scan and URL Filtering engines.

To schedule automatic pattern file and engine updates:

1. Click Updates > Schedule on the main menu.
2. For each type of updatable component, select the update interval. The following are your options:
   - Every x minutes (pattern files only; select the number of minutes between update interval)
   - Hourly (pattern files only)
   - Daily
   - Weekly (select a day from the drop-down menu; this is the recommended setting for the latest engine updates)

   **Note:** Scheduled updates for a given component can be disabled by selecting Manual updates only in each component section.

3. For each component, select a Start time for the update schedule to take effect.
4. Click Save.
Note: Use the Summary screen in the IWSVA Web console to verify the current version of a pattern file. If your network configuration includes a cache server, Trend Micro recommends that you clear the cache and reboot the cache server after updating the pattern file. This forces all URL requests to be scanned, ensuring better network protection. Consult your cache server documentation for information on how to clear the cache and reboot the server.

Maintaining Updates

Verifying a Successful Update

The System Dashboard tab of the Summary screen in the IWSVA Web console displays the version of the component in use, plus the time and date of the last update. Check the Summary page to verify that a manual or scheduled update has completed successfully.

Update Notifications

IWSVA can issue notifications to proactively inform an administrator about the status of a pattern or engine update. For more information about configuring update-related notifications, see Enabling Pattern File Updates Notifications starting on page 13-53 and Enabling Notifications for URL Filtering Engine and Scan Engine Updates starting on page 13-59.

Rolling Back an Update

IWSVA checks the program directory and uses the latest pattern file and engine library file to scan inbound/outbound traffic. It can distinguish the latest pattern file by its file extension; for example, lpt$vpn.401 is newer than lpt$vpn.400.

Occasionally, a new pattern file might incorrectly detect a non-infected file as a virus infection (known as a “false positive”). You can revert to the previous pattern file or engine library file.
Note: IWSVA does not support rollback for the URL filtering engine.

To roll back to a previous pattern file or scan engine:

1. Click Updates > Manual on the main menu.
2. Select the component to roll back and click Rollback.

A progress bar indicates the rollback progress, and a message screen then displays the outcome of the rollback. After the rollback, you can find the current version and date of the last update on the System Dashboard tab of the Summary screen.

Deleting Old Pattern Files

After updating the pattern file, IWSVA keeps old pattern files (Virus, Spyware, IntelliTrap, and IntelliTrap Exception pattern files) on the server so they are available to accommodate a roll back. The number of pattern files kept on the server is controlled by the “Number of pattern files to keep” setting on the Updates > Connection Settings page.

If you need to manually delete pattern files, they can be found in the /etc/iscan/ directory of IWSVA.

Controlled Virus Pattern Releases

There are two release versions of the Trend Micro virus pattern file:

- The Official Pattern Release (OPR) is Trend Micro’s latest compilation of patterns for known viruses. It is guaranteed to have passed a series of critical tests to ensure that customers get optimum protection from the latest virus risks. Only OPRs are available when Trend Micro products poll the ActiveUpdate server.

- A Controlled Pattern Release (CPR) is a pre-release version of the Trend Micro virus pattern file. It is a fully tested, manually downloadable pattern file, designed to provide customers with advanced protection against the latest computer viruses and to serve as an emergency patch during a virus risk or outbreak.
Updates

Note: After you apply a CPR, incremental updates are not possible. This means that subsequent updates require downloading the entire pattern file rather than just the new patterns, resulting in a slightly longer pattern download time.

In order for IWSVA to access the new pattern file, ensure that it has the same permission and ownership as the previous pattern file.

To apply the latest CPR to IWSVA:

1. Open http://www.trendmicro.com/download/pattern-cpr-disclaimer.asp and click Agree to signify your agreement with the terms and conditions of using a Trend Micro CPR.
2. Download the CPR to a temporary folder on the IWSVA device. The filename is in the form lptXXX.zip.
3. Stop all IWSVA services.
4. Extract the contents of the files that you downloaded to the /etc/iscan/directory of IWSVA.
5. Restart all IWSVA services.
   To verify that the CPR was applied correctly, click Summary in the main menu; then, click the System Dashboard tab and confirm that the virus pattern version in use corresponds to the version of the CPR that you tried to apply.
Application Control and Traffic Statistics

InterScan Web Security Virtual Appliance (IWSVA) provides a way to control application usage by protocol and displays useful traffic statistics about inbound and outbound application traffic.

**Note:** To use the Application Control feature, IWSVA must be deployed in Transparent Bridge Mode or Transparent Bridge Mode - High Availability. For more information, see Transparent Bridge Mode on page 2-3 or Transparent Bridge Mode - High Availability on page 2-5.

Topics in this chapter include the following:

- Application Control Overview on page 5-2
- Application Control Traffic Statistics Overview on page 5-8
Application Control Overview

Internet-based applications have grown in popularity over the last few years beyond using the browser to surf websites. Even with corporate usage policies, many companies are unable to curb and regulate the use of those applications. Recent findings show that 75% to 80% of corporate users ignore their company’s computer usage policies. To avoid significant risk, the Application Control feature provides a security technology that automates the discovery of popular Internet applications and allows administrators to control them by using policies.

IWSVA provides both visibility and control for over 420 application types running across any port, including applications using custom clients (for example, Skype, bitTorrent, P2P) or leveraging Web 2.0 technologies within the browser (for example, social networking, webmail, and streaming media sites). IWSVA must be deployed in Transparent Bridge mode to be able to utilize the Application Control feature because so many Internet applications use protocols and ports other than HTTP and port 80.

Note: Application Control is available in Transparent Bridge Mode and Transparent Bridge Mode - High Availability. See Application Control Protocol List on page H-1 for list of supported application types.

Enabling or disabling of the Application Control will not affect policies already created. They will be synchronized between HA nodes and are included in migration packages.

Change actions in Application Control policies and settings are recorded in the Audit Log.

Application Control Policy List

The Application Control feature allows more than a simple allow-or-block option for all examples of applications within a category. This flexibility is provided because many companies have found specific functions of these applications are effective for conducting business.

Administrators may want to allow the two most popular IM applications, but block the rest. For P2P, administrators may want to allow the transfer of files between employees within the corporate network, but prohibit external use.
Creating Application Control policies allows granular control of the functionality within the supported Internet-based application categories.

The Application Control policy list shows all policies on the system—enabled as well as disabled. Click Add to create a new policy, or click a policy name to edit an existing one.

- **Enable Application Control**—Globally controls the enabled status of all policies; overrides the status of an individual policy. Click Save after enabling or disabling Application Control. Enabling or disabling of the Application Control will not affect policies already created. They will be synchronized between HA nodes and are included in migration packages.

- **Add**—Opens the Add Policy wizard that will take you through the steps of defining a new policy.

- **Priority**—Sets the order of precedence—if two conflicting policies overlap in their scope, the policy with the higher priority (closer to 1) will be applied and the other ignored.

**Note:** The Application Control Global Policy is the default policy. It automatically applies to all users, but also always takes the lowest priority. Any policy above it in the list will take precedence.

- **Deploy Policies**—Click this button after creating or modifying an Application Control policy to have it immediately take effect. This avoids waiting for the policy deployment interval.

- **Work and Leisure Time filters**—Click these filters and select from the drop-down box to sort by the blocked or allow option, so you can display your policies for each time by action.

- **Collapse and expand category**—The Expand icon ( ) allows you to see the contents of all the application category. The Collapse icon ( ) allows you to close all application categories.

- **Search**—When creating policies, you can use the search field to find the applications you want to add to your policy rules.

**To view Application Control policies:**

1. Go to Application Control > Policies.
2. Click the name of an existing policy to see the details about that policy.
The Global Application Control policy is the default policy.

3. To add a policy, see Adding an Application Control Policy on page 5-4.

Add Policies: Select Accounts

IWSVA has default global and guest policies for the following activities: HTTPS decryption, HTTP Malware Scan, Applets and Active X, URL Filtering, and Application Control.

- **Global Policy**—For all clients who access through IWSVA.
- **Guest Policy**—For those clients, typically temporary workers, contractors, and technicians who proxy through IWSVA using a special guest port (default port = 8081).

The Global Application Control policy is the default policy.

- **Enable policy**—Enables or disables the individual policy; the global Application Control setting overrides the specifications of an individual policy.
- **IP Range**—Use to specify the range of IP addresses that will be affected by the Application Control policy.
- **IP Address/(User or Group possible)**—Use to specify the single IP address that will be affected by the Application Control policy.

**Note:** The options on this page depend upon the user identification method that you are using—either IP address or User/group name authentication, if you enable LDAP authentication. For more information about configuring the user identification method and defining the scope of a policy, see Configuring the User Identification Method on page 7-5 and Configuring the Scope of a Policy on page 7-22.

- **Add**—Click to add a single or range of IP addresses to the list of addresses that will be affected by the Application Control policy.

Adding an Application Control Policy

**To add an Application Control policy:**

1. Go to Application Control > Policies.
2. Click the Add link at above the policy list.
3. Type a descriptive policy name. This will help you remember the policy.

4. Type a single IP address, a range of IP addresses, or a user/group name to signify the users affected. Alternatively, choose the user or group name if LDAP integration has been set up.

5. Click Add to move the newly entered IP address, range, or user/group name to the Type & Identification table.

6. Check the Enable Policy check box at the top of the screen to enable the policy after it is created.

7. Click Next to continue.

8. See Specifying Application Control Policy Rules on page 5-5 to set up the rules of the policy which apply to specified accounts.

Add or Edit Policies: Specify Rules for Application Control Policies

You add or edit policy rules in two locations:
• Application Control > Policies | Add > Select Account > Specify Rules
• Application Control > Policies | Policy Name | Rule (to edit an existing policy)

Adding an Application Control policy is a two-step procedure. First, create an account to specify the users to which the policy will apply, then assign Application Control rules to the policy.

Note: Use the search field to find a specific application on the Rules page. For more information about an application, click the name of the application to go to a separate page that contains information describing the supported applications, versions and other details.

Specifying Application Control Policy Rules

Editing an Application Control policy requires clicking on the policy name, then clicking the Rule tab.

• Enable policy—Enables or disables the individual policy; the global Application Control policy settings override the specifications of an individual policy.
• Application Category—Choose an action for the protocols to which you want to restrict access. There are over 420 protocols segmented in 32 logical groups. Use the search field to find specific application names.
  • Click on the “+” sign to expand a category and select specific protocols.
  • Click the protocol name to access a page with descriptions of the protocols.

Note: When you create a policy, current connections will not be blocked by the new policy. For example: If a user is logged on to Skype while an admin creates a policy to block Skype, the user can continue to use Skype. However, once the user logs off, he cannot log back on to Skype again because the policy will be in effect.

Use the following available filtering actions:
• Allow—User accounts can use the application normally. Application Control events are recorded if the administrator enables that setting. (See Application Control Settings for details.)
• Block—User accounts cannot use this application. The network packets identified as part of this application will not be delivered. Application Control events can be recorded if the settings is enabled. (See Application Control Settings on page 5-7 for details.) A log entry can also be created for this event.
• Action During Work Time—Select the check box of the protocol to which you want to apply the filtering action during work time. To select all the protocols of a group, click the check box for the group. The group does not need to be expanded for you to select all protocols in a group. (Restricted days and hours are defined at Administration > IWSVA Configuration > Work/Leisure Time. (See Work/Leisure Time on page 14-8 for details.) Click Apply to apply the filtering action to the selected protocols.
• Action During Leisure Time—Select the check box of the protocol for which you want to apply the filtering action during leisure time. To select all the protocols of a group, click the check box for the group. The group does not need to be expanded for you to select all protocols in a group. Click Apply to apply the filtering action to the selected protocols.

Note: Unspecified times are considered “leisure” times.
- **Notes**—Use to create policy notes, for example, to summarize the intent or justification for the policy. It can serve as a simple reminder or as a communication to others who could later administer this feature.

- Click **Finish** at the end of the rules list to return to the policy list.

- In the policy list, check the check box by the appropriate policy name(s) and click **Deploy Policies** when you are ready for the policy/policies to be deployed.

### Application Control Settings

Administrators can configure the following setting:

- Enabling reporting for events with the “Allow” action (Default: enabled)
- Enabling logging for events with the “Blocked” action (Default: enabled)
- Selecting the time interval for the violation log record (Default: 5 minutes)

**Note:** If the Application Control feature is not enabled, no logs are recorded and the Application Traffic Statistics (Summary > Application Traffic) dashboard will not display data.

**To configure the Application Control settings:**

1. Go to **Application Control > Settings**.

2. Select one or more of the following by checking the check box:

   - **Report Application Control events for the “Allow” action**—Selecting this option allows you to monitor and report all application activity that is allowed by the Application Control policies. (Logging activity is normally turned off by default.)

   - **Log Application Control events for the “Blocked” action** — Selecting this option allows you to monitor and log all application activity that has been blocked by the Application Control policies.

   - **Logging Interval XX minutes**—Changing this option defines when to write to a violation log record. For example, the default interval is five minutes. No matter how many client violations occur in that five-minute interval, there will be only one violation log entry.

   A user accessing the Internet using one of the tracked applications may create many sessions in a very short time. In order to prevent a flooding of events
into the log database, this option can limit how often one event record is written for the activity. This limitation technique keeps the violation log from becoming too large and affecting performance. Admins may change the logging interval if they want to record to the violation log more frequently or less frequently.

3. Click **Save**.

### Application Control Traffic Statistics Overview

Application Control real-time traffic information can be viewed at the Summary | Application Traffic tab. Application Control can be enabled in Transparent Bridge Mode and Transparent Bridge Mode - High Availability. Traffic statistics for HA will only be available on the parent unit’s Web console.

**Note:** Application Control traffic statistics will only display if the Application Control feature is enabled at Application Control > Policies.

The Application Control Traffic Statistics tab shows the following data:

- **Bandwidth**—The bandwidth chart shows the Traffic in KBs per second for inbound and outbound traffic.
  
  - Click the last day icon or last 30-days icon to see results for those time periods in a separate window.

- **Concurrent application connections**—The concurrent application connections shown the total concurrent application connections.

- **Top 5 bandwidth usage by application**—The top 5 bandwidth usage by application shows the application usage in a chart and a table.

- **Top 5 concurrent connections by application**—The top 5 concurrent connections by application shows the connection information in a chart and in a table by application name and number of concurrent connections.
Note: Other statistics about bandwidth and users are available at Reports > Real-Time Reports > Application Control Reports > Top “N” reports.

To view end-user details on Internet application usage, the Advanced Reporting and Management option must be deployed with IWSVA.
HTTP Configuration

Before you start using InterScan Web Security Virtual Appliance (IWSVA) to scan for malicious HTTP/HTTPS downloads, filter or block URLs, and apply access quotas for your clients, you need to configure some HTTP settings that control the HTTP traffic flow. IWSVA can be used in conjunction with another proxy server on your network; alternatively, you can configure IWSVA to use its native proxy.

**Note:**
- To enable and configure WCCP, see *Network Configuration and Load Handling* on page 6-11 and your Cisco product documentation.
- To enable and configure Full Transparency (Transparent Bridge mode), see *Network Configuration and Load Handling* on page 6-11.

Topics in this chapter include the following:
- Enabling the HTTP/HTTPS Traffic Flow starting on page 6-2
- Specifying a Proxy Configuration and Related Settings starting on page 6-2
- Network Configuration and Load Handling starting on page 6-11
- Configuring Internet Access Control Settings starting on page 6-13
Enabling the HTTP/HTTPS Traffic Flow

The deployment mode is originally configured with the IWSVA Deployment Wizard. If you would like to change the deployment mode after the installation, you can use the Administration > Deployment Wizard to make the changes.

To enable or disable the HTTP/HTTPS traffic flow through IWSVA:

1. Select Summary on the main menu.

   The state of HTTP/HTTPS traffic flowing through IWSVA appears at the top of the Scanning page.

2. Select one of the following:
   - If HTTP/HTTPS traffic is turned off, click the Turn On link to enable it.
   - If HTTP/HTTPS traffic is turned on, click the Turn Off link to disable it.

When HTTP/HTTPS traffic is turned off, your clients cannot access Web sites or any other services carried through HTTP/HTTPS.

Specifying a Proxy Configuration and Related Settings

If you would like to change the deployment mode after the installation, you can use the Administration > Deployment Wizard to make changes.

- **Transparent bridge**—IWSVA acts as a Layer 2 network bridge between the devices it is deployed between and transparently scans HTTP, HTTPS, and FTP traffic between the clients and external services. No configuration changes to the network devices are required. Transparent bridge settings apply to both HTTP and FTP traffic, and if selected, FTP proxy settings are disabled. By default, SSL (HTTPS) traffic is passed through IWSVA, but not scanned. To allow IWSVA to scan SSL-encrypted traffic, you can configure HTTPS decryption policies to decrypt the content before scanning.

   If the clients and IWSVA are in the same segment, no configuration is required. Otherwise, see the following list for mixed segment configuration considerations.

   If the network device and IWSVA device are on different network segments, use the IWSVA routing table to point IWSVA to the device.
• **Forward Proxy**—This configuration is used to protect clients from receiving malicious HTTP/HTTPS/FTP-borne risks from a server. This is the most common configuration, and the typical use case is to protect Web users on your network from receiving malicious Internet downloads. IWSVA and the clients that it protects are typically in the same LAN.

• **Reverse proxy**—This configuration is used to protect Web servers from attacks or malware introduced by public or private users.

• **ICAP**—Choose this topology if you have an ICAP client on the network and you want it to pass traffic to IWSVA for scanning. IWSVA acts as an ICAP server.

• **WCCP**—The WCCP configuration allows customers that have WCCP enabled routers and switches to redirect Web and FTP traffic to IWSVA to create a high-performance scalable and redundant architecture.

![Diagram](image-url)

**FIGURE 6-1. WCCP configuration and Web and FTP traffic**
Proxy Configurations

There are several types of proxy configurations:

- No upstream proxy (stand-alone mode)
- Upstream proxy (dependent mode)
- Simple transparency
- Reverse proxy
- WCCP

No Upstream Proxy (Stand-alone Mode)

The simplest configuration is to install IW NSA in stand-alone mode, with no upstream proxy. In this case, IW NSA acts as a proxy server for the clients. The advantages of this configuration are its relative simplicity and that there is no need for a separate proxy server. A drawback of a forward proxy in stand-alone mode is that each client must configure the IW NSA device as their proxy server in their browser’s Internet connection settings. This requires cooperation from your network users, and also makes it possible for users to exempt themselves from your organization’s security policies by reconfiguring their Internet connection settings.

![Forward, no upstream proxy](image)
HTTP Configuration

Note: If you configure IWSVA to work in stand-alone mode, each client on your network needs to configure Internet connection settings to use the IWSVA device and port (default 8080) as their proxy server.

To configure a stand-alone installation:

1. Click Administration > Deployment Wizard from the main menu.
   The Deployment Wizard displays.
2. Ensure that Forward proxy mode is selected. Then click Next.
3. Verify that Enable upstream proxy and Enable guest account are not selected.
4. Click Next until the Submit button displays. Click Submit. Then click Close.

Upstream Proxy (Dependent Mode)

IWSVA can be configured to work in conjunction with another proxy server on your network. In this configuration, IWSVA passes requests from clients to another proxy server, which forwards the requests to the requested server.

Like the stand-alone mode, the dependent mode proxy configuration also requires client users to configure the IWSVA device as their proxy server in their Internet connection settings. One benefit of using an upstream proxy is improved performance through content caching on the upstream proxy server. IWSVA only performs content caching in forward proxy mode (if enabled.) When enabled, IWSVA performs content caching, or if another cache server is available, it could be configured for content caching. For other modes or if content caching is not enabled in Forward Proxy mode, every client request needs to contact the Internet server to retrieve the content. When using an upstream proxy, pages cached on the proxy server are served more quickly.
**Note:** If IWSVA is configured to operate in upstream proxy mode with a designated proxy server, Trend Micro recommends that the proxy settings for Updates also be configured to the same designated proxy server (see Proxy Settings for Updates on page 4-3). Certain types of update events utilize the Updates proxy settings to retrieve important information. If proxy settings are not configured properly, IWSVA will not be able to access the Internet for these services.

![Diagram of Forward, upstream proxy](image)

**FIGURE 6-3.  Forward, upstream proxy**

**Note:** When IWSVA is configured in HTTP Forward Proxy mode with Upstream Proxy enabled, pharming sites cannot be effectively blocked.

When you configure IWSVA to work in Forward Proxy mode and enable Upstream Proxy, the Server IP White List will not take effect. Content from servers that you configure on the Server IP White List still will be scanned or filtered.
To configure IWSVA to work with an upstream proxy:

1. Click Administration > Deployment Wizard from the main menu. The Deployment Wizard displays.
2. Ensure that Forward proxy mode is selected, and click Next.
3. Check Enable upstream proxy and enter the IP address or host name of the upstream Proxy server, and the Port number.
4. Click Next until the Submit button displays. Click Submit. Click Close.

**Transparent Proxy**

*Transparency* is the functionality whereby client users do not need to change their Internet connection's proxy settings to work in conjunction with IWSVA. Transparency is accomplished with a Layer 4 switch that redirects HTTP packets to a proxy server, which then forwards the packets to the requested server.

IWSVA supports a “simple” type transparency. Simple transparency is supported by most Layer 4 switches. While it is compatible with a wide variety of network hardware from different manufacturers, configuring simple transparency does impose several limitations:

- When using simple transparency, the User Identification method to define policies is limited to IP address and/or host name; configuring policies based on LDAP is not possible.
- FTP over HTTP is not available; thus, links to ftp:// URLs might not work if your firewall settings do not allow FTP connections. Alternatively, links to ftp:// URLs might work, but the files are not scanned.
- Simple transparency is not compatible with some older Web browsers when their HTTP requests do not include information about the host.
- Do not use any source NAT (IP masquerade) downstream of IWSVA, because IWSVA uses the IP address of the client to scan and clean the malicious traffic.
- A DNS server is needed for DCS to resolve the client machine name from its IP address in order to perform a cleanup.
The benefit of enabling transparency is that the clients’ HTTP/HTTPS requests can be processed and scanned by IWSVA without any client configuration changes. This is more convenient for your end users, and prevents clients from exempting themselves from security policies by simply changing their Internet connection settings.

**FIGURE 6-4.** Forward proxy with transparency

*Note:* In simple transparency mode, IWSVA does not accept SSL (HTTPS) traffic. Configure the router not to redirect port 443 traffic to IWSVA.

If you configure IWSVA in simple transparency mode and the IWSVA server is connected to a layer-4 switch, you should set the HTTP listening port to 80 and enable PING on the data interface to allow users to access the Internet through IWSVA.

**To configure simple transparency:**

1. Click **Administration > Deployment Wizard** from the main menu.
   The Deployment Wizard displays.
2. Check **Simple Transparency mode** and click **Next**.
3. Change the **HTTP Listening port** to the same port that the Layer 4 switch is configured to use.
4. Click **Next** until the Submit button displays. Click **Submit**. Click **Close**.
Reverse Proxy

IWSVA can be used to scan content that clients upload to a Web server. When IWSVA is installed using either the forward or reverse proxy scan configuration, traffic in both directions is scanned (uploading and downloading).

**FIGURE 6-5. Reverse proxy protects Web server from clients**

To configure IWSVA as a reverse proxy:

1. Click Administration > Deployment Wizard from the main menu. The Deployment Wizard displays.
2. Select Reverse proxy mode and click Next.
3. Enter the HTTP Listening Port number, the IP address or host name of the Protected server.
4. If you want to enable HTTPS access, check Enable SSL Port and enter the Port Number.
5. Click Next until the Submit button displays. Click Submit. Click Close.
Note: If communication with your internal Web servers is through SSL, you must configure the HTTPS port(s). For more information, see HTTPS Ports starting on page 6-17.

In reverse proxy mode, IWSVA tunnels HTTPS traffic. HTTPS decryption is not supported in Reverse Proxy Mode.

To complete your reverse proxy configuration, the IWSVA device’s IP address must be registered in the DNS as the host name of the Web server that the reverse proxy is protecting. In this way, the IWSVA device appears to be the Web server, as far as the clients are concerned.

Proxy-related Settings

In addition to specifying the type of proxy configuration you want, you can also set the following parameters for the configuration:

• HTTP listening port
• Anonymous FTP logon over HTTP email address

HTTP Listening Port

If you enable HTTP scanning, be sure to specify the appropriate listening port number of a given HTTP handler so the traffic will go through.

Note: It is not necessary to configure an HTTP Listening Port in Transparent Bridge mode.

To configure the listening port number:

1. Open the IWSVA Web console and click Administration > Deployment Wizard.
2. Select your mode and click Next.
3. In the HTTP Listening port text box, type the port number (default values are 1344 for ICAP and 8080 for HTTP Proxy).
4. Click Save.
HTTP Configuration

Note: IWSVA handles HTTPS connections differently from HTTP connections. Because the data is encrypted, you can configure HTTPS decryption policies to decrypt the content which can then traverse filtering and scanning policies as “normal” HTTP traffic. IWSVA examines the initial CONNECT request, and rejects it if it does not match the set parameters (such as the target URL is on the Block List or contained in the Phish pattern file, or the port number used is not defined in the HttpsConnectACL.ini file).

Anonymous FTP Logon Over HTTP Email Address

FTP over HTTP enables users to access hyperlinks to ftp:// URLs in Web pages and enter a URL starting with ftp:// in the address bar of their browser. If the user omits the user name when accessing this type of URL, anonymous login is used, and the user’s email address is conventionally used as a password string that is passed to the FTP server.

To configure the email address to use for anonymous FTP logon over HTTP:

1. Select Administration > Deployment Wizard from the main menu.
2. Type the Email address to use for an anonymous FTP log on.
3. Click Save.

Network Configuration and Load Handling

The number of users supported by each IWSVA instance depends on the hardware where IWSVA is installed, the average number of concurrent sessions used per user, the bandwidth used by each users' sessions, and the percentage of the user population that is using the Internet simultaneously. In general, the more powerful the IWSVA server platform, the larger IWSVA’s capacity will be.

In general, a two processor dual core server with 4GB of memory and fast hard disk drives will be able to support up to 4000 users. A two processor quad core server with 8GB of memory and fast hard disk drives will be able to support up to 9500 users.

Trend Micro's general capacity planning rules make the assumption that each user opens an average of two concurrent sessions and approximately 20 percent of the user population is actively accessing the Internet.
Note: For more information on capacity sizing, refer to the IWSVA Sizing Guide.

You can install IWSVA on the network in the following modes:

- **Transparent Bridge**—Run a cable from the external (Internet-facing) network device to an IWSVA external port, and from an IWSVA internal port, to an internal network device.
- **Forward Proxy**—Run a cable from the interface configured in the CLI to the internal network device.
- **ICAP**—Connect IWSVA to the ICAP client using the interface configured in the CLI.
- **WCCP**—Trend Micro recommends using the following Cisco IOS versions when configuring WCCP with IWSVA:
  - 12.2(0) to 12.2(22). Avoid using releases 23 and above within the 12.2 family
  - 12.3(10) and above. Avoid using releases 0-9 in the 12.3 family
  - IOS 12.4(15)T3 or later should be used

After setting up the IWSVA server, open the IWSVA Web console and click **Administration > Deployment Wizard** to set the corresponding IWSVA scan mode.

**Shared Policy after Registering to ARM**

If you purchase Trend Micro Advanced Reporting and Management (ARM), after registering to ARM, IWSVA can share the same policies with another IWSVA. For more detailed information, please refer to the *Advanced Reporting and Management for InterScan Web Security Administrator's Guide*.
HTTP Configuration

**Note:** An IWSVA HA cluster must have only one parent server.

You can configure the “parent”/“child” designation in the Cluster Management page or Deployment Wizard of the Web console specifies the parent node. The child node has the same policies and deployment settings, after it is synchronized with the parent.

- See more shared, cluster-level settings in Table 3-1 on page 3-8.
- To switch member roles, see To perform a manual switchover with Weighted Priority Election mode disabled: on page 3-17 or To change the weight value of a node: on page 3-20.

---

**Configuring Internet Access Control Settings**

IWSVA includes several configurations to control your clients’ HTTP/HTTPS access. These settings are separate from any scanning or URL filtering policies that you might configure for your user base.

- HTTP access can be selectively enabled for client users with a given IP address, IP range, or IP mask.

- To improve performance when client users request content from “trusted” sites, scanning, URL filtering, and URL blocking can be disabled for servers with a given IP address, or servers within a given IP range or IP mask.

- HTTP and HTTPS requests to ports or port ranges can be selectively allowed or denied for all users whose Internet access passes through IWSVA. This feature is convenient if you want to prevent certain types of Internet transfers. In addition, you can configure HTTPS decryption policies to decrypt HTTPS traffic for scanning.

**Identifying Clients and Servers**

For controlling client Web access or configuring servers as trusted, there are three ways to identify the client or server:

- **IP address:** a single IP address, for example, 123.123.123.12

- **IP range:** clients that fall within a contiguous range of IP addresses, for example, from 123.123.123.12 to 123.123.123.15
Client IP

In addition to the default setting that allows all clients on your network to access the IWSVA proxy, IWSVA can be configured to allow HTTP access only to those clients that you explicitly specify. If your organization does not allow everyone on your network to access the Internet, this is a convenient way to block HTTP access by default.

To allow HTTP access based on client IP:

1. Select HTTP > Configuration > Internet Access Control from the main menu.

   In transparent bridge mode, the destination and HTTPS ports are not available; therefore, when in this mode the Destination Ports and HTTPS Ports tabs are not present in the Internet Access Control screen.

2. Ensure that the Client IP tab is active.

3. Check Enable HTTP Access Based On Client IP.

4. Select the option that describes how clients are allowed HTTP access—either IP address, IP range, or IP mask.

   Note: If you specify a single IP address and then an IP address range containing the single IP address, the IP address range is negated if a user attempts to access a URL at the single IP address.

For more information about identifying the clients, see Identifying Clients and Servers starting on page 6-13.

To delete a client IP or IP range, click the corresponding Delete icon next to it.

5. Type a descriptive name in the Description field. (40 characters maximum)

6. Click Add.

   The client IP that you have configured is added to the list at the bottom of the Client IP tab. Access control settings are evaluated according to the order they appear in the list at the bottom of the Client IP tab.

7. Click Save.
Server IP White List

To maximize the performance of your network, you can configure IWSVA to skip scanning and filtering content from specific servers. For example, if you are protecting your intranet server with IWSVA in a reverse proxy configuration, you can be reasonably assured that its content is safe and you might want to consider adding your intranet servers to the Server IP White List.

After configuring the IP addresses or ranges of trusted servers, the configurations are saved to the `ServerIPWhiteList.ini` configuration file. Overlapping IP ranges are not allowed.

**WARNING!** Content from servers that you configure on the Server IP white list is not scanned or filtered. Trend Micro recommends adding only those servers over which you have close control of the contents.

In ICAP mode, the server IP white list is only applied to RESPMOD requests. REQMOD activities (such as URL filtering, Webmail upload scanning, and URL blocking) cannot be bypassed by the server IP white list for ICAP installations.

**To add servers to the Server IP White List:**

1. Select HTTP > Configuration > Internet Access Control from the main menu.
2. Ensure that Approved Server IP List tab is active.
3. Check the way you want to specify trusted servers whose content is not scanned or filtered—either IP address, IP range, or IP mask.
   
   For more information about identifying the clients, see Identifying Clients and Servers starting on page 6-13.
4. Type a descriptive name in the Description field. (40 characters maximum)
5. Click Add.

   The trusted servers that you have configured appears at the bottom of the Server IP White List tab.

   To delete a trusted server or range, click the corresponding Delete icon next to it.
6. Access control settings are evaluated according to the order they appear in the list at the bottom of the Server IP White List tab.
7. Click Save.
Destination Port Restrictions

IWSVA can restrict the destination server ports to which clients can connect. HTTP requests to a denied port are not forwarded. This approach can lock down your server and prevent clients from using services such as streaming media applications that contravene your network’s security policies by denying access to the ports used by these services.

The default post-install configuration is to deny all requests, except for those to ports 80 (HTTP), 70 (Gopher), 210 (TCP), 21 (FTP), 443 (SSL), 563 (NNTPS) and 1025 to 65535.

**Note:** To enable FTP over HTTP connections for clients to open FTP links in Web pages, IWSVA must be able to open a command connection to the FTP server on port 21. This requires allowing access to port 21 on the HTTP access control settings.

For a list of ports used by various applications and services, see http://www.iana.org/assignments/port-numbers.

**To restrict the destination ports to which a client can connect:**

1. Select HTTP > Configuration > Internet Access Control from the main menu.
2. Ensure that the Destination Ports tab is activated.
3. Choose the **Action** to perform. Choose **Deny** to prevent connections to a specific port or port range on a destination server, or **Allow** to permit connections to a specific port or port range.
4. Check either **Port** or **Port Range** and then enter the corresponding port(s).
5. Type a descriptive name in the **Description** field. (40 characters maximum)
6. Click **Add**. The destination port restrictions are added to the list at the bottom of the Destination Ports tab.

   To delete a destination port or port range to which you allow or deny access, click the **Delete** icon next to it.

7. Access control settings are evaluated according to the order they appear in the list at the bottom of the Destination Port tab.

   To change the order that ports appear in the list, click the up or down arrows in the **Priority** column.
8. Click Save.

HTTPS Ports

IWSVA can restrict which ports can be used for encrypted HTTP transactions. The default configuration is to allow only HTTPS connections on port 443 (the default HTTPS port) and 563 (the default port for encrypted news groups).

**Note:** If you need to access the Web console through HTTPS while connecting through IWSVA itself, allow access to the IWSVA secure console port number (8443 by default).

---

**To restrict the ports that can be used to tunnel encrypted HTTP transactions:**

1. Select HTTP > Configuration > Internet Access Control from the main menu.
2. Make the HTTPS Ports tab active.
3. Choose the Action to perform—either Deny or Allow.
4. Check either Port or Port Range and then enter the corresponding port(s).
5. Type a descriptive name in the Description field (40 characters maximum.)
6. Click Add. The destination port restrictions appear at the bottom of the HTTPS Ports tab.
   
   To delete any HTTPS port access restrictions that you might have configured, click the Delete icon next to the port or port range to remove.
7. Access control settings are evaluated according to the order they appear in the list at the bottom of the HTTPS Ports tab. To change the order that ports are displayed in the list, click the up or down arrows in the Priority column.
8. Click Save.
Chapter 7

Policies and User Identification Method

InterScan Web Security Virtual Appliance (IWSVA) is able to apply different HTTP virus scanning, HTTPS decryption, Applets and ActiveX security, URL filtering, Application Control and access quota policies to different individuals or groups on your network. In this way, security policies can be customized based on your business need to handle potentially malicious code, view certain categories of Web content or to prevent the consumption of excessive bandwidth for Web browsing.

Topics in this chapter include the following:

• How Policies Work on page 7-2
• Default Global and Guest Policies on page 7-3
• Deploying Policies on page 7-5
• Configuring the User Identification Method on page 7-5
• Login Accounts on page 7-25
How Policies Work

Different security settings can be configured for different users or groups on your network, based on the type of files or Internet resources they need to access. Some examples of the practical application of different security policies are the following:

- **Virus scanning:** Your organization's acceptable user policy might generally prohibit clients from downloading audio or video files. However, there might be some groups within your company who have a legitimate business purpose for receiving these types of files. By configuring several virus scanning policies, you can apply different file blocking rules in HTTP virus scanning policies for different groups within your company.

- **Applets and ActiveX security:** To prevent clients from running applets that could intercept sensitive information and transmit it over the Internet, you might want to configure a policy for most of your company that prevents applets from connecting to their originating servers. However, if there are users in your company who have a legitimate business purpose to run these sorts of applets (for example, to get quotations through a Java applet stock price ticker), another policy could be configured and applied to a sub-set of your client base.

- **URL filtering:** To discourage your employees from engaging in non-work-related Web surfing, you might want to configure a Global Policy that blocks access to Web sites in the “gambling” category. However, you might need to configure another policy that permits access to these types of sites so your sales organization can learn more about prospects in the gaming industry. In addition to selected pre-defined categories, you can also create new Web categories to apply to URL filtering policies.

- **HTTPS decryption:** To scan encrypted content over HTTPS connections, you can configure HTTPS decryption policies based on the type of sites accessed. Once decrypted, the content can traverse through filtering and scanning policies on IWSVA as “normal” HTTP traffic. HTTPS decryption policies prevent security risks embedded in HTTPS traffic.

- **Access quotas:** IWSVA allows you to configure access quota policies to limit the volume of files that clients can download during the course of a day, week, and month, to control the amount of bandwidth that your organization uses. For those employees who have a legitimate business need to browse the Internet extensively, you can configure another policy granting them unlimited Internet access.
• **Application Control:** Using a security technology that automates the discovery of popular Internet-based applications, Application Control policies allow administrators to control the use of those applications. Application Control policies allow granular control of the functionality within the supported Internet-based application categories. IWSVA allows more than a simple allow-or-block option, since many companies have found specific functions of these applications are effective for conducting business.

• **HTTP Inspection:** HTTP Inspection allows administrators to identify behavior and filter web traffic according to HTTP methods, URLs, and headers. It also allows them to create filters or use default filters to identify web traffic, as well as import and export filters. After the traffic is identified, IWSVA can control it according to policy settings that determine the appropriate actions for specific traffic.

• IWSVA enables you to block communication provided by certain Instant Message (IM) protocols and certain authentication connection protocols.

• IWSVA provides the flexibility that allows you to configure and apply approved URL or file name lists on a per-policy bases.

In addition to being able to define custom policies that apply to specific users, IWSVA is pre-configured with two default policies, the “Global Policy” and the “Guest Policy,” to provide a baseline level of HTTP virus scanning, Applets and ActiveX security, and URL filtering.

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**Note:** IWSVA supports the Guest Policy only in HTTP Forward Proxy mode with LDAP enabled.

---

### Default Global and Guest Policies

IWSVA has default global and guest policies for the following activities: HTTPS decryption, HTTP Malware Scan, Applets and ActiveX, and URL Filtering. Application Control and HTTP Inspection have a default global policies.

- **Global Policy**—For all clients who access through IWSVA.
- **Guest Policy**—For those clients, typically temporary workers, contractors, and technicians who proxy through IWSVA using a special guest port (default port = 8081).
The guest account is disabled by default; enable the guest account and port under **Administration > Deployment Wizard > Mode Selection > Proxy Settings** after first enabling LDAP (**Administration > IWSVA Configuration > User Identification** | **User Identification tab**).

**Note:** Guest accounts only apply to the Forward Proxy deployment mode.

By default, access quota control is not available for clients accessing IWSVA through the default listening port; which means there is no pre-configured Global Access Quota Policy.

IWSVA does not provide HTTPS decryption from guest ports. Instead, IWSVA tunnels HTTPS traffic through guest ports.

### About the Guest Policy

The guest port is a feature that's available when the administrator has configured IWSVA to run in HTTP Forward Proxy mode using LDAP “User/group name authentication” as the user identification method. The administrator can opt to open the second listening port so that users who do not have accounts in an organization's directory server (for example, contract personnel or visiting vendors) can still access the Web. When IWSVA is running in HTTP Forward Proxy mode, the default port values are 8080 for user logon residing in a designated directory server configured on IWSVA, and 8081 for guest users. The Guest Policy is the only policy applied to guest users.

For more information about enabling the “User/group name authentication” user identification method, see **User/Group Name Authentication starting on page 7-9**.

### Enabling the Guest Port

To enable Internet connectivity to network users who are not in the LDAP directory and apply guest policies, open a guest port for Web clients to communicate with IWSVA.
To enable the guest port:

1. Select **Administration > IWSVA Configuration > User Identification | User Identification** from the main menu.
2. From the **User Identification** screen, select **User/group name authentication** and then enter the designated directory server(s) of choice.
3. Click **Save**.
4. Select **Administration > Deployment Wizard** from the main menu.
5. From the **Proxy Scan Settings** screen, check “Enable guest account.”
6. Click **Save**.

Deploying Policies

After configuring a policy, the settings are written to the database after you click **Save**. Clicking **Deploy Policies** applies the new policy configuration immediately. Otherwise, the policy changes go into effect when IWSVA reads the information from the database after the time intervals specified under **Policy Deployment Settings (in minutes)** on the **Administration > IWSVA Configuration > Policy Deployment** screen.

**Note:** When policies are being applied, either after the cache expiration interval or from clicking **Deploy Policies**, HTTP(S) and FTP connections are interrupted for a short time (about ten seconds).

Configuring the User Identification Method

You need to configure how IWSVA identifies clients to define the scope of HTTP virus scanning, URL filtering, Applets and ActiveX security, Application Control, and access quota policies. Your choice of user identification method also determines how security events are traced to the affected systems in the log files and reports.

IWSVA provides three user identification methods to identify clients and apply the appropriate policy:

- IP address (default option)
- Host name (modified HTTP headers)
• User/group name authentication (LDAP)

The following table lists the different user identification method IWSVA supports in various deployment modes:

**TABLE 7-1.  **Supported User Identification Method in Different Deployment Modes

<table>
<thead>
<tr>
<th>Deployment Mode</th>
<th>IP Address</th>
<th>Hostname</th>
<th>User/Group Name Authentication</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bridge Mode</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Standalone/Dependant</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>WCCP</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Simple Transparency</td>
<td>Yes (if source NAT is disabled)</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Reverse Mode</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>ICAP</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
</tr>
</tbody>
</table>

*Note: For users connecting to an HTTP server with integrated Windows authentication through the IWSVA using Internet Explorer 6.0, make sure the **Use HTTP1.1 through proxy connections** option is selected in the **Tools > Internet Options > Advanced** screen for NTLM (NT LAN Manager) authentication to work properly.*

**IP Address**

The IP address is the default identification option and requires the following:

• Client IP addresses are not dynamically assigned through DHCP as DHCP will make the IP address identification less accurate as DHCP leases expire.
• Network address translation (NAT) is not performed on the network path between
the affected system and IWSVA.

If the local network meets these conditions, you can configure IWSVA to use the IP
address user identification method.

When using the IP address identification method, the scope of scanning policies is
defined by defining a range of IP addresses, or a specific IP address, when adding or
editing a policy.

To enable the IP address user identification method:
1. Select Administration > IWSVA Configuration > User Identification | User
   Identification from the main menu.
2. From the User Identification screen, select “IP address.”
3. Click Save.

Host Name

The host name identification method requires that clients use Internet Explorer on the
Windows platform. In addition to defining a policy’s scope by specifying the user's host
name(s) when defining accounts to which a policy applies, the Host name (modified
HTTP headers) user identification option logs the MAC address and Windows
machine name to the security event logs.

By default, only the host name portion of the host name/MAC address combination is
stored in IWSVA for certain types of logs, such as the URL Access Log and reports, and
is used to match policies. If you want to use both the host name and MAC address for
user identification, edit intscan.ini and change use_mac_address=no to
use_mac_address=yes in the [user-identification] section.

Note: Applet-filtering messages show the client IP address (and not the host name) because
even when using Internet Explorer, the HTTP request is submitted by the Java
plug-in, not the browser; therefore, Internet Explorer cannot add the special header
to the request.

Since IWSVA is unable to obtain host name information before decrypting HTTPS
contents, IWSVA does not support host name identification for HTTPS decryption
policies in bridge or WCCP mode.
Host name identification relies on information included in HTTP headers by Internet Explorer. To use this identification option, you must modify the end user's Windows Registry. This modification causes the hostname of the end user's PC to be included (in encrypted format) in any HTTP request sent by Internet Explorer. IWSVA includes a utility program, register_user_agent_header.exe, to make this registry modification. The utility must be executed on each PC in the network—it does not need to be run again unless the hostname of the PC is changed.

You can obtain the register_user_agent_header.exe file from the /usr/iwss/bin folder on the IWSVA server or download it from following Web site: http://downloadcenter.trendmicro.com/index.php?clk=tbl&clkval=250&regs=NABU&lang_loc=1

Be aware of the following limitations:

- End users must be using Microsoft Windows OS.
- End users must be browsing with Internet Explorer.
- The register_user_agent_header.exe utility must have been executed on the end user's desktop.
- The context which executes register_user_agent_header.exe utility must have write permissions for the registry key, HKLM\Software\Microsoft\Windows\CurrentVersion\Internet Settings\User Agent\Post Platform.

**To enable the Host name identification method:**

1. Select Administration > IWSVA Configuration > User Identification | User Identification from the main menu.
2. Select Host name (modified HTTP headers).
3. Click Save.

**Note:** Before your users are able to access the Internet, and for IWSVA to apply the correct policy, clients will have to run the client registration utility on each system.
Client Registration Utility

The **Host name (modified HTTP headers)** user identification option requires that you run a Trend Micro-supplied program on each Windows client before clients connect to IWSVA and access the Internet. The program file is: register_user_agent_header.exe and is located in the /usr/iwss/bin (IWSVA machine). An effective way to deploy this program to your clients is to invoke it from a logon script for the local Windows domain.

The program works by modifying a registry entry:

```
(HKEY_LOCAL_MACHINE\Software\Microsoft\Windows\CurrentVersion\Internet Settings\User Agent\Post Platform)
```

Internet Explorer includes that registry entry in the User-Agent HTTP header. You can find the identifying information logged under the **User ID** column in various log files. It alters Windows configuration values to include the MAC address of the client system and the machine name that made the HTTP requests. The MAC address is a unique and traceable identification method and the machine name is an additional and helpful identifier. For more information, refer to **Enabling MAC Address Client Identification** on page 13-62.

After running the register_user_agent_header.exe utility, a new registry value is created under the following key:

```
HKEY_LOCAL_MACHINE\SOFTWARE\Microsoft\Windows\CurrentVersion\Internet Settings\User Agent\Post Platform
```

The new registry value called **IWS25:<host_name>/<MAC address>** is encrypted, where **<host_name>** and **<MAC address>** correspond to the client that ran the utility.

User/Group Name Authentication

IWSVA can integrate with the following LDAP servers, and supports both the LDAP two and three protocols:

- Microsoft™ Active Directory for Windows Servers 2003 and 2008
- Linux™ OpenLDAP Directory 2.3.39
- Sun Java System Directory Server 5.2 (formerly Sun™ ONE Directory Server)
LDAP Authentication Method

When you enable the “User/group name authentication” method, clients are required to enter their network logon credentials before accessing the Internet.

The following table shows which LDAP authentication methods can be used with each of the supported LDAP servers:

### TABLE 7-2. Authentication Methods for Supported LDAP Servers

<table>
<thead>
<tr>
<th></th>
<th>Kerberos</th>
<th>Simple Authentication</th>
<th>NTLM</th>
</tr>
</thead>
<tbody>
<tr>
<td>Microsoft Active Directory for Windows Servers 2003 and 2008</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>Linux OpenLDAP 2.3.39</td>
<td>yes</td>
<td>yes</td>
<td>no</td>
</tr>
<tr>
<td>Sun Java System Directory Server 5.2 (formerly Sun™ ONE Directory Server)</td>
<td>no</td>
<td>yes</td>
<td>no</td>
</tr>
</tbody>
</table>

**Note:** To use the Digest-MD5 authentication method with the Sun Java System Directory Server 5.2, all passwords must be stored as clear text in the LDAP directory.

Choose **Simple** from the LDAP Authentication Method area of the User Identification page (Administration > IWSVA Configuration > User Identification) to have IWSVA send the user's credentials (used in the Admin account) as plain text for the initial LDAP connection only.

For increased security protection, IWSVA uses the advanced authentication method (Kerberos or Digest-MD5) for all subsequent user logon authentications from IWSVA to the LDAP server. In addition, IWSVA still validates user credential using Kerberos authentication method even when you select simple authentication on the LDAP server.
Transparent Identification

Transparent Identification uses several authentication mechanisms to reduce the number of times the user must authenticate to access the Internet. It combines domain-level authentication and the Windows client polling activities into one transparent operation to discover the user credentials and to eliminate the need to manually enter authentication credentials.

Using Transparent Identification, IWSVA:

- Parses the events in the security log on the Active Directory server to obtain the IP-user mapping relationship
- Retrieves Windows client’s active user and domain name
- Uses the fetched information to match with policies to reduce the pop-up authentication window as much as possible

FIGURE 7-1. Transparent Identification Flow
If the transparent identification query fails, IWSVA leverages the existing proxy- and browser-based LDAP authentication methods. See Figure 7-1.

For more information on Transparent Identification, see Configuring LDAP Settings on page 7-16 and Best Practices for IWSVA on page E-1.

Note: The following exceptions apply to Transparent Identification:
- The Transparent Identification solution only applies to Windows AD 2003 and 2008 environments.
- Login names using the “%” special character are not supported when the Window Client Query is enabled.
- Login names using the “$” special character are not supported when Domain Controller query is enabled.
- Transparent Identification cannot distinguish the correct user when:
- - More than one user accesses a shared PC with different logon accounts or
- - The same user logs into a single machine with the same credentials to activate multiple sessions.

Transparent identification solution applies to the following client platforms:
- Windows 2000
- Windows 2003
- Windows XP
- Windows Vista
- Windows 7
- Windows 2008

Transparent identification applies to all deployment modes that support Active Directory (AD) authentication.

LDAP Communication Flows

When clients request Internet content, they are prompted to enter their network credentials. Simple authentication sends the network credentials through clear text. Advanced authentication uses a Kerberos server as a central secure password store. Therefore, the benefit of using Kerberos is that it provides a higher degree of security.
After the client’s credentials are authenticated with a Kerberos Server, a special encrypted “ticket” certified by the Kerberos server is used to access IWSVA and the Internet.

**FIGURE 7-2. LDAP Communication Flow Using Kerberos Authentication**

When User/group authentication is enabled in either forward proxy mode or transparent mode with Active Directory, you can take advantage of the automatic authentication feature provided in the Internet Explorer Web browser. With automatic authentication, clients already logged on the domain network can access the local Intranet without having to enter the logon information (such as the user name and password); that is, no password pop-up screen displays.

**Note:** You must configure IE settings to enable automatic authentication on each client computer. By default, automatic authentication is enabled in IE 7.0.

IWSVA supports Internet Explorer automatic authentication for the following authentication method:
- Single domain (LAN or 802.11)
- Global catalog enabled in a multi-domain environment (LAN or 802.11)
To enable automatic authentication in IE:

1. Open Internet Explorer on a client computer, click **Tools > Internet Options** and then click the **Security** tab.
2. Click **Local intranet** and click **Custom level**.
3. Select **Automatic logon only in Intranet zone** and click **OK**.
4. Click **Site**, select **Automatically detect intranet network**, and click **Advanced**.
5. In the Intranet Network screen, type the IWSVA hostname and click **Add**.
6. Save the settings.

To enable automatic authentication in Firefox:

1. Open Firefox on a client computer and type “about:config” in the address field.
2. Type “ntlm” in the **Filter** field.
3. Double-click **network.automatic-ntlm-auth.trusted-uris**.
4. A pop-up screen displays. Type the hostname of the IWSVA server and click **OK**.

---

**Note:** For other supported Web browsers and authentication methods not listed above, users will need to type the logon information in a pop-up screen.

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**Note:** Trend Micro recommends that you use global catalog instead of referral chasing. If you enable referral chasing, automatic authentication may not work for users whose information is not found in the main LDAP server. In this case, a Web browser window displays for these users to type their logon information.

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**LDAP Authentication in Transparent Mode**

Before configuring LDAP authentication on IWSVA deployed in transparent mode (bridge and WCCP), review the following criteria to ensure each item is fully met.

- A valid hostname must be assigned in the Deployment Wizard when configuring Transparent Bridge or WCCP modes. The same hostname must also be entered in the corporate DNS server.
• Ensure that the user ID cache is enabled, which is the default setting. This setting must be enabled before enabling transparent mode authentication. You can enable user ID cache using the `configure module ldap ipuser_cache enable` command in the CLI.

• By default, IWSVA keeps user ID cache information for up to 1.5 hours. If you need to lower the cache timeout value, use the `configure module ldap ipuser_cache <interval>` command in the CLI to set a shorter cache interval.

• If authentication is enabled, IWSVA will block all non-browser applications trying to access the Internet. For example, the MSN application may try to access the Internet before the user has a chance to log in the IWSVA server. If this happens, the application will be blocked as the user has not successfully authenticated to IWSVA. You can perform one of the following:

  a. Enable the Domain Controller or Windows client query. After enabling either of these options, no authentication is required because IWSVA obtains the username and domain name through domain controller or client query.

  b. Bypass LDAP authentication for the application by adding the URLs that application accesses to “Global Trusted URLs.” The URLs in this list will bypass both authentication and content scanning.

  c. Instruct users to open their Web browsers and get authenticated before starting up applications that need Internet access.

  d. Add the IP address of the client machine to “LDAP authentication White List.” IP address in this list will bypass LDAP authentication.

• When User/group authentication is enabled in either forward proxy mode or transparent mode with Active Directory, you can take advantage of the automatic authentication feature provided in the Internet Explorer Web browser. With automatic authentication, clients already logged on to the domain network can access the local Intranet without having to enter the logon information (such as the user name and password); that is, no password pop-up screen displays.

**Note:** You must configure your IE settings to enable automatic authentication on each client computer. By default, automatic authentication is enabled in IE 7.0.
Configuring LDAP Settings

If you want to use LDAP user/group names for authentication and policy configuration purposes, you must set IWSVA’s user identification feature to use your corporate LDAP server.

**Note:** If you want to apply the Guest Policy for those network users who are not in your LDAP directory, enable the guest account and configure the guest port (default = 8081) that receives those requests on the IWSVA device. For more information about enabling the guest account and configuring the guest port, see Enabling the Guest Port starting on page 7-4. If the guest port is not enabled, only users in the LDAP directory can browse the Internet.

To configure IWSVA to use the user/group name authentication method:

1. Select Administration > IWSVA Configuration > User Identification | User Identification tab from the main menu.
2. Under the **User Identification Method** section, check **User/group name authorization**.
3. Under the User/group Authentication Settings section in the LDAP Settings section, click the **Select LDAP vendor** link.
4. In the secondary browser window, select from the list of supported LDAP servers the LDAP vendor that you are using.

**Note:** In case future versions of Microsoft Active Directory modify the schema, IWSVA supports changing the attribute names that make up a user's distinguished name. If you’re using either Microsoft Active Directory 2003 or 2008, you should select the **Default settings** option.

5. In the **Configure LDAP Connection** secondary window, click **Save** to confirm your LDAP vendor choice.
6. On the **User Identification** configuration screen, in the **LDAP Settings** section, enter the **LDAP server hostname** using the Fully Qualified Domain Name (FQDN).
Entering the LDAP server hostname’s IP address is also acceptable, but FQDN format is recommended due to an incompatibility between Kerberos servers and identifying LDAP servers using their IP address.

7. Enter the **Listening port number** used by the LDAP server that you have chosen (default = 389). If your network has multiple Active Directory servers and you have enabled the Global Catalog (GC) port, change the listening port to 3268.

**Note:** If you enable the Global Catalog in Active Directory, you might need to configure your firewall to allow communication through port 3268.

8. Enter the **“Admin account”** and **Password** for a credential with at least read authority to the LDAP server. If the domain is `us.example.com`:
   - For Microsoft Active Directory, use the UserPrincipalName for the admin account, for example, `NT_Logon_ID@us.example.com`.
   - For OpenLDAP and the Sun Java System Directory Server 5.2, enter the Distinguished Name (DN) for the admin account (for example, `uid=LOGON_ID,ou=People,dc=us,dc=example,dc=com`).

9. Enter the **Base distinguished name** to specify from which level of the directory tree you want IWSVA to begin LDAP searches.

   The base DN is derived from the company's DNS domain components; for example, LDAP server `us.example.com` would be entered as `DC=example, DC=com`.

   If you are using Active Directory servers with the Global Catalog (GC) port enabled, use the root domain of the Global Catalog-enabled Active Directory; for example, use `dc=example,dc=com`.

10. Select the LDAP authentication method to use—either **Simple** or **Advanced**.

    If you opt for **Advanced** authentication, the following authentication methods are used:
    - Microsoft Active Directory and OpenLDAP: Kerberos
    - Sun Java System Directory Server 5.2 (formerly Sun™ ONE Directory Server): Digest-MD5
Additionally, configure the following parameters to use Advanced authentication:

- Default Realm
- Default Domain
- **KDC and Admin Server**: The hostname of the Kerberos key distribution server. If you are using Active Directory, this is typically the same host name as your Active Directory server.
- **KDC port number**: Default port = 88
  
  When using NTLM to authenticate with KDC(s) on a different forest through Internet Explorer or using IWSVA to do referral chasing with Active Directory, Trend Micro recommends enabling “Use HTTP 1.1 through proxy connections.” This setting can be found on the Internet Explorer **Tools** menu > **Internet Options** > **Advanced** tab. Enabling this setting prevents Internet Explorer from cutting off the “Keep-Alive connection” setting. Note that using NTLM is only supported with Microsoft Active Directory.

11. If a client cannot authenticate using the LDAP and/or Kerberos server that you specify, you can configure IWSVA to check other LDAP and/or Kerberos servers on your network. Check the **Enable Referral Chasing** check box and then click the **Primary referral server** and **Secondary referral server** links.

12. To enable Transparent Identification, you can click the check box for **Enable Windows client query**, **Enable Domain Controller query**, or both. Both functions require domain administrator privileges (belonging to the “Domain Admins” group) and use the account information entered in Step 8 on page 7-17.

**Note:** Before enabling the Windows client query, you must:
- Belong to a local administrator's group (Domain Admins) of all windows clients in your organization.
- Verify that Windows Management Instrumentation (WMI) service (or the domain controller query) has started in all windows clients, and that it can be accessed through WMI query (by enabling 'remote administration' in the Windows firewall or enabling port 135 and related dynamically-assigned WMI communication ports on other firewall products.)
- If transparent identification is enabled, you should enter the account of the Domain Administrator's group in the Active Directory server.
• Enabling Windows client query allows IWSVA to obtain the user name and domain name transparently. Click the **Test Client** link to test the client connection and troubleshoot.

**Note:** Any client with a firewall blocking the necessary ports, 135 and 2201, will prevent IWSVA from polling the client PCs and obtaining information. Admins should create firewall policies that allow access to the client for these two ports from the IWSVA IP address.

**FIGURE 7-3. Enabling the Domain Controller Query**

• Enabling the Domain Controller query allows IWSVA to receive the event logs for the domain controllers in the list and to parse it for user information. When first enabled, users receive a prompt to add the Domain Controller server(s) or to refresh the list of Domain Controller servers. If new Domain Controller servers are not auto-detected, they can be added manually by clicking Add in a
secondary window. After adding information, click **Test Remote Query** to verify the Domain Controller server connection. All Domain Controller servers added in the configuration file can have IWSVA query the event logs for username and IP address information. (See **Figure 7-3**.)

13. Enter the information for the other LDAP servers.

**Note:** If you are using Active Directory servers and have enabled the Global Catalog port (default = 3268), then IWSVA referral chasing configurations are not supported. IWSVA uses a different mechanism to query Active Directory servers when the Global Catalog port is enabled, thus configuring referral servers is redundant.

14. Configure the **LDAP Authentication White List** to exempt hosts from the LDAP authentication process.
For example, if you have an application server that access the Internet and you want to permit its access without requiring the server to authenticate, you can include the server's IP address in the LDAP authentication white list. IWSVA will only apply IP address-based policy settings and bypass user/group name checking.

15. To verify the information has been entered correctly and IWSVA can communicate with the LDAP servers that you configured, click **Test LDAP Connection** on the **User Identification** page.

A message appears, indicating that you have successfully contacted the LDAP server.

**16. Click Save.**

### LDAP Query Matching Across Main and Referral Servers

When adding users or groups to a policy’s scope using the “User/group name authentication” identification method, IWSVA initially searches the main LDAP server. If no matching entries are found, the search is extended to the Primary Referral Server and the Secondary Referral Server. However, if entries matching the search string are found in the main LDAP server, the query will not return matches in the Primary and Secondary Referral servers.

For example, assume the following:

- Main LDAP server contains entries “John Smith” and “John Jones”
- Primary referral server contains entry “John Watson”
- Secondary referral server contains “John Carter Rubin”

A query for “John” only returns “John Smith” and “John Jones” because matching entries exist in the main LDAP server and the search will not extend to the referral servers. However, a query for “John Carter” extends down to the secondary referral server and return “John Carter Rubin” because no matching entries exist in the main or primary referral servers.

**Note:** Since the 'member' attribute is incomplete in some built-in groups that exist in Active Directory (such as ‘Domain Users’), IWSVA will not be able to obtain membership information for these groups through LDAP search. Trend Micro recommends you create policies based on user-defined groups instead of built-in groups.
Cross Domain Active Directory Object Queries

Trend Micro recommends using the Global Catalog port (3268) as the IWSVA LDAP communication port when using Microsoft Active Directory. Using port 3268 enables cross domain group nesting object queries. This applies when an object's attribute on one domain refers to another object residing on a different domain (for example, cross-domain user or group membership that resides on different domains in a forest).

For retrieving cross-domain group object attribute(s), you must create groups with the “Universal” Group Scope to ensure that cross-domain group memberships within an Active Directory forest are included in the Global Catalog. Using the Universal Group Scope to create groups also allows cross-domain queries. Avoid creating or using Global Group policies when the Global Catalog has been enabled.

Note: To configure IWSVA to listen on port 3268, the Microsoft Active Directory server that IWSVA uses should have the Global Catalog enabled.

Since the member attribute is not replicated to the Global Catalog for all group types, and because the `memberOf` attribute derives its value by referencing the member attribute (called back links and forward links, respectively), search results for members of groups, and groups in which a member belongs, can vary. Search results depend on whether you search the Global Catalog (port 3268) or the domain (port 389), the kind of groups that the user belongs to (global groups or domain local groups), and whether the user belongs to universal groups outside the local domain.

For more information, search for the article “How the Global Catalog Works” at http://www.microsoft.com.

Configuring the Scope of a Policy

Whether configuring HTTPS decryption, HTTP virus scanning, Applets and ActiveX security, URL filtering, Application Control, or access quota policies, the first step is the same—to configure the policy's scope by identifying the client users to which the policy applies. The following three procedures describe how to select the accounts using the IP address, Host name (modified HTTP headers) and the User/group name authentication user identification methods.
Policies and User Identification Method

Those procedures are:

- Configuring Policies Using IP Addresses on page 7-23
- Configuring Policies Using Host Names on page 7-24
- Configuring Policies Using LDAP on page 7-24

Note: Even if you configure IWSVA to use the Host name (modified HTTP headers) or User/group name authentication user identification method, you can always specify clients by entering an IP address or IP address range.

Before adding a policy and configuring its scope, set the user identification method. See Configuring the User Identification Method starting on page 7-5 for more information.

Configuring Policies Using IP Addresses

Configuring policies using the clients' IP addresses is the simplest identification method and is always available, regardless of the user identification method you have configured to use.

To configure a policy's scope using the IP address user identification method:

1. From the main menu, click HTTP and choose the type of policy to create (HTTPS Decryption policies, HTTP Malware Scan Policies, Applets and ActiveX Policies, URL Filtering Policies, or Access Quota Policies).

   Note: Access Application Control policies from the Application Control > Policies menu.

2. In the screen that corresponds to the type of policy selected, click Add.

3. Type a descriptive Policy name.

   Policy names that include references to the users or groups to which they apply (for example, “Virus Policy for Engineers” or “URL Filtering Policy for Researchers”) are easily recognizable.
4. Select the users to which this policy applies by typing the upper and lower bounds of a contiguous range of IP addresses in the From and To fields. Alternatively, type a single IP address. Click the corresponding Add button to add the addresses to the policy.

5. When you have named your new policy and defined the IP address(es) to which it applies, click Next to proceed with the other policy settings.

**Configuring Policies Using Host Names**

All clients must run a Trend Micro-supplied utility before clients are subject to a policy that uses the host name (modified HTTP headers) identification method. For more information, see Client Registration Utility starting on page 7-9.

**Note:** Application Control policies do not support the use of host names.

**To configure a policy’s scope using the client host names:**

1. From the main menu, click HTTP and then choose the type of policy to create (HTTPS decryption, HTTP Malware Scan Policies, Applets and ActiveX Policies, URL Filtering Policies, and Access Quota Policies).

2. In the screen that corresponds to the type of policy that you selected, click Add.

3. Type a descriptive Policy name.

4. Select the users to which this policy applies by typing the Host name of the client and clicking Add.

   Repeat typing the host names and clicking Add until the Type/Identification table on the right side of the screen shows all the clients to which the policy applies.

5. When you have named your new policy and defined the account(s) to which it applies, click Next to proceed with configuring the rest of the policy.

**Configuring Policies Using LDAP**

Before configuring a policy using users or groups from your LDAP server, set the user identification method and enter the details of your LDAP server. For more information, see Configuring LDAP Settings starting on page 7-16.
To configure a policy’s scope using users and groups from an LDAP server:

1. From the main menu, click HTTP and then choose the type of policy to create (HTTPS decryption, HTTP Malware Scan Policies, Applets and ActiveX Policies, URL Filtering Policies, Application Control Policies, Access Quota Policies).

   Note: Application Control policies are configured at Application Control > Policies.

2. In the screen that corresponds to the type of policy that you selected, click Add.

3. Type a descriptive Policy name.

4. To query your LDAP directory for users or groups to add to your policy:
   a. Check either User or Group.
   b. Type the first part of the user or group name in the Name field and click Search.
   c. When the list box displays users or groups that match your search criteria, highlight the user or group to add to the policy and click Add.

5. Repeat adding users or groups until your policy’s scope is complete.

6. When you have named your new policy and defined the account(s) to which it applies, click Next and proceed with configuring the rest of the policy.

7. Configure the referral servers if the user credential exists on a different directory server other than the one configured.

   This is an exception that exists if IWSVA is configured to use the Global Catalog port 3268 for Microsoft AD, where referral server configurations do not apply.

Login Accounts

Up to 128 users can access IWSVA using assigned access rights. When in the application, users can make configuration changes that are recorded in the audit log (see Audit Log on page 13-25).
If you have a team of security administrators who are responsible for different functions and who might also have help desk privileges, then assigning them access rights can be beneficial to your organization. To manage IWSVA, these users can have different logon credentials with different privileges.

Access rights can also give you the ability to audit what is being changed in IWSVA. If you have the need to comply with certain government agency standards, then this function can be critical.

About Access Rights

There are three levels of access:

- **Administrator**—Users have complete and unrestricted access to the system. They can read and modify any settings accessible through the console, including creating, deleting, and modifying user accounts. Administrator can use this account and password to log into the CLI. This is the default access for new users.
- **Auditor**—Users cannot make any configuration changes; they can view configurations, logs, and reports. They can also change their passwords.
- **Reports only**—Users can only view the Summary pages and scheduled reports. They can generate logs and real-time report queries and change their own password.

**Note:** Accounts that have administrator privileges can log in to the terminal console through SSH.

Adding a Login Account

**To add a login account:**

1. From the main menu, click **Administration > Management Console > Account Administration**.
2. In the Account Administration screen, click **Add**.
3. In the **Login Accounts** page, complete the necessary information:
   - **Username**—The name of the user assigned to the login account.
   - **Password**—Should be a mixture of alphanumeric characters between 4 and 32 characters long. Avoid dictionary words, names, and dates.
Policies and User Identification Method

• Description—The field that briefly describes the login account.
• Access Rights—See About Access Rights starting on page 7-26.

4. Click Save.

The new login account appears in the Account Administration screen.

Changing a Login Account

To change a login account:

1. From the main menu, click Administration > Management Console > Account Administration.
2. Click on the desired username.
3. In the Login Accounts screen, change the necessary information:
   • Username—The name of the user assigned to the login account.
   • Password—Should be a mixture of alphanumeric characters between 4 and 32 characters long. Avoid dictionary words, names, and dates.
   • Description—The field that briefly describes the login account.
   • Access Rights—See About Access Rights starting on page 7-26.
4. Click Save.

The changed login account appears in the Login Accounts screen.

Note: If an administrator account logs into the terminal console through SSH, and does not close the session, the administrator cannot modify the account directly to “Auditor” or “Reports only.” A warning message will appear.
Configuring HTTP Scanning

This chapter describes how to configure HTTPS decryption, HTTP virus scanning, and applets and ActiveX security policies in InterScan Web Security Virtual Appliance (IWSVA). Topics in this chapter include:

- Enabling HTTP Malware Scanning and Applets and ActiveX Security on page 8-2
- HTTP Malware Scanning Performance Considerations on page 8-3
- HTTP Inspection Overview on page 8-4
- HTTPS Security on page 8-25
- Creating and Modifying HTTP Malware Scanning Policies on page 8-34
- X-Forwarded-For HTTP Headers on page 8-57
- Java Applet and ActiveX Security on page 8-66
- Applet and ActiveX Settings on page 8-76
- Managing Digital Certificates on page 8-81
Enabling HTTP Malware Scanning and Applets and ActiveX Security

You can enable or disable HTTP scanning from the Summary page of the Trend Micro™ InterScan™ Web Security Virtual Appliance (IWSVA) Web console.

**Note:** In addition to enabling HTTP scanning and Applet/ActiveX security, ensure that HTTP traffic is turned on, otherwise clients cannot access the Internet. (See Enabling the HTTP/HTTPS Traffic Flow starting on page 6-2.)

**FIGURE 8-1.** Summary page

To enable HTTP scanning and Applets and ActiveX Security:

1. Open the IWSVA Web console and click **Summary** in the left-hand column.
2. If **HTTP/HTTPS Traffic** is shown as a red circle with a white “x”, click the adjacent **Turn On** link to start the IWSVA HTTP proxy daemon.
3. Go to **HTTP > HTTP Malware Scan > Policies**.
4. At the top of the page, check **Enable virus scanning** and **Enable Web reputation**, then click **Save**.
5. Go to HTTP > Applets and ActiveX > Policies.
6. At the top of the page, check Enable Applet/ActiveX security, then click Save.

HTTP Malware Scanning Performance Considerations

There are trade-offs between performance and security while scanning HTTP traffic for malicious content. When users click a link on a Web site, they expect a quick response. This response, however, might take longer as gateway antivirus software performs virus scanning. Some of the requested files might be large, and determining whether the file is safe requires downloading the entire file before it is relayed to the user. Content might also consist of many small files. In this case, the user's wait is the result of the cumulative time needed to scan the files.

One way to improve the user's experience is to skip scanning large files or files that are not likely to harbor viruses. For example, you can skip all files with an extension of .gif, or all files with a MIME type.

When configured to skip scanning a file because of its MIME content-type, IWSVA attempts to determine the file's true-file type (if you have enabled this feature) and match it to the claimed MIME type before skipping it. If the file's true-file type maps to a different MIME type than indicated in the Content-type header attached to the transaction, the file is scanned. Unfortunately, there is not always a clear mapping between file types and MIME types. If you disable the true file type option, IWSVA does not map the true-file type to a MIME type, it is skipped according to the Content-type header as configured.

You can exclude files from scanning based on the file extension. Trend Micro recommends that you minimize the list of MIME content-types to skip. In general, relying on the scan engine to determine whether a file should be scanned is safer than trying to pick out which file types you want to skip yourself. First, the content-type HTTP header might not accurately represent the true type of the content to download. Second, some types that you might think are safe to skip (for example, text) might not really be safe (because scripts are text, and might possibly be malicious). One more area where you might want to use MIME content-type skipping is where you are consciously making a trade-off in safety versus performance. For example, a lot of Web traffic is text, and the IWSVA scan engine scans all that traffic because the content might contain
scripts, which are potentially malicious. But if you are confident that you are browsing an
environment that cannot be exploited by Web scripts, you might choose to add text/* to
your MIME content-type skip list so IWSVA does not scan Web pages.

Malicious code within a small file can quickly spread throughout a network. Malicious
code that requires a large file for transport propagates more slowly, because the file
containing malicious code takes longer to transmit. Therefore, it is important to screen
small files efficiently and completely.

Note: System performance may be adversely affected if the main policy for ActiveX
scanning directs all PE (windows executable) files to be scanned (not just COM
objects, of which ActiveX controls are a subtype), or if all unsigned PE files are to be
blocked. The performance impact occurs because the Javascan daemon—which
enforces policy for these files—as well as Java Applets) is invoked more often.

### HTTP Inspection Overview

The HTTP Inspection feature in IWSVA provides policy control based on HTTP
methods, URLs, and HTTP headers.

Web behavior has become more complicated. IT managers face many challenges, like
enforcing browser type policies, blocking large file transfers to save bandwidth, blocking
Web file uploads and blocking Web Distributed Authoring and Versioning (WebDAV)
traffic. These actions are used to protect company data from loss, block video uploads,
filter on keywords in headers and take action, and prevent message posting on social
networking service (SNS) sites.

HTTP Inspection allows admins to identify behavior and filter web traffic according to
HTTP methods, URLs, and headers. It also allows admins to create filters or use default
filters to identify web traffic. After the traffic is identified, IWSVA can control it
according to policy settings that allow admins to determine the appropriate actions for
specific traffic.
Note: HTTP Inspection filters cannot inspect the data payload of the HTTP packets. For example, it cannot look for pattern matching inside the text or file of a webmail or social networking site post. It can only identify that a POST action is happening to a defined site or set of sites and prevent that POST.

Information about HTTP Inspection is shown in corresponding logs and reports. HTTP Inspection notifications are also available to inform end-users why their actions on the Web are being blocked.

HTTP Inspection Policies

The HTTP Inspection Policy list at HTTP > HTTP Inspection > Policies shows all HTTP Inspection policies on the system—enabled as well as disabled. Click Add to create a new policy, or click a policy name to edit an existing one. See the following sections for details:

- HTTP Inspection: Select Accounts on page 8-5
- HTTP Inspection: Specify Rules on page 8-6
- HTTP Inspection: Specify Exceptions on page 8-9

Editing an HTTP Inspection policy requires clicking on the policy name, then clicking the Rule tab.

HTTP Inspection: Select Accounts

Filters are required to add an HTTP Inspection policy. Several default filters are provided, but to create a policy using a custom filter, you must create the filters first at HTTP > HTTP Inspection > Filters.

To select accounts for an HTTP Inspection policy:

1. Go to HTTP > HTTP Inspection > Policies.
2. Click Add.
3. Enter or determine the following information:
   - Enable policy—Enable or disable the individual policy.
Note: If you have HTTP Inspection policies disabled at the global level (through HTTP > HTTP Inspection > Policies), the enabled status of an individual policy will be ignored.

- **Policy name**—Type a brief but descriptive name for the policy rule. Names must be unique, and will appear in the list of policies that appears when you click HTTP > HTTP Inspection > Policies.

- **Select the users to which the policy applies**—The options on this page depend upon the user identification method that you are using—either IP address, Host name (modified HTTP headers), or User/group name authentication. For more information about configuring the user identification method and defining the scope of a policy, see Configuring the User Identification Method on page 7-5.

Note: Before choosing a Hostname, you need to prepare all clients on the LAN by running the following program on each client:

```
/usr/iwss/bin/register_user_agent_header.exe
```

This can be done by adding it to your Windows domain login script (or by creating one only for this purpose.)

4. Click **Next** to specify the rules and exception, if any, for the new policy.

**HTTP Inspection: Specify Rules**

The Rules screen allows you to select the Inspection Filters for HTTP traffic. Adding an HTTP Inspection policy is a three-step procedure. First, create an account, then assign HTTP Inspection filtering rules to the new account, and then specify any exceptions.
To specify the rules in your HTTP Inspection policy:

1. Complete the steps in To select accounts for an HTTP Inspection policy: on page 8-5.

2. Enter information or determine the following:
   - **Enable policy**—Enables or disables the individual policy; the global HTTP Inspection setting overrides the specifications of an individual policy.
   - **Inspection Filter**—Choose the Inspection Filter to designate the type of traffic to which the policy will apply. The number of filters available is equal to the default filters plus any custom filters that have been created. Table 8-1 describes the default filters.

   **Note:** You can create custom filters at HTTP > HTTP Inspection > Filters > Add.

   - The following describes the available filtering actions:
- **Allow (scan)**—Connection to the target server is allowed and users can access the Web site, but the content is scanned for malware.
- **Allow (no scan)**—Connection to the target server is allowed and users can access the Web site, but the content is not scanned for malware.
- **Block**—Connection to the target server is not established and users are not allowed to access the Web site. A log entry is also created for this event.
- **Monitor**—Connection to the target server is allowed and users can access the Web site. A log entry is also created for this event.

**Note:** For the next section, restricted days and hours are defined at Administration > IWSVA Configuration > Work/Leisure Time.

- **Action During/Work Time**—Check the check box of the inspection filter name (or names) beside the work time column. (To select all the filters, click the check box at the top of the column.) Select the Action to be applied from the drop-down list. Click **Apply** to apply the filtering action to the traffic found by the selected inspection filters.
- **Action During/Leisure Time**—Check the check box of the inspection filter name (or names) beside the Leisure column. (To select all the filters, click the check box at the top of the column.) Select the Action to be applied from the drop-down list. Click **Apply** to apply the filtering action to the traffic found by the selected inspection filters.

**Note:** Unspecified times are considered “leisure” times.

- **Notes**—Use to create policy notes, for example, to summarize the intent or justification for the policy. It can serve as a simple reminder or as a communication to others who could later administer HTTP Inspection.

3. Click **Next** to continue.
HTTP Inspection: Specify Exceptions

There may be URLs or Web sites that you want to exempt from HTTP Inspection filtering (for example, the corporate intranet, business partner sites, and research tool sites). URLs in the exception list will not be blocked or monitored.

You can create exception lists in the HTTP > Configuration > Approved Lists page.

**To specify exception to the HTTP Inspection policy:**

1. Configure the accounts and rules.
2. On the HTTP Inspection Policies: Add Policy Exceptions page, select the name from the drop-down list of the Approved URL List to be exempted from a HTTP Inspection rule.

   **Note:** Approved lists are configured at HTTP > Configuration > Approved Lists.

3. Click Save. Your new policy will now appear in the list of policies at HTTP > HTTP Inspection > Policies.

HTTP Inspection Filters

The HTTP Inspection filters provide a general way to identify Web traffic. It allows for the creation of filtering conditionals using the following components:

- URL Host
- URL Path
- URL Query
- HTTP Method
- HTTP Header

**Default HTTP Inspection Filters**

Default filters for HTTP Inspection provide filtering for common scenarios, such as blocking social networking services (SNS) uploads or regulating Web access through the use of certain types of browsers.
The default filters provided:

- **Browser-type filter**—Identifies requests sent from the FireFox browser according to the user-agent header
- **Large data download filter**—Identifies large file downloads according to the content-length header
- **Large data upload filter**—Identifies large file uploads according to the content-length header
- **Query keyword filter**—Identifies sensitive keyword querying using search engines like Google, Baidu, etc.
- **WebDAV traffic filter**—Identifies WebDAV special request methods PROPFIND, PROPMATCH, MKCOL, COPY, and MOVE
- **Web file upload filter**—Identifies web file uploads (like BBS or Webmail file uploads) according to the content-type header
- **SNS site post filter**—Identifies post request (including message posts and video file uploads) for the top three sites: Facebook, YouTube, and Twitter. Additional sites can be added by the administrator as needed.

![HTTP Inspection filter configuration for preventing POST actions to defined social networking sites](image)
See Table 8.1 for the default filter settings. Admins can make minor adjustments to the default or pre-defined filters to obtain the control capabilities needed.

- **Add**—Opens the Add Filter wizard that will take you through the steps of defining a new filter.
- **Delete**—Allows you to delete a filter.
- **Import**—Allows you to import custom filters created elsewhere or by technical support
- **Export**—Allows you to export existing filters

### Table 8.1. Matrix of Default HTTP Inspection Filters

<table>
<thead>
<tr>
<th>Default Filter Name</th>
<th>Filtering Type</th>
<th>Request Method</th>
<th>URL Host</th>
<th>URL Path</th>
<th>URL Query</th>
<th>Header (Name/Operator/Value)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Browser Type</strong></td>
<td>REQ</td>
<td>None</td>
<td>None</td>
<td>None</td>
<td>None</td>
<td>User-Agent/Contains/FireFox</td>
</tr>
<tr>
<td><strong>LARGE DATA DOWNLOAD</strong></td>
<td>RESP</td>
<td>N/A</td>
<td>None</td>
<td>None</td>
<td>None</td>
<td>Content-length/&gt;=1048576</td>
</tr>
<tr>
<td><strong>LARGE DATA UPLOAD</strong></td>
<td>REQ</td>
<td>None</td>
<td>None</td>
<td>None</td>
<td>None</td>
<td>Content-length/&gt;=1048576</td>
</tr>
</tbody>
</table>
### Table 8-1. Matrix of Default HTTP Inspection Filters (Continued)

<table>
<thead>
<tr>
<th>Default Filter Name</th>
<th>Filtering Type</th>
<th>Request Method</th>
<th>URL Host</th>
<th>URL Path</th>
<th>URL Query</th>
<th>Header (Name/Operator/Value)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>SNS Site Post</strong></td>
<td>REQ</td>
<td>POST</td>
<td>(Added in Advanced View)</td>
<td>None</td>
<td>None</td>
<td>None/None/None/None</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td><strong>youtube_upload</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>REQ {</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>METHOD: POST</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>HOST: upload.youtube.com</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td><strong>twitter_msg_post</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>REQ {</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>METHOD: POST</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>HOST: twitter.com</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>PATH: status</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td><strong>facebook_upload</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>REQ {</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>METHOD: POST</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>HOST: upload.facebook.com</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Web File Upload</strong></td>
<td>REQ</td>
<td>POST</td>
<td>None</td>
<td>None</td>
<td>None</td>
<td>Content-Type/Contains/multi-part/form-data</td>
</tr>
</tbody>
</table>

8-12
Add an HTTP Inspection Filter

There are two ways to add HTTP Inspection filters:

- **Basic view**—Common component of a filter are provided, offering options for the filtering type (HTTP request or response), URL host, URL path, URL query, and request or response header.
- **Advanced view**—Allows you to enter patterns

---

**Note:** New filters can also be added by clicking on the name of an existing filter, then modifying it as needed and saving it under a different name.

---

Adding a Filter in Basic View

The filter configured in the Basic View defines the following:

- **Filter name and description**—Name and description assigned to the new filter by the user.
- **HTTP request or response**—Denotes the traffic direction
- **Filter scope**—Includes the HTTP method (HTTP request only), path, query, and/or header

---

<table>
<thead>
<tr>
<th>DEFAULT FILTER NAME</th>
<th>FILTERING TYPE</th>
<th>REQUEST METHOD</th>
<th>URL HOST</th>
<th>URL PATH</th>
<th>URL QUERY</th>
<th>HEADER (NAME/OPERATOR/VALUE)</th>
</tr>
</thead>
<tbody>
<tr>
<td>WebDAV</td>
<td>REQ</td>
<td>PROP- FIND</td>
<td>None</td>
<td>None</td>
<td>None</td>
<td>None/ None/ None</td>
</tr>
<tr>
<td></td>
<td></td>
<td>PROP- MATCH</td>
<td></td>
<td></td>
<td>None</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>MKCOL COPY</td>
<td></td>
<td></td>
<td>None</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
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<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

---

**webDAV**

REQ PROP- FIND
PROP- MATCH
MKCOL COPY

TABLE 8-1. Matrix of Default HTTP Inspection Filters (Continued)
Keyword matching—For the HOST, PATH, QUERY and METHOD options, matching means the value contains the input keywords (using simple string comparison.) For the HEADER option, matching supports both string-value matching and integer-value comparison.

Using a Packet Capture

To determine some of the components for your filter, it helps to run a packet capture on the HTTP request or response. See the sample capture in Figure 8-4 and the explanation in Table 8-2. See more about the Network Packet Capturing tool at Network Packet Capturing on page 14-23.

FIGURE 8-4. Packet capture for Google search
To add a new HTTP Inspection filter in the basic view:

1. Go to HTTP > HTTP Inspection > Filters.
2. Click Add.
3. Enter a filter name and description.
4. Select the Basic view radio button. See Figure 8-3.
5. Select the filtering type, either HTTP Request or HTTP Response, depending on the direction for which you want to create a filter:
   - **HTTP Request**—Creates a filter used when clients send a request to the Web server to retrieve an HTML page. Request filters include the following scope: request method, URL host, URL path, URL query, and HTTP header.
   - **HTTP Response**—Creates a filter used when the Web server returns a response message to the client. Response filters include the following scope: URL host*, URL path*, URL query*, and HTTP response header.

   **Note:** Information for the items above with an asterisk (*) are obtained from the HTTP request. The response does not contain this information.
6. Enter values to define the filter by configuring one or more of the following options:
   - (HTTP Request Filtering type only) Check the Request Method check box. To limit the scope of the filter, provide the HTTP request method. The value can be those show in Table 8-3 or any other extension method value.

<table>
<thead>
<tr>
<th>METHOD</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>DELETE</td>
<td>Deletes the specified resource</td>
</tr>
<tr>
<td>GET</td>
<td>Requests a representation of the specified resource.</td>
</tr>
<tr>
<td>HEAD</td>
<td>Asks for the response identical to the one that would correspond to a GET request, but without the response body. This is useful for retrieving meta-information written in response headers, without having to transport the entire content.</td>
</tr>
<tr>
<td>OPTIONS</td>
<td>Returns the HTTP methods that the server supports for specified URL. This can be used to check the functionality of a web server by requesting '*' instead of a specific resource.</td>
</tr>
<tr>
<td>POST</td>
<td>Submits data to be processed (e.g., from an HTML form) to the identified resource. The data is included in the body of the request. This may result in the creation of a new resource or the updates of existing resources or both.</td>
</tr>
<tr>
<td>PUT</td>
<td>Uploads a representation of the specified resource.</td>
</tr>
<tr>
<td>TRACE</td>
<td>Echoes back the received request, so that a client can see what (if any) changes or additions have been made by intermediate servers</td>
</tr>
</tbody>
</table>
**Configuring HTTP Scanning**

**Note:** Users can define multiple keywords with an OR relation, separated by the ‘|’ character or on a new line for the URL Query, URL Path, Header, or HTTP Method options.

- Check the **URL Host** check box. Type the host name or IP address (including port number, if any) as part of the URL.
- Check the **URL Path** check box. Type the path part of the URL (if any) after, but not including, the final “/” of the host part, and up to, but not including, the “?” of the query, if any.
- Check the **URL Query** check box. Type the query part of the URL (if any), after, but not including, the “?” and up to the end of the URL string in the field below the translation wizard.
  - If you need to translate a UTF-8 string, check the **Need a translator** check box.

**Note:** Keyword queries are only supported in UTF-8 encoding. Use URL-encoded hex code to match multiple-byte characters with other character sets.

- Type the UTF-8 string to translate.
- Select the appropriate character set:
  - Chinese Simplified (GB2312)
  - Chinese Traditional (Big5)
  - Japanese (EUC)
  - Japanese (Shift-JIS)
- Click **Translate** and the translated value appears in the Translated string field.
- Check the **Header** check box. To select the Name and Value heading to be used, click the “+” sign in the last column. This supports both string-value matching and integer-value comparison:
  - **Contains** | **Not Contain** means the value contains or does not contain the input keywords using a simple string comparison.
• Add multiple keywords with an OR relation, separated by the “|” character.
• =, ≠, ≥, ≤ —Means integer-value comparison
• Exist/Not exist—Means the header includes or does not include the defined header
• The web traffic is matched by one filter only if all the defined scopes are matched, which means there is an AND relation in METHOD, HOST, PATH, QUERY, and multiple HEADERs.
• Type the values to be used and select the appropriate operation (Contains, Not Contain, equals, does not equal, greater than or equal to, or less than or equal to) from the drop-down list.

7. Click Save.
Your new filter name now appears in the list of filters at the HTTP > HTTP Inspection > Filters.

Adding a Filter in the Advanced View

You can edit filter definitions in text mode with defined syntax. (HTTP BODY is not supported.) Regular expressions are supported. All regular expressions are applied (see http://www.pcre.org/pcre.txt). See Table 8-4 for the active Perl-Compatible Regular Expressions (PCRE) flags.

<table>
<thead>
<tr>
<th>REGULAR</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>PCRE_DOTALL</td>
<td>The ‘.’ (period) character matches any byte, including the EOL characters CR (‘\r’) and LF (‘\n’).</td>
</tr>
<tr>
<td>PCRE_DOLLAR_ENDONLY</td>
<td>The ‘$’ (dollar sign) character matches only the absolute “end of source” (the end of the data), and does not match EOL.</td>
</tr>
</tbody>
</table>
Note: PCRE_DOTALL and PCRE_EXTENDED may be turned off by including ‘(?-s)’ and ‘(?-x)’, respectively, in an expression.

Other rules include:
- The PCRE runtime flag PCRE_UTF8 (“UTF-8 mode”) is never used. This means that the ‘.’ character will always match only one byte.
- In signature definitions, EOL may be escaped by using ‘\’ (backslash) at the end of the line (in the Unix shell manner). Note that this is not part of the PCRE regular expression language and, to be safe, the line continuation backslash should be preceded by at least one space. When assembling a multi-line regular expression for use, the line-end backslashes are stripped, and then all leading and trailing white space is stripped from each line before the lines are concatenated.

### TABLE 8-4. Active PCRE Flags for Use in Configuring Patterns

<table>
<thead>
<tr>
<th>REGULAR EXPRESSION</th>
<th>DESCRIPTION</th>
</tr>
</thead>
</table>
| PCRE_EXTENDED      | The main effect of this is that the following characters (as literals) are ignored in regular expression definitions:  
  
  ‘ ’ (space), tab, carriage return, line feed, form feed, ‘#’  
  
  However, the escaped forms of these characters are obeyed:  
  
  ‘\ ’, ‘\t’, ‘\r’, ‘\n’, ‘\f’, ‘\#’.  
  
  The main reason this is done is to allow regular expression definitions to be formatted in a more readable manner (with white space emphasizing structure and branches), and to allow them to be easily split across line boundaries.  |

To add a new HTTP Inspection filter in the advanced view:

1. Go to HTTP > HTTP Inspection > Filters.
2. Click Add.
3. Enter a filter name and description.
4. Select the Advanced view radio button. See Figure 8-5.
5. Enter a pattern in the Patterns field. Use the following syntax:

```
      [ScanSetName] [Filter Type] {
         [TAG]:RegularExpression
         [HDR-TAG]:[HDR-NAME]:[HDR-OP]:RegularExpression
         [TAG]
         METHOD, HOST, PATH, QUERY
         [HDR-TAG]
         REQ-HDR, RESP-HDR
         [HEADER_OP]:
```

**Note:** The [Filter Type] must be replaced with REQ (for request mode) or RESP (for response mode).
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EQ : =
NE : !=
GE : >=
LE : <=
M : Contain
NM : Not Contain
X : Exist
NX : Not exist

a. Here is a sample pattern for Request mode:
   #
   # _SCAN_SET_1_ REQ {
   #   METHOD: POST
   #   HOST: ^www\samplesite\.com:2345(?!\d)
   #   PATH: test
   #   QUERY: test
   #   REQ-HDR:Content-Type:M:multipart/form-data
   #   REQ-HDR:Content-Length:GE:1048576
   # }
   #

b. Here is a sample pattern for the Response mode:
   #
   # _SCAN_SET_2_ RESP {
   #   HOST: ^www\samplesite\.com:2345(?!\d)
   #   PATH: test
   #   QUERY: test
   #   RESP-HDR:Content-Type:M:multipart/form-data
   #   RESP-HDR:Content-Length:GE:1048576
   # }
   #
Note: Other considerations:
1. For integer value comparisons, IWSVA converts the string value part. The string may include a '0x' prefix, and the number will be read in base 16; otherwise, it is interpreted as 10 (decimal) unless the next character is '0', in which case it is interpreted as 8 (octal).

2. If the first non-space character is not a sign or a digital number, then it is not a number.

3. Do not include RESP-HDR in a request header check rule. You cannot add headers which only appear in response headers to a request type filter.

4. Do not include METHOD and REQ-HDR in a response header check rule. You cannot add headers which only appear in request headers to a response type filter. When using the advanced view to create new filters, do not use METHOD in the response type filter.

5. IWSVA does not verify if filters comply with the HTTP protocol. Filters written incorrectly do not work.

6. Click Save.

Editing an HTTP Inspection Filter
You can modify existing filters or use them as a basis for creating new filters.

If you are editing an HTTP Inspection filter, you may edit:
• Filter name
• Filter description
• Filter methods (Basic view)
• Filter patterns (Advanced view)

You can modify a filter in the basic or advanced view.

To modify a filter:
1. Got to HTTP > HTTP Inspection > Filters.
2. Click on the name of the filter to be modified.
3. Change parameters as shown in:
• To add a new HTTP Inspection filter in the basic view: on page 8-15
• To add a new HTTP Inspection filter in the advanced view: on page 8-19

4. Click **Save**.

**Importing an HTTP Inspection Filter**

Two types of HTTP Inspection filters may be imported:
• New filters created by the users in a text file outside of IWSVA
• Custom filters created by Trend Micro support

Filter files are XML files. Imported filter files must conform to a defined standard shown in To create a filter to import: on page 8-23.

**To create a filter to import:**

1. Imported filter XML files can be created in several ways:
   • Exported from IWSVA
   • Created as a new file

2. If you are creating a new file, use the following sample format:

```xml
<?xml version="1.0" encoding="UTF-8"?>
<SDF>
  <Filter Mode="Basic" Name="Browser type filter" ID="1">
    <Note>Identifies requests sent from the FireFox browser according to the user-agent header</Note>
    <Basic Type="REQ">
      <Headers Enable="true">
        <Header Value="Firefox" Op="M" Name="User-Agent"/>
      </Headers>
    </Basic>
  </Filter>
  <Filter Mode="Basic" Name="Large data upload filter" ID="3">
```

8-23
<Note>Identifies large file uploads according to the content-length header</Note>

<Basic Type="REQ">
  <Headers Enable="true">
    <Header Value="1048576" Op="GE" Name="Content-Length"/>
  </Headers>
</Basic>

<Filter Mode="Basic" Name="Query keyword filter" ID="4">
  <Note>Identifies query keyword for search engine website, etc.</Note>
  <Basic Type="REQ">
    <Query Enable="true">
      <Value><![CDATA[[put query keywords here]]]]></Value>
    </Query>
  </Basic>
</Filter>

To import a filter:
1. Go to HTTP > HTTP Inspection > Filters.
2. Click the Import link.
3. Click Browse and specify the path and filter to be imported.
4. Click Import.
5. View the name of the imported filters in the list of filter names.

Exporting an HTTP Inspection Filter

Existing filters can be exported for several reasons:
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- Filters can be used elsewhere
- Custom filters created by Trend Micro support services can be exported, sent to a customer, and then imported by an IWSVA administrators.

**Note:** Do not manually edit exported filter files. Changes might prevent them from importing successfully.

**To export a filter:**

1. Go to **HTTP > HTTP Inspection > Filters**.
2. Check the box of the name or names of files to be exported.
3. Click the **Export** link. (An error message appears if no filter name was selected.)
4. In the Save As dialog box, select the location for the file to be save. Use the default file name or change it.
5. Click **Save**.

**HTTPS Security**

HTTPS (Hypertext Transfer Protocol with Security) is a combination of HTTP with a network security protocol (such as SSL, Secured Sockets Layer). HTTPS connection is used for Web applications (such as online banking) that require secured connections to protect sensitive content. Since traditional security devices are unable to decrypt and inspect this content, virus/malware and other threats embedded in HTTPS traffic can pass unobstructed through your security defenses and on to your enterprise network.

IWSVA supports HTTPS decryption and scanning in the following modes:
- Transparent bridge
- WCCP
- Forward proxy

**Dangers of Unchecked HTTPS Content**

The following lists some major concerns about HTTPS connections:
- Virus scanning and content filtering policies cannot be applied to encrypted data
• Digital certificates can be forged, expired or revoked since clients rarely check the certificate revocation list
• Legitimate certificates can be easily obtained by a malicious third-party, causing users to assume that the information they provide is secure
• Web browsers are vulnerable to certificate insertion attacks that allows a malicious intruder to gain access to a corporate intranet
• Users may not have the required knowledge to decide if a certificate is to be trusted
• Monitoring HTTPS traffic is difficult since the URL path and other information are concealed

SSL Handshake Overview

To use the SSL protocol to establish an HTTPS connection, a Web server needs to install an SSL certificate. Certificates are supplied by a Certificate Authority (CA) and helps determine that a Web site is trustworthy, sensitive information (such as credit card numbers) is encrypted, and data transmitted cannot be tampered with and forged.

When a client initiates an SSL session by typing a URL that starts with https:// instead of http://, an SSL handshake is performed to verify identification (such as certificate exchange and validation) and process encryption methods required for the session. The IWSVA server acts as an intermediary between a client and a secure Web server to validate server certificates. The following describes a simplified SSL handshake process:

1. The client Web browser sends a connection request and its encryption data to the Web server. IWSVA forwards the request to the Web server.
2. The Web server returns its SSL information (including the server certificate). IWSVA checks the server certificate.
3. If the server certificate passes validation tests, the HTTPS connection is allowed between the Web server and the client. IWSVA applies HTTPS decryption policies to scan encrypted content.

   If the Web server requests a client certificate, IWSVA either blocks or tunnels the encrypted traffic.

For more information on server certificate management, refer to Managing Digital Certificates on page 8-81.
HTTPS Decryption and Process Flow in IWSVA

After an HTTPS connection is allowed between the Web server and the client, IWSVA closes the HTTPS security loophole by decrypting and inspecting encrypted content. You can define policies to decrypt HTTPS traffic from selected Web categories. While decrypted, data is treated the same way as HTTP traffic to which URL filtering and scanning rules can be applied.

![Diagram of HTTPS decryption process in IWSVA]

The HTTPS decryption feature offers the following benefits:

- Decryption at the gateway—IWSVA is able to decrypt HTTPS traffic and apply existing security policies.
• Data privacy is preserved—Decrypted data is completely secure since it is still in the IWSVA server's memory. Before leaving the IWSVA server, the data is encrypted for secure passage to the client's browser.
• Central certificate handling—IWSVA verifies certificates issued by remote servers and manage certificates to relieve clients of the critical tasks.

Configuring HTTPS Decryption Policies

Before IWSVA can apply scanning and filtering policies on encrypted content, you must configure HTTPS decryption policies to decrypt the content. Similar to the way you configure URL filtering policies, you configure HTTPS encryption policies to decrypt content based on selected Web categories. For example, you can configure an HTTPS decryption policy to decrypt encrypted content from Web sites in the Business categories.

HTTPS decryption and URL filtering policies use the same Web category grouping and naming. You can also configure custom categories to meet the needs of your company or users.

Note: IWSVA only matches the first custom category regardless of whether zero or more than one custom category is selected.

In bridge mode, if a proxy server is located between IWSVA and the Web server and client browsers are configured to access the Internet through the proxy server, IWSVA tunnels or decrypts and scans HTTPS connections based on the policy settings.

HTTPS Accelerator Card Support

For customers that have more than 20-25 percent of their total traffic as HTTPS, IWSVA has drivers that support HTTPS accelerator cards, which can be used for the demanding computational calculations needed for HTTPS and save the general purpose CPU cycles for other IWSVA functions, such as content inspection. The accelerator card is designed to offload the CPU intensive operations of SSL key pair negotiation, decryption of the HTTPS stream for content inspection, and re-encryption of the content for secure delivery to the client workstation.
IWSVA supports two types of Silicom cards:

- PCI-E 61
- PCI-X 51

Using the accelerator card allows systems to offload high-level SSL or IPsec protocol commands that reduce the host I/O traffic and system processor to increase the total system throughput. This also frees system processor resources for other functions, increasing overall system performance.

**Creating a New HTTPS Decryption Policy**

Creating a new HTTPS decryption policy is a three-step process:

- Select the accounts to which the policy applies
- Specify the Web site categories whose traffic you want to decrypt
- Select an exception list

**To create a new HTTPS decryption policy:**

1. Open the IWSVA Web console and click **HTTP > HTTPS Decryption > Policies** from the main menu.
   
   Click **Add**. The **HTTPS Decryption Policy: Add Policy** screen appears.

2. Type a descriptive **Policy name**.
   
   Policy names that include references to the users or groups to which they apply, for example, “HTTPS decryption policy for Web Mail,” is easy to remember.

3. Select the users to which the policy applies.
   
   The options on this page depend upon the user identification method that you are using—either **IP address**, **Host name (modified HTTP headers)**, or **User/group name authentication (LDAP)**. For more information about configuring the user identification method and defining the scope of a policy, see Configuring the User Identification Method starting on page 7-5.

4. Click **Next**.

5. On the **Specify Categories** screen, ensure that **Enable policy** is selected.

6. Select the URL categories to decrypt.
   
   To select all the categories of a group, click **Select All** for the group. The group does not need to be expanded for you to select all categories in a group.
7. Type an optional **Note** to include useful information about this policy for future reference.

8. Click **Next**.

9. If you want to apply an exception list, in the **Specify Exception Lists** screen, select an approved URL list name from the drop down list box. IWSVA tunnels HTTPS traffic from a URL in the exception list; that is, the encrypted content will not be decrypted for inspection.

10. Click **Save**.

11. In the **HTTPS Decryption Policies** screen, set the priority of the new policy (under the **Priority** column) by clicking the up or down arrow.
   The **Priority** setting determines which policy is applied if there are accounts belonging to two or more policies.

12. Click **Save**.

13. To immediately apply the policy, click **Deploy Policies**; otherwise, the policy is applied after the database cache expires.

---

**WARNING!** In proxy mode, IWSVA applies HTTPS decryption policies based on the client’s browser domain. However in transparency mode, since IWSVA is unable to obtain client domain information, IWSVA applies HTTPS decryption policies to the CommonName in the server certificate.

---

**HTTPS Decryption Settings**

Click **HTTP > HTTPS Decryption > Settings** to configure the following:

- Server certificate validation
- Client certificate handling
- CA certificate import/export

**Server Certificate Validation**

In the Server Certificate Validation screen, enable server certificate validation and configure validation settings to automate certificate tests such as querying certificate revocation list and establishing certificate validity.
Note: If you disable certificate validation, clients can access any HTTPS Web sites without checking server certificates.

If a certificate does not pass a certificate validation test, clients can still choose to access a Web site through HTTPS connection. A warning screen displays on the client's browser.

To configure server certificate validation:

1. From the main menu, click HTTP > HTTPS Decryption > Settings. The Server Certificate Validation screen displays.
2. Select Enable Certificate Verification to check server certificates.
3. Select one or more of the following options:
   - **Deny Certificates where the CommonName does not match the URL**—Select this option to deny a certificate if the CommonName does match the accessed URL. IWSVA treats the certificate as invalid.
   - **Allow Wildcard-Certificates**—Select this option to allow and verify certificates whose CommonName is represented by a wildcard. Disable this option to deny any certificate with a CommonName expressed using wildcards.
   - **Deny expired or wrong purpose certificates**—Select this option to deny certificates that are expired or certificates that cannot be used for the intended purpose.
   - **Verify entire certificate chain**—Select this option to ensure that a given certificate chain (from the supplied certificate to the root Certificate Authority's certificate) is valid and trustworthy.
   - **Certificate Revocation check by CRL**—Select this option to check whether a certificate is revoked (becomes invalid) by looking up the Certificate Revocation List (CRL).
4. Click Save.

Client Certificate Handling

For many high-security applications, such as online banking, the Web server may require client certificates to authenticate the clients. Since IWSVA does not support Web sites that require client certificates, you can select to tunnel or block the connection in the Client Certificate Handling screen.
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- **Tunnel**—Select this option to bypass HTTPS traffic. IWSVA will not decrypt the content for inspection.
- **Block**—Select this option to deny access to the remote server.

**Certificate Authority**

By default, IWSVA acts as a private Certificate Authority (CA) and dynamically generates digital certificates that are sent to client browsers to complete a secure session for HTTPS connections. However, the default CA is not signed by a trusted CA on the Internet and the client browsers will display a certificate warning each time users access an HTTPS Web site. Although users can safely ignore the certificate warning, Trend Micro recommends using a signed certificate for IWSVA.

**To import a CA certificate:**

1. From the main menu, click **HTTP > HTTPS Decryption > Settings | Certificate Authority**.
2. Click **Browse** next to **Certificate** to select a certificate file. IWSVA supports certificates using base64-encoded format.
3. Click **Browse** next to **Private Key** to select the private key associated with the CA certificate. The private key is provided together with your certificate from the well-known CA.
4. Type the **Passphrase** if you provided this information when you first applied for the certificate.
5. Type the passphrase again the **Confirm Passphrase** field.
6. Click **Import**.

**Note:** IWSVA supports certificates using base64-encoded format only.

After importing a CA certificate, a certificate warning screen (Figure 8-7) may display on the end users machines, if they attempt to access a secured Web site. To avoid this behavior, add the related certificates to the Trusted Root Certificates Authorities list in the appropriate Web browser. See Figure 8-8 for details.
Configuring HTTP Scanning

FIGURE 8-7. Certificate Warning Screen

FIGURE 8-8. Add a certificate to Trusted Root Certificate Authorities
To export a CA certificate (public key):
1. From the main menu, click HTTP > HTTPS Decryption > Settings | Certificate Authority.
2. Click Get Public CA Key.
3. Follow the on-screen prompt to save the certificate file on your computer.

To export CA private key:
1. From the main menu, click HTTP > HTTPS Decryption > Settings | Certificate Authority.
2. Click Get Private CA Key.
3. Follow the on-screen prompt to save the key file on your computer.

Creating and Modifying HTTP Malware Scanning Policies

In addition to the default global and guest policies, you can create customized HTTP scanning policies for specified members of your organization.

To create a new virus scan policy:
1. Choose HTTP > HTTP Malware Scan > Policies from the main menu.
2. Select Enable virus scanning to enable virus scanning.
3. Select Enable Web Reputation to enable Web Reputation.
4. Click Add.
5. Type a descriptive Policy name.
   Policy names that include references to the users or groups to which they apply (for example, “Virus Policy for Engineers” or “URL Filtering Policy for Researchers”) are easy to remember.
6. Select the users to which this policy applies.
   The options on this page depend upon the user identification method that you are using—either IP address, Host name (modified HTTP headers), or
User/group name authentication. For more information about configuring the user identification method and defining the scope of a policy, see Configuring the User Identification Method starting on page 7-5 and LDAP Query Matching Across Main and Referral Servers starting on page 7-21.

Note: Regardless of the user identification method you have configured, you can always enter IP addresses of the clients to which the policy applies.

7. When you have named your new policy and defined the account(s) to which it applies, click Next to proceed with defining HTTP virus scanning rules.

To modify an existing HTTP scanning policy:
1. Click HTTP > HTTP Malware Scan > Policies from the main menu.
2. Click the name of the policy to modify.
3. Modify the Web Reputation rule, virus scanning rule, the spyware scanning rule, policy exceptions, and the scanning action.
   The specified scanning action applies to all specified rules.

To add or remove users from an existing HTTP scanning policy:
1. Click HTTP > HTTP Malware Scan > Policies from the main menu.
2. Click the desired scan policy account.
3. From the Scan Policy: Edit Policy screen, on the Account tab, either add or remove a user.
   • To add a user, specify a user IP address in the IP address field or specify a range of users in the From and To fields under IP range. Click Add after specifying a user or range of users.
   • To remove a user, click the trash can icon next to the user.

To enable a HTTP scanning policy:
• In any HTTP scanning policy configuration page, select Enable policy.
Specifying Web Reputation Rules

Web Reputation rules are created at the policy level.

**To specify Web Reputation rules:**

1. Ensure that Web Reputation is enabled at the global level.
   
   Web Reputation must be enabled at the global level to use it at the policy level (HTTP > HTTP Malware Scan > Policies | Enable Web Reputation checkbox).

2. Ensure that Web Reputation is enabled at the policy level.
   
   Using the Add or Edit option for the HTTP > HTTP Malware Scan > Policies | Web Reputation Rule page, ensure that the Use Web Reputation rule in this policy check box is selected. This check box is selected by default.

3. Select Use Page Analysis in this policy to enable IWSVA to examine the Web site for malicious content and adjust the reputation score. For example, if malicious content is detected on a Web site, IWSVA will decrease its reputation score and block access if the score is below the configured sensitivity threshold.

4. Specify the URL blocking sensitivity level.
   
   Upon receiving the Web Reputation score, IWSVA determines whether the score is above or below the threshold. The threshold is defined by sensitivity level as configured by the user. Medium is the default sensitivity setting. This setting is recommended because it blocks most Web threats while not creating many false positives.

5. Either accept or disable the anti-pharming and anti-phishing detections.
   
   By default, anti-pharming and anti-phishing detections are enabled. See Anti-phishing and Anti-pharming Detection on page 8-36.

**Anti-phishing and Anti-pharming Detection**

Phishing attacks are emails designed to steal private information from you. These emails contain URLs which direct you to imposter Web sites where you are prompted to update private information, such as passwords and credit card numbers, social security number, and bank account numbers.
Pharming attacks are attempts to redirect you to imposter Web sites with the intention of stealing private information, which is usually financially related. Pharming compromises a DNS server by planting false information into the server, which causes a user's request to be redirected to an unintended location. Unfortunately, the Web browser displays what appears to be the correct Web site.

**Note:** Because the source of anti-phishing/pharming detection is Web Reputation and anti-phishing/pharming functions in an anti-threat capacity, it is therefore part of the Web Reputation Rule for a policy. And because Web Reputation at the policy level cannot function until enabled at the global level, anti-phishing/pharming is also disabled when Web Reputation is disabled globally.

In ICAP mode, IWSVA does not support anti-pharming.

### Web Reputation Settings

Web Reputation settings involve specifying the following:

- Whether to provide feedback on infected URLs to Trend Micro
- Whether to evaluate Web Reputation in a monitoring only mode (no URLs are blocked)

### Enabling and Disabling Web Reputation

IWSVA allows you to enable or disable Web Reputation at the global level and at the policy level. If you disable Web Reputation at the global level, then it is automatically disabled at the policy level.

**To enable and disable Web Reputation at the global level:**

1. Click **HTTP > HTTP Malware Scan > Policies** from the main menu.
2. From the Scan Policies screen, select **Enable Web Reputation** to enable Web Reputation. Clear the checkbox to disable it.
To enable and disable Web Reputation at the policy level:

1. Click HTTP > HTTP Malware Scan > Policies > policy name and click the Web Reputation Rule tab.
2. Select Use Web Reputation rule in this policy to enable Web Reputation or clear the check box to disable it for this policy.

Managing Web Reputation Results

IWSVA provides two options for managing Web Reputation results: (1) Provide feedback on infected URLs to help improve the Web Reputation database and (2) monitor the effectiveness of Web Reputation without affecting existing Web-access policies. One or all options can be selected.

Feedback Option

In addition to the current dynamic URL Blocking List, virus scan results can be fed back to the URL Local Cache and an external backend Rating Server. The Trend Micro Feedback Engine (TMFBE) provides a feedback mechanism for IWSVA to send back virus scan results to the backend Rating Server. The Feedback option is enabled by default.

Note: When using Upstream Proxy mode, you might need to configure the proxy server to explicitly allow the IWSVA IP address to access www.trendmicro.com.

Negative Results

If the scan result from the Trend Micro virus scanning engine is negative, the infected URL is sent back to the following locations:

- Dynamic URL Blocking List
- URL Local Cache with an adjusted Web Reputation score
- TMFBE feedback buffer with VirusName and IntelliTrap Flag. When this buffer reaches ten entries or five minutes have passed from the last feedback, these URLs are sent to the backend Rating Server in a batch (each URL is sent sequentially).
Positive Results

If the scan result from Trend Micro’s virus scanning engine is positive, the URL in question is saved in the URL local cache. This prevents the same URL from getting scanned by Trend Micro’s virus scanning engine twice.

Monitor Only Option

The Monitor Only option gives you the opportunity to evaluate Web Reputation results. With this option selected, you are able to monitor Web Reputation results from the URL Blocking Log or Security Risk Report. The results only include the URLs filtered by Web Reputation, anti-phishing and anti-pharming. Because you are only monitoring Web Reputation results, no URL blocking occurs and URLs are passed to clients.

By default, the Monitor Only option is disabled.

Clearing the WRS/URL Cache

When a user attempts to access a URL, IWSVA retrieves information about this URL from a remote database—the Web Reputation database—and stores the retrieved information in a local WRS/URL cache. Having the Web Reputation database on a remote server and building the local WRS/URL cache with this database information reduces the overhead on IWSVA and improves performance.

The following are the information types the WRS/URL cache can receive from the Web Reputation database for a requested URL:

- Web category
- Pharming and phishing flags used by anti-pharming and anti-phishing detection
- Web Reputation rating results used to determine whether or not to block a URL (see Specifying Web Reputation Rules on page 8-36)

The URL cache keeps frequently accessed URLs in cache for quick retrieval. Clear the cache only if a new URL query is necessary or if the cache size is affecting performance.

Note: Clearing the cache stops and restarts the HTTP scanning daemon, which may interrupt IWSVA service.
To clear the WRS/URL cache:
1. From the main menu, click HTTP > Configuration > WRS/URL Cache.
2. Click Clear Cache.

Using the Content Cache

Web content caching is the caching of Web objects (such as HTML pages and images) to reduce bandwidth usage, server load, and perceived lag. A Web cache stores copies of objects passing through it. Subsequent duplicate requests may be satisfied from the cache if certain conditions are met. Cached objects will be re-scanned by IWSVA.

The Content Cache capability provides users who access the Web through IWSVA with a quicker experience while saving bandwidth.

**Note:** This feature is available only in Forward Proxy mode. If the deployment mode changes from Forward Proxy mode to another mode, the Content Cache feature is grayed out and will not function.

With the Content Cache feature, administrators enable or disable the IWSVA in-box cache and manage caching through Web console. It also generates cache statistics.

**Note:** The Content Cache feature cannot be disabled from the CLI.

Enabling/Disabling the Content Cache

**To enable/disable the Content Cache feature:**

1. Go to HTTP > Configuration > Content Cache.
2. Select the Enable Content Cache check box at the top of the page to enable the Content Cache feature. (See Figure 8-9)
3. Click Save.
4. Clear the Enable Content Cache check box to disable the Content Cache feature.
5. Click Save.
Clearing the Content Cache

To clear the Content Cache:

1. Disable the Content Cache feature before clearing the cache. The Clear Cache button is disabled when the Content Cache feature is enabled.
2. Click **Clear Cache**. You receive the following warning:
   “It could take a significant amount of time to clear a large cache. Are you sure you want to clear the cache?”
3. Click **OK**. A progress bar displays during the cache clearing process.

**FIGURE 8-9.** Content Cache screen
The Clear Cache button and the Enable Content Cache checkbox are both disabled until the clearing process ends. After the cache clears, the “Last purged date” updates.

Managing the Content Cache

Administrators can configure the following content cache areas:

- Hard disk usage for the Content Cache
- Cache object size

To manage the Content Cache:

1. Go to the **Hard Disk Usage for Content Cache** section of the Content Cache Settings and Statistics tab.

2. Enter a quantity for the **Cache space size**. (See Figure 8-9.)

   Administrators can adjust the amount of disk space used to store the cached content. A larger cache volume will allow more Web objects to be cached. A smaller cache partition will reduce the number of cacheable objects. If you set the cache volume too small and run out of disk space for caching, the hit ratio may decrease as IWSVA will rely more on real-time content retrieval and less on locally cached content.

   Perhaps your VA total partition space is 40GB within binaries, files and log occupying 15GB. Currently, your “Assigned cache space” setting may be 10GB, and the “Cache space in use” may be 5GB. The screen show:
   - Available cache space: 25,000MB [40GB (total space) - 15GB (logs, miscellaneous)]
   - Assigned cache space: 10,000MB
   - Cache space in use: 5,000MB

   In this case, the “Assigned cache space” setting could be increased to a maximum of 25GB.

3. To tune the minimum and maximum size values, select the amount and unit of measure (KB/MB) for the following:
   - Minimum size of object to be cached (default 0KB) Range allowed is: 0-10240KB/10MB
   - Maximum size of object to be cached (default 10MB) Range allowed is: 1-4096MB/4194304KB
The minimum size and maximum size of cached objects will allow you to tune the caching performance. If the minimum size of cached objects is set too small, the cache service will use local resources to cache content that can be retrieved more quickly from the Internet and this can slow performance. If the minimum size is set too large, the cache may not contain popular objects that can save bandwidth and reduce latency.

This is similarly true for the maximum size of cacheable objects. Depending on the type of Web pages users access what type of cacheable objects they contain, the performance will vary. You can experiment with the minimum and maximum size values to fine tune the cache performance and hit rate for your environment. Trend Micro recommends starting with the default values and then fine tuning as necessary for your environment.

4. Click Save.

Content Cache Real-time Statistics

The real-time statistics for the Content Cache feature include:

<table>
<thead>
<tr>
<th>TABLE 8-5. Real-time Statistics definitions</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>CACHE STATISTICS</strong></td>
</tr>
<tr>
<td>Request hit ratio</td>
</tr>
<tr>
<td>Byte hit ratio</td>
</tr>
<tr>
<td>Cache disk usage</td>
</tr>
<tr>
<td>Number of objects in cache</td>
</tr>
</tbody>
</table>
Note: Real-time statistics for the Content Cache feature will not refresh automatically. You must click the Refresh link for the statistics to update.

Content Cache Exceptions List

When administrators do not want to cache a specific URL, they can add the URL to the cache exceptions list. The behavior here is the same as the URL blocking list. Administrators can add a Web site, URL keyword, or string to exceptions list. URLs that match the list will not be cached by IWSVA.

You can have IWSVA block certain Web pages, domains, and URLs from being stored in the content cache. URLs blocked from the Content Cache are not policy based—it affects everyone in the organization.

Note: Content caching is only supported in Forward Proxy mode.

Blocking URLs from the Content Cache combats large Web sites from being cached and taking up cache space that is more efficiently used for other common Web sites.

- **Enable Content Cache**—Enable or disable Content Cache (click Save after enabling or disabling content caching).

- **Match**—Enter an exact Web site, a keyword or phrase, or a string of characters in the field, and then configure IWSVA with how to apply the match. URLs blocked from the content cache supports both the ? and * wildcard.

- **Web site**—Limits the search to the string as a whole; used with one or more wildcards, this type of blocking can be especially useful for preventing entire Web sites from being cached. There is no need to include http:// or https:// in the URL (as it is automatically stripped).

- **URL Keyword**—Looks for any occurrence of the letters or numbers within a URL, and will match regardless of where the string is found (the string “sex” would be considered a match for “http://www.encyclopedia/content/sexton.htm” and the page blocked. Using wildcards with URL Keywords greatly increase the chance of false positives.

- **String**—Limits the search to the string as a whole; for example, to target a specific site, page, file, or other particular item.
• **Import Blocked Content Cache List and Exceptions**—You can import an existing list of URLs that you want to block or exempt from content caching. For example, if you have a list of URLs from a third-party vendor, Web Manager, or related software program, or a list of sites you have compiled using a text editor, you can import the list rather than enter them one-by-one in the Match field. Imported lists must conform to a defined standard.

**Content Cache Exceptions List Format**

The Content Cache exception list uses the following format to import exception lists.

```
[no_cache]
www.example.com/subdomain*
*example.com*
www.example.com/c.jgp
www.example.com*
*www.example1.com*
www.example2.com
```

**HTTP Virus Scanning Rules**

IWSVA administrators can configure which file types to block and scan, and how compressed and large files are handled.

**Specifying File Types to Block**

You can identify the types of files to block for security, monitoring, or performance purposes. Blocked files are not received by the requesting client or scanned—requests to retrieve a blocked file type are not executed. You have the option of blocking file types such as Java applets, executables, Microsoft Office documents, audio/video files, images or other files types that you specify.
To specify which file types to block:
1. While adding or editing a policy, under Block These File Types, check the box of the file types to block. This will block all files in that category.
2. To choose to unblock file types within a selected category, click the Show Details link.
3. Uncheck the files that should not be blocked.

Specifying File Types to Scan
IWSVA is equipped with the following HTTP scanning capabilities:
• IntelliScan
• True-file type detection
• IntelliTrap

Note: For the highest level of security, Trend Micro recommends scanning all files.

About IntelliScan
Most antivirus solutions today offer you two options to determine which files to scan for potential risks. Either all files are scanned (the safest approach), or only those files with certain file extensions considered the most vulnerable to infection are scanned. However, recent developments that disguise files by changing their extensions renders this latter option less effective. IntelliScan is a Trend Micro technology that identifies a file’s “true-file type,” regardless of the file name extension.

Note: IntelliScan examines the header of every file, but based on certain indicators, selects only files that it determines are susceptible to virus infection.

About True-file Type
When set to scan true-file type, the scan engine examines the file header rather than the file name to ascertain the actual file type. For example, if the scan engine is set to scan all executable files and it encounters a file named family.gif, it will not accept that the file is a graphic file and skip scanning. Instead, the scan engine opens the file header and
examines the internally registered data type to determine whether the file is indeed a graphic file, or, for example, an executable that has been deceptively named to avoid detection.

True-file type scanning works in conjunction with Trend Micro IntelliScan, to scan only those file types known to be of potential danger. These technologies can mean a reduction in the overall number of files that the scan engine must examine (perhaps as much as a two-thirds reduction), but it comes at the cost of potentially higher risk.

For example, .GIF and .JPG files make up a large volume of all Web traffic. It is possible for a malicious hacker to give a harmful file a “safe” file name to smuggle it past the scan engine and onto the network. The file could not run until it was renamed, but IntelliScan would not stop the code from entering the network.

**To select which file types to scan:**

IWSVA can scan all files that pass through it, or just a subset of those files as determined by true-file type checking (IntelliScan) or the file extension. In addition, individual files contained within a compressed file can also be scanned.

1. Select the files to scan:
   - To scan all file types, regardless of file name extension, select All scannable files. IWSVA opens compressed files and scans all files within. This is the most secure, and recommended, configuration.
   - To use true-file type identification, select IntelliScan. This configuration scans file types that are known to harbor viruses by checking the file’s true-file type. Because checking the true-file type is independent of the filename’s extension, it prevents a potentially harmful file from having its extension changed to obscure its true-file type.
   - You can explicitly configure the types of files to scan or skip, based on their extensions, to work around possible performance issues with scanning all HTTP traffic. However, this configuration is not recommended because the file extension is not a reliable means of determining its content.
To scan only selected file types, select **Specified file extensions** and then click the list. (Trend Micro does not recommend this setting.) The **Scan Specified Files by Extension** screen opens. The default extensions list shows all file types that are known to potentially harbor viruses. This list is updated with each virus pattern file release. On the **Scan Specified Files by Extension** screen, add or exclude additional extensions in the **Additional Extensions** and **Extensions to Include** fields.

Enter the extension to scan or exclude from scanning (typically three characters), without the period character. Do not precede an extension with a wildcard (*) character, and separate multiple entries with a semicolon.

Click **OK** when you are finished. The screen closes.

2. You can configure IWSVA to selectively bypass certain MIME content-types. Some file types, such as RealAudio or other streaming content, begin playing as soon as the first part of the file reaches the client machine and does not work properly with the resulting delay. You can have IWSVA omit these file types from scanning by adding the appropriate MIME types to the **MIME content-types to skip** list on the **Virus Scan Rule** tab. Type the MIME content-type to bypass in the **MIME content-type to skip** field (for example, image, audio, application/x-director video, and application/pdf). See Appendix B, **Mapping File Types to MIME Content-types** for more information.

You can also enable the **Enable MIME type validation** check box to allow true file type scanning. This option enables a true file type check on the MIME stream. However, not all MIME types can be accurately detected. If false positives occur, disable Mime Type Validation and Content Type will be used instead.

**Note:** Trend Micro recommends minimizing the list of MIME content-types to skip to reduce the risk of virus infection. Also, Trend Micro does not recommend skipping any MIME content-types when large file handling is enabled, because it’s possible for a MIME content-type to be forged.
IntelliTrap detects potentially malicious code in real-time, compressed executable files that arrive with HTTP data. Virus writers often attempt to circumvent virus filtering by using different file compression schemes. IntelliTrap provides heuristic evaluation of compressed files that helps reduce the risk that a virus compressed using these methods enters a network through the Web.

IntelliTrap has the following options:

- Can be enabled or disabled in the **Virus Scan Rule** tab for each scan policy. (IntelliTrap is enabled by default.)
- Malicious, compressed executable files receive the actions specified in the **Action** tab.
To enable / disable IntelliTrap:

- Click HTTP > HTTP Malware Scan > Policies | <policy name> | Virus Scan Rule tab and select the Enable IntelliTrap check box in the IntelliTrap section.

For more IntelliTrap information, see IntelliTrap Pattern and IntelliTrap Exception Pattern Files on page 4-7.

Priority for HTTP Malware Scan Configuration

IWSVA scans according to the following priority:
1. MIME content-types to skip
2. File types to block
3. File types to scan

Configuring Compressed File Scanning Limits

Compressed file scanning limits can be configured for each policy (click HTTP > HTTP Malware Scan > Policies > policy and click the Virus Scan Rule tab).

IWSVA opens and examines the contents of compressed files according to the criteria specified in the HTTP virus scanning configuration screen. IWSVA decompresses the files according to the configurable limits (number of files in the compressed archive, size of the compressed file, number of compressed layers, and the compression ratio).

To configure the compressed file scanning limits:

Under Compressed File Handling, configure the following settings:

- **Action**: Select an action (Pass, Block, or Quarantine) you want IWSVA to take when it detects a compressed file violation.
- **Applies to**: Select one of the following options.
  - **All compressed files**: Match all requests to download compressed files.
  - **Compressed files if...**: Match only requests to download compressed files that exceed the configured criteria. Type values for the following parameters:
    - Decompressed file count exceeds (default is 50000)
    - Size of a decompressed file exceeds (default is 200MB)
    - Number of layers of compression exceeds (range is 0-20; default is 10)
    - Enable/disable Compress ratio exceeds 99% (default is disable)
IWSVA applies the selected action on a compressed file that meets the specified conditions at the gateway and the file is not scanned. For example, suppose your settings appear as shown in Figure 8-11:

![Compressed File Handling](image)

**Figure 8-11.** “Decompression percent” can be used to prevent a denial-of-service (DoS) attack against the IWSVA device

A compressed file that has more than 10 layers of compression or contains more than 10000 files that will not pass through the gateway.

### Handling Large Files

For larger files, a trade-off must be made between the user’s experience and expectations, and maintaining security. The nature of virus scanning requires doubling the download time (that is, the time transferring the entire file to IWSVA, scanning the file, and then transferring the entire file to the client) for large files. In some environments, the doubling of download time might not be acceptable. There are other factors such as network speed, and server capability that must be considered. If the file is not big enough to trigger large-file handling, the file is scanned as a normal file.

Consider configuring large file handling if your users experience browser time-outs when trying to download files. There are two large file scanning options:

- **Scan Before Delivering (Progress Page)** on page 8-52
- **Deferred Scanning** on page 8-53
Scan Before Delivering (Progress Page)

When IWSVA is configured to use the **Scan before delivering** scanning option, requested files are not passed to the client until scanning is finished. A progress page is generated to prevent the browser from timing out and to inform the user that scanning is in progress to prevent them from thinking that the connection is hung.

**Note:** For large file handling, IWSVA uses the progress page. The progress page uses JavaScript and a pop-up window to display the download progress. If your desktop security policy has pop-up blocking enabled or JavaScript disabled, then the progress page does not function and scanning is prevented.

For the progress page to work, IWSVA needs to determine to which externally visible IP address the clients connect. Using 127.0.0.1 causes a problem. If a message about the progress page appears, add the machine IP address to `iscan_web_server` so that the host name does not resolve to 127.0.0.1 (for example, `iscan_web_server=1.2.3.4:1812`) or modify the `/etc/hosts` file.

---

**FIGURE 8-12. “Scan before delivering” Large File Handling Progress Window**

---

<table>
<thead>
<tr>
<th>Downloading</th>
</tr>
</thead>
<tbody>
<tr>
<td>The file sp52.zip is downloading. After the download is complete, the file will be scanned.</td>
</tr>
<tr>
<td>Navigation to another page will interrupt the download, which will then need to be restarted from the beginning.</td>
</tr>
<tr>
<td>Download Status</td>
</tr>
<tr>
<td>Total estimated size: 13518445 bytes</td>
</tr>
<tr>
<td>Transferred size : 13518445 bytes</td>
</tr>
<tr>
<td>Scanning...&gt;&gt;&gt;</td>
</tr>
<tr>
<td>Scanning completed successfully.</td>
</tr>
<tr>
<td>To download the file, click the following link: <a href="#">Download File</a></td>
</tr>
</tbody>
</table>
Configuring HTTP Scanning

Note: Some Internet applications (YouTube, Windows Update, streaming, and others) are programmed to receive a certain amount of data on the client side within a certain time frame (for example, 20 percent of data or 1MB of data in 90 seconds). When IWSVA is configured to use the Scan feature before delivering the scanning option, some requested files will not be passed to the client until the scanning is completed. In this case, it is likely that the Internet application could detect a transmission failure because the client side does not receive enough data in time. Then, the client side will not be able to complete the video file or streaming file.

Deferred Scanning

When IWSVA is configured to use the **Deferred scanning** option, part of the file is passed to the requesting client while IWSVA scans the remainder of the file. The partial file remains in the client’s temporary directory until scanning concludes and the last byte of the file is delivered.

Instead of using a specified data size, IWSVA uses a percentage to define how much data is downloaded at a time. At most every two seconds, IWSVA sends a specified percentage of received data to the browser. The last chunk of data is not larger than 4KB and is sent to the browser before the scan is finished.

For the data download percentage, you can specify either 20, 40, 60, 80, or 100. The default percentage is 60. The actual percentage of data sent to the browser can be much smaller than the percentage specified.

Note: Large file handling does not work when using the Blue Coat Port 80 Security Appliance in ICAP mode. In addition, when using the Blue Coat security appliance in ICAP mode, when the client downloads a large virus-infected file, the client browser may not show the virus blocking notification page. Instead, the client browser will show “Page cannot be displayed.” If IWSVA is configured as an HTTP proxy in-line with the Blue Coat appliance, however, large file handling functions.

External data received by IWSVA is sent to the browser in smaller chunks without scanning. The last chunk is sent to the browser to complete the download only after the entire set of data is received and scanned. Sending smaller chunks not only maintains the IWSVA-Web browser connection, but also keeps end-users posted of the download progress.
Large file handling can be set for each policy (click HTTP > HTTP Malware Scan > Policies > policy and click the Virus Scan Rule tab).

**FIGURE 8-13.** For special handling of large files, there are two options to choose from: (1) scan before delivering and (2) deferred scanning

Disable large file scanning by choosing the **Do not scan files larger than** option to reduce performance issues when downloading very large files. This allows you control over their integrity.

**To disable scanning large files:**
- Under Large File Handling, select the **Do not scan files larger than** check box and then configure the file size over which files are not scanned. The default is 2048MB.
  - Trend Micro does not recommend disabling the scanning of any files, even large ones, because it introduces a security vulnerability into your network.

**To use large file handling for HTTP scanning:**
1. In the Large File Handling section, select **Enable special handling**, and then type the file size (in KB or MB) to be considered a large file. The default value is 512KB.
2. Select the type of large file-handling to use:
   - **Scan before delivering**: Shows progress while scanning, and then loads the page afterwards (default setting)
   - **Deferred scanning**: Loads part of the page while scanning; stops the connection if a virus is found
3. Click **Save**.
Important Notes for Large File Handling

• Violations of the large file handling policy display a user notification in the requesting client’s browser. See the example in Figure 8-14.

The file pl_100M.zip is downloading.
After the download is complete, the file will be scanned.
Navigating to another page will interrupt the download, which will then need to be restarted from the beginning.

Download Status

Transferred data bytes: 112397136
Scanning...>>>

HTTP/HTTPS Download File Blocked

Access to this web site content was blocked by the IT HTTP/HTTPS Scan Policy because violation of a compressed file restriction was detected from this URL.

Event Details:
URL: http://10.204.170.87/TESTDATA/virus/NonCleanable/pl_100M.zip
Action: deleted

Details:
- File: pl_100M.zip, security warning: Exceed_File_Count_Limit
  The file is deleted.

If you believe this file was blocked in error, please contact your IT staff to resolve this issue.

FIGURE 8-14. Notification after Completing Scanning and Downloading the File

• Large file special handling only applies to HTTP scanning, FTP scanning, and FTP over HTTP through the HTTP proxy. It does not apply to FTP over HTTP for ICAP traffic. Time-out issues may occur while downloading large files using FTP over HTTP.

• When using the deferred scanning method, IWSVA does not delete files subsequently found to be infected in the first affected client.
Quarantined File Handling

If you choose to quarantine files that IWSVA detects as malicious, you can optionally choose to encrypt the files before moving them to the quarantine folder by selecting the Encrypt quarantined files check box. This prevents the files from being inadvertently executed or opened. Note that encrypted files can only be decrypted by a Trend Micro Support engineer.

After configuring the HTTP virus scanning rules in the HTTP > HTTP Malware Scan > Policies > Add Policy / Edit Policy screen, click Next to move on to the spyware/grayware scanning rules.

Spyware and Grayware Scanning Rules

In addition to computer viruses, the IWSVA pattern files include signatures for many other potential risks. These additional risks are not viruses, because they do not replicate and spread. However, they can perform unwanted or unexpected actions, such as collecting and transmitting personal information without the user’s explicit knowledge, displaying pop-up windows, or changing the browser’s home page.

IWSVA can be configured to scan for the following additional risks:

- **Spyware**—Software that secretly collects and transmits information without the user’s explicit knowledge or consent
- **Dialers**—Software that secretly dials a telephone number, typically an international or pay-per call number, through the user’s modem.
- **Hacking tools**—Software that can be used for malicious hacking purposes.
- **Password cracking programs**—Software designed to defeat computer passwords and other authentication schemes.
- **Adware**—Software that monitors and collects information about a user’s browsing activities to display targeted advertisements in the user’s browser or through pop-up windows.
- **Joke programs**—Programs that mock computer users or generate some other sort of humorous display.
- **Remote access tools**—Programs designed to allow access to a computer, often without the user’s consent.
• **Others**—Files that do not fit into the other additional risks classifications. Some of these might be tools or commercial software that have legitimate purposes, in addition to having the potential for malicious actions.

**To scan for spyware, grayware, and other non-virus additional risks:**

1. Click **HTTP > HTTP Malware Scan > Policies > policy** and click the **Spyware/Grayware Rule** tab. Under **Scan for Additional Threats**, select the types of additional risks to be detected.

   To scan for all additional risks that have signatures in the pattern file, check **Select All**.

2. Click **Next** to configure the actions against security risks.

![Configuration Interface](image)

**FIGURE 8-15. Spyware, grayware and additional threat scan configuration**

**X-Forwarded-For HTTP Headers**

The X-Forwarded-For (XFF) HTTP header is a de facto standard for identifying the originating IP address of a client connecting to a Web server through an HTTP proxy or load balancer. X-Forwarded-For header is supported by most proxy servers.

- When IWSVA receives an HTTP request with XFF header, it parses the XFF header to get the original client IP address and use the IP address to do policy match.
- When IWSVA forwards an HTTP request, it takes the action configured by the administrator on XFF HTTP header. (See Table 8-6.)
Note: IWSVA does not support parsing XFF headers for HTTPS traffic.

### TABLE 8-6. Available actions for XFF HTTP headers

<table>
<thead>
<tr>
<th>ACTION</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Keep</td>
<td>(Default) IWSVA does not make any changes to the XFF HTTP header.</td>
</tr>
<tr>
<td>Append</td>
<td>IWSVA adds the IP address of last hop into the XFF HTTP header. If the XFF HTTP header does not exist, IWSVA creates one.</td>
</tr>
<tr>
<td>Strip</td>
<td>IWSVA removes the XFF HTTP header from the HTTP request and prevents the privacy information of client from leaking upstream.</td>
</tr>
</tbody>
</table>

See Table 8-7 to verify that your deployment scenario works with the XFF HTTP headers.

### TABLE 8-7. Deployment scenarios using X-Forwarded For HTTP headers

<table>
<thead>
<tr>
<th>DEPLOYMENT MODE</th>
<th>PARSES XFF</th>
<th>ACTION: KEEP</th>
<th>ACTION: ADD IP ADDRESS</th>
<th>ACTION: REMOVE</th>
<th>NOTES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Forward Proxy</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>Bridge</td>
<td>Yes</td>
<td>Yes</td>
<td>N/A</td>
<td>Yes</td>
<td>This mode is transparent and does not need to add and IP address in the header.</td>
</tr>
<tr>
<td>WCCP</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td></td>
</tr>
</tbody>
</table>
Configuring X-Forwarded-For HTTP Headers

In IWSVA, there are mainly two scenarios to configure:

- Enabling or disabling the parsing of XFF HTTP headers
- Configuring the action taken on the XFF HTTP header (if enabled.)

To configure the XFF HTTP header module settings:

1. Go the HTTP > Configuration > X-Forwarded-For Header.
2. Enable or disable parsing of the XFF HTTP.
   - To enable, select Enable from the drop-down list.
   - To disable, select Disable from the drop-down list.
3. If parsing is enabled, set the action to Keep (default) the X-Forwarded-For header intact, Append the IP address where the IWSVA receives the request, or Strip the X-Forwarded-For header. (See Table 8-6.)
4. Click Save.

### Table 8-7. Deployment scenarios using X-Forwarded For HTTP headers

<table>
<thead>
<tr>
<th>DEPLOYMENT MODE</th>
<th>PARSES XFF</th>
<th>ACTION: KEEP</th>
<th>ACTION: ADD IP ADDRESS</th>
<th>ACTION: REMOVE</th>
<th>NOTES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Simple Transparency</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>IWSVA acts as an ICAP server. It does not communicate with the client and server. The IP address is provided by the ICAP client with an X-Client-IP header</td>
</tr>
<tr>
<td>ICAP</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>XFF HTTP headers are not supported in this mode.</td>
</tr>
<tr>
<td>Reverse Proxy</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td></td>
</tr>
</tbody>
</table>
Specifying the Exception Lists

The following describes the type of exception list you can apply to a policy:

- **URL exception list**—contains a list of Web site URLs that you want to exempt from a URL filtering policy, HTTPS decryption policy, Applet/ActiveX security policy, or the WRS rule and file type blocking in an HTTP scanning policy.

- **File name exception list**—files that you want to exempt from file type blocking.

In addition, you can configure IWSVA to bypass virus/spyware scanning and compressed file handling action on an approved list. This could cause security holes when this approved Web site has been hacked to inject malicious code into the Web site. IWSVA addresses this issue by enabling the virus/spyware scan feature as the default. As such, the Web page is always scanned even when a security policy determines that the Web site is within its approved list.

You can apply an exception list in the Policy Exception screen. For HTTP and FTP scanning policies, you can also apply a filename exception list. You can create new exception lists in the Approved Lists screen (see Creating Exception Lists on page 8-61 for more information).

The following describes the options in the Policy Exception screen:

- **Approved URL list**—Select the name of the approved URL list to be exempted from a URL filtering policy, HTTPS decryption policy, Applet/ActiveX security policy, or the WRS rule and file type blocking in an HTTP scanning policy.

- **Approved file name list**—Select a file name list to be exempted from file type blocking. You can apply a file name exception list to an HTTP scanning policy or an FTP scanning policy. This option is not available for Applets and ActiveX policies and URL filtering policies.

- **Do not scan the contents of selected approved lists**—Select this option if you do not want to scan the contents of the URLs or files in the approved lists for viruses. Compressed file handling is not available when this option is selected.
Configuring HTTP Scanning

8-61

FIGURE 8-16. Configuring policy exceptions

Creating Exception Lists

You can create a new URL and file name exception list in the Approved Lists screen.

To configure a URL exception list:

1. Select HTTP > Configuration > Approved Lists from the main menu and click the URL Lists tab.
2. Click Add and specify a name, the match type or, if preferred, import the URL exception list.
   - List Name—Type a brief but descriptive name for the approved list.
   - Match—Type a Web site, a keyword or phrase, or a string of characters in the field. This field supports both the ? and * wildcards. Entries in this field are added one-by-one to the Approved List.
3. Select the option that corresponds to what you typed in the Match field:
   - **Web site**—Limits the search to the string as a whole; used with one or more wildcards, this type of exemption rule can be especially useful for allowing access to an entire Web site. There is no need to include http:// or https:// in the URL (it is automatically stripped).
   - **URL keyword**—Looks for any occurrence of the letters and/or numbers within a URL, and will match regardless of where the string is found (the string “partner” would be considered a match for “http://www.playboy.com/partner.htm” and the URL exempted). Using wildcards in this field greatly increases the chance of false positives and unexpected results.
   - **String**—Limits the search to the string as a whole; for example to target a specific site, page, file, or other particular item.

**Note:**
- For HTTPS decryption policies, the strings to match vary depending on whether you set IWSVA in the proxy or transparency modes.
- In the proxy mode, IWSVA matches the domain names, not the full URL. Thus, you only need to specify the domain names.
- In the transparency mode (WCCP or bridge mode), IWSVA matches the CommonName in the server certificates received.
- For HTTPS standard ports, IWSVA matches the CommonName.
- For HTTPS non-standard ports, IWSVA matches CommonName:Port.

- **Import approved list**—You can import an existing list of URLs that you want exempt from virus scanning or filtering (done by the URL Filtering module). For example if you have a list of URLs from the Trend Micro WebManager, or URLs you have compiled using a text editor, you can import the list rather than enter them one-by-one. Import lists must conform to a defined standard. See **Approved List Formats** on page 8-63.

4. Click Save.
To configure a file name exception list:

1. Select HTTP > Configuration > Approved Lists from the main menu and click the File Name Lists tab.
2. Click Add or Edit and specify the match type or import the exception list.
   • List Name—Type a brief but descriptive name for the approved list.
   • Match—Enter a file name with the file extension or a file extension in the field. This field supports the * wildcard. Entries in this field are added one-by-one to the Approved List.
   • Import approved list—You can import an existing list of file names that you want exempt from virus scanning. For example if you have a list of file names from Trend Micro’s Web site, or file names that you have compiled using a text editor, you can import the list rather than enter them one-by-one. Import lists must conform to a defined standard. See Approved List Formats on page 8-63.
3. Click Save.

Approved List Formats

IWSVA supports two types of approved lists: URL and file name. The list formats for each type is described below.

Note: Approved lists using the [approved] format cannot be imported. Blocked and allowed lists using the [blocked] and [allowed] formats can be imported.

Approved URL List Format

An approved URL list can be any ASCII text file containing the header:

[approved]

There is no limit to the number of URLs you can include in an approved list. Delimit separate Web addresses, URLs, and/or strings using a line break. Approved-lists support the following * and ? wildcards.

Sample file:

[approved]

www.good-job-habits.com/*
www.business-productivity.com/*
File Name List Format

A file name approved List can be any ASCII text file containing the header:

[approved]

There is no limit to the number of file names you can include in an approved list. Delimit separate file names and/or strings using a line break. Approved-lists support the * wildcard.

Sample file:

[approved]
abcfile.doc
*.sc

Setting the Scan Action for Viruses

After configuring the HTTP virus scanning rules, configure the actions that IWSVA takes if an infected file, uncleanable file, password-protected or macro-containing file is detected.

Scan Actions

There are four actions that IWSVA can take in response to the outcome of virus scanning:

• Choose **Delete** to delete an infected file at the server. The requesting client will not receive the file. This action can be applied to the *Infected files*, *Uncleanable files*, and *Password-protected files* scan events.

• Choose **Quarantine** to move a file (without cleaning) to the quarantine directory.

  /var/iwss/quarantine

  The requesting client will not receive the file. This scan action can be applied to all four of the scan events. You can optionally choose to encrypt files before sending them to the quarantine directory. For more information, see **Quarantined File Handling starting on page 8-56**.
• Choose **Clean** to have IWSVA automatically clean and process infected files. The requesting client receives the cleaned file if it is cleanable, otherwise the uncleanable action is taken. This action can be applied to the *Infected files* and *Macros* scan events. For macro-containing files, the Clean action strips the macro from the file, whether the macro is a virus or benign, to protect your network before an updated virus pattern is released and deployed.

• Choose **Pass** to send the file to the requesting user. This action can be applied to the *Uncleanable files*, *Password-protected files*, and *Macros* events. The Pass action should always be used for Macros events, unless you want to strip or quarantine all macro-containing files during a virus outbreak.

**Note:** Trend Micro does not recommend choosing the **Pass** scan action for uncleanable files.

---

**Scan Events**

After scanning, you can configure actions for the four possible scanning outcomes:

• **Infected files**—Files determined to be infected with a virus or other malicious code. Available actions are **Delete**, **Quarantine** or **Clean** (recommended and default action).

• **Uncleanable files**—Depending on the type of virus or malicious code infecting a file, the scan engine might not be able to clean some files. Available actions are **Delete** (recommended and default action), **Quarantine**, and **Pass**.

• **Password-protected files**—Files that cannot be scanned because they are either password-protected or encrypted. The infection status of these types of files cannot be determined. Available actions are **Delete**, **Quarantine**, and **Pass** (recommended and default action).

• **Macros**—Microsoft Office files that contain macro program code. Because many of the fastest spreading viruses are macro viruses, you can quarantine all macro-containing files during the early stages of a virus outbreak to block all files before the new virus pattern is added to the pattern file and deployed to your environment. Available actions are **Quarantine**, **Clean**, and **Pass**. Unless there is a need to quarantine or strip macros during a virus outbreak before an updated pattern file is released, the action for Macro should always be set to **Pass**.
Adding Notes to Your Policy

To record notes about your policy, type them into the **Note** field at the bottom after configuring the actions taken against files detected by IWSVA.

When you have completed configuring the scan actions to apply to your policy, click **Save**. Click **Deploy Policies** to immediately apply the policy; otherwise, the policy is applied after the database cache expires.

Java Applet and ActiveX Security

IWSVA Applets and ActiveX scanning blocks malicious Java applets and unsecured ActiveX controls at the Internet gateway, preventing them from infiltrating your network and performing malicious acts on client workstations.

IWSVA employs a tiered technology approach that operates on both the Internet gateway server and on desktops.
• On the server, IWSVA prefilters Java applets and ActiveX controls based on whether they are digitally signed, the validity of the signature, and the status of the certificates used to do the signing.

• On client workstations, IWSVA code, inserted into Java applets, monitors the behavior of the applets in real time and determines whether their behavior is malicious according to a pre-configured security policy.

*Figure 8-18* illustrates how IWSVA scans and blocks malicious applets and ActiveX objects.

---

**How Applets and ActiveX Security Works**

As applets and ActiveX objects pass through the gateway, the validity of their digital signatures are checked. In addition, IWSVA monitors applets in real-time on the client workstations and issues an alert if any prohibited operations are attempted.

**Step 1. Filtering Applets & ActiveX at the Server**

As Java applets and ActiveX controls are downloaded to the proxy server, IWSVA filters them according to the following criteria:
For ActiveX Objects

If ActiveX security is enabled, IWSVA checks the signatures of CAB files and executable COM objects (of which ActiveX controls are a type) that are digitally signed. It then examines the digital certificates contained in the signature and compare them with those in the IWSVA-specific certificate database. ActiveX objects not signed, invalidly signed, or signed using an unknown root Certification Authority (CA) certificate can be blocked. In their place, the system creates a new HTML page containing a warning message. This new page is then delivered to client workstations.

![Diagram of ActiveX security process]

**FIGURE 8-19. How ActiveX Security Works**

For Java Applets

IWSVA filters Java applets based on whether they are digitally signed, the validity of the signature, and the status of the certificates used to do the signing.

If signature verification is enabled, IWSVA verifies the signatures of digitally signed applets. Those not signed, signed using an unknown or inactive root Certification Authority (CA) certificate, signed using a flagged certificate, or invalidly signed can be blocked. They are then replaced with a new applet that displays a warning message. If certificate checking is disabled, the system accepts all Java applets regardless of the certificates they carry.

IWSVA keeps a database of recognized certificates, which is used in the filtering process. This database is automatically updated to include any unrecognized certificate the system encounters. You can delete entries from the database and enable or disable entries on the **HTTP > Applets and ActiveX > Manage Digital Certificates** screen (see Managing Digital Certificates starting on page 8-81).
For Java Applets, IWSVA first performs Steps 2 and 3 below before sending the applets to the clients.

**Step 2. Instrumenting Applets**

IWSVA analyzes the applet code to determine any potentially dangerous actions that it might perform. It then adds instrumentation code (that is, instructions that notify the user of certain programming operations) to monitor and control these actions.

During instrumentation, IWSVA inserts monitoring code around suspicious instructions and then attaches the security policy assigned to the intended recipients. Depending on how IWSVA is configured, this security policy might vary from one client to another, based on the domain they belong to or their IP addresses. IWSVA supports creating multiple policies that can be mapped to different groups of users in your network. IWSVA uses the inserted monitoring codes and the attached security policy to monitor the applet's behavior in real-time and to determine whether or not this behavior is malicious.

**Note:** The process of instrumenting a signed applet renders the signature invalid. Therefore, the signature is stripped, leaving it unsigned. IWSVA can optionally re-sign the applet if required by the client browser.

**Step 3. Optionally Re-signing Instrumented Applets**

If configured to do so, IWSVA re-signs the instrumented applets using an imported “private key” before sending them to client workstations. Because applets lose their original signatures during the instrumentation process (due to modifications to their original code), you might want to use this feature to ensure that the clients’ Web browsers run the instrumented applets with the permissions they might require to run correctly.

IWSVA supports the import of a “private key”, along with the associated certificate that contains the corresponding “public key,” for use in the re-signing process. You can purchase this key from any of the well-known Certifying Authorities (CAs). Only one re-signing key may be configured for use at any given time.
Note: Re-signing applies only to validly signed applets. If the system is configured to accept unsigned applets, these applets bypass this process and are delivered to client workstations immediately after instrumentation.

Step 4. Monitoring Instrumented Applet Behavior

When the applet executes in the browser, the instrumentation is automatically invoked before any potentially dangerous operation is performed. The instrumentation determines whether an action is permitted by comparing it with the attached security policy. If the action is permitted, IWSVA then allows the action to take place; otherwise, IWSVA notifies the users and gives them the option to allow the behavior, terminate the behavior, or stop the applet.

Enabling Applet/ActiveX Security

To start scanning your HTTP traffic for malicious applets and ActiveX objects, enable this scanning from the Applets and ActiveX policy page.

To enable malicious Applets and ActiveX scanning in HTTP traffic:

1. Select HTTP > Applets and ActiveX > Policies from the main menu.
2. Check Enable Applet/ActiveX security.
3. Click Save.

Adding and Modifying Applet/ActiveX Scanning Policies

The first step when configuring a new policy is to set the client accounts to which the policy applies. See Configuring the Scope of a Policy starting on page 7-22 for more information and procedures for setting a policy’s scope using the three different user identification methods.

All configured policies are listed on the Applets and ActiveX Policies screen available from HTTP > Applets and ActiveX > Policies.
To modify the scope of a policy:

1. Open the Applets and ActiveX Policy screen (HTTP > Applets and ActiveX > Policies from the main menu).
2. Do one of the following:
   • To remove accounts from a policy’s scope, select the users, click Delete and then Save.
   • To add accounts to a policy’s scope, click the Policy Name, switch to the Account tab, add or delete the accounts to which the policy applies, and click Save.
3. Click Deploy Policies. Changes to a policy’s scope do not take effect until the modified policies are deployed.

After configuring the scope of your policies, configure the applet and ActiveX scanning rules.

Configuring Java Applet Security Rules

On the HTTP > Applets and ActiveX > Policies screen, add a new policy or select an existing policy. On the Java Applets Security Rules tab, IWSVA can be configured to either block all applets, or to accept and process applets using the security settings you specify.

Signature Status

A digital signature is a way to verify the genuine publisher of an applet. It also allows you to verify that the applet has not been tampered with or otherwise changed because it was published. After analyzing the applet’s signature, IWSVA makes one of the following determinations:

• Valid signature
• No signature: The applet is unsigned.
• Invalid signature: The applet’s signature is corrupt or cannot be verified for some reason; for example, no trusted root certificate is found

Checking the signature of an applet is done in two steps. The first verifies the integrity of the applet code against data in the signature. The second verifies the integrity of the certificates, the “certificate chain,” used to create the signature. For the signature to be
considered valid, the certificate chain must end with a trusted certificate recognized by IWSVA. The set of these certificates can be viewed and managed by opening the Web console to HTTP > Configuration > Digital Certificates > Active Certificates.

Certificate Status
Java applet security rules can apply different actions to applets that have valid signatures, based on their certificate status.

By default, IWSVA trusts its active certificates. However, an active certificate can be “flagged” if you no longer want to trust applets that have a flagged certificate in their certificate chain. Flagged certificates continue to be listed as active certificates, though the flagged status is noted.

Instrumentation and Re-signing
Instrumentation is the process through which IWSVA adds monitoring and control code to the applet. Because the instrumentation process breaks the applet's signature, if any, you can alternatively choose to re-sign an applet after instrumentation. This ensures the instrumented applets executes in the browser and perform operations as expected.

Applet Instrumentation Settings
The purpose of instrumenting applets is to prevent applets from executing prohibited operations on client machines. By default, Java applets processed by IWSVA are not allowed to perform the following types of operations:

- **Destructive operations**: Deleting and renaming files
- **Non-destructive operations**: Listing files in a directory or retrieving file attribute information
- **Write**: Writing new or modifying existing files
- **Read**: Reading file contents

Configuring Exceptions
For each of the types of operations that can be selectively allowed or prohibited, you can configure file or folder exceptions where the security policies do not apply.
• To allow a given type of file operation, except when performed by a subset of files, check the Enable button next to the file operation. Click the Exceptions link. The Exceptions to File Operations screen opens. Configure the files and folders where the operation is not allowed.

• To disallow a given type of file operation, except for a subset of files, check the Disable button next to the file operation. Click the Exceptions link and then configure the files and folders where the operation is allowed.

To configure Java applet processing settings:

1. After setting the scope of your policy, do one of the following:
   • Select Process Java applets using the following settings for IWSVA to pass, block or instrument the applet based on its signature and certificate status.
   • Select Block all Java applets for IWSVA to not allow any applets to pass to the clients. If you choose this setting, proceed to step Step 3.

2. For each of the following signature and certificate status, choose the processing action to use (* denotes the default Trend Micro-recommended settings):
   • Valid signature, trusted certificate: Pass*, Instrument applet (re-sign), Instrument applet (strip signature), Block
   • Valid signature, flagged certificate: Pass, Instrument applet (re-sign), Instrument applet (strip signature), Block*
   • No signature: Pass, Instrument Applet*, Block
   • Invalid signature: Pass, Instrument Applet (strip signature), Block*

3. For each of the four (destructive, non-destructive, write or read) operations that can be selectively enabled or disabled, click Enable or Disable to configure your security policy.

4. Click Exceptions, and then configure the files or folders that are exceptions to the security policy:
   a. Enter the Directory/File Path of the files that do not apply to the configured security policy.
      • To configure a specific file path, select Exact file path.
      • To exclude the entire folder’s contents from the security rule, select Include all files in this directory.
      • To exclude all of the folder’s files, plus those in subdirectories, from the security rule, select Include files in this and all subdirectories.
b. Click **Add** to add the exceptions to the given security policy.

c. Configure other files or directories to exempt from the applet's security settings.

d. When you’ve completed configuring your file and folder exceptions, click **Save**.

---

**Note:** All file paths are those on the client machine, where the applet runs. The file path format should be in the form required by the operating system running on the client.

---

5. On the **Java Applet Security Rules** tab, select **Bind local ports** to allow applets to bind to ports on the client workstation.

6. To allow applets to connect to their originating servers, select **Connect to their originating servers**.

7. To allow applets to connect to hosts other than the ones they originated from, select **Enable** or **Disable** next to **Host connections**, then configure exceptions to the security policy.

   a. Enter the **Host** that does not apply to the configured security policy.

   b. Click **Add** to add the exceptions to the given security policy.
c. Add other host that do not apply to the security policy.

d. When you’ve completed configuring the hosts that are exceptions to the policy’s security rules, click Save.

![List of Hosts](image)

**FIGURE 8-21. Exceptions to the Java applet host connection rules**

8. Select **Create new thread groups** to allow applets to create new thread groups. To disallow this operation, clear it.

9. Select **Create unlimited active threads** to have IWSVA ignore thread activity from applets downloaded to clients on the LAN and specify a limit to restrict the number of threads applets can create at one time. To disallow this operation, clear it.

10. Select **Create unlimited active windows** to limit the number of active top-level windows applets can open. Enter the number of allowable windows in the provided text box. Clearing this option gives applets the freedom to open as many windows as they want—just like some malicious Java applets do to annoy users.

11. Enter any optional **Note** for future reference about this policy.

12. Click **Next** to continue with configure ActiveX security rules if you are configuring a new Applets and ActiveX policy. If you are modifying an existing policy, click **Save**.

13. Click **Deploy Policies** to immediately apply the policy; otherwise, the policy is applied after the database cache expires.

14. Enter any notes to save pertinent information about this policy, and then click **Save**.
Configuring ActiveX Security Rules

ActiveX security rules can be applied to the two different types of ActiveX controls:

- **Executable cabinet files** (*.cab): An ActiveX control distributed using the Windows native compressed archive format.
- **Portable executable (PE) files** (*.exe, *.ocx, and so on): An executable file format that has “portability” across all 32-bit and 64-bit versions of Windows.

For each of these two file types, you can configure security policies to:

- Block all ActiveX controls of that type
- Allow all ActiveX controls of that type
- Verify signatures, and alternatively block invalidly signed or unsigned files

Enter any notes about this policy and then click **Save**.

Applying Applet and ActiveX Policy Exceptions

There may be URLs or Web sites that you want exempt from an Applet and ActiveX policy (for example, the corporate intranet, business partner sites, and research tool sites).

In the **Exceptions** tab, select the name of the approved URL list to be exempted from the **Approved URL List** field.

You can create exception lists in the **HTTP > Configuration > Approved Lists** page (see **Specifying the Exception Lists** on page 8-60 for more information).

Applet and ActiveX Settings

Applet and ActiveX security policies determine certificate and signature status as configured on the **Applet and ActiveX Settings** page. For example, IWSVA can either attempt to validate signatures, strip the signatures and process all applets as being unsigned, or check the certificate’s revocation status. In addition, IWSVA can re-sign applets after instrumentation.

To validate the signature of an ActiveX control, IWSVA can check the expiration of the signing certificate, check all certificates in the signing chain (exclusive of the signing certificate) and check the revocation status of the certificate (where a revocation information source is available for a certificate).
To configure how IWSVA validates Java applet and ActiveX signatures:

1. Click HTTP > Applets and ActiveX > Settings from the main menu.
2. Complete the settings on the Java Applets and ActiveX Executables tabs.
3. Click Save.

Java Applet Signature Validation

When IWSVA processes signed applets, it can handle digital signatures in one of two ways:

- Strip signatures and treat all incoming applets as unsigned applets, a restrictive security setting that treats all applets, signed or unsigned, in the same manner. In a normal client browser environment, the unsigned applet does not have access to the client system’s resources, but it can still produce annoying behavior such as opening many windows.
- Perform full signature validation on the applets.

Adding Certificates for Applet Signature Verification

Java applet signatures are verified using root certificates installed. To see the list of root certificates, select HTTP > Configuration > Digital Certificates from the main menu. ActiveX signatures are verified against the root certificates in the IWSVA device’s Windows certificate store.

If your environment requires running applets signed with root certificates that are not installed along with IWSVA, then add them to the IWSVA digital certificate store.

To add a certificate to the IWSVA certificate store:

1. Click HTTP > Configuration > Digital Certificates from the main menu.
2. On the Active Certificates tab, click Add, select the certificate, and then click Add.
3. Return to the Active Certificates screen and verify that the added certificate appears on the list.
Certificate Expiration

IWSVA can be configured to:

- Check that the certificate used to sign the applet has not expired
- Check that the certificates in the certification path are all valid

Untrusted Signature Status

If IWSVA is unable to determine whether the certificate should be trusted because of its certification path, then the applet's signature status can be set to:

- Unsigned (which means the signature is stripped), or
- Invalid

Revocation Status

Digital certificates can be revoked by their issuer. IWSVA can check whether a certificate has been revoked when a status source is available.

If IWSVA cannot access the defined status source, you can configure IWSVA to set the status of the certificate to Valid, Unsigned (Strip signature), or Invalid.

Applet Re-signing

IWSVA can re-sign instrumented applets with your company’s own “private key” before they are sent to client workstations. Because applets lose their original certificates during instrumentation, you might want to re-sign them to ensure that clients’ Web browsers always accept the applets without any restrictions.

To use the re-signing feature, you need two keys: 1) a “private key” that must be imported into IWSVA, and 2) a certificate containing the “public key” equivalent to your “private key” that must be imported into your clients’ Web browsers. The certificate enables the browsers to recognize the signature you affix to instrumented applets. Without this certificate, these applets are treated as another unsigned applet—either blocked by the browser or given limited access to system resources.

IWSVA supports the PKCS12 key format. If you do not have a key yet, you can purchase one from any of the well-known Certificate Authorities (CAs).
To re-sign applets after instrumentation:

1. On the Java Applets tab of the Applet and ActiveX Settings page (HTTP > Applets and ActiveX Settings), check Re-sign the applets with the following certificate.
2. Type the path or click Browse to navigate to the certificate to use for re-signing.
3. Enter the certificate's Password.
4. Click Add.
5. Click Save.

ActiveX Signature Validation

To verify whether an ActiveX control is validly signed, IWSVA can check the control's certificate in several ways—for both a Cab file and PE file. This validation includes checking the expiration of the signing certificate, the expiration of all certificates in the signing chain, or by checking the revocation status of the certificate (when a status source is defined).

To configure how IWSVA checks the signature status of a signed ActiveX control:

1. Select HTTP > Applets and ActiveX > Settings from the main menu, and click the ActiveX Executables tab.
2. Enable the types of signature checking to use for ActiveX controls:
   • Verify that the signing certificate has not expired
   • Check that all of the certificates in the certifying path have not expired
   • When the certificate’s issuer is defined, verify whether the certificate has been revoked by the issuer
   • Signature timestamps can be checked. If set, a signature with an expired certificate is considered valid if it has a valid timestamp counter-signature.

   If IWSVA is unable to access the certificate's issuer, then the status of the signature can be set to either Valid or Invalid.
3. Click Save.
Client-side Applet Security Notifications

There are several alert messages that might be displayed in the client's browser in response to IWSVA Java applet security policies.

If an applet is blocked due to its signature or certificate status, the requesting client is presented with a message showing the policy that blocked the applet, along with the reason:

**FIGURE 8-22. Blocked applet notification**

If an instrumented applet attempts to perform an operation that is not allowed by a policy's configuration, a notification displays the disallowed operation and the user is prompted on how to proceed. Available options are:

- **Allow**: The instrumented applet continues to run, including the operations not allowed by the policy.
- **Disallow**: The operation that triggered the Applet security policy is stopped, but the instrumented applet continues to run.
• **Stop Applet**: The instrumented applet is terminated.

![Applet Security Violation Notification](image)

**FIGURE 8-23. Applet Security Violation Notification**

If the client chooses **Stop Applet**, another notification is displayed to indicate that the applet has terminated.

![Applet Execution Termination Notification](image)

**FIGURE 8-24. Applet Execution Termination Notification**

**Managing Digital Certificates**

For IWSVA to determine that a Web server’s or an applet’s signature is trusted, the root Certification Authority (CA) certificate on which the signature is based must be added to the IWSVA certificate store.

There are three types of digital certificates that are involved in producing a digital signature:

• The “end” or “signing” certificate, which contains the public key to be used to validate the actual applet signature
• One or more “intermediate” Certification Authority (CA) certificates, which contain the public keys to validate the signing certificate or another intermediate certificate in the chain
• The “root” CA certificate, which contains the public key used to validate the first intermediate CA certificate in the chain (or, rarely, the signing certificate directly). An otherwise valid signature is “trusted” by IWSVA if the CA certificate of the signature is known to IWSVA, is active, and is not flagged.

If IWSVA encounters an unknown certificate during SSL handshake or applet signature processing, it saves the certificate in the “inactive” list, along with the URL of the Web site or applet that contained the signature. All types of certificates are collected in this way (signing, intermediate, and root). If required later, a CA certificate collected this way can be “activated” (made trusted by IWSVA) so that the signatures of applets that depend on it can be processed as valid. Intermediate CA and end certificates might be activated, but this only has an effect if the root certificate is also activated. In other words, activating an intermediate CA or signing certificate does not make them trusted (only CA certificates can be made trusted), but any certificate might be flagged.

To manage the certificates in the IWSVA certificate store, you can perform the following operations:
• **Delete a certificate:** Removes the selected certificate(s) from the certificate store.
• **De-activate a certificate:** Keep the certificate in the IWSVA certificate store, but do not trust certificates that use it in their certification path.
• **Activate a certificate:** Make a CA certificate trusted.
• **Flag the certificate:** Flag all signatures that use the certificate in its certification path.
• **Clear flagged certificate:** Re-instate the trusted status of a certificate that was previously flagged, so that certificates that use the certificate in their certification path is trusted.

**To view existing certificates:**

1. Select **HTTP > Configuration > Digital Certificates** from the main menu.
2. Switch between the **Active Certificates** and **Inactive Certificates** tabs to see which certificates are already known to IWSVA.
To add a trusted certificate:
1. Select HTTP > Configuration > Digital Certificates from the main menu.
2. Ensure the Active Certificates tab is active.
3. Click Add.
   The Add Certificates screen opens.
4. Type the path or click Browse to navigate to the certificate to add and click Add.

   **Note:** Certificates are commonly contained in files with the extensions .cer, .der, .crt. Also, only active CA certificates are considered trusted, but any active certificate might be flagged.

The screen returns to the Active Certificates tab. The certificate that you added should be visible, along with the type of certificate and its expiration date.

To delete a certificate:
1. Select HTTP > Configuration > Digital Certificates from the main menu.
2. Select the certificate(s) to delete.
3. Click Delete.

To de-activate a trusted certificate:
1. Select HTTP > Configuration > Digital Certificates from the main menu.
2. Make sure the Active Certificates tab is active.
3. Check the certificate(s) to de-activate.
4. Click De-activate.
5. The certificate(s) that you selected moves to the Inactive Certificates tab.

To activate a certificate:
1. Select HTTP > Configuration > Digital Certificates from the main menu.
2. Make sure the Inactive Certificates tab is active.
3. Select the certificate(s) to activate.
4. Click Activate.
5. The certificate(s) that you selected moves to the Active Certificates tab.
To flag a certificate:
1. Select HTTP > Configuration > Digital Certificates from the main menu.
2. Make sure the Active Certificates tab is active.
3. Select the certificate(s) to flag.
4. Click Flag Certificate.
5. The flagged certificate(s) remains visible on the Active Certificates tab, with a red flag in the status column.

To remove a certificate from being flagged:
1. Select HTTP > Configuration > Digital Certificates from the main menu.
2. Make sure the Active Certificates tab is active.
3. Select the flagged certificate(s) to be cleared (certificates with flagged status have a red flag in the Status column).
4. Click Clear Flagged Certificate.
5. The flagged certificate(s) remains visible on the Active Certificates tab, without a red flag in the Status column.
Access Quotas and URL Access Control

Access quotas limit a client’s bandwidth consumption to a fixed amount per unit of time. URL trusting can improve browsing performance by exempting trusted URLs from scanning and other InterScan Web Security Virtual Appliance (IWSVA) operations. URL blocking refuses requests to URLs that you specify or whose patterns are contained in the Phish pattern file.

Topics in this chapter include:

- Introduction to Access Quota Policies on page 9-2
- Overview of URL Access Control on page 9-4
- Specifying URL Access Control on page 9-5
Introduction to Access Quota Policies

The InterScan Web Security Virtual Appliance access quota Guest Policy limits the HTTP bandwidth used by clients who access the Internet through the InterScan Web Security Virtual Appliance guest port. A policy for other clients can also be defined (there is no access quota Global Policy). If no policy matches the connection, then the client has unlimited access. After modifying access quota policies and saving the policies to the database, the InterScan Web Security Virtual Appliance service in a multiple server configuration environment reloads the policies according to the time-to-live (TTL) value configured in the HTTP Configuration screen (Administration > IWSVA Configuration > Policy Deployment.)

If the quota is exceeded while making a download, the download is allowed to continue. However, succeeding downloads/browsing requests (before the access quota interval expires) are refused. Users are allowed access again after the access quota interval expires.

**Note:** For a group quota policy, the quota is for each client within the policy's scope, and all clients in the same policy have the same quota.

Managing Access Quota Policies

The clients within the scope of an access quota policy, the bandwidth quota and the time interval for the quota's duration are configurable.

**To add an access quota policy:**

1. Click HTTP > Access Quota Policies from the main menu.
2. Select Enable access quota control.
3. From the drop-down menu, select the access quota interval—either Daily, Weekly, or Monthly.
   The value for the access quota interval is globally applied to all access quota policies, including all existing policies.
4. Click Save.
5. Click Add.
6. Select Enable policy and enter the access quota.
7. Select the users to which the policy applies.
   The options on this page depend upon the user identification method that you are using—either IP address, Host name (modified HTTP headers), or User/group name authentication. These settings are configured in the Administration > IWSVA Configuration > User Identification tab. For more information about configuring the user identification method and defining the scope of a policy, see Configuring the User Identification Method starting on page 7-5.

   Regardless of the user identification method you have configured, you can always enter IP addresses of the clients to which the policy applies.

8. Type some optional notes to record any special information about the policy.

9. Click Save.

10. When returned to the Access Quota Policies page, click Deploy Policies to immediately apply the policy; otherwise, the policy is applied after the database cache expires.

   There might be occasions when you want to temporarily deactivate a policy, without deleting the settings from the database.

   **To deactivate a policy:**

   1. Click HTTP > Access Quota Policies from the main menu.
   2. From the Access Quota Policies screen, click the linked item in either the Account or Access quota column to go to the Edit Policy screen.
   3. Clear Enable policy at the top of the screen and then click Save.

      Disabling the policy does not take effect until the policy cache refreshes, or you click Deploy Policies.

   If you no longer have any need for a policy (for example, if the employee using the client leaves your organization), you can either delete the whole policy or users within the policy's scope from the InterScan Web Security Virtual Appliance database.

   **To delete a policy:**

   1. Click HTTP > Access Quota Policies from the main menu.
   2. From the Access Quota Policies screen, select the policy and then click Delete.

      Deleting the policy does not take effect until the policy cache refreshes, or you click Deploy Policies.
Overview of URL Access Control

IWSVA can control a URL's access based on Web Reputation feedback, the URL Filtering module, or a combination of both. The combination of Web Reputation and the URL Filtering module is a multi-layered, multi-threat protection solution provided by IWSVA.

The URL Filtering module grants or denies Web access based on the category to which a URL belongs. Web Reputation grants or denies Web access based on whether the requested URL is a phishing or pharming threat that has hacking potential, or has a reputation score that deems it untrustworthy. Both the URL Filtering module and Web Reputation are controlled by the specifications you make in policies.

When a user attempts to access a Web site, the following events occur:

- IWSVA checks the requested URL against the URL blocking list and trusted URL list (see Overview of URL Access Control on page 9-4).
  - If the URL is found on the URL blocking list, the request is denied. If the URL is found on the URL trusted list, access is granted and no form of access control is done.
  - If the URL is not on the blocked or trusted list, IWSVA sends the requested URL to Web Reputation for processing.
  - From a remote database, Web Reputation retrieves the appropriate URL rating for the URL.
    The rating can either be “high,” “medium,” or “low.” The sensitivity level you specify determines whether or not IWSVA blocks the URL (see Specifying Web Reputation Rules on page 8-36).
    If the URL is found on an approved list, IWSVA skips the anti-phishing and anti-pharming detection for this URL (see Specifying the Exception Lists on page 8-60).
    - Web Reputation then determines if the requested URL is a phishing or pharming threat and if so, flags the URL accordingly (see Anti-phishing and Anti-pharming Detection on page 8-36).
    - The final process of Web Reputation is to determine the category of the URL (see URL Filtering Category Mapping on page G-1).
      The category information is used later by the URL Filtering module.
Access Quotas and URL Access Control

- Web Reputation returns the URL rating to IWSVA, any phishing or pharming flags, and the URL category.
- If a URL is flagged for phishing or pharming, IWSVA blocks access to the Web site.
- Next, if you are using the URL Filtering module, this module uses the Web category information for the requested URL to determine if access is permissible.
  
  If the URL is found on the approved URL list, the URL bypasses the category filtering and proceeds to the final step in URL access control (see Work and Leisure Schedule Settings on page 10-12).
  
  If the category of the requested URL is permitted in the URL Filtering policy, then the URL is passed on to the final step; otherwise, the URL is blocked.
- Finally, based on the Web Reputation URL rating, IWSVA determines whether the requested URL is below or above the sensitivity level specified in the scan policy.
  
  If the URL is found on an approved list, IWSVA skips the sensitivity level checking for this URL (see Specifying the Exception Lists on page 8-60).
  
  If the rating falls below the sensitivity level, the requested URL is blocked. However, if the rating is above the sensitivity level, IWSVA grants access.

Specifying URL Access Control

InterScan Web Security Virtual Appliance can optionally “trust” some URLs and exempt them from scanning and filtering to improve browsing performance to low risk sites. It can also block access to sites using a user-configured list, or by checking requested sites against the Phish pattern file, a compilation of sites associated with “phishing” schemes or other malicious acts.

Configuring Trusted URLs

InterScan Web Security Virtual Appliance can be configured to trust some URLs and exempt them from scanning and filtering. Because this opens a security risk by allowing unchecked content into your network, configuring a URL as “trusted” must be considered carefully. Because trusted URLs are not scanned, browsing performance is improved. Good candidates for trusting are Web sites that are frequently accessed and contain content you can control (for example, your company's intranet sites).
Trusted URL information is kept in the `[URL-trusting]`, `normalLists` section of the `intscan.ini` configuration file.

When configuring trusted URLs, you can specify the sites using the following:

- The Web site, which includes any sub-sites
- Exact-match strings within a requested URL

You can apply exceptions to sites that would otherwise match the criteria for the trusted URL list, so InterScan Web Security Virtual Appliance scans or filters them as usual.

A list of trusted URLs and their exceptions can also be imported from a file, in addition to configuring them through the user interface. Write a comment or title (which InterScan Web Security Virtual Appliance ignores) at the top of a file that contains a list of Web sites, URL keywords, or strings, and then write one rule per line. Group sites to be blocked under `[block]` as shown in the following example, and group exceptions under `[allow]`:

```
URL Blocking Import File (this title is ignored)

[block]
www.blockedsite.com*
unwanted.com*
urlkeyword
banned.com/file
banned.com/downloads/

[allow]
www.blockedsite.com/file
www.unwanted.com/subsite/
www.trendmicro.com*
```

**Note:** For HTTPS decryption policies, the strings to match vary depending on whether you set IWSVA in proxy or transparency mode.
- In proxy mode, IWSVA matches the domain names, not the full URL. Thus, you only need to specify the domain names.
- In transparency mode (WCCP or bridge mode), IWSVA matches the CommonNames in the server certificates received.
Managing your trusted URLs and exceptions:

1. Click **HTTP > URL Access Control > Global Trusted URLs** from the main menu.
2. In the **Trusted URLs** configuration page, select **Enable Trusted URLs** to enable URL trusting.

   **WARNING!** When you select the “Enable Trusted URLs” option, the content of trusted URLs will not be filtered and scanned for viruses.

3. Select how you want to specify the URL to trust:
   - **Web site** match (including all sub-sites)
   - **String** match (URL must contain the string)

4. Type the URL string to **Match** and click **Trust** to add it to the Trusted URLs list (shown below the “Do Not Scan these URLs” section). To configure exceptions to the trusted URLs list, click **Do Not Trust** and your entry is entered under **Exceptions to the Trusted URL List**.

5. To remove a trusted URL or exception from your trusted URLs list, highlight the item and click **Remove**. **Remove All** clears all the items.

6. Click **Save**.

To import a list of trusted URLs and their exceptions:

1. Click **HTTP > URL Access Control > Global Trusted URLs** from the main menu.

2. Browse or type the name of the file that contains the list of trusted URLs and their exceptions into the “Import Trusted list and exceptions” field.

3. Click **Import**. The trusted URLs and their exceptions from the file appear in the appropriate fields on the interface.

4. Click **Save**.
Blocking URLs

InterScan Web Security Virtual Appliance can block Web sites and URL strings in the global blocked URL list.

Note: If you have installed the ICAP proxy handler, configure the ICAP client to scan files in pre-cache request mode to make this feature work.

Depending on the deployment mode, you can block an HTTPS Web site by entering the FQDN (in standalone/dependent mode) or certificate cn information (in bridge or WCCP mode).

When configuring URLs to block, you can specify the sites using the following:

• The Web site, which includes any sub-sites
• Keyword matching within a URL
• Exact-match strings within a requested URL

You can apply exceptions to the blocked URL list so InterScan Web Security Virtual Appliance allows requests as usual. Using this feature, you can block a given site to allow access to some of its sub-sites or files. The URL Blocking list (including exceptions) is maintained in the /etc/iscan/URLB.ini file. The path for the URLB.ini file is set using the “normalLists” parameter under the [URL-blocking] section in the intscan.ini file.

You can also block URLs based on pattern matching with the Phish pattern file (/etc/iscan/URLB.ini), a database of patterns of Web sites associated with phishing or related schemes.

In addition to adding the URLs through the Web console, URL block lists can be imported from a text file.

Using a Local List

You can configure InterScan Web Security Virtual Appliance to block access to URLs based on a list of blocked sites and exceptions that you maintain for your environment.

When adding URLs to the Block List and “Exceptions to the Block List,” it is best that you first make all additions to one list and then save this configuration before you make additions to the other list. This method helps ensure that the same URL exists in
both lists. If you attempt to add a URL to the Block List or Exceptions to the Block List and it already exists in the other list, InterScan Web Security Virtual Appliance prevents the addition and displays a warning message stating that the entry already exists in the other list.

To configure URLs to block:

1. Click HTTP > URL Access Control > Global URL Blocking.
2. Select “Enable URL blocking.”
3. On the Via Local List tab, type the full Web address or URL keyword, or exact-match string in the Match field.
   
   To identify a folder or directory in a given Web site, use a forward slash (/) after the last character. For example, if you want to block www.blockedsite.com but allow access to its charity directory:

   a. Type www.blockedsite.com in the Match field, then click Block.
   
   b. Type www.blockedsite.com/charity/ in the Match field, and click Do Not Block. (If you write charity without the forward slash, IWSVA considers www.blockedsite.com/charity as a file.)

   Note: For HTTPS decryption policies, the strings to match vary depending on whether you set IWSVA in proxy or transparency mode.
   - In proxy mode, IWSVA matches the domain names, not the full URL. Thus, you only need to specify the domain names.
   - In transparency mode (WCCP or bridge mode), IWSVA matches both the CommonNames and URLs. You must include these in the blocking list if you want to block an HTTPS site.

4. Click Remove to remove the highlighted entries from the list (or Remove All to remove all entries).
5. Click Save.
Importing a List of Blocked URLs from a File

InterScan Web Security Virtual Appliance can import a list of URLs to block from a file. Type a descriptive title or comment on the first line of a file that contains a list of Web sites, URL keywords, or strings, and then write one rule per line. Group sites to be blocked under [block] as shown in the example, and group exceptions under [allow]. For example:

```
URL Blocking Import File {this title will be ignored}
[block]
www.blockedsite.com*
unwanted.com*
urlkeyword
banned.com/file
banned.com/downloads/
[allow]
www.blockedsite.com/file
www.unwanted.com/subsite/
www.trendmicro.com*
```

To include the “*” and “?” characters in a URL blocking string rather than having IWSVA consider them as wildcards, use variable %2a or %2A to represent * and variable %3f or %3F to represent ?. For example, to block www.example.com/*wildcard literally, specify the blocking rule as www.example.com/%2awildcard instead of www.example.com/*wildcard.

If importing the list is not successful, verify that you have followed the specified format for the URL Blocking import file before contacting customer support. Be sure you have:

- Listed blocked entries under [block] and exceptions under [allow]
- Formatted entries containing wildcards as described in this document or the online help

To import a list of URLs to block:

1. Format a text file as described above with the URLs to block, along with any exceptions.
2. Click HTTP > URL Access Control > Global URL Blocking from the main menu.
3. Specify the location of the file to import in the “Import block list and exceptions” field by clicking Browse, and clicking Import.

4. Click Save.

**Using a Pattern File (Phish)**

Phishing attacks use fake email messages to lure potential victims. “Phishers” imitate an email message from a company with whom the user has an account. These fraudulent email messages seem authentic, and many recipients are deceived into supplying their personal information, such as a credit card account number, eventually resulting in the user becoming a victim of computer crime.

Phish is a Trend Micro service that leverages the following:

- Ability of IWSVA to block outbound access to a specific URL
- Capability of the Trend Micro antivirus team to collect and analyze customer submissions and distribute a database of known harmful URLs.

Phish can minimize harm from private and confidential information from being sent out from the client. Phish also prevents access to known phishing URLs.

The URL that is determined to maliciously collect user information is added to the Phish pattern file. The Phish pattern file is a list of URLs that InterScan Web Security Virtual Appliance blocks. InterScan Web Security Virtual Appliance periodically retrieves the updated Phish pattern file through ActiveUpdate.

IWSVA allows users to submit suspected phishing URLs to TrendLabs for evaluation. TrendLabs evaluates the Web site and determines whether the submitted URL is malicious. The URL is considered malicious if it meets the criteria for one of the categories listed below.

- **Phishing**: A fraudulent collection of confidential information. This can be done by offering an email message or Web site that poses as a communication from a legitimate business, which requests information for the purpose of identity theft.

- **Spyware**: A hidden but legal program that secretly collects confidential information. Spyware monitors a user's computing habits and personal information, and then sends this information to third parties without the user's approval.
• **Virus accomplice:** An outbound HTTP request due to known behavior of malicious code—the malicious code could either send the information out or download further components from a certain URL. These are the symptoms of a spyware or Trojan infection.

• **Disease vector:** A Web site that exists only for a malicious purpose.

**Blocking URLs using Phish**

**To block Phish categories:**

1. Open the InterScan Web Security Virtual Appliance Web console and click **HTTP > URL Access Control > Global URL Blocking > Via Pattern File (Phish).**
2. Make sure that **Enable URL blocking** is enabled.
3. Enable the phish categories to block.
4. Click **Save.**

**Submitting a Suspected Phishing URL to TrendLabs**

To report a suspected phishing URL to Trend Micro, use the submission form on the URL Blocking configuration screen. Submissions are investigated; and if associated with malicious behavior, the URL is added to future releases of the Phish pattern file.

1. Open the InterScan Web Security Virtual Appliance Web console and click **HTTP > URL Access Control > Global URL Blocking > Via Pattern File (Phish).**
2. Type the URL that you want Trend Micro to investigate in the **Phish URL** field.
3. Select the **Phish categories** (either phishing, spyware, virus accomplice, disease vector, or others) that you think the URL is associated with from the menu under **Phish categories**.
4. Type an email address where you can be contacted, if necessary.
5. Add any observations about the URL that you would like to tell our TrendLabs engineers.
6. Click **Submit.**
Chapter 10

URL Filtering

This chapter presents an overview and workflow of the InterScan Web Security Virtual Appliance (IWSVA) URL filtering module with procedures for creating and configuring URL filtering policies.

URL filtering, along with Web Reputation, is part of the multi-layered, multi-threat protection solution provided by IWSVA (see Overview of URL Access Control on page 9-4).

Topics in this chapter include the following:

- Introducing URL Filtering on page 10-2
- Managing URL Filtering Policies on page 10-5
- URL Filtering Settings on page 10-8
- URL Filtering Time Quota Extension on page 10-14
Introducing URL Filtering

The default settings for the IWSVA URL filtering module assume that your organization's primary interest is to avoid legal liabilities associated with viewing of offensive material and/or prevent employee abuse of non-business websites. However, because there are instances that require exceptions, additional policies can be created to allow access to restricted category groups for employees whose job functions require broader access. For example, members of the Human Resources or IT departments might need unrestricted Internet access to conduct investigations into violations of your organization's acceptable Internet use policies.

IWSVA supports the Safe Search feature provided by the search engine filtering providers (such as Google and Yahoo). Safe Search is used to specifically filter adult sites and content from the search results and helps protect children from exposure to adult material.

In addition, IWSVA provides enhanced filtering by combining dynamic filtering with the advanced Web Reputation databases. Browsing Web sites related to online trading, shopping, auction bidding, dating, gambling, and other non-work related activities during work time reduces employee productivity and decreases bandwidth available for legitimate browsing. IWSVA allows Internet access to be customized according to user and workgroup-specific needs, thus optimizing the use of the Internet.

IWSVA's URL filtering policies provide a granular and flexible mechanism to manage Internet access. Each policy has three basic elements that include the following:

- IWSVA access to the Web Reputation database that contains URLs in over 82 categories, such as “gambling,” “games,” and “personals/dating.”
- Categories are contained in the following logical groups:
  - Custom Categories
  - Computers/Bandwidth
  - Computers/Harmful
  - Computers/Communication
  - Adult
  - Business
  - Social
  - General
Access to Web sites in each category can be allowed, blocked, or monitored during
time periods designated as work or leisure time.

Different policies can be configured for different users in your environment.

Access to all identified URLs within a targeted category might be managed according to
policy. The database associates each URL with one or more categories. To accurately
define a Web site, the URL may belong to multiple URL categories. For example, a
shopping site that contains malware may belong to the Shopping category as well as the
Virus Accomplice category. Depending on how many URL categories the URL falls
into, the URL filtering policy may manage the access differently. If a URL that your
organization needs to access is associated with a prohibited category, you can create
exceptions to URL filtering rules to override the database's classification. The patterns
specified in the Approved URL List are matched against the URL, not to the content of
the document to which the URL refers. IWSVA gives you the option of configuring a
URL filtering approved-list by matching Web site, URL keyword, and exact-string
categories.

Another way to bypass IWSVA’s default URL categorization is to create Custom
Categories and assign the necessary access privileges to allow user access.

**URL Filtering Actions**

The following are the filtering actions that you can apply for a given policy during the
work or leisure time periods:

- **Allow**—Connection to the target server is allowed and users can access the Web
  site.

- **Block**—Connection to the target server is not established and users are not allowed
to access the Web site. A log entry is also created for this event.

- **Block with Override**—Connection to target service is not established unless the
  user can type a specific password to override the category blocking.

**Note:** Applying the “block with override” action to categories in a policy requires
administrators to enter the password used for overriding when creating the
policy. Enter this password in the “Password Override Settings” section below
the list of categories.
• **Monitor**—Connection to the target server is allowed and users can access the Web site. A log entry is also created for this event.

• **Time Limit**—Connection to the target server which accesses selected categories of URLs is allowed for the period of time configured by the administrator.

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**Note:**

1. Selecting the “Time Limit” action for categories requires administrators to enter a value in “Time quota” text box in the Time Limit Settings section under the list of categories.

2. The default quota unit is five minutes. Trend Micro recommends that administrators set the “Time quota” value to a multiple of five. Otherwise, IWSVA ignores the remainder less than five. For example, if the value is set to 4 minutes, IWSVA interprets that as 0 minutes. If the value is set to 9 minutes, system interprets that as 5 minutes.

• **Warn**—Connection to the target server is allowed but a notification displays, warning users that the URL about to be accessed belongs to a category that violates company policy. Users have the option of continuing to the page or going back to the previous page.

---

**URL Filtering Workflow**

The input for URL filtering consists of the URL and the user’s ID (IP address, IP address range, user name, group name, or host name). A user is identified according to the user identification method that IWSVA is configured to use (see Configuring the User Identification Method starting on page 7-5).

A URL requested by a user can be classified into one or more of 82-plus categories, which are organized into 7 pre-defined groups. IWSVA passes the requested URL through IWSVA’s URL filtering engine to be filtered according to their policies for the user making the request. Based on the category to which the requested URL belongs and the policy’s action, the URL can be allowed, blocked, monitored or issued a warning.

---

**Note:** Manual updates to the URL filtering engine can be done from the Manual Update screen.
Managing URL Filtering Policies

IWSVA is pre-configured with two default URL filtering policies—the Global Policy that applies to all clients on the network, and the Guest Policy that applies to clients that access IWSVA through the guest port.

**Note:** The Guest Policy is only supported if you have configured IWSVA in stand-alone/dependent mode.

Enabling URL Filtering

Make sure that the URL filtering module is enabled before you start.

**To enable URL filtering:**

1. Click **HTTP > URL Filtering > Policies** from the main menu.
2. Select **Enable URL filtering**.
3. Click **Save**.

Creating a New Policy

Creating a new URL filtering policy is a four-step process:

- Select the accounts to which the policy applies.
- Specify the Web site categories to be allowed, blocked, monitored or warned during work and leisure time.
- Select the Safe Search mode
- Select an exception list

**To create a new policy:**

1. Open the IWSVA Web console and click **HTTP > URL Filtering > Policies** from the main menu.
2. Click **Add**.
   - The **URL Filtering Policy: Add Policy** screen appears.
3. Type a descriptive **Policy name**.
Policy names that include references to the users or groups to which they apply, for example, “URL Filtering Policy for Researchers,” are easy to remember.

4. Select the users to which the policy applies.

The options on this page depend upon the user identification method that you are using—either IP address, Host name (modified HTTP headers), or User/group name authentication. For more information about configuring the user identification method and defining the scope of a policy, see Configuring the User Identification Method starting on page 7-5.

5. Click Next.

6. On the Specify Rules screen, ensure that Enable policy is selected.

7. Select one of the following filtering actions for each URL category or sub category:
   - **Allow**—Connection to the target server is allowed and users can access the Web site.
   - **Block**—Connection to the target server is not established and users are not allowed to access the Web site. A log entry is also created for this event.
   - **Block with Override**—Connection to target service is not established unless the user can type a specific password to override the category blocking.
   - **Monitor**—Connection to the target server is allowed and users can access the Web site.
   - **Time Limit**—Connection to the target server which accesses selected categories of URLs is allowed for the period of time configured by the administrator.
   - **Warn**—Connection to the target server is allowed but a notification displays, warning users that the URL about to be accessed belongs to a category that violates company policy. Users have the option of continuing to the page or going back to the previous page.

8. Select to apply the filtering action during leisure or work time.
   - **Action During/Work Time**—Select the check box of the category that you want to apply the filtering action during work time. To select all the categories of a group, click the check box for the group. The group does not need to be expanded for you to select all categories in a group. Restricted days and hours are defined in the URL Filtering Settings (Schedule tab) page. For more information, see Work and Leisure Schedule Settings on page 10-12.
• **Action During/Leisure Time**—Select the check box of the category that you want to apply the filtering action during leisure time. To select all the categories of a group, click the check box for the group. The group does not need to be expanded for you to select all categories in a group.

9. Click **Apply** to apply the filtering action to the selected categories.

**Note:** Repeat steps 8 and 9 if you want to apply a different filtering action to sub-categories in the same group.

10. (Optional) In the **Password Override Settings** section, you must enter the password used for the overriding the blocking action. This is only necessary if you configure a policy to use the “Block with Override” action setting for a URL Filtering category.

**Note:** Passwords are policy-specific.

11. Type an optional **Note** to include useful information about this policy for future reference.

12. Click **Next**.

13. Select a Safe Search setting for each search engine and click **Next**.
   - **Strict**—Filters out adult contents from all search results (including image, video, and Web search).
   - **Moderate**—Filters out adult contents from Web search results only (excluding image search).
   - **Off**—Does not filter search results. This is the default setting.

14. In the **Specify Exception Lists** screen, select an approved URL list name from the drop-down list box if you want to apply an exception list. URLs in the exception list will bypass URL filtering.

15. Click **Save**.

16. In the **URL Filtering Policies** screen, set the priority of the new policy (under the **Priority** column) by clicking on the up or down arrows.
   The **Priority** setting determines which policy is applied if there are accounts belonging to two or more policies. For accounts that belong to more than one
policy, IWSVA will execute the policy on a first match bases. Policies that contain the account after the first match policy is executed are skipped.

17. Click Save.

18. To immediately apply the policy, click Deploy Policies Now; otherwise, the policy is applied after the database cache expires.

**Modifying and Deleting Policies**

IWSVA gives you the option of editing any existing policy to better suit your current environment. You can also delete unnecessary account(s) from a policy.

**To modify an existing policy:**

1. Click HTTP > URL Filtering > Policies from the main menu.
2. Click the Account Name or Policy Name links of the policy to be modified.
   - Change the scope of your policy by adding or deleting clients on the Account tab.
   - From the Rule tab, modify filtering action for the URL categories.
   - From the Safe Search Engine tab, change the Safe Search mode for each search engine.
   - From the Exception tab, select an exception list that you want to apply to this policy.
4. Click Save.
5. Go to HTTP > URL Filtering > Policies and set the priority of your policies using the arrows. The Priority setting determines which policy is applied if there are accounts belonging to two or more policies.
6. Click Save.
7. Click Deploy Policies to immediately apply the policy; otherwise, the policy is applied after the database cache expires.

**URL Filtering Settings**

There are several settings related to URL filtering that you can modify to reflect the realities of your work environment:
• Over 82 predefined Web site categories, organized in seven (7) logical groups
• Configuring your own custom categories
• Setting “work time” and “leisure time” schedules

Additionally, if you believe a URL is classified in the wrong category, you can send a request to Trend Micro to consider re-classifying the URL. You can also look up the category of a URL that you are not sure of.

Creating Custom Categories

You can define new URL categories in addition to the categories already provided by Trend Micro. For example, you can create a category called “Competitor’s Web site” that contains the URLs of your company’s competitors.

The HTTP > Configuration > Custom Categories screen displays a list of user-defined categories. Click Add to create a new one or click a category name to edit an existing one.

• Category Name—Type a brief but descriptive name for the custom category. Names must be unique.
• Match—Enter a Web site, a keyword or phrase, or a string of characters in the field, and then tell IWSVA how to apply the match. This field supports both the ? and * wildcards. Entries in this field are added one-by-one to the custom category.

Note: For HTTPS decryption policies, the strings to match vary depending on whether you set IWSVA in proxy or transparency mode.
- In proxy mode, IWSVA matches the domain names, not the full URL. Thus, you only need to specify the domain names.
- In transparency mode (WCCP and Bridge mode), IWSVA matches the CommonNames in the server certificates received.

• Web site—Limits the search to the string as a whole; used with one or more wildcards, this type of setting can be especially useful for applying the configured URL filtering action to an entire Web site. There is no need to include http:// or https:// in the URL (it is automatically stripped).
- **URL keyword**—Looks for any occurrence of the letters and/or numbers within a URL, and will match regardless of where the string is found (the string “sex” would be considered a match for “http://www.encyclopedia/content/sexton.htm” and the page blocked). Using wildcards in this field greatly increases the chance of false positives and unexpected results.

- **String**—Limits the search to the string as a whole, for example to target a specific site, page, file, or other particular item.

- **Import URL List**—You can import an existing list of URLs that you want to add to a category. For example if you have a list of your competitors’ URLs you have compiled using a text editor, you can import the list rather than enter them one-by-one. Import lists must conform to a defined standard (refer to the online help for more information).

### Requesting URL Reclassification and URL Lookup

Organized in seven logical groups, IWSVA includes default categories that provide a baseline level of URL filtering. For example, Web sites related to humor and jokes would be found in the “Joke Programs” category, which is located in the **Computers/Bandwidth** group.

If you do not agree with the default classification of a URL, Trend Micro enables you to submit a request for a reclassification. You can also use the Exception List or Custom Categories to bypass domain and Web site ratings categorized by Trend Micro’s URL filtering database.

Before rolling out URL filtering policies, Trend Micro recommends verifying that the default categorizations are appropriate for your organization. For example, a clothing retailer might need to remove a swimsuit Web site from the “Intimate Apparel/Swimsuit” category located in the **Adult** group in order to allow legitimate market and competitor research.

If you want to know a category of a URL, you can look it up when specifying URL filtering settings in the **HTTP > URL Filtering > Settings | URL Reclassification & Lookup** tab.
Unrated and Unknown URLs

An *unrated* URL is a Web site that Trend Micro knows about but has not yet put into a filtering category.

An *unknown* URL is a Web site that is one of the following:
- Unknown to Trend Micro
- A Web site that is not in the Web Reputation database
- The daemon might be down or the remote rating server is inaccessible to give the URL a rating

An unknown URL has a rating of zero (0) and cannot be blocked.

Requesting a Reclassification

To request a URL reclassification:

1. Click **HTTP > URL Filtering > Settings** from the main menu.
2. Click the **URL Reclassification & Lookup** tab.
3. Click on the link to the Trend Micro Site Safety Center. The Trend Micro Online URL Query - Feedback System screen appears.
4. Enter the suspect URL in the field and click **Check Now**. Figure 10-1 shows the results from an approved URL.

![Trend Micro Online URL Query - Site Safety Center screen](image)

**Figure 10-1.** Trend Micro Online URL Query - Site Safety Center screen
5. To suggest a change, click **Give Feedback** and type the necessary information.

### Work and Leisure Schedule Settings

IWSVA enables you to specify two sets of work times: Work Time 1 and Work Time 2. Both of these work times include 24-hour selections.

When creating URL filtering policies, you can set the policy to be in effect for both Work Time 1 and Work Time 2 and/or during “leisure” time. When you set a policy for Work Time 1, it is also in effect for Work Time 2.

IWSVA policies permit or block access to URL categories during work and leisure time. By default, IWSVA uses the following default work time settings:

- **Work days:** Monday to Friday
- **Work hours:** 8:00 to 11:59 (Work Time 1) and 13:00 to 17:00 (Work Time 2).

Time not defined as work hours is considered “leisure” time.

**Note:** It is assumed that all IWSVA devices in a cluster are within the same time zone.

Before implementing URL filtering policies in your organization, Trend Micro recommends verifying that the work and leisure time settings are appropriate for your environment.

**To configure the URL filtering policy schedule:**

1. Open the IWSVA Web console and click **Administration > IWSVA Configuration > Work/Leisure Time**.
2. Under **Work Time Settings**, select the work days and work hours in the fields provided.

   In the Work Time 1 and/or Work Time 2 areas, specify the hours that you want to restrict access to selected URL categories.
3. Click **Save**.

**To specify no work time or all work time:**

- If you do not want to use work times, uncheck all of the work days. All time is then leisure time.
- If you want all time to be work time, select all days and specify the following:
• For Work time 1, choose “0:00” in the From drop-down list and “11:59” in the To drop-down list.
• For Work time 2, choose “12:00” in the From drop-down list and “23:59” in the To drop-down list.

**URL Access Warning TTL**

The URL Access Warning Time-to-Live (TTL) setting allows the administrator to configure the amount of time between displayed warning messages, if the user chooses to be reminded after the initial warning messages displays.

**Note:** The repeated warning message only occurs if the user opts to continue to a Web page after the initial warning message.

The default value is 5 minutes. This setting is configured per user/per category. The warning message displays if the value for the policy rule's selected action is set to Warn. See Creating a New Policy on page 10-5 for more information.

See Configuring URL Access Warning Notifications on page 13-54 for more about the notifications.

**URL Filtering Exceptions**

IWSVA provides the option to configure exceptions to URL filtering by approved lists (see Specifying the Exception Lists on page 8-60). URLs in the exception list will not be blocked or monitored. If your clients have a legitimate need to view Web sites that are being blocked or monitored by URL filtering, include the URL to an approved URL list and apply the list to the policy.

**Note:** IWSVA still applies Safe Search filtering to Web sites in the approved URL list.

To apply an approved URL list to a URL filtering policy:

1. Open the IWSVA Web console and click HTTP > URL Filtering > Policies and click a policy name to edit it.
2. In the Exceptions tab, select the approved URL list name.
3. Click Save.

URL Filtering Time Quota Extension

The Time Quota extension is for the URL Filtering policies with a “Time Limit” action. If an IWSVA system admin would like to allow Internet browsing to continue for an individual after the time limit has been exhausted, the time period can be extended here. Users will receive a notification if the time quota has been reached. A log is recorded for users who exhaust their quotas.

This page shows the following information:

- **User**—Identifies user by name or IP address. Admins can also search for a user or sort by the users name.
- **Daily Time Quota Allotment**—Displays time allotted in a policy for the amount of time that can be used for browsing.
- **Extend Given Time**—Displays extended time given already, if any.
- **Daily Time Quota Used**—Displays the total of time used browsing, which may include the original time allotted plus any time extensions, or portions of time extensions that have been used.
- **Extend Quota**—Provides a place to configure the extension with:
  - **Check box**—Check to extend time
  - **Amount**—Numeric value of extension
  - **Units of measure**—Time in minutes or hours for the extension

**Note:** Time can only be extended for URL Filtering policies that have the “Time Limit” action as part of the policy rule.
To extend the allotted time for Internet browsing:

1. Go to **HTTP > Access Quota Policies > Time Quota URL Filtering Extension**.
2. Find the appropriate user by sorting the User column or using the search field.
3. Go to the Extend Quota column in the row of the appropriate user.
4. Check the check box to allow time to be extended.
5. Type the number of minutes or hours the extension will encompass and select the appropriate unit of time (hours or minutes).
6. Click **Save** for the extension to take effect.
FTP Scanning

This chapter describes FTP virus scanning and the different ways FTP scanning can be deployed and configured for your environment.

Topics in this chapter include:

• Introduction on page 11-2
• FTP Settings on page 11-2
• FTP Scanning Options on page 11-4
• Configuring FTP Scanning Settings on page 11-7
• Setting Scan Actions on Viruses on page 11-9
• FTP Access Control Settings on page 11-10
Introduction

InterScan Web Security Virtual Appliance (IWSVA) can scan FTP uploads and downloads for viruses and other malicious code in a manner similar to how it processes HTTP traffic. Unlike HTTP scanning, however, a single configuration is applied to all clients on your network—user or group-based policies are not supported for FTP scanning.

IWSVA FTP scanning uses either a stand-alone proxy or works in conjunction with another FTP proxy on the network. To deploy FTP scanning into your environment, first configure the FTP settings that control the type of proxy and the type of data connection (either passive or active FTP; see Passive and Active FTP starting on page 11-3). The next step is to configure the scanning rules that control the traffic direction that is scanned, the type of files to block or scan, how compressed and large files are handled, and the actions taken when malicious code is detected.

After setting the FTP scanning settings, there are optional security and performance settings to consider modifying. Access control lists can be configured to selectively allow client FTP access based on the client’s IP address. To improve performance when frequently accessing FTP sites over which you have direct control of the content, specific FTP servers can be added to an approved list so that downloads from them are not scanned. Moreover, to further lock down the IWSVA device, FTP access to specific ports can either be allowed or denied.

Note: IWSVA does not support active FTP scanning in WCCP mode.

FTP Settings

IWSVA FTP scanning settings include options for using either the IWSVA native (stand-alone) proxy or a separate FTP proxy, two options for how data connections are made (active FTP vs. passive FTP).
Proxy Settings

IWSVA FTP scanning provides two proxy options—a “stand-alone” mode whereby clients connect to the native IWSVA proxy that later connects with the FTP server, and an “FTP proxy” mode whereby IWSVA passes requests through a separate FTP proxy that in turn connects to the FTP server.

- In stand-alone mode, the client needs to use `<username>@<FTP server name>` as the FTP username to indicate which FTP server IWSVA should connect to.
- In FTP proxy mode, no username is required because IWSVA always connects to the FTP proxy and server designated in the configuration settings.

FTP proxy mode can also be used to protect a single FTP server by specifying the FTP server’s hostname/IP address and port number in the FTP proxy configuration. In this case, the IWSVA FTP scanning module is dedicated to the specified FTP server, in a manner similar to a reverse proxy for HTTP scanning.

Passive and Active FTP

IWSVA uses either active or passive FTP for data connections, depending on your firewall setting. FTP uses two ports, a data port and a command port. In active FTP, the server connects to the client to establish the data connection. In passive FTP, the client connects to the server.

When passive FTP is selected in the IWSVA configuration, IWSVA converts the “active” mode on the client side into the “passive” mode on the server side. Mode conversion is performed only when the IWSVA configuration is passive and the client uses the active mode. If the IWSVA configuration is active, no conversion is performed, so passive requests from the client are still passive requests on the server side.

Client Requests

To configure the FTP settings, you need to specify the proxy settings and the data connection.
To configure the FTP settings:

1. Click FTP > Configuration > General from the main menu.

2. Under the Proxy Settings section, select the appropriate FTP setting based on your topology—either Use stand-alone mode if you want the native IWSVA proxy to connect to FTP sites, or Use FTP proxy for the FTP service to work with an existing FTP proxy (specify the host name of the Proxy server and the Port).

3. Choose the type of data connection to use—either Passive FTP or Active FTP.

4. Click Save.

FTP Scanning Options

The FTP virus scanning settings are similar to the HTTP scanning settings, with two differences:

- FTP scanning does not support user or group-based policies; therefore, one configuration is applied to all clients that access the FTP sites through IWSVA.
- The traffic direction to scan can be configured—either to uploads, downloads, or both.

Enabling FTP Traffic and FTP Scanning

Before your clients can access the FTP sites through IWSVA, the FTP traffic must be enabled.

To turn on the FTP traffic:

1. Click Summary in the main menu.

2. Click Turn On or Turn Off (at the top of the screen) to start or stop the FTP traffic flow.

   Turn Off means the FTP service on the IWSVA device is shut down; therefore, clients cannot connect to any FTP servers through the IWSVA FTP proxy. The default setting is On.

After the FTP traffic is enabled, FTP scanning must be turned on.
To enable or disable FTP scanning:
1. Open the IWSVA Web console and click FTP > Scan Rules.
2. Select Enable FTP scanning.
3. Click Save.

Scan Direction
Depending on how you want to use IWSVA FTP scanning, you can selectively configure the FTP scanning module to scan uploads, downloads or both. For example, if you have deployed antivirus software to all of the workstations in your organization, disabling uploads might be justified to achieve a performance benefit, because the files should already be scanned on the client.

File Blocking
You can specify the types of files to block for security, monitoring or performance purposes. You can block file types such as Java applets, Microsoft Office documents, audio/video files, executables, images, or other types that you can manually configure. If your organization has policies that prohibit certain types of files in your network, IWSVA FTP file blocking can stop them at the FTP gateway.

File Scanning
When configuring the types of files to be scanned, there are three options:
- **All scannable files**: All files are scanned (the safest option).
- **IntelliScan**: Only file types known to harbor viruses are scanned (file type is determined by checking the file header). See About IntelliScan starting on page 8-46 for more information.
- **Specified file extensions**: Only files with specified file extensions are scanned.

Trend Micro recommends scanning all files, unless performance considerations require choosing one of the other options. See Configuring FTP Scanning Settings on page 11-7 for more information.
Priority for FTP Scan Configuration

If the configurations on the FTP Virus Scan screen conflict with each other, the program scans according to the following priority:

1. Block these file types
2. Scan these file types (if not blocked)

Compressed File Handling

Compressed files can pose special challenges to antivirus software performance, because they must be decompressed before the individual files within the archive can be scanned. IWSVA provides the option to block, quarantine, or pass all compressed files at the gateway.

Alternatively, you can also configure IWSVA to apply the selected action on compressed files that meet one of the following conditions:

- Decompressed file count exceeds a given threshold
- Cumulative decompressed file size exceeds a configured maximum
- Recursively compressed file exceeds a certain number of compressed layers

**Note:** IWSVA can also block specified file types within a compressed file during FTP scanning.

Large File Handling

If the delay when downloading large files is unacceptable, IWSVA can be configured to skip scanning of files larger than a configured threshold. Additionally, the FTP scanning module can use the “deferred scanning” method for large files to prevent the client connection from timing out. See Deferred Scanning starting on page 8-53 for more information.

**Note:** The FTP scanning module does not support the “scan before delivering” large file handling methods used by the HTTP scanning module.
Encrypting Quarantined Files

If IWSVA is configured to quarantine files as a scan action, it can optionally encrypt the files to prevent them from accidentally being executed by someone browsing the quarantine folder. Note that after encrypted, the files can only be decrypted by a representative from Trend Micro’s Support department.

Scanning for Spyware/Grayware

IWSVA can scan for many additional non-virus risks for which patterns are contained in the spyware/grayware pattern file. For a summary of these risks, see Spyware and Grayware Scanning Rules starting on page 8-56.

FTP Scanning Exception List

You can apply an approved list that contains the names of files that you want to exempt from file type blocking. In addition, you can configure IWSVA to bypass virus/spyware scanning and compressed file handling action on files in an approved list.

For more information, see Specifying the Exception Lists on page 8-60.

Configuring FTP Scanning Settings

To configure FTP scanning:

1. Click FTP > Scan Rules from the main menu.
2. Select Enable FTP scanning.
3. Select the types of FTP transfers to scan—either Upload, Download, or both.
4. Under the Block these file types section, select the file types to be blocked. In the Other file types field, type other file types to block (use a space to delimit multiple entries). See Appendix B, Mapping File Types to MIME: Content-types for a list of other file types that can be blocked.
5. Select the files to scan:
   • To scan all file types regardless of extension, select **All scannable files**. IWSVA opens compressed files and scans all files within. Scanning all files is the most secure configuration.
   • To use true-file type identification, select **IntelliScan**. IntelliScan uses a combination of true attachment type scanning and exact extension name scanning. True attachment type scanning recognizes the file type even when the file extension has been changed. IntelliScan automatically determines which scanning method to use.
   • To scan file types based on their extensions, select **Specified file extensions**. This contains the list of file types known to harbor viruses. IWSVA scans only those file types that are explicitly specified in the Default Extensions list and in the Additional Extensions text box. The default list of extensions is periodically updated from the virus pattern file. Use this option, for example, to decrease the aggregate number of files IWSVA checks, therefore, decreasing the overall scan times.

   **Note:** There is no limit to the number or types of files you can specify. Do not precede an extension with the (*) character. Delimit multiple entries with a semicolon.

6. Under **Compressed file handling**, select an action (Block, Quarantine, or Pass) and select to apply the action to one of the following:
   • All compressed files
   • Compressed files if

   If you enable the second option, type a value for the following parameters:
   • Decompressed file count exceeds (default is 50000)
   • Size of a decompressed file exceeds (default is 200MB)
   • Number of layers of compression exceeds (0-20, default is 10)
   • Compression ratio of any file in the archive exceeds 99 percent

7. Under **Large File Handling**, select **Do not scan files larger than** and enter the file size.

8. To avoid browser time-out issues when downloading large files, select **Enable Deferred Scan** and type the file size above which deferred scanning occurs. Also,
select from the drop-down list the percentage of data to be sent to the client unscanned.

**WARNING!** The partial delivery of a file might result in a virus leak; therefore, this would be a performance versus an absolute security choice for you. Use this option only when you are currently experiencing an issue with timeouts.

9. To encrypt files sent to the quarantine directory to prevent them from being inadvertently opened or executed, select *Encrypt quarantined files*.
10. Click *Save* and switch to the *Spyware/Grayware Scan Rule* tab.
11. Select the types of additional risks to scan for, and click *Save*.
12. In the *Exceptions* tab, select an approved file name list from the drop-down list. Select *Do not scan the contents of selected approved lists* if you do not want to scan the contents of the files in the approved lists for viruses. In addition, compressed file handling action will not be applied.
13. Switch to the *Action* tab, and select the actions for IWSVA to take in response to scanning.
14. Click *Save*.

**Setting Scan Actions on Viruses**

You can specify the action for FTP scanning to take upon finding an infected file (the recommended action setting is *Clean*):

- Choose *Quarantine* to move an infected file to the quarantine directory without cleaning. The requesting client does not receive the file.
- Choose *Delete* to delete an infected file at the server. The requesting client does not receive the file.
- Choose *Clean* to automatically clean and process an infected file. The requesting client receives the cleaned file if it is cleanable.

You can specify the action for FTP scanning to take upon finding an uncleanable file, which includes worms and Trojans (the recommended action setting is *Delete*):
• Choose **Pass** to send an uncleanable file to the client without cleaning (Trend Micro does not recommend this choice, because it might allow infected files into your network).

• Choose **Quarantine** to move, without cleaning, an uncleanable file to the quarantine directory. The requesting client does not receive the file.

• Choose **Delete** to delete an uncleanable file at the server. The requesting client does not receive the file.

You can specify the action for FTP scanning to take in handling a password-protected compressed file (the recommended action setting is **Pass**):

• Choose **Pass** to send a password-protected file to the client without cleaning.

• Choose **Quarantine** to move, without cleaning, a password-protected file to the quarantine directory. The requesting client does not receive the file.

• Choose **Delete** to delete a password-protected file at the server. The requesting client does not receive the file.

In the event a file containing macros (not necessarily macro viruses) is detected during FTP transfers, the following actions are available (the recommended action setting is **Pass**).

• Choose **Quarantine** to move the files containing macro(s) to the quarantine directory.

• Choose **Clean** to remove macros before delivering the file.

• Choose **Pass** to disable special handling of files containing macro(s).

**FTP Access Control Settings**

IWSVA includes several access control settings for additional security and performance tuning:

• FTP access can be enabled based on the client's IP address.

• Trusted servers over which you have close control of their content and are frequently accessed can be added to an approved list and transfers are not scanned for a performance benefit.

• The IWSVA FTP server can be locked down by denying access to ports that you configure.
By Client IP

By default, all clients on the network are allowed to access FTP sites through the IWSVA device (provided FTP traffic is enabled, see Enabling FTP Traffic and FTP Scanning starting on page 11-4).

To limit FTP access based on client IP address:
1. Click FTP > Configuration > FTP Access Control from the main menu.
2. Switch to the Client IP tab.
3. Select Enable FTP Access Based on Client IP.
4. Enter the IP addresses of clients allowed FTP access through IWSVA. The following are acceptable entries:
   • IP: a single IP address, for example, 123.123.123.12.
   • IP Range: clients that fall within a contiguous range of IP addresses, for example, from 123.123.123.12 to 123.123.123.15.
   • IP Mask: a single client within a specified subnet, for example, entering IP = 192.168.0.1 and Mask = 255.255.255.0 identifies all machines in the 192.168.0.x subnet. Alternatively, the Mask can be specified as a number of bits (0 to 32).
5. Type a descriptive name in the Description field. (40 characters maximum)
6. Click Add and continue entering other clients that are allowed to access FTP sites.
7. Click Save.

Via Approved Server IP List

To reduce possible performance issues when accessing trusted FTP sites over which you directly control the content, you can exempt some FTP sites from scanning by adding their IP addresses to an approved list.

Note: Skipping scanning through the IP approved list only applies to file downloads. Uploaded files are still scanned.

To add trusted servers to the approved list:
1. Click FTP > Configuration > FTP Access Control from the main menu.
2. Switch to the Approved Server IP List tab.
3. Enter the IP addresses of FTP sites to exempt from IWSVA FTP virus scanning. See Identifying Clients and Servers starting on page 6-13 for information and examples about how to identify the servers.
4. Type a descriptive name in the Description field. (40 characters maximum)
5. Click Add and continue entering other FTP sites to exempt.
6. Click Save.

Via Destination Ports

By default, clients can access any port on the IWSVA FTP server. To increase security, you can selectively allow or deny access to the ports.

To configure IWSVA FTP ports to which clients can connect:
1. Click FTP > Configuration > FTP Access Control from the main menu.
2. Switch to the Destination Ports tab.
3. Choose the action to apply to a port, either Deny or Allow.
4. Enter the Port or Port Range to which the action applies.
5. Type a descriptive name in the Description field. (40 characters maximum.)
6. Click Add.
7. Continue to add other ports to allow or deny.
8. Click Save.

Note: The destination port list at the bottom of the Destination Port tab reflects the processing order (or reverse priority order). Destination port access control is only applied during an FTP command connection, and FTP data connections are not affected. A typical configuration is 1. “Deny ALL” and 2. “Allow 21” which results in only allowing access to port 21.
Command Line Interface Commands

This chapter describes the Command Line Interface (CLI) commands that you can use in the InterScan Web Security Virtual Appliance (IWSVA) product to perform monitoring, debugging, troubleshooting, and configuration tasks.

CLI commands allow administrators to perform additional configuration tasks, such as enabling and disabling Squid caching, and to perform debug and troubleshooting functions. The CLI interface also provides additional commands to monitor critical resources and functions, such as monitoring the traffic that flows in or out of a network interface.

Topics included in this chapter are:
- SSH Access starting on page 12-2
- Command Modes starting on page 12-3
- Command List starting on page 12-3
SSH Access

Access to the IWSVA CLI interface can be obtained through the IWSVA terminal (keyboard and monitor connected directly to the IWSVA server) or remotely using a SSH v2 connection to the management IP address. Before you access the CLI using SSH, you must first enable SSH access control in the Web console (Administration > Network Configuration > Remote CLI).

Preventing Password Brute Force Attacks through SSH

IWSVA can protect against password brute force attacks. If a remote terminal attempts to log on to IWSVA with the wrong password using SSH, IWSVA will reject subsequent log on attempts. This feature is enabled and disabled through the CLI.

To enable the anti-password brute force attack function:

1. Log on to IWSVA using the root, enable, or admin account. “root” and “admin” account users can log on using SSH, but the “enable” account users can only log on to the IWSVA local machine.
   • If logging on with the root account, type `clish` and `enable` to access the clish privileged mode.
   • If logging on with the admin account, type `enable` to access the clish privileged mode.
   • If logging on with the enable account, you are already in the clish privileged mode.

2. To enable the function, type the following command: `configure service pswd_protection enable`

To disable the anti-password, brute force attack function:

1. Follow Step 1 in the previous procedure.

2. To disable the function, type the following command: `configure service pswd_protection disable`. 
Command Modes

To access the CLI interface, you will need to have the administrator account and password. IWSVA’s CLI commands are separated into two categories—non-privileged and privileged commands.

Non-privileged commands are basic commands that allow the administrator to obtain specific low security risk information and to perform simple tasks. The non-privileged command prompt ends with an angle bracket (>).

Privileged commands provide full configuration control and advanced monitoring and debugging features. To use privileged commands, type `enable` and the password for the Enable account. The screen displays `enable#` as the privileged command prompt. To return to non-privileged commands, type `exit`.

**Note:** Some CLI commands are not available to child members of an HA cluster because these parameters need to be configured through the parent member of the cluster. Some of the commands unavailable through the child server are: `configure system date`, `configure module ntp`, `configure system password`, `configure service ssh`, and `configure system timezone`.

Command List

**Note:** Commands have been standardized. Commands with syntax changes from a previous release show the new command syntax first, followed by the replaced command syntax. For example:

```
start shell
```

Replaces:
```
admin shell
```
The following table lists the available commands:

**TABLE 12-1. Command Line Interface Commands**

<table>
<thead>
<tr>
<th>COMMAND</th>
<th>SYNTAX</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>configure module arm disable</td>
<td>configure module arm disable</td>
<td>Force un-registration to ARM</td>
</tr>
<tr>
<td><strong>Replaces:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>disable ARM</td>
<td></td>
<td></td>
</tr>
<tr>
<td>configure module database password</td>
<td>configure module database password</td>
<td>Configure the database password</td>
</tr>
<tr>
<td><strong>Replaces:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>configure db password</td>
<td></td>
<td></td>
</tr>
<tr>
<td>configure module http bypass_non_http disable</td>
<td>configure module http bypass_non_http disable</td>
<td>Disable non-HTTP traffic bypass</td>
</tr>
<tr>
<td><strong>Replaces:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>disable bypass_non_http</td>
<td></td>
<td></td>
</tr>
<tr>
<td>configure module http bypass_non_http enable</td>
<td>configure module http bypass_non_http enable</td>
<td>Enable non-HTTP traffic bypass</td>
</tr>
<tr>
<td><strong>Replaces:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>enable bypass_non_http</td>
<td></td>
<td></td>
</tr>
<tr>
<td>configure module http scan_before_deliver_port</td>
<td>configure module http scan_before_deliver_port &lt;port&gt; [mgmt_interface]</td>
<td>Configure the redirecting port to scan before delivery</td>
</tr>
<tr>
<td><strong>Note:</strong> This is a new command.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>COMMAND</td>
<td>SYNTAX</td>
<td>DESCRIPTION</td>
</tr>
<tr>
<td>---------</td>
<td>--------</td>
<td>-------------</td>
</tr>
<tr>
<td>configure module http x-forwarded-for action add</td>
<td>configure module http x-forwarded-for action add</td>
<td>Add the IP address of the last hop to the XFF HTTP header</td>
</tr>
<tr>
<td><strong>Note</strong>: This is a new command.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>configure module http x-forwarded-for action keep</td>
<td>configure module http x-forwarded-for action keep</td>
<td>Make no changes in the XFF HTTP header</td>
</tr>
<tr>
<td><strong>Note</strong>: This is a new command.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>configure module http x-forwarded-for action remove</td>
<td>configure module http x-forwarded-for action remove</td>
<td>Remove the XFF HTTP header from the HTTP request for upstream security</td>
</tr>
<tr>
<td><strong>Note</strong>: This is a new command.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>configure module http x-forwarded-for parse disable</td>
<td>configure module http x-forwarded-for parse disable</td>
<td>Disable parsing of the XFF HTTP header</td>
</tr>
<tr>
<td><strong>Note</strong>: This is a new command.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>configure module http x-forwarded-for parse enable</td>
<td>configure module http x-forwarded-for parse enable</td>
<td>Enable parsing of the XFF HTTP header to obtain the original IP address for policy matching</td>
</tr>
<tr>
<td><strong>Note</strong>: This is a new command.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>configure module https hardware_engine cavium</td>
<td>configure module https hardware_engine cavium</td>
<td>Use “cavium” hardware accelerate card; this operation requires that the hardware card be inserted into the machine</td>
</tr>
</tbody>
</table>
### TABLE 12-1. Command Line Interface Commands (Continued)

<table>
<thead>
<tr>
<th>COMMAND</th>
<th>SYNTAX</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>configure module https hardware_engine none</td>
<td>configure module https hardware_engine none</td>
<td>Do not use SSL hardware accelerate card</td>
</tr>
<tr>
<td>configure module https iis_client_certificate &lt;enable/disable&gt;</td>
<td>configure module https iis_client_certificate &lt;enable/disable&gt;</td>
<td>Configure iis_client_certificate</td>
</tr>
<tr>
<td><strong>Replaces:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt;disable/enable&gt; iis_client_certificate</td>
<td></td>
<td></td>
</tr>
<tr>
<td>configure module https iis_client_certificate sites clear</td>
<td>configure module https iis_client_certificate sites clear</td>
<td>Clear the cache of IIS hosted HTTPS sites with client certificate required</td>
</tr>
<tr>
<td><strong>Replaces:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>clear iis_client_certificate sites</td>
<td></td>
<td></td>
</tr>
<tr>
<td>configure module https logacccfullurl</td>
<td>configure module https logacccfullurl</td>
<td>Configure logacccfullurl</td>
</tr>
<tr>
<td><strong>Replaces:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt;disable</td>
<td>enable&gt; https logacccfullurl</td>
<td></td>
</tr>
<tr>
<td>COMMAND</td>
<td>SYNTAX</td>
<td>DESCRIPTION</td>
</tr>
<tr>
<td>---------</td>
<td>--------</td>
<td>-------------</td>
</tr>
<tr>
<td>configure module identification mac_address &lt;enable/disable&gt;</td>
<td>configure module identification mac_address &lt;enable/disable&gt;</td>
<td>Include/exclude MAC address for hostname identification method</td>
</tr>
<tr>
<td>Replaces: configure mac address no</td>
<td></td>
<td></td>
</tr>
<tr>
<td>configure mac address yes</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
| configure module ldap groupcache interval | configure module ldap groupcache interval <interval> | Configure IWSVA LDAP user group membership cache interval 
*interval UINT* interval (in hours) |
| Replaces: configure ldap groupcache interval <interval> | | |
| configure module ldap ipuser_cache disable | configure module ldap ipuser_cache disable | Disable IWSVA LDAP IP user cache |
| Replaces: configure ldap ipuser_cache disable | | |
| configure module ldap ipuser_cache enable | configure module ldap ipuser_cache enable | Enable IWSVA LDAP IP user cache |
| Replaces: configure ldap ipuser_cache enable | | |
### TABLE 12-1. Command Line Interface Commands (Continued)

<table>
<thead>
<tr>
<th>COMMAND</th>
<th>SYNTAX</th>
<th>DESCRIPTION</th>
</tr>
</thead>
</table>
| configure module ldap ipuser_cache interval | configure module ldap ipuser_cache interval <interval> | Configure IWSVA LDAP IP user cache interval. 
*interval* FLOAT interval (in hours) |
<p>| configure module ldap www-auth port | configure module ldap www-auth port &lt;port&gt; | Configure the user/group authentication port in transparent mode (WCCP or bridge mode) |
| configure module log transaction disable | configure module log transaction disable | Disable the Transaction Log |
| <strong>Note:</strong> This is a new command. | | |
| configure module log transaction enable | configure module log transaction enable | Enable the Transaction Log |
| <strong>Note:</strong> This is a new command. | | |
| configure module log transaction filter disable | configure module log transaction filter disable | Disable the Transaction Log filter. |
| <strong>Note:</strong> This is a new command. | | |</p>
<table>
<thead>
<tr>
<th>COMMAND</th>
<th>SYNTAX</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>configure module log transaction filter enable</td>
<td>configure module log transaction filter enable &lt;fromip&gt; &lt;toip&gt;</td>
<td>Enable the Transaction Log filter. PARAM name: &quot;fromip&quot; IP address AAA.BBB.CCC.DDD where each part is in the range 0-255 PARAM name: &quot;toip&quot; IP address AAA.BBB.CCC.DDD where each part is in the range 0-255</td>
</tr>
<tr>
<td>configure module log verbose filter disable</td>
<td>configure module log verbose filter disable</td>
<td>Disable verbose log filter</td>
</tr>
<tr>
<td>configure module log verbose filter enable fromip toip</td>
<td>configure module log verbose filter enable fromip toip</td>
<td>Enable verbose log filter</td>
</tr>
<tr>
<td>configure module log verbose ftp disable</td>
<td>configure module log verbose ftp disable</td>
<td>Disable verbose FTP logs</td>
</tr>
</tbody>
</table>

**Note:** This is a new command.

**Replaces:** disable verbose ftp
TABLE 12-1. Command Line Interface Commands (Continued)

<table>
<thead>
<tr>
<th>COMMAND</th>
<th>SYNTAX</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>configure module log verbose ftp enable</td>
<td>configure module log verbose ftp enable</td>
<td>Enable verbose FTP logs</td>
</tr>
<tr>
<td>Replaces:</td>
<td>enable verbose ftp</td>
<td></td>
</tr>
<tr>
<td>configure module log verbose http disable</td>
<td>configure module log verbose http disable</td>
<td>Disable verbose HTTP logs</td>
</tr>
<tr>
<td>Replaces:</td>
<td>disable verbose http</td>
<td></td>
</tr>
<tr>
<td>configure module log verbose http enable</td>
<td>configure module log verbose http enable</td>
<td>Enable verbose HTTP logs</td>
</tr>
<tr>
<td>Replaces:</td>
<td>enable verbose http</td>
<td></td>
</tr>
<tr>
<td>configure module log verbose wccp disable</td>
<td>configure module log verbose wccp disable</td>
<td>Disable verbose WCCP logs</td>
</tr>
<tr>
<td>Replaces:</td>
<td>disable verbose wccp</td>
<td></td>
</tr>
<tr>
<td>configure module log verbose wccp enable</td>
<td>configure module log verbose wccp enable</td>
<td>Enable verbose WCCP logs</td>
</tr>
<tr>
<td>Replaces:</td>
<td>enable verbose wccp</td>
<td></td>
</tr>
<tr>
<td>configure module ntp schedule &lt;enable/disable&gt;</td>
<td>configure module ntp schedule &lt;enable/disable&gt;</td>
<td>Enable or disable scheduled NTP time synchronization</td>
</tr>
<tr>
<td>Replaces:</td>
<td>disable ntp schedule enable ntp schedule</td>
<td></td>
</tr>
</tbody>
</table>

configure module ntp schedule

configure module ntp schedule <enable/disable>

Replaces: disable ntp schedule enable ntp schedule

Enable or disable scheduled NTP time synchronization
### TABLE 12-1. Command Line Interface Commands (Continued)

<table>
<thead>
<tr>
<th>COMMAND</th>
<th>SYNTAX</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>configure module ntp schedule</td>
<td>configure module ntp schedule &lt;interval&gt; &lt;primary_server&gt; [secondary_server]</td>
<td>Configure scheduled NTP time synchronization. &lt;interval&gt; (30m, 1h, 2h, 4h, 6h, 12h, 1d, 2d, 3d, 1w, 1M) primary_server ADDRESS Primary NTP server secondary_server ADDRESS Secondary NTP server</td>
</tr>
<tr>
<td>configure module ntp sync</td>
<td>configure module ntp sync &lt;server&gt;</td>
<td>Configure NTP server synchronization. server ADDRESS NTP server</td>
</tr>
<tr>
<td>configure network bonding add</td>
<td>configure network bonding add &lt;bondingname&gt; [interface1] [interface2] [interface3] [interface4]</td>
<td>Add a link aggregation bonding interface. &lt;bondingname&gt; is the name of the bonding interface</td>
</tr>
<tr>
<td>configure network bonding options miimon</td>
<td>configure network bonding options miimon &lt;interval&gt;</td>
<td>Configure miimon options of specified bonding device. &lt;interval&gt; is the specific miimon interval to be set. Default is 100. <strong>Note:</strong> Miimon is a value setup in milliseconds.</td>
</tr>
<tr>
<td>Command</td>
<td>Syntax</td>
<td>Description</td>
</tr>
<tr>
<td>---------------------------------</td>
<td>---------------------------------------------</td>
<td>-----------------------------------------------------------------------------</td>
</tr>
</tbody>
</table>
| configure network bonding options xmit_hash_policy | configure network bonding options xmit_hash_policy <policy> | Configure xmit_hash_policy options of specified bonding device
<policy> is the specific xmit_hash_policy to be set
Default is 1 (3layer). 0 (2layer) is also available. |
| configure network bonding remove | configure network bonding remove <bondingname> | Remove a link aggregation bonding interface
<bondingname> is the name of the bonding interface |
| configure network bridge interface | configure network bridge interface [interface1] [interface2] [interface3] [interface4] [interface5] [interface6] [interface7] [interface8] | Configure the default bridge interface
<interface1> ... <interface8> interface name or link aggregation bonding name |
| Replaces: configure bridge interface <internal> <external> | | |
| configure network bridge redirect ftpports | configure network bridge redirect ftpports <ports> | Configure the redirection ftp ports
ports MULTIPORTS Redirect ports <port1;port2;...> |
<p>| Replaces: configure redirect ftpports &lt;ports&gt; | | |</p>
<table>
<thead>
<tr>
<th>COMMAND</th>
<th>SYNTAX</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>configure network bridge redirect httpports</td>
<td>configure network bridge redirect httpports &lt;ports&gt;</td>
<td>Configure the redirection HTTP ports &lt;ports&gt; MULTIPORTS Redirect ports &lt;port1;port2;...&gt;</td>
</tr>
<tr>
<td>configure network bridge redirect httpsports</td>
<td>configure network bridge redirect httpsports &lt;ports&gt;</td>
<td>Configure the redirection HTTPS ports &lt;ports&gt; MULTIPORTS Redirect ports &lt;port1;port2;...&gt;</td>
</tr>
<tr>
<td>configure network bridge stp</td>
<td>configure network bridge stp</td>
<td>Configure the default bridge STP settings</td>
</tr>
<tr>
<td>configure network bridge stp disable</td>
<td>configure network bridge stp disable</td>
<td>Disable STP on IWSVA</td>
</tr>
<tr>
<td>configure network bridge stp enable</td>
<td>configure network bridge stp enable</td>
<td>Enable STP on IWSVA</td>
</tr>
<tr>
<td>configure network bridge stp priority</td>
<td>configure network bridge stp priority</td>
<td>Set the STP priority of IWSVA</td>
</tr>
</tbody>
</table>

**Note:** This is a new command.
### TABLE 12-1. Command Line Interface Commands (Continued)

<table>
<thead>
<tr>
<th>COMMAND</th>
<th>SYNTAX</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>configure network</td>
<td>configure network dns  Replaces: configure dns</td>
<td>Configure DNS settings</td>
</tr>
<tr>
<td>dns</td>
<td>&lt;dns1&gt; [dns2]</td>
<td><em>dns1</em> IP_ADDR Primary DNS server</td>
</tr>
<tr>
<td></td>
<td></td>
<td><em>dns2</em> IP_ADDR Secondary DNS server</td>
</tr>
<tr>
<td>configure network hostname</td>
<td>configure network hostname  Replaces: configure hostname</td>
<td>Configure the hostname</td>
</tr>
<tr>
<td>hostname</td>
<td>&lt;hostname&gt;</td>
<td><em>HOSTNAME</em> Hostname or FQDN</td>
</tr>
<tr>
<td>configure network</td>
<td>configure network interface dhcp  Replaces:</td>
<td>Configure the default</td>
</tr>
<tr>
<td>interface dhcp</td>
<td>configure mgmt ip static  &lt;ip&gt; &lt;mask&gt;  Note:</td>
<td>Ethernet interface to use DHCP</td>
</tr>
<tr>
<td>interface dhcp</td>
<td>The old command does not map directly to the</td>
<td></td>
</tr>
<tr>
<td>interface dhcp</td>
<td>new command. Changes were made to support the</td>
<td></td>
</tr>
<tr>
<td>interface dhcp</td>
<td>updated release.</td>
<td></td>
</tr>
<tr>
<td>interface dhcp</td>
<td>&lt;interface_name&gt; [vlan]</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td><em>vlan</em> VLAN_ID VLAN ID [1-4094], default none</td>
</tr>
<tr>
<td></td>
<td></td>
<td>VLAN: [0]</td>
</tr>
<tr>
<td>configure network</td>
<td>configure network interface duplex  Replaces:</td>
<td>Configure the duplex of the Ethernet interface</td>
</tr>
<tr>
<td>interface duplex</td>
<td>configure ethernet duplex  &lt;ethname&gt; &lt;duplex&gt;</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### TABLE 12-1. Command Line Interface Commands (Continued)

<table>
<thead>
<tr>
<th>COMMAND</th>
<th>SYNTAX</th>
<th>DESCRIPTION</th>
</tr>
</thead>
</table>
| configure network interface ping  
  
  `<interface_name>`  
  `<action>`  
  **Replaces:**  
  enable/disable ping  
  [mgmt] | configure network interface ping  
  `<interface_name>`  
  `<enable/disable>` | Accept/disallow ICMP-request on the separated management interface          |
| configure network interface static | configure network interface static  
  `<interface_name>`  
  `<ip>`  
  `<mask>`  
  `<gateway>`  
  [vlan] | Configure the default Ethernet interface to use the static IP configuration |
| configure network lanbypass auto | configure network lanbypass auto             | The system auto-adjusts the LAN bypass status.                              |
| configure network lanbypass off  | configure network lanbypass off              | Never bypass traffic                                                       |
| configure network lanbypass on   | configure network lanbypass on               | Always bypasses traffic                                                    |
| configure network mgmt disable  | configure network mgmt disable              | Disable the separate IWSVA management interface                            |
| configure network mgmt interface | configure network mgmt interface  
  `<interface_name>` | Configure IWSVA management interface name                                   |
| **Replaces:** configure mgmt interface  
  `<interface_name>` | | |

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### TABLE 12-1. Command Line Interface Commands (Continued)

<table>
<thead>
<tr>
<th>COMMAND</th>
<th>SYNTAX</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>configure network portgroup add</td>
<td>configure network portgroup add &lt;pgname&gt; [interface1] [interface2] [interface3] [interface4] [interface5] [interface6] [interface7] [interface8]</td>
<td>Add a port group</td>
</tr>
<tr>
<td><strong>Note:</strong> This is a new command.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>configure network portgroup linkloss &lt;pgname&gt;</td>
<td>configure network portgroup linkloss &lt;pgname&gt;</td>
<td>Configure the port group link loss forward settings</td>
</tr>
<tr>
<td><strong>Note:</strong> This is a new command.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>configure network portgroup remove &lt;pgname&gt;</td>
<td>configure network portgroup remove &lt;pgname&gt;</td>
<td>Remove a port group</td>
</tr>
<tr>
<td><strong>Note:</strong> This is a new command.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>configure network portgroup vlan &lt;pgname&gt;</td>
<td>configure network portgroup vlan &lt;pgname&gt;</td>
<td>Configure the port group VLAN ID</td>
</tr>
<tr>
<td><strong>Note:</strong> This is a new command.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>configure network proxy interface</td>
<td>configure network proxy interface &lt;proxy&gt;</td>
<td>Configure the default proxy interface</td>
</tr>
<tr>
<td><strong>Replaces:</strong></td>
<td></td>
<td>proxy_IFNAME Interface name</td>
</tr>
</tbody>
</table>
### TABLE 12-1. Command Line Interface Commands (Continued)

<table>
<thead>
<tr>
<th>COMMAND</th>
<th>SYNTAX</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>configure network route add</code> &lt;ip_prefixlen&gt; &lt;via&gt; &lt;dev&gt;</td>
<td><code>configure network route add &lt;xxx.xxx.xxx/LL&gt; &lt;via&gt; &lt;device&gt;</code></td>
<td>Add a route for a specified NIC device in VA</td>
</tr>
<tr>
<td><strong>Note:</strong> This is a new command.</td>
<td></td>
<td></td>
</tr>
<tr>
<td><code>configure network route default</code> &lt;gateway&gt;</td>
<td><code>configure network route default &lt;gateway&gt;</code></td>
<td>Reset the default gateway by executing <code>configure network route default &lt;**.*.*.*&gt;</code></td>
</tr>
<tr>
<td><strong>Replaces:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><code>configure ip dhcp [vlan]</code></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Note:</strong> The old command does not map directly to the new command. Changes were made to support the updated release.</td>
<td></td>
<td></td>
</tr>
<tr>
<td><code>configure network route del</code> &lt;ip_prefixlen&gt; &lt;via&gt; &lt;dev&gt;</td>
<td><code>configure network route del &lt;xxx.xxx.xxx/LL&gt; &lt;via&gt; &lt;device&gt;</code></td>
<td>Delete a route for a specified NIC device in VA</td>
</tr>
<tr>
<td><strong>Note:</strong> This is a new command.</td>
<td></td>
<td></td>
</tr>
<tr>
<td><code>configure service pswd_protection disable</code></td>
<td><code>configure service pswd_protection disable</code></td>
<td>Disable SSH password protection service</td>
</tr>
<tr>
<td><strong>Note:</strong> This is a new command.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Command</td>
<td>Syntax</td>
<td>Description</td>
</tr>
<tr>
<td>-----------------------------</td>
<td>-----------------------------------------</td>
<td>--------------------------------------------------</td>
</tr>
<tr>
<td>configure service</td>
<td></td>
<td></td>
</tr>
<tr>
<td>pswd_protection enable</td>
<td>configure service pswd_protection enable</td>
<td>Enable SSH password protection service</td>
</tr>
<tr>
<td>Note: This is a new command.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>configure service</td>
<td></td>
<td></td>
</tr>
<tr>
<td>recycle time</td>
<td>configure service recycle time</td>
<td>Enable recycling by time PARAM name &quot;time&quot;</td>
</tr>
<tr>
<td>Note: This is a new command.</td>
<td></td>
<td>Use hh:mm time format between 00:00 and 23:59</td>
</tr>
<tr>
<td>configure service</td>
<td></td>
<td></td>
</tr>
<tr>
<td>recycle disable time</td>
<td>configure service recycle disable time</td>
<td>Disable recycling by time</td>
</tr>
<tr>
<td>Note: This is a new command.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>configure service</td>
<td></td>
<td></td>
</tr>
<tr>
<td>recycle transaction</td>
<td>configure service recycle transaction</td>
<td>Enable recycling by transaction PARAM name &quot;transaction&quot; Daemon will recycle after 100000-99999999 transaction(s)</td>
</tr>
<tr>
<td>Note: This is a new command.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>configure service</td>
<td></td>
<td></td>
</tr>
<tr>
<td>recycle disable transaction</td>
<td>configure service recycle disable</td>
<td>Disable the transaction recycling</td>
</tr>
<tr>
<td>Note: This is a new command.</td>
<td>transaction</td>
<td></td>
</tr>
<tr>
<td>configure service ssh</td>
<td>configure service ssh disable</td>
<td>Disable the SSH daemon</td>
</tr>
<tr>
<td>Replace: disable ssh</td>
<td>disable ssh</td>
<td></td>
</tr>
<tr>
<td>COMMAND</td>
<td>SYNTAX</td>
<td>DESCRIPTION</td>
</tr>
<tr>
<td>-------------------------------</td>
<td>---------------------------------------------</td>
<td>---------------------------------------------------------------</td>
</tr>
<tr>
<td>configure service ssh enable</td>
<td>configure service ssh enable</td>
<td>Enable the SSH daemon</td>
</tr>
<tr>
<td><strong>Replaces:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>enable</td>
<td></td>
<td></td>
</tr>
<tr>
<td>configure service ssh port</td>
<td>configure service ssh port &lt;port&gt;</td>
<td>Configure SSH port number</td>
</tr>
<tr>
<td><strong>Replaces:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>configure ssh port</td>
<td></td>
<td></td>
</tr>
<tr>
<td>create ssh port &lt;port&gt;</td>
<td></td>
<td></td>
</tr>
<tr>
<td>configure system date</td>
<td>configure system date &lt;date&gt; &lt;time&gt;</td>
<td>Configure date and save to CMOS</td>
</tr>
<tr>
<td><strong>Replaces:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>configure date</td>
<td></td>
<td></td>
</tr>
<tr>
<td>configure system ha</td>
<td>configure system ha</td>
<td>Configure high availability</td>
</tr>
<tr>
<td><strong>Note:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>This is a new command.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>configure system ha remove</td>
<td>configure system ha remove</td>
<td>Remove HA configuration and reboot IWSVA</td>
</tr>
<tr>
<td><strong>Note:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>This is a new command.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>configure system ha</td>
<td>configure system ha</td>
<td>Configure the HA synchronization interval</td>
</tr>
<tr>
<td>synchronization interval</td>
<td>configure system ha synchronization interval</td>
<td></td>
</tr>
<tr>
<td><strong>Note:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>This is a new command.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PARAM name: &quot;Interval&quot;</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Interval (in minutes) at which HA will synchronize settings to child server. Range in minutes: 5-60</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### TABLE 12-1. Command Line Interface Commands (Continued)

<table>
<thead>
<tr>
<th>COMMAND</th>
<th>SYNTAX</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>configure system harddisk</td>
<td>configure system harddisk</td>
<td>Add new hard disk and extend IWSVA data partition space</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Note:</strong> IWSVA only supports adding one new hard disk and extends the IWSVA data partition space each time.</td>
</tr>
<tr>
<td>configure system hwmonitor</td>
<td>configure system hwmonitor</td>
<td>Configure system hardware monitoring information.</td>
</tr>
<tr>
<td>Note: This is a new command.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>configure system hwmonitor interval</td>
<td>configure system hwmonitor interval [1-60]</td>
<td>Configure hardware status polling in minutes. Range is 1-60 minutes. Default duration determined by the IPMI polling cycle.</td>
</tr>
<tr>
<td>Note: This is a new command.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>configure system keyboard</td>
<td>configure system keyboard</td>
<td>Configure system keyboard layout type</td>
</tr>
<tr>
<td>configure system keyboard us</td>
<td>configure system keyboard us</td>
<td>Configure system keyboard layout type to U.S. English</td>
</tr>
</tbody>
</table>
### Table 12-1. Command Line Interface Commands (Continued)

<table>
<thead>
<tr>
<th>Command</th>
<th>Syntax</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>configure system password</td>
<td>configure system password &lt;user&gt;</td>
<td>Configure account password</td>
</tr>
<tr>
<td><strong>Replaces:</strong> configure password</td>
<td></td>
<td>user USER The user name for which you want to change the password.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>The user could be 'enable', 'root' or any user in the IWSVA's Administrator group</td>
</tr>
<tr>
<td>configure timezone Africa Cairo</td>
<td>configure system timezone Africa Cairo</td>
<td>Configure timezone to Africa/Cairo location</td>
</tr>
<tr>
<td>configure timezone Africa Harare</td>
<td>configure system timezone Africa Harare</td>
<td>Configure timezone to Africa/Harare location</td>
</tr>
<tr>
<td>configure timezone Africa Nairobi</td>
<td>configure system timezone Africa Nairobi</td>
<td>Configure timezone to Africa/Nairobi location</td>
</tr>
<tr>
<td>configure timezone America Anchorage</td>
<td>configure system timezone America Anchorage</td>
<td>Configure timezone to America/Anchorage location</td>
</tr>
<tr>
<td>configure timezone America Bogota</td>
<td>configure system timezone America Bogota</td>
<td>Configure timezone to America/Bogota location</td>
</tr>
<tr>
<td>configure timezone America Buenos_Aires</td>
<td>configure system timezone America Buenos_Aires</td>
<td>Configure timezone to America/Buenos_Aires location</td>
</tr>
</tbody>
</table>

**Note:** All “configure system timezone” commands replace the old “configure timezone” commands.

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<table>
<thead>
<tr>
<th>COMMAND</th>
<th>SYNTAX</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>configure system timezone America Chicago</td>
<td>configure system timezone America Chicago</td>
<td>Configure timezone to America/Chicago location</td>
</tr>
<tr>
<td>configure system timezone America Chihuahua</td>
<td>configure system timezone America Chihuahua</td>
<td>Configure timezone to America/Chihuahua location</td>
</tr>
<tr>
<td>configure system timezone America Denver</td>
<td>configure system timezone America Denver</td>
<td>Configure timezone to America/Denver location</td>
</tr>
<tr>
<td>configure system timezone America Godthab</td>
<td>configure system timezone America Godthab</td>
<td>Configure timezone to America/Godthab location</td>
</tr>
<tr>
<td>configure system timezone America Lima</td>
<td>configure system timezone America Lima</td>
<td>Configure timezone to America/Lima location</td>
</tr>
<tr>
<td>configure system timezone America Los_Angeles</td>
<td>configure system timezone America Los_Angeles</td>
<td>Configure timezone to America/Los_Angeles location</td>
</tr>
<tr>
<td>configure system timezone America Mexico_City</td>
<td>configure system timezone America Mexico_City</td>
<td>Configure timezone to America/Mexico_City location</td>
</tr>
<tr>
<td>configure system timezone America New_York</td>
<td>configure system timezone America New_York</td>
<td>Configure timezone to America/New_York location</td>
</tr>
<tr>
<td>configure system timezone America Noronha</td>
<td>configure system timezone America Noronha</td>
<td>Configure timezone to America/Noronha</td>
</tr>
<tr>
<td>COMMAND</td>
<td>SYNTAX</td>
<td>DESCRIPTION</td>
</tr>
<tr>
<td>---------</td>
<td>---------</td>
<td>-------------</td>
</tr>
<tr>
<td>configure system timezone America Phoenix</td>
<td>configure system timezone America Phoenix</td>
<td>Configure timezone to America/Phoenix</td>
</tr>
<tr>
<td>configure system timezone America Santiago</td>
<td>configure system timezone America Santiago</td>
<td>Configure timezone to America/Santiago</td>
</tr>
<tr>
<td>configure system timezone America St_Johns</td>
<td>configure system timezone America St_Johns</td>
<td>Configure timezone to America/St_Johns</td>
</tr>
<tr>
<td>configure system timezone America Tegucigalpa</td>
<td>configure system timezone America Tegucigalpa</td>
<td>Configure timezone to America/Tegucigalpa</td>
</tr>
<tr>
<td>configure system timezone Asia Almaty</td>
<td>configure system timezone Asia Almaty</td>
<td>Configure timezone to Asia/Almaty location</td>
</tr>
<tr>
<td>configure system timezone Asia Baghdad</td>
<td>configure system timezone Asia Baghdad</td>
<td>Configure timezone to Asia/Baghdad location</td>
</tr>
<tr>
<td>configure system timezone Asia Baku</td>
<td>configure system timezone Asia Baku</td>
<td>Configure timezone to Asia/Baku location</td>
</tr>
<tr>
<td>configure system timezone Asia Bangkok</td>
<td>configure system timezone Asia Bangkok</td>
<td>Configure timezone to Asia/Bangkok location</td>
</tr>
<tr>
<td>configure system timezone Asia Calcutta</td>
<td>configure system timezone Asia Calcutta</td>
<td>Configure timezone to Asia/Calcutta location</td>
</tr>
<tr>
<td>configure system timezone Asia Colombo</td>
<td>configure system timezone Asia Colombo</td>
<td>Configure timezone to Asia/Colombo location</td>
</tr>
<tr>
<td>COMMAND</td>
<td>SYNTAX</td>
<td>DESCRIPTION</td>
</tr>
<tr>
<td>--------------------------------------</td>
<td>---------------------------------------------</td>
<td>--------------------------------------------------</td>
</tr>
<tr>
<td>configure system timezone Asia Dhaka</td>
<td>configure system timezone Asia Dhaka</td>
<td>Configure timezone to Asia/Dhaka location</td>
</tr>
<tr>
<td>configure system timezone Asia Hong_Kong</td>
<td>configure system timezone Asia Hong_Kong</td>
<td>Configure timezone to Asia/Hong_Kong location</td>
</tr>
<tr>
<td>configure system timezone Asia Irkutsk</td>
<td>configure system timezone Asia Irkutsk</td>
<td>Configure timezone to Asia/Irkutsk location</td>
</tr>
<tr>
<td>configure system timezone Asia Jerusalem</td>
<td>configure system timezone Asia Jerusalem</td>
<td>Configure timezone to Asia/Jerusalem location</td>
</tr>
<tr>
<td>configure system timezone Asia Kabul</td>
<td>configure system timezone Asia Kabul</td>
<td>Configure timezone to Asia/Kabul location</td>
</tr>
<tr>
<td>configure system timezone Asia Karachi</td>
<td>configure system timezone Asia Karachi</td>
<td>Configure timezone to Asia/Karachi location</td>
</tr>
<tr>
<td>configure system timezone Asia Katmandu</td>
<td>configure system timezone Asia Katmandu</td>
<td>Configure timezone to Asia/Katmandu location</td>
</tr>
<tr>
<td>configure system timezone Asia Krasnoyarsk</td>
<td>configure system timezone Asia Krasnoyarsk</td>
<td>Configure timezone to Asia/Krasnoyarsk location</td>
</tr>
<tr>
<td>configure system timezone Asia Kuala_Lumpur</td>
<td>configure system timezone Asia Kuala_Lumpur</td>
<td>Configure timezone to Asia/Kuala_Lumpur location</td>
</tr>
<tr>
<td>configure system timezone Asia Kuwait</td>
<td>configure system timezone Asia Kuwait</td>
<td>Configure timezone to Asia/Kuwait location</td>
</tr>
</tbody>
</table>
TABLE 12-1. Command Line Interface Commands (Continued)

<table>
<thead>
<tr>
<th>COMMAND</th>
<th>SYNTAX</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>configure system timezone Asia Magadan</td>
<td>configure system timezone Asia Magadan</td>
<td>Configure timezone to Asia/Magadan location</td>
</tr>
<tr>
<td>configure system timezone Asia Manila</td>
<td>configure system timezone Asia Manila</td>
<td>Configure timezone to Asia/Manila location</td>
</tr>
<tr>
<td>configure system timezone Asia Muscat</td>
<td>configure system timezone Asia Muscat</td>
<td>Configure timezone to Asia/Muscat location</td>
</tr>
<tr>
<td>configure system timezone Asia Rangoon</td>
<td>configure system timezone Asia Rangoon</td>
<td>Configure timezone to Asia/Rangoon location</td>
</tr>
<tr>
<td>configure system timezone Asia Seoul</td>
<td>configure system timezone Asia Seoul</td>
<td>Configure timezone to Asia/Seoul location</td>
</tr>
<tr>
<td>configure system timezone Asia Shanghai</td>
<td>configure system timezone Asia Shanghai</td>
<td>Configure timezone to Asia/Shanghai location</td>
</tr>
<tr>
<td>configure system timezone Asia Singapore</td>
<td>configure system timezone Asia Singapore</td>
<td>Configure timezone to Asia/Singapore location</td>
</tr>
<tr>
<td>configure system timezone Asia Taipei</td>
<td>configure system timezone Asia Taipei</td>
<td>Configure timezone to Asia/Taipei location</td>
</tr>
<tr>
<td>configure system timezone Asia Tehran</td>
<td>configure system timezone Asia Tehran</td>
<td>Configure timezone to Asia/Tehran location</td>
</tr>
<tr>
<td>configure system timezone Asia Tokyo</td>
<td>configure system timezone Asia Tokyo</td>
<td>Configure timezone to Asia/Tokyo location</td>
</tr>
</tbody>
</table>
### TABLE 12-1. Command Line Interface Commands (Continued)

<table>
<thead>
<tr>
<th>Command</th>
<th>Syntax</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>configure system timezone</td>
<td>configure system timezone Asia Yakutsk</td>
<td>Configure timezone to Asia/Yakutsk location</td>
</tr>
<tr>
<td>timezone Asia Yakutsk</td>
<td></td>
<td></td>
</tr>
<tr>
<td>configure system timezone</td>
<td>configure system timezone Atlantic Azores</td>
<td>Configure timezone to Atlantic/Azores location</td>
</tr>
<tr>
<td>timezone Atlantic Azores</td>
<td></td>
<td></td>
</tr>
<tr>
<td>configure system timezone</td>
<td>configure system timezone Australia Adelaide</td>
<td>Configure timezone to Australia/Adelaide location</td>
</tr>
<tr>
<td>timezone Australia Adelaide</td>
<td></td>
<td></td>
</tr>
<tr>
<td>configure system timezone</td>
<td>configure system timezone Australia Brisbane</td>
<td>Configure timezone to Australia/Brisbane location</td>
</tr>
<tr>
<td>timezone Australia Brisbane</td>
<td></td>
<td></td>
</tr>
<tr>
<td>configure system timezone</td>
<td>configure system timezone Australia Darwin</td>
<td>Configure timezone to Australia/Darwin location</td>
</tr>
<tr>
<td>timezone Australia Darwin</td>
<td></td>
<td></td>
</tr>
<tr>
<td>configure system timezone</td>
<td>configure system timezone Australia Hobart</td>
<td>Configure timezone to Australia/Hobart location</td>
</tr>
<tr>
<td>timezone Australia Hobart</td>
<td></td>
<td></td>
</tr>
<tr>
<td>configure system timezone</td>
<td>configure system timezone Australia Melbourne</td>
<td>Configure timezone to Australia/Melbourne location</td>
</tr>
<tr>
<td>timezone Australia Melbourne</td>
<td></td>
<td></td>
</tr>
<tr>
<td>configure system timezone</td>
<td>configure system timezone Australia Perth</td>
<td>Configure timezone to Australia/Perth location</td>
</tr>
<tr>
<td>timezone Australia Perth</td>
<td></td>
<td></td>
</tr>
<tr>
<td>configure system timezone</td>
<td>configure system timezone Europe Amsterdam</td>
<td>Configure timezone to Europe/Amsterdam location</td>
</tr>
<tr>
<td>timezone Europe Amsterdam</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Command</td>
<td>Syntax</td>
<td>Description</td>
</tr>
<tr>
<td>---------</td>
<td>--------</td>
<td>-------------</td>
</tr>
<tr>
<td>configure system timezone Europe Athens</td>
<td>configure system timezone Europe Athens</td>
<td>Configure timezone to Europe/Athens location</td>
</tr>
<tr>
<td>configure system timezone Europe Belgrade</td>
<td>configure system timezone Europe Belgrade</td>
<td>Configure timezone to Europe/Belgrade location</td>
</tr>
<tr>
<td>configure system timezone Europe Berlin</td>
<td>configure system timezone Europe Berlin</td>
<td>Configure timezone to Europe/Berlin location</td>
</tr>
<tr>
<td>configure system timezone Europe Brussels</td>
<td>configure system timezone Europe Brussels</td>
<td>Configure timezone to Europe/Brussels location</td>
</tr>
<tr>
<td>configure system timezone Europe Bucharest</td>
<td>configure system timezone Europe Bucharest</td>
<td>Configure timezone to Europe/Bucharest location</td>
</tr>
<tr>
<td>configure system timezone Europe Dublin</td>
<td>configure system timezone Europe Dublin</td>
<td>Configure timezone to Europe/Dublin location</td>
</tr>
<tr>
<td>configure system timezone Europe Moscow</td>
<td>configure system timezone Europe Moscow</td>
<td>Configure timezone to Europe/Moscow location</td>
</tr>
<tr>
<td>configure system timezone Europe Paris</td>
<td>configure system timezone Europe Paris</td>
<td>Configure timezone to Europe/Paris location</td>
</tr>
<tr>
<td>configure system timezone Pacific Auckland</td>
<td>configure system timezone Pacific Auckland</td>
<td>Configure timezone to Pacific/Auckland location</td>
</tr>
<tr>
<td>configure system timezone Pacific Fiji</td>
<td>configure system timezone Pacific Fiji</td>
<td>Configure timezone to Pacific/Fiji location</td>
</tr>
<tr>
<td>COMMAND</td>
<td>SYNTAX</td>
<td>DESCRIPTION</td>
</tr>
<tr>
<td>-------------------------</td>
<td>---------------------------------------------</td>
<td>--------------------------------------------------</td>
</tr>
<tr>
<td>configure system timezone Pacific Guam</td>
<td>configure system timezone Pacific Guam</td>
<td>Configure timezone to Pacific/Guam location</td>
</tr>
<tr>
<td>configure system timezone Pacific Honolulu</td>
<td>configure system timezone Pacific Honolulu</td>
<td>Configure timezone to Pacific/Honolulu location</td>
</tr>
<tr>
<td>configure system timezone Pacific Kwajalein</td>
<td>configure system timezone Pacific Kwajalein</td>
<td>Configure timezone to Pacific/Kwajalein location</td>
</tr>
<tr>
<td>configure system timezone Pacific Midway</td>
<td>configure system timezone Pacific Midway</td>
<td>Configure timezone to Pacific/Midway location</td>
</tr>
<tr>
<td>configure system timezone US Alaska</td>
<td>configure system timezone US Alaska</td>
<td>Configure timezone to US/Alaska location</td>
</tr>
<tr>
<td>configure system timezone US Arizona</td>
<td>configure system timezone US Arizona</td>
<td>Configure timezone to US/Arizona location</td>
</tr>
<tr>
<td>configure system timezone US Central</td>
<td>configure system timezone US Central</td>
<td>Configure timezone to US/Central location</td>
</tr>
<tr>
<td>configure system timezone US East-Indiana</td>
<td>configure system timezone US East-Indiana</td>
<td>Configure timezone to US/East-Indiana location</td>
</tr>
<tr>
<td>configure system timezone US Eastern</td>
<td>configure system timezone US Eastern</td>
<td>Configure timezone to US/Eastern location</td>
</tr>
<tr>
<td>configure system timezone US Hawaii</td>
<td>configure system timezone US Hawaii</td>
<td>Configure timezone to US/Hawaii location</td>
</tr>
<tr>
<td>configure system timezone US Mountain</td>
<td>configure system timezone US Mountain</td>
<td>Configure timezone to US/Mountain location</td>
</tr>
</tbody>
</table>
### TABLE 12-1. Command Line Interface Commands (Continued)

<table>
<thead>
<tr>
<th>Command</th>
<th>Syntax</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>configure system</td>
<td>configure system timezone US Pacific</td>
<td>Configure timezone to US/Pacific location</td>
</tr>
<tr>
<td>timezone US Pacific</td>
<td></td>
<td></td>
</tr>
<tr>
<td>enable</td>
<td>enable</td>
<td>Enable administrative commands</td>
</tr>
<tr>
<td>exit</td>
<td>exit</td>
<td>Exit the session</td>
</tr>
<tr>
<td>ftpput</td>
<td>ftpput &lt;url&gt; &lt;filename&gt; [-a]</td>
<td>Upload file through FTP protocol</td>
</tr>
</tbody>
</table>
|                    |                                   | *url STRING*  
|                    |                                   | ftp://username:password @hostname/path                                      |
|                    |                                   | *filename FILENAME*  The file name and path to upload                       |
|                    |                                   | *active ACTIVETYPE FTP* active mode                                         |
| help               | help                             | Display an overview of the CLI syntax                                       |
| history            | history [limit]                  | Display the current session's command line history                          |
| ping               | ping [-c num_echos] [-i interval] <dest> | -c num_echos UINT  
<p>|                    |                                   | Specify the number of echo requests to be sent [5]                         |
|                    |                                   | -i interval UINT  Wait interval seconds between sending each packet         |
|                    |                                   | <em>dest ADDRESS</em> Host name or IP address                                      |</p>
<table>
<thead>
<tr>
<th>COMMAND</th>
<th>SYNTAX</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>reboot</td>
<td>reboot [time]</td>
<td>Reboot this machine after a specified delay or immediately</td>
</tr>
<tr>
<td></td>
<td></td>
<td><em>time UINT</em> Time in minutes to reboot this machine [0]</td>
</tr>
<tr>
<td>resolve</td>
<td>resolve &lt;dest&gt;</td>
<td>Resolve an IP address on the network</td>
</tr>
<tr>
<td></td>
<td></td>
<td><em>dest ADDRESS</em> Remote ip address to resolve</td>
</tr>
<tr>
<td>restart service database</td>
<td>restart service</td>
<td>Restart the database</td>
</tr>
<tr>
<td>database</td>
<td>database</td>
<td></td>
</tr>
<tr>
<td></td>
<td>restart</td>
<td>Replace: service database restart</td>
</tr>
<tr>
<td>restart service ftpd</td>
<td>restart service</td>
<td>Restart the FTP traffic scanning daemon</td>
</tr>
<tr>
<td>ftpd</td>
<td>ftpd</td>
<td>Replace: service ftpd restart</td>
</tr>
<tr>
<td>restart service httpd</td>
<td>restart service</td>
<td>Restart the HTTP traffic scanning daemon</td>
</tr>
<tr>
<td>httpd</td>
<td>httpd</td>
<td>Replace: service httpd restart</td>
</tr>
<tr>
<td></td>
<td>httpd restart</td>
<td></td>
</tr>
<tr>
<td>restart service iwss_daemons</td>
<td>restart service</td>
<td>Restart all IWSVA services</td>
</tr>
<tr>
<td></td>
<td>iwss_daemons</td>
<td>Replace: restart iwss_daemons</td>
</tr>
<tr>
<td>COMMAND</td>
<td>SYNTAX</td>
<td>DESCRIPTION</td>
</tr>
<tr>
<td>----------</td>
<td>--------</td>
<td>-------------</td>
</tr>
<tr>
<td>restart service logtodb</td>
<td>restart service logtodb</td>
<td>Restart the daemon that saves logs to database</td>
</tr>
<tr>
<td><strong>Replaces:</strong> service logtodb restart</td>
<td></td>
<td></td>
</tr>
<tr>
<td>restart service maild</td>
<td>restart service maild</td>
<td>Restart the email notification daemon</td>
</tr>
<tr>
<td><strong>Replaces:</strong> service maild restart</td>
<td></td>
<td></td>
</tr>
<tr>
<td>restart service metric_mgmt</td>
<td>restart service metric_mgmt</td>
<td>Restart the metric management daemon</td>
</tr>
<tr>
<td><strong>Replaces:</strong> service metric_mgmt restart</td>
<td></td>
<td></td>
</tr>
<tr>
<td>restart service ssh</td>
<td>restart service ssh</td>
<td>Restart the SSH daemon</td>
</tr>
<tr>
<td><strong>Note:</strong> This is a new command.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>restart service svcmonitor</td>
<td>restart service svcmonitor</td>
<td>Restart the monitor daemon</td>
</tr>
<tr>
<td><strong>Replaces:</strong> service svcmonitor restart</td>
<td></td>
<td></td>
</tr>
<tr>
<td>restart service tmcmagent</td>
<td>restart service tmcmagent</td>
<td>Restart the TMCM agent</td>
</tr>
<tr>
<td><strong>Replaces:</strong> service tmcmagent restart</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### TABLE 12-1. Command Line Interface Commands (Continued)

<table>
<thead>
<tr>
<th>COMMAND</th>
<th>SYNTAX</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>restart service tmsyslog <strong>Replaces:</strong> service tmsyslog restart</td>
<td>restart service tmsyslog</td>
<td>Restart the syslog daemon</td>
</tr>
<tr>
<td>restart service wccpd <strong>Replaces:</strong> service wccpd restart</td>
<td>restart service wccpd</td>
<td>Restart the WCCP daemon</td>
</tr>
<tr>
<td>restart service webui <strong>Replaces:</strong> service webui restart</td>
<td>restart service webui</td>
<td>Restart the tomcat daemon</td>
</tr>
<tr>
<td>show kernel iostat <strong>Replaces:</strong> show statistic io</td>
<td>show kernel iostat</td>
<td>Display Central Processing Unit (CPU) statistics and input/output statistics for devices, partitions and network file systems (NFS)</td>
</tr>
<tr>
<td>show kernel messages</td>
<td>show kernel messages</td>
<td>Display kernel messages</td>
</tr>
<tr>
<td>show kernel modules</td>
<td>show kernel modules</td>
<td>Display modules loaded in the kernel</td>
</tr>
<tr>
<td>show kernel parameters</td>
<td>show kernel parameters</td>
<td>Display running kernel parameters</td>
</tr>
<tr>
<td>show memory statistic <strong>Replaces:</strong> show statistic memory</td>
<td>show memory statistic</td>
<td>Display memory statistics</td>
</tr>
</tbody>
</table>
### Table 12-1. Command Line Interface Commands (Continued)

<table>
<thead>
<tr>
<th>Command</th>
<th>Syntax</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>show module config all</td>
<td>show module config all</td>
<td>View the all the config files</td>
</tr>
<tr>
<td><strong>Replaces:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>show config all</td>
<td></td>
<td></td>
</tr>
<tr>
<td>show module config database</td>
<td>show module config database</td>
<td>View the database config files</td>
</tr>
<tr>
<td><strong>Replaces:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>show config db</td>
<td></td>
<td></td>
</tr>
<tr>
<td>show module config file intscan</td>
<td>show module config file intscan</td>
<td>View the intscan config file</td>
</tr>
<tr>
<td><strong>Replaces:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>show file &lt;intscan&gt;</td>
<td></td>
<td></td>
</tr>
<tr>
<td>show module config file IWSSPIJavascan</td>
<td>show module config file IWSSPIJavascan</td>
<td>View the IWSSPIJavascan config file</td>
</tr>
<tr>
<td><strong>Replaces:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>show file &lt;IWSSPIJavascan &gt;</td>
<td></td>
<td></td>
</tr>
<tr>
<td>show module config file IWSSPIProtocolFtp</td>
<td>show module config file IWSSPIProtocolFtp</td>
<td>View the IWSSPIProtocolFtp config file</td>
</tr>
<tr>
<td>COMMAND</td>
<td>SYNTAX</td>
<td>DESCRIPTION</td>
</tr>
<tr>
<td>---------</td>
<td>--------</td>
<td>-------------</td>
</tr>
<tr>
<td>show module config file IWSSPIProtocolHttpProxy <strong>Replaces:</strong> show file &lt;IWSSPIProtocolHttpProxy&gt;</td>
<td>show module config file IWSSPIProtocolHttpProxy</td>
<td>View the IWSSPIProtocolHttpProxy config file</td>
</tr>
<tr>
<td>show module config file IWSSPIProtocolIcap <strong>Replaces:</strong> show file &lt;IWSSPIProtocolIcap&gt;</td>
<td>show module config file IWSSPIProtocolIcap</td>
<td>View the IWSSPIProtocolIcap config file</td>
</tr>
<tr>
<td>show module config file IWSSPIScanVsapi <strong>Replaces:</strong> show file &lt;IWSSPIScanVsapi&gt;</td>
<td>show module config file IWSSPIScanVsapi</td>
<td>View the IWSSPIScanVsapi config file</td>
</tr>
<tr>
<td>show module config file IWSSPISigScan <strong>Replaces:</strong> show file &lt;IWSSPISigScan&gt;</td>
<td>show module config file IWSSPISigScan</td>
<td>View the IWSSPISigScan config file</td>
</tr>
<tr>
<td>show module config file IWSSPIUrlFilter</td>
<td>show module config file IWSSPIUrlFilter</td>
<td>View the IWSSPIUrlFilter config file</td>
</tr>
<tr>
<td>COMMAND</td>
<td>SYNTAX</td>
<td>DESCRIPTION</td>
</tr>
<tr>
<td>---------</td>
<td>--------</td>
<td>-------------</td>
</tr>
</tbody>
</table>
| show module database backup  
**Replaces:** show db backup | show module database backup | Display database backups |
| show module database password  
**Replaces:** show db password | show module database password | Display the database password |
| show module database settings  
**Replaces:** show db settings | show module database settings | Display the configuration of the database |
| show module database size  
**Replaces:** show db size | show module database size | Display the size of IWSVA database |
| show module http x-forwarded-for | show module http x-forwarded-for | Display the configuration of the XFF HTTP header module |
| show module ldap groupcache interval  
**Replaces:** show ldap groupcache interval | show module ldap groupcache interval | Display IWSVA LDAP user group membership cache interval |
### TABLE 12-1. Command Line Interface Commands (Continued)

<table>
<thead>
<tr>
<th>COMMAND</th>
<th>SYNTAX</th>
<th>DESCRIPTION</th>
</tr>
</thead>
</table>
| show module ldap
  ipuser_cache |
  **Replaces:**
  show ldap
  ipuser_cache |
  show module ldap
  ipuser_cache |
<p>| Display the configuration of IWSVA LDAP IP user cache. |
| Client IP cache associates a client IP address with a user who recently authenticated from that same IP address. Any request originating from the same IP address as a previously authenticated request will be attributed to that user, provided the new request is issued within a configurable window of time (15 minutes by default for HTTP, 90 minutes for ICAP) from that authentication. The caveat is that client IP addresses seen by IWSVA must be unique to a user within that time period; thus this cache is not useful in environments where there is a proxy server or source NAT between the clients and IWSVA, or where DHCP frequently reassigns client IPs. |</p>
<table>
<thead>
<tr>
<th>COMMAND</th>
<th>SYNTAX</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>show module ldap ipuser_cache interval</td>
<td>show module ldap ipuser_cache interval</td>
<td>Display IWSVA LDAP IP user cache interval</td>
</tr>
<tr>
<td><strong>Replaces:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>show ldap ipuser_cache interval</td>
<td></td>
<td></td>
</tr>
<tr>
<td>show module ldap www-auth port</td>
<td>show module ldap www-auth port</td>
<td>Display the authentication port</td>
</tr>
<tr>
<td><strong>Replaces:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>show www-auth port</td>
<td></td>
<td></td>
</tr>
<tr>
<td>show module log admin</td>
<td>show module log admin [log_suffix]</td>
<td>View the admin log file log_suffix LOGSUFFIX [log_suffix] []</td>
</tr>
<tr>
<td><strong>Replaces:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>show log admin [log_suffix]</td>
<td></td>
<td></td>
</tr>
<tr>
<td>show module log ftp</td>
<td>show module log ftp [log_suffix]</td>
<td>View the ftp log file log_suffix LOGSUFFIX [log_suffix] []</td>
</tr>
<tr>
<td><strong>Replaces:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>show log ftp [log_suffix]</td>
<td></td>
<td></td>
</tr>
<tr>
<td>show module log http</td>
<td>show module log http [log_suffix]</td>
<td>View the http log file log_suffix LOGSUFFIX [log_suffix] []</td>
</tr>
<tr>
<td><strong>Replaces:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>show log http [log_suffix]</td>
<td></td>
<td></td>
</tr>
<tr>
<td>show module log mail</td>
<td>show module log mail [log_suffix]</td>
<td>View the mail log file log_suffix LOGSUFFIX [log_suffix] []</td>
</tr>
<tr>
<td><strong>Replaces:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>show log mail [log_suffix]</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**TABLE 12-1. Command Line Interface Commands (Continued)**
<table>
<thead>
<tr>
<th>COMMAND</th>
<th>SYNTAX</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>show module log postgres</td>
<td>show module log postgres</td>
<td>View the postgres log</td>
</tr>
<tr>
<td>show module log tmudump</td>
<td>show module log tmudump</td>
<td>View the tmudump log file</td>
</tr>
<tr>
<td>show module log update</td>
<td>show module log update [log_suffix]</td>
<td>View the update log file log_suffix LOGSUFFIX [log_suffix] []</td>
</tr>
<tr>
<td>show module metrics ftp</td>
<td>show module metrics ftp</td>
<td>Display IWSVA ftp performance metrics</td>
</tr>
<tr>
<td>show module metrics http</td>
<td>show module metrics http</td>
<td>Display IWSVA http performance metrics</td>
</tr>
<tr>
<td>show module ntp schedule</td>
<td>show module ntp schedule</td>
<td>Display the scheduled NTP server configuration</td>
</tr>
</tbody>
</table>

**TABLE 12-1. Command Line Interface Commands (Continued)**
### TABLE 12-1. Command Line Interface Commands (Continued)

<table>
<thead>
<tr>
<th>COMMAND</th>
<th>SYNTAX</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>show module webui port</td>
<td>show module webui port</td>
<td>Display Web server port settings</td>
</tr>
<tr>
<td><strong>Replaces:</strong> show webserver port</td>
<td></td>
<td></td>
</tr>
<tr>
<td>show network arp</td>
<td>show network arp [dest]</td>
<td>Display system arp tables</td>
</tr>
<tr>
<td><strong>Replaces:</strong> show arp [dest]</td>
<td>dest ADDRESS Remote IP address to arp</td>
<td></td>
</tr>
<tr>
<td>show network bonding &lt;bonding name&gt;</td>
<td>show network bonding &lt;bonding name&gt;</td>
<td>Display bonding settings</td>
</tr>
<tr>
<td></td>
<td></td>
<td>If &lt;bonding name&gt; is missing, all bonding settings display. If &lt;bonding name&gt; is specified, specified bonding settings display.</td>
</tr>
<tr>
<td>show network bridge redirect ftpports</td>
<td>show network bridge redirect ftpports</td>
<td>Display the FTP redirection port numbers</td>
</tr>
<tr>
<td><strong>Replaces:</strong> show redirect ftpports</td>
<td></td>
<td></td>
</tr>
<tr>
<td>show network bridge redirect httpsports</td>
<td>show network bridge redirect httpsports</td>
<td>Display the HTTPS redirection port numbers</td>
</tr>
<tr>
<td><strong>Replaces:</strong> show redirect httpsports</td>
<td></td>
<td></td>
</tr>
<tr>
<td>COMMAND</td>
<td>SYNTAX</td>
<td>DESCRIPTION</td>
</tr>
<tr>
<td>---------------------------</td>
<td>-------------------------------</td>
<td>-----------------------------------------------------------------------------</td>
</tr>
<tr>
<td>show network bridge stp</td>
<td>show network bridge stp</td>
<td>Display the bridge STP settings</td>
</tr>
<tr>
<td><strong>Note:</strong> This is a new command.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>show network capture</td>
<td>show network capture [filename]</td>
<td>Display packets captures</td>
</tr>
<tr>
<td><strong>Replaces:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>show capture</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>filename</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>STRING</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>show network connections</td>
<td>show network connections</td>
<td>Display system connections or daemons. For example, execute</td>
</tr>
<tr>
<td>&lt;all/listening&gt;</td>
<td>&lt;all/tcp/udp&gt;</td>
<td>display which daemons are running.</td>
</tr>
<tr>
<td><strong>Replaces the following commands:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>show connections</td>
<td>show connections</td>
<td></td>
</tr>
<tr>
<td>show daemons</td>
<td>show daemons</td>
<td></td>
</tr>
<tr>
<td><strong>Note:</strong> Additional parameters available in new command.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>show network conntrack</td>
<td>show network conntrack</td>
<td>Display state tracked connections</td>
</tr>
<tr>
<td><strong>Replaces:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>show conntrack</td>
<td></td>
<td></td>
</tr>
<tr>
<td>show network conntrack</td>
<td>show network conntrack expect</td>
<td>Display state expected connections</td>
</tr>
<tr>
<td><strong>Replaces:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>show conntrack expect</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>expect</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Command</td>
<td>Syntax</td>
<td>Description</td>
</tr>
<tr>
<td>---------------------------------</td>
<td>------------------------------------</td>
<td>------------------------------</td>
</tr>
<tr>
<td>show network data interface</td>
<td>show network data interface</td>
<td>Display network address</td>
</tr>
<tr>
<td>Replaces: show ip address</td>
<td></td>
<td></td>
</tr>
<tr>
<td>show network dns</td>
<td>show network dns</td>
<td>Display network dns servers</td>
</tr>
<tr>
<td>Replaces: show ip dns</td>
<td></td>
<td></td>
</tr>
<tr>
<td>show network ethernet</td>
<td>show network ethernet &lt;ethname&gt;</td>
<td>Display Ethernet card</td>
</tr>
<tr>
<td>Replaces: show ethernet &lt;ethname&gt;</td>
<td></td>
<td>settings</td>
</tr>
<tr>
<td>show network firewall filter</td>
<td>show firewall filter</td>
<td>Display firewall filter</td>
</tr>
<tr>
<td>Replaces: show firewall filter</td>
<td></td>
<td></td>
</tr>
<tr>
<td>show network firewall nat</td>
<td>show firewall nat</td>
<td>Display firewall NAT</td>
</tr>
<tr>
<td>Replaces: show firewall nat</td>
<td></td>
<td></td>
</tr>
<tr>
<td>show network gateway</td>
<td>show network gateway</td>
<td>Display network gateway</td>
</tr>
<tr>
<td>Replaces: show ip gateway</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### TABLE 12-1. Command Line Interface Commands (Continued)

<table>
<thead>
<tr>
<th>COMMAND</th>
<th>SYNTAX</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>show network hostname</td>
<td>show network hostname</td>
<td>Display network hostname</td>
</tr>
<tr>
<td><strong>Replaces:</strong> show hostname</td>
<td></td>
<td></td>
</tr>
<tr>
<td>show network interfaces</td>
<td>show network interfaces</td>
<td>Display network interface information</td>
</tr>
<tr>
<td><strong>Replaces:</strong> show interfaces</td>
<td></td>
<td></td>
</tr>
<tr>
<td>show network interfaces status once</td>
<td>show network interfaces status once</td>
<td>Display the link status of the network card once</td>
</tr>
<tr>
<td><strong>Note:</strong> This is a new command.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>show network interfaces statistic</td>
<td>show network interfaces statistic</td>
<td>Display the link status of the network card</td>
</tr>
<tr>
<td><strong>Note:</strong> This is a new command.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>show network lanbypass</td>
<td>show network lanbypass</td>
<td>Displays the current configuration status of LAN-bypass function If lanbypass used, it would show one of the following states: on / off / auto.</td>
</tr>
<tr>
<td><strong>Note:</strong> This is a new command.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### TABLE 12-1. Command Line Interface Commands (Continued)

<table>
<thead>
<tr>
<th>COMMAND</th>
<th>SYNTAX</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>show network mgmt interface</td>
<td>show network mgmt interface</td>
<td>Display the status and address information</td>
</tr>
<tr>
<td><strong>Replaces:</strong> show mgmt ip address</td>
<td></td>
<td></td>
</tr>
<tr>
<td>show mgmt status</td>
<td></td>
<td></td>
</tr>
<tr>
<td>show network ping</td>
<td>show network ping</td>
<td>Display data and management status</td>
</tr>
<tr>
<td><strong>Replaces:</strong> show ping</td>
<td></td>
<td></td>
</tr>
<tr>
<td>show ping mgmt</td>
<td></td>
<td></td>
</tr>
<tr>
<td>show network portgroup</td>
<td>show network portgroup</td>
<td>Display current port group settings</td>
</tr>
<tr>
<td>show network route</td>
<td>show network route</td>
<td>Display network routing table</td>
</tr>
<tr>
<td><strong>Replaces:</strong> show ip route</td>
<td></td>
<td></td>
</tr>
<tr>
<td>show network sockets</td>
<td>show network sockets</td>
<td>Display open network socket statistics</td>
</tr>
<tr>
<td><strong>Replaces:</strong> show open sockets</td>
<td></td>
<td></td>
</tr>
<tr>
<td>show process library</td>
<td>show process library &lt;pid&gt;</td>
<td>A library call tracer</td>
</tr>
<tr>
<td></td>
<td>pid UINT &lt;pid&gt;</td>
<td></td>
</tr>
<tr>
<td>show process stack</td>
<td>show process stack &lt;pid&gt;</td>
<td>Print a stack trace of a running process</td>
</tr>
<tr>
<td></td>
<td>pid UINT &lt;pid&gt;</td>
<td></td>
</tr>
</tbody>
</table>
TABLE 12-1. Command Line Interface Commands (Continued)

<table>
<thead>
<tr>
<th>COMMAND</th>
<th>SYNTAX</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>show process [target]</td>
<td>show process [target]</td>
<td>Display process information</td>
</tr>
<tr>
<td></td>
<td>target STRING [optional</td>
<td>name/ID with wildcard support] []</td>
</tr>
<tr>
<td>show process top</td>
<td>show process top</td>
<td>Display information about running processes</td>
</tr>
<tr>
<td>show process trace</td>
<td>show process trace &lt;pid&gt;</td>
<td>Trace system calls and signals</td>
</tr>
<tr>
<td></td>
<td>pid UINT &lt;pid&gt;</td>
<td></td>
</tr>
<tr>
<td>show service ssh</td>
<td>show service ssh</td>
<td>Show status of SSH service</td>
</tr>
<tr>
<td></td>
<td>Replaces: show ssh</td>
<td></td>
</tr>
<tr>
<td>show storage partition</td>
<td>show storage partition</td>
<td>Report filesystem usage in readable format only</td>
</tr>
<tr>
<td></td>
<td>[partition]</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Replaces: show disk partition[partition]</td>
<td></td>
</tr>
<tr>
<td></td>
<td>show disk partition</td>
<td></td>
</tr>
<tr>
<td></td>
<td>readable [partition]</td>
<td></td>
</tr>
<tr>
<td>show storage space</td>
<td>show disk space [target]</td>
<td>Report file space usage in readable format only</td>
</tr>
<tr>
<td></td>
<td>target STRING [optional</td>
<td></td>
</tr>
<tr>
<td></td>
<td>directory or filename] [/]</td>
<td></td>
</tr>
</tbody>
</table>

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<table>
<thead>
<tr>
<th>COMMAND</th>
<th>SYNTAX</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>show storage statistic</td>
<td>show storage statistic</td>
<td>Display disk statistics</td>
</tr>
<tr>
<td><strong>Replaces:</strong> show statistic disk</td>
<td></td>
<td></td>
</tr>
<tr>
<td>show system configuration</td>
<td>show system configuration</td>
<td>Display summary information of running configuration</td>
</tr>
<tr>
<td><strong>Replaces:</strong> show running configuration -verbose</td>
<td>show system configuration [-verbose]</td>
<td>Display detailed information of running configuration</td>
</tr>
<tr>
<td>show system date</td>
<td>show system date</td>
<td>Display current date/time</td>
</tr>
<tr>
<td><strong>Replaces:</strong> show date</td>
<td></td>
<td></td>
</tr>
<tr>
<td>show system ha</td>
<td>show system ha</td>
<td>Display HA information, such as: Cluster name, Description, HA mode, Deployment mode, Cluster IP address, Preemption, Member list, Role, Localhost, Hostname, IP address, Weight</td>
</tr>
<tr>
<td><strong>Note:</strong> This is a new command.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>show system hwmonitor</td>
<td>show system hwmonitor</td>
<td>Display hardware monitoring information.</td>
</tr>
<tr>
<td><strong>Note:</strong> This is a new command.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>COMMAND</td>
<td>SYNTAX</td>
<td>DESCRIPTION</td>
</tr>
<tr>
<td>---------</td>
<td>--------</td>
<td>-------------</td>
</tr>
<tr>
<td>show system hwmonitor interval</td>
<td>show system hwmonitor interval</td>
<td>Show current polling interval value.</td>
</tr>
<tr>
<td><strong>Note:</strong> This is a new command.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>show system hwmonitor sel</td>
<td>show system hwmonitor sel</td>
<td>Shows the hardware event log information as a base for sending SNMP traps.</td>
</tr>
<tr>
<td><strong>Note:</strong> This is a new command.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>show system hwmonitor sensor</td>
<td>show system hwmonitor sensor</td>
<td>Shows all the information gathered from sensors.</td>
</tr>
<tr>
<td><strong>Note:</strong> This is a new command.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>show system keyboard</td>
<td>show system keyboard</td>
<td>Display default keyboard table</td>
</tr>
<tr>
<td>show system openfiles</td>
<td>show system openfiles [target]</td>
<td>Display open files</td>
</tr>
<tr>
<td><strong>Replaces:</strong> show open files [target]</td>
<td></td>
<td></td>
</tr>
<tr>
<td>show system timezone</td>
<td>show timezone</td>
<td>Display the timezone on IWSVA</td>
</tr>
<tr>
<td><strong>Replaces:</strong> show timezone</td>
<td></td>
<td></td>
</tr>
<tr>
<td>show system uptime</td>
<td>show system uptime</td>
<td>Show how long the system has been running</td>
</tr>
<tr>
<td><strong>Replaces:</strong> show uptime</td>
<td></td>
<td></td>
</tr>
<tr>
<td>show system openfiles target STRING [optional directory or filename] []</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>COMMAND</td>
<td>SYNTAX</td>
<td>DESCRIPTION</td>
</tr>
<tr>
<td>--------------------</td>
<td>-------------------</td>
<td>-----------------------------------------------------------------------------</td>
</tr>
<tr>
<td>show system version</td>
<td>show system version</td>
<td>Display IWSVA version</td>
</tr>
<tr>
<td>Replaces: show version</td>
<td></td>
<td></td>
</tr>
<tr>
<td>shutdown</td>
<td>shutdown [time]</td>
<td>Shutdown this machine after a specified delay or immediately</td>
</tr>
<tr>
<td></td>
<td>time UINT</td>
<td>Time in minutes to shutdown this machine [0]</td>
</tr>
<tr>
<td>start service</td>
<td>start service</td>
<td>Start the database daemon</td>
</tr>
<tr>
<td>database</td>
<td>database</td>
<td></td>
</tr>
<tr>
<td>Replaces:</td>
<td>service database</td>
<td></td>
</tr>
<tr>
<td>start</td>
<td>start service</td>
<td></td>
</tr>
<tr>
<td>ftpd</td>
<td>ftpd</td>
<td>Start the FTP traffic scanning daemon</td>
</tr>
<tr>
<td>Replaces:</td>
<td>service ftpd</td>
<td></td>
</tr>
<tr>
<td>start</td>
<td>start service</td>
<td></td>
</tr>
<tr>
<td>httpd</td>
<td>httpd</td>
<td>Start the HTTP traffic scanning daemon</td>
</tr>
<tr>
<td>Replaces:</td>
<td>service httpd</td>
<td></td>
</tr>
<tr>
<td>start</td>
<td>start service</td>
<td></td>
</tr>
<tr>
<td>logtodb</td>
<td>logtodb</td>
<td>Start the daemon that saves logs to database</td>
</tr>
<tr>
<td>Replaces:</td>
<td>service logtodb</td>
<td></td>
</tr>
<tr>
<td>start</td>
<td>start service</td>
<td></td>
</tr>
<tr>
<td>maild</td>
<td>maild</td>
<td>Start the email notification daemon</td>
</tr>
<tr>
<td>Replaces:</td>
<td>service maild</td>
<td></td>
</tr>
<tr>
<td>start</td>
<td>service maild</td>
<td></td>
</tr>
<tr>
<td>COMMAND</td>
<td>SYNTAX</td>
<td>DESCRIPTION</td>
</tr>
<tr>
<td>------------------------------</td>
<td>-----------------------------</td>
<td>------------------------------------</td>
</tr>
<tr>
<td>start service metric_mgmt</td>
<td>start service metric_mgmt</td>
<td>Start the metric management daemon</td>
</tr>
<tr>
<td><strong>Replaces:</strong> service metric_mgmt start</td>
<td></td>
<td></td>
</tr>
<tr>
<td>start service ssh</td>
<td>start service ssh</td>
<td>Enable the sshd daemon</td>
</tr>
<tr>
<td><strong>Replaces:</strong> enable ssh</td>
<td></td>
<td></td>
</tr>
<tr>
<td>start service svcmonitor</td>
<td>start service svcmonitor</td>
<td>Start the monitor daemon</td>
</tr>
<tr>
<td><strong>Replaces:</strong> service svcmonitor start</td>
<td></td>
<td></td>
</tr>
<tr>
<td>start service tmcmagent</td>
<td>start service tmcmagent</td>
<td>Start the TMCM agent</td>
</tr>
<tr>
<td><strong>Replaces:</strong> service tmcmagent start</td>
<td></td>
<td></td>
</tr>
<tr>
<td>start service tmsyslog</td>
<td>start service tmsyslog</td>
<td>Start the sylog daemon</td>
</tr>
<tr>
<td><strong>Replaces:</strong> service tmsyslog start</td>
<td></td>
<td></td>
</tr>
<tr>
<td>start service wccpd</td>
<td>start service wccpd</td>
<td>Start the WCCP daemon</td>
</tr>
<tr>
<td><strong>Replaces:</strong> service wccpd start</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### TABLE 12-1. Command Line Interface Commands (Continued)

<table>
<thead>
<tr>
<th>COMMAND</th>
<th>SYNTAX</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>start service webui</td>
<td>start service webui</td>
<td>Start the tomcat daemon</td>
</tr>
<tr>
<td>Replaces: service webui start</td>
<td></td>
<td></td>
</tr>
<tr>
<td>start shell</td>
<td>start shell</td>
<td>Administrative shell access</td>
</tr>
<tr>
<td>Replaces: admin shell</td>
<td></td>
<td></td>
</tr>
<tr>
<td>start task database backup</td>
<td>start task database backup</td>
<td>Back up your database</td>
</tr>
<tr>
<td>Replaces: admin db backup</td>
<td></td>
<td></td>
</tr>
<tr>
<td>start task database reindex</td>
<td>start task database reindex</td>
<td>Reindex the IWSVA database</td>
</tr>
<tr>
<td>Replaces: admin db reindex</td>
<td></td>
<td></td>
</tr>
<tr>
<td>start task database restore</td>
<td>start task database restore [filename]</td>
<td>Restore your database from a backup</td>
</tr>
<tr>
<td>Replaces: admin db restore [filename]</td>
<td></td>
<td></td>
</tr>
<tr>
<td>start task database truncate</td>
<td>start task database truncate &lt;DATE_FIELD&gt;</td>
<td>Truncate the IWSVA database</td>
</tr>
<tr>
<td>Replaces: admin db truncate &lt;DATE_FIELD&gt;</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
TABLE 12-1. Command Line Interface Commands (Continued)

<table>
<thead>
<tr>
<th>COMMAND</th>
<th>SYNTAX</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>start task database</td>
<td>start task database vacuum</td>
<td>Vacuum the IWSVA database</td>
</tr>
<tr>
<td>vacuum</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Replaces:</strong> admin db vacuum</td>
<td></td>
<td></td>
</tr>
<tr>
<td>start task capture</td>
<td>start task capture interface &lt;interface&gt; [-h host] [-p port]</td>
<td>Capture network interface traffic</td>
</tr>
<tr>
<td>interface</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Replaces:</strong> capture interface</td>
<td>capture interface &lt;interface&gt; [-h host] [-p port]</td>
<td></td>
</tr>
<tr>
<td>start task monitor ftp</td>
<td>start task monitor ftp</td>
<td>Monitor the FTP log</td>
</tr>
<tr>
<td><strong>Replaces:</strong> monitor ftp</td>
<td></td>
<td></td>
</tr>
<tr>
<td>start task monitor http</td>
<td>start task monitor http</td>
<td>Monitor the HTTP log</td>
</tr>
<tr>
<td><strong>Replaces:</strong> monitor http</td>
<td></td>
<td></td>
</tr>
<tr>
<td>stop process</td>
<td>stop process &lt;pid&gt;</td>
<td>Stop a running process</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Note:** If the administrator finds that database may not be fully vacuumed, tune the "max_fsm_pages" parameter in the `postgresql.conf` configuration file found at `/var/iwss/postgres/pgdata/`. 
### Table 12-1. Command Line Interface Commands (Continued)

<table>
<thead>
<tr>
<th>Command</th>
<th>Syntax</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>stop process core</td>
<td>stop process core &lt;pid&gt;</td>
<td>Stop a running process and generate a core file</td>
</tr>
<tr>
<td></td>
<td></td>
<td><em>pid UINT &lt;pid&gt;</em></td>
</tr>
<tr>
<td>stop service database</td>
<td></td>
<td>Stop the database daemon</td>
</tr>
<tr>
<td><strong>Replaces</strong>: service</td>
<td>service &lt;database&gt; stop</td>
<td></td>
</tr>
<tr>
<td>stop service ftpd</td>
<td></td>
<td>Stop the FTP traffic daemon</td>
</tr>
<tr>
<td><strong>Replaces</strong>: service</td>
<td>ftpd stop</td>
<td></td>
</tr>
<tr>
<td>stop service httpd</td>
<td></td>
<td>Stop the HTTP traffic daemon</td>
</tr>
<tr>
<td><strong>Replaces</strong>: service</td>
<td>httpd stop</td>
<td></td>
</tr>
<tr>
<td>stop service logtodb</td>
<td></td>
<td>Stop the daemon that saves logs to database</td>
</tr>
<tr>
<td><strong>Replaces</strong>: service</td>
<td>logtodb stop</td>
<td></td>
</tr>
<tr>
<td>stop service maild</td>
<td></td>
<td>Stop the email notification daemon</td>
</tr>
<tr>
<td><strong>Replaces</strong>: service</td>
<td>maild stop</td>
<td></td>
</tr>
<tr>
<td>stop service metric_mgmt</td>
<td>service metric_mgmt stop</td>
<td>Stop the metric management daemon</td>
</tr>
</tbody>
</table>
### TABLE 12-1. Command Line Interface Commands (Continued)

<table>
<thead>
<tr>
<th>COMMAND</th>
<th>SYNTAX</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>stop service ssh</td>
<td>stop service ssh</td>
<td>Disable the sshd daemon</td>
</tr>
<tr>
<td><strong>Replaces:</strong> disable ssh</td>
<td></td>
<td></td>
</tr>
<tr>
<td>stop service svcmonitor</td>
<td>stop service svcmonitor</td>
<td>Stop the monitor daemon</td>
</tr>
<tr>
<td><strong>Replaces:</strong> service svcmonitor stop</td>
<td></td>
<td></td>
</tr>
<tr>
<td>stop service tmcmagent</td>
<td>service stop tmcmagent</td>
<td>Stop the TMCM agent</td>
</tr>
<tr>
<td><strong>Replaces:</strong> service tmcmagent stop</td>
<td></td>
<td></td>
</tr>
<tr>
<td>stop service tmsyslog</td>
<td>stop service tmsyslog</td>
<td>Stop the syslog daemon</td>
</tr>
<tr>
<td><strong>Replaces:</strong> service tmsyslog stop</td>
<td></td>
<td></td>
</tr>
<tr>
<td>stop service wccpd</td>
<td>stop service wccpd</td>
<td>Stop the WCCP daemon</td>
</tr>
<tr>
<td><strong>Replaces:</strong> service wccpd stop</td>
<td></td>
<td></td>
</tr>
<tr>
<td>stop service webui</td>
<td>stop service webui</td>
<td>Stop the tomcat daemon</td>
</tr>
<tr>
<td><strong>Replaces:</strong> service webui stop</td>
<td></td>
<td></td>
</tr>
<tr>
<td>COMMAND</td>
<td>SYNTAX</td>
<td>DESCRIPTION</td>
</tr>
<tr>
<td>----------</td>
<td>-----------------------------</td>
<td>-----------------------------------------------------------------------------</td>
</tr>
<tr>
<td>traceroute</td>
<td>traceroute [-h hops] &lt;dest&gt; [-n]</td>
<td>TraceRoute</td>
</tr>
<tr>
<td></td>
<td></td>
<td>-h hops UINT Specify maximum number of hops</td>
</tr>
<tr>
<td></td>
<td></td>
<td>dest ADDRESS Remote system to trace</td>
</tr>
<tr>
<td></td>
<td></td>
<td>-n DASHN Do not resolve hostname []</td>
</tr>
<tr>
<td>wget</td>
<td>wget &lt;url&gt; &lt;path&gt;</td>
<td>Download file through HTTP/FTP protocols</td>
</tr>
<tr>
<td></td>
<td></td>
<td>url STRING</td>
</tr>
<tr>
<td></td>
<td></td>
<td>[<a href="http://username:password@hostname/path">http://username:password@hostname/path</a>]</td>
</tr>
<tr>
<td></td>
<td></td>
<td>path FILENAME The local path to download file</td>
</tr>
</tbody>
</table>
Chapter 13

Reports, Logs, and Notifications

This chapter describes how administrators can get timely information about their gateway security through InterScan Web Security Virtual Appliance (IWSVA) reports, logs, and notifications.

Topics in this chapter include the following:

- Summary Reports on page 13-2
- Introduction to Reports on page 13-11
- Types of Reports on page 13-12
- Report Settings on page 13-15
- Generating Reports on page 13-17
- Introduction to Logs on page 13-23
- Syslog Configuration on page 13-39
- Introduction to Notifications on page 13-39
- Enabling MAC Address Client Identification on page 13-62
- Advanced Reporting and Management (ARM) Integration on page 13-63
Summary Reports

The IWSVA console opens to the Summary screen that displays the System Dashboard with real-time, dynamic system information. Other available reports display static information. Tabs on the Summary screen provides access to the following:

- Real-time Statistics
- Scanning Activity
- URL Activity
- Spyware Activity
- Security Risk Reporting
- Hardware Status
- Application Traffic Statistics

Real-time Statistics

IWSVA provides dynamic statistics where the administrator can view the “real-time” information about the IWSVA system. These statistics are displayed as graphs in the System Dashboard tab of the Summary page and include the following:

- Virus and Spyware Trend Display
- Component Update Status Display
- Hard Drive Display
- Bandwidth Display
- Concurrent Connections Display
- CPU Usage Display
- Physical Memory Usage Display

The “Virus and Spyware Trend” dashboard displays the latest information as to when the report was generated. The information displayed is not updated in real time as in the other dynamic real-time reports of the Summary (System Dashboard tab) screen.
Note: If the system time is adjusted backward (either manually or through automatic network time server synchronization), IWSVA will stop gathering real-time statistics information. To have IWSVA collect real-time statistics information, you must restart the metric management daemon. Type the following commands in the CLI:

```plaintext
stop service metric_mgmt
start service metric_mgmt
```

**Virus and Spyware Trend Display**

This is a static display that shows the rate at which viruses and spyware are being detected by IWSVA. (You can specify threshold alerts so that you are notified of a critical level of virus and/or spyware “hits.”) The rate is based on a seven-day period and “hits” are recorded daily. Therefore, a new display is started every seven days. The display does not include the names of users involved.

Note: Because each day’s virus and spyware data is represented by a single point on the display, IWSVA cannot start graphing data until there are two points, or two days worth of data available.

The information in the Virus and Spyware display is for the entire IWSVA.

**Component Update Status Display**

This is a static display that shows the current version of IWSVA components (such as the scanning engine and virus pattern) and the dates they were last updated. To manually update the components, click **Update** to display the Manual Update screen. See *Manual Updates* on page 4-10 for more information.

**Hard Drive Display**

This is a static display that shows the status of the disk(s) used by IWSVA for its system files, quarantine space, temporary space, and logs. The Hard Drive display can monitor up to 12 disks.

If the database resides on the same drive as any of these directories, then the database disk usage is also included in the display. The scale along the Y-axis ranges from 10 to 100 percent.
You can specify threshold alert values and the frequency of alerts so that you are notified when any of the hard disk statuses reach a critical level. IWSVA can send these alerts either through email, SNMP trap/notification (if enabled), or both. SNMP traps are sent when a configured threshold value is met.

**Bandwidth Display**

This is a dynamic display that shows the bandwidth usage of both inbound and outbound traffic for HTTP and FTP. IWSVA recognizes traffic in terms of requests and responses. Therefore, the display interprets all requests as outbound traffic and all responses as inbound traffic. From this display, you can view any potential bandwidth problems.

The display shows ten data points that give the graph a history of five to ten minutes of activity. This activity is only monitored for the local IWSVA device. With the ideal refresh rate being between 30 and 60 seconds, the display has a default refresh rate of 30 seconds.

Clicking the 1-day or 30-day button opens a window that shows a static chart with one or 30 days of usage, respectively. IWSVA retrieves this information from the database. If the database does not contain enough data, the display shows the data that is available.

**Note:** The 30-day display option shows each day's bandwidth usage data by a single point. For the 1-day display option, the screen shows the bandwidth usage for each hour of the day by a single point. IWSVA cannot start graphing data until there are at least two points worth of data available.

You can specify threshold alert values and the frequency of alerts so that you are notified when a bandwidth usage reaches a critical level. IWSVA can send alerts either through email, SNMP trap/notification (if enabled), or both. See *Email Notification Settings* on page 13-40.

**Note:** The bandwidth setting should be very high—above “out of normal range” values to avoid frequent alerts.
Concurrent Connections Display
This dynamic display shows concurrent connections usage for HTTP/HTTPS in purple and FTP in orange. It shows the number of connections and connection time (in seconds.)

CPU Usage Display
This is a dynamic display that shows CPU utilization on the local system. In the case of multiple CPUs, the display shows the average IWSVA usage across all CPUs. It does this by displaying a single line for all CPU utilization. IWSVA determines the CPU utilization based on CPU cycles used, CPU cycles used by IWSVA, and total CPU cycles used by the backend, CPU-monitoring API.

By default, IWSVA samples the CPU usage each second for two minutes, giving you 120 data points. In the init file, you can change the default refresh rate.

Clicking the 1-day or 30-day button opens a window that shows a static chart with one or 30 days of CPU usage, respectively. IWSVA retrieves this information from the database. If the database does not contain enough data, then the display shows the data that is available.

Note: The 30-day display option shows each day’s CPU usage data by a single point. For the 1-day display option, the screen shows the CPU usage for each hour of the day by a single point. IWSVA cannot start graphing data until there are at least two points worth of data available.

Physical Memory Usage Display
This is a dynamic display that shows the amount of physical memory used by the local IWSVA server.

By default, IWSVA samples the physical memory usage each second for two minutes, giving you 120 data points. In the init file, you can change the default refresh rate.

Clicking the 1-day or 30-day button opens a window that shows a static chart with one or 30 days of physical memory usage, respectively. IWSVA retrieves this information from the database. If the database does not contain all the data, the display shows the data that is available.
Note: The 30-day display option shows each day’s physical memory usage data by a single point. For the 1-day display option, the screen shows the physical memory usage for each hour of the day by a single point. IWSVA cannot start graphing data until there are at least two points worth of data available.

Scanning Activity
Activities pertaining to scanning are available from the Scanning tab. They include the following:

- Enabling and disabling HTTP and FTP traffic (available from all Summary page tabs)
- Access links to Trend Micro’s Web threat protection sites (available from all Summary page tabs)
- Displaying malware names and frequency of occurrence in scanning results by selected time period
- Top 5 Virus/Malware Risk (last 7 days) based on IP Address/Host name/User name
- Refreshing scanning results

The Scanning tab displays the names of top five most detected virus/malware and devices at risk. In addition, you can also view scanning results by a selected time period.

URL Activity
Activities pertaining to URL activity are available from the URL tab. This screen includes the top URLs/categories/phishing sites blocked for the past seven days and URL activity by selected time period displays of the following items:

- Most blocked URLs
- Most blocked URL categories
- Most blocked phishing sites
- URL activity summary
Spyware Activity

Activities pertaining to spyware activity are available from the Spyware tab. This tab displays scanning information about the following:

- **Top 5 Detected Spyware (last 7 days)**—This section gives the spyware name and the option to add it to the exceptions list.
- **Top 5 Spyware Risks (last 7 days)**—This section lists the User ID from which the risk initiates.
- **Scanning results for (Today, Past week, or Past month)**—This section lists the spyware name and frequency of occurrence.
- **Cleanup results for (Today, Past week, or Past month)**—This section lists the malware type and the number of each type cleaned.

Security Risk Reporting

Activities pertaining to security risk reporting are available from the Security Risk Report tab. Security Risk Reporting displays information for the past week or the past 28 days on different types of malicious activity. A comprehensive graph provides an “at-a-glance” view of multiple, color-coded threats.

Data from this report (listed by day or week) can be exported in CSV format or printed. The type of threats tabulated here include:

- **Malware**—such as viruses, macros, Trojans, IntelliTrap detections, and others
- **Spyware/grayware**—such as spyware, grayware, and ActiveX
- **Pharming**—such as those reported by Web Reputation
- **Phishing**—such as those reported by Web Reputation and the phishing pattern
- **Unauthorized Web access**—such as URL filtering and offending URLs detected by Web Reputation

Hardware Status

The Hardware Status feature provides the administrator with the ability to monitor hardware information about fans, voltage, temperature, etc. on Intelligent Platform Management Interface (IPMI)-enabled devices.
Note: IWSVA hardware monitoring is only compatible with the Baseboard Management Controller (BMC) with Intelligent Platform Management Interface (IPMI) v2.0 support installed on bare metal.

Administrators can query the hardware status information using the IWSVA Web console or by SNMP request. If SNMP trap is enabled, an alert will be sent when system events are detected, such as “temperature threshold exceeded”, “voltage threshold exceeded”, etc.

Alerts can be sent to notify administrators of any problems. They are configured at: Notification > SNMP Notifications Settings > Hardware monitoring events (check box).

The following provides a brief description of the options available on the Hardware Status screen:

• Interface Status—Icons shown Table 13-1 represent the status of the interfaces:

<table>
<thead>
<tr>
<th>ICON</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>![Icon]</td>
<td>Link not detected. Could be an empty port, cable may be loose or broken, or the peer machine may be down.</td>
</tr>
<tr>
<td>![Icon]</td>
<td>Link OK</td>
</tr>
<tr>
<td>![Icon]</td>
<td>Link error</td>
</tr>
<tr>
<td>![Icon]</td>
<td>Link disabled</td>
</tr>
<tr>
<td>![Icon]</td>
<td>Data interface</td>
</tr>
</tbody>
</table>

TABLE 13-1. Interface Status Indicators
• **Hardware Type**—shows Voltage, Fan, CPU, Storage and Temperature statistics
• **Status**—shows the current status of the hardware. Usually it shows “Normal,” but if an abnormal event occurs, it displays Critical or Failed, depending on the event. The five available status are:
  • **Normal**—Component status is ok
  • **Warning**—Component status is compromised
  • **Critical**—Component status is in danger of failing
  • **Failed**—Component is not working
  • **Unknown**—No component information is available
• **Sensor Information**—displays information about the status of the type of hardware monitored.

### SNMP Queries and Traps

Administrators can poll the hardware status using SNMP queries and receive alerts through SNMP traps. To do this, administrators need import the hardware-monitoring MIB file into an SNMP tool like iReasoning MIB Browser.

IWSVA also supports two standard MIB files for network interface card statistics:
• **RFC1213-MIB**
• **HOST-RESOURCES-MIB**

These are available from:


The third Trend Micro-specific MIB for hardware events monitoring is:
**TM-HWMONITOR-MIB**

located on the Trend Micro download site at:
To receive traps from IWSVA, administrators need configure the SNMP trap destination at Administration > Network Configuration > SNMP Settings.

Application Traffic Statistics

Application Control real-time traffic information can be viewed at the Summary | Application Traffic tab. Application Control can be enabled in Transparent Bridge Mode and Transparent Bridge Mode - High Availability. Traffic statistics for HA will only be available on the parent unit's Web console.

**Note:** Application Control traffic statistics only display if you enable the Application Control feature at Application Control > Policies.

The Application Control Traffic Statistics tab shows the following data:

- **Bandwidth**—The bandwidth chart shows the Traffic in KBs per second for inbound and outbound traffic. Click the last day icon or last 30-days icon to see results for those time periods in a separate window.

- **Concurrent application connections**—The concurrent application connections shown the total concurrent application connections.

- **Top 5 bandwidth usage by application**—The top 5 bandwidth usage by application shows the application usage in a chart and a table.

- **Top 5 concurrent connections by application**—The top 5 concurrent connections by application shows the connection information in a chart and in a table by application name and number of concurrent connections.

**Note:** Other statistics about bandwidth and users are available at Reports > Real-Time Reports > Application Control Reports > Top "N" reports.

To view end-user details on Internet application usage, the Advanced Reporting and Management option must be deployed with IWSVA.
Accessing Additional Web Threat Information

From the Threat Resources drop-down list in the upper right corner of the Summary page, you can access the links to Trend Micro’s Web threat protection sites to learn more about the latest Web threats, research from where various Web threats are originating, access Trend's virus encyclopedia, and see real-time Web and email malware statistics. See Enabling HTTP Malware Scanning and Applets and ActiveX Security on page 8-2 to view the Threat Resources drop-down list.

![Web Threat Protection Technologies](image)

**FIGURE 13-1.** Web threat protection technologies that can be accessed in IWSVA

Introduction to Reports

IWSVA can generate reports about virus and malicious code detections, files blocked, URLs accessed and DCS cleanups. You can use this information about IWSVA program events to help optimize program settings and fine tune your organization's security policies.
You can configure and customize reports. For example, IWSVA allows you to generate reports for all or specific user(s), all or specific group(s), either on demand (in real time) or on a scheduled basis.

In addition, for scheduled reports, you can create report templates based on user(s)/group(s) or report type. To allow you to share the selected report information with those who need it, IWSVA can send the generated report through email as file attachments.

**Types of Reports**

IWSVA can generate the following categories of reports:

- **Violation-event reports**—Reports about virus detections, policy violations, blocked URLs, and monitored URLs and applications.
- **Application Control reports**—Reports allow you to specify all application protocols or to select specific application protocols.
- **Spyware/Grayware reports**—Reports about spyware detections
- **HTTP Inspection reports**—Reports about HTTP Inspection violations by blocked and monitored users.
- **Cleanup reports**—Reports about DCS cleanup attempts requested by IWSVA
- **Traffic reports**: Reports about Web browsing activity, the most popular Web sites and downloads, and other details about Web browsing activity.
- **URL filtering category reports**—Reports about a main category or selected sub-categories
- **Individual/per user reports**

The following sections describe all available reports.

**Violation-event Reports**

IntelliTrap is used to detect potentially malicious code in real-time, compressed executable files that arrive with HTTP/HTTPS data. When IntelliTrap detects a malicious executable file, the following detections appears in Violation-event reports:

- Riskiest URLs by viruses detected
- Users with most requests for malicious URLs
• Most violations by user
• Most violations by group
• Most blocked URL categories
• Most monitored URL categories
• Most warned (including warned and continued) URL categories
• Most blocked Applets and ActiveX objects
• Most blocked URLs
• Most monitored URLs
• Most blocked URLs by day of the week
• Most blocked URLs by hour
• Most warned (including warned and continued) URLs

Summary Reports
• Most blocked URLs by day of the week
• Most blocked URLs by hour

Application Control Reports
• Top “n” protocols used
• Top “n” Most active users

Note: To generate Application Control reports, you must select the following option:
- “Enable Application Control” at Application Control > Policies.

Reports can be generated for specific protocols by clicking the “Specify Application Protocols” link at Reports > Real-time Reports > Application Control reports > Top “N” reports.

Spyware/Grayware Reports
• Spyware/grayware detection by category
• Top spyware/grayware detections
• User with most Spyware/Grayware infections
HTTP Inspection Reports

• Top “n” most blocked users
• Top “n” most monitored users

Cleanup Reports

• Cleanup events by category
• Top cleanup events by name
• Most infected IP addresses

Note: Cleanup reports require the installation of the Damage Cleanup Services (DCS) component and the registration of IWSVA and DCS (Administration > IWSVA Configuration > Register to DCS).

Traffic Reports

For traffic reports, you need to enable “Log HTTP/HTTPS/FTP access events” in Logs > Log Settings.

Traffic reports might take a long time to generate; that is, up to a few hours for large sites with extensive access logs.

• Most active users
• Most popular URLs
• Most popular downloads
• Most popular search engines
• Top categories (weighted)

Summary Reports

• Daily traffic report
• Activity level by day of the week
• Activity level by hour
URL Filtering Category Reports

- Most active users
- Most active URLs
- Most monitored users
- Most monitored URLs
- Most warned (including warned and continued) users
- Most warned (including warned and continued) URLs

Individual/per User Reports

- Overview report
- Most popular sites visited by user*
- Most blocked URL categories by user
- Most monitored URL categories by user
- Most warned (including warned and continued) URL categories by user
- Most blocked URLs by user
- Most monitored URLs by user
- Most warned (including warned and continued) URLs by user

Summary Reports

- Overview report
- URL activity by user*

* Log HTTP/HTTPS/FTP access events must be enabled in Logs > Log Settings

Report Settings

When generating a real-time report or setting up scheduled reports, you need to specify the information in the following sections:

- Report Scope (Users and Groups) on page 13-16
- Generate Reports by Protocol on page 13-16
- Type and Number of Report Records on page 13-16
- Options on page 13-17
Report Scope (Users and Groups)

Select the user(s) and or group(s) for which you want to generate a report. Options include:

- **All users**: All clients accessing the Internet through IWSVA
- **Specific user(s)**: Clients with specific IP addresses, host names, or LDAP directory entries
- **All groups**: All groups in the LDAP directory; if using the IP address or host name identification method, then “All groups” is equivalent to “All users”
- **Specific group(s)**: Either specified LDAP groups or a range of IP addresses

When generating reports for specific users or groups, the user selection method is determined by the method configured under Administration > IWSVA Configuration > User Identification | User Identification tab. For more information about user identification, see Configuring the User Identification Method starting on page 7-5.

Generate Reports by Protocol

You can select to generate reports based on selected Web protocols (HTTPS, HTTP, or FTP). For example, you can select to generate reports for HTTPS traffic to check detected threats through HTTPS connections.

Type and Number of Report Records

IWSVA allows you to specify the number of records shown in different reports. For example, you can configure the number of users to be listed on the “Most active users” Web traffic report. The default number of records for all reports is 10. The maximum number of report records allowed is 99.
Options
IWSVA can present program information in either bar, stacked bar or line charts. Different chart shading for URLs or downloads blocked by IWSVA versus successful requests can also be used.

Additional Report Settings
For real-time reports, specify the time period the report covers. When setting up a scheduled report, there are some additional settings:

• Send a copy of the report to a specific person or email distribution list after the report has been generated
• Run the reports at a specific time and day
• “Enable” the report to run at the scheduled time

Generating Reports
Real-time Reports
IWSVA enables you to generate reports in real time for either all or a subset of the clients accessing the Internet. You can save the generated real-time report in PDF or CVS format (click the corresponding link on the upper left corner in the report screen).

To configure real-time reports:
1. Click Reports > Real-Time Reports in the main menu.
2. Under “Time period,” select a time period for the report (either All Dates, Today, Last 7 days, Last 30 days). Or click Range to generate a report in a given time range, and then select the From and To dates.
3. Under Report by, select the users for which the report is generated—either All users, Specific user(s), All groups, or Specific group(s). For more information about running reports for specific users or groups, see To select specific group(s) and To select specific user(s): starting on page 13-19.
4. Under Generate Report by Protocol, select the Web protocol for which you want to generate a report.
5. Under Report Type, select the report type(s) and enter the desired report record number(s).

**Note:** IWSVA groups multiple report parameters into a single report, with each report parameter having its own section.

6. Under Options, select the chart type from the menu. To denote blocked traffic from unblocked traffic using different shading, select “Distinguish blocked from unblocked traffic.”

7. Click Generate Report.

   Click Reset to reset the form to the default values.

The following table provides information about the parameters that can comprise a report:

### TABLE 13-2. Report Parameter Availability Depends on the Report Type

<table>
<thead>
<tr>
<th>REPORT BY</th>
<th>REPORT PARAMETERS INCLUDED</th>
</tr>
</thead>
<tbody>
<tr>
<td>All users</td>
<td>Includes all listed report parameters except for “Individual user reports”</td>
</tr>
<tr>
<td>Specific users</td>
<td>Includes only the “Individual user reports” parameters</td>
</tr>
<tr>
<td>All groups or Specific groups</td>
<td>The following reports are enabled: &lt;br&gt;- Most violations by group*&lt;br&gt;- Most blocked URL categories*&lt;br&gt;- Most monitored URL categories*&lt;br&gt;- Most warned (including warned and continued) URL categories&lt;br&gt;- Most blocked Applets and ActiveX objects&lt;br&gt;- Most blocked URLs*&lt;br&gt;- Most monitored URLs*&lt;br&gt;- Most blocked URLs by day of the week*&lt;br&gt;- Most blocked URLs by hour*</td>
</tr>
</tbody>
</table>
To select specific group(s):

1. Click Reports > Real-time Reports in the main menu.
2. Under Report by, select Specific group(s), and then click Select.
   When you click Select on Specific group(s) (Reports > Real-time Reports > Report by), the Select Groups pop-up screen opens according to the configured user identification method (Administration > IWSVA Configuration > User Identification | User Identification).
3. Type the IP address range (or search for a group name in your LDAP directory if using the “User/group name authentication” identification method).
4. Click Add.
5. After adding all the groups, click Save.

To select specific user(s):

1. Click Reports > Real-time Reports in the main menu.
2. Under Report by, select Specific user(s), and then click Select.
   When you click Select on Specific user(s) (Reports > Real-time Reports > Report by), the Select Users pop-up screen opens according to the setting made in the user identification method (Administration > IWSVA Configuration > User Identification | User Identification).
3. Type the IP address, Host name or search for a user name in your LDAP directory if using the “User/group name authentication” identification method.
4. Click Add.
5. After adding the users to include in the report, click Save.

* For Web Reputation (including anti-pharming and anti-phishing), blocked sites appear in these reports. But to find a blocked site, the information is only in “Most blocked URLs.”
Scheduled Reports

You can configure IWSVA to generate scheduled reports on a daily, weekly, or monthly basis.

To configure scheduled reports:

2. Click Reports > Scheduled Reports > Daily Reports | Weekly Reports | Monthly Reports from the main menu.
3. Click Add or a report name to edit it.
4. Enter a name for the new report. Set the time and/or date to generate the scheduled report.
5. Under Report template, select a template from the drop down list.

    Note: Template reports must exist before you can configure a new scheduled report profile. For more information, see: Scheduled Report Templates on page 13-21.

6. Select Email this report and the attachment format, and type the email address(es) to which IWSVA should send the generated report as a file attachment. You must also enter the From and Subject fields. Separate multiple email addresses with commas.

7. Click Save.

To delete a scheduled report:

1. Click Reports > Scheduled Reports > Daily Reports | Weekly Reports | Monthly Reports in the main menu.
2. Select the report setting to remove and then click Delete.

    Note: Deleting a scheduled report will not remove the associated report template.
Scheduled Report Templates

To define what content is to be included in a report and customize report format, IWSVA allows you to configure report templates to generate only the reports that you want to distribute to specific recipients. After you have created a report template, you can apply it to a scheduled report profile. IWSVA generates the report and distributes it to specific recipients based on the settings in the scheduled report profile.

You can create different report templates for daily, weekly, and monthly reports. In addition, report templates can be reused and changes made to a template are automatically reflected in the associated reports. The Copy function allows you to create new report templates quickly by adjusting the settings copied from another template.

To configure a scheduled report template:

1. Click Reports > Report Template from the main menu.
2. Click Add or click a template name to edit an existing one.
3. Enter the Template Name for a new template.
4. Under Generate Report for, select the users for which the report is generated—either All users, Specific user(s), All groups, or Specific group(s). For more information about running reports for specific users or groups, see To select specific group(s): and To select specific user(s): starting on page 13-19.
5. Under Report Type, select the report type and enter the desired report parameter(s).
6. Under Options, select the chart type from the menu. To denote blocked traffic from unblocked traffic using different shading, select “Distinguish blocked from unblocked traffic.”
7. Click Save.

To create a new report template based on the settings of an existing template:

1. Click Reports > Report Template from the main menu.
2. Select the name of the template you want to copy. Click Copy. The Add Template screen displays with the settings of the template you have selected.
3. Enter a different name in the Template Name field and make changes to the template if required.
4. Click Save.
Saved Scheduled Reports

When a scheduled report is generated, IWSVA sends the report to specified recipients and saves a copy to the database. You can view or download the saved report under Reports > Scheduled Report > Daily Reports|Weekly Reports|Monthly Reports and click the Saved Reports tab. You can configure the number of saved reports IWSVA is to store in the database (refer to Customizing Reports starting on page 13-22).

To download a saved scheduled report:
2. Click a report name to display the report.
3. You can save the report in HTML format using the save feature in your Web browser or click to save the report in CSV or PDF format on your computer.

To delete a saved scheduled report:
1. Click Reports > Scheduled Reports > Daily Reports|Weekly Reports|Monthly Reports in the main menu.
2. Click Saved Reports tab.
3. Select the reports to remove and then click Delete.

Customizing Reports

You can configure IWSVA to archive scheduled reports. The default path for archiving reports is /var/iwss/report but can be modified. The default configuration is to archive 60 daily reports, 20 weekly reports, and four monthly reports before deleting them from the server, but you can configure the number of scheduled reports to save.

To customize the report data maintenance settings:
1. Click Reports > Customization in the main menu.
2. Under Report Archives, type the following information in the fields provided:
   a. Archive Directory to save the reports (the default is /var/iwss/report)
Note: When changing the Archive Directory, the folder must exist on the IWSVA device before it is entered into the Report Customization page. In order to view reports already generated, copy them over to the new folder.

b. Number of scheduled reports to save:
   • Daily reports (default is 60)
   • Weekly reports (default is 20)
   • Monthly reports (default is 4)

3. Click Save.

Introduction to Logs

There are two types of logs available with IWSVA: reporting logs and system logs.

Reporting logs provide program event information, and the IWSVA Web console can be used to query and view them. These logs include:
   • Application control
   • Virus
   • URL blocking
   • URL access
   • Performance
   • System events

System logs contain unstructured messages about state changes or errors in the software, and are only visible by viewing the log file—they cannot be seen from the Web console. System logs include the following logs:
   • Application Control
   • HTTP scan
   • FTP scan
   • Mail delivery daemon
   • Administration
   • Update
   • Audit trail
The IWSVA database stores all log data, but log data can also be stored in text log files for backward compatibility with previous IWSVA versions or used with an external reporting tool. Storing the log data in text log files provides redundancy to verify that the database is properly updated. Trend Micro recommends using the database as the only storage location for log data.

In addition, IWSVA provides syslog capabilities. This allows you to configure IWSVA to send specified logs to one or more external syslog servers.

**Options for Recording Data**

IWSVA uses data from reporting logs to generate reports. You can configure IWSVA to write reporting log data to both the database and text logs, only to the database, or only to the text log. If you choose the text-only option, then neither reports nor logs can be viewed from within the IWSVA user interface. In this case, you can only review the logs by directly opening the generated text files.

Configure reporting log options in the IWSVA Web console under **Logs > Log Settings** (see Log Settings starting on page 13-34 for more information).

There is a performance penalty for enabling the access log (**Log HTTP/HTTPS/FTP access events** is disabled by default). By default, access logging is disabled. In order to obtain reports for user access, you must enable access logging by selecting **Log HTTP/HTTPS/FTP access events** in the **Logs > Log Settings > Reporting Logs** screen.

If you do not enable access logging, many reports on user activities will not be available. Moreover, if IWSVA is configured as an upstream proxy, valuable data on user activities might not be available. If you want IWSVA to summarize all Web-related activities, enable the access log under the **Options** section in **Logs > Log Settings > Reporting Logs**.

**Note:** When the access log is enabled, the IWSVA service is restarted. During the restart, a router might take up to 30 seconds to recognize IWSVA again, during which time the router does not redirect packets.
Querying and Viewing Logs
The IWSVA Web console provides tools to query log files.

Application Control Log
Administrators can query Application Control logs if they enable the “Log Application Control events for the Blocked action” in the Application Control > Settings page. By default, IWSVA writes to the log every five minutes. This interval can be changed on the Application Control > Settings page.

Application Control logs provide the following information:

- **Time period**—Displays all logs, or logs for current day, week, or month.
- **Blocked Application Rules**—Select from the list of Application Control rules to have those logs displayed. If more than one blocked instance occurs for the same policy, all instances will be displayed.
- **Sort by**—Choose the order in which you want IWSVA to group the logs for display:
  - **Date**—The date and time the protocol was blocked
  - **Protocol**—Type of Web connection (HTTP or HTTPS)
  - **Rule**—The reason a given application was blocked, that is, the rule that caused the application to be blocked. Example: An Application Control policy of blocking all Instant Message (IM) applications.
  - **User ID**—ID of the user whose application was blocked

Audit Log
The audit log contains information that describes any configuration changes that users make to the application. For instance, after a migration or rollback procedure is activated by a user, an entry recording the migration activity is created in the audit log.

To view the audit log:

1. Click **Logs > Log Query > Audit Log** in the main menu.
2. Under **Time period**, select the time for which you want a report generated.
   - Click **Range** to view the virus log in a given time range, then select the start and end dates.
3. Under User(s), select the user(s) for which you want to view log entries. Click Add (or Add All for all users listed). To remove user(s) from the right list box, click Remove (or Remove All for all users listed).
4. Under the Sort by section, select an option by which to sort the display log. The options are “User” and “Date.”
5. Click Show Log. The Audit Log screen opens.
6. Click Refresh to update the screen.

Cleanup Log

The cleanup log contains information returned by DCS after it performs a cleanup of the client machine. If no response is returned from a DCS server, there is no entry for that cleanup request.

To view the virus log:
1. Click Logs > Log Query > Cleanup Log in the main menu.
2. Select a Time period (All Dates, Today, Last 7 days, Last 30 days).
   Click Range to select a time range, then select the start and end dates.
3. Under Malware cleaned, select the malware name(s).
   Highlight the names to add, and then click Add (or Add All for all viruses listed).
   To remove malware name(s) from the right list box, click Remove (or Remove All for all malware names listed).
   Under some circumstances, DCS is unable to connect to a client machine when IWSVA sends the cleanup request. Because no malware is cleaned during these attempts, querying the cleanup log by malware name does not display any information. To view logs about cleanup attempts when DCS could not successfully connect to the client machine, select Show connection failure events.
4. Under the Sort by section, select a sort option (Malware, Date, IP address, Action, Type, or Subtype).
5. Click Show Log. The Cleanup Log viewing screen opens.
6. Click Refresh to update the screen.
FTP Get Log
The FTP Get log contains all FTP Get transaction information, including user ID, date, FTP transfer source, and file name.

To view the FTP Get log:
1. Click Logs > Log Query > FTP Get Log in the main menu.
2. Select a Time period (All Dates, Today, Last 7 days, Last 30 days).
   Click Range to select a time range, then select the start and end dates.
3. Under Sort by, select a sort order.
5. Click Refresh to update the screen.

FTP Put Log
The FTP Put log contains all FTP Put transaction information, which includes user ID, date, sender identification, and file name.

To view the FTP Put log:
1. Click Logs > Log Query > FTP Put Log in the main menu.
2. Select a Time period (All Dates, Today, Last 7 days, Last 30 days).
   Click Range to select a time range, then select the start and end dates.
3. Under Sort by, select a sort option.
5. Click Refresh to update the screen.

HTTP Inspection Log
The HTTP Inspection log contain information about monitored and blocked users which includes date, filter, rule, user ID, filtering action, URL, and protocol.

To view the HTTP Inspection log:
1. Click Logs > Log Query > HTTP Inspection Log in the main menu.
2. Select a Time period (All Dates, Today, Last 7 days, Last 30 days).
   Click Range to select a time range, then select the start and end dates.
3. Under **HTTP Inspection Rules**, add the appropriate rule(s) listed in the left list box to the right list box. Highlight the rule(s) to add, then click **Add** (or **Add All** for all URLs listed). To remove the list of rules from the right list box, click **Remove** (or **Remove All** for all rules listed).

4. Under **Protocol**, select a Web protocol type for which you want to view logs.

5. Under **Sort by**, select the appropriate option to sort the display log:
   - **URL**—The blocked URL
   - **Date**—The date and time when the URL was blocked
   - **Filter**—The filter defined by the user used in the HTTP Inspection policy.
   - **Rule**—How the URL was blocked.
   - **User ID**—The IP address, host name, or LDAP user/group name associated with the client that requested the URL
   - **Protocol**—Type of Web connection (HTTPS or HTTP)
   - **Filtering action**—Action defined in the policy.

6. Click **Show Log**. The **HTTP Inspection Log** viewing screen opens.

7. Click **Refresh** to update the screen.

**Performance Log**

The performance log contains information about server performance. Each performance metric record contains:
- Date and time the metric was recorded
- IWSVA device that recorded the metric
- Metric name (one of: HTTP Requests Processed, HTTP Responses Processed, Number of HTTP threads, HTTP CPU % Utilization)
- Metric value

**To view the performance log:**

1. Open the IWSVA Web console and click **Logs > Log Query > Performance Log** in the main menu.

2. Select a **Time period** (All Dates, Today, Last 7 days, Last 30 days) from the drop-down menu.
   Click **Range** to select a time range, then select the start and end dates.
3. Under Sort by, select a sort order.
5. Click Refresh to update the screen.

Spyware/Grayware Log
The spyware/grayware log contains information about spyware/grayware detected by IWSVA, including the name of the spyware/grayware, date, action, category, scan type, file name affected, user ID of the client involved, and Web protocol.

To view the spyware/grayware log:
1. Click Logs > Log Query > Spyware/Grayware Log in the main menu.
2. Under Time period, select a time (All Dates, Today, Last 7 days, Last 30 days).
   Click Range to select a time range, then select the start and end dates.
3. Under Grayware, select the spyware/grayware for which you want to view log entries. Click Add (or Add All for all grayware listed).
   To remove grayware from the right list box, click Remove (or Remove All for all viruses listed).
4. Under Protocol, select a Web protocol type for which you want to view logs.
5. Under the Sort by section, select a sort option (Grayware, Date, Action, Category, Scan Type, File Name, User ID, Protocol).
7. Click Refresh to update the display.

System Event Log
The system event log contains information about state changes or errors that occurred in the system. The following types of events are recorded:
• Active updates
• Product registration
• System maintenance
• ARM database connection status (if using ARM)
To view the system event logs:

1. Click Logs > Log Query > System Event Log in the main menu.
2. Under Time period, select a time (All Dates, Today, Last 7 days, or Last 30 days).
   Click Range to select a time range, then select the start and end dates.
3. Under Level(s), select the event level(s) for which you want to view log entries.
   Click Add (or Add All for all grayware listed).
   To remove an event level from the right list box, click Remove (or Remove All for all levels listed).
4. Under the Sort by section, select a sort option (Server, Date, Level, or Source).
5. Click Show Log. The System Event Log viewing screen opens.
6. Click Refresh to update the display.

URL Blocking Log

The URL Blocking log contains information about URLs that have been blocked including the date and time the blocking event occurred, category, blocking rule applied, user ID, Outbreak Prevention Policy (OPP) ID if applicable, and scan type.

To view the URL blocking log:

1. Click Logs > Log Query > URL Blocking Log in the main menu.
2. Select a Time period (All Dates, Today, Last 7 days, or Last 30 days).
   Click Range to select a time range, then select the start and end dates.
3. Under URLs blocked, you can add the URL(s) listed in the left list box to the right list box.
   Highlight the URL(s) to add, then click Add (or Add All for all URLs listed). To remove the list of URLs from the right list box, click Remove (or Remove All for all URLs listed).
4. Under Protocol, select a Web protocol type for which you want to view logs.
5. Under Sort by, select the appropriate option to sort the display log.
   • URL—The blocked URL
   • Date—The date and time when the URL was blocked
   • Category—The rule defined by the user in the URL filtering, Access Quota, file blocking, and URL blocking policy
• **Rule**—How the URL was blocked:
  • *IWSVA-defined rule (block the URL containing a virus)*: Displays the URL that has been blocked
  • *URL blocking rule*: Displays the URL in the block list
  • *URL filtering rule*: Displays the policy name
  • *OPP defined rule*: Displays the OPP rule
  • *File type defined rule*: Displays blocked file type
  • *Phish defined rule*: Displays a Phish violation rule
  • *Access Quota defined rule*: Displays access quota violation rule

• **User ID**—The IP address, host name, or LDAP user/group name associated with the client that requested the URL

• **OPP ID**—The ID number of the Outbreak Prevention Policy (OPP)

• **Scan Type**—Either URL filter, URL block, or Phish trap

• **Protocol**—Type of Web connection (HTTPS, HTTP, or FTP)

6. Click **Show Log**. The **URL Blocking Log** viewing screen opens.

7. Click **Refresh** to update the screen.

**Note:** You can also find an entry in the **URL Blocking Log** when an FTP proxy blocks a file by type.

**URL Filtering Log**

The URL filtering log contains information on filtered URLs (those that are blocked or monitored) including the date and time the filtering action occurred, category, URL filtering rule applied, user ID, and scan type.

**To view the URL filtering log:**

1. Click **Logs > Log Query > URL Filtering Log** in the main menu.

2. Select a **Time period** (All Dates, Today, Last 7 days, or Last 30 days).

   Click **Range** to select a time range, then select the start and end dates.

3. Under **URLs filtered**, you can add the URL(s) listed in the left list box to the right list box.
Highlight the URL(s) to add, then click Add (or Add All for all URLs listed). To remove the list of URLs from the right list box, click Remove (or Remove All for all URLs listed).

4. Under Protocol, select a Web protocol type for which you want to view logs.

5. Select the filtering action (Block, Monitor, Warn, Override, and/or Warn and Continue) for which you want to view logs.

6. Under Sort by, select the appropriate option to sort the display log.
   - URL—The filtered URL
   - Date—The date and time when the URL was filtered
   - Category—The rule defined by the user in the URL filtering policy
   - Rule—How the URL was filtered
     - URL filtering rule: Displays the policy name
   - User ID—The IP address, host name, or LDAP user/group name associated with the client that requested the URL
   - Scan Type—Content filter scan type
   - Protocol—Type of Web connection (HTTP or HTTPS)
   - Filtering action—The filtering action applied to a given URL or category

7. Click Show Log. The URL Filtering Log viewing screen opens.

8. Click Refresh to update the screen.

URL Access Log
The URL access log contains URL access information. IWSVA writes to the URL access log only when Log HTTP/HTTPS/FTP access events is enabled (Log HTTP/HTTPS/FTP access events is disabled by default) under Logs > Log Settings > Reporting Logs. Each access monitoring record contains the following information:
   - Date and time the access occurred
   - User who visited the site
   - IWSVA device that processed the access
   - IP address of the client system that requested the access
Note: Network address translation might render this data meaningless, or at least make it appear that all access occurs from a single client. Also, when the access log is enabled, the IWSVA service is restarted. During the restart, a router might take up to 30 seconds to recognize IWSVA again, during which time the router does not redirect packets.

- Domain accessed
- Path portion of the URL (the HTTP service can get the full URL path)
- IP address of the server from which the data was retrieved
- The URL category for every access event

To view the URL access log:
1. Open the IWSVA Web console and click Logs > Log Query > URL Access Log in the main menu.
2. Select a Time period (All Dates, Today, Last 7 days, or Last 30 days) from the drop-down menu.
   Click Range to select a time range, then select the start and end dates.
3. Under Protocol, select a Web protocol type for which you want to view logs.
4. Under Sort by, select a sort option.
5. Click Show Log. The URL Access Log viewing screen opens.
6. Click Refresh to update the URL access log.

Virus Log
The virus log contains information about viruses that IWSVA has detected.

To view the virus log:
1. Click Logs > Log Query > Virus Log in the main menu.
2. Under Time period, select the time for which you want a report generated.
   Click Range to view the virus log in a given time range, then select the start and end dates.
3. Under Viruses, select the virus(es) for which you want to view log entries. Click Add (or Add All for all viruses listed). To remove virus(es) from the right list box, click Remove (or Remove All for all viruses listed).
4. Under Protocol, select a Web protocol type for which you want to view logs.
5. Under the Sort by section, select an option by which to sort the display log.
6. Click Show Log. The Virus Log screen opens.
7. Click Refresh to update the screen.

Deleting Logs

If you no longer need to refer to text log files, you can delete them from the directory.

To delete one or more logs:
1. Click Logs > Log Deletion in the main menu.
2. On each of the four tabs (Virus Log, URL Blocking Log, URL Access Log, Performance Log, and System Event Log) select the log to delete.
3. Click Delete, then confirm by clicking OK on the next screen.

Log Settings

From the Log Settings screen, you can configure:
• Directories for reporting and system logs (for the text log files only)
• Whether to gather performance data or log HTTP/HTTPS/FTP access events, and the logging interval for each
• Database log update interval, and the number of days to keep logs in the database
• Whether to write logs to database and log files, to the database only, or to the log file only

Note: The following procedure deletes text log files; logs in the database cannot be deleted manually. Configure a scheduled deletion for database logs on the Logs > Log Settings screen.

Note: Text log files cannot be automatically deleted—they can be manually deleted on the Logs > Log Deletion screen. Database logs cannot be manually deleted—a deletion schedule can be configured on the Logs > Log Settings screen.
Log File Folder Locations

You can configure the folders for the reporting logs and the system logs. The default location is `/var/iwss/log`. A folder must exist on the IWSVA device and you must have the correct permission before the folder can be configured as the log file location. IWSVA checks after a folder path is entered, and an error message appears if the folder entered is not accessible.

**Note:** `/etc/iscan/log` is a symbolic link to `/var/iwss/log`.

To configure reporting log directories:
1. Click **Logs > Log Settings > Reporting Logs** from the main menu.
2. In the corresponding text boxes, type the folder locations for the log files.
3. Click **Save**.

To configure the system log directories:
1. Click **Logs > Log Settings > System Logs**.
2. In the corresponding text boxes, type the folder locations for the log files.
3. Click **Save**.

Other Log Options

There are some additional settings that control how IWSVA logs events. These can be configured on the **Log Settings** screen.

**System Logs**

On the **System Logs** tab, configure the number of days to retain system logs before automatically deleting them (default = five days).

**Reporting Logs**

On the **Reporting Logs** tab, you can configure IWSVA to gather performance data and log HTTPS/HTTP/FTP access events or Application Control events. If you enable these, configure the logging interval to record access events (from 1 to 9 minutes). Then, configure how to log these events:
• **Log user’s visit along with all downloaded files and objects (verbose)**—This verbose logging option captures all information for the user’s visit. It logs the initial connection to the site as well as all objects on the web pages downloaded. This option requires extensive disk space use and should only be enabled if your logging requirements need this type of extensive logging. Enabling this option can also reduce the performance of the system if fast disk drive subsystems are not available.

• **Log user’s visit along with any downloaded files and objects that are above the size XXXX KB**—This logging option captures the user’s visit, or connection, to the web site and all associated files or objects greater than the size specified. This option allows you to capture information about where each user has visited and allows you to reduce the amount of logging events collected by fine-tuning the size parameter. The larger the size parameter, the less detailed file and object information is collected from the downloaded pages. This option provides the best trade-off between performance, size of logs, and information collected.

• **Log files and objects downloaded that are at least XXXX KB**—This logging option only captures file and objects downloaded that are larger than the specified size parameter. This option allows you to eliminate the collection of user connection information to the web site and is used to log events for web site objects equal to or greater than the specified size. This option can dramatically lower the amount of disk space needed for logging and should be used only when large object logging is required without user connection information.

The default time period that logs are kept in the database is 30 days; customize this to reflect your specific environment's needs. In addition, set the time interval that the database is updated with new logs (default = 30 seconds).

**Log File Naming Conventions**

By default, log files are written to the `/etc/iscan/log` directory. IWSVA has a standard convention for naming log files. For instance, the convention for virus logs is:

```
virus.log.2010.07.04
```

which can be read as virus log for July 4, 2010
The naming conventions for each type of log are described in *Figure 13-1.*

**TABLE 13-1. Log File Naming Conventions**

<table>
<thead>
<tr>
<th>LOG</th>
<th>FILE NAME</th>
</tr>
</thead>
<tbody>
<tr>
<td>Virus Log</td>
<td>virus.log.yyyy.mm.dd</td>
</tr>
<tr>
<td>URL Blocking/URL Filtering</td>
<td>url_blocking.log.yyy.mm.dd.0001</td>
</tr>
<tr>
<td>Performance Log</td>
<td>perf.log.yyyy.mm.dd</td>
</tr>
<tr>
<td>URL Access Log</td>
<td>access.log.yyy.mm.dd.0001</td>
</tr>
<tr>
<td>FTP Log</td>
<td>ftp.log.yyyymmd.0001</td>
</tr>
<tr>
<td>HTTP Log</td>
<td>http.log.yyyymmd.0001</td>
</tr>
<tr>
<td>Mail Delivery Log</td>
<td>mail.log.yyyymmd.0001</td>
</tr>
<tr>
<td>Update Log</td>
<td>update.log.yyyymmd.0001</td>
</tr>
<tr>
<td>Scheduled Update Log</td>
<td>admin.log.yyyymmd.0001</td>
</tr>
<tr>
<td>System Event Log</td>
<td>systemevent.log.yyy.mm.dd</td>
</tr>
<tr>
<td>Temporary Control Manager Log</td>
<td>CM.yyyymmd.0001</td>
</tr>
<tr>
<td>Java Applet Scanning Log</td>
<td>jscan.log.yyyymmd.0001</td>
</tr>
<tr>
<td>Audit Log</td>
<td>audit.trail.log</td>
</tr>
<tr>
<td>Database Import Tool Log</td>
<td>log_to_db.log.yyyymmd.0001</td>
</tr>
<tr>
<td>World Virus Tracking Center Log</td>
<td>logtowvts.log.yyyymmd.0001</td>
</tr>
<tr>
<td>HA Agent Log</td>
<td>ha_agent.yyyymm.dd</td>
</tr>
<tr>
<td>Application Control Log (reporting)</td>
<td>appcontrol.log.yyyy.mm.dd.0001</td>
</tr>
<tr>
<td>Application Control Log (system)</td>
<td>appd.log.yyyymmd.0001</td>
</tr>
</tbody>
</table>
Note: Deleting a log does not necessarily prevent the corresponding data from appearing in the IWSVA Web console. To prevent IWSVA from displaying data, you must remove the corresponding data from the appropriate database table.

**TABLE 13-3. Major Database Tables for IWSVA Logging/Reporting**

<table>
<thead>
<tr>
<th>TABLE NAME</th>
<th>EXAMPLE COLUMNS</th>
</tr>
</thead>
<tbody>
<tr>
<td>tb_url_usage</td>
<td>username, URL, path</td>
</tr>
<tr>
<td>tb_report_by</td>
<td>period, category, entity_type, entity_name</td>
</tr>
<tr>
<td>tb_violation</td>
<td>username, URL, file_name, action, blocked_by, category</td>
</tr>
<tr>
<td>tb_performance_value</td>
<td>server, date_field, metric_value, metric_id</td>
</tr>
</tbody>
</table>

**Exporting Log and Report Data as CSV Files**

When viewing your log query or a real-time report, IWSVA supports exporting log data to a CSV file in order to view and analyze the data in other applications. Click **Export to CSV** and then download the file from the IWSVA server.

The character format that IWSVA uses to save CSV files is configurable using the `csvcharformat` parameter under the `[Common]` section of the `intscan.ini` file. The default is UTF-8 format. Some versions of Microsoft Excel cannot display double-byte characters in UTF-8 text files. If your logs contain double-byte characters, Trend Micro recommends opening and saving the files as Unicode using Notepad before attempting to open the CSV file using Excel.

**Exporting Report Data as PDF Files**

In addition to the CSV export feature, IWSVA also allows you to export report data as PDF files that can be viewed using a PDF-reader application in any platform. Click **PDF** and follow the on-screen prompt to download the file from the IWSVA server.
Reports, Logs, and Notifications

Syslog Configuration

With syslog server support, IWSVA can send logs to external syslog servers. You can configure up to a maximum of four syslog servers and specify the type or priority level of the logs to send to each syslog server.

To configure a syslog server:

1. Click Logs > Syslog Configuration in the main menu.
2. Click Add.
3. For Syslog Server Settings:
   a. Select Enable Syslog to allow IWSVA to send logs to this syslog server
   b. Specify the Server Name/IP Address
   c. Specify the UDP Port (the default is 514)
4. Under Save the Following Logs, specify the logs to send. You can select to send events to the syslog server by either the log type or the syslog priority level.
   • Click By log type and select the type(s) of logs. Or,
   • Click By syslog priority level and select the level(s)
5. Click Save.

Introduction to Notifications

Notifications can be issued in response to scanning, blocking, alerting, and program update events. There are two types of notifications—administrator notifications and user notifications, described as follows:

• **Administrator notifications** provide information about HTTP/HTTPS scanning, HTTP/HTTPS file blocking, FTP blocked file types, FTP scanning, threshold alerts, restricted tunnel traffic, High Availability events, and Applets/ActiveX security events, as well as pattern file and scan engine updates. IWSVA sends administrator notifications through email to addresses that you configure in the Email Settings screen.
User notifications provide information about HTTPS access errors, HTTPS certificate warnings, HTTP/HTTPS scannings, HTTP/HTTPS file blockings, FTP scannings, URL blockings, FTP blocked file types, High Availability events, and Applets/ActiveX scanning events. IWSVA presents user notifications in the client's browser or FTP client in lieu of the prohibited Web page or file that the client is trying to view or download.

The messages presented in both the administrator and user notifications are configurable and can include “tokens” or variables to customize notification messages with information about the event. In addition, user notification messages support HTML tags to customize the appearance of the message and provide links to other resources, such as security policy documents hosted on your intranet.

Email Notification Settings

IWSVA sends administrator notifications to email addresses that you specify. The administrator enters email settings when installing IWSVA and when running the setup program, but email settings can also be modified post-installation on the Web console's Email Settings screen.

To configure email settings for administrator notifications:

1. Click Notifications in the main menu.
2. In the Notifications screen, click Send notification to.
3. Type the email address to send notifications, the sender's email address, the SMTP server, the SMTP server port, and the time interval between checking the mail queue.
4. If your mail server requires ESMTP, enable Use Extended Hello (EHLO) for IWSVA to initialize SMTP sessions using the EHLO command.
5. Click Save.

Notification Tokens/Parameters

To make notifications more meaningful, IWSVA can use tokens (or variables) as information placeholders in a notification. When an event occurs, IWSVA dynamically substitutes the specific information in place of the variable, providing detailed information about that specific event.
For example, you could create a generic notification as follows:

A virus was detected in HTTP traffic.

This notification lets you know there is a problem, but does not provide any details. Instead, you could configure the notification using variables as follows:

On %Y, IWSVA detected a security risk %v in the file %F. %N attempted to download the file from %U.

The notification might read as follows:

On 5/28/08 6:31:56 PM, IWSVA detected a security risk JS_TEST_VIRUS in the file EXT_JS.JS. 10.2.203.130 attempted to download the file from http://10.2.203.130/TESTDATA/virus/NonCleanable/EXT_JS.JS

With this information, administrators can contact the client and provide more security information. The notification in this example uses five variables: %Y, %v, %F, %N and %U.

The following table contains a list of variables that can be used in notification messages and pages.

<table>
<thead>
<tr>
<th>VARIABLE</th>
<th>VARIABLE MEANING</th>
<th>HOW THE VARIABLE IS USED</th>
</tr>
</thead>
<tbody>
<tr>
<td>%h</td>
<td>IWSVA hostname</td>
<td>The IWSVA host name where the event was triggered</td>
</tr>
<tr>
<td>%u</td>
<td>URL/URI</td>
<td>Refer to the default message for %c usage example</td>
</tr>
<tr>
<td>%c</td>
<td>IP address:port after &quot;https://&quot;</td>
<td>Refer to the default message for %c usage example</td>
</tr>
<tr>
<td>$$DETAILS</td>
<td>Details of certificate failure reason / access denied reason</td>
<td></td>
</tr>
<tr>
<td>%A</td>
<td>Action taken</td>
<td>The action taken by IWSVA</td>
</tr>
</tbody>
</table>

TABLE 13-4. Description of Variables
TABLE 13-4. Description of Variables (Continued)

<table>
<thead>
<tr>
<th>VARIABLE</th>
<th>VARIABLE MEANING</th>
<th>HOW THE VARIABLE IS USED</th>
</tr>
</thead>
<tbody>
<tr>
<td>%F</td>
<td>File name</td>
<td>The name of the file in which a risk is detected, for example, anti_virus_test_file.htm</td>
</tr>
<tr>
<td>%H</td>
<td>IWSVA host name</td>
<td>The IWSVA host name where the event was triggered</td>
</tr>
<tr>
<td>%L</td>
<td>Detailed file name and reason</td>
<td>The quarantine folder location where a file was moved</td>
</tr>
<tr>
<td>%M</td>
<td>Moved to location</td>
<td>The date and time of the triggering event</td>
</tr>
<tr>
<td>%N</td>
<td>User name</td>
<td>The name of the risk detected</td>
</tr>
<tr>
<td>%R</td>
<td>Transfer direction</td>
<td>The name of the risk detected</td>
</tr>
<tr>
<td>%U</td>
<td>URL/URI</td>
<td>The date and time of the triggering event</td>
</tr>
<tr>
<td>%V</td>
<td>Malware name (virus, Trojan, and so on)</td>
<td>The date and time of the triggering event</td>
</tr>
<tr>
<td>%X</td>
<td>Reasons/block type</td>
<td>The date and time of the triggering event</td>
</tr>
<tr>
<td>%Y</td>
<td>Date and time</td>
<td>The date and time of the triggering event</td>
</tr>
</tbody>
</table>

HTTP/HTTPS/FTP File Type Block

<table>
<thead>
<tr>
<th>%U</th>
<th>URL/URI</th>
<th>The following tokens are only used in messages for administrators or in user notification messages:</th>
</tr>
</thead>
<tbody>
<tr>
<td>%F</td>
<td>File name</td>
<td></td>
</tr>
<tr>
<td>%A</td>
<td>Action taken</td>
<td></td>
</tr>
<tr>
<td>%H</td>
<td>IWSVA host name</td>
<td></td>
</tr>
<tr>
<td>%R</td>
<td>Transfer direction</td>
<td></td>
</tr>
<tr>
<td>%X</td>
<td>Reasons/block type</td>
<td></td>
</tr>
<tr>
<td>%Y</td>
<td>Date and time</td>
<td></td>
</tr>
<tr>
<td>%N</td>
<td>User name</td>
<td></td>
</tr>
</tbody>
</table>
### TABLE 13-4. Description of Variables (Continued)

<table>
<thead>
<tr>
<th>VARIABLE</th>
<th>VARIABLE MEANING</th>
<th>HOW THE VARIABLE IS USED</th>
</tr>
</thead>
<tbody>
<tr>
<td>%V</td>
<td>Virus or Trojan</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Applets and ActiveX Security</td>
<td></td>
</tr>
<tr>
<td>%D</td>
<td>Protocol being scanned</td>
<td></td>
</tr>
<tr>
<td>%H</td>
<td>IWSVA host name</td>
<td></td>
</tr>
<tr>
<td>%N</td>
<td>User name</td>
<td></td>
</tr>
<tr>
<td>%U</td>
<td>URL/URI</td>
<td></td>
</tr>
<tr>
<td>%W</td>
<td>New certificate information</td>
<td></td>
</tr>
<tr>
<td>%X</td>
<td>[reasons/block type]</td>
<td></td>
</tr>
<tr>
<td>%Y</td>
<td>Date and time</td>
<td></td>
</tr>
<tr>
<td>%Z</td>
<td>Policy name</td>
<td></td>
</tr>
<tr>
<td></td>
<td>HA events</td>
<td></td>
</tr>
<tr>
<td>%H</td>
<td>Host name</td>
<td></td>
</tr>
<tr>
<td>%P</td>
<td>Peer name</td>
<td></td>
</tr>
<tr>
<td>%R</td>
<td>Reason</td>
<td></td>
</tr>
<tr>
<td></td>
<td>URL Filtering by Time Quota</td>
<td></td>
</tr>
<tr>
<td>%U</td>
<td>URL/URI</td>
<td></td>
</tr>
<tr>
<td>%C</td>
<td>Category</td>
<td></td>
</tr>
<tr>
<td>%H</td>
<td>IWSVA host name</td>
<td></td>
</tr>
<tr>
<td>%N</td>
<td>User name</td>
<td></td>
</tr>
<tr>
<td>%Q</td>
<td>Quantity of time</td>
<td></td>
</tr>
<tr>
<td>%Y</td>
<td>Date and time</td>
<td></td>
</tr>
<tr>
<td></td>
<td>URL Blocked by Access Control</td>
<td></td>
</tr>
<tr>
<td>%H</td>
<td>IWSVA host name (only works in header field)</td>
<td></td>
</tr>
<tr>
<td>%N</td>
<td>User name</td>
<td></td>
</tr>
</tbody>
</table>
TABLE 13-4. Description of Variables (Continued)

<table>
<thead>
<tr>
<th>VARIABLE</th>
<th>VARIABLE MEANING</th>
<th>HOW THE VARIABLE IS USED</th>
</tr>
</thead>
<tbody>
<tr>
<td>%U</td>
<td>URL/URI (only works in body)</td>
<td></td>
</tr>
<tr>
<td>%Y</td>
<td>Date and time</td>
<td></td>
</tr>
<tr>
<td>%X</td>
<td>Reason (only works in body)</td>
<td></td>
</tr>
</tbody>
</table>

URL Blocking by HTTP Inspection

| %H       | IWSVA host name |                      |
| %I       | Filter name |                          |
| %N       | User name |                          |
| %U       | URL/URI |                          |
| %Y       | Date and time |                          |

URL Blocked by URL Filtering

| %C       | Category |                      |
| %H       | IWSVA host name (only works in header field) |                      |
| %N       | User name |                          |
| %U       | URL/URI |                          |
| %Y       | Date and time |                          |

URL Access Warning

| %A       | Action |                      |
| %B       | Warn and continue |                          |
| %C       | Category |                      |
| %H       | IWSVA host name (only works in header field) |                      |
| %N       | User name |                          |
| %U       | URL/URI (only works in body) |                      |
To customize URL Access Warning notifications, the message template must contain following form to display the "Continue" option:

```html
<form id="warncontinue" method="post" action="%B$$IWSX_URL_ACTION$$"><br>
<INPUT type=hidden value="%A" name=data>
</form>
```

A button or hyperlink must be defined to submit the form about the customized notification that allows users to continue. Example:

```html
<a href="javascript:void(0)"
onclick="document.getElementById('warncontinue').submit();
return false;">Continue to this website (not recommended)</a>
```

### URL Access Override

<table>
<thead>
<tr>
<th>VARIABLE</th>
<th>VARIABLE MEANING</th>
<th>HOW THE VARIABLE IS USED</th>
</tr>
</thead>
<tbody>
<tr>
<td>%A</td>
<td>Action</td>
<td></td>
</tr>
<tr>
<td>%B</td>
<td>Continue to URL/URI</td>
<td></td>
</tr>
<tr>
<td>%C</td>
<td>Category</td>
<td></td>
</tr>
<tr>
<td>%E</td>
<td>Policy default Time Limit</td>
<td></td>
</tr>
<tr>
<td>%H</td>
<td>IWSVA host name</td>
<td></td>
</tr>
<tr>
<td>%J</td>
<td>Policy maximum Time Limit</td>
<td></td>
</tr>
<tr>
<td>%N</td>
<td>User name</td>
<td></td>
</tr>
<tr>
<td>%U</td>
<td>URL/URI (only works in body)</td>
<td></td>
</tr>
<tr>
<td>%Y</td>
<td>Date and time</td>
<td></td>
</tr>
<tr>
<td>%Z</td>
<td>Policy name</td>
<td></td>
</tr>
</tbody>
</table>
Configuring Notifications

To configure a notification, select the types of events that issue the notification and then edit the email and browser notification messages.

Using HTML Tags in User Notifications

You can use HTML to format user notification messages. While the HTML files can include reference links to external images or styles, IWSVA only supports uploading HTML files. Any additional files have to be uploaded separately to a Web server, and Trend Micro recommends using absolute links to help avoid broken links.

TABLE 13-4. Description of Variables (Continued)

<table>
<thead>
<tr>
<th>VARIABLE</th>
<th>VARIABLE MEANING</th>
<th>HOW THE VARIABLE IS USED</th>
</tr>
</thead>
<tbody>
<tr>
<td>%m</td>
<td>Metric</td>
<td></td>
</tr>
<tr>
<td>%t</td>
<td>Threshold value</td>
<td></td>
</tr>
</tbody>
</table>
Configuring Applets and ActiveX Security Notification Settings

When IWSVA detects an attempt to download a Java Applet or ActiveX object that violates a security policy, the application sends an administrator a notification through email and a user notification message in the requesting client's browser.

To configure the Applets and ActiveX security notification settings:

1. Click Notifications in the main menu, then click Applets and ActiveX Instrumentation.
2. Under Administrator Notification, select Send a message when a malicious Applet or ActiveX attempt is detected.
3. If you do not want to use the default notification messages, highlight the default text and type your own version. If applicable, insert variables in the text as described in Notification Tokens/Parameters starting on page 13-40.
4. For the User Notification Messages:
   a. Select Default to display the default warning message.
   b. Select Customized to display a custom message and either type or import the customized message’s content.
      • You can design your own notification page using any HTML editor, then Import the page to IWSVA (for example, if you want to display company brandings, or provide a link to additional resources).
      • You can append a custom message to the IWSVA default by selecting both the Default and Customized options.
5. Click Save.

Configuring FTP Blocked File Type Notifications

In addition to scanning FTP uploads and downloads, InterScan Web Security Virtual Appliance can block file types at the FTP gateway. To prevent performance issues, the FTP scanning module supports special configurations for compressed files and large files. Spyware and grayware scanning is also supported.

InterScan Web Security Virtual Appliance FTP scanning can be deployed into your environment in conjunction with another FTP proxy server or InterScan Web Security Virtual Appliance can act as its own FTP proxy. And to help ensure the security of the
InterScan Web Security Virtual Appliance server, several security-related configurations are available to control access to the InterScan Web Security Virtual Appliance server and its ports.

To configure the FTP blocked file type notification settings:

1. Click **Notifications** on the main menu, then click **FTP Blocked File Type**.
2. Under **Administrator Notification**, check **Send a message when the FTP blocked file type is accessed**.
   
   Depending on what IWSVA is configured to block, this option can result in a large number of notification messages sent to the default recipient. As an alternative to item-by-item notifications, bear in mind that blocked files are written to a log, and can be included in one of the IWSVA generated reports.

3. If you do not want to use the default notification messages, highlight the default text and type your own. If applicable, insert variables in the text as described in Notification Tokens/Parameters starting on page 13-40.

4. For the **User Notification Message**:
   
   a. Select **Default** to display the default warning message.
   
   b. Select **Customized** to display a custom message and type the customized content.
      
      • You can design your own notification page using any HTML editor, then **Import** the page to IWSVA (for example, if you want to display company brandings, or provide a link to additional resources).
      
      • You can append a custom message to the IWSVA default by selecting both the Default and Customized options.

5. Click **Save**.

Configuring FTP Scanning Notification Settings

When IWSVA detects malicious code in a user’s FTP transfer, it can automatically send a customized administrator notification to the designated email addresses and/or display a notification in the requesting FTP client program.
To configure the FTP scanning notification settings:

1. Click Notifications on the main menu, then click FTP Scanning.
2. Under Administrator Notification, select the trigger detection events for sending a notification (Virus and/or Trojan and/or Other malicious code).
3. If you do not want to use the default notification messages, highlight the default text and type your own. If applicable, insert variables in the text as described in Notification Tokens/Parameters starting on page 13-40.
4. For the User Notification Message:
   a. Select Default to display the default warning message.
   b. Select Customized to display a custom message and type the customized content.
      • You can design your own notification page using any HTML editor, then Import the page to IWSVA (for example, if you want to display company brandings, or provide a link to additional resources).
      • You can append a custom message to the IWSVA default by selecting both the Default and Customized options.
5. Click Save.

Configuring High Availability Events Notifications

Notifications can be configured for the following HA events:

• Switchover
• Child Server Failure
• Recovered Child Server
• Configuration Sync Failure

To configure HA event notifications:

1. Click Notifications on the main menu, then click High Availability Events.
2. Click the “Send a message when...” check box to have a message sent for the specific HA event. You may check one or more.
3. Use the default message or replace it with your own custom message for any or all of the four events notifications.
4. Click Save.
Configuring HTTP/HTTPS File Blocking Notifications

When IWSVA blocks a file, it sends an administrator notification through email, and a user notification message is displayed in the requesting client's browser.

To configure HTTP/HTTPS file blocking notifications:

1. Click Notifications and then click HTTP/HTTPS Blocked File Type.
2. Under Administrator Notification, select Send a message when the blocked file type is accessed.
3. If you do not want to use the default notification message, highlight the default text and type your own version. If applicable, insert tokens in the text as described in Notification Tokens/Parameters starting on page 13-40.
4. Type the Headline to appear in the browser.
   The default headline is Trend Micro InterScan Web Security Event. The headline is common for virus infection messages, file-type blocking, and URL blocking messages.
5. For the User Notification Message:
   a. Select Default to display the default warning message.
   b. Select Customized to display a custom message and either type or import content from an HTML file.
      • You can design your own notification page using any HTML editor, then Import the page to IWSVA (for example, if you want to display company brandings, or provide a link to additional resources).
      • You can append a custom message to the IWSVA default by selecting both the Default and Customized options.
6. Verify the notifications by clicking Preview.
7. Click Save.

Configure HTTP/HTTPS Scanning Notifications

When IWSVA detects malicious code in a file requested by a client, it issues an administrator notification through email and a user notification in the requesting client's browser.

Because IntelliTrap is considered a type of security threat, it uses the same notifications as HTTP/HTTPS Scanning.
To configure HTTP/HTTPS scanning notifications:

1. Click Notifications and then click HTTP/HTTPS Scanning.
2. Under Administrator Notification, select the trigger detection events for sending a notification (Virus and/or Trojan and/or Other Internet Threats.)

   Note:  
   IntelITrap notification is associated with Other Internet Threats. Therefore, IntelITrap notification is enabled when you select Other Internet Threats.

3. If you do not want to use the default notification message, highlight the default text and type your own version. If applicable, insert tokens in the message as described in Notification Tokens/Parameters starting on page 13-40.

4. Type the Headline to appear in the browser.
   The default is Trend Micro InterScan Web Security Event. The header line is common for virus infection messages, file-type blocking, and URL blocking messages.

5. For the User Notification Message for Message for downloaded file and Message for uploaded file:
   a. Select Default to display the default warning message.
   b. Select Customized to display a custom message and either type or import the customized message’s content from an HTML file.
      • You can design your own notification page using any HTML editor, then Import the page to IWSVA (for example, if you want to display company brandings, or provide a link to additional resources).
      • You can append a custom message to the IWSVA default by selecting both the Default and Customized options.
   c. Verify that the notifications appear correctly by clicking Preview.

6. Click Save.

Configuring HTTPS Access Denied Notifications

Whenever users are denied to access a Web site through HTTPS connections, they will see an HTML page explaining that their request has been rejected.
To configure HTTPS access denied notifications:

1. Click Notifications and then click HTTPS Access Denied.
2. Type the Headline to appear in the browser.
   The default is Trend Micro InterScan Web Security Event. The header line is common for virus infection messages, file-type blocking, and URL blocking messages.
3. For the User Notification Message:
   a. Select Default to display the default warning message.
   b. Select Customized to display a custom message and either type or import content from an HTML file.
      - You can design your own notification page using any HTML editor, then Import the page to IWSVA (for example, if you want to display company brandings, or provide a link to additional resources).
      - You can append a custom message to the IWSVA default by selecting both the Default and Customized options.
4. Verify the notifications by clicking Preview.
5. Click Save.

Configuring HTTPS Certificate Failure Notifications

Whenever users are denied to access a Web site whose certificate does not pass the verification tests, they will see an HTML screen with the warning message. Users have the option to continue accessing the Web site without decrypting and checking HTTPS traffic.

To configure HTTPS certificate failure notifications:

1. Click Notifications and then click HTTPS Certificate Failure.
2. Type the Headline to appear in the browser.
   The default is Trend Micro InterScan Web Security Event. The header line is common for virus infection messages, file-type blocking, and URL blocking messages.
3. For the User Notification Message:
   a. Select Default to display the default warning message.
   b. Select Customized to display a custom message and either type or import content from an HTML file.
• You can design your own notification page using any HTML editor, then Import the page to IWSVA (for example, if you want to display company brandings, or provide a link to additional resources).
• You can append a custom message to the IWSVA default by selecting both the Default and Customized options.

4. Verify the notifications by clicking Preview.
5. Click Save.

Enabling Pattern File Updates Notifications
IWSVA can send notifications when the product attempts to update engines or pattern files based on scheduled pattern updates.

Note: IWSVA will not send notifications for manual pattern updates.

To enable pattern file update notifications:
1. Click Notifications from the main menu, then click Pattern File Updates.
2. For the pattern update attempts:
   a. Select the update events that trigger a notification. You can configure notifications for Successful, Unsuccessful or Not needed update attempts.
   b. Type a Subject for the notification message. Default is IWSVA pattern update result.
3. Click Save.

Enabling Threshold Alerts Notifications
You can specify threshold alert values and the frequency of alerts so that you are notified when the level of any of the following items reaches a critical level:
• Virus
• Spyware
• Database
• Hard drive
• Bandwidth
IWSVA can send these alerts either through email, SNMP trap/notification (if enabled), or both. See Email Notification Settings on page 13-40.

**Note:** Configure threshold alert settings for email notifications. Threshold alert settings do not affect when IWSVA sends SNMP traps.

**To enable threshold alert notifications:**

1. Click **Notifications** in the main menu, then click **Threshold Alerts**.
2. Under **Thresholds**, specify the desired thresholds and either accept the defaults or specify new values in the **Threshold Value** and **Limit 1 Notification Every** columns.
3. If you do not want to use the default notification messages under **Notification Message**, highlight the default text and type your own version. If applicable, insert variables in the text as described in Notification Tokens/Parameters starting on page 13-40.
4. Click **Save**.

**Configuring URL Access Warning Notifications**

The URL Access Warning Mode sends notifications if the URL Filtering rules action is set to “Warn” and the user attempts to access a URL that belongs to a category prohibited by company policy. (See Creating a New Policy on page 10-5 for details.) The user receives the warning before seeing the Web page.

The user has an option to click one of the following links in the warning message:

- Click here to exit this Web page and go back to the previous page OR
- Continue to this Web site (not recommended)

**To configure the URL Access Warning notifications:**

1. Click **Notifications** on the main menu and then click **URL Access Warning**.
2. Type the **Headline** to appear in the browser.
   
   The default is *Trend Micro InterScan Web Security Event*. The header line is common for virus infection messages, file-type blocking, and URL blocking messages.
3. For the **User Notification Message**:
   a. Select **Default** to display the default warning message.
b. Select **Customized** to display a custom message and either type or import content from an HTML file.
   - You can design your own notification page using any HTML editor, then **Import** the page to IWSVA (for example, if you want to display company brandings, or provide a link to additional resources).
   - You can append a custom message to the IWSVA default by selecting both the Default and Customized options.
   - The notification must contain a form to submit necessary information to IWSVA if end users choose to continue. The format is:
     ```html
     <form id="warncontinue" method="post" action="%B$$$IWSX_URL_ACTION$$$">
     <INPUT type=hidden value="%A" name=data>
     </form>
     ```
   - A button or hyperlink must be defined to submit the form about the customized notification for users to continue. Example:
     ```html
     <a href="javascript:void(0)"
     onclick="document.getElementById('warncontinue').submit();
     return false;">Continue to this website (not recommended)</a>
     ```

4. Verify the notifications by clicking **Preview**.
5. Click **Save**.

**Configuring URL Access Override Notifications**

A user receives the URL Access Override Mode notification if a user tries to access a URL in a category that has a “block with override” action set by company policy. The user receives the override warning and needs to enter a password to continue. In the notification, the user sees the amount of additional time allowed for browsing. After entering the correct password, the user continues to the requested Web page.

The user has an option to click one of the following links in the warning message:
- Discontinue browsing that page if password is not known
- Enter the password and continue browsing for the specified period of time

The administrator must first set the category action in the policy to the “Block with Override” action setting. See **Creating a New Policy on page 10-5** for details.
To configure a user notification message for URL Access Overrides:

1. Click **Notifications** in the main menu, then click **URL Access Override**.

2. Under **User Notification Message for URL Access Override**:
   a. Type the **Headline** to appear in the browser. The default is *Trend Micro InterScan Web Security Event*. The header line is common for virus infection messages, file-type blocking, and URL blocking messages.
   
   b. Click **Default** to display the default warning message.
   
   c. Click **Customized** to display your own warning message. Type the message in the text box, or **Import** it from a HTML file on your local machine.
      
      • You can design your own notification page using any HTML editor, then **Import** the page to IWSVA (for example, if you want to display company brandings, or provide a link to additional resources).
      
      • You can append a custom message to the IWSVA default by selecting both the Default and Customized options.
   
   d. If you customize URL Access Override notifications, the message template must contain some javascript code to encrypt the password with base64 code. It should contain some elements: password, time limit and ttl_type. Otherwise, the customized notification page cannot work.

   **Example:**

   ```html
   <form id="overridecontinue" method="post" action="%B[Warn and Continue URL/URI]$$$IWSX_URL_ACTION$$">
   <INPUT type=hidden value="%A[Action]" name=data>
   .
   </form>
   ```

   e. A button or hyperlink must be defined to submit the form about the customized notification for users to continue.

   **Example:**

   ```html
   <input type="button" name="Button22" value="Submit" class="style3" onclick="doSubmit();" />
   ```
3. Verify the notifications by clicking **Preview**.
4. Click **Save**.

**Configuring a URL Blocking by Access Control Notification**

When IWSVA detects an attempt to access a URL in the Phish pattern file or a prohibited URL from the local IWSVA list, IWSVA displays a warning screen in the browser of the requesting client to indicate the URL was blocked.

**To configure a user notification message for URL Blocking by Access Control:**

1. Click **Notifications** in the main menu, then click **URL Blocking by Access Control**.

2. Under **User Notification Message for Restricted or Blocked URLs**:
   a. Type the **Headline** to appear in the browser.
      The default is *Trend Micro InterScan Web Security Event*. The header line is common for virus infection messages, file-type blocking, and URL blocking messages.
   b. Click **Default** to display the default warning message.
   c. Click **Customized** to display your own warning message. Type the message in the text box, or import it from a HTML file on your local machine.
      - You can design your own notification page using any HTML editor, then import the page to IWSVA (for example, if you want to display company brandings, or provide a link to additional resources).
      - You can append a custom message to the IWSVA default by selecting both the Default and Customized options.

3. Verify the notifications by clicking **Preview**.
4. Click **Save**.

**Configuring a URL Blocking by HTTP Inspection Notification**

When IWSVA detects an attempt to access a URL in violation of an HTTP Inspection policy with a blocking action, IWSVA displays a warning screen in the browser of the requesting client to indicate the URL was blocked.
To configure a user notification message for HTTP Inspection:
1. Click **Notifications** in the main menu, then click **URL Blocking by HTTP Inspection**.
2. Under **User Notification Message for Restricted or Blocked URLs**:
   a. Type the **Headline** to appear in the browser.
      
      The default is *Trend Micro InterScan Web Security Event*. The header line is common for virus infection messages, file-type blocking, and URL blocking messages.
   
   b. Click **Default** to display the default warning message.
   
   c. Click **Customized** to display your own warning message. Type the message in the text box, or **Import** it from a HTML file on your local machine.
      
      • You can design your own notification page using any HTML editor, then **Import** the page to IWSVA (for example, if you want to display company brandings, or provide a link to additional resources).
      
      • You can append a custom message to the IWSVA default by selecting both the Default and Customized options.
   
3. Verify the notifications by clicking **Preview**.

Configuring a URL Blocking by URL Filtering Notification

When IWSVA detects an attempt to access a URL in the Phish pattern file or a prohibited URL from the local IWSVA list, IWSVA displays a warning screen in the browser of the requesting client to indicate the URL was blocked.

To configure a user notification message for URL Blocking by URL Filtering:
1. Click **Notifications** in the main menu, then click **URL Blocking by URL Filtering**.
2. Under **User Notification Message for Restricted or Blocked URLs**:
   a. Type the **Headline** to appear in the browser.
      
      The default is *Trend Micro InterScan Web Security Event*. The header line is common for virus infection, file-type blocking, and URL blocking messages.
   
   b. Click **Default** to display the default warning message.
   
   c. Click **Customized** to display your own warning message. Type the message in the text box, or **Import** it from a HTML file on your local machine.
• You can design your own notification page using any HTML editor, then **Import** the page to IWSVA (for example, if you want to display company brandings, or provide a link to additional resources).

• You can append a custom message to the IWSVA default by selecting both the Default and Customized options.

3. Verify the notifications by clicking **Preview**.

4. Click **Save**.

**Enabling Notifications for URL Filtering Engine and Scan Engine Updates**

Though less frequent than pattern file updates, Trend Micro periodically releases new versions of the scan engine to reflect advances in virus and malicious code detection methods. IWSVA can issue administrator notifications in response to scheduled scan engine updates.

---

**Note:** IWSVA will not send notifications for manual engine updates.

**To enable URL Filtering and Scan Engines Update Notifications:**

1. Click **Notifications** from the main menu, then click **URL Filtering and Scan Engines Update**.

2. For the scan engine and/or the URL filtering engine, select the update events to trigger a notification.
   You can configure notifications for **Successful**, **Unsuccessful**, or **Not needed** update attempts.

3. For the scan engine and/or the URL filtering engine, type the **Subject** of the notification email message.

4. Click **Save**.
Configuring URL Filtering by Time Quota Notification Settings

If a rule in a URL Filtering policy has a time limit action, the URL Filtering by Time Quota notification can be received by a user. End-users will see it appear in their Web browser whenever a policy is configured with the “Time Limit” action in URL Filtering > Policies | Rule tab. See Creating a New Policy on page 10-5 for details.

Whenever users try to download a page that has been configured in IWSVA with a time limit action, and if the time limit has been exhausted, they will see an HTML page explaining that their request has been rejected (if the option is enabled). See URL Filtering Time Quota Extension on page 10-14 for details.

To configure the URL Filtering by Time Quota notification settings:

1. Click Notifications in the main menu, then click URL Filtering by Time Quota.
2. If you do not want to use the default notification message, check the Customized check box and type your own version. If applicable, insert variables in the text as described in Notification Tokens/Parameters starting on page 13-40.
3. Click Save.

Enabling SNMP Trap Notifications

IWSVA supports sending SNMP traps in response to security, update, or program events.

**Note:** To send SNMP traps, you first need to configure the SNMP settings and then enable this feature. To do this, choose Administration > Network Configuration > SNMP Settings.

To enable sending SNMP traps:

1. Click Notifications on the main menu and then click SNMP Notification Settings... at the bottom of the screen.
2. Select the types of events that triggers an SNMP trap. The different classes of events are:
   - Virus or Internet threats—Events related to virus or malicious code detections
• **Security violations**—Activities that are prohibited by IWSVA policies, not related to viruses or malicious code

• **Pattern, database or scan engine updates**—Events related to IWSVA updates

• **IWSVA service interruptions**—Issues with any of the essential IWSVA services

• **System performance metric**—IWSVA periodically sends an SNMP trap with the following performance data:
  - CPU load percentage
  - Memory load percentage
  - Disk load percentage
  - Concurrent connection (ICAP request and response mode and proxy mode)
  - Incoming and outgoing throughput (bytes per second)

• **High Availability events**—Issues with any of the essential HA functions, if HA is used.

• **Hardware monitoring events**—Events related to monitored hardware components:
  - Voltage
  - Fan
  - CPU
  - Storage
  - Temperature

3. Click Save.
Enabling MAC Address Client Identification

If you select Host name (modified HTTP headers) in the User Identification screen, IWSVA displays client IP address information in logs, reports, and notifications. You can also configure IWSVA to display client MAC address information.

**Note:** To identify a client by the MAC address, you must select **Host name (modified HTTP headers)** in the User Identification screen. Host name identification is only supported for end-users browsing with Internet Explorer on Microsoft Windows platforms.

**To display client MAC addresses in logs, notifications, and reports:**

1. You can obtain the `register_user_agent_header.exe` file from the `/usr/iwss/bin` folder on the IWSVA server or download it from following Web site:


2. Run `register_user_agent_header.exe` on each client computer. The program configures the computer to include MAC address information in data packets.

3. Log on to the Web console on the IWSVA server and make sure the **Host name (modified HTTP headers)** option is selected in the User Identification screen (Administration > IWSVA Configuration > User Identification | User Identification).

4. Access the privileged CLI commands on the IWSVA server and type: `configure module identification mac_address enable`.

**To disable client MAC address identification:**

Access the privileged commands on the IWSVA server and type: `configure module identification mac_address disable`.
Advanced Reporting and Management (ARM) Integration

This section focuses on IWSVA's integration with Trend Micro Advanced Reporting and Management (ARM), including registering and unregistering, and the IWSVA features affected by ARM registration.

Topics include:
• Introducing ARM on page 13-63
• ARM Registration and Unregistration on page 13-64
• Feature Changes after ARM Registration on page 13-64

Introducing ARM

Trend Micro Advanced Reporting and Management (ARM) provides customers with a high-performance, off-box reporting solution. ARM is based on new advanced database technology that greatly enhances the current InterScan Web Security product reporting capabilities and provides advanced features, such as dynamic dashboard, drill-down reporting, custom reporting, and real-time, problem-solving capabilities.

ARM provides a centralized reporting and policy management solution that includes:
• Instant reporting capabilities for IWSVA pre-canned report types to eliminate or reduce reports that take many hours to complete
• Centralized logging and reporting for multiple InterScan Web Security product units
• Custom reporting with GUI interface for fast report creation, using iReport
• Real-time, historic, and ad hoc reporting capabilities
• Dynamic dashboard for true Network Operation Center (NOC) monitoring
• Ability to troubleshoot with drill down reporting
• Central policy management and synchronization between multiple managed InterScan Web Security product units
ARM Registration and Unregistration

IWSVA can register to ARM as a standalone device, or as a cluster member if the device is configured to belong to a HA cluster before registering to ARM. When IWSVA registers to ARM as a HA cluster member, it will share the parent member's IWSVA policies. See Chapter 3, High Availability and Cluster Management for Transparent Bridge Mode on page 3-1 for details.

IWSVA registration is initialized from the ARM server using the Device Registration function. After registration, IWSVA will use ARM's remote database for all logging and reporting functions. However, policy databases will remain locally on the IWSVA device to allow the IWSVA to continue functioning in the event of a bad network connection between the IWSVA and ARM devices. If the connection between the IWSVA and ARM devices is down or the ARM device is non-functional, logging and reporting functions will not be possible as IWSVA cannot send its event information to ARM for processing. In the case where the ARM device is not reachable for long periods of time, you may want to un-register the IWSVA devices from ARM to allow IWSVA to perform local logging and reporting functions.

Normally, IWSVA un-registration is also initiated from the ARM server using the Device Registration function if the connection between IWSVA and ARM is functioning properly. However if the connection between the IWSVA and ARM devices is broken (in the case of a bad network connection), the un-registration process can be initiated manually from the IWSVA device using the following CLI command: `configure module arm disable`. If you manually un-register IWSVA from ARM, all logging and reporting functions will be reverted back to the IWSVA's local databases.

But since the ARM device was down or the connection was broken, you must remember to also un-register the IWSVA devices from the ARM server using the Device Registration function when ARM becomes available. This allows ARM and IWSVA to stay in synch when the connection is restored between the two devices.

For more information on the ARM register and unregister procedures, refer to the Advanced Reporting and Management for InterScan Web Security Administrator's Guide.

Feature Changes after ARM Registration

Because ARM provides enhanced reporting and log management capabilities, the following IWSVA features and Web screens are affected after ARM registration:
• Summary screen
• Logs and reports
• Notifications
• Command Line Interface (CLI)

**Summary Screen**

- All statistic tabs, including “Scanning,” “URL,” “Spyware,” and “Security Risk Report” do not display in the Summary screen.
- In the System Dashboard, the following are removed:
  - Virus and Spyware Trend table
  - All 1 day/30 days statistics for “Bandwidth,” “CPU Usage,” and “Physical Memory Usage”

---

**FIGURE 13-2. Summary screen changes after ARM registration**
Logs and Reports

After IWSVA is registered to ARM, IWSVA automatically connects to and sends log data to the ARM database. The following log query and reporting functions are modified:

- **Log query**—Log queries (except for audit log) are disabled on IWSVA and the respective Web console screens do not display. A message displays in the IWSVA Web console to direct you to view related log information using the ARM management tool. You can click the link to access the ARM Web console. 
  
  *Figure 13-3* shows an example.

  ![Figure 13-3. Log query function changes after ARM registration](image)

- **Log settings**—Because IWSVA sends log data to the ARM database, settings to the local database IWSVA uses are no longer relevant. Thus, the following local database settings are disabled:
  - Number of days to store logs in database
  - “Text only” option for the Write logs setting
• **Reports**—All report screens are disabled in the IWSVA Web console. A message displays prompting you to access the ARM management tool to view generated reports.

![Report Page](image)

**FIGURE 13-4. Reports function changes after ARM registration**

• **Notification**—In the IWSVA Web console, the threshold alerts setting for local database is disabled.

• **Command Line Interface (CLI)**—In previous versions of IWSVA, if IWSVA was registered to ARM, the database-related commands were disabled in the CLI. Now database-related commands are enabled in the CLI and operate only the local database, which is the policy database.
This chapter describes the administrative functions available in IWSVA.

Topics in this chapter include the following:

• Overview on page 14-2
• IWSVA Configuration on page 14-2
• Network Configuration on page 14-11
• Management Console on page 14-14
• Config Backup/Restore on page 14-16
• System Updates on page 14-17
• System Maintenance on page 14-18
• Product License on page 14-18
• Support on page 14-22
Overview

The Administration menu includes the following options:

- IWSVA Configuration on page 14-2
  - Cluster Management on page 14-3
  - Policy Deployment on page 14-5
  - Database Connection on page 14-5
  - Quarantine Management on page 14-6
  - System Time on page 14-7
  - Work/Leisure Time on page 14-8
  - Register to Control Manager on page 14-9
  - Damage Cleanup Services Registration on page 14-9
- Network Configuration on page 14-11
  - Web Console on page 14-11
  - Remote CLI on page 14-12
  - SNMP Settings on page 14-12
  - Static Routes on page 14-13
- Management Console on page 14-14
  - Account Administration on page 14-14
  - Management Access Control on page 14-15
- Config Backup/Restore on page 14-16
- System Updates on page 14-17
- System Maintenance on page 14-18
- Product License on page 14-18
- Support on page 14-22

IWSVA Configuration

IWSVA Configuration contains the following items:

- Cluster Management on page 14-3
- Policy Deployment on page 14-5
Cluster Management

The Cluster Management page allows users to view cluster settings, access to modifying cluster settings, and quick login access to child servers.

Click the Modify link to access the cluster settings modification page.

Go the Summary page of the parent node and click Synchronize Now to synchronize the parent policy settings to the child node.

**Note:** You can restrict contact with the parent to only those servers appearing on an approved list. The child member of the cluster will inherit the parent’s approved list after synchronization. Contact requests from any machine not on the list will be rejected.

For more information on setting up and managing clusters, see the following sections:

- Create a New Cluster on page 2-6
- Join an Existing Cluster on page 2-8
- About Cluster Management on page 3-10
- Synchronizing Nodes Manually on page 3-7
- Deleting a Child Member from a Cluster on page 3-15
- Dissolving a Cluster on page 3-16
- Performing a Manual Switchover on page 3-17
- Modifying a Cluster on page 3-17
User Identification

If you do not use an LDAP server on the network, choose your preferred method of user identification for use in reports, logs, notification messages, and for creating scan policies. Changing the user identification method can affect any existing policies you might have created, as well as logs and reports.

If IWSVA is in the proxy mode and you have an LDAP server on the network, choose the user and group name authentication and contact your LDAP administrator to obtain the various attribute settings.

IWSVA supports the following user identification methods:

• **No identification**—(Not recommended) Logged events and reports will be anonymous; URL Filtering and other policies are created based IP addresses.

• **IP address**—In event logs, the IP address of the machine is recorded; the ID is not tied to a particular set of log in credentials.

• **Host name (modified HTTP headers)**—Use this option to create group policies based on host name.

**Note:**
1. Host name identification is only supported for end-users browsing with Internet Explorer on Microsoft Windows platforms.
2. Because IWSVA is unable to obtain host name information before decrypting HTTPS contents, IWSVA does not support host name identification for HTTPS decryption policies in the bridge or WCCP modes.
3. You can use the **configure module identification mac_address enable** command in the CLI to include the machine address (MAC) of the client computers in event logs, reports, and notifications. You must run the **register_user_agent_header.exe** file on each client.

**WARNING!** Before choosing the Host name, you need to prepare all clients on the LAN by running the **register_user_agent_header.exe** file on each client. This file can be found as part of the installation package. You can conveniently run this file by adding it to your Windows domain login script (or by creating one for just this purpose).
**User/group name authentication**—Choose this option if you have an LDAP server set up on the network. If you are using IWSVA with a downstream proxy, you should log into the IWSVA CLI interface, change to enable mode, and disable the User ID cache with the `configure module ldap ipuser_cache disable` command.

For more information about the User Identification method, see: Configuring the User Identification Method on page 7-5.

**Policy Deployment**

After creating or modifying a policy, you can immediately deploy it to the IWSVA policy database by clicking **Deploy**. Alternatively, you can do nothing and the policies will be automatically deployed according to the Time-to-Live (TTL) interval set in the Administration > Policy Deployment page.

By default, IWSVA will automatically deploy new policies after 30 minutes for the following types of policies:

- Virus scan
- HTTPS
- Applet and ActiveX
- HTTP Inspection
- URL filtering
- Access quota
- Application Control

**Database Connection**

IWSVA uses either an existing PostgreSQL database, or installs its own PostgreSQL database. The database holds policy settings and log data. Product configuration settings are stored in the “intscan.ini” file. These fields show the choices made during Setup, and should not be changed independent of the Linux ODBC Data Source.
Database Connection Settings:
- **ODBC data source name**—Shows the ODBC name chosen during Setup.
- **User name**—Shows the user name for the ODBC data source; determined during Setup. Default is “sa”
- **Password**—Displays the encrypted ODBC password chosen during Setup.
- **Test Database Connection**—Click to check that the Policy Database and Log Database connections are correct and that the connection is working. Response messages are generated from the native ODBC data source.

**Quarantine Management**
Most Internet threats, including spyware, Trojans, and worms cannot be “cleaned” because they do not actually “infect” the file. Trend Micro recommends you delete worms (because of the huge numbers possible) and quarantine or delete spyware, Trojans, and other unwanted programs that IWSVA has been configured to detect.

**Quarantine Directory**
Specify quarantine directory—When the Scan Policy Action for HTTP and/or FTP scanning is Quarantine, IWSVA moves those files to the directory specified here. The default location is:

```
/var/iwss/quarantine
```

**Note:** Trend Micro recommends that you encrypt all quarantined files as described in *Encrypting Quarantined Files* on page 14-6.

**Encrypting Quarantined Files**
Quarantined files are likely to be dangerous. Encrypting files for quarantine can help protect against accidental reinfection or the effects of some other type of malicious code.

Trend Micro recommends that if you choose to quarantine rather than delete suspect files, that you encrypt them before saving to the quarantine directory.
Note: See the “How to” section of the IWSVA Online Help for instructions on decrypting quarantined files.

To encrypt HTTP quarantines:
1. Click HTTP > HTTP Malware Scan > Policies, and then either choose an existing policy from the list, or click Add to create a new one.
2. Open the Virus Scan Rule tab. At the bottom of the page, click the Encrypt quarantined files check box.

To encrypt FTP quarantines:
1. Click FTP > Scan Rules.
2. Open the Virus Scan Rule tab. At the bottom of the page, click Encrypt quarantined files.

System Time
In the System Time page if the IWSVA Web console, you can manually configure the date and time. IWSVA also supports NTP servers and synchronizes the date and time information based on the specified schedule.

System Time Settings
Synchronize date and time with an NTP server—Select this option to obtain date and time information from the specified NTP server. You can enable automatic time synchronization based on the schedule you select from the list. Click Synchronize Now to connect to the NTP server and update the system date and time. This also allows you to test whether the NTP server is available.

Set the system time manually—Select this option and enter the system date and time in the fields.

Time Zone
Select your continent and nearest city from the lists provided.
Work/Leisure Time

When configuring URL Filtering or Application Control policies, you can have IWSVA differentiate between two sets of work times and leisure times. For example, you can allow recreational Web surfing or use of IM applications before and after scheduled work hours. Filtering schedules can be policy based—different schedules can be given to different individuals or groups.

Work Time Settings

When creating URL Filtering or Application Control policies, you can set the policy to be in effect for both Work Time 1 and Work Time 2 or during “leisure” time along with either Work Time 1 or Work Time 2.

- **Work days**—Select the days of the week for which you want work-hour restrictions to be in effect.
- **Work hours**—From the Work Time 1 and/or Work Time 2 areas, specify the hours during which you want to restrict access to selected URL or protocol categories. Time not defined as work hours is considered leisure. Both Work Time 1 and Work Time 2 include 24-hour selections.

To configure the Work/Leisure Time settings:

1. Open the IWSVA Web console and click **Administration > IWSVA Configuration > Work/Leisure Time**.
2. Under **Work Time Settings**, select the work days and work hours in the fields provided.
   - In the Work Time 1 and/or Work Time 2 areas, specify the hours that you want to restrict access to selected URL categories.
3. Click **Save**.

To specify no work time or all work time:

- If you do not want to use work times, uncheck all of the work days. All time is then leisure time.
- If you want all time to be work time, select all days and specify the following:
  - For Work time 1, choose “0:00” in the **From** drop-down list and “11:59” in the **To** drop-down list.
  - For Work time 2, choose “12:00” in the **From** drop-down list and “23:59” in the **To** drop-down list.
**Note:** To allow a noon-time period of unrestricted “Web surfing” or IM use, you can leave a time gap between the end of the morning period and beginning of the afternoon period.

---

**Register to Control Manger**

Use the Administration > IWSVA Configuration > Register to Control Manager screen to configure the communication between the localhost.localdomain Management and Communication Protocol (MCP) Agent and Trend Micro Control Manager server.

- **Connection Settings**—Specify the entity name (instance of IWSVA on the particular machine). The entity name appears in the Control Manager product tree, helping you to identify the product.

- **Control Manager Server Settings**—Specify the FQDN (Fully Qualified Domain Name) or IP address of the Control Manager server. The Web server authentication user name is used by the Internet Information Services (IIS) server for authentication. This information is not used by Control Manager.

- **MCP Proxy Settings**—In this section, specify the proxy server for communication with the Control Manager server.

- **Two Way Communication Port Forwarding**—Two-way communication allows the TMCM server to send commands in real-time to IWSVA. If the user does not specify this information, the agent defaults to one-way communication, which means IWSVA polls the TMCM server at set intervals to retrieve the commands.

---

**Damage Cleanup Services Registration**

If you have one or more Trend Micro Damage Cleanup Service (DCS) installed on the network, you can have IWSVA work in conjunction with them.

This is an especially useful relationship on networks where client laptops or visitors join the LAN. If the client already contains a Trojan, spyware, worm, or attempts to access known phish sites or disease vectors, IWSVA can detect and block the spurious outbound HTTP activity. It will also request the DCS server to conduct a clean up of the affected machine(s).
Enable DCS—Select this option to engage the relationship between IWSVA and DCS. If IWSVA detects suspicious activity, it blocks the outbound access and sends the client's IP address to the DCS server for clean up. DCS also sends clean up logs to IWSVA when this option is enabled.

DCS server name or IP address—Specify the IP address of the Damage Cleanup Server(s) you want to register.

- To remove, or unregister a DCS server from IWSVA, click the trash bin icon next to the server from which you want to disconnect.

Port number—The default HTTP port for the DCS server is 80. DCS does not support HTTPS.

Redirect client to DCS on cleanup failure—Choose this option to have IWSVA redirect client HTTP requests to a “manual” DCS cleanup Web page if the DCS server could not clean the client.

IWSVA only redirects the client if the DCS server reports that it was either unable to contact the client, or unable perform an automatic clean up on the client.

If the client chooses not to perform a manual DCS clean up, and the browser does not support ActiveX, or if ActiveX is disabled, the client can navigate off the page and use the Internet as usual. After four hours (default), the client will again be directed to the manual DCS cleanup page.

Default redirect time can be set in the file

/etc/iscan/intscan.ini

under the “infected_url_block_length” parameter.

**Note:** If you are using an HTTPS connection for the IWSVA console, see “Redirect Clients to DCS When IWSVA is using HTTPS” topic in the IWSVA product online help for important configuration steps.

Place the DCS server and test client on the same side of the data interface when IWSVA works in Transparent Bridge mode or Proxy mode. Otherwise, DCS server cannot provide the clean up service.

You can view the logs sent by DCS from the IWSVA console, as well as the spyware detection reports.
Network Configuration

Network Configuration includes the following items:
- Web Console on page 14-11
- Remote CLI on page 14-12
- SNMP Settings on page 14-12
- Static Routes on page 14-13

Web Console

By default, the IWSVA console is accessed through an HTTP connection on port 1812. For improved security, Trend Micro recommends that you use a Secure Socket Layer connection (HTTPS).

In bridge mode, IWSVA uses the ports specified as follows:

- **Non-SSL mode**—default; access the IWSVA console using a non-secure URL, for example:
  
  http://<IWSVA Server IP address:port>

- **Port number**—default is 1812; can be changed to any unused port (recognized by the firewall)

- **SSL mode**—recommended; choose this option to enable a secure connection to the IWSVA console
  - **SSL Certificate**—to support SSL, IWSVA needs a public key and certificate; locate the certificate you will use, and upload it to the IWSVA server
  - **SSL Password**—enter the password associated with the SSL certificate, if any.
  - **Port number**—enter the port on which you want to open the IWSVA console, for example:
    
    https://<IWSVA Server IP address:port>
Remote CLI

SSH (Secure Shell) is a network protocol that allows two network devices to exchange data in a secured connection. SSH replaces Telnet which sends data (including passwords) in clear text. IWSVA allows administrators to access the CLI from a remote location using SSH only.

Use **Administration > Network Configuration > Remote CLI** screen to configure SSH on IWSVA for remote CLI access.

- **SSH: Command line access**—Select this option to enable SSH connection for remote CLI access. Clear this check box to disable SSH service.
- **Port Number**—Type the service port number for SSH. The default port number is 22.

SNMP Settings

SNMP trap notifications are especially useful for monitoring the state of the IWSVA services—IWSVA issues a trap notifying you if a service stops unexpectedly. IWSVA supports SNMP agent notifications for the following events:

- HTTP, FTP, and ICAP service interruptions
- Virus pattern file, Tunnel pattern file, scan engine, and URL Filtering engine updates
- Security events
- HA events

**Note:** If IWSVA detects that the HTTP or FTP scanning service is down, it will try twice to restart it. If the service cannot be restarted, SNMP traps will be issued to the specified destination every 30 minutes until the service restarts.

System Information Setup

Specify all the necessary system information in the System Information section of the **Administration > Network Configuration > SNMP Settings** screen.
The community that you specify in the Community Name and Default Community fields identifies the community in which the SNMP object belongs. In SNMP, every managed object belongs to a community. This provides a minimal amount of security, because designating communities can define which SNMP agents can communicate.

**Access Control Setup**

Specify all the necessary access control information in the Access Control section of the Administration > Network Configuration > SNMP Settings screen.

The fields in this section are read-only because IWSVA sends simple status and alert messages. For the Read-Only Object Identifier (OID) field, the object ID (OID) is the code for a particular message, alert, or alarm. The “object” is the actual message, alert, or alarm.

**Static Routes**

Configure and deploy static route settings at Administration > Network Configuration > Static Routes.

**Note:** Static routes can also be added during deployment and changed using the Administration > Deployment Wizard.

The following provides a brief description of the options in this screen:

**Add**—Opens the Static Routes screen that allows you to create a new static route. You can add up to 50 static routes.

- If you bind a static route to an interface, the router setting must be in the same network segment as the interface.
- If you bind a static route to a port, the router setting must be in the same network segment as the port.

**Delete**—Deletes a static route from the list.

**Network ID**—Click a Network ID to edit settings.

**Netmask**—Displays the subnet mask of the router for this route.

**Router**—Displays the IP address of the router for this route.
Interface—Displays the interface that binds to this route.

Deployment Status—Displays whether a static route is deployed successfully.

Click Deploy after specifying all the required settings.

Configuring Static Routes

To configure a static route:

Enter the following:

• Network ID—Type the destination network or host ID.
• Netmask—Type the subnet mask.
• Router—Type the IP address of the router (the next hop) for this route.
• Interface—Select the interface that binds to this route. The router setting must be in the same network segment as the binding interface.

Management Console

The Management Console offers the following options:

• Account Administration on page 14-14
• Management Access Control on page 14-15

Account Administration

Account administration allows you to add and delete login accounts. It shows all the existing accounts, giving the username, a description, and the access rights, which are:

Administrator—Administrators have complete and unrestricted access to the system.

Auditor—Auditors cannot make any configuration changes. Auditors can only view configuration, generate real-time reports and view other reports.

Reports Only—Reports only can generate and view other reports.

Login Accounts

The Login Accounts page shows all the available login accounts.

• Click Add to create a new login account or click a username to edit an existing one.
To delete a login account, select the check box associated with the login account and then click Delete.

- **Username**—The name of the user assigned to the login account.
- **Description**—The field that briefly describes the login account.
- **Access Rights**—There are three levels of access:
  - **Administrator**—Users have complete and unrestricted access to the system. They can read and modify any settings accessible through the console including creating, deleting, and modifying user accounts. Users with Administrator rights can log into IWSVA through an SSH connection. This is the default access for new users.
  - **Auditor**—Users cannot make any configuration changes; they can view configurations, logs, and reports and can also change their own passwords.
  - **Reports only**—Users can only view the Summary pages and scheduled reports. They can generate logs and real-time report queries and change their own passwords.

**Management Access Control**

An administrator can set the access control list (ACL) to restrict access to the management console (such as the Web console, CLI, and PING requests) or to a specific IP address or IP address range.

The management ACL is disabled by default, which allows any user to access the IWSVA management console. Administrators can add one or multiple IP addresses to the management ACL. Any IP address added to the management ACL can also be deleted individually. If the list is enabled, the administrator can only connect to the IWSVA management console from an IP address displayed on the allowed IP address list.

**Note:** Add the IP addresses of the central managers to which IWSVA registers (such as Trend Micro Control Manager, Advanced Reporting and Management, and so on) to the access list to allow them to function properly and access the necessary data from IWSVA.
To enable and configure the access control list for the management console:

1. Go to Administration > Management Console > Management Access Control.
2. Select one of the following options:
   - IP address - to add a single IP address to the management ACL
   - IP range - to add a range of IP addresses to the management ACL
   - IP range netmask - to add all the IP address covered by a network segment to the management ACL

   **Note:** No more than 20 entries can be added to the management ACL.

3. Click Add to add your entry to the allowed list.
4. Check the Enable Administrative Access Based on Client IP check box.

   **Note:** At least one IP address must be added to the management ACL before enabling this feature. Only users from the allowed IP address list can access the management console.

5. Click Save.
6. To delete an entry, click the Delete icon on the row of the entry to be deleted and confirm the deletion by clicking Save.

**Config Backup/Restore**

The Configuration Backup & Restore page is where you can generate an IWSVA configuration file for backup. Also from this page, the configuration and policy information for the following Trend Micro products can be migrated to IWSVA 5.5:

- IWSS 3.1 (Windows)
- IWSVA 5.1 SP1
- IWSVA 5.5
Note: For those using versions IWSVA 3.1 or IWSVA 5.0, you must upgrade to IWSVA 5.1, apply the IWSVA 5.1 SP1 patch, and upgrade to IWSVA 5.5.

IWSVA supports both full and partial migration. Use full migration to restore system and application settings or to apply current configuration to an IWSVA replacement machine. Perform a partial migration if you want to replace policy- and application-level configurations.

Note: 1. To perform a full migration, make sure the deployment mode, IP address, and network card(s) are the same on the two IWSVA machines.
2. OS settings, system patch information, and pattern files will not be updated after a full or partial migration.
3. IWSVA in High Availability mode only supports partial migration.

System Updates

From time to time, Trend Micro makes system updates available through the Download Center at: http://downloadcenter.trendmicro.com/

There are two kinds of system updates:
• Application patches
• OS updates

Both are handled in the same way and can be viewed in the History section of the Administration > System Updates screen. Only properly formatted and encrypted Trend Micro updates can be uploaded using this utility

To install a system update:

1. Get the latest update from the Trend Micro Download Center at:
   http://downloadcenter.trendmicro.com/
2. Go to Administration > System Updates.
3. Click Browse to locate the downloaded file.
4. Click Upload.
5. In the summary screen, click Install.
6. You may navigate to another screen after you receive the successful installation message.

**Note:** See Adding System Updates or Removing an Application Patch on page 15-21 for instructions on removing an application patch.

**WARNING!** Updates available from other sources should never be applied to the IWSVA server.

**Note:** After updating, the IWSVA server may restart. Whether it continues to pass network traffic during this time depends on the installation mode (Bridge, HTTP proxy, or ICAP).

### System Maintenance

Go to **Administration > System Maintenance** to shut down or restart the system for maintenance purposes. IWSVA records the actions performed to the audit and system event logs.

- **Shut down**—Select this option to turn off the appliance and stop the IWSVA service.
- **Restart**—Select this option to restart the IWSVA service or the system. The IWSVA service is unavailable while the system is restarting.
- **Comment**—Enter a reason for the selected action you want to perform. You cannot leave this field blank. The information you enter in this field is recorded in the logs.

### Product License

The Product License function allows you to register and license IWSVA. Fully activating IWSVA is a two-step process. First, you must register IWSVA with Trend Micro. After registering, a valid IWSVA activation code (AC) will be provided to license the product.
A license to the Trend Micro software usually includes the right to product updates, pattern file updates, and basic technical support (“Maintenance”) for one (1) year from the date of purchase only.

To activate IWSVA, you first need a Registration Key, which you acquire during product registration. It allows you to obtain an activation code. You can activate IWSVA using the Deployment Wizard or later using the IWSVA console.

License Expiration Warning

Typically, ninety (90) days before the Maintenance Agreement expires, you will start to receive email notifications, alerting you of the upcoming discontinuances. You can update your Maintenance Agreement by purchasing renewal maintenance from your reseller, Trend Micro sales, or on the Trend Micro Online Registration URL:

https://olr.trendmicro.com/registration/

Registering IWSVA

There are several ways to register IWSVA:

- **To register if you are a new customer:**
  1. Click the Trend Micro Product Registration Server link in your product at Administration > Development Wizard > Product Activation.
  2. In the Enter Registration Key screen, use the Registration Key that came with your product (Trend Micro Enterprise Protection DVD or License Certificate).
  3. Click Continue, and then I CONFIRM.
     The Confirm Product Information screen appears.
  4. Click Continue with Registration to confirm all the product information.
  5. Next, type all the required contact information in the fields provided and click Submit.
  6. From the Confirm Registration Information screen, click Edit to update your contact information and click OK to continue.
The Activation Code screen appears. Your Activation Code will be sent to your registered email address.

7. Click OK to finish.

To register if you are a registered user:

1. Click the Trend Micro Product Registration Server link in your product at Administration > Development Wizard > Product Activation.
2. Type your login ID and password in the fields provided, and then click Login. You will be prompted to change your password the first time you log on.
3. In the My Products screen, click Add Products and type the Registration Key.
4. To edit your company profile, click View/Edit Company Profile.
5. Your Activation Code appears on the next screen. To receive a copy of your Activation Code at your registered email address, click Send Now.

Note: For maintenance renewal, contact Trend Micro sales or your reseller. Click Check Status Online at Administration > Product License to manually update the maintenance expiration date on the Product License screen.

Obtaining a Registration Key

The Registration Key can be found on:
• Trend Micro Enterprise Solution DVD
• License Certificate (that you obtained after purchasing the product)

Registering and activating your copy of IWSVA entitles you the following benefits:
• Updates to the IWSVA pattern files and scan engine
• Technical support
• Easy access in viewing the license expiration update, registration and license information, and renewal reminders
• Easy access in renewing your license and updating the customers profile

Registration Keys have 18 characters and appear as follows:
xx-xxxx-xxxx-xxxx-xxxx
Obtaining and Entering an Activation Code

When the full version expires, IWSVA security updates will be disabled; when the evaluation period expires, both the security updates and scanning capabilities will be disabled. In the Product License screen, you can obtain an Activation Code online, view renewal instructions, and check the status of your product.

To activate IWSVA, you need an Activation Code. This can be done in several ways.

• You automatically receive an evaluation Activation Code if you download IWSVA from the Trend Micro Web site.
• You can use a Registration Key to obtain an Activation Code online.

Activation Codes have 31 characters and appear like this:

xx-xxxx-xxxxx-xxxxx-xxxxx-xxxxx-xxxxx

To obtain and enter an activation code online:

1. Open the IWSVA console and then click Administration > Product License.
2. Obtain an activation code by registering IWSVA (click the link at the top of the page to register and then follow the on-screen instructions).
3. Click the Enter a new code link.
4. When prompted, type the activation code in the Activation Code field and then click Activate.

Updating Your License

To obtain the latest license through the Web, go to Administration > Product License and click Check Online Status.

For more renewal instructions, see: https://olr.trendmicro.com/registration/us/en-us/instruction_renew.aspx

Renewing a Maintenance Agreement

Trend Micro or an authorized reseller provides technical support, virus pattern downloads, and program updates for one (1) year to all registered users, after which you must purchase renewal maintenance.
If your Maintenance Agreement expires, scanning will still be possible, but virus pattern and program updates will stop. To prevent this, renew the Maintenance Agreement as soon as possible.

- To purchase renewal maintenance, contact the same vendor from whom you purchased the product. A Maintenance Agreement, extending your protection for a year, will be sent by post to the primary company contact listed in your company’s Registration Profile.
- To view or modify your company’s Registration Profile, log in to the account at the Trend Micro online registration Web site:
  

Support

Using the case diagnostic tool (CDT), IWSVA generates core and/or system file(s) containing the system data held in memory when a process abnormally terminates. The Generate System Information File button is an extension of this feature, allowing you to package the current machine “state” at the click of a button.

The core and/or system file(s) that IWSVA generates contains the following information:

- **IWSVA information**—Includes the IWSVA product version, engine version, build number, and IWSVA hot fixes and service pack information. Product and integration settings are also part of this information
- **IWSVA/system logs**—Includes the IWSVA logs and debug logs, logs generated by syslogd daemon (if system logs are enabled), and core dump file
- **System/network information**—Includes the hardware configuration, operating system, build, system resource status, other applications installed, and network information
- **CDT-compliant configuration/plugins information**—Includes information about changes made to the CDT as a result of IWSVA adding a new component, such as a TMCM or MCP agent.

Core files are first created in the first directory listed as follows, and then compressed and moved to the second directory listed:

/var/iwss/coredumps
/var/iwss/UserDumps

Use these files when working with Trend Micro technical support to help diagnose the cause of your problem. To view the files yourself, use a program like GDB, the GNU Project debugger.

While IWSVA generates the core and/or system file(s), the application could encounter some conditions that prevent it from gathering all the possible diagnostic information. For instance, debug could be disabled, a core dump may not exist, or other critical commands or files may not exist. In this case, IWSVA gathers as much information as possible and also records any errors encountered in a log file with comprehensive messages.

Network Packet Capturing

The Network Packet Capturing wizard is located on the Administration > Support | Network Packet Capturing tab. Using the captured network packet, administrators or support teams can perform traffic debug or analysis.

With this feature, administrators can choose a single or multiple network interfaces on which to simultaneously capture network packet. After the capture starts, the elapsed time displays. The capture operation stops when the administrator clicks Stop capturing or when the (default) maximum file size of 10GB is reached.

**Note:** The default maximum file size limitation is configured in `/etc/iscan/network.ini`.

The packet capture for each interface will be save in an individual file using the naming convention of “capture-{interface}-[date:time].pcap”. For example capture-eth0-20111101:31:31:01.pcap would be the file name for the packet capture on the eth0 network interface performed on November 1, 2011.

After the network packet capture completes, all packet capture files are saved in one compressed package file named to “capture-{date}.tgz”. This file displays in the downloadable list. Administrators can either download or deleted the compressed file.
Using Network Packet Capturing

Administrators can analyze traffic with this feature that allows packet captures for selected interfaces or a single interface.

To capture network packets:

1. Go to the Administration > Support page and click the Network Packet Capturing tab.
2. Select the appropriate interface(s) from the Available column.
3. Click Add or Add All to move the selected interfaces to the Selected column.
4. If needed, click Remove or Remove All to remove interfaces from the Selected column.
5. Click Start Capturing. The elapsed time displays. The capture stops when the maximum files size of 10GB is reached.
6. If necessary, click Stop Capturing to stop the packet capture before reaching the maximum file size.
7. When the capture finishes, select the appropriate generate file or select All.
8. Select an action:
   • Click Download and browse to save the capture file to a directory.
   • Click Delete to delete the generated files and click OK.
After opening the InterScan Web Security Virtual Appliance (IWSVA) console, test the following to verify that the program is working properly. The following lists the tests described in this chapter:

- EICAR Test File on page 15-2
- Testing Web Reputation on page 15-2
- Testing Upload Scanning on page 15-3
- Testing HTTPS Decryption Scanning on page 15-4
- Testing FTP Scanning on page 15-6
- Testing Application Control on page 15-7
- Testing HTTP Inspection on page 15-8
- Testing URL Monitoring on page 15-10
- Testing Download Scanning on page 15-11
- Testing URL Filtering on page 15-12
- Testing Spyware Scanning on page 15-12
- Testing PhishTrap on page 15-14
- Testing Java Applet and ActiveX Scanning on page 15-15
- Additional IWSVA Configurations on page 15-16
- IWSVA Performance Tuning on page 15-26
EICAR Test File

The European Institute for Computer Antivirus Research (EICAR) has developed a test virus to test your antivirus appliance. This script is an inert text file. The binary pattern is included in the virus pattern file from most antivirus vendors. The test virus is not a virus and does not contain any program code.

**WARNING!** Never use real viruses to test your Internet security.

Download the EICAR test virus from the following URLs:

http://www.eicar.org/anti_virus_test_file.htm
https://secure.eicar.org/eicar.com

Alternatively, you can create your own EICAR test virus by typing or copying the following into a text file, and then naming the file eicar.com:

X5O!P%@AP[4\PZX54(P^)7CC)7}$EICAR-STANDARD-ANTIVIRUS-TEST-FILE!$H+H*

**Note:** Flush the URL cache (HTTP > Configuration > URL Cache), the Content Cache (HTTP > Configuration > Content Cache), and your local browser before testing. If either cache contains a copy of the test virus, it is possible an attempt to download the file would get the file from the cache, rather than getting it from the Internet, and IWSVA would not detect the file.

Testing Web Reputation

To test IWSVA’s Web Reputation feature, open a Web browser and type the following in the address field:

http://wr21.winshipway.com

If the test is successful, you should receive an IWSVA Security Event message stating, “This URL has a Web security rating that prohibits it from being accessed.”
Testing Upload Scanning

The following procedure contains instructions to test the uploaded virus:

1. Open the IWSVA console and click **HTTP > HTTP Malware Scan > Policies** in the main menu. Clear **Enable virus scanning**, and then click **Save**.
2. Download the test virus (eicar.com) from the following page:
   
   http://www.eicar.org/anti_virus_test_file.htm
3. Save the test virus on your local machine.
4. Re-open the IWSVA console, under **HTTP > HTTP Malware Scan > Policies** in the main menu, select **Enable virus scanning**, and then click **Save**.
5. Upload the test virus to a Web site. A message similar to *Figure 15-1* appears in your browser.

**Trend Micro InterScan Web Security Event**

<table>
<thead>
<tr>
<th>HTTP/HTTP2 Upload File Blocked</th>
</tr>
</thead>
<tbody>
<tr>
<td>Access to this web site content was blocked by the IT HTTP/HTTPS Scan Policy because malware was detected from this URL.</td>
</tr>
</tbody>
</table>

**Event Details:**
- **URL:** http://10.204.170.76/Upload/upload.cgi
- **Action:** deleted

**Details:**
- **File:** eicar.zip, **security warning:** ZIP_64BIT_FILE
  - The unsalable file is deleted.

If you believe this file was blocked in error, please contact your IT staff to resolve this issue.

*Figure 15-1.* This warning screen shows the detection of an EICAR test virus.
Testing HTTPS Decryption Scanning

This section describes the procedure to test HTTPS decryption on IWSVA in stand-alone mode.

**To test virus scanning of decrypted HTTPS traffic:**

1. Set the Web client’s HTTP proxy to point to IWSVA (for example, open Internet Explorer and click `Tools > Internet Options > Connections > LAN Settings > Use a proxy server`).
2. Open the IWSVA Web console and click `HTTP > HTTPS Decryption > Settings | Server Certificate Validation` and make sure all options are selected.
3. Click `HTTP > HTTPS Decryption > Policies` and click Enable HTTPS Decryption.
4. Click Add to create a new HTTPS decryption policy. In the Rules tab, select Disease Vector under the Business: Computer/Internet category.
5. From the client machine, access the test virus file from the following URL: https://secure.eicar.org/eicar.com
6. Because the server certificate is not in the trusted list on IWSVA, a certificate error notification displays. Click Visit site anyway.
7. A security warning screen displays. The warning message varies depending on whether URL filtering is also enabled or not.

**Trend Micro InterScan Web Security Event**

<table>
<thead>
<tr>
<th>HTTP/HTTPS Download File Blocked</th>
</tr>
</thead>
<tbody>
<tr>
<td>Access to this web site content was blocked by the IT HTTP/HTTPS Scan Policy because malware was detected from this URL.</td>
</tr>
<tr>
<td><strong>Event Details:</strong></td>
</tr>
<tr>
<td>URL: <a href="http://10.204.170.5/TESTDNTA/virus/NonCleanable/eicar.com">http://10.204.170.5/TESTDNTA/virus/NonCleanable/eicar.com</a></td>
</tr>
<tr>
<td>Action: deleted</td>
</tr>
<tr>
<td>Details:</td>
</tr>
<tr>
<td>-- File: eicar.com, malicious code name: Eicar_test_file</td>
</tr>
<tr>
<td>The undeletable file is deleted.</td>
</tr>
</tbody>
</table>

If you believe this file was blocked in error, please contact your IT staff to resolve this issue.

**FIGURE 15-2.** Security warning screen if URL filtering is disabled
Trend Micro InterScan Web Security Event

Access to this website was blocked by an IT URL Filtering policy because of its category.

Event Details:
URL: http://www.playboy.com/
Category: Adult/Nudity/Content

If you believe this URL was blocked in error, please contact your IT staff to resolve this issue.

FIGURE 15-3. Security warning screen if URL filtering is also enabled

On the IWSVA server, you can view detailed log information in the URL filtering log or the virus log.

FIGURE 15-4. View the log for HTTPS decryption test in the Virus Log screen if URL filtering is disabled
Testing FTP Scanning

The following procedure contains instructions to test your FTP virus scanning capability in standalone mode.

**To test virus scanning of FTP traffic:**

1. Download the test virus from the following page:
   
   http://www.eicar.org/anti_virus_test_file.htm

2. Access the FTP server through IWSVA with it working as the FTP proxy.
   
   For example, assume the following IP addresses: IWSVA FTP proxy server (10.2.203.126), FTP server (10.2.202.168).
   
   Open a command line prompt and type the following:
   
   ftp 10.2.203.126

3. Log on as user@host. For example, if your FTP account name is anonymous and the IP address of the FTP server is 10.2.202.168, then log on as anonymous@10.2.202.168

4. Upload the test virus (for example, eicar_com.zip) by typing the following command:
   
   put eicar_com.zip
5. If you have configured the IWSVA FTP proxy mode correctly, IWSVA displays a message similar to the one in Figure 15-6.

![Image of a command prompt with FTP commands and an error message]

**FIGURE 15-6.** This is a warning message that shows the detection of a virus in eicar_com.zip.

### Testing Application Control

IWSVA must be deployed in Transparent Bridge Mode or Transparent Bridge Mode-High Availability to use the Application Control feature.

The following procedure allows you to modify the Application Control Global Policy to block end users from accessing the Google website.

**To test Application Control:**

1. Open the IWSVA console and go to **HTTP > Application Control > Policies**.
2. Check the **Enable Application Control** check box and click **Save**.
3. Click the **Application Control Global Policy** name to modify it.
4. Find the Google protocol listing in one of two ways:
• Type “Google” in the Application Category search field. The search result you want is the listing of “Google” in the Web category.
• Scroll down to the Web category, expand the category and find the entry for Google.

5. Select the **Block** action from the drop-down action menu in the column on the right side of the Web category name.
6. Check the check boxes for work and leisure time for the Google protocol. Leave all other categories set to the **Allow** action (default.)
7. Click **Apply**. The block action now displays in the Work and Leisure time columns for the Google protocol.
8. Click **Save** and you return to the Application Control Policies page.
9. Click **Deploy Policies** to deploy the updated policy.
    Your browser displays the message shown in *Figure 15-7.*

---

**FIGURE 15-7.** Message confirms Application Control policy breach

Testing HTTP Inspection

Use this procedure to test the HTTP Inspection browser-type filter which identifies requests sent from a FireFox browser according.
To test HTTP Inspection:

1. Open the IWSVA console and go to HTTP > HTTP Inspection > Policies.
2. Check the Enable HTTP Inspection check box and click Save.
3. Click the HTTP Inspection Global Policy name to access the policy for modification.
4. Select the Block action from the drop-down action menu above the list of HTTP Inspection filters.
5. Check the check boxes for work and leisure time for the Browser type filter.
6. Click Apply. The block action now displays in the Work and Leisure time columns. Leave all other filter types set to the Allow action (default.)
7. Click Save and you return to the HTTP Inspection Policies page.
8. Click Deploy Policies to deploy the updated policy.
9. Attempt to access an http:// URL, such as http://www.google.com, with your FireFox browser. Your browser displays the notification message in Figure 15-8.

![Trend Micro InterScan Web Security Event](image)

**FIGURE 15-8. HTTP Inspection Policy Breach Notification**
Testing URL Monitoring

Before testing the monitor feature in URL filtering, require your users to set the Web client’s HTTP proxy to point to IWSVA.

To test URL filtering:

1. Open the IWSVA Web console and click HTTP > Configuration > Custom Categories and create a new category “monitor” for the following URL: http://www.download.com

2. Click HTTP > URL Filtering > Policies and select Enable URL Filtering; then, click the URL Filtering Global Policy name to access the policy for editing it.

3. In the Rule tab, select Monitor and click the check box under Leisure Time for “monitor” under Custom Categories; then, click Apply.

4. Select Monitor and click the check box under Leisure Time for Search Engines/Portals under Computers/Communications; then, click Apply.

5. Save and deploy this policy.
6. From a client computer, access the following Web sites during leisure time:

   http://www.download.com
   http://www.google.com
   http://www.yahoo.com

You should be able to access the Web sites without seeing any warning messages. To query and view URL filtering log, access the IWSVA Web console and click Logs > Log Query > URL Filtering Log.

Testing Download Scanning

To test virus scanning when downloading using HTTP or FTP over HTTP, attempt to download the test virus from the following Web site:

   http://www.eicar.org/anti_virus_test_file.htm

Trend Micro InterScan Web Security Event

<table>
<thead>
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</tr>
<tr>
<td><strong>Event Details:</strong></td>
</tr>
<tr>
<td><strong>URL:</strong> <a href="http://10.234.170.5/TESTDATA/virus/NonCleansable/eicar.com">http://10.234.170.5/TESTDATA/virus/NonCleansable/eicar.com</a></td>
</tr>
<tr>
<td><strong>Action:</strong> deleted</td>
</tr>
<tr>
<td><strong>Details:</strong></td>
</tr>
<tr>
<td>-- File: eicar.com, malicious code name: Eicar_test_file</td>
</tr>
<tr>
<td>The uncleanable file is deleted.</td>
</tr>
<tr>
<td>If you believe this file was blocked in error, please contact your IT staff to resolve this issue.</td>
</tr>
</tbody>
</table>

**FIGURE 15-10.** This virus-warning screen opens if the system is set up properly.
If a client attempts to download an infected file, IWSVA blocks all other users’ access to that site for four hours by default. When other clients subsequently attempt to access the same URL that contained the virus, they will see a URL blocking message instead of the virus-warning message.

Configure the default block time (in hours) by changing the parameter `infected_url_block_length` under the `[Scan-configuration]` section of the `intscan.ini` file.

**Testing URL Filtering**

Trend Micro recommends that you use the default settings to test URL filtering.

**To test URL Filtering:**
1. Click **HTTP > URL Filtering > Settings** from the main menu and in the **Schedule** tab. Configure the work days and times.
2. Click **HTTP > URL Filtering > Policies** from the Main menu.
3. Select **Enable URL filtering** and then click **Save**.
4. Click **URL Filtering Global Policy** and select the Block action to apply to the categories that you want blocked during work and leisure times. Keep the default settings in the Safe Search and Exception tabs.
5. Click **Save** to save any changes. Click **Deploy Policies** to make the policy effective immediately.
6. Open a browser and access any site that is in a category to be blocked at the time of the test. IWSVA blocks access to URLs belonging to the category that is set to be blocked.

**Testing Spyware Scanning**

**To test spyware scanning:**
1. Click **Summary** from the main menu.
2. Click the **Scanning** tab.
3. Enable spyware and other grayware categories for scanning by clicking **HTTP scanning**.
4. Click **HTTP > HTTP Malware Scan > Policies**.

5. Click **Virus Scan Global Policy**.

6. Click the **Spyware/Grayware Scan Rule** tab and then select the types of spyware/grayware that should be scanned.

7. Click **Save**.

8. Click **Virus Scan Global Policy**.

9. Click the **Action** tab.

10. Under the **Uncleanable files** field, select the action setting (Delete, Quarantine, or Pass).

11. Click **Save**.

12. Click **Deploy Policies** to make the policy effective immediately.

After a successful spyware detection, a sample message appears:

**Trend Micro InterScan Web Security Event**

---

**HTTP/HTTPS Download File Blocked**

Access to this web site content was blocked by the IT HTTP/HTTPS Scan Policy because malware was detected from this URL.

**Event Details:**

- **URL:** http://10.204.170.5/TESTDATA/virus/grayware/ADW/ADW.zip
- **Action:** deleted
- **Details:**
  - **File:** ADW_Test_File.exe, Enclosure: ADW.zip, malicious code name: **Adware_Test_File**
  - The uncleanable file is deleted.

If you believe this file was blocked in error, please contact your IT staff to resolve this issue.

---

**FIGURE 15-11.** A sample message after detecting a spyware with action “Delete” setting
Testing PhishTrap

To test PhishTrap:

1. Click **HTTP > URL Access Control > URL Blocking** from the main menu.
2. Select **Enable URL blocking**.
3. Click the **Via Pattern File (Phish)** tab.
4. Under **Block the following Phish categories**, select all four categories (Phishing, Spyware, Virus accomplice, and Disease vector).
5. Click **Save**.

After a successful phishing site detection, a sample message appears:

---

**URL Blocked**

This URL has a web security rating that prohibits it from being accessed based on corporate policy. The requested site is either a known or suspected source of malware.

**Event Details:**

URL: http://cgi.ebay.com.Idstripnfo.in/ce/eBayAIAPICil

Content rating: Anti-phishing

If you believe this URL was blocked in error, please contact your IT staff to resolve this issue.

---

**FIGURE 15-12.** A sample message after detecting a phishing site.
Testing Java Applet and ActiveX Scanning

Java applets and ActiveX controls are used on many Web pages to display interactive content or applications. One way to test IWSVA is to temporarily configure the global policy to block all applets and ActiveX controls, and then attempt to open Web pages that use them (to verify that the applet or object is blocked).

To test Java applet and ActiveX scanning:

1. Click HTTP > Applets and ActiveX > Policies from the main menu.
2. If necessary, select Enable Applet/ActiveX security and click Save.
3. Click Applet/ActiveX Security Global Policy.
4. On the Java Applet Security Rules tab, click Block all Java applets and then Save.
5. On the ActiveX Security Rules tab, click Block all cabinet files and Block all PE format files and then click Save.
6. From the Applets and ActiveX Policies screen, select Deploy Policies to make policy changes effective immediately.
7. Open a Web browser and attempt to navigate to Web sites that use Java applets and ActiveX controls, for example, for stock price tickers or games. IWSVA blocks the mobile code from downloading and running in your browser.

Note: Blocking all Java applets and ActiveX controls might be too restrictive for your environment because it prevents many legitimate Web sites from functioning properly. After testing, Trend Micro recommends going back to the Applets and ActiveX Policy: Edit Global Policy screen to change the settings back to the default or your own less-restrictive configuration.
Additional IWSVA Configurations

This section briefly introduces some common IWSVA configuration tasks.

Configuring the Separate Management Interface

In many large enterprises and/or secure networking environments, a separate network segment (also known as the management network) can be used to manage various network devices. For security reasons, the management network is not connected to the Internet and is a separate network that ordinary users are not allowed to access.

On the IWSVA server, you can enable the separate management interface that connects to the company’s management network. A separate network interface must be available on the IWSVA server for the dedicated management interface. After the management interface is activated and configured on IWSVA, you can access the IWSVA Web console or CLI through the separate management interface. The following shows an example network topology:

![FIGURE 15-13. IWSVA management interface placement in the network](image)
In this example, the management interface on the IWSVA is connected to the management network in the company. The clients access the Internet through the data (bridge or proxy) interface.

**WARNING!** Do NOT configure the data (bridge/proxy) interface and the management interface to be in the same network segment. If they are in the same network segment, the firewall might block the HTTP/HTTPS and FTP traffic.

**To configure the separate management interface:**

1. From the main menu, click the Administration > Deployment Wizard > Network Settings page and then click the Enable Separate Management Interface check box.
2. From the Ethernet interface drop-down list, select a desired interface for the management interface.
3. Configure the IP address settings.
4. Select Enable PING if you want IWSVA to respond to PING requests on this interface.
5. Click Save. You can access the separate management interface to log into the Web console and manage IWSVA.

**Tip:** If the IWSVA machine is behind a router/switch in the management network, configure a static route on the management interface to access IWSVA through the Web console or SSH.

**To test the separate management interface:**

1. First try to log on to the Web console through the data (bridge or proxy) interface. You should be able to log on and manage IWSVA.
2. Next try accessing the Web console on the separate management interface. You should be able to log on and manage IWSVA.
Securing the IWSVA Console

By default, the IWSVA Web management console (GUI) is accessed through an HTTP connection on port 1812. For improved security, Trend Micro recommends that you use a Secure Socket Layer connection (HTTPS). You will need to provide a public key and certificate.

To connect to the IWSVA Web console through HTTPS:

1. From the main menu, click Administration > Network Configuration > Web Console and choose SSL Mode to enable a secure connection to the IWSVA console.
2. In the SSL Certificate field, click Browse to locate the certificate you will use, and then Upload to import it to the IWSVA device.
3. Type the password associated with the SSL certificate, if any.
4. Type the port on which you would like to open the IWSVA console and then click Save.

For example:

https://<IWSVA device IP address:port>

Note: Non-SSL mode is the default; use it to access the IWSVA console using a non-secure URL; for example:

http://<IWSVA device IP address:port>

The default non-secure port is 1812; you can change it to any unused port (recognized by the firewall).

Activating Remote CLI

You can enable the remote CLI feature to connect to the IWSVA server and configure settings using the CLI commands. Remote connection is secured through SSH v2 (Secure SHell) which is a network protocol that allows two network devices to exchange data in a secured connection. SSH replaces Telnet which sends data (including passwords) in clear text.
To enable remote CLI on the IWSVA server:

1. From the main menu, click **Administration > Network Configuration > Remote CLI** and choose **SSH: Command line access** to enable remote CLI access using SSH on IWSVA.
2. Type the service port number for SSH v2. The default port number is 22.
3. Click **Save**.

Specifying HTTP Malware Scanning

HTTP scanning is enabled by default. The HTTP traffic flow for clients to browse the Web and perform other HTTP operations can be enabled and disabled (see **Enabling the HTTP/HTTPS Traffic Flow on page 6-2**).

Specifying the User Identification Method

IWSVA supports several methods to identify clients when configuring a policy’s scope (see **Configuring the User Identification Method on page 7-5**). The default identification method is through the client’s IP address. IWSVA also supports identifying clients through their host names or MAC addresses and through their LDAP directories.

Enabling the Guest Account (LDAP only)

When using the **User/group name authentication** identification method, all virus scanning, Java applets and ActiveX security, URL filtering, and access quota policies will support configuring policies for users who are temporarily visiting your network. These guest policies are applied to clients that connect to IWSVA through the “guest” port. The guest account is disabled by default—enable it to allow guests Internet access.

To enable the guest account and configure the guest port:

1. IWSVA needs to be configured for User/group name authentication (LDAP) in the **Administration > IWSVA Configuration > User Identification** | **User Identification** tab.
2. To enable the guest account, go to **Administration > Deployment Wizard > Start > Deployment Mode**.
3. Select **Forward proxy mode** and click **Next**.
4. On the Proxy Settings screen, in the Forward Proxy Mode section, select the Enable guest account check box.
   The default value in the Port number field is 8081 and typically does not have to be modified unless the port is already in use.

5. Click Next until the Submit button displays. Click Submit and then click Close.

Reviewing Scanning and Filtering Policies

IWSVA is pre-configured to provide a baseline level of gateway security. Trend Micro recommends reviewing the HTTP virus scanning Global and Guest policy configurations to ensure they reflect your organization's security policies.

Additionally, if you are running the Applets and ActiveX security, URL filtering and FTP scanning modules, review those configurations and modify them accordingly.

Enabling Access Quota Policies

To limit bandwidth consumption, enable the access quota control to set a maximum amount of data that a client can retrieve or download during a given time period.

To enable access quota control:

1. Click HTTP > Access Quota Policies on the main menu.
2. Select Enable access quota control.
3. To configure access quota control for your network’s guest users, click Access Quota Guest Policy and configure the settings. To configure access quota control for other network users, click Add and configure a new policy.
4. Click Save.

   For the new policy to take effect immediately, click Deploy Policies in the HTTP > Access Quota Policies page.

Setting Access Control Settings

The default IWSVA settings allow all non-guest clients to access the Internet. To allow a subset of your clients Internet access, configure the IP addresses allowed to do so on the Internet Access Control screen.
In addition, IWSVA can be configured to exempt some servers from scanning, URL filtering, and URL blocking to speed up browsing performance when visiting trusted sites. For example, consider adding the IP address ranges of your intranet sites to the Server IP white list to exempt frequently visited sites from scanning and filtering.

To configure which clients are allowed to access the Internet:
1. Click HTTP > Configuration > Internet Access Control from the main menu.
2. On the Client IP tab, select Enable HTTP access based on client IP and enter the IP addresses that are allowed to access the Internet.
3. Click Save.

To configure which servers are exempt from filtering and scanning:
1. Click HTTP > Configuration > Internet Access Control from the main menu.
2. Click the Server IP White List tab, configure the IP addresses of servers that are exempt from scanning, URL filtering, and URL blocking.
3. Click Save.

Adding System Updates or Removing an Application Patch

From time to time, Trend Micro makes updates available through the Download Center. After downloading the latest update from the Download Center to a desktop or other computer, you can upload it to the IWSVA device where it is automatically installed.

To add a system update:
1. Download the latest update from http://downloadcenter.trendmicro.com
2. From the main menu, click Administration > System Updates and then click Browse.
3. Locate the update you downloaded from the Trend Micro Download Center.
4. Click Upload to have IWSVA copy the update to the IWSVA device and begin installing.

Only a properly formatted and encrypted Trend Micro patch can be uploaded from this utility.
To remove an application patch:
1. From the main menu, click Administration > System Updates.
2. In the History section, click the Application Patches tab.
3. Click the Uninstall link beside the application patch number.
4. In the preview page that appears, verify the version of the patch you want to remove.
   You can remove the most recently installed application patch at any time.
5. Click Uninstall. A progress page appears. After the patch has been removed, close the window to return to the main IWSVA console.

About Hot Fixes, Patches, and Service Packs
After an official product release, Trend Micro often develops hot fixes, patches, and service packs to address issues, enhance product performance, or add new features.

The following is a summary of the items Trend Micro might release:
- **Hot fix**: A work around or solution to a single customer-reported issue. Hot fixes are issue-specific, and therefore, not released to all customers. Windows hot fixes include a setup program.
- **Security Patch**: A hot fix focusing on security issues that is suitable for deployment to all customers.
- **Patch**: A group of hot fixes and security patches that solve multiple program issues. Trend Micro makes patches available on a regular basis.
- **Service Pack**: A consolidation of hot fixes, patches, and feature enhancements significant enough to be considered a product upgrade. You can obtain hot fixes from your Technical Account Manager. Check the Trend Micro Knowledge Base to search for released hot fixes:
  - [http://esupport.trendmicro.com/support/](http://esupport.trendmicro.com/support/)
Check the Trend Micro Web site regularly to download patches and service packs:
  - [http://www.trendmicro.com/download](http://www.trendmicro.com/download)
All releases include a readme file with the information you need to install, deploy, and configure your product. Read the readme file carefully before installing the hot fix, patch, or service pack file(s).
Checking the Database Connection

When you are setting up a database for multiple IWSVA configurations, specify the same database for all IWSVA devices.

**To check the database connection settings:**

1. Click Administration > IWSVA Configuration > Database Connection.
2. Under Database Connection Settings, view the database settings.
3. Click Test Database Connection.

Policy settings are stored in the database, and IWSVA copies the settings to a memory cache. IWSVA reloads the settings from the database into memory according to the Policy Deployment Settings (in minutes) option that specifies the interval.

**To configure the Policy Deployment Settings (in minutes):**

1. Open the IWSVA Web console and click Administration > IWSVA Configuration > Policy Deployment.
2. Under Policy Deployment Settings (in minutes), type a value for the following parameters:
   - Access quota policy
   - Applets and ActiveX policy
   - Application Control policy
   - HTTPS policy
   - URL filtering policy
   - Virus scan policy
3. Click Save.

Changing the Management Console Password

The Web console password is the primary means to protect your IWSVA device from unauthorized changes. For a more secure environment, change the console password on a regular basis and use a password that is difficult to guess.

The administrator passwords can be changed through the Web console interface. The CLI allows you to change the Enable, Root, and any Administrator account passwords. The CLI command uses the “configure password” command to make the changes.
To change the Web console password through the CLI:

1. Log in to the CLI console as “enable.”
2. Type the following command:
   
   ```
   configure system password
   ```

The following tips help you design a safe password:

- Include both letters and numbers in your password
- Avoid words found in any dictionary, of any language
- Intentionally misspell words
- Use phrases or combine words
- Use both uppercase and lowercase letters

To change the Web console password:

1. Open the IWSVA console and click **Administration > Management Console > Account Administration** in the main menu.
2. Click the user account for which you want to change the password.
3. From the Login Accounts page, type the new password in the **Password** field and then again in the **Confirm Password** field.
4. Click **Save**.

Configurations After Changing the Web Console Listening Port

When users enable the HTTPS Web console management mode by accessing the **Administration > Network Configuration > Web Console** screen and setting the **Port number** for SSL mode to a port (such as 8443) not used by other applications, they should also specify this SSL management port number in the **HTTP > Configuration > Internet Access Control** screen as well (see Using SSL with Damage Cleanup Services (DCS) on page 15-25).

If this port number is not specified in the **Internet Access Control** screen, the consequence could be that the IWSVA progress page is blocked by IWSVA itself, when using the HTTPS Web console. In other words, when clients try to access URLs, they would see the progress bar blocked by IWSVA.
Using SSL with Damage Cleanup Services (DCS)

To redirect clients to DCS to clean up malicious code when you are using the HTTPS-enabled Web console, access to the secure port that IWSVA uses (typically 8443) must be enabled. Otherwise, redirection to DCS is not successful, because the redirection request is blocked.

**To allow access to secure port 8443:**

1. Click HTTP > Configuration > Internet Access Control, and make the HTTPS Ports tab active.
2. Allow access to the Port used for HTTPS traffic (typically 8443).
3. Click Add and then Save.

In addition, two parameters in the [http] section of the intscan.ini file need to be modified when IWSVA is configured to use HTTPS:

```
iscan_web_server=[user defined https port, e.g., 8443]
iscan_web_protocol=https
```

Verifying URL Filtering Settings

If you are running the URL filtering module, review the post-install tasks that follow to prepare IWSVA for your environment.

IWSVA accesses the Web Reputation database that contains URLs in over 80 categories, such as “gambling,” “games,” and “personals/dating.” These categories are contained in logical groups.

Trend Micro recommends reviewing the URL filtering settings to ensure that the categories that qualify as company-prohibited sites reflect the values of your organization and do not affect your employees’ business-related Web browsing. Before rolling out URL filtering policies, Trend Micro recommends verifying that the default categorizations are appropriate for your organization. For example, a clothing retailer might need to remove a swimsuit Web site from the “Intimate Apparel/Swimsuit” category located in the Adult group in order to allow legitimate market and competitor research.

Additionally, you might need to configure URL exceptions to enable employee access to specific sites that would otherwise be blocked, and review the definitions of “work time” to ensure it reflects your workplace schedule.
To review URL filtering settings:

1. Click **HTTP > URL Filtering > Policies > policy > Exceptions** from the main menu.
2. Choose an approved URL list from the drop-down list that contains the Web sites that will be exempt from URL filtering so that they are always accessible to your clients.
3. On the **Schedule** tab, the default setting for “work time” is Monday to Friday, from 08:00 to 11:59, and from 13:00 to 17:00. Modify these time settings according to the employee schedules in your workplace.
4. Click **HTTP > URL Filtering > Policies** from the main menu and review the category settings of the URL Filtering Guest Policy and URL Filtering Global Policy.

IWSVA Performance Tuning

If you are experiencing issues with slow browsing performance, consider the modifications described in the following section.

LDAP Performance Tuning

When running IWSVA to use the user/group name authentication identification method (LDAP), HTTP proxy performance becomes dependent upon the responsiveness of the LDAP directory server. In a worst case scenario, every HTTP request would require an LDAP query to authenticate the user’s credentials, and another to retrieve group membership information for that user. These queries introduce latency in terms of the transmit/receive delay between IWSVA and the LDAP server, and add load to the LDAP server itself.

LDAP Internal Caches

To reduce the amount of LDAP queries required, IWSVA provides several internal caches:
• **User group membership cache:** This cache can store the group membership information for several hundred users. By default, entries in this cache are valid for 48 hours, or until the cache fills (at which point entries are replaced, starting with the oldest). The time to live (TTL) for entries in this cache can be configured through the `user_groups_central_cache_interval` setting in the `[user-identification]` section of the `intscan.ini` configuration file.

• **Client IP to User ID cache:** This cache associates a client IP address with a user who recently authenticated from that same IP address. Any request originating from the same IP address as a previously authenticated request is attributed to that user, provided the new request is issued within a configurable window of time (15 minutes by default for HTTP, 90 minutes for ICAP) from that authentication. The caveat is that client IP addresses recognized by IWSVA must be unique to a user within that time period; therefore, this cache is not useful in environments where there is a proxy server or source NAT between the clients and IWSVA, or where DHCP frequently reassigns client IPs. To enable or disable this cache, change the `enable_ip_user_cache` setting in the `[user-identification]` section of the `intscan.ini` configuration file. To change the TTL of this cache, change the `ip_user_central_cache_interval` (unit is hours). For example, to create a TTL of 30 minutes, enter “0.5”.

• **User authentication cache:** This avoids re-authenticating multiple HTTP requests passed over a persistent connection. When users pass the credential validation over a persistent connection, IWSVA adds an entry (two important keys in one cache entry are the client's IP address and the client's user name) in the user authentication cache so the subsequent requests over a keep-alive connection does not authenticate again. The client's IP address and client's user name serve as two forward references, or links, to the “client IP to user ID cache” and “user group membership cache,” respectively. IWSVA is still able to retrieve the user's connection information from both the IP-user and user-group caches.

When deploying IWSVA with LDAP integration, it is important to consider the additional load that authenticating HTTP requests places on the LDAP directory server. In an environment that cannot effectively use the client IP to user ID cache, the directory server needs to be able to handle queries at the same rate IWSVA receives HTTP requests.
DisableVerbose Logging When LDAP Enabled

Trend Micro recommends turning off verbose logging in the `intscan.ini` file, under the `[http]` section, “verbose” parameter, when LDAP is enabled for server performance reasons. Verbose logging is primarily used by software developers to identify abnormal application behavior and troubleshooting. In a production deployment, verbose logging is usually unnecessary.

If verbose logging is enabled and LDAP is also enabled, IWSVA logs user authentication information and group membership information in the HTTP log in the Log folder. Logs might contain hundreds of lines per user and, therefore, significantly consume disk space, depending on the amount of internal traffic and the number of groups with which a user is associated.Verbose logging keeps the service busy by issuing I/O operations to the operating system. This might prevent the service from responding to HTTP requests in a timely fashion, and latency might occur. In an extreme bursting HTTP traffic environment, it’s possible to observe significant delays when IWSVA starts up in the verbose mode.
Contact Information and Web-based Resources

This appendix provides information to optimize the InterScan Web Security Virtual Appliance (IWSVA) performance and get further assistance with any technical support questions you might have.

Topics in this appendix include:

• Contacting Technical Support on page A-2
• IWSVA Core Files for Support on page A-2
• Knowledge Base on page A-3
• Sending Suspicious Code to Trend Micro on page A-4
• TrendLabs on page A-5
• Security Information Center on page A-5
• TrendEdge on page A-7
Contacting Technical Support

In the United States, Trend Micro representatives can be reached through phone, fax, or email. Our Web site and email addresses is as follows:

http://www.trendmicro.com
http://esupport.trendmicro.com/
support@trendmicro.com

General US phone and fax numbers are as follows:

Voice: +1 (408) 257-1500 (main)
Fax: +1 (408) 257-2003

Our US headquarters are located in the heart of Silicon Valley:

Trend Micro, Inc.
10101 N. De Anza Blvd.
Cupertino, CA 95014

To obtain Trend Micro contact information for your region/country, please visit http://www.trendmicro.com

IWSVA Core Files for Support

IWSVA generates a core file containing the system data held in memory when a process is abnormally terminated.

Raw core files are created in the var/iwss/coredumps directory on the IWSVA device. They are then compressed and moved to /var/iwss/UserDumps. You can use these files when working with Trend Micro technical support to help diagnose the cause of the problem.

To access the core files:

• From the main IWSVA menu, click Administration > Support.

To inspect the files yourself, use a program like GDB, the GNU Project debugger.
FIGURE A-1. Trend Micro Technical Support site at downloadcenter.trendmicro.com

Knowledge Base

The Trend Micro Knowledge Base is a 24x7 online resource that contains thousands of do-it-yourself technical support procedures for Trend Micro products. Use Knowledge Base, for example, if you are getting an error message and want to find out what to do to. New solutions are added daily.

Also available in Knowledge Base are product FAQs, hot tips, preventive antivirus advice, and regional contact information for support and sales.

http://esupport.trendmicro.com/
And, if you can't find an answer to a particular question, the Knowledge Base includes an additional service that allows you to submit your question through an email message. Response time is typically 24 hours or less.

**Sending Suspicious Code to Trend Micro**

You can send your viruses, infected files, Trojans, suspected worms, spyware, and other suspicious files to Trend Micro for evaluation. To do so, visit the Trend Micro Submission Wizard URL:

http://subwiz.trendmicro.com/SubWiz

Click the “Submit a suspicious file/undetected virus” link.

You are prompted to supply the following information:

- **Email**: Your email address where you would like to receive a response from the antivirus team.
- **Product**: The product you are currently using. If you are using multiple Trend Micro products, select the product that has the most effect on the problem submitted, or the product that is most commonly in use.
- **Number of Infected Seats**: The number of users in your organization that are infected.
- **Upload File**: Trend Micro recommends that you create a password-protected zip file of the suspicious file, using the word “virus” as the password—then select the protected zip file in the **Upload File** field.
- **Description**: Please include a brief description of the symptoms you are experiencing. Our team of virus engineers “dissect” the file to identify and characterize any risks it might contain and return the cleaned file to you, usually within 48 hours.

**Note**: Submissions made through the submission wizard/virus doctor are addressed promptly and are not subject to the policies and restrictions set forth as part of the Trend Micro Virus Response Service Level Agreement.
When you click **Next**, an acknowledgement screen opens. This screen also displays a Tracking Number for the problem you submitted.

If you prefer to communicate by email, send a query to the following address:

virusresponse@trendmicro.com

In the United States, you can also call the following toll-free telephone number:

(877) TRENDAV, or 877-873-6328

**TrendLabs**

TrendLabs is Trend Micro’s global infrastructure of antivirus research and product support centers that provide customers with up-to-the minute security information.

The “virus doctors” at TrendLabs monitor potential security risks around the world, to ensure that Trend Micro products remain secure against emerging risks. The daily culmination of these efforts are shared with customers through frequent virus pattern file updates and scan engine refinements.

TrendLabs is staffed by a team of several hundred engineers and certified support personnel that provide a wide range of product and technical support services. Dedicated service centers and rapid-response teams are located in Tokyo, Manila, Taipei, Munich, Paris, and Lake Forest, CA.

**Security Information Center**

Comprehensive security information is available over the Internet, free of charge, on the Trend Micro Security Information Web site:

http://www.trendmicro.com/vinfo/

Visit the Security Information site to:

- Read the Weekly Virus Report, which includes a listing of risks expected to trigger in the current week, and describes the 10 most prevalent risks around the globe for the current week
• View a Malware Map of the top 10 risks around the globe

![Malware Map](image)

**FIGURE A-2. Trend Micro World Virus Tracking Program virus map**

• Consult the Virus Encyclopedia, a compilation of known risks including risk rating, symptoms of infection, susceptible platforms, damage routine, and instructions on how to remove the risk, as well as information about computer hoaxes

• Download test files from the European Institute of Computer Anti-virus Research (EICAR), to help you test whether your security product is correctly configured

• Read general virus information, such as:
  • The Virus Primer, which helps you understand the difference between viruses, Trojans, worms, and other risks
  • The Trend Micro *Safe Computing Guide*
  • A description of risk ratings to help you understand the damage potential for a risk rated Very Low or Low vs. Medium or High risk
  • A glossary of virus and other security risk terminology
• Download comprehensive industry white paper
• See the Threat Meter or search the Threat Encyclopedia

![Threat Encyclopedia](image)

**FIGURE A-3. Trend Micro Threat Information**

• Subscribe, free, to Trend Micro’s Virus Alert service, to learn about outbreaks as they happen, and the Weekly Virus Report
• Learn about free virus update tools available to Webmasters

**To open Security Information:**

1. Open the IWSVA Web console.
2. Click **Security Info** from the drop-down menu at the top-right panel of the screen. The **Security Information** screen opens.

**TrendEdge**

A program for Trend Micro employees, partners, and other interested parties that provides information on unsupported, innovative techniques, tools, and best practices for Trend Micro products. The TrendEdge database contains numerous documents covering a wide range of topics.

[http://trendedge.trendmicro.com](http://trendedge.trendmicro.com)
# Mapping File Types to MIME Content-types

The following table describes some of the file types that you can enter in the HTTP and FTP virus scanning policy **MIME content-type to skip** field to skip scanning of the corresponding MIME content-types.

- [Overview on page B-2](#)
- [File Type Mapping Table for MIME Content Files on page B-3](#)

<table>
<thead>
<tr>
<th>MIME Content-type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>application/octet-stream</td>
<td>Executable files</td>
</tr>
<tr>
<td>application/pdf</td>
<td>PDF files</td>
</tr>
<tr>
<td>application/zip</td>
<td>Zip files</td>
</tr>
<tr>
<td>text/plain</td>
<td>Plain text files</td>
</tr>
</tbody>
</table>
Overview

Potential MIME names are not limited to Table B-1, which means you can input any name into the IWSVA UI skip list. (See To select which file types to scan: on page 8-47 for details.) However, the MIME type can only be skipped under the following dependencies:

IWSVA receives a file and determines:
• Is the MIME name is set to be skipped on the UI
• Is the file type (not the MIME name) is listed in the mapping table:
• If the MIME name is in the mapping tables, is MIME name is on the UI skip list?

If IWSVA finds a match, it can be skipped. If IWSVA cannot find a match, it will not be skipped.

![Diagram showing MIME Content Type Flow for Skipped Files]

FIGURE B-1. MIME Content Type Flow for Skipped Files
If an admin inputs a MIME name and the file type is unknown to IWSVA, IWSVA will skip the scanning of that file. If a MIME type is set to be skipped in IWSVA and it does not exist in the file type-MIME table, scanning will be skipped because the file type-MIME table can not list all possible MIME types for all possible file types.

If at least one of the MIME types for a file type is set to be skipped, it will also have scanning skipped because MIME names are not standard. The file type-MIME table can not list all MIME types for an known file type.

For example, the file type-MIME table contains mappings for FLV files: video/flv, video/x-flv: It does not contain “application/flv.” However, some Web sites use “application/flv.” IWSVA will not be able find the mapping entry for it, but IWSVA knows this is an FLV file by performing a file type check. It will skip the scan of this file.

If admin inputs “video/flv” and “application/flv” in skip list, the following check occurs:

- MIME name set to be skipped (MIME type: application/flv) >Yes >
- Check whether file type is in mapping table (file type: flv) > Yes >
- At least one of the MIME types for file type is set to skip >Yes > Skip the scan

File Type Mapping Table for MIME Content Files

<table>
<thead>
<tr>
<th>FILE TYPE</th>
<th>MIME CONTENT-TYPE</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACE Compression File</td>
<td>application/x-ace</td>
</tr>
<tr>
<td>ACE Compression File</td>
<td>application/x-compressed</td>
</tr>
<tr>
<td>Apple Sound</td>
<td>audio/aiff</td>
</tr>
<tr>
<td>Apple Sound</td>
<td>audio/x-aiff</td>
</tr>
<tr>
<td>Audio InterChange File Format from Apple/SGI</td>
<td>audio/aiff</td>
</tr>
</tbody>
</table>
## TABLE B-1. File Type Mapping Table for MIME Content-Files (Continued)

<table>
<thead>
<tr>
<th>FILE TYPE</th>
<th>MIME CONTENT-TYPE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Audio InterChange File Format from Apple/SGI</td>
<td>audio/x-aiff</td>
</tr>
<tr>
<td>Audio InterChange File Format from Apple/SGI</td>
<td>sound/aiff</td>
</tr>
<tr>
<td>Audio InterChange File Format from Apple/SGI</td>
<td>audio/rmf</td>
</tr>
<tr>
<td>Audio InterChange File Format from Apple/SGI</td>
<td>audio/x-rmf</td>
</tr>
<tr>
<td>Audio InterChange File Format from Apple/SGI</td>
<td>audio/x-pn-aiff</td>
</tr>
<tr>
<td>Audio InterChange File Format from Apple/SGI</td>
<td>audio/x-gsm</td>
</tr>
<tr>
<td>Audio InterChange File Format from Apple/SGI</td>
<td>audio/x-midi</td>
</tr>
<tr>
<td>Audio InterChange File Format from Apple/SGI</td>
<td>audio/vnd.qcelp</td>
</tr>
<tr>
<td>ARJ</td>
<td>application/arj</td>
</tr>
<tr>
<td>ARJ</td>
<td>application/x-arj</td>
</tr>
<tr>
<td>ARJ</td>
<td>application/x-compress</td>
</tr>
<tr>
<td>ARJ</td>
<td>application/x-compressed</td>
</tr>
<tr>
<td>ARJ</td>
<td>zz-application/zz-winassoc-arj</td>
</tr>
<tr>
<td>Advanced Streaming Format</td>
<td>video/x-ms-asf</td>
</tr>
<tr>
<td>Advanced Streaming Format</td>
<td>video/x-ms-asf-plugin</td>
</tr>
<tr>
<td>Advanced Streaming Format</td>
<td>video/x-ms-wm</td>
</tr>
</tbody>
</table>
### TABLE B-1. File Type Mapping Table for MIME Content-Files (Continued)

<table>
<thead>
<tr>
<th>FILE TYPE</th>
<th>MIME CONTENT-TYPE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Advanced Streaming Format</td>
<td>video/x-ms-wmx</td>
</tr>
<tr>
<td>Advanced Streaming Format</td>
<td>audio/asf</td>
</tr>
<tr>
<td>Advanced Streaming Format</td>
<td>application/asx</td>
</tr>
<tr>
<td>Advanced Streaming Format</td>
<td>application/x-mplayer2</td>
</tr>
<tr>
<td>Advanced Streaming Format</td>
<td>application/vnd.ms-asx</td>
</tr>
<tr>
<td>Nullsoft AVS</td>
<td>video/avs-video</td>
</tr>
<tr>
<td>Mime Base 64</td>
<td>application/base64</td>
</tr>
<tr>
<td>Macintosh MacBinary Archive</td>
<td>application/mac-binary</td>
</tr>
<tr>
<td>Macintosh MacBinary Archive</td>
<td>application/macbinary</td>
</tr>
<tr>
<td>Macintosh MacBinary Archive</td>
<td>application/octet-stream</td>
</tr>
<tr>
<td>Macintosh MacBinary Archive</td>
<td>application/x-binary</td>
</tr>
<tr>
<td>Macintosh MacBinary Archive</td>
<td>application/x-macbinary</td>
</tr>
<tr>
<td>BINHEX</td>
<td>application/binhex</td>
</tr>
<tr>
<td>BINHEX</td>
<td>application/binhex4</td>
</tr>
<tr>
<td>BINHEX</td>
<td>application/mac-binhex</td>
</tr>
<tr>
<td>BINHEX</td>
<td>application/mac-binhex40</td>
</tr>
<tr>
<td>BINHEX</td>
<td>application/x-binhex40</td>
</tr>
<tr>
<td>Windows BMP</td>
<td>image/bmp</td>
</tr>
<tr>
<td>Windows BMP</td>
<td>image/x-bmp</td>
</tr>
<tr>
<td>Windows BMP</td>
<td>image/x-bitmap</td>
</tr>
<tr>
<td>FILE TYPE</td>
<td>MIME CONTENT-TYPE</td>
</tr>
<tr>
<td>-------------------------------</td>
<td>---------------------</td>
</tr>
<tr>
<td>Windows BMP</td>
<td>image/x-xbitmap</td>
</tr>
<tr>
<td>Windows BMP</td>
<td>image/x-win-bitmap</td>
</tr>
<tr>
<td>Windows BMP</td>
<td>image/x-windows-bmp</td>
</tr>
<tr>
<td>Windows BMP</td>
<td>image/ms-bmp</td>
</tr>
<tr>
<td>Windows BMP</td>
<td>image/x-ms-bmp</td>
</tr>
<tr>
<td>SGI Image</td>
<td>image/x-sgi-bw</td>
</tr>
<tr>
<td>GNU BZIP2</td>
<td>application/x-bzip2</td>
</tr>
<tr>
<td>GNU BZIP3</td>
<td>application/bzip2</td>
</tr>
<tr>
<td>GNU BZIP4</td>
<td>application/x-bz2</td>
</tr>
<tr>
<td>GNU BZIP5</td>
<td>application/x-compressed</td>
</tr>
<tr>
<td>Computer Graphics Metafiles</td>
<td>image/cgm</td>
</tr>
<tr>
<td>COM</td>
<td>application/octet-stream</td>
</tr>
<tr>
<td>COM</td>
<td>application/x-msdos-program</td>
</tr>
<tr>
<td>COM</td>
<td>application/x-msdownload</td>
</tr>
<tr>
<td>UNIX cpio Archive</td>
<td>application/x-cpio</td>
</tr>
<tr>
<td>Macromedia Director Shockwave Movie</td>
<td>application/x-director</td>
</tr>
<tr>
<td>WordPerfect</td>
<td>application/wordperfect</td>
</tr>
<tr>
<td>AutoCAD DWG</td>
<td>application/acad</td>
</tr>
<tr>
<td>AutoCAD DWG</td>
<td>application/x-acad</td>
</tr>
</tbody>
</table>
### TABLE B-1. File Type Mapping Table for MIME Content-Files (Continued)

<table>
<thead>
<tr>
<th>FILE TYPE</th>
<th>MIME CONTENT-TYPE</th>
</tr>
</thead>
<tbody>
<tr>
<td>AutoCAD DWG</td>
<td>drawing/x-dwg</td>
</tr>
<tr>
<td>AutoCAD DWG</td>
<td>image/vnd.dwg</td>
</tr>
<tr>
<td>AutoCAD DWG</td>
<td>image/x-dwg</td>
</tr>
<tr>
<td>Encapsulated Postscript</td>
<td>application/postscript</td>
</tr>
<tr>
<td>Encapsulated Postscript</td>
<td>image/x-eps</td>
</tr>
<tr>
<td>Encapsulated Postscript</td>
<td>image/eps</td>
</tr>
<tr>
<td>Encapsulated Postscript</td>
<td>application/x-eps</td>
</tr>
<tr>
<td>Encapsulated Postscript</td>
<td>application/eps</td>
</tr>
<tr>
<td>EXE</td>
<td>application/octet-stream</td>
</tr>
<tr>
<td>EXE</td>
<td>application/exe</td>
</tr>
<tr>
<td>EXE</td>
<td>application/x-msdownload</td>
</tr>
<tr>
<td>EXE</td>
<td>application/x-exe</td>
</tr>
<tr>
<td>EXE</td>
<td>application/dos-exe</td>
</tr>
<tr>
<td>EXE</td>
<td>vms/exe</td>
</tr>
<tr>
<td>EXE</td>
<td>application/x-winexe</td>
</tr>
<tr>
<td>EXE</td>
<td>application/msdos-windows</td>
</tr>
<tr>
<td>Free Hand Document</td>
<td>image/x-freehand</td>
</tr>
<tr>
<td>AutoDesk Animator (FLI or FLC)</td>
<td>video/x-fli</td>
</tr>
<tr>
<td>AutoDesk Animator (FLI or FLC)</td>
<td>video/flc</td>
</tr>
<tr>
<td>AutoDesk Animator (FLI or FLC)</td>
<td>video/fli</td>
</tr>
</tbody>
</table>
## TABLE B-1. File Type Mapping Table for MIME Content-Files (Continued)

<table>
<thead>
<tr>
<th>FILE TYPE</th>
<th>MIME CONTENT-TYPE</th>
</tr>
</thead>
<tbody>
<tr>
<td>AutoDesk Animator (FLI or FLC)</td>
<td>video/x-acad-anim</td>
</tr>
<tr>
<td>Macromedia Flash FLV Video</td>
<td>video/flv</td>
</tr>
<tr>
<td>Macromedia Flash FLV Video</td>
<td>video/x-flv</td>
</tr>
<tr>
<td>Macromedia Flash FLV Video</td>
<td>flv-application/octet-stream</td>
</tr>
<tr>
<td>Frame Maker</td>
<td>application/vnd.framemaker</td>
</tr>
<tr>
<td>GIF</td>
<td>image/gif</td>
</tr>
<tr>
<td>GNU ZIP</td>
<td>application/gzip</td>
</tr>
<tr>
<td>GNU ZIP</td>
<td>application/x-gzip</td>
</tr>
<tr>
<td>GNU ZIP</td>
<td>application/x-gunzip</td>
</tr>
<tr>
<td>GNU ZIP</td>
<td>application/gzipped</td>
</tr>
<tr>
<td>GNU ZIP</td>
<td>application/gzip-compressed</td>
</tr>
<tr>
<td>GNU ZIP</td>
<td>application/x-compressed</td>
</tr>
<tr>
<td>GNU ZIP</td>
<td>application/x-compress</td>
</tr>
<tr>
<td>GNU ZIP</td>
<td>gzip/document</td>
</tr>
<tr>
<td>GNU ZIP</td>
<td>encoding/x-gzip</td>
</tr>
<tr>
<td>Windows Icon</td>
<td>image/ico</td>
</tr>
<tr>
<td>Windows Icon</td>
<td>image/x-icon</td>
</tr>
<tr>
<td>Windows Icon</td>
<td>application/ico</td>
</tr>
<tr>
<td>Windows Icon</td>
<td>application/x-ico</td>
</tr>
<tr>
<td>Windows Icon</td>
<td>application/x-win-bitmap</td>
</tr>
</tbody>
</table>
### TABLE B-1. File Type Mapping Table for MIME Content-Files (Continued)

<table>
<thead>
<tr>
<th>FILE TYPE</th>
<th>MIME CONTENT-TYPE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Windows Icon</td>
<td>image/x-win-bitmap</td>
</tr>
<tr>
<td>Amiga 8SVX Audio Interchange File Format</td>
<td>audio/x-aiff</td>
</tr>
<tr>
<td>Amiga 9SVX Audio Interchange File Format</td>
<td>image/iff</td>
</tr>
<tr>
<td>Amiga 10SVX Audio Interchange File Format</td>
<td>image/x-iff</td>
</tr>
<tr>
<td>Amiga 11SVX Audio Interchange File Format</td>
<td>application/iff</td>
</tr>
<tr>
<td>JAVA Applet</td>
<td>text/x-java-source</td>
</tr>
<tr>
<td>JAVA Applet</td>
<td>application/java-class</td>
</tr>
<tr>
<td>JAVA Applet</td>
<td>application/x-java-applet</td>
</tr>
<tr>
<td>JAVA Applet</td>
<td>application/x-java-vm</td>
</tr>
<tr>
<td>JPEG</td>
<td>image/jpeg</td>
</tr>
<tr>
<td>JPEG</td>
<td>image/jpg</td>
</tr>
<tr>
<td>JPEG</td>
<td>image/jp_</td>
</tr>
<tr>
<td>JPEG</td>
<td>image/pipeg</td>
</tr>
<tr>
<td>JPEG</td>
<td>image/pjpeg</td>
</tr>
<tr>
<td>LHA</td>
<td>application/x-lha</td>
</tr>
<tr>
<td>LHA</td>
<td>application/lha</td>
</tr>
<tr>
<td>LHA</td>
<td>application/x-compress</td>
</tr>
<tr>
<td>LHA</td>
<td>application/x-compressed</td>
</tr>
</tbody>
</table>
### TABLE B-1. File Type Mapping Table for MIME Content-Files (Continued)

<table>
<thead>
<tr>
<th>FILE TYPE</th>
<th>MIME CONTENT-TYPE</th>
</tr>
</thead>
<tbody>
<tr>
<td>LHA</td>
<td>application/macilha</td>
</tr>
<tr>
<td>Compiled LISP</td>
<td>application/x-lisp</td>
</tr>
<tr>
<td>NT/95 Shortcut (*.lnk)</td>
<td>application/x-ms-shortcut</td>
</tr>
<tr>
<td>LightWave 3D Object</td>
<td>image/x-lwo</td>
</tr>
<tr>
<td>MAUD Sample Format</td>
<td>audio/x-maud</td>
</tr>
<tr>
<td>Microsoft Document Imaging</td>
<td>image/vnd.ms-modi</td>
</tr>
<tr>
<td>MIDI</td>
<td>audio/midi</td>
</tr>
<tr>
<td>Magick Image File Format</td>
<td>application/x-mif</td>
</tr>
<tr>
<td>Multi-image Network Graphics</td>
<td>video/x-mng</td>
</tr>
<tr>
<td>Multi-image Network Graphics</td>
<td>video/mng</td>
</tr>
<tr>
<td>MP3</td>
<td>audio/mpeg</td>
</tr>
<tr>
<td>MP3</td>
<td>audio/mpeg3</td>
</tr>
<tr>
<td>MP3</td>
<td>audio/x-mpeg-3</td>
</tr>
<tr>
<td>MPEG</td>
<td>video/mpeg</td>
</tr>
<tr>
<td>MPEG</td>
<td>video/ mpg</td>
</tr>
<tr>
<td>MPEG</td>
<td>video/x-mpg</td>
</tr>
<tr>
<td>MPEG</td>
<td>video/mpeg2</td>
</tr>
<tr>
<td>MPEG</td>
<td>video/x-mpeg</td>
</tr>
<tr>
<td>Microsoft Cabinet</td>
<td>application/x-cainet-win32-x86</td>
</tr>
</tbody>
</table>
### TABLE B-1.  File Type Mapping Table for MIME Content-Files  (Continued)

<table>
<thead>
<tr>
<th>FILE TYPE</th>
<th>MIME CONTENT-TYPE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Windows Word</td>
<td>application/msword</td>
</tr>
<tr>
<td>Windows Word</td>
<td>application/doc</td>
</tr>
<tr>
<td>Windows Word</td>
<td>application/vnd.msword</td>
</tr>
<tr>
<td>Windows Word</td>
<td>application/vnd.ms-word</td>
</tr>
<tr>
<td>Windows Word</td>
<td>application/x-msw6</td>
</tr>
<tr>
<td>Windows Word</td>
<td>application/x-msword</td>
</tr>
<tr>
<td>Windows Excel</td>
<td>application/excel</td>
</tr>
<tr>
<td>Windows Excel</td>
<td>application/x-msexcel</td>
</tr>
<tr>
<td>Windows Excel</td>
<td>application/x-ms-excel</td>
</tr>
<tr>
<td>Windows Excel</td>
<td>application/x-excel</td>
</tr>
<tr>
<td>Windows Excel</td>
<td>application/vnd.ms-excel</td>
</tr>
<tr>
<td>Windows Excel</td>
<td>application/xls</td>
</tr>
<tr>
<td>Windows Excel</td>
<td>application/x-xls</td>
</tr>
<tr>
<td>Windows Installer</td>
<td>application/x-ole-storage</td>
</tr>
<tr>
<td>Microsoft Access (MDB)</td>
<td>application/x-msaccess</td>
</tr>
<tr>
<td>Microsoft Access (MDB)</td>
<td>application/msaccess</td>
</tr>
<tr>
<td>Microsoft Access (MDB)</td>
<td>application/vnd.msaccess</td>
</tr>
<tr>
<td>Microsoft Access (MDB)</td>
<td>application/vnd.ms-access</td>
</tr>
<tr>
<td>Microsoft Access (MDB)</td>
<td>application/mdb</td>
</tr>
<tr>
<td>Microsoft Access (MDB)</td>
<td>application/x-mdb</td>
</tr>
</tbody>
</table>
### TABLE B-1. File Type Mapping Table for MIME Content-Files (Continued)

<table>
<thead>
<tr>
<th>FILE TYPE</th>
<th>MIME CONTENT-TYPE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Microsoft Access (MDB)</td>
<td>zz-application/zz-winassoc-mdb</td>
</tr>
<tr>
<td>Microsoft Office 12</td>
<td>application/vnd.ms-word.document.macroEnabled.12</td>
</tr>
<tr>
<td>Microsoft Office 12</td>
<td>application/vnd.openxmlformats-officedocument.wordprocessingml.document</td>
</tr>
<tr>
<td>Microsoft Office 12</td>
<td>application/vnd.ms-word.template.macroEnabled.12</td>
</tr>
<tr>
<td>Microsoft Office 12</td>
<td>application/vnd.openxmlformats-officedocument.wordprocessingml.template</td>
</tr>
<tr>
<td>Microsoft Office 12</td>
<td>application/vnd.ms-powerpoint.template.macroEnabled.12</td>
</tr>
<tr>
<td>Microsoft Office 12</td>
<td>application/vnd.openxmlformats-officedocument.presentationml.template</td>
</tr>
<tr>
<td>Microsoft Office 12</td>
<td>application/vnd.ms-powerpoint.addin.macroEnabled.12</td>
</tr>
<tr>
<td>Microsoft Office 12</td>
<td>application/vnd.ms-powerpoint.slide-show.macroEnabled.12</td>
</tr>
<tr>
<td>Microsoft Office 12</td>
<td>application/vnd.openxmlformats-officedocument.presentationml.slideshow</td>
</tr>
<tr>
<td>Microsoft Office 12</td>
<td>application/vnd.ms-powerpoint.presentation.macroEnabled.12</td>
</tr>
<tr>
<td>Microsoft Office 12</td>
<td>application/vnd.openxmlformats-officedocument.presentationml.presentation</td>
</tr>
<tr>
<td>FILE TYPE</td>
<td>MIME CONTENT-TYPE</td>
</tr>
<tr>
<td>------------------------</td>
<td>-----------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Microsoft Office 12</td>
<td>application/vnd.ms-excel.addin.macroEnabled.12</td>
</tr>
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<td>Microsoft Office 12</td>
<td>application/vnd.ms-excel.sheet.binary.macroEnabled.12</td>
</tr>
<tr>
<td>Microsoft Office 12</td>
<td>application/vnd.ms-excel.sheet.macroEnabled.12</td>
</tr>
<tr>
<td>Microsoft Office 12</td>
<td>application/vnd.openxmlformats-officedocument.spreadsheetml.sheet</td>
</tr>
<tr>
<td>Microsoft Office 12</td>
<td>application/vnd.ms-excel.template.macroEnabled.12</td>
</tr>
<tr>
<td>Microsoft Office 12</td>
<td>application/vnd.openxmlformats-officedocument.spreadsheetml.template</td>
</tr>
<tr>
<td>Microsoft Office 12</td>
<td>application/vnd.openxmlformats-officedocument.spreadsheetml.template</td>
</tr>
<tr>
<td>Windows PowerPoint</td>
<td>application/mspowerpoint</td>
</tr>
<tr>
<td>Windows PowerPoint</td>
<td>application/powerpoint</td>
</tr>
<tr>
<td>Windows PowerPoint</td>
<td>application/vnd.ms-powerpoint</td>
</tr>
<tr>
<td>Windows PowerPoint</td>
<td>application/ms-powerpoint</td>
</tr>
<tr>
<td>Windows PowerPoint</td>
<td>application/vnd-mspowerpoint</td>
</tr>
<tr>
<td>Windows PowerPoint</td>
<td>application/x-powerpoint</td>
</tr>
<tr>
<td>Windows PowerPoint</td>
<td>application/x-mspowerpoint</td>
</tr>
</tbody>
</table>

TABLE B-1.   File Type Mapping Table for MIME Content-Files   (Continued)
## TABLE B-1. File Type Mapping Table for MIME Content-Files (Continued)

<table>
<thead>
<tr>
<th>FILE TYPE</th>
<th>MIME CONTENT-TYPE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Windows Project</td>
<td>application/vnd.ms-project</td>
</tr>
<tr>
<td>Windows Project</td>
<td>application/x-msproject</td>
</tr>
<tr>
<td>Windows Project</td>
<td>application/x-project</td>
</tr>
<tr>
<td>Windows Project</td>
<td>application/msproj</td>
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<tr>
<td>Windows Project</td>
<td>application/msproject</td>
</tr>
<tr>
<td>Windows Project</td>
<td>application/x-ms-project</td>
</tr>
<tr>
<td>Windows Project</td>
<td>application/x-dos_ms_project</td>
</tr>
<tr>
<td>Windows Project</td>
<td>application/mpp</td>
</tr>
<tr>
<td>Windows Project</td>
<td>zz-application/zz-winassoc-mpp</td>
</tr>
<tr>
<td>Windows Write</td>
<td>application/mswrite</td>
</tr>
<tr>
<td>Windows Write</td>
<td>application/x-mswrite</td>
</tr>
<tr>
<td>Windows Write</td>
<td>application/wri</td>
</tr>
<tr>
<td>Windows Write</td>
<td>application/x-wri</td>
</tr>
<tr>
<td>Windows Write</td>
<td>application/msword</td>
</tr>
<tr>
<td>Windows Write</td>
<td>application/microsoft_word</td>
</tr>
<tr>
<td>Windows Write</td>
<td>zz-application/zz-winassoc-wri</td>
</tr>
<tr>
<td>Open Document</td>
<td>application/vnd.oasis.opendocument.text</td>
</tr>
<tr>
<td>Open Document</td>
<td>application/vnd.oasis.opendocument.text-template</td>
</tr>
<tr>
<td>FILE TYPE</td>
<td>MIME CONTENT-TYPE</td>
</tr>
<tr>
<td>------------------</td>
<td>--------------------------------------------------------</td>
</tr>
<tr>
<td>Open Document</td>
<td>application/vnd.oasis.opendocument.graphics</td>
</tr>
<tr>
<td>Open Document</td>
<td>application/vnd.oasis.opendocument.graphics-template</td>
</tr>
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<td>Open Document</td>
<td>application/vnd.oasis.opendocument.presentation</td>
</tr>
<tr>
<td>Open Document</td>
<td>application/vnd.oasis.opendocument.presentation-template</td>
</tr>
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<td>Open Document</td>
<td>application/vnd.oasis.opendocument.spreadsheet</td>
</tr>
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<td>Open Document</td>
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<tr>
<td>Open Document</td>
<td>application/vnd.oasis.opendocument.chart</td>
</tr>
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<td>Open Document</td>
<td>application/vnd.oasis.opendocument.chart-template</td>
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<tr>
<td>Open Document</td>
<td>application/vnd.oasis.opendocument.image</td>
</tr>
<tr>
<td>Open Document</td>
<td>application/vnd.oasis.opendocument.image-template</td>
</tr>
<tr>
<td>Open Document</td>
<td>application/vnd.oasis.opendocument.formula</td>
</tr>
<tr>
<td>Open Document</td>
<td>application/vnd.oasis.opendocument.formula-template</td>
</tr>
<tr>
<td>Open Document</td>
<td>application/vnd.oasis.opendocument.text-master</td>
</tr>
</tbody>
</table>
### TABLE B-1. File Type Mapping Table for MIME Content-Files (Continued)

<table>
<thead>
<tr>
<th><strong>FILE TYPE</strong></th>
<th><strong>MIME CONTENT-TYPE</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Open Document</td>
<td>application/vnd.oasis.opendocument.text-web</td>
</tr>
<tr>
<td>Gravis Patch Files</td>
<td>audio/pat</td>
</tr>
<tr>
<td>Gravis Patch Files</td>
<td>audio/x-pat</td>
</tr>
<tr>
<td>Microsoft Paint v1.x</td>
<td>image/x-pcx</td>
</tr>
<tr>
<td>Microsoft Paint v1.x</td>
<td>image/pcx</td>
</tr>
<tr>
<td>Microsoft Paint v1.x</td>
<td>image/x-pc-paintbrush</td>
</tr>
<tr>
<td>Microsoft Paint v1.x</td>
<td>application/x-pcx</td>
</tr>
<tr>
<td>Microsoft Paint v1.x</td>
<td>application/pcx</td>
</tr>
<tr>
<td>Microsoft Paint v1.x</td>
<td>zz-application/zz-winassoc-pcx</td>
</tr>
<tr>
<td>Microsoft Paint v2.x</td>
<td>image/x-pcx</td>
</tr>
<tr>
<td>Microsoft Paint v2.x</td>
<td>image/x-pc-paintbrush</td>
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<td>Microsoft Paint v2.x</td>
<td>application/x-pcx</td>
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<tr>
<td>Microsoft Paint v2.x</td>
<td>application/pcx</td>
</tr>
<tr>
<td>Microsoft Paint v2.x</td>
<td>zz-application/zz-winassoc-pcx</td>
</tr>
<tr>
<td>PCX</td>
<td>image/x-pcx</td>
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<tr>
<td>PCX</td>
<td>image/pcx</td>
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<tr>
<td>PCX</td>
<td>image/x-pc-paintbrush</td>
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<tr>
<td>PCX</td>
<td>application/x-pcx</td>
</tr>
<tr>
<td>FILE TYPE</td>
<td>MIME CONTENT-TYPE</td>
</tr>
<tr>
<td>---------------------------------</td>
<td>----------------------------</td>
</tr>
<tr>
<td>PCX</td>
<td>application/pcx</td>
</tr>
<tr>
<td>PCX</td>
<td>zz-application/zz-winassoc-pcx</td>
</tr>
<tr>
<td>Palm Pilot Image</td>
<td>application/x-pilot-pdb</td>
</tr>
<tr>
<td>Adobe Portable Document Format (PDF)</td>
<td>application/pdf</td>
</tr>
<tr>
<td>Adobe Portable Document Format (PDF)</td>
<td>application/x-pdf</td>
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<tr>
<td>Adobe Font File</td>
<td>application/x-font</td>
</tr>
<tr>
<td>Macintosh Bitmap</td>
<td>image/pict</td>
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<tr>
<td>Macintosh Bitmap</td>
<td>image/x-pict</td>
</tr>
<tr>
<td>Portable Network Graphics</td>
<td>image/png</td>
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<tr>
<td>PPM Image</td>
<td>image/x-portable-pixmap</td>
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<td>PPM Image</td>
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<td>PPM Image</td>
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<td>Postscript</td>
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<tr>
<td>Adobe Photoshop (PSD)</td>
<td>application/octet-stream</td>
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<tr>
<td>Paint Shop Pro</td>
<td>image/bmp</td>
</tr>
<tr>
<td>Quick Time Media</td>
<td>video/quicktime</td>
</tr>
<tr>
<td>Quick Time Media</td>
<td>video/x-quicktime</td>
</tr>
</tbody>
</table>
### TABLE B-1. File Type Mapping Table for MIME Content-Files (Continued)

<table>
<thead>
<tr>
<th>FILE TYPE</th>
<th>MIME CONTENT-TYPE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quick Time Media</td>
<td>image/mov</td>
</tr>
<tr>
<td>Quick Time Media</td>
<td>audio/aiff</td>
</tr>
<tr>
<td>Quick Time Media</td>
<td>audio/x-midi</td>
</tr>
<tr>
<td>QuarkXPress Document (QXD)</td>
<td>application/quarkxpress</td>
</tr>
<tr>
<td>QuarkXPress Document (QXD)</td>
<td>application/x-quark-express</td>
</tr>
<tr>
<td>Real Audio</td>
<td>audio/vnd.rn-realaudio</td>
</tr>
<tr>
<td>Real Audio</td>
<td>audio/x-pn-realaudio</td>
</tr>
<tr>
<td>Real Audio</td>
<td>audio/x-realaudio</td>
</tr>
<tr>
<td>Real Audio</td>
<td>audio/x-pm-realaudio-plugin</td>
</tr>
<tr>
<td>Real Audio</td>
<td>video/x-pn-realvideo</td>
</tr>
<tr>
<td>RAR</td>
<td>application/rar</td>
</tr>
<tr>
<td>Sun Raster (RAS)</td>
<td>image/x-cmu-raster</td>
</tr>
<tr>
<td>Sun Raster (RAS)</td>
<td>image/cmu-raster</td>
</tr>
<tr>
<td>Real Media</td>
<td>application/vnd.rn-realmedia</td>
</tr>
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<td>Microsoft RTF</td>
<td>application/rtf</td>
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<tr>
<td>Microsoft RTF</td>
<td>application/x-rtf</td>
</tr>
<tr>
<td>Microsoft RTF</td>
<td>text/richtext</td>
</tr>
<tr>
<td>Lotus ScreenCam Movie</td>
<td>application/vnd.lotus-screencam</td>
</tr>
<tr>
<td>Lotus ScreenCam Movie</td>
<td>application/x-lotusscreencam</td>
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<tr>
<td>Lotus ScreenCam Movie</td>
<td>application/x-screencam</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>FILE TYPE</td>
<td>MIME CONTENT-TYPE</td>
</tr>
<tr>
<td>-----------------------</td>
<td>-----------------------------</td>
</tr>
<tr>
<td>Lotus ScreenCam Movie</td>
<td>video/x-scm</td>
</tr>
<tr>
<td>Lotus ScreenCam Movie</td>
<td>video/x-screencam</td>
</tr>
<tr>
<td>IRCAM Sound File</td>
<td>audio/x-sf</td>
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<tr>
<td>Sonic Foundry File</td>
<td>audio/sfr</td>
</tr>
<tr>
<td>Macromedia Flash</td>
<td>application/x-shockwave-flash</td>
</tr>
<tr>
<td>TAR</td>
<td>application/x-tar</td>
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<tr>
<td>TAR</td>
<td>application/tar</td>
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<tr>
<td>TAR</td>
<td>application/x-gtar</td>
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<tr>
<td>TAR</td>
<td>multipart/x-tar</td>
</tr>
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<td>TAR</td>
<td>application/x-compress</td>
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<tr>
<td>TAR</td>
<td>application/x-compressed</td>
</tr>
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<td>Targa Image</td>
<td>image/tga</td>
</tr>
<tr>
<td>Targa Image</td>
<td>image/x-tga</td>
</tr>
<tr>
<td>Targa Image</td>
<td>image/targa</td>
</tr>
<tr>
<td>Targa Image</td>
<td>image/x-targa</td>
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<td>TIFF</td>
<td>image/tiff</td>
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<tr>
<td>TNEF file</td>
<td>application/ms-tnef</td>
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<tr>
<td>TNEF file</td>
<td>application/vnd.ms-tne</td>
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<tr>
<td>ASCII Text</td>
<td>text/plain</td>
</tr>
<tr>
<td>ASCII Text</td>
<td>application/txt</td>
</tr>
</tbody>
</table>
### TABLE B-1. File Type Mapping Table for MIME Content-Files (Continued)

<table>
<thead>
<tr>
<th>FILE TYPE</th>
<th>MIME CONTENT-TYPE</th>
</tr>
</thead>
<tbody>
<tr>
<td>ASCII Text</td>
<td>text/html</td>
</tr>
<tr>
<td>ASCII Text</td>
<td>text/css</td>
</tr>
<tr>
<td>UUENCODE</td>
<td>text/x-uuencode</td>
</tr>
<tr>
<td>VBScript</td>
<td>text/vbscript</td>
</tr>
<tr>
<td>VBScript</td>
<td>text/vbs</td>
</tr>
<tr>
<td>VBScript</td>
<td>application/x-vbs</td>
</tr>
<tr>
<td>Creative Voice Format (VOC)</td>
<td>audio/voc</td>
</tr>
<tr>
<td>Creative Voice Format (VOC)</td>
<td>audio/x-voc</td>
</tr>
<tr>
<td>Microsoft RIFF</td>
<td>audio/wav</td>
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<tr>
<td>Microsoft RIFF</td>
<td>application/x-cdf</td>
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<tr>
<td>Microsoft RIFF</td>
<td>application/x-cmx</td>
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<tr>
<td>Microsoft RIFF</td>
<td>image/x-cmx</td>
</tr>
<tr>
<td>Microsoft RIFF</td>
<td>drawing/cmx</td>
</tr>
<tr>
<td>Microsoft RIFF</td>
<td>application/cmex</td>
</tr>
<tr>
<td>Webshots Picture Collection</td>
<td>application/x-webshots</td>
</tr>
<tr>
<td>Webshots Picture Collection</td>
<td>application/wbc</td>
</tr>
<tr>
<td>Windows Metafile</td>
<td>application/x-msmetafile</td>
</tr>
<tr>
<td>Windows Metafile</td>
<td>application/wmf</td>
</tr>
<tr>
<td>Windows Metafile</td>
<td>application/x-wmf</td>
</tr>
<tr>
<td>Windows Metafile</td>
<td>image/x-wmf</td>
</tr>
<tr>
<td>FILE TYPE</td>
<td>MIME CONTENT-TYPE</td>
</tr>
<tr>
<td>-----------------------------------------</td>
<td>----------------------------------------</td>
</tr>
<tr>
<td>Windows Metafile</td>
<td>zz-application/zz-winassoc-wmf</td>
</tr>
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<td>PKZIP</td>
<td>application/zip</td>
</tr>
<tr>
<td>PKZIP</td>
<td>application/x-zip</td>
</tr>
<tr>
<td>PKZIP</td>
<td>application/x-zip-compressed</td>
</tr>
<tr>
<td>PKZIP</td>
<td>multipart/x-zip</td>
</tr>
<tr>
<td>PKZIP</td>
<td>application/x-compress</td>
</tr>
<tr>
<td>PKZIP</td>
<td>application/x-compressed</td>
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<tr>
<td>ACE Compression File</td>
<td>application/x-ace</td>
</tr>
<tr>
<td>ACE Compression File</td>
<td>application/x-compressed</td>
</tr>
<tr>
<td>Apple Sound</td>
<td>audio/aiff</td>
</tr>
<tr>
<td>Apple Sound</td>
<td>audio/x-aiff</td>
</tr>
<tr>
<td>Audio InterChange File Format from Apple/SGI</td>
<td>audio/aiff</td>
</tr>
<tr>
<td>Audio InterChange File Format from Apple/SGI</td>
<td>audio/x-aiff</td>
</tr>
<tr>
<td>Audio InterChange File Format from Apple/SGI</td>
<td>sound/aiff</td>
</tr>
<tr>
<td>Audio InterChange File Format from Apple/SGI</td>
<td>audio/rmf</td>
</tr>
<tr>
<td>Audio InterChange File Format from Apple/SGI</td>
<td>audio/x-rmf</td>
</tr>
<tr>
<td>Audio InterChange File Format from Apple/SGI</td>
<td>audio/x-pn-aiff</td>
</tr>
</tbody>
</table>
### TABLE B-1. File Type Mapping Table for MIME Content-Files (Continued)

<table>
<thead>
<tr>
<th>FILE TYPE</th>
<th>MIME CONTENT-TYPE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Audio InterChange File Format from Apple/SGI</td>
<td>audio/x-gsm</td>
</tr>
<tr>
<td>Audio InterChange File Format from Apple/SGI</td>
<td>audio/x-midi</td>
</tr>
<tr>
<td>Audio InterChange File Format from Apple/SGI</td>
<td>audio/vnd.qcelp</td>
</tr>
<tr>
<td>ARJ</td>
<td>application/arj</td>
</tr>
<tr>
<td>ARJ</td>
<td>application/x-arj</td>
</tr>
<tr>
<td>ARJ</td>
<td>application/x-compress</td>
</tr>
<tr>
<td>ARJ</td>
<td>application/x-compressed</td>
</tr>
<tr>
<td>ARJ</td>
<td>zz-application/zz-winassoc-arj</td>
</tr>
<tr>
<td>Advanced Streaming Format</td>
<td>video/x-ms-asf</td>
</tr>
<tr>
<td>Advanced Streaming Format</td>
<td>video/x-ms-asf-plugin</td>
</tr>
<tr>
<td>Advanced Streaming Format</td>
<td>video/x-ms-wm</td>
</tr>
<tr>
<td>Advanced Streaming Format</td>
<td>video/x-ms-wmx</td>
</tr>
<tr>
<td>Advanced Streaming Format</td>
<td>audio/asf</td>
</tr>
<tr>
<td>Advanced Streaming Format</td>
<td>application/asx</td>
</tr>
<tr>
<td>Advanced Streaming Format</td>
<td>application/x-mplayer2</td>
</tr>
</tbody>
</table>
Appendix C

Architecture and Configuration Files

Topics in this appendix include the following:

• Main Components on page C-2
• Main Services on page C-2
• Scheduled Tasks on page C-3
• About Configuration Files on page C-4
• Protocol Handlers on page C-5
• Scanning Modules on page C-6
Main Components

The following are the main InterScan Web Security Virtual Appliance (IWSVA) modules:

- **Main Program**: Installs the Web console and the basic library files necessary for IWSVA.
- **HTTP Malware Scanning**: Installs the services necessary for HTTP scanning (either ICAP or HTTP scanning) and URL blocking.
- **Application Control**: Provides a security technology that automates the discovery of popular Internet applications and allows administrators to control them using policies.
- **HTTP Inspection**: Allows administrators to identify behavior and filter web traffic according to HTTP methods, URLs, and headers.
- **FTP Scanning**: Installs the service that enables FTP scanning.
- **URL Filtering**: Installs the service necessary for URL filtering.
- **Applets and ActiveX Scanning**: Installs the service necessary for checking Java applet and ActiveX object digital signatures, and instrumenting applets so their execution can be monitored for prohibited operations.
- **SNMP Notifications**: Installs the service to send SNMP traps to SNMP-compliant network management software.
- **Control Manager Agent for IWSVA**: Installs the files necessary for the Control Manager agent to enable monitoring and configuration through Control Manager.

Main Services

To start or stop any of the services in this section, you must be logged on to IWSVA as root using either a local terminal or SSH. The root user can only stop or start the HTTP and FTP services from within IWSVA CLI (see Enabling the HTTP/HTTPS Traffic Flow on page 6-2 and Enabling FTP Traffic and FTP Scanning on page 11-4). No other services can be stopped or started from within IWSVA.

The following services are used by IWSVA:

- **Trend Micro IWSVA Console (java)**: This service is the Web server hosting the Web console.
• **Trend Micro IWSVA for FTP (isftpd):** This service enables the FTP traffic flow and FTP virus scanning.

• **Trend Micro IWSVA for HTTP (iwssd):** This service enables the HTTP traffic flow and HTTP scanning (including FTP over HTTP). It also handles Applets and ActiveX security processing.

  **Note:** FTP over HTTP is not supported in Transparent Bridge Mode.

• **Trend Micro IWSVA Log Import (logtodb):** This service writes logs from text files to the database.

• **Trend Micro IWSVA Notification Delivery Service (isdelvd):** This service handles administrator notifications (through email) and user notifications (through browser).

• **Trend Micro SNMP Service (svcmonitor if using the Linux SNMP agent, snmpmonitor if using the IWSVA-installed SNMP agent):** This service sends SNMP trap notifications to SNMP-capable network monitoring devices.

• **Trend Micro Control Manager Service (En_Main):** This service permits IWSVA configuration and status reporting through Trend Micro Control Manager, if you are using Control Manager.

• **Trend Micro IWSVA for Dashboard (ismetricmgmd):** This service collects system resource data to be used in the display of real-time dashboard metrics.

### Scheduled Tasks

When installing IWSVA, the setup program creates several scheduled tasks.

• **purgefile:** Runs daily at 2:00 am to delete old text log files, subject to the configured time interval to retain logs.

• **schedulereport:** Runs hourly to check if a scheduled report is configured to run.

• **schedulepr_update:** Runs daily to check if it is time to update the product registration/license.

• **schedule_au:** Runs every 15 minutes to check if it is time to update the pattern file or other program components.

• **cleanfile:** Runs hourly, to remove temporary files downloaded for scan-behind or large file scanning.
• **DbOldDataCleanup.sh**: Runs daily at 2:05 am to clean up old reporting log data in the database and cleans up the old access quota counters in the database.

• **svc_snmpmonitor.sh**: Runs every 5 minutes to verify that the logtodb, mail, postgres and metric daemons are running. It restarts them if they are not.

• **db_reindex.sh**: Runs daily at 28 minutes past every other hour to rebuild corrupted database indices containing any invalid data. This maintains optimum database performance.

• **db_vacuum.sh**: Runs daily at 3:58 am to perform garbage collection to free up unused space from database tables in order to maintain optimum database performance.

### About Configuration Files

To access configuration files, you must be logged on to the appliance as **root** using either a local terminal or SSH.

There are three types of configuration files: main, protocol module, and scanning module. All the configuration files are in the `{IWSS root}` directory; the default location for `{IWSS root}` is `/etc/iscan/`. The main configuration file is in `intscan.ini`.

- Settings specific to virus scanning are in: `{IWSS root}/IWSSPIScanVsapi.dsc`
- Settings that are specific to the ICAP protocol are in: `{IWSS root}/IWSSPIProtocolIcap.pni`
- Settings that are specific to the stand-alone proxy are in: `{IWSS root}/IWSSPIProtocolHttpProxy.pni`
- Settings for URL filtering scanning module are in: `{IWSS root}/IWSSPIUrlFilter.dsc`
- Settings specific to reporting are in: `{IWSS root}/report.ini`
- Settings for the URL Categorization database are in:
Architecture and Configuration Files

{IWSS root}/urlfxIFX.ini

- Settings for default URL categories and their mapping information are in:
  {IWSS root}/urlfcMapping.ini

- Settings for the list of IP address and IP ranges of all machines allowed to access the IWSVA device are in:
  {IWSS root}/ClientACL_http.ini (for HTTP)
  {IWSS root}/ClientACL_ftp.ini (for FTP)

- Settings for rules that define what ports IWSVA forwards HTTP requests to are in:
  {IWSS root}/HttpPortPermission_http.ini (for HTTP)
  {IWSS root}/HttpPortPermission_ftp.ini (for FTP)

- Settings for rules that define what ports IWSVA allows HTTPS tunneling to are in:
  {IWSS root}/HttpsConectACL_http.ini

- Settings for list of IP address and IP ranges of trusted servers are in:
  {IWSS root}/ServerIPWhiteList_http.ini (for HTTP)
  {IWSS root}/ServerIPWhiteList_ftp.ini (for FTP)

The IWSVA Web console varies depending on which modules are used. If you have been using a previous version of IWSVA, there are also many new features available in IWSVA that require new .ini file entries.

Protocol Handlers

Functions responsible for interpreting and processing messages in some recognized transmission protocols are encapsulated in a dynamic library referred to as a protocol handler. IWSVA provides a choice of either an ICAP protocol handler, which enables IWSVA to act as an ICAP server, or an HTTP proxy handler, wherein IWSVA acts like a direct HTTP proxy server. (The HTTP protocol handler is also used in bridge mode.) The application binary is independent of the protocol handler, allowing the same application to support different protocols with a configuration change.

Provide the complete path of the active configuration file of the protocol in the main/protocol_config_path entry in the intscan.ini file application.
Protocol handlers require their own specific configuration files, which contain entries that pertain only to that protocol. These protocol configuration files are denoted with a .pni filename extension.

### Scanning Modules

Traffic scanning functionality is provided through dynamic libraries known as scanning modules. The first scanning module available to IWSVA provides content scanning using the scan engine.

Each scanning module has a configuration file with a .dsc extension. The IWSVA application locates the available scanning modules by searching for .dsc files in the directory that is provided in the scan/plugin_dir entry in the intscan.ini file.
Appendix D

OpenLDAP Reference

Though OpenLDAP supports Kerberos authentication, the packages to enable Kerberos authentication support are not installed by default. This appendix covers how to install and configure Kerberos support for OpenLDAP. In addition, this appendix explains how to set up your OpenLDAP directory so InterScan Web Security Virtual Appliance (IWSVA) can query it when using the user/group authentication method.

This chapter includes the following topics:

• OpenLDAP Server Side Configuration on page D-2
• Customized Attribute Equivalence Table Configuration on page D-10
• LDIF Format Sample Entries on page D-12
• Sample Configuration on page D-13
OpenLDAP Server Side Configuration

Software Package Dependencies

The following software packages are compatible with IWSVA:

- cyrus-sasl-2.1.19
- db-4.2.52.NC
- heimdal-0.6.2
- openldap-2.3.39
- openssl-0.9.7d

Configuration Files

Using OpenLDAP with IWSVA requires modifying the following configuration files:

/etc/openldap/ldap.conf
/etc/openldap/slapd.conf

Sample ldap.conf

# System-wide ldap configuration files. See ldap.conf(5) for
details
# This file should be world readable but not world writable.

# OpenLDAP supports the ldap.conf file. You could use this file to
# specify a number of defaults for OpenLDAP clients. Normally this
# file can be found under /etc/openldap based on /etc/init.d/ldap
# start script's setting
# Set host IP address or fully qualified domain name
HOST example.peter.com
#HOST 10.2.1.1
# Set the default BASE DN where LDAP search will start off
BASE dc=peter,dc=com
# Set the default URI
URI ldap://example.peter.com

# SASL options
# specify the sasl mechanism to use. This is a user-only option.
# SASL_MECH <mechanism>
# specify the realm. This is a user-only option
# SASL_REALM <realm>
# specify the authentication identity.
# SASL_AUTHCID <authcid>

Sample slapd.conf

#
# See slapd.conf(5) for details on configuration options.
# This file should NOT be world readable.
#
# Enforce all changes to follow the defined schemas loaded via
# include statements in the conf file

# NOTE 1
# All the OpenLDAP config files and backend databases are accessed
# and created by "ldap", so if you touch these config files by
# "root", "a Permission Denied" error will occur. Please modify
# ownership accordingly.
# NOTE 2
# krb5-kdc.schema fails to work with current OpenLDAP 2.2.x distro
# krb5ValidStart, krb5ValidEnd, krb5PasswordEnd need to have
# "EQUALITY generalizedTimeMatch" inserted before the ORDERING
# statement.
# www.openldap.org/lists/openldap-bugs/200309/msg00029.html
# Enforce all changes to follow the defined schemas loaded via
# include statements in the conf file

schemacheck on

# Included schemas

include /usr/local/etc/openldap/schema/core.schema
include /usr/local/etc/openldap/schema/krb5-kdc.schema
include /usr/local/etc/openldap/schema/cosine.schema
include /usr/local/etc/openldap/schema/inetorgperson.schema
include /usr/local/etc/openldap/schema/nis.schema
include /usr/local/etc/openldap/schema/java.schema
Do not enable referrals because IWSVA 3.1 has its own implementation

Directives say where to write out slapd's PID and arguments

started with

pidfile /usr/local/var/run/slapd.pid
argsfile /usr/local/var/run/slapd.args

Load dynamic backend modules:
modulepath/usr/local/libexec/openldap
moduleloadback_bdb.la
moduleloadback ldap.la
moduleloadback ldbm.la
moduleloadback passwd.la
moduleloadback shell.la

Sample security restrictions
# Require integrity protection (prevent hijacking)
# Require 112-bit (3DES or better) encryption for updates
# Require 63-bit encryption for simple bind
security ssf=1 update_ssf=112 simple_bind=64

Sample access control policy:
Root DSE: allow anyone to read it
Subschema (sub)entry DSE: allow anyone to read it
Other DSEs:
Allow self write access
Allow authenticated users read access
Allow anonymous users to authenticate
Directives needed to implement policy:
access to dn.base="" by * read
access to dn.base="cn=Subschema" by * read
access to *
by self write
by users read
by anonymous auth

if no access controls are present, the default policy
allows anyone and everyone to read anything but restricts
updates to rootdn. (e.g., "access to * by * read")
rootdn can always read and write EVERYTHING!

access to dn.base="" by * read
access to dn.base="cn=Subschema" by * read
access to *
by self write
by users read
by anonymous auth
by * none

# We have found this gives a useful amount of information about
# directory
loglevel 256

# Specify the number of threads used in slapd, default = 16
# Increasing or decreasing the number of threads used can
# drastically affect performance, we found 20 threads to be optimal
# for our setup, but it can be different under other operating
# systems
threads 20

# Tell slapd to close connections that have been idle for 30 seconds
# or more
idletimeout 30

# Enable LDAPv2 support. This option is disabled by default.
allow bind_v2

# Disable anonymous bind
disallow bind_anon

# Comment this section to enable simple bind
# disallow bind_simple

# NOTE 3
# SASL Configuration
# Caution: make sure you use the canonical name of the machine
# in sasl-host. Otherwise, OpenLDAP won't be able to offer GSSAPI
# authentication
# Set the SASL realm and canonical name of the host
sasl_host example.peter.com
sasl_realm PETER.COM

# Allow proxy authentication if it's configured
sasl-authz-policy both

# NOTE 4
# Mapping of SASL authentication identities to LDAP entries
# The sasl-regexp line are particularly critical. They are what
# rewrite incoming connections who have SASL formatted DNs to the
# DNs that are in the directory DB. It's important to remember that
# they are processed in order, so you want to write them from most
# specific to most general

# NOTE 5
# We set the cn=. since we are going to adopt different security
# mechanisms. If Kerberos v5 is the only one used, change wildcard
# to cn=GSSAPI,cn=auth
#sasl-regexp uid=(.*),cn=GSSAPI,cn=auth
#uid=$1,ou=people,dc=peter,dc=com
sasl-regexp uid=(.*)$,cn=.*,cn=auth uid=$1,ou=people,dc=peter,dc=com

# ldbm database definitions

# NOTE 6
# Correctly configuring the backend Berkeley DB is very critical
# follow the guideline at
# http://www.openldap.org/faq/data/cache/1073.html
# Cleartext passwords, especially for the rootdn, should
# be avoided. See slappasswd(8) and slapd.conf(5) for details.
# Use of strong authentication encouraged.
databasebdb

# These options specify a DN and passwd that can be used to
# authenticate as the super-user entry of the database. The DN and
# password specified here will always work, regardless of whether
# the entry named actually exists or has the password given.
# This solves the chicken-and-egg problem of how to authenticate and
# add entries before any entries yet exist
suffix"dc=peter,dc=com"
rootdn"cn=admin,dc=peter,dc=com"
rootpwadmin

# NOTE 7
# The database directory MUST exist prior to running slapd AND
# should only be accessible by the slapd/tools. Mode 700
# recommended.
directory/usr/local/var/openldap-data

tell the slapd to store the 10000 most accessed entries in memory
#Having a properly configured cache size can drastically affect
#performance
cachesize 10000

# Indices to maintain
# Some versions of OpenLDAP don't support the index of uniqueMember
# "pres" indexing allows you to see a filter that asks if the
# attribute is present in an entry
# "eq" indexing allows to ask if an attribute has an exact value
# "approx" indexing allows to ask if an attribute value sounds like
# something
# This option is tied to --enable-phonetic compile option in
# OpenLDAP
# "sub" indexing allows to do substring search on an attribute's
# values
index default eq,pres
index objectclass eq,pres
index cn,sn,givenname,mail eq,pres,approx,sub
index uideq,pres
index uidNumber,gidNumber,memberUid eq,pres

Tools

To create the server database and associate indices by importing an existing
LDIF file:

NAME

slapadd - Add entries to a SLAPD database

SYNOPSIS

[-f slapd.conf] [-l ldif-file]

DESCRIPTION

Slapadd is used to add entries specified in LDAP Directory Interchange Format (LDIF)
to a slapd database.

• Dump the server database to an LDIF file. This can be useful when you want to
make human-readable backup of current database.

NAME

slapcat - SLAPD database to LDIF utility
SYNOPSIS
[-f slapd.conf] [-l ldif=file]

DESCRIPTION
slapcat is used to generate an LDAP Directory Interchange Format (LDIF) output based upon the contents of a slapd database.
• Rebuilds all indices based upon the current database contents

NAME
slapindex - SLAPD index to LDIF utility

SYNOPSIS
/usr/sbin/slapindex [-f slapd.conf] [-d level] [-b suffix] [-n dbnum]

DESCRIPTION
Slapindex is used to regenerate slapd indices based upon the current contents of a database.
• Check the settings of slapd.conf

NAME
Slaptest – Check the suitability of the slapd.conf file

SYNOPSIS
/usr/sbin/slaptest  [-v]  [-d level] [-f slapd.conf]

DESCRIPTION
Slaptest is used to check the conformance of the slapd.conf configuration file. It opens the slapd.conf configuration file, and parses it according to the general and the backend-specific rules, checking its conformance.
• LDAP query utility

NAME
ldapsearch - LDAP search tool

SYNOPSIS

DESCRIPTION

ldapsearch opens a connection to an LDAP server, binds, and performs a search using specified parameters.

EXAMPLE

The command performs a query using simple plain text authentication for a matched entry with “uid=petery” and requests the mail attribute for a matched entry to be returned by the LDAP server.

ldapsearch -x -D "cn=admin,dc=peter,dc=com" -w admin -b "dc=peter,dc=com" -s sub "uid=petery" mail

For further information, consult the manual page.

Verify SASL/OpenLDAP/Kerberos v5 Authentication

1. KRB5_CONFIG="/etc/heimdal/krb5.conf" ./ldapsearch -v -x -D "cn=admin,dc=peter,dc=com" -W -b "dc=peter,dc=com" -s base -LLL
   -H ldap://example.peter.com/ supportedSASLMechanisms

2. KRB5_CONFIG="/etc/heimdal/krb5.conf" ./ldapsearch -b "dc=peter,dc=com" 
   -H ldap://example.peter.com/

3. KRB5_CONFIG="/etc/heimdal/krb5.conf" ./ldapwhoami -H ldap://example.peter.com
Customized Attribute Equivalence Table Configuration

If you configure IWSVA to use the OpenLDAP or Sun Java System Directory Server 5.2 (formerly Sun™ ONE Directory Server) directories, there are several user group associations that can be configured.

The *Corporate group* field tells IWSVA the object class to use as part of the LDAP search filter when searching for LDAP group objects. The “Corporate user” indicates the object class to use as part of the search filter for user objects. Because LDAP cannot distinguish whether an entry is group or user-specific, IWSVA needs this “tag” to perform the query.

The *Corporate memberOf* field defines the group membership of an entry, a user or a group while the “Corporate member” field specifies the members in a group entry because a user is the finest entity and cannot contain any member. An attribute name is
the first column in this equivalence table and it specifies the attribute that contains relevant information. Default attributes are “ou” and “uniqueMember” in the standard OpenLDAP schema.

Attribute syntax is the second column in the equivalence table and it defines the attribute that IWSVA needs to associate and look up to locate the group or member entry in the LDAP server. IWSVA provides two options to configure this setting, namely {“Common Name (CN)”, “Distinguished Name (DN)"}.

Consider the following simple LDIF file as an example, keeping in mind the following:

- LDIF is a method for representing data in an LDAP directory in a human readable format.
- To simplify the example, some entries have been removed.
- To dump a LDIF file of an OpenLDAP server, execute slapcat, usually under the OpenLDAP installation path or /usr/local/sbin.

```
slapcat -l [output_file_name]
```
LDIF Format Sample Entries

See the following simplified example of a user entry in LDIF format.

EXAMPLE:

```
dn: uid=peterx,ou=People,dc=client,dc=us,dc=Xnet,dc=org
givenName: Peter
telephoneNumber: +1 408 555 5555
sn: Peter
ou: All of IWSVA Developer Team
ou: People#Corporate User field
mail: peterx@peter.com
objectClass: top
objectClass: person
objectClass: organizationalPerson
objectClass: inetOrgPerson
uid: peterx
cn: Peter X
```

See the following simplified example of a group entry in LDIF format.

EXAMPLE:

```
dn: cn=All of IWSVA Developer Team,ou=Engineering,ou=Groups,dc=client,dc=us,dc=Xnet,dc=org
ou: Groups #Corporate Group field
ou: Engineering
description: All of IWSVA Developer Team
objectClass: top
objectClass: groupOfUniqueNames
uniqueMember: uid=peterx,ou=People,dc=client,dc=us,dc=Xnet,dc=org
cn: All of IWSVA Developer Team
```

Note the following:

- Associate the “Corporate Member” between a group and user entry using “Distinguished Name (DN)” as the attribute syntax.
- Associate the “Corporate MemberOf” in a group and user entry using “Common Name (CN)” as the attribute syntax.
Sample Configuration

Consider the following LDAP attribute mapping:

See the following sample user entry in LDIF format.

EXAMPLE:

```
dn: uid=peterx,ou=People,dc=client,dc=us,dc=Xnet,dc=org
givenName: Peter
telephoneNumber: +1 408 555 5555
sn: Peter
ou: All of Developer Team
ou: Employee#Corporate User field
mail: peterx@peter.com
objectClass: top
objectClass: person
objectClass: organizationalPerson
objectClass: inetOrgPerson
```
uid: peterx
cn: Peter X

See the following sample group entry in LDIF format.

EXAMPLE:

dn: cn=All of Developer Team,ou=Groups,dc=client,dc=us,dc=Xnet,dc=org
ou: Teams #Corporate Group field
ou: Engineering
description: All of Developer Team
objectClass: top
objectClass: groupOfUniqueNames
teamMember: Peter X
cn: All of Developer Team

Note the following:
1. Associate the “Corporate Member” between a group and user entry using “Distinguished Name (DN)” as the attribute syntax.
2. Associate the “Corporate MemberOf” in a group and user entry using “Common Name (CN)” as the attribute syntax.
Best Practices for IWSVA

This appendix contains information about the best practices to follow for InterScan Web Security Virtual Appliance.

The topics include:
• Authenticating Multiple Users on Shared Personal Computers on page E-2
• Scanning Considerations on page E-2
• Transparent Identification Topology on page E-7
• Transparent Identification Settings on page E-8
• Configuring Transparent Identification on page E-10
Authenticating Multiple Users on Shared Personal Computers

Supporting multiple users on a single shared personal computer (PC) using Microsoft Active Directory server for authentication can present some challenges to IT managers and users alike. IWSVA provides authentication based on a browser challenge and can support the authentication of multiple users on a shared PC using Microsoft Internet Explorer as the default browser.

Best Practice Suggestions

Leveraging Microsoft ShellRunas Utility

- For shared PCs, you can leverage the Microsoft ShellRunas utility to force the user to authenticate each time Microsoft Internet Explorer is started. The AD credentials are used to authenticate the user and Internet Explorer will leverage the credentials to automatically populate the user ID information in the HTTP header to allow IWSVA to identify the user for logging, reporting, and policy enforcement purposes.
- Users must remember to shut down their IE browser sessions when they're finished using the computer. This allows Microsoft Internet Explorer to prompt the next user for their credentials. User education is critical to the success of this tool.
- Optionally, you can also modify the IP User Cache parameter to extend or shorten the cache interval for the authenticated user cache to further fine tune when users should be prompted for their authentication credentials. The default IWSVA user cache value is 1.5 hours (90 minutes). See the "configure module ldap ipuser_cache interval <interval>" CLI command for more information.

Scanning Considerations

IWSVA's malware scanning architecture is a hybrid solution that uses cloud-based malware detection methods such as Trend Micro's Smart Protection Network (SPN) and local, on-box scan technologies and signature files.
Smart Protection Network - Cloud Based Services

IWSVA’s Smart Protection Network (SPN) is the industry's highest performing cloud-based malware protection service. Smart Protection Network has the following malware detection components:

- **Web Reputation Services (WRS)** is comprised of several correlated services that provide proactive detection and blocking against known bad web sites, domains, files and objects, as well as email related items - including anti-pharming and anti-phishing detection.
  - Domain reputation
  - Page reputation
  - Email reputation
  - File reputation

- **URL Filtering Service** stores its URL database in the cloud for rapid updates and protects Trend Micro's global user base without the need to download and update URL database files on the IWSVA server. This provides up-to-date URL information to every customer and accelerates the proactive protection capabilities to reduce the time between the discovery of a bad site and the time it is added to the URL database to protect all customers.

- **Feedback Loop** provides real-time information from all of Trend Micro's products to update the SPN cloud-based components and URL filtering databases. Malware detected on customer premise equipment are fed back into the cloud architecture and used to fine-tune information in real time. This provides fast proactive protection with low false positives to Trend Micro’s global customer base.

Best Practice Suggestions

Smart Protection Network (SPN) uses cloud-based services and relies on DNS queries for lookups. In order to ensure fast response and minimum latency, the IWSVA device must be configured with a primary and a secondary DNS server.

The DNS servers must be able to support the volume of DNS requests made by IWSVA. In general, before IWSVA builds up its local DNS cache, two DNS requests will be made for each URL accessed. Make sure your DNS server is installed on a server with enough resources and performance to handle the extra DNS volume.
Your DNS server should have a fast network card and be installed on a fast network switch to reduce latency.

Trend Micro recommends on-site DNS servers versus ISP provided DNS servers that are housed outside of the company's network. In general, ISP DNS servers have higher latency and do not support large numbers of DNS queries from a single IP address. Many ISP DNS servers have throttling mechanisms that limit the number of DNS requests per second and can affect IWSVA's Web Reputation Services (WRS) performance.

Try to place your DNS server as close to the IWSVA unit(s) as possible to eliminate unnecessary network hops between the devices to improve network response time and performance.

WRS and URL Filtering requests are made over HTTP port 80. Do not block the IWSVA management IP address for these ports on your firewall.

**Local IWSVA Scan Engines**

IWSVA provides local on-box scanning to ensure that content downloaded from the Internet is scanned for malware. Smart Protection Network's Web Reputation Service and URL Filtering services can filter a large percentage of the well-known and newly discovered malware sites and content, but local file scanning ensures that files and objects received are free of embedded viruses, worms, and other malicious code such as Trojans.

IWSVA provides the following local scan engines:

- **WRS Page Analysis** provides real-time content scanning with automatic update service to the Smart Protection Network to ensure that no zero-day threats are found on web sites with good reputation ratings. Any malware found triggers an automated update to the Smart Protection Network to re-examine the source of the content and to update its reputation score.

- **File Type Block** provides the ability to identify and block over 60 different file MIME types. These can include popular files such as Java applets, executable files, Microsoft Office documents, and so forth. See Mapping File Types to MIME Content-types on page B-1 for a detailed list of the supported file type.

- **Virus Scan (VSAPI)** provides signature based virus and malware scanning.
Best Practices for IWSVA

- **IntelliScan** provides the ability to identify and scan files based on their true file type, preventing users from trying to bypass the scan engines by changing the file extension or by some other form of file manipulation.

- **IntelliTrap** provides heuristics scanning to identify and protect against malware that changes or morphs from one state to another as it navigates through the network.

- **Compressed File Scanning** provides protection against malware that is hidden in highly-compressed files that are compressed many times over. Malware authors use this common delivery method to try and evade traditional anti-virus scanning software.

- **Spyware/Grayware Scanning** protects against spyware, dialers, hacking tools, password cracking applications, adware, joke programs, remote access tools, and other grayware types. This local scan engine provides protection based on spyware signatures and is used to compliment the Spyware URL category found in the URL Filtering feature. The local Spyware/Grayware scan engine is used to scan against files download or uploaded to the Internet that may be infected with spyware or grayware. Whereas the URL Filtering Spyware category is used to proactively block access to sites known to contain spyware related files and objects.

- **Applets and ActiveX Scanning** provides protection from malware embedded in Java applets and mobile code such as ActiveX applications found on many modern web sites.

- **Large File Scanning** provides administrators with a way to bypass scanning for large files that can consume a lot of system resources. Traditionally, malware authors do not embed viruses in large files because they want the malware to spread quickly without drawing a lot of attention to the file.

**Best Practice Suggestions**

- IWSVA's local scan services operate in a specific order to reduce the need to scan unnecessarily. IWSVA's scanning order for Internet traffic flows in the following order starting with the proactive Smart Protection Network's cloud-based services first.
  - Web Reputation Service (WRS)
  - URL Filtering Service
  - File Type Block
  - Virus Scan
• IntelliTrap Heuristics
• MacroTrap
• IntelliScan True File Type
• Applets and ActiveX

• The Virus Scan (VSAPI) scan engine consumes the most resources. Enabling Web Reputation (WRS) and subscribing to the URL Filtering service and enabling its Computer/Harmful category can greatly reduce the need to perform traditional VSAPI-based virus scans. Making these changes can reduce server resources and provide additional scalability for your environment.

• For trusted, white-listed sites and files that have a high integrity rating, you can disable malware scanning to improve performance and reduce server resource use. Use the Global Trusted URLs, Approved URL and Approved File white lists in the Exception tabs to bypass scanning for trusted sites and files.

• You can configure large file scanning to skip scanning for files over a specific size. This can help reduce unnecessary scanning for larger files and lower resource use to improve capacity and performance.

• To improve user response time for larger file downloads, enable the Large File Handling’s Deferred Scanning feature to “trickle” parts of the scanned file to the requesting host. This keeps the browser's file transfer status indicator alive and shows progress to the user while the file is scanned. If malware is found within the trickled file, IWSVA blocks the remainder of the file - resulting in an incomplete file that cannot be executed. For multi-media files or streaming content that uses HTTP port 80, such as YouTube content, you must enable Deferred Scanning to allow portions of the media to flow through. Selecting the “Scan Before Delivery” option blocks the streaming content until it is fully scanned and results in bad user experiences.

• For customers that need to scan the entire file before delivering it to their users, select the “Scan Before Delivery” option from the Large File Handling feature. This instructs IWSVA to buffer the file and completely scan it before delivering any portion to the user. This method is slightly slower in terms of end-user performance perception, but ensures that no portion of the infected file is allowed through.

• Keep in mind that entries placed in the Global Trusted URLs white list are not scanned. If you want to scan white listed items, create an Approved List object and use this in the policy’s Exception tab. The Exception Tab gives you the option of scanning white listed items in the HTTP and FTP Scan Policies.
Transparent Identification Topology

Figure E-1 shows the typical transparent bridge mode network topology used when deploying IWSVA with transparent identification in your organization.

In Figure E-1, IWSVA sits behind the firewall with access to the Domain Controllers and client machines, required for Transparent Identification. If there is a NAT or firewall between client machines or Domain Controllers and IWSVA, the Transparent Identification query might fail.

In your organization, if the domain structure is not a single domain, but a tree or a forest, Trend Micro recommends that you enable the Global Catalog in the Domain Controller used by IWSVA as shown in Figure E-1. It not only reduces the logon traffic passing through the Internet and saves your bandwidth, but it also speeds up the logon process and helps IWSVA to obtain user/group information more quickly.
Transparent Identification Settings

Before starting the next procedure, check the following:

- **Domain Controller Settings:** Create a new account or use an existing one that belongs to 'Domain Admins' group in your Domain Controller for IWSVA used to query for user/group information.
- **Client Settings:** Configure the Windows Management Instrumentation (WMI) to start automatically and verify it is started on the clients.
- **Firewall Settings:** Verify the Windows firewall or other personal firewall in the client or the Domain Controller allows WMI traffic to pass.

If you use Windows firewall in your client machines, you can deploy a group policy to change the default firewall settings in each client machine joined to the domain. This will automate the client configuration procedure and simplify deployment. See the following procedures for more information:

- To create a group policy object: on page E-9
- To apply the new Group Policy Object to all client machines: on page E-10

**Step 1. Creating the Group Policy Object and Linking It to the Proper Organizational Unit**

![Group Policy Management Editor](image)

**FIGURE E-2. Allow inbound remote administration exception**
To create a group policy object:

1. Go to the Group Management Policy editor.
3. Double-click Domain Profile.
4. Click Windows Firewall: Allow remote administration exception.
5. On the Action menu, select Properties.
6. Click Enable, and then click OK.

Step 2. Applying the Group Policy Object to all client machines

![FIGURE E-3. Enforce the Group Policy Object to all clients in the organizational unit](image)
To apply the new Group Policy Object to all client machines:

1. Go to the Group Policy Management MMC snap-in. (See Figure E-3.)
2. Right-click the newly added Group Policy Object.
3. Select Enforced.

Configuring Transparent Identification

Before starting this procedure, IWSVA should be configured with a valid DNS server that has good performance for resolving DNS requests. Make sure IWSVA can resolve the Domain Controller's hostname in the DNS server.

To configure Transparent Identification in IWSVA:

1. Select the Administration > IWSVA Configuration > User Identification | User Identification tab from the main menu.
2. Under the User Identification Method section, check User/group name authorization.
3. Under the User/group Authentication Settings section in the LDAP Settings section, click the Select LDAP vendor link.
4. In the secondary browser window, select Microsoft Active Directory from the list of supported the LDAP vendors.
5. In the Configure LDAP Connection secondary window, click Save to confirm your LDAP vendor choice.
6. On the User Identification configuration screen, in the LDAP Settings section, type the LDAP server host name using the Fully Qualified Domain Name (FQDN).

   **Note:** Entering the LDAP server hostname's IP address is also acceptable, but FQDN format is recommended due to an incompatibility between Kerberos servers and identifying LDAP servers using their IP address.

7. Type the Listening port number used by the LDAP server that you have chosen (Default = 389).
8. Type the **Admin account** and **password** of the new created or existing account of “Domain Admins” group.
   
   You should use the UserPrincipalName for the admin account in the following format: NT_logon_ID@domain. For example: chris@trendmicro.com

9. Type the **Base distinguished name** to specify which level of the directory tree IWSVA should begin LDAP searches.

   The base Domain Name is derived from the company's DNS domain components; for example, LDAP server us.example.com would be entered as DC=example, DC=com.

10. Select the LDAP authentication method to use **Advanced (Kerberos Authentication)**.

11. Additionally, configure the following parameters to use Advanced authentication:
   (By default, the following setting will be automatically filled in, when enter 'Tab' button)
   
   - Default realm
   - Default domain
   - KDC and Admin Server: the same host name as your Active Directory server.
   - KDC Port Number: Default port = 88

12. Click the check boxes for **Enable Windows client query** and **Enable Domain Controller query** to enable both.

13. Click the **Test Client** link to test the client connection. It should be successful.

   Clicking the check box for Enable Domain Controller query allows IWSVA to receive the event logs for the Domain Controllers listed and to parse the event logs for user information.

   When the “Enable Domain Controller query” is first enabled, users receive a prompt to add the Domain Controller server(s) or to refresh the list of Domain Controller servers. Do the following:

   a. Click **Refresh** to auto-detect Domain Controller servers.
b. If new Domain Controller servers are not auto-detected, add them manually by clicking **Add**. (See Figure E-4.)

c. Type the Domain Controller information in the secondary window, and click **Test Remote Query** to verify the Domain Controller server connection.

   All Domain Controller servers added to the configuration file allow IWSVA to query the event logs for username and IP address information.

d. Make sure the status of all Domain Controllers in the list is OK as indicated by the small green check mark before going to next step.

![Figure E-4](image)

**FIGURE E-4.** Enter Domain Controller information and test the remote query

14. If necessary, add information for the additional LDAP servers.

   **Note:** All Active Directory domain controllers used to authenticate users to the domain should be added to the LDAP server list.
15. To verify the information has been entered correctly and IWSVA can communicate with the LDAP servers that you configured, click **Test LDAP Connection** on the User Identification page.

A message box appears, indicating that you have successfully contacted the LDAP server.

16. Click **Save**.
WCCP Deployment & Troubleshooting

This appendix contains information about deploying and troubleshooting installation of the InterScan Web Security Virtual Appliance (IWSVA) working with Cisco's Web Cache Communication Protocol (WCCP).

The topics include:

- Introduction to WCCP on page F-2
- Deploying WCCP on Cisco 2821 Routers on page F-3
- Deploying WCCP on Cisco 3750 Switches on page F-6
- Deploying WCCP on Cisco ASA Devices on page F-9
- Configuring IWSVA with WCCP Deployment Mode on page F-11
- Additional IWSVA Tips on page F-14
- Advanced Concepts: Deploying WCCP for Redundancy and Fault Tolerance on page F-19
- Troubleshooting Cisco WCCP & IWSVA on page F-23
Introduction to WCCP

Cisco router and switches supporting Web Cache Communication Protocol (WCCP) can redirect traffic to one or more transparent proxy web cache servers. Web caches reduce network latency by enabling end users to retrieve web pages that they have accessed previously from a memory buffer or “cache” instead of from a web server.

Cisco created WCCP to control the interaction of external web cache devices with Adaptive Security Appliances. WCCP not only reduces the load on web cache devices, but it also provides load balancing and support for multiple routers and protocols. WCCP is transparent to the end user and requires no modification to the endpoint devices.

IWSVA and WCCP Overview

This appendix describes how to configure IWSVA to run in WCCP mode and communicate with a Cisco WCCP enabled device in an N-tier environment. When an IWSVA is running in WCCP mode and integrates with a Cisco WCCP device, it becomes a “web cache” even though it does not specifically serve cached content. Instead it serves as a “cache engine” for the ASA and performs web gateway functions for filtering and scanning web content.

Examples used throughout this document illustrate the configuration steps required on the IWSVA and the Cisco WCCP supported devices. Although Trend Micro cannot test and validate every Cisco device that supports WCCP, testing is performed on every IWSVA version with WCCP.

Note: IWSVA’s WCCP implementation defaults to WCCP service 80 and the Dynamic WCCP service type and this is compatible for most WCCP v2 implementations. However, if your Cisco device is using a different WCCP service number other than 80 or is using the Standard WCCP service method, you will need to change the IWSVA’s WCCP parameters to match. Please refer to the Additional IWSVA Tips on page F-14 for more information on how to change IWSVA’s WCCP service parameters.

Examples used in this document were created with IWSVA 5.5 and the following Cisco products:

- Cisco 2821 router running IOS version 12.4(13r)T
Cisco 3750 switch running IOS version 12.2(40)SE
Cisco ASA 5510 running version 8.4(35)k8

Deploying WCCP on Cisco 2821 Routers

Known issues and deployment requirements for Cisco routers include:

1. Cisco IOS versions 12.2(23) through 12.3(9) have been known to have WCCP connectivity issues. These versions should be avoided with IWSVA integration.

2. The router ID that is automatically selected is the highest IP address configured on the Cisco router. If the interface supporting this IP address is not directly accessible by the IWSVA device, the WCCP L2 redirection method will not function. In this case, you will need to ensure that proper route entries are configured and enabled on your routers and switches to allow IWSVA to communicate with the interface configured with the Router ID.

Deployment Example

This example uses a Cisco 2821 router running IOS 12.4(13r)T with two network segments - a private network and a public facing DMZ network.

- **Private Network**—192.168.1.0/24 - Supported on the Cisco's GigabitEthernet 0/0 interface with 192.168.1.1 as the gateway address.

- **DMZ Network**—172.16.1.0/24 - Supported on the Cisco's GigabitEthernet 0/1 interface with 172.16.1.5 as the gateway address.

- **IWSVA Device**—172.16.1.101 - Acts as the WCCP cache device and performs content scanning and filtering.

The private network hosts the company's client computers and the DMZ network houses the public facing servers (web, FTP, etc) and the IWSVA unit. IWSVA can access the Internet through the corporate firewall as illustrated in Figure F-1.
Configuring the Cisco 2821 Router

Log into the Cisco router with administrative permissions and perform the following configuration steps.

To configure the Cisco 2821 router:
1. Enter the Cisco router's terminal configuration mode.

   Hostname#conf t
   Hostname(config)#

2. Configure a redirect-list containing the client protocol(s) to be redirected to the IWSVA unit. In this example, the HTTP WWW and FTP protocols are redirected.
for scanning. The access-list number used in this example is 101. But this number can be different for your environment.

Hostname (config)# access-list 101 permit tcp 192.168.1.0/0.0.0.255 any eq www
Hostname (config)# access-list 101 permit tcp 192.168.1.0/0.0.0.255 any eq ftp

3. Configure a group-list containing all members of the WCCP server. In this example, we configured a group-list with the IWSVA member. WCCP forwards the protocols selected in the previous step to the IWSVA identified in this group-list. The access-list number used in this example is 22. This number can be different for your environment.

Hostname (config)# access-list 22 permit 172.16.1.101/0.0.0.1

4. Enable WCCP on the Cisco router. The WCCP service number used in this example is 80. By default, IWSVA always uses service number 80 with the Dynamic WCCP service. If you are using Cisco IOS 12.2 or 12.3, the WCCP version defaults to 2. In these cases, it is not necessary to configure the WCCP version. Please make sure your Cisco device is configured for the same values. The password used in this example is set to “novirus” and it must match the password configured on the IWSVA’s WCCP configuration settings.

Hostname (config)# ip wccp 80 redirect-list 101 group-list 22 password novirus

5. Enable WCCP Outbound redirection on the interface that allows traffic to reach the public Internet. This interface does not need to be the interface where you have installed your cache device - the IWSVA in this example. In this example, the public Internet facing interface is 0/0, and the WCCP redirection is enabled as OUT on this router interface.

Hostname (config)# interface GigabitEthernet0/0
Hostname (config-if)# ip wccp 80 redirect out

6. Enable WCCP Inbound redirection on the interface that will be receiving traffic from the client devices. In this example, the client facing interface is 0/1 and we will enable the WCCP redirection as IN on this router interface.

Hostname (config)# interface GigabitEthernet0/1
Hostname (config-if)# ip wccp 80 redirect in

Cisco 2821 routers can support GRE and the L2 forwarding methods as well as both Hash and Mask assignment methods. In the above example, the L2 forwarding method was selected along with the Mask assignment method for better performance.

Deploying WCCP on Cisco 3750 Switches

Known issues and deployment requirements for Cisco switches include:

1. Cisco IOS versions 12.2(23) through 12.3(9) have been known to have WCCP connectivity issues. These versions should be avoided with IWSVA integration.

2. WCCP entries and PBR entries use the same TCAM region. WCCP is supported only on the templates that support PBR: access, routing, and dual IPv4/v6 routing. As a result, for switches (like the 3750, 3560 series) to support WCCP, the SDM template needs to be changed to something other than “default.” When TCAM entries are not available to add WCCP entries, packets are not redirected and are forwarded by using the standard routing tables.

3. The IWSVAs must be directly connected to the switch that has WCCP enabled. They should be in the same subnetwork.

4. Configure the switch interfaces that are connected to the web clients, IWSVAs, and the web server as Layer 3 interfaces (routed ports and switch virtual interfaces [SVIs]). For WCCP packet redirection to work, the servers, IWSVAs, and clients must be on different subnets.

5. Check the supported forward and assignment method by the switch, and make sure these two settings are correct in IWSVA. For example, 3560 and 3750 series just support L2 forwarding method and Mask assignment method.

6. You cannot configure WCCP and VPN routing/forwarding (VRF) on the same switch interface.

7. You cannot configure WCCP and PBR on the same switch interface.

8. You cannot configure WCCP and a private VLAN (PVLAN) on the same switch interface.
Deployment Example

This example uses a Cisco 3750 switch running IOS 12.2(40)SE with two VLAN network segments - VLAN 30 and VLAN 160.

- **VLAN 30 Network**—10.168.30.0/24 - Supports the clients on the corporate network. This VLAN has 10.168.30.254 as the gateway address.

- **VLAN 160 Network**—10.168.160.0/24 - Supports the IWSVA and other servers and has access to the public Internet through the corporate firewall. This VLAN has 10.168.160.254 as the gateway address.

- **IWSVA Device**—10.168.160.54 - Acts as the WCCP cache device and performs content scanning and filtering.

![Example Topology for Cisco 3750 Switch Implementation](image)
Configuring the Cisco 3750 Switch

Log into the Cisco 3750 switch with administrative permissions and perform the following configuration steps.

To configure the Cisco 3750 switch:

1. Enter the Cisco switch's terminal configuration mode.

   Switch #conf t

   Switch(config)#

2. Configure an access-list containing the client VLAN(s) to be redirected to the IWSVA unit. In this example, we will redirect the 10.168.30.0/24 client subnet. The access-list used is the standard list and the WCCP80 is the identifier for this ACL. It can be different in your environment to match your naming conventions.

   Switch (config)# ip access-list standard wccp80 permit 10.168.30.0 0.0.0.255

3. Configure a group-list containing all members for the WCCP cache. In this example, a group-list is configured with the IWSVA device's 10.168.160.54 IP address. The IWSVA device handles the inbound redirection where WCCP will forward the traffic you selected in the previous step. The group80 is the identifier for this ACL and it can be different in your environment to match your naming conventions.

   Switch (config)# ip access-list standard group80 permit host 10.168.160.54

4. Enable WCCP on the Cisco switch. The WCCP service number used in this example is 80. By default, IWSVA uses service number 80 with the Dynamic service type. Please make sure your Cisco device is configured for the same values. The password used in this example is set to "novirus" and it must match the password configured on the IWSVA's WCCP configuration settings.

   Switch (config)# ip wccp 80 redirect-list wccp80 group-list group80 password novirus

5. Enable WCCP inbound redirection on the VLAN interface that is connected to the clients. The client side interface must be a different VLAN (subnet) from the IWSVA and the web server VLAN(s) - otherwise, proper WCCP redirection will
fail. In this example, the client side subnet is VLAN30 and the IWSVA server side subnet is VLAN160.

Switch (config)# interface vlan 30
Switch (config-if)# ip wccp 80 redirect in

6. On the IWSVA device's Web UI for WCCP configuration, make sure that the L2 forwarding method and the Mask assignment method are selected. For Cisco 3750 switches, this is the only supported configuration for these two parameters.

### Deploying WCCP on Cisco ASA Devices

Known issues and deployment requirements for Cisco ASA devices include:

1. The Cisco ASA must be running version 7.2.1 or higher in order to support WCCP. Avoid using version 7.2(2) as this is known to have compatibility issues with IWSVA.

2. The Cisco ASA only supports a topology where the clients and the IWSVA device are on the same internal interface of the ASA device. This allows IWSVA to communicate directly with the client hosts without needing to go through the ASA device.

3. The Router ID that is automatically selected is the highest IP address configured on the Cisco ASA. If the Router ID happens to be on an interface that is external to the IWSVA device, such as on the DMZ interface or the external Internet facing interface, the proper routes must be defined on all necessary routing and switching devices to allow IWSVA access to the Router ID's IP address.

### Deployment Example

This example uses a Cisco ASA 5510 running software version 8.4(35)k8 with two network segments—an internal and external network.

- **Internal Network**—192.168.1.0/24 - Supports the internal network where the clients reside. The internal network also houses the IWSVA device. 192.168.1.1 is the gateway address defined on the ASA's 0/1 interface.
• **External Network**—172.16.12.0/24 - Supports the external network and the path to the public Internet. 172.16.12.1 is the gateway address defined on the ASA's 0/0 interface.

• **IWSVA Device**—192.168.6.10 - Acts as the WCCP Cache device and performs content scanning and filtering

![Cisco ASA Network Diagram]

**FIGURE F-3.  Example topology for Cisco ASA implementation**

### Configuring the Cisco ASA

Log into the Cisco ASA with administrative permissions and perform the following configuration steps.

**To configure the Cisco ASA:**

1. Enter the Cisco ASA's terminal configuration mode.

   ```
   ASA #conf t
   ASA(config)#
   ```

2. Configure an access-list containing the WCCP server member(s). In our example, there is only one WCCP server which is the IWSVA device.

   ```
   ASA (config)# access-list wccp-servers permit ip host 192.168.1.10 any
   ```
3. Create an access-list to allow the ASA to redirect traffic to the cache server. In our example, the 192.168.1.0/24 subnet will be redirected to the IWSVA acting as the cache server.

   ASA (config)# access-list wccp-traffic permit ip 192.168.1.0 255.255.255.0 any

4. Configure WCCP to redirect traffic from the “wccp-traffic” filter to the “wccp-servers” device. The password used in this example is set to “novirus” and it must match the password configured on the IWSVA's WCCP configuration settings.

   ASA (config)# wccp web-cache group-list wccp-servers redirect-list wccp-traffic password novirus

5. Enable WCCP inbound redirection on the internal client interface. In this example, the internal client interface is called “inside”. The standard service is “web-cache” (service group id 0), which intercepts TCP port 80 (HTTP) traffic and redirects it to the cache servers.

   ASA (config)# wccp interface inside web-cache redirect in

   In this example, the GRE forwarding method and the Hash assignment were selected in the IWSVA device's WCCP configuration Web UI screen.

### Configuring IWSVA with WCCP Deployment Mode

WCCP is supported on specific versions of IWSS and on all versions of IWSVA. The configuration steps are very similar between each IWSVA version and this document will highlight the installation procedure with IWSVA 5.5.

The minor differences between IWSS and IWSVA WCCP deployments include the following:

- **Forward Method**—The IWSA 3.1 and IWSVA products support both GRE and L2 forwarding methods. IWSS 3.1 only supports GRE. Generally, the L2 forward method can achieve better performance over GRE, but it depends on the network topology and the Cisco device. For example, Cisco routers supporting WCCP version 1 cannot use the L2 forward method.
• **Router IP Address**—The Router ID of WCCP service group can have an effect on
the topology design. The Router ID is treated as an IPv4 address and can also be
used as the source address of any WCCP-generated GRE frames. When the GRE
forward method is configured, IWSVA will use the Router ID as the source IP
address of the GRE packets.

Most Cisco routers do not allow the re-configuration of the Router ID. Cisco
routers automate the selection of the Router ID by leveraging the highest reachable
IPv4 address defined on the router. However, this IP address may not be the best
choice when it comes to the WCCP Router ID and customers must ensure that their
networking devices’ route tables are updated accordingly to allow communications
between the Router ID’s IP address and the IWSVA device.

• **Assignment Method**—With WCCP, either the Hash or Mask assignment method
can be used. The Mask assignment method is only supported with IOS versions
supporting WCCP version 2. The IWSS products only support the Hash assignment
method while the IWSVA products can support both the Hash and the Mask
assignment methods.

**Configuring WCCP on IWSVA Device**

Depending on the version of IWSVA used, the WCCP configuration is done in the
Deployment Wizard or in the HTTP configurations under the Proxy Deployment (older
versions). The examples in this installation primer will use IWSVA 5.5 to illustrate the
WCCP configuration steps.

Figure 4 shows the WCCP parameters and gives an explanation of each WCCP
parameter required for a basic WCCP v2 deployment with the default WCCP service 80
and Dynamic service type.
FIGURE F-4. IWSVA’s Deployment Wizard WCCP Settings Screen

See Table F-1 for the WCCP settings and descriptions.

TABLE F-1. WCCP Settings

<table>
<thead>
<tr>
<th>PARAMETER</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Router IP address</td>
<td>Enter the Cisco device(s) IP addresses for the interfaces that will be redirecting traffic to the IWSVA devices for scanning and URL filtering. Multiple Cisco device IP addresses are entered and separated by commas.</td>
</tr>
</tbody>
</table>
Cisco's WCCP is a proprietary redirection technology that is unique to Cisco routers and switches. As such, its implementation can vary slightly between IOS versions running on different devices and this may require further fine tuning on the IWSVA device. This section discusses a few examples where additional fine tuning may be required to fully achieve compatibility.

#### TABLE F-1. WCCP Settings (Continued)

<table>
<thead>
<tr>
<th>PARAMETER</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Password</td>
<td>Used if the Cisco routers were configured with a security password for WCCP. Passwords must match between IWSVA and the Cisco device.</td>
</tr>
<tr>
<td>Forwarding Method</td>
<td>The WCCP forwarding methods supported are GRE and Layer2 (L2). This setting must match the forwarding type provided by the Cisco device. Generally, L2 forwarding provides slightly better performance, but is not routable and requires the clients and the IWSVA to be on the same subnet/VLAN.</td>
</tr>
<tr>
<td>Assignment Method</td>
<td>The Mask assignment method used for the WCCP protocol. Hash table and Mask value sets are supported and the assignment method selected should match the Cisco device's abilities. Check your Cisco device's IOS version for more information on the assignment methods supported.</td>
</tr>
<tr>
<td>Service Group</td>
<td>The service group can be set for Standard or Dynamic and the default service group ID is 80. Change this value to match your Cisco device's service group settings.</td>
</tr>
<tr>
<td>Redirected Protocols</td>
<td>The protocols that are redirected from the Cisco device to the IWSVA for content scanning. Options include HTTP (80), HTTPS (443), and FTP (21).</td>
</tr>
</tbody>
</table>

### Additional IWSVA Tips

Cisco's WCCP is a proprietary redirection technology that is unique to Cisco routers and switches. As such, its implementation can vary slightly between IOS versions running on different devices and this may require further fine tuning on the IWSVA device. This section discusses a few examples where additional fine tuning may be required to fully achieve compatibility.
IWSVA's WCCP Configuration File

IWSVA stores its WCCP configuration in the IWSSPIProtocolHttpProxy.pni file under the /var/iwss directory and is used by the WCCP daemon. If you need to change any WCCP parameters that are not exposed on the IWSVA WCCP web UI configuration screen, this is the configuration file you will need to modify. Trend Micro recommends configuring the WCCP function from the IWSVA Web UI under normal circumstances and only manually making changes to the IWSSPIProtocolHttpProxy.pni file when absolutely necessary.

Trend Micro highly recommends that you make a copy of the file beforehand. You can use the “cp” copy command to backup the file:

cp IWSSPIProtocolHttpProxy.pni IWSSPIProtocolHttpProxy.pni_backup

The file can be opened and changed with an editor such as “vi”. If you are new to the vi editor, you can obtain more information on its commands from any of the following web sites:

http://www.eng.hawaii.edu/Tutor/vi.html
http://www.cs.rit.edu/~cslab/vi.html
http://www.cs.colostate.edu/helpdocs/vi.html

Whenever changes are made, the file must be saved and the WCCP daemon must be restarted to activate the new changes. Restart the WCCP server daemon with the following commands:

/usr/iwss/S99ISWCCPd stop
/usr/iwss/S99ISWCCPd start

The following WCCP parameters can be manually changed from the IWSSPIProtocolHttpProxy.pni configuration file.

# Name: wccp_router
# Type: address
# Default:
# Description
# Please put one to eight IP Addresses of Cisco routers that you
# will register your IWSx to.
# Example: wccp_router=192.168.1.254,192.168.2.254
wccp_router=

# Name: wccp_address
# Type: address
# Default:
# Description
# Use this option if you require WCCP to use a specific interface address.
# The default behavior is to not bind to any specific address.
# Example: wccp_address=192.168.1.1
wccp_address=

# NAME: wccp_forwarding_method
# TYPE: int
# DEFAULT: 1
# Description:
# WCCP2 allows the setting of forwarding methods between the router/switch and the cache. Valid values are as follows:
# 1 - GRE encapsulation (forward the packet in a GRE/WCCP tunnel)
# 2 - L2 redirect (forward the packet using Layer 2/MAC rewriting)
wccp_forwarding_method=1

# NAME: wccp_return_method
# TYPE: int
# DEFAULT: 1
# Description:
# This field is reserved for the future. Any change to the value will take no effect.
wccp_return_method=1

# NAME: wccp_assignment_method
# TYPE: int
# DEFAULT: 2
# Description:
# Cisco assignment method, 1 is Hash, 2 is Mask.
wccp_assignment_method=2

#wccp_std_service=standard 0
#wccp_dynamic_service=dynamic 80
Dynamic WCCPv2 services require further information to define the traffic you wish to have diverted.

The format is:

```
  wccp_service <id> protocol=<protocol> flags=<flag>,<flag>.. priority=<priority> ports=<port>,<port>..
```

The relevant WCCPv2 flags:

- `src_ip_hash`, `dst_ip_hash`
- `source_port_hash`, `dest_port_hash`
- `src_ip_alt_hash`, `dst_ip_alt_hash`
- `src_port_alt_hash`, `dst_port_alt_hash`
- `ports_source`, `ports_defined`

The port list can be one to eight entries.

```
  wccp_service=dynamic 80 protocol=tcp flags=src_ip_hash priority=120 ports=80,21,443
```

Dynamic WCCPv2 services require further information to define the traffic you wish to have diverted.

The format is:

```
  wccp_service_info <id> protocol=<protocol> flags=<flag>,<flag>.. priority=<priority> ports=<port>,<port>..
```

The relevant WCCPv2 flags:

- `src_ip_hash`, `dst_ip_hash`
- `source_port_hash`, `dest_port_hash`
- `src_ip_alt_hash`, `dst_ip_alt_hash`
- `src_port_alt_hash`, `dst_port_alt_hash`
- `ports_source`, `ports_defined`

The port list can be one to eight entries.
Changing the Default WCCP Service

By default, IWSVA is setup to use WCCP service 80 and the Dynamic service type. This works well in many WCCP v2 environments, but may require modification if these values are changed on the Cisco device.

To change from the default WCCP service values:

1. Log into the IWSVA’s console using the “root” level user for full administrative rights.
2. Navigate to the /etc/iscan directory with the cd /etc/iscan command.
3. Open the intscan.ini file for editing. For example, you can use the vi intscan.ini command.
4. Search for the “wccp_service” parameter by typing /wccp_service and pressing Enter. The system should show the WCCP settings similar to the following. Note the default service type and number is “dynamic 80”.

# wccp_service_info=80 protocol=tcp flags=source_port_hash,
src_port_alt_hash priority=120 ports=80,21,443

# NAME: wccp_password
# TYPE: cyphered text
# DEFAULT:
# Description:
# MD5 service authentication can be enabled by setting
# wccp_password=<cyphered password>.
# Please note that the user should not modify this field manually.
# When the user set the password on the WebUI, the UI will use the
# encrypt the password with MD5 and save it in the configuration
# file
wccp_password=

wccp_logging=0
#       0 - off, no WCCP log, error only
#       1 - on (default), write WCCP log to http.log file
wccp_service=dynamic 80  protocol=tcp  flags=src_ip_hash  priority=120  
    ports=80,21,443,8080

5. Change the wccp_std=dynamic 80 to the new value supported by your Cisco device. For example, change it from Dynamic 80 to Standard 0 as shown in the example below. You will need to place the vi editor into insert mode with i before you can make the change.

wccp_std_service=standard 0  protocol=tcp  flags=src_ip_hash  
    priority=120  ports=80

6. Exit the insert mode by pressing the Esc key. Type :wq to write and quit.

7. Restart the WCCP Server Daemon with the following commands:
    /usr/iwss/S99ISWCCPd stop
    /usr/iwss/S99ISWCCPd start

Note: If the Standard 0 service is used, the Cisco device can only redirect the HTTP port 80 traffic to the IWSVA device. If the Dynamic service is used, the Cisco device can redirect other ports in addition to port 80. For example, ports 80, 21, 443, and 8080 can be supported under the Dynamic service.

Advanced Concepts: Deploying WCCP for Redundancy and Fault Tolerance

There are numerous ways IWSVA can be deployed in WCCP mode. In larger environments where scalability and redundancy are desired, multiple IWSVA's can be deployed with multiple Cisco routers for load balancing and fault tolerance with WCCP version 2.

Figure 5 illustrates an example with a redundant architecture that leverages multiple IWSVA devices and multiple WCCP version 2 capable routers.
In this example, two Cisco 2821 routers running IOS 12.4(13r)T are used to redirect traffic to three IWSVA 5.5 devices for URL filtering and content scanning. This customer desires load balancing across all three IWSVA devices and fault tolerance in case one of the IWSVA's is brought down. This design allows the remaining IWSVA devices to pick up the extra load so traffic processing is uninterrupted. If one of the Cisco routers is taken off line, the remaining router will automatically pick up the load and continue the traffic distribution across the IWSVA devices.

**Configuring the Cisco Routers**

The configuration steps and commands are similar to the Cisco 2821 router example. The completed router configurations are illustrated below for reference.
Cisco Router One

The following configuration demonstrates how WCCP is configured and enabled on the first Cisco router. The L2 Forward method and Mask assignment method are used in this example and WCCP version 2 is supported by the router's IOS version.

```
! ip access-list standard wccp80
  permit 192.168.1.0 0.0.0.255
!
```

```
ip access-list standard wccp-servers
  permit 172.16.1.101
  permit 172.16.1.102
  permit 172.16.1.103
!
```

```
ip wccp 80 redirect-list wccp80 group-list wccp-servers
!
interface GigabitEthernet0/1
ip wccp 80 redirect in
!
```

Cisco Router Two

The following configuration demonstrates how WCCP is configured and enabled on the second Cisco router. The L2 Forward method and Mask assignment method are used in this example and WCCP version 2 is supported by the router's IOS version.

```
!
```

```
ip access-list standard wccp80
  permit 192.168.1.0 0.0.0.255
!
```

```
ip access-list standard wccp-servers
```

permit 172.16.1.101
permit 172.16.1.102
permit 172.16.1.103
!
ip wccp 80 redirect-list wccp80 group-list wccp-servers
!
interface GigabitEthernet0/1
ip wccp 80 redirect in
!

Configuring the IWSVA Device

For this example, the three IWSVA devices are configured with the same WCCP settings. Figure F-6 illustrates the configuration values for the WCCP settings.

**FIGURE F-6. IWSVA’s WCCP Settings Screen**
In this example, the two Cisco routers' IP addresses were entered in the Router IP Address(es) field and separated by a comma. The L2 forwarding method and the Mask assignment method were selected.

Troubleshooting Cisco WCCP & IWSVA

In order to properly troubleshoot your WCCP environment, verbose logging (debug mode) of the WCCP event information may be required on the IWSVA and/or Cisco device. By default, the verbose logging is disabled. If you run into problems that you cannot solve by using this guide, contact Trend Micro's technical support team for further assistance. They may instruct you to enable verbose/debug logging on the IWSVA and/or Cisco devices to collect the necessary troubleshooting information.

Note: Running IWSVA and/or the Cisco device in debug or verbose logging modes will add latency as the product may be required to capture large amounts of data for debug purposes. You should only enable these verbose logging modes at the request of the Trend Micro technical support representative.

Enabling IWSVA's WCCP Event Logging

To enable IWSVA's WCCP logging feature:

1. Log into the IWSVA console as the “root” user.
2. Navigate to the /var/iwss directory by typing `cd /var/iwss`.
3. Open the IWSSPITraversalHttProxy.pni file with an editor such as vi. For vi, type `vi IWSSPITraversalHttProxy.pni`.
4. Search the file for the “wccp_logging” parameter by typing `/wccp_logging`.
5. Type `i` to put the vi editor into insert mode and change the value from 0 to 1. This enables the IWSVA's WCCP logging function.

   ```
   wccp_logging=1
   # 0 - off, no WCCP log, error only
   # 1 - on (default), write WCCP log to http.log file
   ```

6. Exit the insert mode with the Esc key and type `:wq` to write the file and quit the vi editor.
The WCCP events will be saved in the HTTP log files under the /etc/iscan/log directory on the IWSVA device. The log files will be saved under a format that lists the date and time of the file's creation, such as: http.log.20110325.0001

You can navigate to this directory and use an editor such as vi to open and view the file.

Enabling Cisco Device's WCCP Event Logging

Depending on the Cisco device you are using, how you enable the WCCP event log may be different than what is shown in this installation primer. For our example, a Cisco ASA router was use. Please refer to your Cisco router or switch’s administration guide.

To enable the WCCP event logging on a Cisco device:

1. Log into the Cisco device's console using an administrative account that has configuration rights.
2. Enter the config mode and type the command to enable the WCCP event debug function.

   Router (config) # debug wccp event

Starting the Troubleshooting Process

If the WCCP enabled devices are not forwarding traffic to the IWSVA devices for scanning, the first thing to check is the communications between the Cisco and IWSVA devices. This section describes the various commands used in troubleshooting the communications between the Cisco device and the IWSVA acting as the cache device.

Several helpful commands provided by the Cisco device that can help verify the configuration and setup of your Cisco device includes the following.

- show ip wccp <service id>
- show ip wccp <service id> view
- debug ip wccp event
- debug ip wccp packet
Checking the IWSVA Configuration

On the IWSVA device, check the following configuration parameters to ensure that communications is being performed properly on the IWSVA device.

To check the IWSVA configuration:

1. Verify that the password set for the IWSVA WCCP password parameter matches the password on the WCCP device. If the passwords are not the same, no communications between the devices can occur.

2. If the passwords match, make sure the IWSVA Scan Daemons (services) are functioning properly.
   a. On the IWSVA console, log in as the “root” user.
   b. Use the `lsof -iTCP -n -P` command to list the daemons and look for the `iwssd` and `isftpd` daemons to make sure they are in “LISTEN” mode
3. Check the IWSVA's WCCP control connection to make sure it is running correctly.
   a. On the IWSVA console, login as the “root” user.
   b. Check the status value in the /etc/iscan/wccp_status file. If the status is set to 2 and the WCCP Server Daemon is running, the control connection is good. The `cat` command can be used to open and view the file.
Check the communications between the IWSVA and Cisco device.

a. On the IWSVA unit, enable the debug-level logging for the WCCP Server Daemon:
   i. Set `wccp_logging=1` in IWSSIProtocolHttpProxy.pni file in the /var/iwss directory.
   ii. Restart the WCCP Server Daemon with the following commands:
       ```bash
       /usr/iwss/S99ISWCCPd stop
       /usr/iwss/S99ISWCCPd start
       ```

b. Check the `http.log.current_date_time.nnnn` file in the IWSVA's /etc/iscan/log directory for the following log entries. You can use an editor such as "vi" to open and view the log file or use the "cat filename | more" command.

   ... <6887> WCCP: Sending WCCPv2 HERE_I_AM for service ID 80
   ... <6887> WCCP: Received WCCPv2 ISEE_YOU from 10.13.9.185
   ... <6887> WCCP: Good Received WCCPv2 ISEE_YOU

If you cannot see the first log entry with the “Here I Am” message, the WCCP transparency mode is not configured or the WCCP Server Daemon is not running.

If you cannot see the second log entry with the “I See You” message, the network device is not responding. Check its configuration or connectivity between IWSVA and the network device.
If you cannot see the third log entry confirming the “I See You”, the message from the network device cannot be parsed. This may happen if you use an unsupported network device.

5. Check the control connection on the Cisco router or switch. Log into the Cisco device’s console as the administrative user and perform the following diagnostic procedures:

   a. Run the `show ip wccp <service id> view` command to obtain a list of all routers and IWSVA systems.
      
      ```
      Router# show ip wccp 80 view
      WCCP Routers Informed of:
      10.13.10.17
      WCCP Cache Engines Visible:
      10.13.9.189
      WCCP Cache Engines NOT Visible:
      -none-
      ```
      
      If the “Cache Engines Visible” contains “-none-”, there is no communications over the control connection.

   b. Run the `show ip wccp <service_id>` command to obtain a list of all routers and IWSVA systems. Unless another service value was selected, the default Service ID should be 80.
      
      ```
      Router# show ip wccp 80
      Global WCCP information:
      Router information:
          **Router Identifier:** 10.13.10.17
          **Protocol Version:** 2.0
          **Service Identifier:** web-cache
          **Number of Cache Engines:** 1
          **Number of routers:** 1
          **Total Packets Redirected:** 0
          **Redirect access-list:** -none-
          **Total Packets Denied Redirect:** 0
      ```
Total Packets Unassigned: 0
Group access-list: -none-
Total Messages Denied to Group: 0
Total Authentication failures: 0

The router identifier is the Cisco router's IP address that the IWSVA sees. This address is not necessarily the router interface that the redirected traffic uses to reach the cache, but the IP address displayed needs to be reachable by IWSVA.

The Total Packets Unassigned value is the number of packets that were not redirected due to a lack of assignment to an IWSVA device. The redirection failure can happen during the initial discovery of the IWSVA device or if the IWSVA is unavailable for short periods of time - such as being down for maintenance or services being restarted.

Checking the WCCP Registration Activity

Perform the following steps on the Cisco device to validate the WCCP registration activity.

To validate the WCCP registration activity:

1. Run the **show ip wccp 80 view** command to obtain a list of routers and IWSVA systems. This example assumes that the service ID is left at the default value of 80.

2. If the Cisco device is unable to “partner” with IWSVA, you will need to enable the debug capabilities to expose the WCCP activity on the Cisco device. The debug commands to enable the WCCP events and packets are:

   ```
   debug ip wccp events
   debug ip wccp packets
   ```

   You should enable the debug commands as shown in the example below after you have configured the IWSVA device and the Cisco device for WCCP. The debug will show the WCCP communication sessions between the two devices.

3. Log into the Cisco device's console as the administrative user and perform the following:

   a. ```
      Router# debug ip wccp event
      ```
   WCCP events debugging is on.
b. **Router# debug ip wccp packet**

WCCP packet info debugging is on

The Cisco device will display the results of the packet debug as follows:

Router#

```
2d18h: WCCP-EVNT:S00: Built new router view: 0 routers, 0 usable web caches, change # 00000001
2d18h: %SYS-5-CONFIG_I: Configured from console by console
2d18h: WCCP-PKT:S00: Sending I_See_You packet to 192.168.15.2 w/ rcv_id 00000001
2d18h: WCCP-EVNT:S00: Redirect_Assignment packet from 192.168.15.2 fails source check
2d18h: %WCCP-5-SERVICEFOUND: Service web-cache acquired on Web Cache 192.168.15.2
2d18h: WCCP-PKT:S00: Received valid Here_I_Am packet from 192.168.15.2 w/rcv_id 00000001
2d18h: WCCP-EVNT:S00: Built new router view: 1 routers, 1 usable web caches, change # 00000002
2d18h: WCCP-PKT:S00: Sending I_See_You packet to 192.168.15.2 w/ rcv_id 00000002
2d18h: WCCP-EVNT:S00: Built new router view: 1 routers, 1 usable web caches, change # 00000002
2d18h: WCCP-PKT:S00: Received valid Redirect_Assignment packet from 192.168.15.2 w/rcv_id 00000002
2d18h: WCCP-PKT:S00: Sending I_See_You packet to 192.168.15.2 w/ rcv_id 00000003
2d18h: WCCP-EVNT:S00: Built new router view: 1 routers, 1 usable web caches, change # 00000003
2d18h: WCCP-PKT:S00: Sending I_See_You packet to 192.168.15.2 w/ rcv_id 00000003
2d18h: WCCP-PKT:S00: Sending I_See_You packet to 192.168.15.2 w/ rcv_id 00000004
2d18h: WCCP-PKT:S00: Sending I_See_You packet to 192.168.15.2 w/ rcv_id 00000005
2d18h: WCCP-EVNT:S00: Built new router view: 1 routers, 1 usable web caches, change # 00000006
2d18h: WCCP-PKT:S00: Received valid Redirect_Assignment packet from 192.168.15.2 w/rcv_id 00000006
```

**What to Look for in the Packet Debug**

Whenever the Cisco device receives a “Here I Am” packet from the cache (IWSVA), the Cisco device answers with an “I See You” packet. You should see the responses as illustrated in the previous example above if your IWSVA is communicating properly with the Cisco device.
In a production environment, there may be a lot of other chatter that may make deciphering of the debug difficult. In order to filter the debug traffic and highlight the appropriate IP address for faster troubleshooting, use an ACL to restrict the debug capture to packets that only have the IWSVA IP address as the source address.

The example below shows how an ACL is used to zero in on the IWSVA IP address.

1. Execute the two commands shown below to configure an ACL on the IWSVA IP address(es) and enable the debug process.

   ```
   Router(config)# access-list 130 permit ip host 192.168.15.2 host 192.168.15.1
   Router# debug ip packet 130
   ```

The following illustration shows an example of a filtered debug packet trace using the IWSVA IP address.
What to Look for in the Packet Debug

If the router sees no IWSVA or WCCP activity, check the basic connectivity between the two devices. Try to ping IWSVA from the router or the router from the IWSVA device. If the pings work, verify that the configuration on the router is correct.

If the cache acquisition occurs but there is no packet redirection, verify that traffic actually reaches the router. Also, verify that traffic is being forwarded to the correct Cisco device interface. This was configured during the traffic redirection steps in the examples above. Note that the interception and redirection traffic goes to TCP port 80.

If the cache acquisition occurs and you see the redirection of packets but your clients cannot browse the Internet, check the IWSVA device's connectivity to the Internet and to your clients. From the IWSVA's console management screen, try pinging some IP addresses on the public Internet and to some of your clients on the internal network.

Checking the Packet Redirection

Perform the following steps on the Cisco device to validate the packet redirection activity to ensure that packets are being forwarded properly.

To validate the packet redirection activity:

1. Log into your Cisco device's console as the administrative user.
2. Run the `show ip wccp 80 detail` command to obtain the redirection statistics from the Cisco device. This example assumes that the service ID is set to the default of 80.
Router# show ip wccp 80 detail

WCCP Cache-Engine information:
Web Cache ID: 10.13.9.189
Protocol Version: 2.0
State: Usable
Redirection: GRE
Initial Hash Info: 00000000000000000000000000000000
00000000000000000000000000000000
Assigned Hash Info: FFFFFFFFFFFFFFFFFFFFFFFFFFFFF
FFFFFFFFFFFFFFFFFFFFFFFFFFFF
Hash Allotment: 256 (100.00%)
Packets Redirected: 736
Connect Time: 00:07:45

The Redirection parameter shows the packet redirection protocol used between the Cisco device and the cache (IWSVA). The redirection protocol can be set to Generic Routing Encapsulation (GRE) or Layer 2 (L2). GRE tunnels the communications and creates a point-to-point connection to allow devices to communicate over an IP network. L2 redirection on the other hand sends the packets directly to the cache (IWSVA) without encapsulating it first - but this requires the Cisco device and the IWSVA to be on the same Layer 2 network.

The Hash Allotment is the number of hash buckets assigned to the IWSVA. The Hex values show the Hash Allotment with Initial Hash Info and Assigned Hash Info values. The hash algorithm allows the collection and division of all the possible destination Internet addresses within a number of buckets. Each IWSVA device in the defined service group receives a percentage of the preset buckets. WCCP dynamically manages these resources according to the load and other preset conditions. If IWSVA is the only cache device defined, WCCP will assign all bucket resources to the IWSVA unit.

When the Cisco device starts the redirection of packets to the Cache Engine (IWSVA), you should see an increase in the value of the “Packets Redirected” field.

**Verifying the Packet Flow on IWSVA**

If the forward method is set to GRE and the packets are redirected from the Cisco device, but are not being received by the IWSVA scanning daemons (based on the http.log file in the /etc/iscan/log directory), check the following IWSVA settings.
Note: For L2 forward method deployments, skip to step 2 and proceed to step 3.

To verify the packet flow on IWSVA:

1. Log into the IWSVA console as the root user.

2. For GRE forward method deployments, use the `ifconfig` command to verify that the “gre1” device is operating correctly.
   - `bash - 3.2# ifconfig`

```
/ # ifconfig
   gre1 Link enet:UNSPEC  HWaddr 0A-00-09-50-00-00-00-00-00-00-00-00-00-00-00-00-00-00-00
   inet addr:10.13.9.189 B-T-P:10.13.9.189 Mask:255.255.255.255
   UP POINTOPOINT RUNNING NDARP MTU:1476 Metric:1
   RX packets:50 errors:0 dropped:0 overruns:0 frame:0
   TX packets:0 errors:0 dropped:0 overruns:0 carrier:0
   collisions:0 txqueuelen:0
   RX bytes:5110 (4.9 KiB) TX bytes:0 (0.0 b)
   / #
```

**FIGURE F-9.** Use the `ifconfig` command to verify that the “gre1” device is operating correctly

3. Use the `iptunnel` command to verify that the IP tunnel from the router to IWSVA is configured.
   - `bash-3.2# iptunnel`

```
-bash-3.2# iptunnel
gre0 gre/ip remote any local any ttl inherit nopmtudiscard
gre1 gre/ip remote 10.204.190.195 local 10.204.190.97 dev eth0 ttl inherit
-bash-3.2#
```

**FIGURE F-10.** Use the `iptunnel` command to verify that the IP tunnel is configured.
4. Use the **iptables** command to verify that the IWSVA firewall is redirecting the packets to the scanning daemons.

   -bash-3.2# iptables -t nat -vl

   ![iptables output]

   **FIGURE F-11.** Use the **iptables** command to verify that the IWSVA firewall is redirecting the packets

5. (Optional) As an “advanced” troubleshooting step, you can use the **tcpdump** command to capture packets from the IWSVA firewall. This will allow you to verify that IWSVA is processing the packets correctly.

   a. To limit the amount of data that is captured with the tcpdump packet capture command, configure the Cisco router with an ACL to limit the WCCP redirection to one client. This will allow you to decrease the scope and concentrate on a single client.

   The example below shows how to restrict the WCCP redirection to one client (10.10.10.152) and start the WCCP redirection process.

   ```
   Router(config)# access-list 50 permit 10.10.10.152
   Router(config)# ip wccp web-cache redirect-list 50
   ```

   b. Enable the packet capture on the IWSVA using the **tcpdump** command. This is done from the IWSVA's console, and you must access the console as the “root” user.

   -bash-3.2# tcpdump -s0 -w wccp.cap

   c. After capturing enough packets, stop the packet capture, and copy the wccp.cap file to your local host.
Using a packet analysis tool such as Wireshark, open the wccp.cap file, and analyze the packet capture.

Analyze the packet capture to see that the communications between the Cisco device and the IWSVA device are working properly.

**Note:** Using the tcpdump packet capture utility is an advanced concept and it may not be easy to decipher the communications between the Cisco and IWSVA device. If you have troubleshooting up to this step and still cannot resolve the WCCP issue, you should contact Trend Micro's customer support department for more assistance.
URL Filtering Category Mapping

Table G-1 shows the URL Filtering Category mapping differences between IWSVA 5.1 and 5.1 SP1/5.5
## URL Filtering Category Mapping Table.

**TABLE G-1.** URL Category Mapping from IWSVA 5.1 to IWSVA 5.1 SP1/5.5

<table>
<thead>
<tr>
<th>ID #</th>
<th>5.1 CATEGORY</th>
<th>5.1 SP1/5.5 CATEGORY</th>
</tr>
</thead>
<tbody>
<tr>
<td>23=Internet Radio and TV</td>
<td>Computers/Bandwidth</td>
<td>Network Bandwidth</td>
</tr>
<tr>
<td>72=Pay to Surf</td>
<td>Computers/Bandwidth</td>
<td>Network Bandwidth</td>
</tr>
<tr>
<td>57=Peer-to-peer</td>
<td>Computers/Bandwidth</td>
<td>Network Bandwidth</td>
</tr>
<tr>
<td>56=Personal Network Storage/File Download Server</td>
<td>Computers/Bandwidth</td>
<td>Network Bandwidth</td>
</tr>
<tr>
<td>43=Photo Searches</td>
<td>Computers/Bandwidth</td>
<td>Network Bandwidth</td>
</tr>
<tr>
<td>70=Ringtones/Mobile Phone Downloads</td>
<td>Computers/Bandwidth</td>
<td>Network Bandwidth</td>
</tr>
<tr>
<td>71=Software Downloads</td>
<td>Computers/Bandwidth</td>
<td>Network Bandwidth</td>
</tr>
<tr>
<td>69=Streaming Media/MP3</td>
<td>Computers/Bandwidth</td>
<td>Network Bandwidth</td>
</tr>
<tr>
<td>77=Adware</td>
<td>Computers/Harmful</td>
<td>Internet Security</td>
</tr>
<tr>
<td>80=Cookies</td>
<td>Computers/Harmful</td>
<td>Internet Security</td>
</tr>
<tr>
<td>81=Dialers</td>
<td>Computers/Harmful</td>
<td>Internet Security</td>
</tr>
<tr>
<td>79=Disease Vector</td>
<td>Computers/Harmful</td>
<td>Internet Security</td>
</tr>
<tr>
<td>82=Hacking</td>
<td>Computers/Harmful</td>
<td>Internet Security</td>
</tr>
<tr>
<td>83=Joke Program</td>
<td>Computers/Harmful</td>
<td>Internet Security</td>
</tr>
<tr>
<td>86=Made for AdSense</td>
<td>Computers/Harmful</td>
<td>Internet Security</td>
</tr>
<tr>
<td>78=Malware Accomplice Formerly “Virus Accomplice”</td>
<td>Computers/Harmful</td>
<td>Internet Security</td>
</tr>
<tr>
<td>84=Password Cracking</td>
<td>Computers/Harmful</td>
<td>Internet Security</td>
</tr>
</tbody>
</table>
TABLE G-1. URL Category Mapping from IWSVA 5.1 to IWSVA 5.1 SP1/5.5

<table>
<thead>
<tr>
<th>ID #</th>
<th>5.1 CATEGORY</th>
<th>5.1 SP1/5.5 CATEGORY</th>
</tr>
</thead>
<tbody>
<tr>
<td>75</td>
<td>Phishing</td>
<td>Computers/Harmful Internet Security</td>
</tr>
<tr>
<td>73</td>
<td>Potentially Malicious Software</td>
<td>Computers/Harmful Internet Security</td>
</tr>
<tr>
<td>39</td>
<td>Proxy Avoidance</td>
<td>Computers/Harmful Internet Security</td>
</tr>
<tr>
<td>85</td>
<td>Remote Access Program</td>
<td>Computers/Harmful Internet Security</td>
</tr>
<tr>
<td>76</td>
<td>Spam</td>
<td>Computers/Harmful Internet Security</td>
</tr>
<tr>
<td>74</td>
<td>Spyware</td>
<td>Computers/Harmful Internet Security</td>
</tr>
<tr>
<td>88</td>
<td>Web Advertisement</td>
<td>Computers/Harmful Internet Security</td>
</tr>
<tr>
<td>42</td>
<td>Blogs/Web Communications</td>
<td>Computers/Communication Communications and Search</td>
</tr>
<tr>
<td>51</td>
<td>Chat/Instant Messaging</td>
<td>Computers/Communication Communications and Search</td>
</tr>
<tr>
<td>52</td>
<td>Email (Formerly “Email related”)</td>
<td>Computers/Communication Communications and Search</td>
</tr>
<tr>
<td>41</td>
<td>Internet Infrastructure</td>
<td>Computers/Communication Communications and Search</td>
</tr>
<tr>
<td>24</td>
<td>Internet Telephony</td>
<td>Computers/Communication Communications and Search</td>
</tr>
<tr>
<td>53</td>
<td>Newsgroups</td>
<td>Computers/Communication Communications and Search</td>
</tr>
<tr>
<td>40</td>
<td>Search Engines/Portals</td>
<td>Social Communications and Search</td>
</tr>
</tbody>
</table>
### TABLE G-1. URL Category Mapping from IWSVA 5.1 to IWSVA 5.1 SP1/5.5

<table>
<thead>
<tr>
<th>ID #</th>
<th>5.1 CATEGORY</th>
<th>5.1 SP1/5.5 CATEGORY</th>
</tr>
</thead>
<tbody>
<tr>
<td>50=Social Networking</td>
<td>Computers/Communications</td>
<td>Communications and Search</td>
</tr>
<tr>
<td>89=Web Hosting</td>
<td>Computers/Communications</td>
<td>Communications and Search</td>
</tr>
<tr>
<td>16=Abortion</td>
<td>Adult</td>
<td>Adult</td>
</tr>
<tr>
<td>1=Adult/Mature Content</td>
<td>Adult</td>
<td>Adult</td>
</tr>
<tr>
<td>8=Alcohol/Tobacco</td>
<td>Adult</td>
<td>Adult</td>
</tr>
<tr>
<td>11=Gambling</td>
<td>Adult</td>
<td>Adult</td>
</tr>
<tr>
<td>25=Illegal Drugs</td>
<td>Adult</td>
<td>Adult</td>
</tr>
<tr>
<td>9=Illegal/Questionable</td>
<td>Adult</td>
<td>Adult</td>
</tr>
<tr>
<td>5=Intimate Apparel/Swimsuit</td>
<td>Adult</td>
<td>Adult</td>
</tr>
<tr>
<td>26=Marijuana</td>
<td>Adult</td>
<td>Adult</td>
</tr>
<tr>
<td>6=Nudity</td>
<td>Adult</td>
<td>Adult</td>
</tr>
<tr>
<td>3=Pornography</td>
<td>Adult</td>
<td>Adult</td>
</tr>
<tr>
<td>4=Sex Education</td>
<td>Adult</td>
<td>Adult</td>
</tr>
<tr>
<td>10=Tasteless</td>
<td>Adult</td>
<td>Adult</td>
</tr>
<tr>
<td>14=Violence/Hate/Racism</td>
<td>Adult</td>
<td>Adult</td>
</tr>
<tr>
<td>15=Weapons</td>
<td>Adult</td>
<td>Adult</td>
</tr>
<tr>
<td>59=Auctions</td>
<td>Business</td>
<td>Business</td>
</tr>
<tr>
<td>32=Brokerage/Trading</td>
<td>Business</td>
<td>Business</td>
</tr>
<tr>
<td>21=Business/Economy</td>
<td>Business</td>
<td>Business</td>
</tr>
</tbody>
</table>
### TABLE G-1. URL Category Mapping from IWSVA 5.1 to IWSVA 5.1 SP1/5.5

<table>
<thead>
<tr>
<th>ID #</th>
<th>5.1 CATEGORY</th>
<th>5.1 SP1/5.5 CATEGORY</th>
</tr>
</thead>
<tbody>
<tr>
<td>31=Financial Services</td>
<td>Business</td>
<td>Business</td>
</tr>
<tr>
<td>45=Job Search/Careers</td>
<td>Business</td>
<td>Business</td>
</tr>
<tr>
<td>60=Real Estate</td>
<td>Business</td>
<td>Business</td>
</tr>
<tr>
<td>58=Shopping</td>
<td>Business</td>
<td>Business</td>
</tr>
<tr>
<td>38=Computers/Internet</td>
<td>Business</td>
<td>General</td>
</tr>
<tr>
<td>67=Vehicles</td>
<td>Business</td>
<td>General</td>
</tr>
<tr>
<td>30=Activist Groups</td>
<td>Social</td>
<td>Lifestyle</td>
</tr>
<tr>
<td>44=Alternative Journals</td>
<td>General</td>
<td>Lifestyle</td>
</tr>
<tr>
<td>19=Arts (Formerly Arts/ Entertainment)</td>
<td>Social</td>
<td>Lifestyle</td>
</tr>
<tr>
<td>22=Cult/Occult</td>
<td>Social</td>
<td>Lifestyle</td>
</tr>
<tr>
<td>29=Cultural Institutions</td>
<td>Social</td>
<td>Lifestyle</td>
</tr>
<tr>
<td>20=Entertainment (Formerly Arts/ Entertainment)</td>
<td>Social</td>
<td>Lifestyle</td>
</tr>
<tr>
<td>87=For Kids</td>
<td>General</td>
<td>Lifestyle</td>
</tr>
<tr>
<td>33=Games</td>
<td>Social</td>
<td>Lifestyle</td>
</tr>
<tr>
<td>62=Gay/Lesbian</td>
<td>Social</td>
<td>Lifestyle</td>
</tr>
<tr>
<td>63=Gun Clubs/Hunting</td>
<td>Social</td>
<td>Lifestyle</td>
</tr>
<tr>
<td>68=Humor (Formerly Humor/Jokes)</td>
<td>Social</td>
<td>Lifestyle</td>
</tr>
</tbody>
</table>
### Table G-1: URL Category Mapping from IWSVA 5.1 to IWSVA 5.1 SP1/5.5

<table>
<thead>
<tr>
<th>ID #</th>
<th>5.1 Category</th>
<th>5.1 SP1/5.5 Category</th>
</tr>
</thead>
<tbody>
<tr>
<td>55=Personal Sites</td>
<td>Social</td>
<td>Lifestyle</td>
</tr>
<tr>
<td>47=Personals/Dating</td>
<td>Social</td>
<td>Lifestyle</td>
</tr>
<tr>
<td>18=Recreation/Hobbies</td>
<td>Social</td>
<td>Lifestyle</td>
</tr>
<tr>
<td>54=Religion</td>
<td>General</td>
<td>Lifestyle</td>
</tr>
<tr>
<td>64=Restaurants/Food (Formerly Restaurants/Dining/Food)</td>
<td>Social</td>
<td>Lifestyle</td>
</tr>
<tr>
<td>61=Society/Lifestyle</td>
<td>Social</td>
<td>Lifestyle</td>
</tr>
<tr>
<td>65=Sports</td>
<td>Social</td>
<td>Lifestyle</td>
</tr>
<tr>
<td>76=Spam</td>
<td>Social</td>
<td>N/A</td>
</tr>
<tr>
<td>63=Sport Hunting and Gun Clubs</td>
<td>Social</td>
<td>N/A</td>
</tr>
<tr>
<td>66=Travel</td>
<td>Social</td>
<td>Lifestyle</td>
</tr>
<tr>
<td>38=Computers/Internet</td>
<td>General</td>
<td>General</td>
</tr>
<tr>
<td>27=Education</td>
<td>General</td>
<td>General</td>
</tr>
<tr>
<td>34=Government/Legal</td>
<td>General</td>
<td>General</td>
</tr>
<tr>
<td>37=Health</td>
<td>General</td>
<td>General</td>
</tr>
<tr>
<td>86=Made for AdSense sites (MFA)</td>
<td>General</td>
<td>N/A</td>
</tr>
<tr>
<td>35=Military</td>
<td>General</td>
<td>General</td>
</tr>
<tr>
<td>46=News/Media</td>
<td>General</td>
<td>General</td>
</tr>
</tbody>
</table>
TABLE G-1.  URL Category Mapping from IWSVA 5.1 to IWSVA 5.1 SP1/5.5

<table>
<thead>
<tr>
<th>ID #</th>
<th>5.1 CATEGORY</th>
<th>5.1 SP1/5.5 CATEGORY</th>
</tr>
</thead>
<tbody>
<tr>
<td>36=Politics (Formerly Political)</td>
<td>General</td>
<td>General</td>
</tr>
<tr>
<td>49=Reference</td>
<td>General</td>
<td>General</td>
</tr>
<tr>
<td>48=Translators / Cached Pages (Formerly Translators (circumvent filtering))</td>
<td>General</td>
<td>General</td>
</tr>
<tr>
<td>67=Vehicles</td>
<td>N/A</td>
<td>General</td>
</tr>
<tr>
<td>90=Untested (Formerly Unrated)</td>
<td>General</td>
<td>General</td>
</tr>
</tbody>
</table>
Appendix H

Application Control Protocol List

Table H-1 shows the protocols supported by the Application Control feature. See Application Control and Traffic Statistics on page 5-1 for more information.

- List of Protocols for Application Control on page H-2
List of Protocols for Application Control

Table H-1 shows the protocols controlled by the Application Control feature.

This list in Table H-1 was current at the time of product release. Check for readme updates at:

Categories include:

- Application Service on page H-3
- Audio/Video on page H-5
- Authentication on page H-9
- Database on page H-10
- Encrypted on page H-11
- File Server on page H-12
- File Transfer on page H-15
- Forum on page H-15
- Game on page H-16
- Instant Messaging on page H-17
- Mail on page H-19
- Middleware on page H-20
- Network Management on page H-21
- Network Service on page H-22
- Peer to Peer on page H-24
- Printer on page H-26
- Terminal on page H-27
- Thin Client on page H-28
- Tunneling on page H-29
- Wireless Application Protocol (WAP) on page H-30
- Web on page H-31
- Webmail on page H-56
<table>
<thead>
<tr>
<th>APPLICATION</th>
<th>DESCRIPTION</th>
<th>SUPPORTED APPLICATIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dictionary Server Protocol</td>
<td>The DICT protocol is a TCP transaction based query/response protocol that enables a client to access dictionary definitions from a set of natural language dictionary databases.</td>
<td></td>
</tr>
<tr>
<td>End Point Mapper</td>
<td>End Point Mapper is a protocol used by Exchange to determine the ports used by various services.</td>
<td></td>
</tr>
<tr>
<td>Lightweight Directory Access Protocol (LDAP)</td>
<td>LDAP (Lightweight Directory Access Protocol) is a protocol used for accessing directory services. Windows environment use this protocol to send queries to Active Directory.</td>
<td></td>
</tr>
<tr>
<td>Microsoft Office Groove</td>
<td>Microsoft Office Groove is a desktop application designed for document collaboration in teams with members who are regularly off-line or who do not share the same network security clearance.</td>
<td></td>
</tr>
<tr>
<td>Name Service Provider Interface</td>
<td>Name Service Provider Interface is a protocol used by Exchange.</td>
<td></td>
</tr>
</tbody>
</table>
PORT MAPPER: Port Mapper protocol maps RPC program and version numbers to port numbers. This program makes dynamic binding of remote programs possible.

SAP: SAP is both a protocol and the name of an ERP application used by most companies.

SECURE LDAP: Secure version of the LDAP protocol.

SERVICE LOCATION PROTOCOL: Service Location Protocol is a decentralized, lightweight, scalable and extensible protocol for service discovery within a site.

SIMPLE SERVICE DISCOVERY PROTOCOL (SSDP): Simple Service Discovery Protocol (SSDP) provides a mechanism whereby network clients can discover desired network services.

SYSLOG: Syslog protocol is used for the transmission of event notification messages across networks between a client and a server.

WEBSHARE MESSAGE QUEUE SERIES: Mq (IBM Websphere MQ) is an inter-application communication protocol.
### Table H-1. List of Support Applications

<table>
<thead>
<tr>
<th>APPLICATION</th>
<th>DESCRIPTION</th>
<th>SUPPORTED APPLICATIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Audio/Video</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Grooveshark</td>
<td>Grooveshark has unlimited service listening to music online.</td>
<td></td>
</tr>
<tr>
<td>H225</td>
<td>The H225 Protocol is a VoIP protocol, used for call signaling and RAS (Registration, Admission and Status).</td>
<td></td>
</tr>
<tr>
<td>H245</td>
<td>H245 is a VoIP protocol, used for call signaling CODEC negotiation.</td>
<td></td>
</tr>
<tr>
<td>iTunes</td>
<td>iTunes is a Apple's proprietary digital media player application, used for playing and organizing digital music and video files.</td>
<td></td>
</tr>
<tr>
<td>Media Gateway Control Protocol</td>
<td>MGCP protocol is used as signaling protocol for voice IP applications.</td>
<td></td>
</tr>
<tr>
<td>Microsoft Multimedia Streaming (MMS)</td>
<td>MMS protocol is used extensively today by Microsoft video streaming servers. It enables to stream a file in real time to many simultaneous viewers.</td>
<td></td>
</tr>
<tr>
<td>Mpeg 2 Transmission</td>
<td>MPEG-Transport Stream is a protocol used for MPEG flows transmission</td>
<td></td>
</tr>
</tbody>
</table>
### TABLE H-1. List of Support Applications

<table>
<thead>
<tr>
<th>APPLICATION</th>
<th>DESCRIPTION</th>
<th>SUPPORTED APPLICATIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>MSN Video</td>
<td>This protocol is used by MSN Messenger for video conversations.</td>
<td></td>
</tr>
<tr>
<td>Netflix</td>
<td>Netflix is an online movie service.</td>
<td></td>
</tr>
<tr>
<td>Paltalk audio chat</td>
<td>Proprietary protocol used by Paltalk in audio chats</td>
<td></td>
</tr>
<tr>
<td>PPLive</td>
<td>PPLive is an application intended to watch TV in peer to peer</td>
<td></td>
</tr>
<tr>
<td>PPStream - P2P based Streamed Media (PPStream)</td>
<td>The PPStream protocol provides audio and video streaming. It is based on BitTorrent (peer to peer) technology. It is mainly used in China.</td>
<td></td>
</tr>
<tr>
<td>Q931</td>
<td>The Q.931 protocol enables the use of voice and image on networks for video conferencing. It provides no flow control, however, or retransmission, since the underlying layers are assumed to be reliable and the circuit-oriented nature of ISDN allocates bandwidth in fixed increments of 64 kbps. Q.931 does manage connection setup and close. Like TCP, Q.931 documents both the protocol itself and a state machine.</td>
<td></td>
</tr>
<tr>
<td>Real Data Transport</td>
<td>This protocol is used to transport audio/video data.</td>
<td></td>
</tr>
</tbody>
</table>
## Table H-1. List of Support Applications

<table>
<thead>
<tr>
<th>APPLICATION</th>
<th>DESCRIPTION</th>
<th>SUPPORTED APPLICATIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Real Time Control Protocol (RTCP)</td>
<td>The real-time transport Control protocol RTP allows monitoring of the data delivery in a manner scalable to large multicast networks, and to provide minimal control and identification functionality.</td>
<td></td>
</tr>
<tr>
<td>Real Time Protocol (RTP)</td>
<td>The real-time transport protocol RTP provides end-to-end network transport functions suitable for applications transmitting real-time data, such as audio, video or simulation data, over multicast or unicast network services. RTP does not address resource reservation and does not guarantee quality-of-service for real-time services. The data transport is augmented by a control protocol (RTCP) to allow monitoring of the data delivery in a manner scalable to large multicast networks, and to provide minimal control and identification functionality. The protocol supports the use of RTP-level translators and mixers.</td>
<td></td>
</tr>
<tr>
<td>Real Time Streaming Protocol (RTSP)</td>
<td>The Real Time Streaming Protocol (RTSP) is an application-level protocol for control over the delivery of data with real-time properties. RTSP provides an extensible framework to enable controlled, on-demand delivery of real-time data, such as audio and video.</td>
<td>RealPlayer</td>
</tr>
</tbody>
</table>
Session Initiation Protocol (SIP) is the Internet Engineering Task Force’s (IETF’s) standard for multimedia conferencing over IP. Like other VoIP protocols, SIP is designed to address the functions of signaling and session management within a packet telephony network.

Shoutcast is a protocol used to stream audio files over HTTP.

Skinny Client Control Protocol (SCCP) is a Cisco proprietary protocol used between Cisco Call Manager and Cisco VOIP phones. It is also supported by some other vendors.

Audio/Video stream based on Silverlight. Silverlight is a Microsoft web browser plug-in designed to render programmable animations and to stream videos. It is quite similar with Adobe Flash: animated vector graphics, H264 video streaming.

Spotify is a Swedish proprietary protocol for music streaming.

This protocol is used by Yahoo Messenger for video conversations.
### TABLE H-1. List of Support Applications

<table>
<thead>
<tr>
<th>APPLICATION</th>
<th>DESCRIPTION</th>
<th>SUPPORTED APPLICATIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Identification Protocol</td>
<td>The Identification Protocol provides a means to determine the identity of a user of a particular TCP connection.</td>
<td></td>
</tr>
<tr>
<td>Kerberos</td>
<td>Kerberos provides a means of verifying the identities of the different workstations on an open (unprotected) network.</td>
<td></td>
</tr>
<tr>
<td>Remote Authentication Dial-In User Service (RADIUS)</td>
<td>RADIUS (Remote Authentication Dial-In User Service) is a client/server protocol that enables remote access servers to communicate with a central server to authenticate dial-in users and authorize their access to the requested system or service.</td>
<td></td>
</tr>
<tr>
<td>SOCKSv4</td>
<td>Socks 4 is an authentication protocol.</td>
<td></td>
</tr>
<tr>
<td>SOCKSv5</td>
<td>Socks 5 is an authentication protocol.</td>
<td></td>
</tr>
<tr>
<td>Yellow Page Password</td>
<td>The Yellow Page Password protocol enables the modification of logins and passwords in Network Interface System cards.</td>
<td></td>
</tr>
</tbody>
</table>
### TABLE H-1. List of Support Applications

<table>
<thead>
<tr>
<th>APPLICATION</th>
<th>DESCRIPTION</th>
<th>SUPPORTED APPLICATIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yellow Pages Server</td>
<td>Yellow Pages Server is a protocol used to distribute NIS databases to client systems within an NIS domain.</td>
<td></td>
</tr>
<tr>
<td>MySQL Protocol (MySQL)</td>
<td>MySQL is an open source relational database management system (RDBMS) that uses Structured Query Language (SQL), the most popular language for adding, accessing, and processing data in a database.</td>
<td></td>
</tr>
<tr>
<td>Postgres</td>
<td>PostgreSQL is a sophisticated Object-Relational DBMS, supporting almost all SQL constructs, including subselects, transactions, and user-defined types and functions.</td>
<td>7.3 7.4 8.0 8.1 8.2</td>
</tr>
<tr>
<td>Tabular Data Stream</td>
<td>TDS protocol is used to communicate between SQL applications and a SQL Server.</td>
<td></td>
</tr>
</tbody>
</table>

**Database**
Transparent Network Service (Oracle)

Transparent Network Service (TNS) is the Oracle (version 8 or higher) networking technology that provides a single application interface to all industry-standard networking protocols. To connect to a database, users initiate a connect request by passing information (username and password) along with a short name for the database service they wish to connect to.

Internet Security Association and Key Management Protocol (ISAKMP)

The Internet Security Association and Key Management Protocol (ISAKMP) defines procedures and packet formats to establish, negotiate, modify and delete Security Associations (SA).

IP secure (IPSec UDP)

IPSec protocol provides services for securing hosts communications. IPSec provides two security services: Authentication Header (AH), which allows authentication of the sender and Encapsulating Security Payload (ESP), which allows both authentication of the sender and encryption of data.

Online Certificate Status Protocol

Network protocol used for validating certificate.

<table>
<thead>
<tr>
<th>APPLICATION</th>
<th>DESCRIPTION</th>
<th>SUPPORTED APPLICATIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transparent Network Service (Oracle)</td>
<td>Transparent Network Service (TNS) is the Oracle (version 8 or higher) networking technology that provides a single application interface to all industry-standard networking protocols. To connect to a database, users initiate a connect request by passing information (username and password) along with a short name for the database service they wish to connect to.</td>
<td></td>
</tr>
<tr>
<td>IP secure (IPSec UDP)</td>
<td>IPSec protocol provides services for securing hosts communications. IPSec provides two security services: Authentication Header (AH), which allows authentication of the sender and Encapsulating Security Payload (ESP), which allows both authentication of the sender and encryption of data.</td>
<td></td>
</tr>
<tr>
<td>Online Certificate Status Protocol</td>
<td>Network protocol used for validating certificate.</td>
<td></td>
</tr>
</tbody>
</table>
Secure Socket Layer (SSL) is a commonly-used protocol for managing the security of a message transmission on the Internet. SSL has recently been succeeded by Transport Layer Security (TLS), which is based on SSL.

File transfer software developed by Axway.

This protocol is used to transport data in data connection of FTP communication.

The FTP protocol is used for reliable data transfer between a client and a server.

The Mount protocol is separate from, but related to, the NFS protocol. It provides operating system specific services to launch the NFS protocol -- looking up server path names, validating user identity, and checking access permissions.

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<tr>
<th>APPLICATION</th>
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</thead>
<tbody>
<tr>
<td>Secure Socket Layer (SSL)</td>
<td>Secure Sockets Layer (SSL) is a commonly-used protocol for managing the security of a message transmission on the Internet. SSL has recently been succeeded by Transport Layer Security (TLS), which is based on SSL.</td>
<td></td>
</tr>
<tr>
<td>Cross File Transfer</td>
<td>File transfer software developed by Axway.</td>
<td></td>
</tr>
<tr>
<td>File Transfer Protocol Data (FTP)</td>
<td>This protocol is used to transport data in data connection of FTP communication.</td>
<td></td>
</tr>
<tr>
<td>File Transfer Protocol (FTP)</td>
<td>The FTP protocol is used for reliable data transfer between a client and a server.</td>
<td></td>
</tr>
<tr>
<td>Mount</td>
<td>The Mount protocol is separate from, but related to, the NFS protocol. It provides operating system specific services to launch the NFS protocol -- looking up server path names, validating user identity, and checking access permissions.</td>
<td></td>
</tr>
</tbody>
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<tr>
<th>APPLICATION</th>
<th>DESCRIPTION</th>
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</tr>
</thead>
<tbody>
<tr>
<td>NetBIOS</td>
<td>NetBIOS defines a software interface and standard methods providing a communication interface between the application program and the attached medium. NetBIOS is used in various LAN (Ethernet, Token Ring etc) as well as WAN environments such TCP/IP, PPP and X.25 networks.</td>
<td></td>
</tr>
<tr>
<td>Network File System (NFS)</td>
<td>NFS protocol provides transparent remote access to shared file systems across networks.</td>
<td></td>
</tr>
<tr>
<td>Network Lock Manager</td>
<td>The network lock manager is a facility that works in cooperation with the Network File System (NFS) to provide a System V style of advisory file and record locking over the network.</td>
<td></td>
</tr>
<tr>
<td>Remote synchronous (file transfer)</td>
<td>Rsync is a protocol used by various services performing updates. It greatly speeds up the update process since only the differences between two sets of files are transferred, instead of the whole new file.</td>
<td></td>
</tr>
<tr>
<td>Rquota</td>
<td>The RQuota protocol enables the implementation of quotas on remote machines. It is used in conjunction with the NFS protocol.</td>
<td></td>
</tr>
</tbody>
</table>
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</thead>
<tbody>
<tr>
<td>Rstat</td>
<td>The RStat protocol is used in the Sun NFS family to exchange statistics on network activity.</td>
<td></td>
</tr>
<tr>
<td>Rusers</td>
<td>The RUser's protocol provides a service that lists users currently logged on a remote server.</td>
<td></td>
</tr>
<tr>
<td>Server Message Block (Windows File Server) (SMB)</td>
<td>The Server Message Block Protocol (SMB) provides a method for client applications to read and write to files and to request services from server programs in a computers network.</td>
<td></td>
</tr>
<tr>
<td>Sync</td>
<td>The Sync protocol is an RPC service allowing data synchronisation.</td>
<td></td>
</tr>
<tr>
<td>Trivial File Transfer Protocol (TFTP)</td>
<td>Trivial File Transfer Protocol (TFTP) is a file transfer protocol that is simpler to use but than the File Transfer Protocol (FTP) but that proposes less features. TFTP uses the User Datagram Protocol (UDP) rather than the Transmission Control Protocol (TCP).</td>
<td></td>
</tr>
<tr>
<td>Yellow Pages Update</td>
<td>The Yellow Pages Update protocol enables information updates in Network Information Services (NIS) cards.</td>
<td></td>
</tr>
</tbody>
</table>
## Application Control Protocol List

### Table H-1. List of Support Applications

<table>
<thead>
<tr>
<th>Application</th>
<th>Description</th>
<th>Supported Applications</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>File Transfer</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>AIM Transfer Protocol</td>
<td>File transfer over AIM</td>
<td>&gt;=6.5</td>
</tr>
<tr>
<td>Jabber File Transfer</td>
<td>Jabber transfer is an open standard to transfer file between 2 Jabber clients.</td>
<td></td>
</tr>
<tr>
<td>PalTalk Transfer Protocol</td>
<td>PalTalk is an instant messaging protocol</td>
<td>9.4</td>
</tr>
<tr>
<td>Ymsg Transfer Protocol (Yahoo Messenger Transfer Protocol)</td>
<td>File transfer over ymsg</td>
<td>9.4</td>
</tr>
<tr>
<td><strong>Forum</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Google groups</td>
<td>Google groups</td>
<td></td>
</tr>
<tr>
<td>Internet Relay Chat (IRC)</td>
<td>IRC (Internet Relay Chat) is an instant messaging protocol.</td>
<td></td>
</tr>
<tr>
<td>MSN groups</td>
<td>MSN Groups</td>
<td>20080129fr 20080129en</td>
</tr>
<tr>
<td>Network News Transport Protocol (NNTP)</td>
<td>The Network News Transport Protocol (NNTP) is used for the distribution, inquiry, retrieval and posting of net news articles using a reliable stream-based mechanism.</td>
<td></td>
</tr>
</tbody>
</table>
### List of Support Applications

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<thead>
<tr>
<th>APPLICATION</th>
<th>DESCRIPTION</th>
<th>SUPPORTED APPLICATIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Secure IRC</td>
<td>IRCs is the secure version of the IRC protocol.</td>
<td></td>
</tr>
<tr>
<td>Secure NNTP</td>
<td>Secure version of the NNTP protocol.</td>
<td></td>
</tr>
<tr>
<td>Windows Live groups</td>
<td>MSN Groups</td>
<td>20091231</td>
</tr>
<tr>
<td>Yahoo groups</td>
<td>Yahoo! Groups</td>
<td>20080123fr</td>
</tr>
<tr>
<td></td>
<td></td>
<td>20080123en</td>
</tr>
<tr>
<td></td>
<td></td>
<td>20090205fr</td>
</tr>
<tr>
<td></td>
<td></td>
<td>20090205en</td>
</tr>
<tr>
<td><strong>Game</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CounterStrike</td>
<td>Network protocol used by CounterStrike game and Steam.</td>
<td></td>
</tr>
<tr>
<td>Quake</td>
<td>Quake is a protocol allowing communication between Quake Clients and Quake servers.</td>
<td></td>
</tr>
<tr>
<td>Steam</td>
<td>Steam is a digital distribution, digital rights management, multiplayer and communications platform developed by Valve Corporation.</td>
<td></td>
</tr>
<tr>
<td>World of Warcraft</td>
<td>WOW is an online game.</td>
<td>3.2.2.10505</td>
</tr>
</tbody>
</table>
**TABLE H-1. List of Support Applications**

<table>
<thead>
<tr>
<th>APPLICATION</th>
<th>DESCRIPTION</th>
<th>SUPPORTED APPLICATIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Xbox Live</td>
<td>Online multiplayer gaming and digital media delivery service created and operated by Microsoft Corporation.</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Instant Messaging</strong></td>
<td></td>
</tr>
<tr>
<td>AIM express</td>
<td>AOL Web Instant Messaging</td>
<td>20090504</td>
</tr>
<tr>
<td>AOL Instant Messenger (AIM)</td>
<td>AIM is an instant messaging protocol. Originally, it meant ‘AOL Instant Messenger’.</td>
<td>6.0 6.1 6.5 AgileMesse-</td>
</tr>
<tr>
<td></td>
<td>nger IM+</td>
<td></td>
</tr>
<tr>
<td>Gadu Gadu</td>
<td>Gadu Gadu is a Polish instant messaging protocol.</td>
<td></td>
</tr>
<tr>
<td>Gizmo Protocol</td>
<td>Gizmo is an instant messaging protocol.</td>
<td></td>
</tr>
<tr>
<td>Google Chat (Gmail Chat)</td>
<td>Google Webmessenger</td>
<td>20090430</td>
</tr>
<tr>
<td>Jabber Protocol</td>
<td>Jabber is an open standard instant messaging and presence system.</td>
<td>jingle pidgin psi</td>
</tr>
<tr>
<td>MSN live for Mobile</td>
<td>MSNMobile is MSN instant messenger for mobile.</td>
<td></td>
</tr>
</tbody>
</table>
TABLE H-1. List of Support Applications

<table>
<thead>
<tr>
<th>APPLICATION</th>
<th>DESCRIPTION</th>
<th>SUPPORTED APPLICATIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>MSN Messenger</td>
<td>The MSN protocol allows the exchange of instant messages. The MSN protocol is used by the Microsoft software Microsoft Messenger</td>
<td>4.7 6.5 7.5 8.1 8.5 AgileMessenger IM+ TOnline</td>
</tr>
<tr>
<td>MXit</td>
<td>MXit is a free instant messaging software application developed by MXit Lifestyle in South Africa that runs on GPRS/3G mobile phones and on PCs.</td>
<td>8.1 8.5 9.0 9.1 9.4</td>
</tr>
<tr>
<td>PalTalk Protocol</td>
<td>PalTalk is an instant messaging protocol.</td>
<td>8.1 8.5 9.0 9.1 9.4</td>
</tr>
<tr>
<td>Secure AIM</td>
<td>AIMS is the secure version of AIM.</td>
<td></td>
</tr>
<tr>
<td>Skype</td>
<td>Skype is a widely used free voice over IP protocol.</td>
<td>4.0 4.1 4.2 5.0b</td>
</tr>
</tbody>
</table>
TABLE H-1. List of Support Applications

<table>
<thead>
<tr>
<th>APPLICATION</th>
<th>DESCRIPTION</th>
<th>SUPPORTED APPLICATIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>TeamSpeak</td>
<td>TeamSpeak is proprietary Voice over IP protocol.</td>
<td>2</td>
</tr>
<tr>
<td>Yahoo Messenger</td>
<td>Yahoo Messenger is used by the Yahoo Instant Messenger application to send instant messages, files and emails between users.</td>
<td>&gt;=8.1</td>
</tr>
<tr>
<td>Yahoo Messenger conference service</td>
<td>This protocol is used in signaling part in a conference call.</td>
<td></td>
</tr>
<tr>
<td>Yahoo Messenger on web</td>
<td>Yahoo webmessenger</td>
<td></td>
</tr>
</tbody>
</table>

**Mail**

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Lotus Notes</td>
<td>Lotus Notes is a groupware knowledge management system which integrates various services such as web browsing, calendaring and mailing.</td>
<td></td>
</tr>
<tr>
<td>MS Exchange Message API (MAPI)</td>
<td>MS Exchange Message API is a protocol used by Exchange clients to retrieve their emails.</td>
<td></td>
</tr>
</tbody>
</table>
### TABLE H-1. List of Support Applications

<table>
<thead>
<tr>
<th>APPLICATION</th>
<th>DESCRIPTION</th>
<th>SUPPORTED APPLICATIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Post Office Protocol (POP3)</td>
<td>Post Office Protocol - Version 3 (POP3) allows a workstation to simply and dynamically access a mail stored on a mail server.</td>
<td></td>
</tr>
<tr>
<td>Secure IMAP</td>
<td>IMAPS is the secure version of IMAP.</td>
<td></td>
</tr>
<tr>
<td>Secure POP3</td>
<td>Secure version of the POP3 protocol.</td>
<td></td>
</tr>
<tr>
<td>Secure SMTP</td>
<td>Secure version of the SMTP protocol.</td>
<td></td>
</tr>
<tr>
<td>Simple Mail Transfer Protocol (SMTP)</td>
<td>The Simple Mail Transfer Protocol (SMTP) is a protocol used for transferring mail reliably and efficiently.</td>
<td></td>
</tr>
</tbody>
</table>

**Middleware**

<table>
<thead>
<tr>
<th>APPLICATION</th>
<th>DESCRIPTION</th>
<th>SUPPORTED APPLICATIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Advance Message Queuing Protocol</td>
<td>Advanced Message Queuing Protocol</td>
<td>0.8 0.9</td>
</tr>
<tr>
<td>Distributed Computing Environment Remote Procedure Call (DCERPC)</td>
<td>The DCERPC protocol is an RPC implementation used in Distributed Computing Environments. This protocol is used by many software applications including Microsoft Exchange.</td>
<td></td>
</tr>
</tbody>
</table>
## Table H-1. List of Support Applications

<table>
<thead>
<tr>
<th>Application</th>
<th>Description</th>
<th>Supported Applications</th>
</tr>
</thead>
<tbody>
<tr>
<td>General Inter-ORB Protocol (Corba) (CORBA)</td>
<td>The General Inter Orb protocol (GIOP) is used to make requests or return replies between ORBs in a Corba environment.</td>
<td></td>
</tr>
<tr>
<td>Remote Procedure Call (RPC)</td>
<td>RPC (Remote Procedure Call) is an easy and popular paradigm for implementing the client-server model of distributed computing. A request is sent to a remote system to execute a designated procedure, using arguments supplied, and the result is returned to the caller.</td>
<td></td>
</tr>
<tr>
<td>Simple Object Access Protocol (SOAP)</td>
<td>SOAP is a lightweight protocol intended for exchanging structured information in a decentralized, distributed environment. It defines, using XML technologies, an extensible messaging framework containing a message construct that can be exchanged over a variety of underlying protocols.</td>
<td></td>
</tr>
</tbody>
</table>

**Network Management**

| Cisco NetFlow Protocol | NetFlow is a Cisco protocol that provides nearly real-time traffic monitoring, aggregation and statistic evaluation, multicriterial data flow selection, using source/destination IP addresses, protocols, etc. |                        |

---
### Table H-1. List of Support Applications

<table>
<thead>
<tr>
<th>Application</th>
<th>Description</th>
<th>Supported Applications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Simple Network Management Protocol (SNMP)</td>
<td>SNMP is a request/response protocol that communicates management information between two types of SNMP software entities: SNMP applications (also called SNMP managers) and SNMP agents.</td>
<td>1 2c 2u 3</td>
</tr>
<tr>
<td>TD collect protocol</td>
<td>Tdcollect is a qosmos protocol used in the collect procedure between Qwork probes and Qcenter (Qosmos).</td>
<td></td>
</tr>
<tr>
<td>Connection Oriented Transfer Protocol (ISO)</td>
<td>COTP (Connection Oriented Transport Protocol) is a protocol ensuring the transport service in the OSI model.</td>
<td></td>
</tr>
<tr>
<td>Domain Name Service (DNS)</td>
<td>The DNS protocol is used to translate internet names (<a href="http://www.site.com">www.site.com</a>) into IP addresses and vice versa.</td>
<td></td>
</tr>
<tr>
<td>Dynamic Host Configuration Protocol (DHCP)</td>
<td>The DHCP protocol is used to configure automatically the network parameters of a station.</td>
<td></td>
</tr>
<tr>
<td>Group 3 facsimile communication over IP</td>
<td>This protocol is used to exchanges FAXes on top on TCP/IP.</td>
<td></td>
</tr>
</tbody>
</table>
### Table H-1. List of Support Applications

<table>
<thead>
<tr>
<th>Application</th>
<th>Description</th>
<th>Supported Applications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Multipoint Communication Service</td>
<td>Multipoint Communication Service (MCS) is a multipoint data delivery service for use in multimedia and audiovisual conferencing service. It provides the mechanism for multipoint aware applications to send data to all or a subset of the group with a single send primitive and to force, if desired, a uniformly sequenced reception of data for all users.</td>
<td></td>
</tr>
<tr>
<td>Netbios Name Service</td>
<td>NetBios Name Service (NBNS) is a protocol resulting from NetBios and which makes it possible to manage the names in a Microsoft NetBios network. NetBios names are human readable and NBNS serves the same purpose as the DNS system in IP environments.</td>
<td></td>
</tr>
<tr>
<td>Network Time Protocol (NTP)</td>
<td>Network Time Protocol (NTP) is a time synchronization system for computer clocks through the Internet network. It provides mechanisms to synchronize time and coordinate time distribution in a large network.</td>
<td></td>
</tr>
<tr>
<td>Resource Location Protocol</td>
<td>Resource Location Protocol (RLP) is a protocol used to discover the location of resources present in a network.</td>
<td></td>
</tr>
</tbody>
</table>
## Simple Network Paging Protocol

Protocol defines a method by which a pager can receive a message over the Internet.

## Simple Traversal of UDP through NATs

STUN (Simple Traversal of UDP through NATs) allows a client behind a NAT to establish UDP tunnels between two hosts.

## TIBCO Rendez-Vous Protocol

This protocol is used in financial domain (banks).

### Peer to Peer

<table>
<thead>
<tr>
<th>APPLICATION</th>
<th>DESCRIPTION</th>
<th>SUPPORTED APPLICATIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ares Protocol</td>
<td>Ares is a peer to peer protocol.</td>
<td>Ares2.1.1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Ares2.0</td>
</tr>
<tr>
<td>BitTorrent Protocol</td>
<td>BitTorrent is a peer-to-peer protocol.</td>
<td>Azureus</td>
</tr>
<tr>
<td></td>
<td></td>
<td>BitComet</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Deluge</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Ktorrent</td>
</tr>
<tr>
<td></td>
<td></td>
<td>BitTorrent</td>
</tr>
<tr>
<td></td>
<td></td>
<td>MLDonkey</td>
</tr>
<tr>
<td></td>
<td></td>
<td>utorrent</td>
</tr>
<tr>
<td>DirectConnect</td>
<td>DirectConnect is a peer to peer protocol.</td>
<td></td>
</tr>
<tr>
<td>Edonkey</td>
<td>Edonkey is a peer to peer protocol.</td>
<td>emule0.48a</td>
</tr>
</tbody>
</table>
### Table H-1. List of Support Applications

<table>
<thead>
<tr>
<th>Application</th>
<th>Description</th>
<th>Supported Applications</th>
</tr>
</thead>
<tbody>
<tr>
<td>fring - Peer to Peer Mobile VOIP</td>
<td>fring is a peer to peer Mobile VoIP based internet telephony network</td>
<td></td>
</tr>
<tr>
<td>Gnutella</td>
<td>Gnutella is a peer to peer protocol.</td>
<td>limewire&gt;=4.1 6.6 Shareaza&gt;=3.3.1.0 i mesh&gt;=7.2.0.45910</td>
</tr>
<tr>
<td>GoBoogy Protocol</td>
<td>Goboogy is a Peer To Peer protocol.</td>
<td></td>
</tr>
<tr>
<td>iMesh</td>
<td>iMesh is a peer to peer protocol.</td>
<td></td>
</tr>
<tr>
<td>Kazaa</td>
<td>Kazaa is a peer to peer protocol</td>
<td></td>
</tr>
<tr>
<td>Mute Protocol</td>
<td>Mute is a peer to peer protocol.</td>
<td></td>
</tr>
<tr>
<td>OpenFT Protocol</td>
<td>OpenFT is a peer to peer protocol.</td>
<td></td>
</tr>
<tr>
<td>Pando protocol</td>
<td>Pando is a peer to peer protocol.</td>
<td>&gt;=2.3.0.9</td>
</tr>
<tr>
<td>Real Time Messaging Protocol</td>
<td>Real Time Messaging Protocol (RTMP) is a proprietary protocol developed by Adobe Systems for streaming audio, video and data over the Internet, between a Flash player and a server.</td>
<td></td>
</tr>
</tbody>
</table>
### TABLE H-1. List of Support Applications

<table>
<thead>
<tr>
<th>APPLICATION</th>
<th>DESCRIPTION</th>
<th>SUPPORTED APPLICATIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Soulseek</td>
<td>Soulseek is a peer to peer protocol.</td>
<td>&gt;=1.56c</td>
</tr>
<tr>
<td>WinMX</td>
<td>WinMX is a peer to peer protocol.</td>
<td>3.53</td>
</tr>
<tr>
<td>Xunlei/Thunder protocol</td>
<td>Xunlei/Thunder protocol</td>
<td>20090430</td>
</tr>
<tr>
<td>Zattoo</td>
<td>Zattoo is a P2PTV protocol.</td>
<td></td>
</tr>
</tbody>
</table>

**Printer**

<table>
<thead>
<tr>
<th>Common Unix Printer System (CUPS)</th>
<th>The Common Unix Printer System (CUPS) protocol is a cross-platform printing solution for UNIX environments. It is based on the “Internet Printing Protocol” and it is compatible with Microsoft Operating systems since Windows 2000.</th>
</tr>
</thead>
<tbody>
<tr>
<td>HP Printer Job Language</td>
<td>The Jetdirect protocol is used by HP network printers.</td>
</tr>
<tr>
<td>Internet Printing Protocol</td>
<td>Internet Printing Protocol (IPP) is a standard used for distributed printing using Internet tools and technologies.</td>
</tr>
<tr>
<td>Line Printer Daemon</td>
<td>LPR is a protocol providing printing services and used in Berkeley distributions of the UNIX™ operating system.</td>
</tr>
</tbody>
</table>
### Table H-1. List of Support Applications

<table>
<thead>
<tr>
<th>APPLICATION</th>
<th>DESCRIPTION</th>
<th>SUPPORTED APPLICATIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Terminal</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Remote Login (RLOGIN)</td>
<td>The RLOGIN protocol allows to establish a bidirectional communication to distant terminals.</td>
<td></td>
</tr>
<tr>
<td>Remote Shell (RSH)</td>
<td>The RSH protocol allows a user to establish a secure connection to a remote host and to obtain a shell allowing commands to be sent to the remote machine to be executed.</td>
<td></td>
</tr>
<tr>
<td>Secure Shell (SSH)</td>
<td>Secure Shell (SSH), sometimes known as Secure Socket Shell, is a UNIX-based command interface and a protocol for obtaining secure access to a remote computer.</td>
<td></td>
</tr>
<tr>
<td>Secure TELNET (Secure Telnet)</td>
<td>Secure version of the Telnet.</td>
<td></td>
</tr>
<tr>
<td>Telnet</td>
<td>Telnet provides a fairly general, bi-directional, eight-bit byte oriented communications facility. Its primary aim is to provide a standard method of interfacing between terminal devices and terminal-oriented processes.</td>
<td></td>
</tr>
<tr>
<td>Tnip (Telnet VIP)</td>
<td>Telnet VIP is an emulation of the Telnet protocol for VIP (Visual Information Projection) terminals.</td>
<td></td>
</tr>
<tr>
<td>APPLICATION</td>
<td>DESCRIPTION</td>
<td>SUPPORTED APPLICATIONS</td>
</tr>
<tr>
<td>-------------------------------------------------</td>
<td>-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
<td>------------------------</td>
</tr>
<tr>
<td>Thin Client</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Independant Computing Architecture (Citrix)</td>
<td>ICA (Independent Computing Architecture) is a protocol of communication and a property of the Citrix company.</td>
<td></td>
</tr>
<tr>
<td>PCAnywhere</td>
<td>PCAnywhere is a remote control solution. It can manage both Windows and Linux systems. Enhanced video performance and built-in AES 256-bit encryption help make communications fast and secure. PCAnywhere also features powerful file-transfer capabilities.</td>
<td></td>
</tr>
<tr>
<td>Remote Desktop Protocol (Windows Terminal Server) (RDP)</td>
<td>A key component of terminal server is the Remote Desktop Protocol which allows a thin client to communicate with the terminal server over the network. This protocol is based on International Telecommunications Union's (ITU) T.120 protocol, an international, standard multichannel conferencing protocol currently used in the Microsoft NetMeeting conferencing software product. It is tuned for high-bandwidth enterprise environments and will also support encrypted sessions.</td>
<td>4 5 6</td>
</tr>
<tr>
<td>Remote Frame Buffer (VNC)</td>
<td>RFB (Remote Frame Buffer) is a simple protocol for remote access to graphical user interfaces.</td>
<td></td>
</tr>
</tbody>
</table>
### TABLE H-1. List of Support Applications

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<tr>
<th>APPLICATION</th>
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</tr>
</thead>
<tbody>
<tr>
<td>VMware</td>
<td>VMware is a protocol used by the VMware application, allowing it to have network interfaces and remote access to a virtual machine.</td>
<td></td>
</tr>
<tr>
<td>X-Window</td>
<td>X11 is designed to communicate all the information necessary to operate a window system over a single asynchronous bi-directional stream of 8-bit bytes. The X protocol specifies four types of messages but named extensions can also be defined to extend the system.</td>
<td></td>
</tr>
<tr>
<td>GPRS Tunneling Protocol</td>
<td>The GPRS Tunneling Protocol (GTP) is used to create a tunnel between the SGSN and GGSNs of a mobile operator network, thus allowing mobile station data to be transmitted.</td>
<td></td>
</tr>
<tr>
<td>Level 2 Tunneling Protocol (L2TP)</td>
<td>Layer Two Tunneling Protocol (L2TP) is an extension of the Point-to-Point Tunneling Protocol (PPTP) used by an Internet service provider (ISP) to enable the operation of a virtual private network (VPN) over the Internet.</td>
<td></td>
</tr>
<tr>
<td>OpenVPN</td>
<td>OpenVPN is used for establishing a secure connection between two entities</td>
<td></td>
</tr>
</tbody>
</table>

Tunneling
### List of Support Applications

<table>
<thead>
<tr>
<th>Application</th>
<th>Description</th>
<th>Supported Applications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Point-to-Point Tunneling Protocol (PPTP)</td>
<td>Point-to-Point Tunneling Protocol allows the Point to Point Protocol (PPP) to be tunnelled through an IP network.</td>
<td></td>
</tr>
<tr>
<td>Wireless Application Protocol (WAP)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MMS Encapsulation</td>
<td>MultiMedia Messages Encapsulation protocol (MMSE) is used by mobile stations to send multimedia messages.</td>
<td></td>
</tr>
<tr>
<td>Universal Computer Protocol</td>
<td>Universal Computer Protocol is used by some mobile phones to send SMS.</td>
<td></td>
</tr>
<tr>
<td>WAP Binary XML</td>
<td>The WAP Binary XML protocol defines an encoding scheme for the binary data used in WAP environments.</td>
<td></td>
</tr>
<tr>
<td>Wireless Session Protocol (WSP)</td>
<td>Wireless Session Protocol (WSP) is an application layer protocol present in the WAP stack. It is used by mobile stations to send SMS for example.</td>
<td></td>
</tr>
<tr>
<td>Wireless Transaction Protocol (WTP)</td>
<td>Wireless Transaction Protocol (WTP) is a transport layer protocol which belongs to the WAP stack. It provides a reliable transmission of network packets and is very similar to TCP.</td>
<td></td>
</tr>
<tr>
<td>APPLICATION</td>
<td>DESCRIPTION</td>
<td>SUPPORTED APPLICATIONS</td>
</tr>
<tr>
<td>-------------------------------------------------</td>
<td>-------------------------------------------------------------------------------------------------------</td>
<td>------------------------</td>
</tr>
<tr>
<td>Wireless Transport layer Security (WTLS)</td>
<td>Wireless Transport Layer Security (WTLS) is a security protocol, part of the WAP stack. It sits between the WTP and WDP layers in the WAP communications stack.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Web</td>
<td></td>
</tr>
<tr>
<td>2Shared</td>
<td>2shared is an online space for sharing and storage.</td>
<td></td>
</tr>
<tr>
<td>4Shared</td>
<td>4shared is an online space for sharing and storage.</td>
<td></td>
</tr>
<tr>
<td>Advogato</td>
<td>Contains web traffic from &quot;www.advogato.org&quot;.</td>
<td></td>
</tr>
<tr>
<td>Amie street</td>
<td>Contains web traffic from &quot;amiestreet.com&quot;.</td>
<td></td>
</tr>
<tr>
<td>aNobii</td>
<td>Contains web traffic from &quot;www.anobii.com&quot;.</td>
<td></td>
</tr>
<tr>
<td>Apple</td>
<td>Contains web traffic from &quot;www.apple.com&quot;.</td>
<td></td>
</tr>
<tr>
<td>Ask</td>
<td>Contains web traffic from &quot;www.ask.com&quot; and &quot;fr.ask.com&quot;.</td>
<td></td>
</tr>
</tbody>
</table>
### TABLE H-1. List of Support Applications

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<tr>
<th>APPLICATION</th>
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</tr>
</thead>
<tbody>
<tr>
<td>ASmallWorld</td>
<td>Contains web traffic from &quot;www.asmallworld.net&quot;.</td>
<td></td>
</tr>
<tr>
<td>Athlinks</td>
<td>Contains web traffic from &quot;www.athlinks.com&quot;.</td>
<td></td>
</tr>
<tr>
<td>Avatars united</td>
<td>Contains web traffic from &quot;www.avatarsunited.com&quot;.</td>
<td></td>
</tr>
<tr>
<td>Avoidr</td>
<td>Contains web traffic from &quot;www.avoidr.com&quot;.</td>
<td></td>
</tr>
<tr>
<td>Babycenter</td>
<td>Contains web traffic from &quot;www.babycenter.com&quot;.</td>
<td></td>
</tr>
<tr>
<td>Badoo</td>
<td>Contains web traffic from &quot;www.badoo.com&quot;.</td>
<td></td>
</tr>
<tr>
<td>Bebo</td>
<td>Bebo is a social networking website, enabling users to connect to relatives, friends, or unknown people.</td>
<td></td>
</tr>
<tr>
<td>Bigadda</td>
<td>Contains web traffic from &quot;www.bigadda.com&quot;.</td>
<td></td>
</tr>
<tr>
<td>BigTent</td>
<td>Contains web traffic from &quot;www.bigtent.com&quot;.</td>
<td></td>
</tr>
<tr>
<td>APPLICATION</td>
<td>DESCRIPTION</td>
<td>SUPPORTED APPLICATIONS</td>
</tr>
<tr>
<td>--------------</td>
<td>---------------------------------------------------</td>
<td>------------------------</td>
</tr>
<tr>
<td>Biip</td>
<td>Contains web traffic from “www.biip.no”.</td>
<td></td>
</tr>
<tr>
<td>BlackPlanet</td>
<td>Contains web traffic from “www.blackplanet.com”.</td>
<td></td>
</tr>
<tr>
<td>Blogster</td>
<td>Contains web traffic from “www.blogster.com”.</td>
<td></td>
</tr>
<tr>
<td>Bolt</td>
<td>Contains web traffic from “www.bolt.com”.</td>
<td></td>
</tr>
<tr>
<td>Books iRead</td>
<td>Contains web traffic from “weread.com”.</td>
<td></td>
</tr>
<tr>
<td>Buzznet</td>
<td>Contains web traffic from “www.buzznet.com”.</td>
<td></td>
</tr>
<tr>
<td>Bypassthat</td>
<td>Contains web traffic from “www.bypassthat.com”.</td>
<td></td>
</tr>
<tr>
<td>Cafemom</td>
<td>Contains web traffic from “www.cafemom.com”.</td>
<td></td>
</tr>
<tr>
<td>Care2</td>
<td>Contains web traffic from “www.care2.com”.</td>
<td></td>
</tr>
<tr>
<td>Cellufun</td>
<td>Contains web traffic from “m.cellufun.com”.</td>
<td></td>
</tr>
</tbody>
</table>
### TABLE H-1. List of Support Applications

<table>
<thead>
<tr>
<th>APPLICATION</th>
<th>DESCRIPTION</th>
<th>SUPPORTED APPLICATIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Classmates</td>
<td>Contains web traffic from “www.classmates.com”</td>
<td></td>
</tr>
<tr>
<td>Cloob</td>
<td>Contains web traffic from “www.cloob.com”</td>
<td></td>
</tr>
<tr>
<td>College Blender</td>
<td>Contains web traffic from “www.collegeblender.com”</td>
<td></td>
</tr>
<tr>
<td>Couch surfing</td>
<td>Contains web traffic from “www.couchsurfing.org”</td>
<td></td>
</tr>
<tr>
<td>Daily booth</td>
<td>Contains web traffic from “dailybooth.com”</td>
<td></td>
</tr>
<tr>
<td>Daily strength</td>
<td>Contains web traffic from “www.dailystrength.org”</td>
<td></td>
</tr>
<tr>
<td>Dailymotion</td>
<td>Dailymotion is a website where users can send or watch videos.</td>
<td></td>
</tr>
<tr>
<td>Decayenne</td>
<td>Contains web traffic from “www.decayenne.com”</td>
<td></td>
</tr>
<tr>
<td>Deezer</td>
<td>Contains web traffic from “www.deezer.com”</td>
<td></td>
</tr>
<tr>
<td>APPLICATION</td>
<td>DESCRIPTION</td>
<td>SUPPORTED APPLICATIONS</td>
</tr>
<tr>
<td>-----------------</td>
<td>-----------------------------------------------------------------------------</td>
<td>------------------------</td>
</tr>
<tr>
<td>Deviant Art</td>
<td>Contains web traffic from “www.deviantart.com”.</td>
<td></td>
</tr>
<tr>
<td>DigitalVerse</td>
<td>Contains web traffic from “www.digitalverse.org”.</td>
<td></td>
</tr>
<tr>
<td>Disaboom</td>
<td>Contains web traffic from “www.disaboom.com”.</td>
<td></td>
</tr>
<tr>
<td>Dol2day</td>
<td>Contains web traffic from “www.dol2day.com”.</td>
<td></td>
</tr>
<tr>
<td>DontStayIn</td>
<td>Contains web traffic from “www.dontstayin.com”.</td>
<td></td>
</tr>
<tr>
<td>Doubleclick ads</td>
<td>Doubleclick Ads</td>
<td></td>
</tr>
<tr>
<td>Draugiem</td>
<td>Contains web traffic from “www.draugiem.lv”.</td>
<td></td>
</tr>
<tr>
<td>eBuddy</td>
<td>eBuddy is a web and mobile messenger which supports various instant messaging.</td>
<td></td>
</tr>
<tr>
<td>Elftown</td>
<td>Contains web traffic from “www.elftown.com”.</td>
<td></td>
</tr>
</tbody>
</table>
**TABLE H-1. List of Support Applications**

<table>
<thead>
<tr>
<th>APPLICATION</th>
<th>DESCRIPTION</th>
<th>SUPPORTED APPLICATIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eons</td>
<td>Contains web traffic from “www.eons.com”.</td>
<td></td>
</tr>
<tr>
<td>Epernicus</td>
<td>Contains web traffic from “www.epernicus.com”.</td>
<td></td>
</tr>
<tr>
<td>Expedia</td>
<td>Contains web traffic from “www.expedia.com” and “www.expedia.fr”.</td>
<td></td>
</tr>
<tr>
<td>Experience Project</td>
<td>Contains web traffic from “www.experienceproject.com”.</td>
<td></td>
</tr>
<tr>
<td>Exploroo</td>
<td>Contains web traffic from “www.exploroo.com”.</td>
<td></td>
</tr>
<tr>
<td>Facebook</td>
<td>Facebook is a social network.</td>
<td></td>
</tr>
<tr>
<td>Faceparty</td>
<td>Contains web traffic from “www.faceparty.com”.</td>
<td></td>
</tr>
<tr>
<td>Faces</td>
<td>Contains web traffic from “www.faces.com”.</td>
<td></td>
</tr>
<tr>
<td>Fetlife</td>
<td>Contains web traffic from “fetlife.com”.</td>
<td></td>
</tr>
<tr>
<td>FileFlyer</td>
<td>FileFlyer is an online solution to store, send and share files</td>
<td></td>
</tr>
<tr>
<td>APPLICATION</td>
<td>DESCRIPTION</td>
<td>SUPPORTED APPLICATIONS</td>
</tr>
<tr>
<td>---------------------</td>
<td>-----------------------------------------------------------------------------</td>
<td>-------------------------</td>
</tr>
<tr>
<td>Fillos de Galicia</td>
<td>Contains web traffic from “fillos.org”.</td>
<td></td>
</tr>
<tr>
<td>FilmAffinity</td>
<td>Contains web traffic from “www.filmaffinity.com”.</td>
<td></td>
</tr>
<tr>
<td>FledgeWing</td>
<td>Contains web traffic from “www.fledgewing.com”.</td>
<td></td>
</tr>
<tr>
<td>Flickr</td>
<td>Contains web traffic from “www.flickr.com”.</td>
<td></td>
</tr>
<tr>
<td>Flixster</td>
<td>Contains web traffic from “www.flixster.com”.</td>
<td></td>
</tr>
<tr>
<td>Fotolog</td>
<td>Contains web traffic from “www.fotolog.com”.</td>
<td></td>
</tr>
<tr>
<td>Foursquare</td>
<td>Contains web traffic from “foursquare.com”.</td>
<td></td>
</tr>
<tr>
<td>Friends Reunited</td>
<td>Contains web traffic from “www.friendsreunited.com”.</td>
<td></td>
</tr>
<tr>
<td>Friendster</td>
<td>Friendster is a social networking website, enabling users to connect to</td>
<td></td>
</tr>
<tr>
<td></td>
<td>relatives, friends, or unknown people.</td>
<td></td>
</tr>
</tbody>
</table>
### TABLE H-1. List of Support Applications

<table>
<thead>
<tr>
<th>APPLICATION</th>
<th>DESCRIPTION</th>
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</tr>
</thead>
<tbody>
<tr>
<td>Fruhstuckstreff</td>
<td>Contains web traffic from “www.fruhstueckstreff.de”.</td>
<td></td>
</tr>
<tr>
<td>Fubar</td>
<td>Contains web traffic from “www.fubar.com”.</td>
<td></td>
</tr>
<tr>
<td>GaiaOnline</td>
<td>Contains web traffic from “www.gaiaonline.com”.</td>
<td></td>
</tr>
<tr>
<td>GamerDNA</td>
<td>Contains web traffic from “www.gamerdna.com”.</td>
<td></td>
</tr>
<tr>
<td>Gather</td>
<td>Contains web traffic from “www.gather.com”.</td>
<td></td>
</tr>
<tr>
<td>Gays</td>
<td>Contains web traffic from “gays.com”.</td>
<td></td>
</tr>
<tr>
<td>Geni</td>
<td>Contains web traffic from “www.geni.com”.</td>
<td></td>
</tr>
<tr>
<td>Gogoyoko</td>
<td>Contains web traffic from “www.gogoyoko.com”.</td>
<td></td>
</tr>
<tr>
<td>Goodreads</td>
<td>Contains web traffic from “www.goodreads.com”.</td>
<td></td>
</tr>
</tbody>
</table>
### Table H-1. List of Support Applications

<table>
<thead>
<tr>
<th>Application</th>
<th>Description</th>
<th>Supported Applications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Google</td>
<td>This protocol is used for sending user queries to the famous Google search engine.</td>
<td></td>
</tr>
<tr>
<td>Google ads</td>
<td>Google Ads</td>
<td></td>
</tr>
<tr>
<td>Google Earth</td>
<td>Google Earth is a program used to view the virtual globe.</td>
<td></td>
</tr>
<tr>
<td>Google Maps</td>
<td>Google Maps can be used to calculate routes or to look at maps.</td>
<td></td>
</tr>
<tr>
<td>Gougou Search engine</td>
<td>Gougou is a Chinese web search engine.</td>
<td></td>
</tr>
<tr>
<td>Grono</td>
<td>Contains web traffic from “grono.net”.</td>
<td></td>
</tr>
<tr>
<td>Habbo</td>
<td>Contains web traffic from “www.habbo.fr” and “www.habbo.com”.</td>
<td></td>
</tr>
<tr>
<td>Hi5</td>
<td>hi5 is a social networking website, enabling users to connect to relatives, friends, or unknown people.</td>
<td></td>
</tr>
<tr>
<td>Hospitality Club</td>
<td>Contains web traffic from “www.hospitalityclub.org”.</td>
<td></td>
</tr>
</tbody>
</table>
The Hypertext Transfer Protocol (HTTP) is used for browsing the web.

<table>
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<tr>
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<th>DESCRIPTION</th>
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</tr>
</thead>
<tbody>
<tr>
<td>Hyper Text Transfer Protocol (HTTP)</td>
<td>The Hypertext Transfer Protocol (HTTP) is used for browsing the web.</td>
<td>1.0 1.1</td>
</tr>
<tr>
<td>Hyves</td>
<td>Contains web traffic from “www.hyves.nl”.</td>
<td></td>
</tr>
<tr>
<td>Ibibo</td>
<td>Contains web traffic from “www.ibibo.com”.</td>
<td></td>
</tr>
<tr>
<td>Imeem</td>
<td>Contains web traffic from “www.imeem.com”.</td>
<td></td>
</tr>
<tr>
<td>Indaba Music</td>
<td>Contains web traffic from “www.indabamusic.com”.</td>
<td></td>
</tr>
<tr>
<td>InterNations</td>
<td>Contains web traffic from “www.internations.org”.</td>
<td></td>
</tr>
<tr>
<td>IRC Galleria</td>
<td>Contains web traffic from “irc-galleria.net”.</td>
<td></td>
</tr>
<tr>
<td>Italki</td>
<td>Contains web traffic from “www.italki.com”.</td>
<td></td>
</tr>
<tr>
<td>Itsmy</td>
<td>Contains web traffic from “mobile.itsmy.com”.</td>
<td></td>
</tr>
<tr>
<td>Iwiw</td>
<td>Contains web traffic from “iwiw.hu”.</td>
<td></td>
</tr>
</tbody>
</table>
**TABLE H-1. List of Support Applications**

<table>
<thead>
<tr>
<th>APPLICATION</th>
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</tr>
</thead>
<tbody>
<tr>
<td>Jaiku</td>
<td>Contains web traffic from &quot;www.jaiku.com&quot;.</td>
<td></td>
</tr>
<tr>
<td>JammerDirect</td>
<td>Contains web traffic from &quot;www.jammerdirect.com&quot;.</td>
<td></td>
</tr>
<tr>
<td>Kaioo</td>
<td>Contains web traffic from &quot;kaioo.com&quot;.</td>
<td></td>
</tr>
<tr>
<td>Kaixin001</td>
<td>Contains web traffic from &quot;www.kaixin001.com&quot;.</td>
<td></td>
</tr>
<tr>
<td>Kiwibox</td>
<td>Contains web traffic from &quot;www.kiwibox.com&quot;.</td>
<td></td>
</tr>
<tr>
<td>Kproxy</td>
<td>Contains web traffic from &quot;www.kproxy.com&quot;.</td>
<td></td>
</tr>
<tr>
<td>Lastfm</td>
<td>Contains web traffic from &quot;www.last.fm&quot;.</td>
<td></td>
</tr>
<tr>
<td>LibraryThing</td>
<td>Contains web traffic from &quot;www.librarything.com&quot;.</td>
<td></td>
</tr>
<tr>
<td>Lifeknot</td>
<td>Contains web traffic from &quot;www.lifeknot.com&quot;.</td>
<td></td>
</tr>
<tr>
<td>Listografy</td>
<td>Contains web traffic from &quot;listography.com&quot;.</td>
<td></td>
</tr>
</tbody>
</table>
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<table>
<thead>
<tr>
<th>APPLICATION</th>
<th>DESCRIPTION</th>
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</tr>
</thead>
<tbody>
<tr>
<td>Live</td>
<td>Contains web traffic from “www.live.com”.</td>
<td></td>
</tr>
<tr>
<td>LiveJournal</td>
<td>Contains web traffic from “www.livejournal.com”.</td>
<td></td>
</tr>
<tr>
<td>Livemocha</td>
<td>Contains web traffic from “www.livemocha.com”.</td>
<td></td>
</tr>
<tr>
<td>Lunarstorm</td>
<td>Contains web traffic from “www.lunarstorm.se”.</td>
<td></td>
</tr>
<tr>
<td>MEETin</td>
<td>Contains web traffic from “www.meetin.org”.</td>
<td></td>
</tr>
<tr>
<td>Meettheboss</td>
<td>Contains web traffic from “www.meettheboss.tv”.</td>
<td></td>
</tr>
<tr>
<td>Meetup</td>
<td>Contains web traffic from “www.meetup.com”.</td>
<td></td>
</tr>
<tr>
<td>Megaproxy</td>
<td>Contains web traffic from “www.megaproxy.fr”.</td>
<td></td>
</tr>
<tr>
<td>Megaupload</td>
<td>Megaupload is an online solution to store, send and share files</td>
<td></td>
</tr>
<tr>
<td>Mixi</td>
<td>Contains web traffic from “mixi.jp”.</td>
<td></td>
</tr>
</tbody>
</table>
**TABLE H-1. List of Support Applications**

<table>
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<tr>
<th>APPLICATION</th>
<th>DESCRIPTION</th>
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</tr>
</thead>
<tbody>
<tr>
<td>MocoSpace</td>
<td>Contains web traffic from &quot;www.mocospace.com&quot;.</td>
<td></td>
</tr>
<tr>
<td>MOG</td>
<td>Contains web traffic from &quot;mog.com&quot;.</td>
<td></td>
</tr>
<tr>
<td>MouthShut</td>
<td>Contains web traffic from &quot;www.mouthshut.com&quot;.</td>
<td></td>
</tr>
<tr>
<td>Mapquest</td>
<td>Contains web traffic from &quot;www.mapquest.com&quot; and &quot;www.mapquest.fr&quot;.</td>
<td></td>
</tr>
<tr>
<td>MSN search</td>
<td>This protocol is used for sending user queries to the MSN Live search engine.</td>
<td></td>
</tr>
<tr>
<td>Multiply</td>
<td>Contains web traffic from &quot;multiply.com&quot;.</td>
<td></td>
</tr>
<tr>
<td>Muxlim</td>
<td>Contains web traffic from &quot;muxlim.com&quot;.</td>
<td></td>
</tr>
<tr>
<td>My Opera</td>
<td>Contains web traffic from &quot;my.opera.com&quot;.</td>
<td></td>
</tr>
<tr>
<td>MyAnimeList</td>
<td>Contains web traffic from &quot;myanimelist.net&quot;.</td>
<td></td>
</tr>
</tbody>
</table>
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</thead>
<tbody>
<tr>
<td>MyChurch</td>
<td>Contains web traffic from “www.mychurch.org”.</td>
<td></td>
</tr>
<tr>
<td>MyHeritage</td>
<td>Contains web traffic from “www.myheritage.fr”.</td>
<td></td>
</tr>
<tr>
<td>MyLife</td>
<td>Contains web traffic from “www.mylife.com”.</td>
<td></td>
</tr>
<tr>
<td>Myspace</td>
<td>MySpace is one of most popular social networking sites on the Web.</td>
<td></td>
</tr>
<tr>
<td>MyYearBook</td>
<td>Contains web traffic from “www.myyearbook.com”.</td>
<td></td>
</tr>
<tr>
<td>Nasza Klasa</td>
<td>Contains web traffic from “nasza-klasa.pl”.</td>
<td></td>
</tr>
<tr>
<td>Netlog</td>
<td>Netlog is a social networking website, enabling users to connect to relatives, friends, or unknown people.</td>
<td></td>
</tr>
<tr>
<td>Nettby</td>
<td>Contains web traffic from “www.nettby.no”.</td>
<td></td>
</tr>
<tr>
<td>Nexopia</td>
<td>Contains web traffic from “www.nexopia.com”.</td>
<td></td>
</tr>
</tbody>
</table>
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</thead>
<tbody>
<tr>
<td>NGO Post</td>
<td>Contains web traffic from “ngopost.org”.</td>
<td></td>
</tr>
<tr>
<td>Ning</td>
<td>Contains web traffic from “www.ning.com”.</td>
<td></td>
</tr>
<tr>
<td>Odnoklassniki</td>
<td>Contains web traffic from “odnoklassniki.ru”.</td>
<td></td>
</tr>
<tr>
<td>Officedepot</td>
<td>Contains web traffic from “www.officedepot.com” and “www.officedepot.fr”.</td>
<td></td>
</tr>
<tr>
<td>OneClimate</td>
<td>Contains web traffic from “www.oneclimate.net”.</td>
<td></td>
</tr>
<tr>
<td>OneWorldTV</td>
<td>Contains web traffic from “tv.oneworld.net”.</td>
<td></td>
</tr>
<tr>
<td>Open Diary</td>
<td>Contains web traffic from “www.opendiary.com”.</td>
<td></td>
</tr>
<tr>
<td>Orkut</td>
<td>Contains web traffic from “www.orkut.com”.</td>
<td></td>
</tr>
<tr>
<td>OUTeverywhere</td>
<td>Contains web traffic from “www.outeverywhere.com”.</td>
<td></td>
</tr>
</tbody>
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<tr>
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</tr>
</thead>
<tbody>
<tr>
<td>PartnerUp</td>
<td>Contains web traffic from &quot;www.partnerup.com&quot;.</td>
<td></td>
</tr>
<tr>
<td>PassportStamp</td>
<td>Contains web traffic from &quot;www.passportstamp.com&quot;.</td>
<td></td>
</tr>
<tr>
<td>Perfspot</td>
<td>Perfspot is a social networking website, enabling users to connect to relatives, friends, or unknown people and share files.</td>
<td></td>
</tr>
<tr>
<td>Pingsta</td>
<td>Contains web traffic from &quot;www.pingsta.com&quot;.</td>
<td></td>
</tr>
<tr>
<td>Plaxo</td>
<td>Contains web traffic from &quot;www.plaxo.com&quot;.</td>
<td></td>
</tr>
<tr>
<td>Playahead</td>
<td>Contains web traffic from &quot;www.playahead.se&quot;.</td>
<td></td>
</tr>
<tr>
<td>Plurk</td>
<td>Contains web traffic from &quot;www.plurk.com&quot;.</td>
<td></td>
</tr>
<tr>
<td>Pogo</td>
<td>Contains web traffic from &quot;www.pogo.com&quot;.</td>
<td></td>
</tr>
<tr>
<td>Present</td>
<td>Contains web traffic from &quot;presentlyapp.com&quot;.</td>
<td></td>
</tr>
</tbody>
</table>
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<tr>
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</tr>
</thead>
<tbody>
<tr>
<td>PriceRunner</td>
<td>PriceRunner is a price comparison service.</td>
<td></td>
</tr>
<tr>
<td>Proxeasy</td>
<td>Contains web traffic from “www.proxeasy.com”.</td>
<td></td>
</tr>
<tr>
<td>Proxono</td>
<td>Contains web traffic from “www.proxono.org” and “www.proxono.info”.</td>
<td></td>
</tr>
<tr>
<td>Qapacity</td>
<td>Contains web traffic from “www.qapacity.com”.</td>
<td></td>
</tr>
<tr>
<td>Quarterlife</td>
<td>Contains web traffic from “www.quarterlife.com”.</td>
<td></td>
</tr>
<tr>
<td>Qzone</td>
<td>Contains web traffic from “qzone.qq.com”.</td>
<td></td>
</tr>
<tr>
<td>Rambler</td>
<td>Rambler is Russian information internet gate.</td>
<td></td>
</tr>
<tr>
<td>RapidShare</td>
<td>RapidShare is an online solution to store, send and share files</td>
<td></td>
</tr>
<tr>
<td>Ravelry</td>
<td>Contains web traffic from “www.ravelry.com”.</td>
<td></td>
</tr>
</tbody>
</table>
### TABLE H-1. List of Support Applications

<table>
<thead>
<tr>
<th>APPLICATION</th>
<th>DESCRIPTION</th>
<th>SUPPORTED APPLICATIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Realtor</td>
<td>Contains web traffic from &quot;www.realtor.com&quot;.</td>
<td></td>
</tr>
<tr>
<td>Renren</td>
<td>Contains web traffic from &quot;renren.com&quot;.</td>
<td></td>
</tr>
<tr>
<td>ResearchGATE</td>
<td>Contains web traffic from &quot;www.researchgate.net&quot;.</td>
<td></td>
</tr>
<tr>
<td>ReverbNation</td>
<td>Contains web traffic from &quot;www.reverbnation.com&quot;.</td>
<td></td>
</tr>
<tr>
<td>Runescape</td>
<td>Contains web traffic from &quot;www.runescape.com&quot;.</td>
<td></td>
</tr>
<tr>
<td>Ryze</td>
<td>Contains web traffic from &quot;www.ryze.com&quot;.</td>
<td></td>
</tr>
<tr>
<td>ScienceStage</td>
<td>Contains web traffic from &quot;sciencestage.com&quot;.</td>
<td></td>
</tr>
<tr>
<td>Scispace</td>
<td>Contains web traffic from &quot;www.scispace.com&quot;.</td>
<td></td>
</tr>
<tr>
<td>Second Life</td>
<td>Second Life is an Internet-based virtual world which enables its users to interact with each other through motional avatars.</td>
<td></td>
</tr>
</tbody>
</table>
### TABLE H-1. List of Support Applications

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<tr>
<th>APPLICATION</th>
<th>DESCRIPTION</th>
<th>SUPPORTED APPLICATIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Secure HTTP</td>
<td>HTTPS is the secure version of HTTP.</td>
<td></td>
</tr>
<tr>
<td>SendSpace</td>
<td>SendSpace is an online solution to store, send and share files</td>
<td></td>
</tr>
<tr>
<td>ShareTheMusic</td>
<td>Contains web traffic from &quot;www.sharethemusic.com&quot;.</td>
<td></td>
</tr>
<tr>
<td>Shelfari</td>
<td>Contains web traffic from &quot;www.shelfari.com&quot;.</td>
<td></td>
</tr>
<tr>
<td>SkyBlog</td>
<td>SkyBlog is a website where users can have blogs.</td>
<td></td>
</tr>
<tr>
<td>Skyrock</td>
<td>Contains web traffic from &quot;www.skyrock.com&quot;.</td>
<td></td>
</tr>
<tr>
<td>SocialVibe</td>
<td>Contains web traffic from &quot;www.socialvibe.com&quot;.</td>
<td></td>
</tr>
<tr>
<td>Sonico</td>
<td>Contains web traffic from &quot;www.sonico.com&quot;.</td>
<td></td>
</tr>
<tr>
<td>Southwest</td>
<td>Contains web traffic from &quot;www.southwest.com&quot;.</td>
<td></td>
</tr>
<tr>
<td>Stickam</td>
<td>Contains web traffic from &quot;www.stickam.com&quot;.</td>
<td></td>
</tr>
</tbody>
</table>
### TABLE H-1. List of Support Applications

<table>
<thead>
<tr>
<th>APPLICATION</th>
<th>DESCRIPTION</th>
<th>SUPPORTED APPLICATIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>StudiVZ</td>
<td>Contains web traffic from &quot;www.studivz.net&quot;.</td>
<td></td>
</tr>
<tr>
<td>StumbleUpon</td>
<td>Contains web traffic from &quot;www.stumbleupon.com&quot;.</td>
<td></td>
</tr>
<tr>
<td>Surrogafier</td>
<td>Contains web traffic from &quot;www.surrogafier.info&quot;.</td>
<td></td>
</tr>
<tr>
<td>Tagged</td>
<td>Tagged is a social networking website, enabling users to connect to relatives, friends, or unknown people.</td>
<td></td>
</tr>
<tr>
<td>TalentTrove</td>
<td>Contains web traffic from &quot;lafango.com&quot;.</td>
<td></td>
</tr>
<tr>
<td>Talkbiznow</td>
<td>Contains web traffic from &quot;www.talkbiznow.com&quot;.</td>
<td></td>
</tr>
<tr>
<td>Taltopia</td>
<td>Contains web traffic from &quot;www.taltopia.com&quot;.</td>
<td></td>
</tr>
<tr>
<td>Taringa</td>
<td>Contains web traffic from &quot;www.taringa.net&quot;.</td>
<td></td>
</tr>
<tr>
<td>Tchatche</td>
<td>Tchatche is an instant messaging website.</td>
<td></td>
</tr>
</tbody>
</table>
### Table H-1. List of Support Applications

<table>
<thead>
<tr>
<th>Application</th>
<th>Description</th>
<th>Supported Applications</th>
</tr>
</thead>
<tbody>
<tr>
<td>TeachStreet</td>
<td>Contains web traffic from “www.teachstreet.com”.</td>
<td></td>
</tr>
<tr>
<td>The Auteurs</td>
<td>Contains web traffic from “www.theauteurs.com”.</td>
<td></td>
</tr>
<tr>
<td>TravBuddy</td>
<td>Contains web traffic from “www.travbuddy.com”.</td>
<td></td>
</tr>
<tr>
<td>Travellerspoint</td>
<td>Contains web traffic from “www.travellerspoint.com”.</td>
<td></td>
</tr>
<tr>
<td>Travelocity</td>
<td>Contains web traffic from “www.travelocity.com”.</td>
<td></td>
</tr>
<tr>
<td>Tribe</td>
<td>Contains web traffic from “www.tribe.net”.</td>
<td></td>
</tr>
<tr>
<td>Trombi</td>
<td>Contains web traffic from “www.trombi.com”.</td>
<td></td>
</tr>
<tr>
<td>Tuenti</td>
<td>Contains web traffic from “www.tuenti.com”.</td>
<td></td>
</tr>
<tr>
<td>Tumblr</td>
<td>Contains web traffic from “www.tumblr.com”.</td>
<td></td>
</tr>
<tr>
<td>Twitter</td>
<td>Contains web traffic from “twitter.com”.</td>
<td></td>
</tr>
</tbody>
</table>
### TABLE H-1. List of Support Applications

<table>
<thead>
<tr>
<th>APPLICATION</th>
<th>DESCRIPTION</th>
<th>SUPPORTED APPLICATIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>VampireFreaks</td>
<td>Contains web traffic from &quot;www.vampirefreaks.com&quot;.</td>
<td></td>
</tr>
<tr>
<td>Viadeo</td>
<td>Contains web traffic from &quot;www.viadeo.com&quot;.</td>
<td></td>
</tr>
<tr>
<td>Vkontakte</td>
<td>Contains web traffic from &quot;odnoklassniki.ru&quot;.</td>
<td></td>
</tr>
<tr>
<td>Vox</td>
<td>Contains web traffic from &quot;www.vox.com&quot;.</td>
<td></td>
</tr>
<tr>
<td>Vtunnel</td>
<td>Contains web traffic from &quot;www.vtunnel.com&quot; and &quot;www.vtunnel.info&quot;.</td>
<td></td>
</tr>
<tr>
<td>Wakoopa</td>
<td>Contains web traffic from &quot;wakoopa.com&quot;.</td>
<td></td>
</tr>
<tr>
<td>Wasabi</td>
<td>Contains web traffic from &quot;wasabi.com&quot;.</td>
<td></td>
</tr>
<tr>
<td>Wayn</td>
<td>Contains web traffic from &quot;www.wayn.com&quot;.</td>
<td></td>
</tr>
<tr>
<td>WebBiographies</td>
<td>Contains web traffic from &quot;www.webbiographies.com&quot;.</td>
<td></td>
</tr>
<tr>
<td>APPLICATION</td>
<td>DESCRIPTION</td>
<td>SUPPORTED APPLICATIONS</td>
</tr>
<tr>
<td>----------------------</td>
<td>-----------------------------------------------------------------------------</td>
<td>------------------------</td>
</tr>
<tr>
<td>WeOurFamily</td>
<td>Contains web traffic from &quot;www.weourfamily.com&quot;.</td>
<td></td>
</tr>
<tr>
<td>WerKenntWen</td>
<td>Contains web traffic from &quot;www.wer-kennt-wen.de&quot;.</td>
<td></td>
</tr>
<tr>
<td>Wikipedia</td>
<td>Wikipedia is the biggest multilingual free-content encyclopedia on the Internet.</td>
<td></td>
</tr>
<tr>
<td>Windowslive</td>
<td>Contains web traffic from &quot;home.spaces.live.com&quot; and &quot;www.windowslive.fr&quot;.</td>
<td></td>
</tr>
<tr>
<td>Windows LiveSpace</td>
<td>Contains web traffic from &quot;login.live.com&quot;.</td>
<td></td>
</tr>
<tr>
<td>WiserEarth</td>
<td>Contains web traffic from &quot;www.wiserearth.org&quot;.</td>
<td></td>
</tr>
<tr>
<td>Wordpress</td>
<td>Contains web traffic from &quot;wordpress.com&quot;.</td>
<td></td>
</tr>
<tr>
<td>Xanga</td>
<td>Contains web traffic from &quot;www.xanga.com&quot;.</td>
<td></td>
</tr>
<tr>
<td>Xing</td>
<td>Contains web traffic from &quot;www.xing.com&quot;.</td>
<td></td>
</tr>
</tbody>
</table>
### TABLE H-1.  List of Support Applications

<table>
<thead>
<tr>
<th>APPLICATION</th>
<th>DESCRIPTION</th>
<th>SUPPORTED APPLICATIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>XMLRPC protocol</td>
<td>It's remote procedure calling using HTTP as the transport and XML as the encoding. XML-RPC is designed to be as simple as possible, while allowing complex data structures to be transmitted, processed and returned.</td>
<td></td>
</tr>
<tr>
<td>Xt3</td>
<td>Contains web traffic from “www.xt3.com”.</td>
<td></td>
</tr>
<tr>
<td>Yahoo answers</td>
<td>Contains web traffic from “answers.yahoo.com”.</td>
<td></td>
</tr>
<tr>
<td>Yahoo biz</td>
<td>Contains web traffic from “fr.biz.yahoo.com” and “finance.yahoo.com”.</td>
<td></td>
</tr>
<tr>
<td>Yahoo games</td>
<td>Contains web traffic from “games.yahoo.com”.</td>
<td></td>
</tr>
<tr>
<td>Yahoo geocities</td>
<td>Contains web traffic from “geocities.yahoo.com”.</td>
<td></td>
</tr>
<tr>
<td>Yahoo maps</td>
<td>Contains web traffic from “maps.yahoo.com”.</td>
<td></td>
</tr>
<tr>
<td>Yahoo realestate</td>
<td>Contains web traffic from “realestate.yahoo.com”.</td>
<td></td>
</tr>
<tr>
<td>APPLICATION</td>
<td>DESCRIPTION</td>
<td>SUPPORTED APPLICATIONS</td>
</tr>
<tr>
<td>------------------------------</td>
<td>------------------------------------------------------------------------------</td>
<td>------------------------</td>
</tr>
<tr>
<td>Yahoo search</td>
<td>This protocol is used to send queries to the Yahoo search engine.</td>
<td></td>
</tr>
<tr>
<td>Yahoo travel</td>
<td>Contains web traffic from “travel.yahoo.com” and “fr.voyage.yahoo.com”.</td>
<td></td>
</tr>
<tr>
<td>Yahoo360PlusVietnam</td>
<td>Contains web traffic from “vn.360plus.yahoo.com”.</td>
<td></td>
</tr>
<tr>
<td>Yammer</td>
<td>Contains web traffic from “www.yammer.com”.</td>
<td></td>
</tr>
<tr>
<td>Yandex</td>
<td>Yandex is Russian information internet gate.</td>
<td></td>
</tr>
<tr>
<td>Yelp</td>
<td>Contains web traffic from “www.yelp.com”.</td>
<td></td>
</tr>
<tr>
<td>Youmeo</td>
<td>Contains web traffic from “calumbrannan.com”.</td>
<td></td>
</tr>
<tr>
<td>Youtube</td>
<td>Youtube is a website where users can send or watch videos.</td>
<td></td>
</tr>
<tr>
<td>Zelune</td>
<td>Contains web traffic from “www.zelune.info”.</td>
<td></td>
</tr>
</tbody>
</table>
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<table>
<thead>
<tr>
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</tr>
</thead>
<tbody>
<tr>
<td>Zoo</td>
<td>Contains web traffic from &quot;www.zoo.gr&quot;.</td>
<td></td>
</tr>
<tr>
<td>zShare</td>
<td>zShare is an online solution to store, send and share files</td>
<td></td>
</tr>
<tr>
<td><em>Webmail</em></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dynamic Internet Messaging Program</td>
<td>Webmail DIMP</td>
<td></td>
</tr>
<tr>
<td>Facebook mail</td>
<td>Facebook_mail is a webmail environment on Facebook.</td>
<td></td>
</tr>
<tr>
<td>Gmail basic (Gmail)</td>
<td>Webmail Google, HTML version</td>
<td></td>
</tr>
<tr>
<td>Gmail mobile version</td>
<td>Gmail_mobile is the google webmail for mobile phones</td>
<td></td>
</tr>
<tr>
<td>Google Mail (Gmail)</td>
<td>Google webmail</td>
<td>20100630</td>
</tr>
<tr>
<td>IMP mobile version</td>
<td>MIMP is the IMP webmail for mobile phones</td>
<td></td>
</tr>
<tr>
<td>Internet Messaging Program</td>
<td>IMP is the IMAP webmail of the Horde project</td>
<td></td>
</tr>
</tbody>
</table>
### Table H-1. List of Support Applications

<table>
<thead>
<tr>
<th>Application</th>
<th>Description</th>
<th>Supported Applications</th>
</tr>
</thead>
<tbody>
<tr>
<td>La Poste Webmail</td>
<td>La Poste webmail</td>
<td>20090424</td>
</tr>
<tr>
<td>LinkedIn website</td>
<td>LinkedIn is professional social network.</td>
<td></td>
</tr>
<tr>
<td>Live hotmail for mobile</td>
<td>Livemail_mobile is the livemail webmail for mobile phones</td>
<td></td>
</tr>
<tr>
<td>mail.ru webmail</td>
<td>mailru is the mail.ru webmail</td>
<td></td>
</tr>
<tr>
<td>Maktoob mail</td>
<td>Maktoob webmail</td>
<td></td>
</tr>
<tr>
<td>Orange webmail</td>
<td>Orangemail is the webmail on webmail.orange.fr</td>
<td></td>
</tr>
<tr>
<td>Outlook Web Access</td>
<td>Outlook Web Access</td>
<td></td>
</tr>
<tr>
<td>Rambler webmail</td>
<td>Rambler webmail is the webmail on russian website rambler.ru</td>
<td></td>
</tr>
<tr>
<td>SquirrelMail</td>
<td>SquirrelMail is a web-based email application written in the PHP scripting</td>
<td></td>
</tr>
<tr>
<td>Windows Live Hotmail</td>
<td>Windows Live Hotmail</td>
<td>20100630</td>
</tr>
<tr>
<td>Yahoo Mail Ajax version (Yahoo Mail)</td>
<td>Yahoo webmail, ajax version.</td>
<td>20100630</td>
</tr>
</tbody>
</table>
### TABLE H-1. List of Support Applications

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<tr>
<th>APPLICATION</th>
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</tr>
</thead>
<tbody>
<tr>
<td>Yahoo Mail classic (Yahoo Mail)</td>
<td>Yahoo webmail, classic version.</td>
<td>20100630</td>
</tr>
<tr>
<td>Yahoo webmail for mobile</td>
<td>Ymail_mobile is the webmail on yahoo.com adapted to mobiles</td>
<td></td>
</tr>
<tr>
<td>Yahoo webmail for mobile (New version)</td>
<td>Ymail_mobile_new is the new webmail on yahoo.com adapted to mobiles</td>
<td></td>
</tr>
<tr>
<td>Yandex webmail</td>
<td>Yandex webmail is the Russian webmail on webmail.yandex.ru</td>
<td></td>
</tr>
<tr>
<td>Zimbra</td>
<td>Zimbra webmail.</td>
<td>200905112</td>
</tr>
<tr>
<td>Zimbra Webmail Standard Version</td>
<td>zimbra_standard is the called standard version for the zimbra webmail</td>
<td></td>
</tr>
</tbody>
</table>
## Glossary of Terms

This glossary describes special terms as used in this document or the online help.

<table>
<thead>
<tr>
<th><strong>TERM</strong></th>
<th><strong>EXPLANATION</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>100BaseT</td>
<td>An alternate term for “fast Ethernet,” an upgraded standard for connecting computers into a local area network (LAN). 100BaseT Ethernet can transfer data at a peak rate of 100 Mbps. It is also more expensive and less common than 10BaseT. <em>Also see</em> 10BaseT.</td>
</tr>
<tr>
<td>10BaseT</td>
<td>The most common form of Ethernet is called 10BaseT, which denotes a peak transmission speed of 10 Mbps using copper twisted-pair cable. Ethernet is a standard for connecting computers into a local area network (LAN). The maximum cable distance is 100 meters (325 feet), the maximum devices per segment is 1, and the maximum devices per network are 1024. <em>Also see</em> 100BaseT.</td>
</tr>
<tr>
<td>access (verb)</td>
<td>To read data from or write data to a storage device, such as a computer or server.</td>
</tr>
<tr>
<td>access (noun)</td>
<td>Authorization to read or write data. Most operating systems allow you to define different levels of access, depending on job responsibilities.</td>
</tr>
<tr>
<td>TERM</td>
<td>EXPLANATION</td>
</tr>
<tr>
<td>--------------------------</td>
<td>---------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>action</td>
<td>The operation to be performed when:</td>
</tr>
<tr>
<td></td>
<td>- a virus has been detected</td>
</tr>
<tr>
<td></td>
<td>- spam has been detected</td>
</tr>
<tr>
<td></td>
<td>- a content violation has occurred</td>
</tr>
<tr>
<td></td>
<td>- an attempt was made to access a blocked URL, or</td>
</tr>
<tr>
<td></td>
<td>- file blocking has been triggered.</td>
</tr>
<tr>
<td></td>
<td>Actions typically include clean and deliver, quarantine, delete, or deliver/transfer anyway. Delivering/transferring anyway is not recommended—delivering a virus-infected message or transferring a virus-infected file can compromise your network.</td>
</tr>
<tr>
<td>activate</td>
<td>To enable your software after completion of the registration process. Trend Micro products are not operable until product activation is complete. Activate during installation or after installation (in the Web console) on the Product License screen.</td>
</tr>
<tr>
<td>Activation Code</td>
<td>A 37-character code, including hyphens, that is used to activate Trend Micro products. Here is an example of an Activation Code: SM-9UE7-HG5B3-8577B-TD5P4-Q2XT5-48PG4 Also see Registration Key.</td>
</tr>
<tr>
<td>active FTP</td>
<td>Configuration of FTP protocol that allows the client to initiate “handshaking” signals for the command session, but the host initiates the data session.</td>
</tr>
<tr>
<td>active/passive pair</td>
<td>A cluster composed of two machines contains one machine is active for traffic scan, while the other machine is passive and does not scan traffic. The passive device works as backup of to the active device to meet high availability requirements.</td>
</tr>
<tr>
<td>TERM</td>
<td>EXPLANATION</td>
</tr>
<tr>
<td>----------------------</td>
<td>---------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>ActiveUpdate</td>
<td>ActiveUpdate is a function common to many Trend Micro products. Connected to the Trend Micro update Web site, ActiveUpdate provides up-to-date downloads of virus pattern files, scan engines, and program files through the Internet or the Trend Micro Total Solution CD or DVD.</td>
</tr>
<tr>
<td>ActiveX</td>
<td>A type of open software architecture that implements object linking and embedding, enabling some of the standard interfaces, such as downloading of Web pages.</td>
</tr>
<tr>
<td>ActiveX malicious code</td>
<td>An ActiveX control is a component object embedded in a Web page which runs automatically when the page is viewed. ActiveX controls allow Web developers to create interactive, dynamic Web pages with broad functionality such as HouseCall, Trend Micro’s free online scanner. Hackers, virus writers, and others who want to cause mischief or worse might use ActiveX malicious code as a vehicle to attack the system. In many cases, the Web browser can be configured so that these ActiveX controls do not execute by changing the browser’s security settings to “high.”</td>
</tr>
<tr>
<td>ActiveUpdate</td>
<td>A Trend Micro utility that enables on-demand or background updates to the virus pattern file and scan engine, as well as the anti-spam rules database and anti-spam engine.</td>
</tr>
<tr>
<td>address</td>
<td>Refers to a networking address (see IP address) or an email address, which is the string of characters that specify the source or destination of an email message.</td>
</tr>
<tr>
<td>TERM</td>
<td>EXPLANATION</td>
</tr>
<tr>
<td>----------------</td>
<td>---------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>administrator</td>
<td>Refers to “system administrator”—the person in an organization who is responsible for activities such as setting up new hardware and software, allocating user names and passwords, monitoring disk space and other IT resources, performing backups, and managing network security.</td>
</tr>
<tr>
<td>administrator account</td>
<td>A user name and password that has administrator-level privileges.</td>
</tr>
<tr>
<td>administrator email address</td>
<td>The address used by the administrator of your Trend Micro product to manage notifications and alerts.</td>
</tr>
<tr>
<td>adware</td>
<td>Advertising-supported software in which advertising banners appear while the program is running. Adware that installs a “back door”; tracking mechanism on the user's computer without the user's knowledge is called “spyware.”</td>
</tr>
<tr>
<td>alert</td>
<td>A message intended to inform a system's users or administrators about a change in the operating conditions of that system or about some kind of error condition.</td>
</tr>
<tr>
<td>anti-relay</td>
<td>Mechanisms to prevent hosts from &quot;piggybacking&quot; through another host's network.</td>
</tr>
<tr>
<td>antivirus</td>
<td>Computer programs designed to detect and clean computer viruses.</td>
</tr>
<tr>
<td>archive</td>
<td>A single file containing one or (usually) more separate files plus information to allow them to be extracted (separated) by a suitable program, such as a .zip file.</td>
</tr>
<tr>
<td>attachment</td>
<td>A file attached to (sent with) an email message.</td>
</tr>
<tr>
<td>audio/video file</td>
<td>A file containing sounds, such as music, or video footage.</td>
</tr>
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<tr>
<td>authentication</td>
<td>The verification of the identity of a person or a process. Authentication ensures that digital data transmissions are delivered to the intended receiver. Authentication also assures the receiver of the integrity of the message and its source (where or whom it came from). The simplest form of authentication requires a user name and password to gain access to a particular account. Authentication protocols can also be based on secret-key encryption, such as the Data Encryption Standard (DES) algorithm, or on public-key systems using digital signatures. Also see public-key encryption and digital signature.</td>
</tr>
<tr>
<td>binary</td>
<td>A number representation consisting of zeros and ones used by practically all computers because of its ease of implementation using digital electronics and Boolean algebra.</td>
</tr>
<tr>
<td>block</td>
<td>To prevent entry into your network.</td>
</tr>
<tr>
<td>bridge</td>
<td>A device that forwards traffic between network segments based on data link layer information. These segments have a common network layer address.</td>
</tr>
<tr>
<td>browser</td>
<td>A program which allows a person to read hypertext, such as Internet Explorer. The browser gives some means of viewing the contents of nodes (or &quot;pages&quot;) and of navigating from one node to another. A browser acts as a client to a remote Web server.</td>
</tr>
<tr>
<td>cache</td>
<td>A small fast memory, holding recently accessed data, designed to speed up subsequent access to the same data. The term is most often applied to processor-memory access, but also applies to a local copy of data accessible over a network etc.</td>
</tr>
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<td><strong>TERM</strong></td>
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<tr>
<td>case-matching</td>
<td>Scanning for text that matches both words and case. For example, if “dog” is added to the content-filter, with case-matching enabled, messages containing “Dog” pass through the filter; messages containing “dog” do not.</td>
</tr>
<tr>
<td>cause</td>
<td>The reason a protective action, such as URL-blocking or file-blocking, was triggered—this information appears in log files.</td>
</tr>
<tr>
<td>child</td>
<td>The non-parent machine in a cluster, the child machine is the passive machine for active/passive scenario. Child members receive synchronized configurations from parent device.</td>
</tr>
<tr>
<td>clean</td>
<td>To remove virus code from a file or message.</td>
</tr>
<tr>
<td>client</td>
<td>A computer system or process that requests a service of another computer system or process (a &quot;server&quot;) using some kind of protocol and accepts the server's responses. A client is part of a client-server software architecture.</td>
</tr>
<tr>
<td>client-server environ-</td>
<td>A common form of distributed system in which software is split between server tasks and client tasks. A client sends requests to a server, according to some protocol, asking for information or action, and the server responds.</td>
</tr>
<tr>
<td>environment</td>
<td></td>
</tr>
<tr>
<td>cluster</td>
<td>A group of machines form a cluster; and the machines in the cluster will share almost the same policies and configurations. Administrators can use the Web UI on the parent member via floating (or cluster) IP address to manage centralized policies and configurations.</td>
</tr>
<tr>
<td>cluster-level settings</td>
<td>IWSVA policies and settings which can be centrally managed in cluster.</td>
</tr>
<tr>
<td>TERM</td>
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</tr>
<tr>
<td>cluster IP address</td>
<td>An IWSVA cluster has a floating IP address; administrators can always use the floating IP address to manage the cluster from Web UI and CLI. The floating (or cluster) IP address remains associated with the cluster and always points to the parent member of the cluster, even when switchover or failover occurs.</td>
</tr>
<tr>
<td>compressed file</td>
<td>A single file containing one or more separate files plus information to allow them to be extracted by a suitable program, such as WinZip.</td>
</tr>
<tr>
<td>configuration</td>
<td>Selecting options for how your Trend Micro product will function, for example, selecting whether to quarantine or delete a virus-infected email message.</td>
</tr>
<tr>
<td>content filtering</td>
<td>Scanning email messages for content (words or phrases) prohibited by your organization’s Human Resources or IT messaging policies, such as hate mail, profanity, or pornography.</td>
</tr>
<tr>
<td>content violation</td>
<td>An event that has triggered the content filtering policy.</td>
</tr>
<tr>
<td>cookie</td>
<td>A mechanism for storing information about an Internet user, such as name, preferences, and interests, which is stored in your Web browser for later use. The next time you access a Web site for which your browser has a cookie, your browser sends the cookie to the Web server, which the Web server can then use to present you with customized Web pages. For example, you might enter a Web site that welcomes you by name.</td>
</tr>
<tr>
<td>daemon</td>
<td>A program that is not invoked explicitly, but lies dormant waiting for some condition(s) to occur. The perpetrator of the condition need not be aware that a daemon is lurking.</td>
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<td>TERM</td>
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</tr>
<tr>
<td>damage routine</td>
<td>The destructive portion of virus code, also called the payload.</td>
</tr>
<tr>
<td>default</td>
<td>A value that pre-populates a field in the Web console interface. A default value represents a logical choice and is provided for convenience. Use default values as-is, or change them.</td>
</tr>
<tr>
<td>De-Militarized Zone (DMZ)</td>
<td>From the military term for an area between two opponents where fighting is prevented. DMZ Ethernets connect networks and computers controlled by different bodies. They might be external or internal. External DMZ Ethernets link regional networks with routers.</td>
</tr>
<tr>
<td>Deployment Wizard</td>
<td>A Web console-based wizard, which is used for ease of deployment. Deployment-related configurations have been removed from the product installation to this wizard.</td>
</tr>
<tr>
<td>dialer</td>
<td>A type of Trojan that when executed, connects the user's system to a pay-per-call location in which the unsuspecting user is billed for the call without his or her knowledge.</td>
</tr>
<tr>
<td>digital signature</td>
<td>Extra data appended to a message which identifies and authenticates the sender and message data using a technique called public-key encryption. Also see public-key encryption and authentication.</td>
</tr>
<tr>
<td>directory</td>
<td>A node, which is part of the structure in a hierarchical computer file system. A directory typically contains other nodes, folders, or files. For example, C:\Windows is the Windows directory on the C drive.</td>
</tr>
<tr>
<td>directory path</td>
<td>The subsequent layers within a directory where a file can be found, for example, the directory path for the ISVW for SMB Quarantine directory is: C:\Programs\Trend Micro\ISVW\Quarantine</td>
</tr>
<tr>
<td>TERM</td>
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</tr>
<tr>
<td>disclaimer</td>
<td>A statement appended to the beginning or end of an email message, that states certain terms of legality and confidentiality regarding the message. To see an example, click the online help for the SMTP Configuration - Disclaimer screen.</td>
</tr>
<tr>
<td>DNS</td>
<td>Domain Name System—A general-purpose data query service chiefly used on the Internet for translating host names into IP addresses.</td>
</tr>
<tr>
<td>DNS resolution</td>
<td>When a DNS client requests host name and address data from a DNS server, the process is called resolution. Basic DNS configuration results in a server that performs default resolution. For example, a remote server queries another server for data on a machine in the current zone. Client software on the remote server queries the resolver, which answers the request from its database files.</td>
</tr>
<tr>
<td>(administrative) domain</td>
<td>A group of computers sharing a common database and security policy.</td>
</tr>
<tr>
<td>domain name</td>
<td>The full name of a system, consisting of its local host name and its domain name, for example, tellsi-tall.com. A domain name should be sufficient to determine a unique Internet address for any host on the Internet. This process, called “name resolution”, uses the Domain Name System (DNS).</td>
</tr>
<tr>
<td>DoS (Denial of Service) attack</td>
<td>Group-addressed email messages with large attachments that clog your network resources to the point where messaging service is noticeably slow or even stopped.</td>
</tr>
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<tr>
<td>DOS virus</td>
<td>Also referred to as “COM” and “EXE file infectors.” DOS viruses infect DOS executable programs- files that have the extensions *.COM or *.EXE. Unless they have overwritten or inadvertently destroyed part of the original program’s code, most DOS viruses try to replicate and spread by infecting other host programs.</td>
</tr>
<tr>
<td>download (noun)</td>
<td>Data that has been downloaded, for example, from a Web site through HTTP.</td>
</tr>
<tr>
<td>download (verb)</td>
<td>To transfer data or code from one computer to another. Downloading often refers to transfer from a larger &quot;host&quot; system (especially a server or mainframe) to a smaller &quot;client&quot; system.</td>
</tr>
<tr>
<td>dropper</td>
<td>Droppers are programs that serve as delivery mechanisms to carry and drop viruses, Trojans, or worms into a system.</td>
</tr>
<tr>
<td>ELF</td>
<td>Executable and Linkable Format—An executable file format for UNIX and Linux platforms.</td>
</tr>
<tr>
<td>encryption</td>
<td>Encryption is the process of changing data into a form that can be read only by the intended receiver. To decipher the message, the receiver of the encrypted data must have the proper decryption key. In traditional encryption schemes, the sender and the receiver use the same key to encrypt and decrypt data. Public-key encryption schemes use two keys: a public key, which anyone might use, and a corresponding private key, which is possessed only by the person who created it. With this method, anyone might send a message encrypted with the owner's public key, but only the owner has the private key necessary to decrypt it. PGP (Pretty Good Privacy) and DES (Data Encryption Standard) are two of the most popular public-key encryption schemes.</td>
</tr>
<tr>
<td>Term</td>
<td>Explanation</td>
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</tr>
<tr>
<td>End User License Agreement (EULA)</td>
<td>An End User License Agreement or EULA is a legal contract between a software publisher and the software user. It typically outlines restrictions on the side of the user, who can refuse to enter into the agreement by not clicking &quot;I accept&quot; during installation. Clicking &quot;I do not accept&quot; will, of course, end the installation of the software product. Many users inadvertently agree to the installation of spyware and adware into their computers when they click &quot;I accept&quot; on EULA prompts displayed during the installation of certain free software.</td>
</tr>
<tr>
<td>Ethernet</td>
<td>A local area network (LAN) technology invented at the Xerox Corporation, Palo Alto Research Center. Ethernet is a best-effort delivery system that uses CSMA/CD technology. Ethernet can be run over a variety of cable schemes, including thick coaxial, thin coaxial, twisted pair, and fiber optic cable. Ethernet is a standard for connecting computers into a local area network. The most common form of Ethernet is called 10BaseT, which denotes a peak transmission speed of 10 Mbps using copper twisted-pair cable.</td>
</tr>
<tr>
<td>executable file</td>
<td>A binary file containing a program in machine language which is ready to be executed (run).</td>
</tr>
<tr>
<td>EXE file infector</td>
<td>An executable program with a .exe file extension. Also see DOS virus.</td>
</tr>
<tr>
<td>exploit</td>
<td>An exploit is code that takes advantage of a software vulnerability or security hole. Exploits are able to propagate into and run intricate routines on vulnerable computers.</td>
</tr>
<tr>
<td>failover</td>
<td>When a parent member of an cluster crashes or fails to handle traffic, IWSVA automatically performs a switchover in the cluster and elects a new machine to fill the role of the parent member of the cluster.</td>
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<td>TERM</td>
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<tr>
<td>false positive</td>
<td>An email message that was &quot;caught&quot; by the spam filter and identified as spam, but is actually not spam.</td>
</tr>
<tr>
<td>FAQ</td>
<td>Frequently Asked Questions—A list of questions and answers about a specific topic.</td>
</tr>
<tr>
<td>file</td>
<td>An element of data, such as an email message or HTTP download.</td>
</tr>
<tr>
<td>file-infecting virus</td>
<td>File-infecting viruses infect executable programs (generally, files that have extensions of .com or .exe). Most such viruses simply try to replicate and spread by infecting other host programs, but some inadvertently destroy the program they infect by overwriting a portion of the original code. A minority of these viruses are very destructive and attempt to format the hard drive at a pre-determined time or perform some other malicious action. In many cases, a file-infecting virus can be successfully removed from the infected file. However, if the virus has overwritten part of the program's code, the original file will be unrecoverable</td>
</tr>
<tr>
<td>file type</td>
<td>The kind of data stored in a file. Most operating systems use the file name extension to determine the file type. The file type is used to choose an appropriate icon to represent the file in a user interface, and the correct application with which to view, edit, run, or print the file.</td>
</tr>
<tr>
<td>file name extension</td>
<td>The portion of a file name (such as .dll or .xml) which indicates the kind of data stored in the file. Apart from informing the user what type of content the file holds, file name extensions are typically used to decide which program to launch when a file is run.</td>
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<tr>
<td>filtering, dynamic</td>
<td>IP service that can be used within VPN tunnels. Filters are one way GateLock controls traffic from one network to another. When TCP/IP sends data packets to the firewall, the filtering function in the firewall looks at the header information in the packets and directs them accordingly. The filters operate on criteria such as IP source or destination address range, TCP ports, UDP, Internet Control Message Protocol (ICMP), or TCP responses. Also see tunneling and Virtual Private Network (VPN).</td>
</tr>
<tr>
<td>firewall</td>
<td>A gateway machine with special security precautions on it, used to service outside network (especially Internet) connections and dial-in lines.</td>
</tr>
<tr>
<td>floating IP address</td>
<td>See cluster IP address.</td>
</tr>
<tr>
<td>FTP</td>
<td>A client-server protocol which allows a user on one computer to transfer files to and from another computer over a TCP/IP network. Also refers to the client program the user executes to transfer files.</td>
</tr>
<tr>
<td>gateway</td>
<td>An interface between an information source and a Web server.</td>
</tr>
<tr>
<td>grayware</td>
<td>A category of software that might be legitimate, unwanted, or malicious. Unlike threats such as viruses, worms, and Trojans, grayware does not infect, replicate, or destroy data, but it might violate your privacy. Examples of grayware include spyware, adware, and remote access tools.</td>
</tr>
<tr>
<td>group file type</td>
<td>Types of files that have a common theme, for example:</td>
</tr>
<tr>
<td></td>
<td>- Audio/Video</td>
</tr>
<tr>
<td></td>
<td>- Compressed</td>
</tr>
<tr>
<td></td>
<td>- Executable</td>
</tr>
<tr>
<td></td>
<td>- Images</td>
</tr>
<tr>
<td></td>
<td>- Java</td>
</tr>
<tr>
<td></td>
<td>- Microsoft Office</td>
</tr>
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</tr>
<tr>
<td>GUI</td>
<td>Graphical User Interface—The use of pictures rather than just words to represent the input and output of a program. This contrasts with a command line interface where communication is by exchange of strings of text.</td>
</tr>
<tr>
<td>HA</td>
<td>See High Availability</td>
</tr>
<tr>
<td>hacking tool</td>
<td>Tools such as hardware and software that enables penetration testing of a computer system or network for the purpose of finding security vulnerabilities that can be exploited.</td>
</tr>
<tr>
<td>hard disk (or hard drive)</td>
<td>One or more rigid magnetic disks rotating about a central axle with associated read/write heads and electronics, used to read and write hard disks or floppy disks, and to store data. Most hard disks are permanently connected to the drive (fixed disks) though there are also removable disks.</td>
</tr>
<tr>
<td>header (networking definition)</td>
<td>Part of a data packet that contains transparent information about the file or the transmission.</td>
</tr>
<tr>
<td>heuristic rule-based scanning</td>
<td>Scanning network traffic, using a logical analysis of properties that reduces or limits the search for solutions.</td>
</tr>
<tr>
<td>High Availability</td>
<td>High availability uses a second unit or node to ensure that the services are available even if the first unit breaks down.</td>
</tr>
<tr>
<td>HTTPS</td>
<td>Hypertext Transfer Protocol Secure—A variant of HTTP used for handling secure transactions.</td>
</tr>
<tr>
<td>host</td>
<td>A computer connected to a network.</td>
</tr>
<tr>
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<td>EXPLANATION</td>
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</tr>
<tr>
<td>hub</td>
<td>This hardware is used to network computers together (usually over an Ethernet connection). It serves as a common wiring point so that information can flow through one central location to any other computer on the network thus enabling centralized management. A hub is a hardware device that repeats signals at the physical Ethernet layer. A hub retains the behavior of a standard bus type network (such as Thinnet), but produces a star topology with the hub at the center of the star. This configuration enables centralized management.</td>
</tr>
<tr>
<td>ICSA</td>
<td>ICSA Labs is an independent division of TruSecure Corporation. For over a decade, ICSA has been the security industry’s central authority for research, intelligence, and certification testing of products. ICSA Labs sets standards for information security products and certifies over 90 percent of the installed base of antivirus, firewall, IPSec, cryptography, and PC firewall products in the world today.</td>
</tr>
<tr>
<td>image file</td>
<td>A file containing data representing a two-dimensional scene, in other words, a picture. Images are taken from the real world, for example, through a digital camera, or they might be generated by computer using graphics software.</td>
</tr>
<tr>
<td>incoming</td>
<td>Email messages or other data routed into your network.</td>
</tr>
<tr>
<td>installation script</td>
<td>The installation screens used to install UNIX versions of Trend Micro products.</td>
</tr>
<tr>
<td>instance-level settings</td>
<td>IWSVA policies and settings which only apply to individual instances.</td>
</tr>
<tr>
<td>integrity checking</td>
<td>See checksumming.</td>
</tr>
<tr>
<td>TERM</td>
<td>EXPLANATION</td>
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<tr>
<td>IntelliScan</td>
<td>IntelliScan is a Trend Micro scanning technology that optimizes performance by examining file headers using true-file type recognition, and scanning only file types known to potentially harbor malicious code. True-file type recognition helps identify malicious code that can be disguised by a harmless extension name.</td>
</tr>
<tr>
<td>Internet</td>
<td>A client-server hypertext information retrieval system, based on a series of networks connected with routers. The Internet is a modern information system and a widely accepted medium for advertising, online sales, and services, as well as university and many other research networks. The World Wide Web is the most familiar aspect of the Internet.</td>
</tr>
<tr>
<td>Internet Protocol (IP)</td>
<td>An Internet standard protocol that defines a basic unit of data called a datagram. A datagram is used in a connectionless, best-effort, delivery system. The Internet protocol defines how information gets passed between systems across the Internet.</td>
</tr>
<tr>
<td>interrupt</td>
<td>An asynchronous event that suspends normal processing and temporarily diverts the flow of control through an &quot;interrupt handler&quot; routine.</td>
</tr>
<tr>
<td>&quot;in the wild&quot;</td>
<td>Describes known viruses that are actively circulating. Also see &quot;in the zoo.&quot;</td>
</tr>
<tr>
<td>&quot;in the zoo&quot;</td>
<td>Describes known viruses that are currently controlled by antivirus products. Also see &quot;in the wild.&quot;</td>
</tr>
<tr>
<td>intranet</td>
<td>Any network which provides similar services within an organization to those provided by the Internet outside it, but which is not necessarily connected to the Internet.</td>
</tr>
<tr>
<td>IP</td>
<td>Internet Protocol—See IP address.</td>
</tr>
<tr>
<td>TERM</td>
<td>EXPLANATION</td>
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</tr>
<tr>
<td>IP address</td>
<td>Internet address for a device on a network, typically expressed using dot notation such as 123.123.123.123.</td>
</tr>
<tr>
<td>IP gateway</td>
<td>Also called a router, a gateway is a program or a special-purpose device that transfers IP datagrams from one network to another until the final destination is reached.</td>
</tr>
<tr>
<td>IT</td>
<td>Information technology, to include hardware, software, networking, telecommunications, and user support.</td>
</tr>
<tr>
<td>Java applets</td>
<td>Java applets are small, portable Java programs embedded in HTML pages that can run automatically when the pages are viewed. Java applets allow Web developers to create interactive, dynamic Web pages with broader functionality. Authors of malicious code have used Java applets as a vehicle for attack. Most Web browsers, however, can be configured so that these applets do not execute - sometimes by simply changing browser security settings to &quot;high.&quot;</td>
</tr>
<tr>
<td>Java file</td>
<td>Java is a general-purpose programming language developed by Sun Microsystems. A Java file contains Java code. Java supports programming for the Internet in the form of platform-independent Java &quot;applets.&quot; (An applet is a program written in Java programming language that can be included in an HTML page. When you use a Java-technology enabled browser to view a page that contains an applet, the applet’s code is transferred to your system and is executed by the browser’s Java Virtual Machine.)</td>
</tr>
<tr>
<td>Java malicious code</td>
<td>Virus code written or embedded in Java. Also see Java file.</td>
</tr>
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</tr>
<tr>
<td>JavaScript virus</td>
<td>JavaScript is a simple programming language developed by Netscape that allows Web developers to add dynamic content to HTML pages displayed in a browser using scripts. Javascript shares some features of Sun Microsystems Java programming language, but was developed independently. A JavaScript virus is a virus that is targeted at these scripts in the HTML code. This enables the virus to reside in Web pages and download to a user's desktop through the user's browser. Also see VBscript virus.</td>
</tr>
<tr>
<td>joke program</td>
<td>An executable program that is annoying or causes users undue alarm. Unlike viruses, joke programs do not self-propagate and should simply be removed from your system.</td>
</tr>
<tr>
<td>KB</td>
<td>Kilobyte—1024 bytes of memory.</td>
</tr>
<tr>
<td>keylogger</td>
<td>Keyloggers are programs that catch and store all keyboard activity. There are legitimate keylogging programs that are used by corporations to monitor employees and by parents to monitor their children. However, criminals also use keystroke logs to sort for valuable information such as logon credentials and credit card numbers.</td>
</tr>
<tr>
<td>LAN (Local Area Network)</td>
<td>A data communications network which is geographically limited, allowing easy interconnection of computers within the same building.</td>
</tr>
<tr>
<td>LDAP (Lightweight Directory Access Protocol)</td>
<td>An internet protocol that email programs use to locate contact information from a server. For example, suppose you want to locate all persons in Boston who have an email address containing the name “Bob.” An LDAP search would enable you to view the email addresses that meet this criteria.</td>
</tr>
<tr>
<td><strong>TERM</strong></td>
<td><strong>EXPLANATION</strong></td>
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</tr>
<tr>
<td>license</td>
<td>Authorization by law to use a Trend Micro product.</td>
</tr>
<tr>
<td>license certificate</td>
<td>A document that proves you are an authorized user of a Trend Micro product.</td>
</tr>
<tr>
<td>link (also called hyperlink)</td>
<td>A reference from some point in one hypertext document to some point in another document or another place in the same document. Links are usually distinguished by a different color or style of text, such as underlined blue text. When you activate the link, for example, by clicking on it with a mouse, the browser displays the target of the link.</td>
</tr>
<tr>
<td>listening port</td>
<td>A port utilized for client connection requests for data exchange.</td>
</tr>
<tr>
<td>load balancing</td>
<td>Load balancing is the mapping (or re-mapping) of work to processors, with the intent of improving the efficiency of a concurrent computation.</td>
</tr>
<tr>
<td>local area network (LAN)</td>
<td>Any network technology that interconnects resources within an office environment, usually at high speeds, such as Ethernet. A local area network is a short-distance network used to link a group of computers together within a building. 10BaseT Ethernet is the most commonly used form of LAN. A hardware device called a hub serves as the common wiring point, enabling data to be sent from one machine to another over the network. LANs are typically limited to distances of less than 500 meters and provide low-cost, high-bandwidth networking capabilities within a small geographical area.</td>
</tr>
<tr>
<td>log storage directory</td>
<td>Directory on your server that stores log files.</td>
</tr>
<tr>
<td>logic bomb</td>
<td>Code surreptitiously inserted into an application or operating system that causes it to perform some destructive or security-compromising activity whenever specified conditions are met.</td>
</tr>
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</tr>
<tr>
<td>macro</td>
<td>A command used to automate certain functions within an application.</td>
</tr>
<tr>
<td>MacroTrap</td>
<td>A Trend Micro utility that performs a rule-based examination of all macro code that is saved in association with a document. Macro virus code is typically contained in part of the invisible template that travels with many documents (.dot, for example, in Microsoft Word documents). MacroTrap checks the template for signs of a macro virus by seeking out key instructions that perform virus-like activity—instructions such as copying parts of the template to other templates (replication), or instructions to execute potentially harmful commands (destruction).</td>
</tr>
<tr>
<td>macro virus</td>
<td>Macro viruses are often encoded as an application macro and included in a document. Unlike other virus types, macro viruses aren't specific to an operating system and can spread through email attachments, Web downloads, file transfers, and cooperative applications.</td>
</tr>
<tr>
<td>malware (malicious software)</td>
<td>Programming or files that are developed for the purpose of doing harm, such as viruses, worms, and Trojans.</td>
</tr>
<tr>
<td>Web console</td>
<td>The user interface for your Trend Micro product.</td>
</tr>
<tr>
<td>mass mailer (also known as a Worm)</td>
<td>A malicious program that has high damage potential, because it causes large amounts of network traffic.</td>
</tr>
<tr>
<td>Mbps</td>
<td>Millions of bits per second—a measure of bandwidth in data communications.</td>
</tr>
<tr>
<td>MB</td>
<td>Megabyte—1024 kilobytes of data.</td>
</tr>
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</tr>
<tr>
<td>Media Access Control (MAC) address</td>
<td>An address that uniquely identifies the network interface card, such as an Ethernet adapter. For Ethernet, the MAC address is a 6 octet address assigned by IEEE. On a LAN or other network, the MAC address is a computer’s unique hardware number. (On an Ethernet LAN, it’s the same as the Ethernet address.) When you’re connected to the Internet from your computer (or host as the Internet protocol thinks of it), a correspondence table relates your IP address to your computer’s physical (MAC) address on the LAN. The MAC address is used by the Media Access Control sublayer of the Data-Link Control (DLC) layer of telecommunication protocols. There is a different MAC sublayer for each physical device type.</td>
</tr>
<tr>
<td>Microsoft Office file</td>
<td>Files created with Microsoft Office tools such as Excel or Microsoft Word.</td>
</tr>
<tr>
<td>mixed threat attack</td>
<td>Complex attacks that take advantage of multiple entry points and vulnerabilities in enterprise networks, such as the “Nimda” or “Code Red” threats.</td>
</tr>
<tr>
<td>MTA (Mail Transfer Agent)</td>
<td>The program responsible for delivering email messages. Also see SMTP server.</td>
</tr>
<tr>
<td>Network Address Translation (NAT)</td>
<td>A standard for translating secure IP addresses to temporary, external, registered IP address from the address pool. This allows Trusted networks with privately assigned IP addresses to have access to the Internet. This also means that you don’t have to get a registered IP address for every machine in your network.</td>
</tr>
<tr>
<td>network virus</td>
<td>A type of virus that uses network protocols, such as TCP, FTP, UDP, HTTP, and email protocols to replicate. Network viruses often do not alter system files or modify the boot sectors of hard disks. Instead, they infect the memory of client machines, forcing them to flood the network with traffic, which can cause slowdowns or even complete network failure.</td>
</tr>
</tbody>
</table>
### TERM | EXPLANATION
--- | ---
notification | A message that is forwarded to one or more of the following:  
- system administrator  
- sender of a message  
- recipient of a message, file download, or file transfer  
The purpose of the notification is to communicate that a prohibited action has taken place, or was attempted, such as a virus being detected in an attempted HTTP file download.
(Also see action and target)
offensive content | Words or phrases in messages or attachments that are considered offensive to others, for example, profanity, sexual harassment, racial harassment, or hate mail.
online help | Documentation that is bundled with the GUI.
open source | Programming code that is available to the general public for use or modification free of charge and without license restrictions.
oprating system | The software which handles tasks such as the interface to peripheral hardware, scheduling tasks, and allocating storage. In this documentation, the term also refers to the software that presents a window system and graphical user interface.
outgoing | Email messages or other data leaving your network, routed out to the Internet.
parameter | A variable, such as a range of values (a number from 1 to 10).
parent | The central point of the cluster, a parent is the active machine for active/passive scenario. Administrators perform central management on the parent member, and cluster-level configurations are synchronized to the child member.
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</thead>
<tbody>
<tr>
<td>partition</td>
<td>A logical portion of a disk. <em>(Also see sector, which is a physical portion of a disk.)</em></td>
</tr>
<tr>
<td>passive FTP</td>
<td>Configuration of FTP protocol that allows clients within your local area network to initiate the file transfer, using random upper port numbers (1024 and above).</td>
</tr>
<tr>
<td>password cracker</td>
<td>An application program that is used to recover a lost or forgotten password. These applications can also be used by an intruder to gain unauthorized access to a computer or network resources.</td>
</tr>
<tr>
<td>pattern file (also known as Official Pattern Release)</td>
<td>The pattern file, as referred to as the Official Pattern Release (OPR), is the latest compilation of patterns for identified viruses. It is guaranteed to have passed a series of critical tests to ensure that you get optimum protection from the latest virus threats. This pattern file is most effective when used with the latest scan engine.</td>
</tr>
<tr>
<td>payload</td>
<td>Payload refers to an action that a virus performs on the infected computer. This can be something relatively harmless, such as displaying messages or ejecting the CD drive, or something destructive, such as deleting the entire hard drive.</td>
</tr>
<tr>
<td>policies</td>
<td>Policies provide the initial protection mechanism for the firewall, allowing you to determine what traffic passes across it based on IP session details. They protect the Trusted network from outsider attacks, such as the scanning of Trusted servers. Policies create an environment in which you set up security policies to monitor traffic attempting to cross your firewall.</td>
</tr>
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</tr>
<tr>
<td>port</td>
<td>A logical channel or channel endpoint in a communications system, used to distinguish between different logical channels on the same network interface on the same computer. Each application program has a unique port number associated with it.</td>
</tr>
<tr>
<td>protected network</td>
<td>A network protected by IWSVA (Trend Micro™ InterScan™ Web Security Virtual Appliance).</td>
</tr>
<tr>
<td>proxy</td>
<td>A process providing a cache of items available on other servers which are presumably slower or more expensive to access.</td>
</tr>
<tr>
<td>proxy server</td>
<td>A World Wide Web server which accepts URLs with a special prefix, used to fetch documents from either a local cache or a remote server, then returns the URL to the requester.</td>
</tr>
<tr>
<td>public-key encryption</td>
<td>An encryption scheme where each person gets a pair of “keys,” called the public key and the private key. Each person’s public key is published while the private key is kept secret. Messages are encrypted using the intended recipient’s public key and can only be decrypted using his or her private key. Also see authentication and digital signature.</td>
</tr>
<tr>
<td>purge</td>
<td>To delete all, as in getting rid of old entries in the logs.</td>
</tr>
<tr>
<td>quarantine</td>
<td>To place infected data such as email messages, infected attachments, infected HTTP downloads, or infected FTP files in an isolated directory (the Quarantine Directory) on your server.</td>
</tr>
<tr>
<td>queue</td>
<td>A data structure used to sequence multiple demands for a resource when mail is being received faster than it can be processed. Messages are added at the end of the queue, and are taken from the beginning of the queue, using a FIFO (first-in, first-out) approach.</td>
</tr>
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</tr>
<tr>
<td>recipient</td>
<td>The person or entity to whom an email message is addressed.</td>
</tr>
<tr>
<td>registration</td>
<td>The process of identifying yourself as a Trend Micro customer, using a product Registration Key, on the Trend Micro Online Registration screen. <a href="https://olr.trendmicro.com/registration">https://olr.trendmicro.com/registration</a></td>
</tr>
</tbody>
</table>
| Registration Key | A 22-character code, including hyphens, that is used to register in the Trend Micro customer database. Here is an example of a Registration Key: SM-27RT-UY4Z-39HB-MNW8  
*Also see Activation Code*                                                                                                                                                                                                                                        |
<p>| relay            | To convey by means of passing through various other points.                                                                                                                                                                                                                                                                               |
| remote access tool (RAT) | Hardware and software that allow a legitimate system administrator to manage a network remotely. However, these same tools can also be used by intruders to attempt a breach of your system security.                                                                                                                                                       |
| removable drive  | A removable hardware component or peripheral device of a computer, such as a zip drive.                                                                                                                                                                                                                                                  |
| replicate        | To self-reproduce. As used in this documentation, the term refers to viruses or worms that can self-reproduce.                                                                                                                                                                                                                          |
| router           | This hardware device routes data from a local area network (LAN) to a phone line's long distance line. Routers also act as traffic cops, allowing only authorized machines to transmit data into the local network so that private information can remain secure. In addition to supporting these dial-in and leased connections, routers also handle errors, keep network usage statistics, and handle security issues. |
| scan             | To examine items in a file in sequence to find those that meet a particular criteria.                                                                                                                                                                                                                                                   |</p>
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<tr>
<td>scan engine</td>
<td>The module that performs antivirus scanning and detection in the host product to which it is integrated.</td>
</tr>
<tr>
<td>script</td>
<td>A set of programming commands that, after invoked, can be executed together. Other terms used synonymously with “script” are “macro” or “batch file.”</td>
</tr>
<tr>
<td>sector</td>
<td>A physical portion of a disk. (Also see partition, which is a logical portion of a disk.)</td>
</tr>
<tr>
<td>seat</td>
<td>A license for one person to use a Trend Micro product.</td>
</tr>
<tr>
<td>Secure Socket Layer (SSL)</td>
<td>Secure Socket Layer (SSL), is a protocol designed by Netscape for providing data security layered between application protocols (such as HTTP, Telnet, or FTP) and TCP/IP. This security protocol provides data encryption, server authentication, message integrity, and optional client authentication for a TCP/IP connection.</td>
</tr>
<tr>
<td>server</td>
<td>A program which provides some service to other (client) programs. The connection between client and server is normally by means of message passing, often over a network, and uses some protocol to encode the client’s requests and the server’s responses. The server might run continuously (as a daemon), waiting for requests to arrive, or it might be invoked by some higher-level daemon which controls a number of specific servers.</td>
</tr>
<tr>
<td>shared drive</td>
<td>A computer peripheral device that is used by more than one person, thus increasing the risk of exposure to viruses.</td>
</tr>
<tr>
<td>signature</td>
<td>See virus signature.</td>
</tr>
<tr>
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<tr>
<td>signature-based spam detection</td>
<td>A method of determining whether an email message is spam by comparing the message contents to entries in a spam database. An exact match must be found for the message to be identified as spam. Signature-based spam detection has a nearly zero false positive rate, but does not detect “new” spam that isn’t an exact match for text in the spam signature file. Also see rule-based spam detection. Also see false positive.</td>
</tr>
<tr>
<td>single device</td>
<td>A machine that is not deployed in any Cluster</td>
</tr>
<tr>
<td>SMTP</td>
<td>Simple Mail Transfer Protocol—A protocol used to transfer electronic mail between computers, usually over Ethernet. It is a server-to-server protocol, so other protocols are used to access the messages.</td>
</tr>
<tr>
<td>SMTP server</td>
<td>A server that relays email messages to their destinations.</td>
</tr>
<tr>
<td>SNMP</td>
<td>Simple Network Management Protocol—A protocol that supports monitoring of devices attached to a network for conditions that merit administrative attention.</td>
</tr>
<tr>
<td>SNMP trap</td>
<td>A trap is a programming mechanism that handles errors or other problems in a computer program. An SNMP trap handles errors related to network device monitoring. See SNMP.</td>
</tr>
<tr>
<td>spam</td>
<td>Unsolicited email messages meant to promote a product or service.</td>
</tr>
<tr>
<td>spyware</td>
<td>Advertising-supported software that typically installs tracking software on your system, capable of sending information about you to another party. The danger is that users cannot control what data is being collected, or how it is used.</td>
</tr>
</tbody>
</table>
### Term | Explanation
--- | ---
subnet mask | In larger networks, the subnet mask lets you define subnetworks. For example, if you have a class B network, a subnet mask of 255.255.255.0 specifies that the first two portions of the decimal dot format are the network number, while the third portion is a subnet number. The fourth portion is the host number. If you do not want to have a subnet on a class B network, you would use a subnet mask of 255.255.0.0.

A network can be subnetted into one or more physical networks which form a subset of the main network. The subnet mask is the part of the IP address which is used to represent a subnetwork within a network. Using subnet masks allows you to use network address space which is normally unavailable and ensures that network traffic does not get sent to the whole network unless intended. Subnet masks are a complex feature, so great care should be taken when using them. *Also see* IP address.

switchover | Switchover means IWSVA changes the parent role in the cluster. It can be triggered by user manually, or when system detects a failure.

target | The scope of activity to be monitored for a violating event, such as a virus being detected in an email message. For example, you could target virus scanning of all files passing into and out of your network, or just files with a certain file name extension.

(Also see action and notification) |  

TCP | Transmission Control Protocol—TCP is a networking protocol, most commonly use in combination with IP (Internet Protocol), to govern connection of computer systems to the Internet.

Telnet | The Internet standard protocol for remote login that runs on top of TCP/IP (Transmission Control Protocol/Internet Protocol). This term can also refer to networking software that acts as a terminal emulator for a remote login session.
### Glossary of Terms

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<tr>
<td>top-level domain</td>
<td>The last and most significant component of an Internet fully qualified domain name, the part after the last &quot;.&quot;. For example, host <code>wombat.doc.ic.ac.uk</code> is in top-level domain “uk” (for United Kingdom).</td>
</tr>
<tr>
<td>Total Solution CD/DVD</td>
<td>A CD or DVD containing the latest product versions and all the patches that have been applied during the previous quarter. The Total Solution CD or DVD is available to all Trend Micro Premium Support customers.</td>
</tr>
<tr>
<td>traffic</td>
<td>Data flowing between the Internet and your network, both incoming and outgoing.</td>
</tr>
<tr>
<td>Transmission Control Protocol/Internet Protocol (TCP/IP)</td>
<td>A communications protocol which allows computers with different operating systems to communicate with each other. Controls how data is transferred between computers on the Internet.</td>
</tr>
<tr>
<td>trigger</td>
<td>An event that causes an action to take place. For example, your Trend Micro product detects a virus in an email message. This might <strong>trigger</strong> the message to be placed in quarantine, and a notification to be sent to the system administrator, message sender, and message recipient.</td>
</tr>
<tr>
<td>Trojan Horse</td>
<td>A malicious program that is disguised as something benign. A Trojan is an executable program that does not replicate, but instead, resides on a system to perform malicious acts, such as opening a port for an intruder.</td>
</tr>
<tr>
<td>true-file type</td>
<td>Used by IntelliScan, a virus scanning technology, to identify the type of information in a file by examining the file headers, regardless of the file name extension (which could be misleading).</td>
</tr>
<tr>
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</tr>
<tr>
<td>trusted domain</td>
<td>A domain from which your Trend Micro product will always accept messages, without considering whether the message is spam. For example, a company called Dominion, Inc. has a subsidiary called Dominion-Japan, Inc. Messages from dominion-japan.com are always accepted into the dominion.com network, without checking for spam, because the messages are from a known and trusted source.</td>
</tr>
<tr>
<td>trusted host</td>
<td>A server that is allowed to relay mail through your network because they are trusted to act appropriately and not, for example, relay spam through your network.</td>
</tr>
<tr>
<td>tunneling</td>
<td>A method of sending data that enables one network to send data through another network’s connections. Tunnelling is used to get data between administrative domains which use a protocol that is not supported by the internet connecting those domains.</td>
</tr>
</tbody>
</table>

With VPN tunneling, a mobile professional dials into a local Internet Service Provider's Point of Presence (POP) instead of dialing directly into their corporate network. This means that no matter where mobile professionals are located, they can dial a local Internet Service Provider that supports VPN tunneling technology and gain access to their corporate network, incurring only the cost of a local telephone call.

When remote users dial into their corporate network using an Internet Service Provider that supports VPN tunneling, the remote user as well as the organization knows that it is a secure connection. All remote dial-in users are authenticated by an authenticating server at the Internet Service Provider’s site and then again by another authenticating server on the corporate network. This means that only authorized remote users can access their corporate network, and can access only the hosts that they are authorized to use.
<table>
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<tr>
<td>tunnel interface</td>
<td>A tunnel interface is the opening, or doorway, through which traffic to or from a VPN tunnel passes. A tunnel interface can be numbered (that is, assigned an IP address) or unnumbered. A numbered tunnel interface can be in either a tunnel zone or security zone. An unnumbered tunnel interface can only be in a security zone that contains at least one security zone interface. The unnumbered tunnel interface borrows the IP address from the security zone interface. Also see Virtual Private Network (VPN).</td>
</tr>
<tr>
<td>tunnel zone</td>
<td>A tunnel zone is a logical segment that hosts one or more tunnel interfaces. A tunnel zone is associated with a security zone that acts as its carrier.</td>
</tr>
<tr>
<td>URL</td>
<td>Universal Resource Locator—A standard way of specifying the location of an object, typically a Web page, on the Internet, for example, <a href="http://www.trendmicro.com">www.trendmicro.com</a>. The URL maps to an IP address using DNS.</td>
</tr>
<tr>
<td>VBscript virus</td>
<td>VBScript (Microsoft Visual Basic scripting language) is a simple programming language that allows Web developers to add interactive functionality to HTML pages displayed in a browser. For example, developers might use VBScript to add a &quot;Click Here for More Information&quot; button on a Web page. A VBscript virus is a virus that is targeted at these scripts in the HTML code. This enables the virus to reside in Web pages and download to a user's desktop through the user's browser. Also see JavaScript virus.</td>
</tr>
<tr>
<td>virtual IP address (VIP address)</td>
<td>A VIP address maps traffic received at one IP address to another address based on the destination port number in the packet header.</td>
</tr>
<tr>
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</tr>
<tr>
<td>Virtual Local Area Network (VLAN)</td>
<td>A logical (rather than physical) grouping of devices that constitute a single broadcast domain. VLAN members are not identified by their location on a physical subnetwork but through the use of tags in the frame headers of their transmitted data. VLANs are described in the IEEE 802.1Q standard.</td>
</tr>
<tr>
<td>Virtual Private Network (VPN)</td>
<td>A VPN is an easy, cost-effective and secure way for corporations to provide telecommuters and mobile professionals local dial-up access to their corporate network or to another Internet Service Provider (ISP). Secure private connections over the Internet are more cost-effective than dedicated private lines. VPNs are possible because of technologies and standards such as tunneling and encryption.</td>
</tr>
<tr>
<td>virtual router</td>
<td>A virtual router is the component of Screen OS that performs routing functions. By default, Trend Micro GateLock supports two virtual routers: Untrust-VR and Trust-VR.</td>
</tr>
<tr>
<td>virtual system</td>
<td>A virtual system is a subdivision of the main system that appears to the user to be a stand-alone entity. Virtual systems reside separately from each other in the same Trend Micro GateLock remote appliance; each one can be managed by its own virtual system administrator.</td>
</tr>
<tr>
<td>TERM</td>
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</tr>
<tr>
<td>virus</td>
<td>A computer virus is a program – a piece of executable code – that has the unique ability to infect. Like biological viruses, computer viruses can spread quickly and are often difficult to eradicate. In addition to replication, some computer viruses share another commonality: a damage routine that delivers the virus payload. While payloads might only display messages or images, they can also destroy files, reformat your hard drive, or cause other damage. Even if the virus does not contain a damage routine, it can cause trouble by consuming storage space and memory, and degrading the overall performance of your computer.</td>
</tr>
<tr>
<td>virus kit</td>
<td>A template of source code for building and executing a virus, available from the Internet.</td>
</tr>
<tr>
<td>virus signature</td>
<td>A virus signature is a unique string of bits that identifies a specific virus. Virus signatures are stored in the Trend Micro virus pattern file. The Trend Micro scan engine compares code in files, such as the body of an email message, or the content of an HTTP download, to the signatures in the pattern file. If a match is found, the virus is detected, and is acted upon (for example, cleaned, deleted, or quarantined) according to your security policy.</td>
</tr>
<tr>
<td>virus trap</td>
<td>Software that helps you capture a sample of virus code for analysis.</td>
</tr>
<tr>
<td>virus writer</td>
<td>Another name for a computer hacker, someone who writes virus code.</td>
</tr>
<tr>
<td>Web</td>
<td>The World Wide Web, also called the Web or the Internet.</td>
</tr>
<tr>
<td>Web server</td>
<td>A server process running at a Web site which sends out Web pages in response to HTTP requests from remote browsers.</td>
</tr>
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<tr>
<td>wildcard</td>
<td>A term used in reference to content filtering, where an asterisk (*) represents any characters. For example, in the expression &quot;ber, this expression can represent barber, number, plumber, timber, and so on. The term originates from card games, in which a specific card, identified as a &quot;wildcard,&quot; can be used for any number or suit in the card deck.</td>
</tr>
<tr>
<td>working directory</td>
<td>The destination directory in which the main application files are stored, such as /etc/iscan/IWSVA.</td>
</tr>
<tr>
<td>workstation (also known as client)</td>
<td>A general-purpose computer designed to be used by one person at a time and which offers higher performance than normally found in a personal computer, especially with respect to graphics, processing power and the ability to carry out several tasks at the same time.</td>
</tr>
<tr>
<td>worm</td>
<td>A self-contained program (or set of programs) that is able to spread functional copies of itself or its segments to other computer systems.</td>
</tr>
<tr>
<td>zip file</td>
<td>A compressed archive (in other words, &quot;zip file&quot;) from one or more files using an archiving program such as WinZip.</td>
</tr>
<tr>
<td>&quot;Zip of Death&quot;</td>
<td>A zip (or archive) file of a type that when decompressed, expands enormously (for example 1000 percent) or a zip file with thousands of attachments. Compressed files must be decompressed during scanning. Huge files can slow or stop your network.</td>
</tr>
<tr>
<td>zone</td>
<td>A zone can be a segment of network space to which security measures are applied (a security zone), a logical segment to which a VPN tunnel interface is bound (a tunnel zone), or a physical or logical entity that performs a specific function (a function zone).</td>
</tr>
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