TREND MICRO™

Network VirusWall™ Enforcer 1500i

(R220XL Series)

Installation & Deployment Guide

Network Security for Enterprise and Medium Business

Network Security

Document part no. NVEM06872/150310

Release date: May 2015

Product name: Trend Micro™ Network VirusWall™ Enforcer 1500i

Software version: 3.5 Service Pack 2

Protected by US patent no. 5,623,600

The user documentation for Network VirusWall Enforcer is intended to introduce the main features of the product and installation instructions for your production environment. Read through it prior to installing or using the product.

Detailed information about how to use specific features within the product are available in the Online Help and the Knowledge Base at the Trend Micro website.

Trend Micro is always seeking to improve its documentation. Your feedback is always welcome. Please evaluate this documentation on the following site:

http://www.trendmicro.com/download/documentation/rating.asp

Contents

Preface

Chapter 1: Introducing Network VirusWall Enforcer

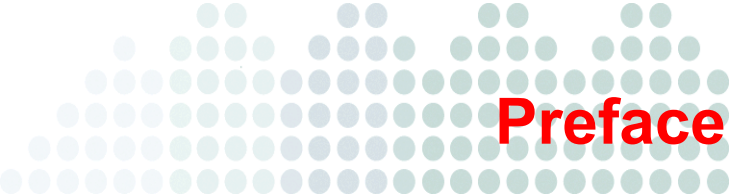
Chapter 2: Getting Started

Chapter 3: Deploying Network VirusWall Enforcer

Chapter 4: Preconfiguring Network VirusWall Enforcer

Chapter 5: Troubleshooting and Technical Support

Index



Preface

Welcome to the Trend Micro™ Network VirusWall™ Enforcer *Installment and Deployment Guide*. This book contains basic information about the tasks you need to perform to deploy the device. It is intended for novice and advanced users of who want to plan, deploy, and preconfigure Network VirusWall Enforcer.

This preface discusses the following topics:

About this Installment and Deployment Guide

This document contains detailed information about getting started with Network VirusWall Enforcer. It provides an overview of the device and how to install it. It also covers initial configuration and deployment to help you prepare the device for use in protecting your network.

Content Overview

The *Installment and Deployment Guide* provides the following information.

TABLE P-1. Document contents

Introducing Network VirusWall Enforcer on page 1-1	An overview of the device, its components, and its technical specifications
Getting Started on page 2-1	Details of the actual device and its specifications, including instructions for mounting and powering on the device
Deploying Network VirusWall Enforcer on page 3-1	Recommendations to help you plan for the deployment of one or more devices
Preconfiguring Network VirusWall Enforcer on page 4-1	Considerations and procedures on how to perform initial configuration (or preconfiguration)
Troubleshooting and Technical Support on page 5-1	Troubleshooting tips for issues encountered during preconfiguration

Document Set

The following documents are provided with your product.

TABLE P-2. Product documentation

DOCUMENT	FORMAT	LOCATION	COVERAGE
Installation and Deployment Guide	PDF	• DVD-ROM • Trend Micro Download Center	Guides you through device installation, deployment, and initial configuration
Administrator's Guide	PDF	• DVD-ROM • Trend Micro Download Center	Explains features and guides your through managing policies, administrative tasks, and troubleshooting
Quick Start Guide	PDF and print	• DVD-ROM • Trend Micro Download Center • Product package	Provides an overview of the device and initial tasks
Online Help	Web pages	• Web console	Explains options on the web console and relevant tasks
Readme	Text	• DVD-ROM • Trend Micro Download Center	Provides late-breaking news and software build information

Documentation and Software Updates

For the latest documentation and software updates, visit the Trend Micro Download Center at:

http://downloadcenter.trendmicro.com/

Audience

This *Installment and Deployment Guide* is targeted at network administrators who will deploy the device. Network VirusWall Enforcer documentation assumes that readers have networking knowledge and understand antivirus and content security concepts.

Device and Software Version

This *Installment and Deployment Guide* is released for administrators that are using the following device and software version.

TABLE P-3. Target device and software

PRODUCT INFORMATION	TARGET
Device	Network VirusWall Enforcer 1500i
Hardware series	R220 Series
Software version	3.5 Service Pack 2

Document Conventions

Network VirusWall Enforcer documentation uses the following conventions.

TABLE P-4. Conventions used in the documentation

CONVENTION	DESCRIPTION
ALL CAPITALS	Acronyms, abbreviations, and names of certain commands and keys on the keyboard
Bold	References to user interface items, including menus, buttons, tabs, and other labels
Italics	References to other documentation

TABLE P-4. Conventions used in the documentation (Continued)

CONVENTION	DESCRIPTION
`Monospace`	Actual text, typed commands, file names, and program output
Note:	Important information
Tip:	Recommendations
WARNING!	Critical information

Chapter 1

Introducing Network VirusWall Enforcer

This chapter introduces Trend Micro™ Network VirusWall™ Enforcer and provides an overview of important concepts and features.

This chapter discusses the following topics:

Network VirusWall Enforcer Overview

Network VirusWall Enforcer is an outbreak prevention appliance that allows organizations to enforce security policies at the network layer. Network VirusWall Enforcer scans network traffic to help ensure that it is free of fast-spreading network viruses. It helps reduce the chance of severe security compromise by preventing ARP spoofing attacks.

Network VirusWall Enforcer can identify infected computers and deliver cleanup services to these endpoints. Because it works at the network layer, it can effectively quarantine and isolate actual and potential infection sources. It can address infected endpoints, endpoints with software vulnerabilities or those without adequate malware protection, and endpoints that violate network usage policies.

Network VirusWall Enforcer helps organizations take precise action on security policy violations to proactively detect, contain, and even eliminate malware outbreaks. With Network VirusWall Enforcer in the network, organizations can significantly reduce network downtime due to rapidly spreading malware and reduce the cost of dealing with the malware at individual endpoints.

Figure 1-1 depicts a how Network VirusWall Enforcer can be deployed to protect a network.

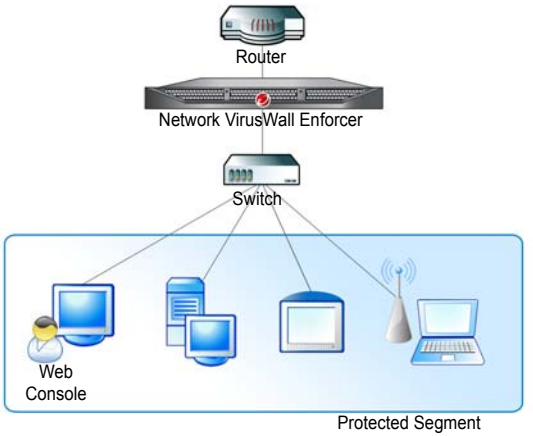


FIGURE 1-1. Basic Deployment

Key Concepts

Before proceeding to the succeeding sections of this document, take note of the following concepts.

TABLE 1-1. Key Concepts in this Document

CONCEPT	DESCRIPTION
Management port	Dedicated for management purposes. You can specify only one management port.
Mirror port	Sends all traffic passing the device to a computer to capture all data. The data can then be used for debugging purposes. You can specify one mirror port. Using this port type can impact performance.
Regular ports	Carries analyzed traffic to and from segments. You can specify multiple regular ports. Regular ports are also referred to as "bridge" ports.
Failopen	A fault-tolerance solution also known as "LAN bypass" that allows the Network VirusWall Enforcer device to continue to pass traffic even if a software or hardware failure occurs within the device.
Preconfiguration console	The console used to preconfigure a Network VirusWall Enforcer device. The preconfiguration process involves port configuration and setup of the management IP address to enable access to the web console.
Web console	The browser-based administrative console for defining policies and managing the device.

Technical and Environmental Specifications

The following table lists the technical specifications of Network VirusWall Enforcer:

TABLE 1-2. Technical specifications

SPECIFICATION	DETAILS
Form Factor	1U Rack-Mount
Weight	8.1 KG maximum
Dimensions (WxDxH)	434 x 394 x 42.4 mm
Management Ports	10/100/1000 BASE-T Port x 1
Data Ports	10/100/1000 BASE-T Port x 2
AC Input Voltage	100 to 240 VAC
AC Input Current	4A to 2A
HDD/RAID	500 GB without RAID
Power Supply	250 W
Power Consumption (Max)	305 W
Heat	1040 BTU/hr maximum
Frequency	50/60 Hz
Operating Temp.	10°C to 35°C
Storage Temp.	-40°C to 65°C

The following table lists the environmental specifications of Network VirusWall Enforcer:

TABLE 1-3. Environmental specifications

SPECIFICATION	DETAILS
Temperature (operating)	See Fresh Air for temperature information
Temperature (storage)	–40°C to 65°C (–40°F to 149°F) with a maximum temperature gradation of 20°C per hour
Relative humidity (operating)	See Dell Fresh Air for relative humidity information
Relative humidity (storage)	5% to 95% at a maximum wet bulb temperature of 33°C (91°F); atmosphere must be non-condensing at all times
Maximum vibration (operating)	0.26 Gms from 5 Hz to 350 Hz for 15 minutes (in all operation orientations)
Maximum vibration (storage)	1.87 Gms from 10Hz to 500 Hz for 15 minutes (all six sides tested)
Maximum shock (operating)	One shock pulse in the positive z axis (one pulse on each side of the system) of 31 G for 2.6 ms in the operational orientation
Maximum shock (storage)	Six consecutively executed shock pulses in the positive and negative x, y, and z axes (one pulse on each side of the system) of 71 G for up to 2 ms Six consecutively executed shock pulses in the positive and negative x, y, and z axes (one pulse on each side of the system) of 32 G faired square wave pulse with velocity change at 270 inches/second (686 centimeters/second)

TABLE 1-3. Environmental specifications (Continued)

SPECIFICATION	DETAILS
Altitude (operating)	–15.2m to 3048m (–50 ft to 10,000 ft)
Altitude (storage)	–15.2m to 10,668m (–50 ft to 35,000 ft)
Airborne contaminants	Class G1 or lower as defined by ISA-S71.04-1985

Chapter 2

Getting Started

This chapter guides you through setting up and powering on a Trend Micro™ Network VirusWall™ Enforcer device.

This chapter discusses the following topics:

Package Contents

Figure 2-1 illustrates the package contents.

FIGURE 2-1. Package contents

Note: The actual items in your package may appear slightly different from those shown in this document.

Refer to *Table 2-1* to check whether the package is complete. If any of the items is missing, please contact Trend Micro support (see *Getting Technical Support on page 5-3)*.

TABLE 2-1. Network VirusWall Enforcer package contents

QUANTITY	ITEM	DESCRIPTION
1 unit	Network VirusWall Enforcer device	The device and the lockable bezel
1 piece	Power cord	Supplies power to the device
1 set	Rack kit	Mounts the device to a standard 19-inch rack cabinet
1 unit	Network VirusWall Enforcer DVD	Bootable DVD that can be used to restore the device operating system and software. This DVD also includes tools and device documentation, specifically: • Image file for the Network VirusWall Enforcer operating system • Security Appliance License Agreement • Third-party License Attributions • Administrator's Guide • Installation and Deployment Guide • Quick Start Guide • Readme • Trend Micro™ Control Manager™ patches • Syslog and TFTP tools **Note:** Refer to the troubleshooting section in the *Administrator's Guide* for instructions on how to use the provided tools.

TABLE 2-1. Network VirusWall Enforcer package contents (Continued)

QUANTITY	ITEM	DESCRIPTION
3 printed documents	• Security Appliance License Agreement • Quick Start Guide • Dell™ Product Information Guide	Printed documents that provide safety, licensing, and getting started information. Consult these documents before using Network VirusWall Enforcer.

Front Panel

Figure 2-2 shows the controls, indicators, connectors, and features on the front panel, behind the removable bezel. *Table 2-2* provides component descriptions.

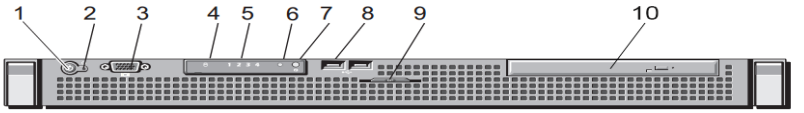


FIGURE 2-2. Front panel

TABLE 2-2. Front panel features

ITEM	INDICATOR, BUTTON, OR CONNECTOR	ICON	DESCRIPTION
1	Power-on indicator, power button		The power button turns the device on and off. The indicator lights up when the device is on. **Tip:** To force the device to shut down, press and hold the power button for five seconds.
2	NMI button		The nonmaskable interrupt (NMI) button is used to troubleshoot software and device driver errors. This button can be pressed using the end of a paper clip. Use this button only if directed to do so by qualified support personnel.
3	Video connector		Connects to a monitor; can be used to locally access and configure the device.
4	Hard drive activity indicator		Lights up when the hard drive is in use.
5	Diagnostic indicators (4)		The diagnostic indicators aid in troubleshooting hardware-related issues with technical support.
6	Device status indicator		Lights blue during device system operation.

TABLE 2-2. Front panel features (Continued)

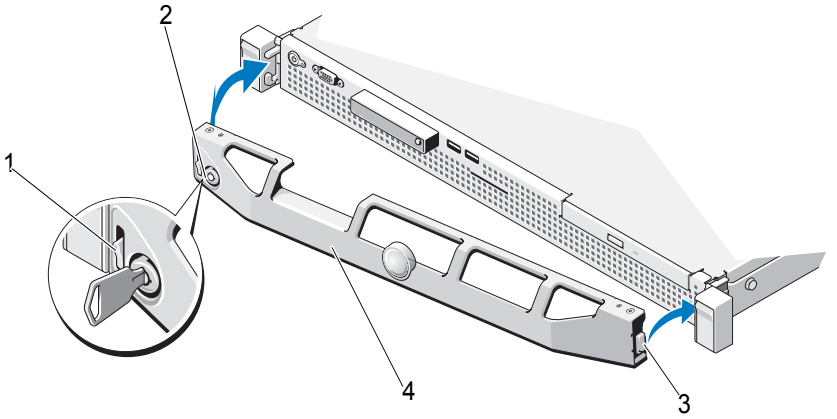
ITEM	INDICATOR, BUTTON, OR CONNECTOR	ICON	DESCRIPTION
7	Device identification button		The identification buttons on the front and back panels can be used to locate a particular device within a rack. When one of these buttons is pushed, the LCD panel on the front and the device status indicator on the back panel flash blue until one of the buttons is pushed again.
8	USB connectors (2)		The connectors accept USB 2.0-compliant devices. Use these connectors to connect a keyboard and directly configure the device.
9	Device identification panel		A slide-out panel for device information that contains the Express Service tag, embedded NIC MAC address, and iDRAC6 Enterprise card MAC address. Space is provided for additional labels.
10	Optical drive		One optional slim-line SATA DVD drive or DVD+RW drive.

Installing the Bezel

The device is supplied with a removable bezel as shown in *Figure 2-3*.

FIGURE 2-3. Network VirusWall Enforcer with the bezel

To replace the bezel, hook the right end of the bezel onto the chassis, and then fit the free end of the bezel onto the device. Secure the bezel with the keylock.



1	Release latch	2	Keylock
3	Bezel	4	Hinge tab

FIGURE 2-4. Installing and removing the bezel

To remove the bezel:

1. Unlock the keylock at the left end of the bezel.
2. Lift up the release latch next to the keylock.
3. Rotate the left end of the bezel away from the front panel.
4. Unhook the right end of the bezel and pull the bezel away from the device.

Back Panel

Figure 2-5 shows the controls, indicators, and connectors located on the device's back panel.

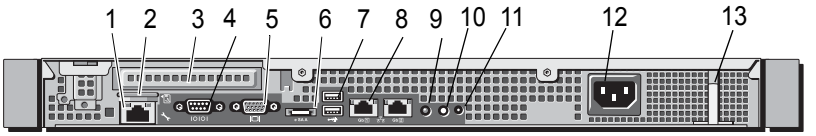


FIGURE 2-5. Back panel

TABLE 2-3. Back panel features

ITEM	INDICATOR, BUTTON, OR CONNECTOR	ICON	DESCRIPTION
1	iDRAC6 Enterprise port (optional)		Dedicated management port for the optional iDRAC6 Enterprise card.
2	Media slot (optional)		Connects an external SD memory card for the optional iDRAC6 Enterprise card.
3	NIC expansion slot slot		Expansion slot for additional NICs. The presence of an expansion card in this slot and the number for network ports available varies depending on the purchased device.
4	Serial connector	IOIOI	Connects a serial device to Network VirusWall Enforcer.

TABLE 2-3. Back panel features (Continued)

ITEM	INDICATOR, BUTTON, OR CONNECTOR	ICON	DESCRIPTION
5	Video connector		Connects a VGA display to the device.
6	eSATA	eSATA	Connects to eSATA devices for additional storage
7	USB connectors (2)		Connects USB devices to the device. The ports are USB 2.0-complaint.
8	Ethernet connectors (4)		Embedded 10/100/1000 Mbps connectors.
9	Device status indicator		Lights blue during normal operation.
10	Device identification button		The identification buttons on the front and back panels can be used to locate a particular device within a rack. When one of these buttons is pushed, the LCD panel on the front and the device status indicator on the back panel flash blue until one of the buttons is pushed again.
11	Device identification connector		Connects the optional system status indicator assembly through the optional cable management arm.
12	Power supply		250-W power supply.
13	Retention clip		Secures the power cable.

A dual port server adapter occupies the expansion slot. The two ports in this card correspond to ports 3 and 4, as shown in the image below, for a total of four network ports.

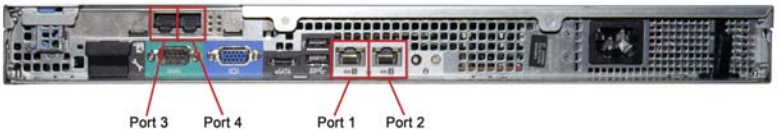


FIGURE 2-6. Standard four-port configuration

Device Ports

Network VirusWall Enforcer supports four network ports, with the first two ports (port 1 and 2) providing management functionality. More specifically, these ports can be configured as management (MGMT) or mirror (MIRR) ports. Ports 3 and 4 are regular data ports that connect to the network and provide security functionality. The device applies its protection features to packets that pass through these data ports.

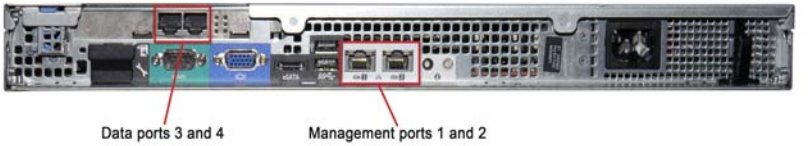


FIGURE 2-7. Network VirusWall Enforcer ports

Port Functions

Network VirusWall Enforcer ports can be classified based on their function. As described earlier, there are regular data ports and management ports. Management ports can be assigned different functions as shown in the table below.

TABLE 2-4. Port types

TYPE (INTERFACE TYPE; PORT NUMBER)	FUNCTION (CODE)	DEFAULT STATE	DESCRIPTION
Data (Copper or Fiber; ports 3 onwards)	Regular (REG)	Enabled	These are the standard ports used for policy enforcement. Network VirusWall Enforcer can assess endpoints connected to this port through L2 or L3 switches.

TABLE 2-4. Port types (Continued)

TYPE (INTERFACE TYPE; PORT NUMBER)	FUNCTION (CODE)	DEFAULT STATE	DESCRIPTION
Management (Copper; ports 1 to 2)	Manage-ment (MGMT)	Disabled	You can access the web con-sole through all regular ports, but you can also dedicate a single port for accessing the web console and managing the device.
	Mirror (MIRR)		Assign this function to send all traffic through this port. You can use this port to capture all scanning data, which can be used for debugging. Note that having a mirror port can impact performance.

Data Port Adapter

While the management ports are onboard ports, Network VirusWall Enforcer data ports are provided using Silicom PEG2BPi-SD-RoHS (Dual port Copper Gigabit Ethernet PCI Express Bypass Server Adapter). This server adapter minimizes network downtime with copper bypass circuitry.

By using bypass server adapters, Network VirusWall Enforcer data ports provide a fault-tolerance solution known as "failopen" or "LAN bypass". This solution allows Network VirusWall Enforcer to continue passing network traffic even when other device components fail or when the device loses power.

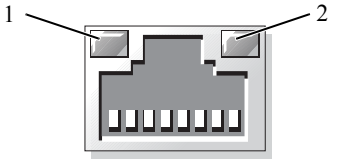
Note: Management ports do not support failopen.

Network Port Indicators

Each Network VirusWall Enforcer port has an indicator that allows you to determine the port's current state.

Indicators on Onboard Ports

Each onboard port (ports 1-2) on the back panel has an indicator that provides information on network activity and link status. The following figures and tables describe the indicators on the onboard ports.



1 Link indicator 2 Activity indicator

FIGURE 2-8. Onboard port indicators

TABLE 2-5. Indicator codes for onboard ports

INDICATOR CODE	STATUS
Link and activity indicators are off.	The port is not connected to the network.
Link indicator is green.	The port is connected to a valid link partner on the network.
Activity indicator is blinking yellow.	Network data is being sent or received.

Indicators on the Copper Expansion Cards

Network VirusWall Enforcer has a two-port gigabit server adapter in its expansion slot. Each port in the card corresponds to three LED indicators that provide the following information:

- Link/Activity (top LED, green)—lit at any speed and blinks with activity
- 100 (middle LED, green)—lit when connected at 100Mbit/s
- 1000 (middle LED, green)—lit when connected at 1000Mbit/s

Installing the Device

To use Network VirusWall Enforcer:

- Mounted to a standard 19-inch four-post rack cabinet

  The device requires 1 rack unit (RU) of vertical space in the rack.

  Tip: If mounting more than one device, position and mount the devices in close proximity. Doing so allows you to easily maintain the devices.

- On any stable surface as a freestanding device

  For freestanding installation, ensure that the device has at least 2in (5.08 cm) of clearance on each side to allow for adequate airflow and cooling.

  WARNING! Ensure that the fan vent is not blocked.

Installing the device involves performing the following tasks.

WARNING! **Before performing the following tasks, review the safety instructions in the Product Information Guide that came with the device.**

Step 1: Unpack the device

Unpack your device. The Network VirusWall Enforcer rack kit does not require screws and is very simple to use. The kit contains two rail assemblies and two Velcro straps.

Step 2: Install the rails and device in a rack

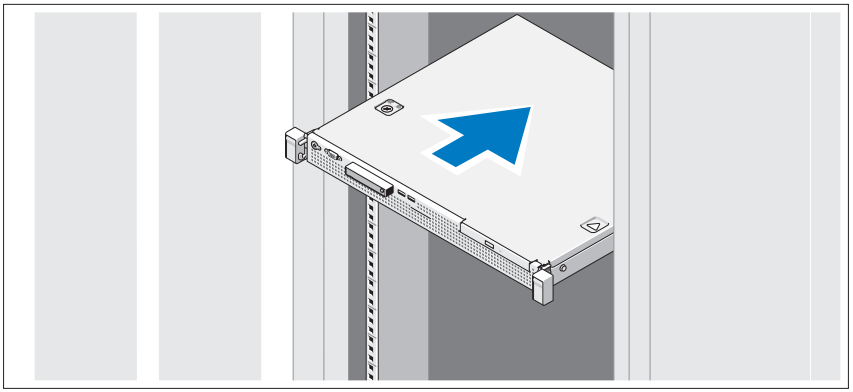


FIGURE 2-9. Rails and device assembly

Assemble the rails and install the device in the rack.

Note: For detailed information about hardware components and instructions on how to assemble the rack kit, visit the Dell™ PowerEdge™ R220 document repository at http://www.dell.com/support/home/us/en/19/product-support/product/poweredge-r220/manuals.

Step 3: Connect the keyboard and monitor (optional)

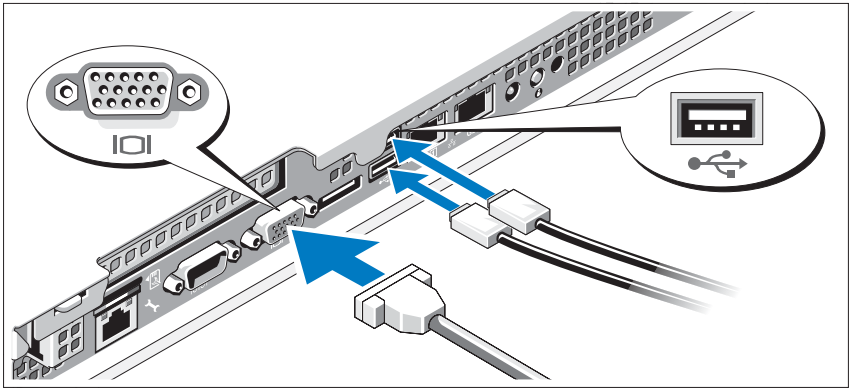


FIGURE 2-10. Connecting the keyboard and the monitor

Connect the keyboard and monitor. The connectors on the back of your device have icons indicating which cable to plug into each connector. Be sure to tighten the screws (if any) on the monitor's cable connector.

Step 4: Connect the power cables

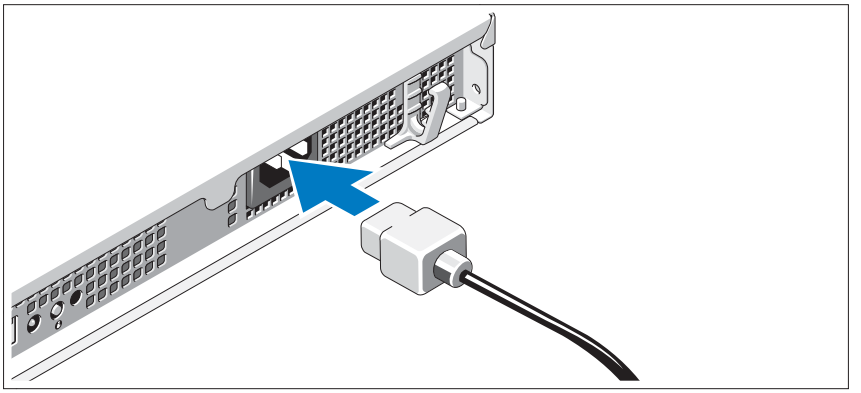


FIGURE 2-11. Connecting the power cables

Connect the power cable(s) to the device and, if using a monitor, connect the monitor's power cable to the monitor.

Step 5: Secure the power cables

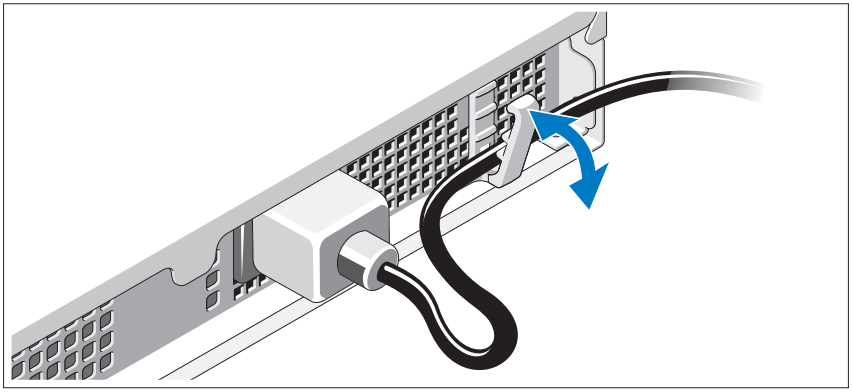


FIGURE 2-12. Securing the power cables

Bend the power cable(s) of the device into a loop as shown in the illustration and secure the cable to the bracket using the provided strap.

Plug the other end of the power cables into a grounded electrical outlet or a separate power source, such as an uninterruptible power supply (UPS) or a power distribution unit (PDU).

Step 6: Turn on the device

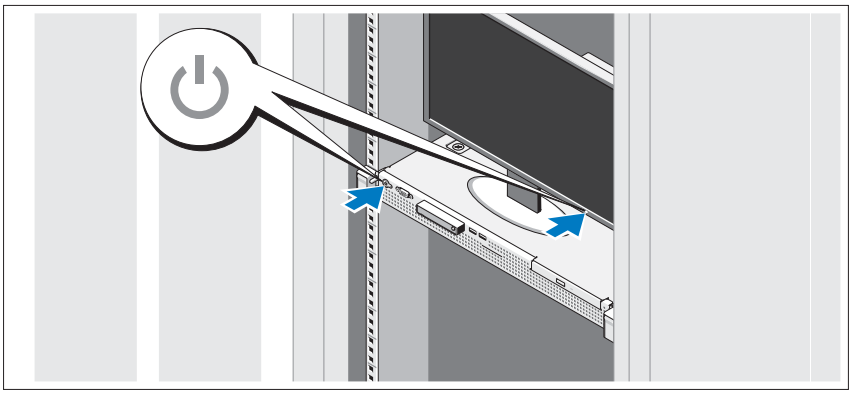


FIGURE 2-13. Powering the device and the monitor

Press the power button on the device and on the monitor (optional). The power indicators should light up.

Step 7: Install the bezel (optional)

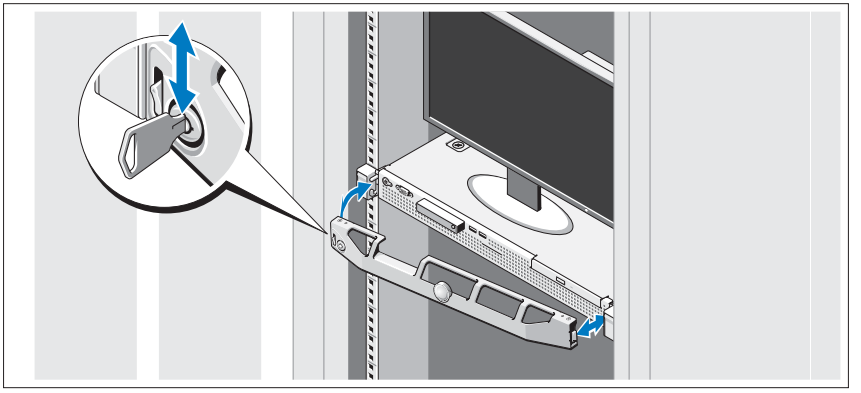


FIGURE 2-14. Attaching the bezel

Install the bezel. For detailed information, see *Installing the Bezel* on page 2-6.

Chapter 3

Deploying Network VirusWall Enforcer

Before configuring a Network VirusWall Enforcer device, plan how to integrate the device into your network. Determine the topology it will support.

This chapter explains how to plan for the deployment. It also provides deployment scenarios to help you understand the various ways the device can protect your network.

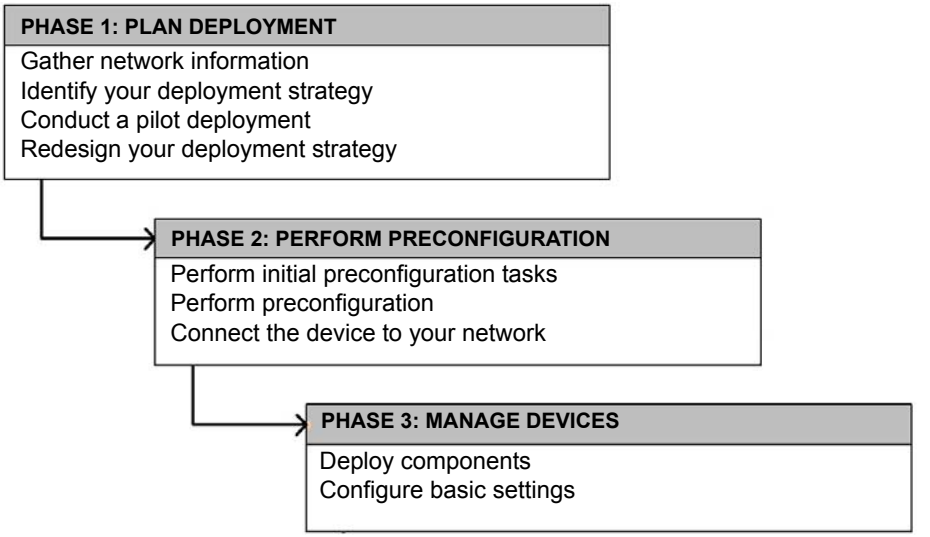
This chapter discusses the following topics:

Planning for Deployment

To take advantage of the benefits Network VirusWall Enforcer can bring to your organization, you will need to understand the possible ways to deploy one or more devices. This section provides a deployment overview and introduces important considerations.

Deployment Overview

Follow three stages of deployment to successfully install the device(s).



Tip: This *Installment and Deployment Guide* discusses phases 1 and 2. Refer to the *Administrator's Guide* for information related to phase 3.

Phase 1: Plan the Deployment

During phase 1, plan how to best deploy the device(s) by completing these tasks:

- Identify the segments of your network that are in the greatest need of protection.

- Plan for network traffic, considering the location of critical computers, such as email, web, and application servers.
- Determine the number of devices needed to meet your security needs and their locations on the network.
- Conduct a pilot deployment on a test segment of your network.
- Redefine your deployment strategy based on the results of the pilot deployment.

Phase 2: Perform Preconfiguration

In phase 2, begin implementing the plan you created in phase 1 by performing the following tasks:

- Perform the initial preconfiguration tasks (see *Before Preconfiguration* on page 4-2).
- Perform preconfiguration on the device(s) (see *Performing Preconfiguration* on page 4-3).
- Connect the device(s) to your network (see *Connecting to the Network* on page 4-10).

Phase 3: Manage Devices

During phase 3, manage Network VirusWall Enforcer devices from the web console. For this phase, consult the following sections of the Administrator's Guide:

- *Understanding Network VirusWall Enforcer* provides details about relevant concepts, including management options, endpoints, security risks, policy enforcement, device ports, fault tolerance, updatable components, SNMP support, and VLAN support.
- *Preparing for Policy Enforcement* discusses the tasks you need to perform before creating policies and deploying them to your network.
- *Policy Creation and Deployment* covers actual policy creation, providing sample scenarios and instructions.

Deployment Notes

Consider the following when planning for a deployment:

- All traffic to and from a network segment must go through the device.

To protect an organization from network threats, position the device in a key place on your network segment. The device should be able to scan all network traffic to prevent, detect, or contain threats.

- Each of the interfaces supports the following port speed and duplex mode settings:
  - 10Mbps x half-duplex
  - 10Mbps x full-duplex
  - 100Mbps x half-duplex
  - 100Mbps x full-duplex
  - 1000Mbps x full-duplex

Note: Both the connected L2/L3 and Network VirusWall Enforcer devices should have the same port speed and duplex mode. Otherwise, the Network VirusWall Enforcer port will operate in half-duplex mode. To simplify configuration, you can set Network VirusWall Enforcer to auto-select the optimum port speed and duplex mode. Likewise, allow your switch to auto-select the port speed and duplex mode.

- For IPv4 addresses, the device supports addresses belonging to any class (class A, B, or C). For IPv6 addresses, it supports global unicast and link-local addresses.

Tip: Although each range is in a different class, you are not required to use any particular range for your internal network. However, selecting a fixed range greatly diminishes the chance of IP addressing conflicts.

- Policy enforcement and network virus scan support various actions for noncompliant or infected endpoints.

Identifying What to Protect

Position Network VirusWall Enforcer between layer 2 (L2) or layer 3 (L3) devices. This way, the device can apply its protection to packets coming in or out of your network.

Identify segments of your network to protect by considering which kinds of endpoints may introduce security risks or violate security policies. Also, consider the location of resources that are critical to your organization, such as:

- Remote endpoints that access your internal network resources
- Guest endpoints that temporarily connect to your network
- Key network segments/important network assets, such as places on the network that contain email, web, or application servers

Remote Access Endpoints

Remote endpoints access internal network resources in the same manner as the endpoints already on your network and comprise essentially another internal network segment. You must consider whether to protect remote endpoints as you do internal endpoints.

You can consider two types of remote endpoints:

- **Dialup/VPN users**—telecommuters who typically dial up or use VPN to connect to your network
- **External business units**—offices located outside the main network site that need access to resources on the main network

A home user could establish a dialup connection or a VPN connection to access a company's internal network resources. Most likely, business units would establish a VPN connection.

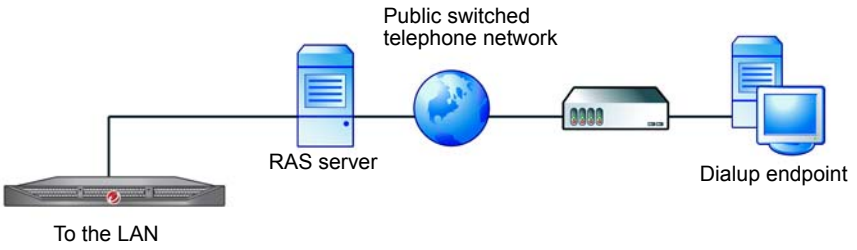


FIGURE 3-1. Dialup service deployment scenario

Figure 3-1 illustrates a dialup connection between a home user and an organization's internal network. A RAS server, the point where the dialup connection terminates, is connected to a regular port (see *Key Concepts* on page 1-3 for information about different types of ports). This means that all packets going between the RAS server and the LAN pass through the device. Once the home user establishes a connection with the RAS server, it essentially becomes part of the internal network, as illustrated in the basic deployment scenario (see *Basic Deployment Scenario* on page 3-18). The home user accesses both network resources and the Internet in the same way that internal endpoints access them.

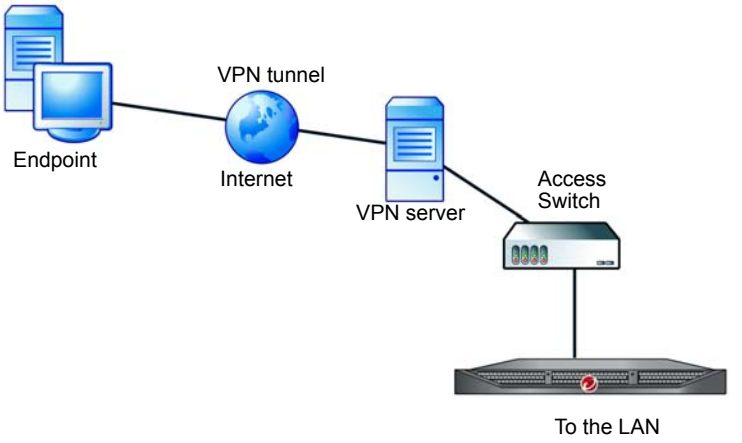


FIGURE 3-2. Endpoint-to-site VPN deployment scenario

Figure 3-2 illustrates a connection between a home user and an organization's internal network through a VPN server connected to a regular port (see *Key Concepts* on page 1-3 for information about different types of ports). In this configuration, the home user's VPN connection is considered part of the internal network.

Note: Network VirusWall Enforcer must be behind the VPN server, which encrypts and decrypts VPN traffic.

The recommended settings for this scenario are the same as the settings for the dialup user scenario (see *Figure 3-1*).

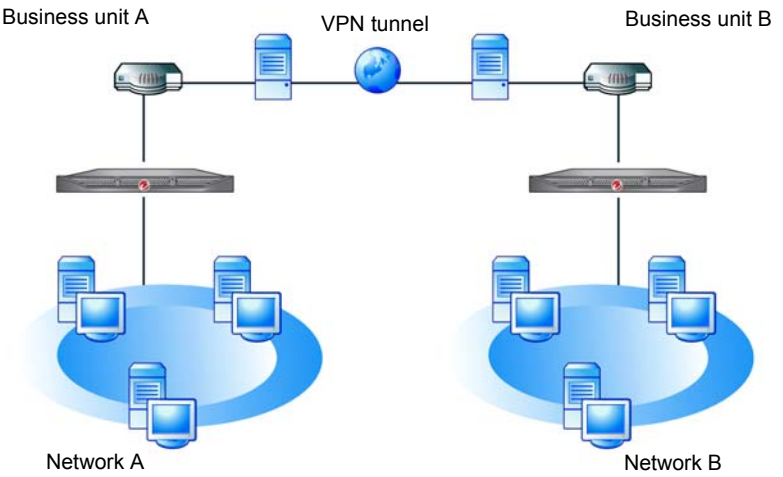


FIGURE 3-3. Site-to-site VPN deployment scenario

Figure 3-3 illustrates a VPN connection between two business units. As in the home user scenario, a VPN server is connected to a regular port on each device (see *Key Concepts* on page 1-3 for information about different types of ports).

Guest Endpoints

Guest endpoints are endpoints that do not belong to an internal network domain. They are often visitors who temporarily access your network resources through their portable computers. Guest endpoints represent a major risk because they are typically outside the scope of the network security infrastructure. These endpoints are more likely to violate antivirus policies and introduce security risks to the network.

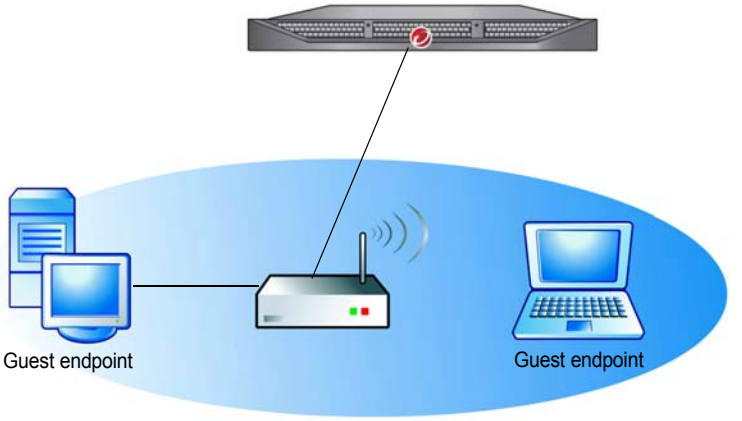


FIGURE 3-4. Guest network deployment scenario

Figure 3-4 illustrates a segment of an internal network for guest endpoints. A wireless access point, switch, or hub is connected to the regular port (see *Key Concepts* on page 1-3 for information about different types of ports). This type of topology ensures that the device scans all traffic before it leaves the guest network segment and makes isolation of the guest segment possible in the event of a virus outbreak.

Key Segments and Critical Assets

Key network segments need to be protected from network-based threats. This may include a group of endpoint computers or network resources critical to your organization, such as email, web, or application servers.

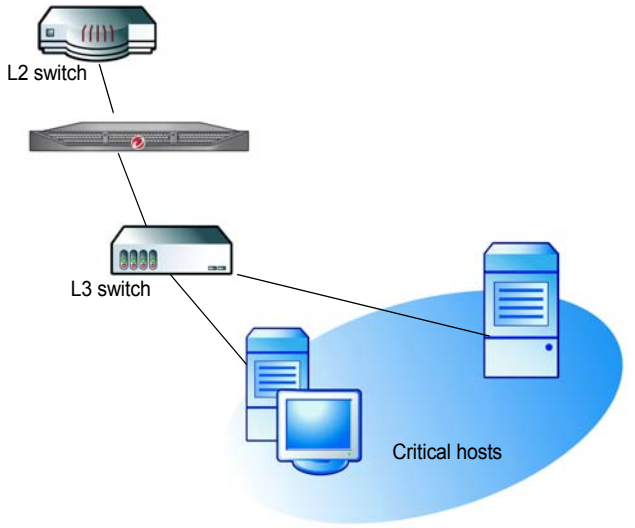


FIGURE 3-5. Key network segments scenario

The diagram above illustrates a segment of an internal network containing email and web servers, including endpoints. An internal switch or hub is connected to a regular port (see *Key Concepts* on page 1-3 for information about different types of ports), creating a segment where all packets going in and out of the segment can be scanned. Installing the device in this position adds the benefits of virus scanning and segment isolation in the event of a virus outbreak.

The device can also guard against attacks that not only originate on the Internet, but also attacks that may originate from within your network. Since traffic first passes through the device before reaching email and web servers, the device can scan and detect infected packets that come from endpoints on the LAN.

Dual-Switch VLAN Environment

Network VirusWall Enforcer must be placed in line on the physical network to provide security. In most situations, this means placing it between an upstream switch and one or more downstream switches.

Most VLAN configurations will utilize two switches. Single-switch VLAN configurations are possible; for more information, refer to *Single-Switch VLAN Environment* on page 3-12. The figures in this section illustrate multiple downstream switches in a flat topology; however, a single in line configuration is also possible.

In *Figure 3-6*, the devices are installed between an upstream switch and downstream switches. This configuration is appropriate when multiple VLANs carry moderate network traffic, and the upstream switch carries high-bandwidth traffic.

Note: Ensure that Spanning Tree Protocol (STP) is enabled. If STP is not enabled, packets may loop for an indefinite period.

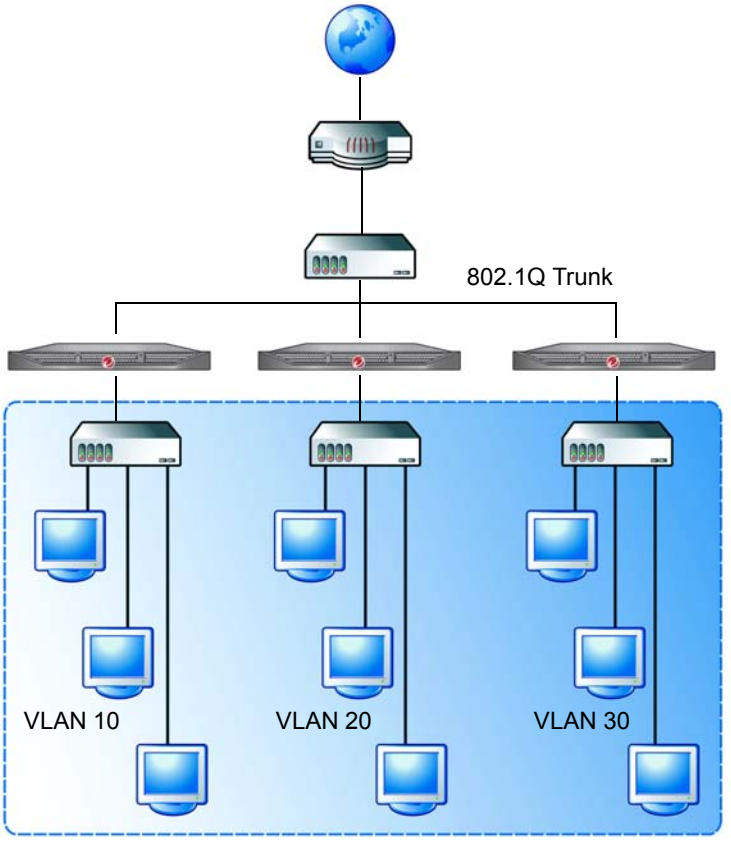


FIGURE 3-6. Multiple VLAN segments with each device protecting one segment

In *Figure 3-6*, the devices are installed on an 802.1Q trunk line between two switches.

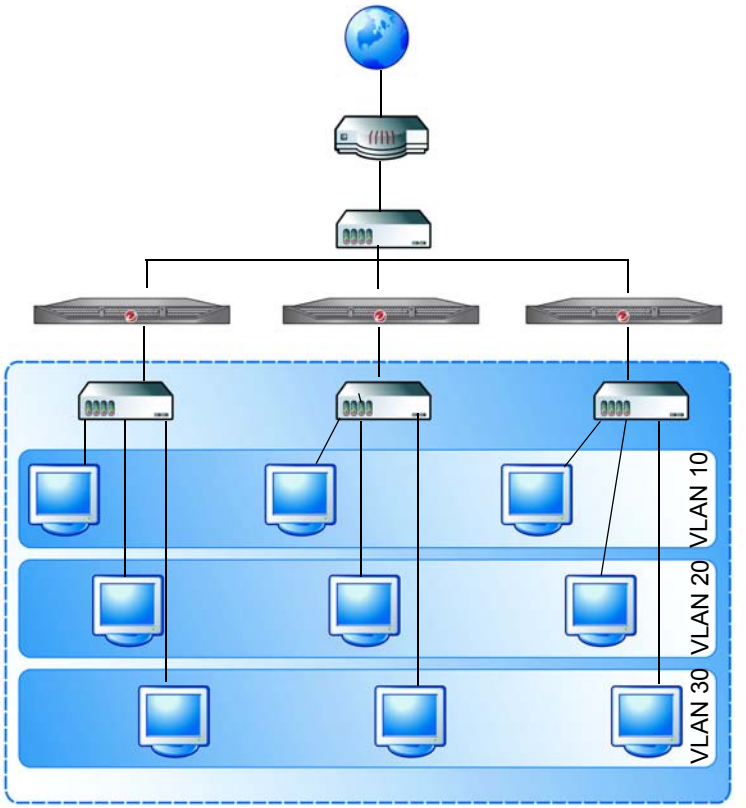


FIGURE 3-7. Multiple VLAN segments with each device protecting all segments

Single-Switch VLAN Environment

A single-switch configuration may have the following properties:

- Possible only when using a switch that can be configured to carry individual VLAN traffic on specific physical ports.
- VLAN 20 is assigned to ports 1 and 2 on the switch.

- The upstream network is connected to port 2 on the switch.
- The regular port on Network VirusWall Enforcer is connected to port 1 on the switch.
- Endpoints are connected to other regular ports on Network VirusWall Enforcer.

FIGURE 3-8. Single-switch VLAN environment

Networks with IPv6 Addresses

Administrators deploying Network VirusWall Enforcer in an environment with IPv6 addresses must plan carefully to ensure that the device can provide protection and does not interfere with network connectivity.

IPv6 Limitations

The following features are not supported on IPv6 networks:

- Threat mitigation with Threat Discovery Appliance
- Policies that require user authentication using Kerberos
- Program rescue
- Enforcement of network application policies (port activity, instant messengers, file transfers, and Outbreak Prevention Policy)
- Remote detection of endpoint operating systems for policy enforcement
- ActiveUpdate through Network Address Translation/Protocol Translation (NAT-PT)
- Addressing:
  - Dynamic addressing from a Windows DHCPv6 server

  - Limited Linux DHCPv6 support; the device can obtain an IP address, a prefix, and a DNS from a Linux DHCPv6 server, but it will not be able to obtain gateway settings.
- Specifying a link-local IP address as the update source

Pure IPv6 Environments

In environments with purely IPv6 hosts, administrators do not need to perform special deployment tasks. As long as Network VirusWall Enforcer is supplied with a valid IPv6 address, it can function normally. Note, however, that certain device features are not available in pure IPv6 environments as described in *IPv6 Limitations* on page 3-13.

Note: Many resources on the Internet, including the Trend Micro™ ActiveUpdate™ and product registration servers, are accessible only through IPv4 traffic. When configured as an IPv6-only host, Network VirusWall Enforcer traffic to and from the Internet can be translated using a dual-stack proxy.

Dual-Stack and Mixed Environments

Environments with dual-stack hosts or those with both IPv6 and IPv4 hosts require relatively complex deployment planning. Consider the following key points during planning:

- Ensure that you configure both an IPv4 and IPv6 address for Network VirusWall Enforcer if it will be processing both kinds of traffic.
- Network VirusWall Enforcer cannot perform traffic translation when in dual-stack mode. It will treat IPv6 and IPv4 traffic independently.
- Note the limitations of the device on IPv6 networks as discussed in *IPv6 Limitations* on page 3-13.

Planning for Network Traffic

The scenario presented in *Key Segments and Critical Assets* on page 3-9 is a good example of how to plan for network traffic. There is a strategic advantage to positioning the device in front of resources that endpoints access regularly, such as an email server or an Internet gateway. Because many viruses make their way into networks through email attachments and web browsers, forcing traffic to pass through the device significantly reduces the risk of virus infection. Identify other places on your network through which large amounts of traffic pass and consider placing the device where it can scan the most traffic.

Determining the Number of Devices to Deploy

Determine how many devices would best meet your security requirements. Consider the following factors:

- **Existing network topology**—based on your network topology, identify the segments that you want the device to protect (see *Identifying What to Protect* on page 3-4)
- **Existing network device interfaces**—because a device handles 10/100Mbps or 1Gbps Fast Ethernet traffic, identify the network device interfaces that handle the same type of traffic and can therefore connect to Network VirusWall Enforcer devices
- **Desired effectiveness of protection**—to lower the risk of a virus outbreak spreading, segment several sections of your network with Network VirusWall Enforcer devices
- **Desired degree of performance**—consider the number of endpoints and the amount of traffic that a device can handle

Fault Tolerance

Network VirusWall Enforcer provides fault tolerance with the failopen feature.

Failopen

Failopen or LAN bypass involves one Network VirusWall Enforcer device. Failopen is a fault-tolerance solution that allows a Network VirusWall Enforcer to continue passing network traffic even when other device components fail or when the device loses power.

Failopen Considerations

Consider the following important points about failopen:

- If the switches on your network do not support auto MDI/MDI-X, use a crossover and non-crossover cable combination to enable failopen. Invalid cable combinations prevent Network VirusWall Enforcer from using failopen and can result in network issues. Refer to device documentation to determine whether your L2 switches support auto MDI/MDI-X.
- All regular ports on the device support LAN bypass and will allow traffic bypass even when the device is powered off.
- To help ensure that failopen works, keep the total length of the network cable connecting regular ports to other devices within 100 meters (~328 feet). Resetting a Network VirusWall Enforcer device with failopen enabled temporarily blocks network connection for about 30 seconds.
- *Table 3-1* describes the connection status of ports when certain procedures are performed.

TABLE 3-1. Port status

TIME (SECONDS)	PROCEDURE	REGULAR PORTS WITH FAILOPEN
2	Restarting the device	Disconnected

TABLE 3-1. Port status

TIME (SECONDS)	PROCEDURE	REGULAR PORTS WITH FAILOPEN
38	Configuring memory	Connected
	Initializing	Connected
	Loading Grand Unified Bootloader (GRUB)	Connected
	Booting Network VirusWall Enforcer mini kernel	Connected
	Starting kernel	Connected
12	Disabling failopen and bridge learning	Disconnected
n/a	Preconfiguring the device	Connected

Conducting a Pilot Deployment

Trend Micro recommends conducting a pilot deployment in a controlled environment to help you understand how the device features work. A pilot deployment also helps you determine how the device can be used to accomplish your security goals and the level of support you will likely need after a full deployment.

Perform the following tasks to conduct a pilot deployment:

- Choose a pilot site.
- Create a contingency plan.
- Deploy and evaluate your pilot.

Choosing a Pilot Site

Choose a pilot site that matches your planned deployment. Look at other devices on your network, such as switches or firewalls, and other software installations, such as OfficeScan™ and Control Manager™. Try to simulate the type of topology that would serve as an adequate representation of your production environment.

Creating a Contingency Plan

Trend Micro recommends creating a contingency plan in case there are issues with the installation, operation, or upgrade of the device. Consider your network's vulnerabilities and how you can retain a minimum level of security if issues arise.

Deploying and Evaluating your Pilot

Deploy and evaluate the pilot based on expectations regarding both security enforcement and network performance. Create a list of items that meet or do not meet the expected results during the pilot process.

Redefining Your Deployment Strategy

Identify the potential pitfalls and plan accordingly for a successful deployment. Consider especially how the device performed with the security installations on your network. This pilot evaluation can be rolled into the overall production and deployment plan.

Tip: See *Performing Preconfiguration* on page 4-3 and *Verifying Network Support* on page 4-2 for checklists for preparing a device for deployment.

Basic Deployment Scenario

The device can be installed on a network that contains Ethernet devices such as hubs, switches, and routers. Deploy Network VirusWall Enforcer between a switch that leads to the public network and a switch that protects a segment of the local area network (LAN). It can also be installed between an edge switch and a hub.

Figure 3-9 illustrates a basic deployment scenario. A switch or a router is connected to a regular port.

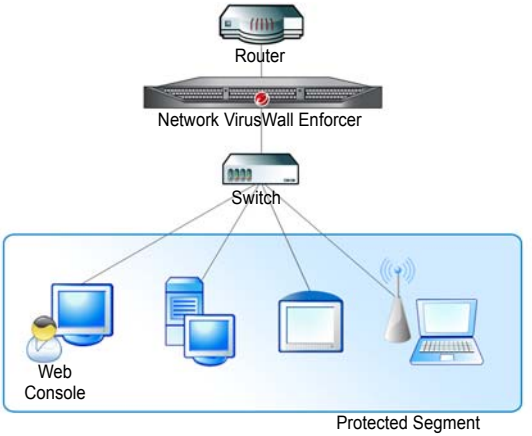


FIGURE 3-9. Basic Deployment

Network VirusWall Enforcer protects your network as follows:

- Scans traffic to and from endpoints
- Prevents endpoints that violate your security policies from gaining access to resources
- Isolates endpoints in the event of a virus infection

In this deployment setup, you may opt to enable failopen. With failopen enabled, traffic can still pass through the device if the device encounters a hardware or system error that prevents it from filtering network packets.

Chapter 4

Preconfiguring Network VirusWall Enforcer

This chapter discusses the following topics:

Before Preconfiguration

Complete the following tasks before you preconfigure Network VirusWall Enforcer:

- Test the failopen functionality. Network traffic should still pass through the device after a hardware or system error or if the device loses power.
- Determine the password for the `admin` account.

> **Tip:** There are two default accounts: `Admin` and `PowerUser`. These accounts use `admin` and `poweruser`, respectively, as their default passwords.

- Determine the host name for the device.

Verifying Network Support

In a failopen deployment, the total length of the network cable connecting regular ports to other devices must not exceed 100 meters (~328 feet).

A cable longer than the maximum length will prevent failopen from working. See *Failopen Considerations* on page 3-16 for more information.

Preparing for Preconfiguration

To prepare for preconfiguration, check if you have completed the instructions in *Before Preconfiguration* on page 4-2 before starting with the succeeding steps.

Also, ensure that you can access Network VirusWall Enforcer directly. Before powering on the device, attach the following peripherals:

- VGA monitor
- Keyboard

> **Tip:** For instructions on how to connect peripherals and power on the device, see *Installing the Device* on page 2-14.

Understanding Preconfiguration

Ensure that the tasks in *Preparing for Preconfiguration* on page 4-2 have been completed before starting preconfiguration.

To perform preconfiguration:

1. Plan and determine the deployment strategy (see *Deploying Network VirusWall Enforcer* on page 3-1).
2. Perform preconfiguration (see instructions in *The Preconfiguration Console* on page 4-3).
3. Perform configuration tasks (see *Configuring Policy Enforcement and Device Settings* in the *Administrator's Guide*).

After completing the initial configuration tasks (see *Preparing for Preconfiguration* on page 4-2), use the Preconfiguration console to proceed.

The Preconfiguration Console

The Preconfiguration console lets you configure basic device settings directly using a keyboard and a monitor. All initial configuration tasks, like specifying port functions and the device IP address must be done through the Preconfiguration console.

The Preconfiguration console can also be accessed using an SSH client such as PuTTY. However, before this can be done, you must configure the device IP address and ensure that the device can connect to the network. For more information on accessing the Preconfiguration console remotely, see the *Administrator's Guide*.

Performing Preconfiguration

You must complete the following tasks to preconfigure the device:

1. *Logging on the Preconfiguration Console* on page 4-4
2. *Configuring Device Settings* on page 4-6
3. *Setting the Interface Speed and Duplex Mode* on page 4-9

Logging on the Preconfiguration Console

A few minutes after powering on the device, the attached monitor will display the Preconfiguration console. If this screen does not display, press CTRL+R.

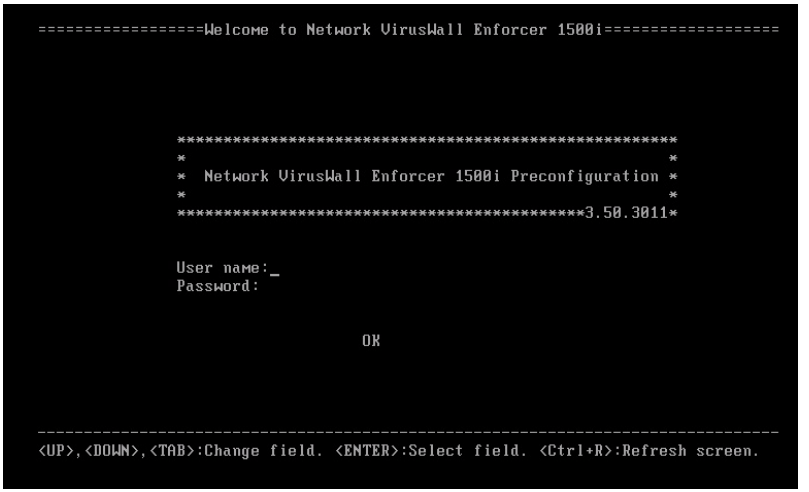


FIGURE 4-1. The Preconfiguration console logon screen

To log on to the Preconfiguration console

1. To get full access to the Preconfiguration console, type the default administrator user name and password:

   User name: `admin`

   Password: `admin`

Note: Only the `administrator` and `power user` accounts can be used to log on to the Preconfiguration console. Immediately after logging on to the web console, change the passwords to these accounts for increased security. For more information, see the *Administrator's Guide*.

---

2. After logging on, the **Main Menu** appears.

Note: The Preconfiguration console has a timeout value of ten minutes. If the console is idle for ten minutes, it automatically logs off the account. Also, to help protect the console from unauthorized access, users must wait between each logon attempt after three unsuccessful attempts.

FIGURE 4-2. The Preconfiguration console main menu

Configuring Device Settings

Immediately after logging on to the Preconfiguration console for the first time, configure the device host name and network settings.

To configure the device settings:

1. On the **Main Menu** of the Preconfiguration console, type 2 to select **Device Settings**. The Device Settings screen appears.

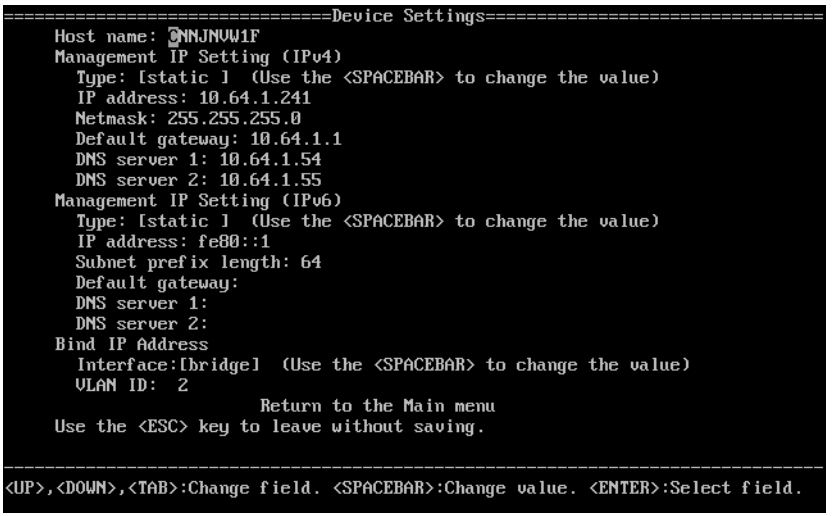


FIGURE 4-3. Device Settings screen

Note: When configuring the device for the first time, factory default settings appear.

2. Type a host name that properly represents the device in the network.

   Each device on your network must have a unique host name. Control Manager™ uses this unique host name during registration and as the managed product name.

Host names may contain up to 30 alphanumeric characters without spaces. Trend Micro recommends a unique descriptive host name to represent and identify the device as seen through the management console. For example, designate `NVWE-NY-main` as the host name for a device protecting a New York main office.

3. Type or select the management IP address settings under Management IP settings. Specify either the IPv4 or the IPv6 settings as necessary. When using Network VirusWall Enforcer as a dual-stack host, provide both IPv4 and IPv6 settings.

WARNING! **If there is a NAT device in your environment, Trend Micro recommends assigning a static IP address to the device. Because different port settings are assigned from your NAT, your device may not work properly if dynamic IP addresses are used.**

---

4. After specifying the network settings, press `ENTER`.

Enabling Ports and Selecting Port Functions

Depending on your desired deployment, you may need to enable certain ports and specify their function. By default, only the regular ports are enabled. So, if you need to use management or mirror port functionality, you need to enable the management ports, which are ports 1 and 2.

To enable non-regular ports and modify their function:

1. On the **Main Menu** of the Preconfiguration console, type **4** to open the Interface Settings screen.

```
==============================Interface Settings==============================
      Current Interface Settings:

      Name          Port1 Port2 Port3 Port4
      ------------------------------------
      Speed&Duplex   ----  ----  auto  auto
      Type           DIS   DIS   REG   REG

      DIS: Not assigned                10H: 10 Mbps x half-duplex
      N/A: External card not installed 10F: 10 Mbps x full-duplex
      MGMT: Management port            100H: 100 Mbps x half-duplex
      MIRR: Mirror port                100F: 100 Mbps x full-duplex
                                       1000F: 1000 Mbps x full-duplex
                                       auto: Detect the best speed


        1) Interface Speed & Duplex mode setting
        2) Interface setting
        3) Return to the Main menu


------------------------------------------------------------------------------
<UP>,<DOWN>:Change item. <ENTER>:Select item.
```

FIGURE 4-4. Interface Settings screen

2. Type **2** to select **Interface setting**.

   The Interface Settings screen changes so that the function of each port can be selected and modified.

3. Select a port by using the up and down arrows. Each port number corresponds to the physical ports as shown below.

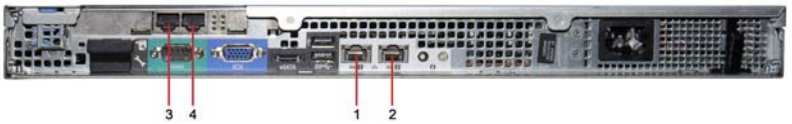


FIGURE 4-5. Network VirusWall Enforcer ports

4. To modify the function of the selected port depending on your deployment strategy, press the SPACEBAR. Disabled management interface (onboard) ports can be assigned the following functions:
   - **DIS**—the port is disabled; this is the default setting
   - **MGMT**—the port is specifically used to manage the device
   - **MIRR**—the port is used to mirror network traffic to another computer; this is typically used for debugging

Tip: For more information about different port functions, see *Port Functions* on page 2-11.

5. Select **Return to the previous menu** and press ENTER.

Setting the Interface Speed and Duplex Mode

Both the connected L2/L3 and Network VirusWall Enforcer devices should have the same port speed and duplex mode. Otherwise, the Network VirusWall Enforcer port will operate in half-duplex mode. To simplify configuration, you can set Network VirusWall Enforcer to auto-select the optimum port speed and duplex mode. However, manual selection of the correct port speed and duplex mode can help ensure optimal network performance. Use the Preconfiguration console to configure the interface speed and duplex mode.

To set the interface speed and duplex mode:

1. On the Interface Settings screen, type **1** to open the **Interface speed & duplex mode setting** screen, which displays the current interface speeds and duplex settings of all ports.
2. Select a port by using the up and down arrows.
3. Select the speed, using the SPACEBAR to scroll through the speed and duplex mode options. For more information on the supported speed and duplex modes, see *Deployment Notes* on page 3-3.
4. After configuring all port speeds and duplex modes, select **Return to the previous menu** to go back to the **Interface Settings** screen.

5. Type **3** to select **Return to Main menu**. The **Main Menu** displays.
6. Select **Save and Log Off** to make changes take effect.

Note: In order to apply the configuration changes made in the Preconfiguration console, you must save and log off.

Connecting to the Network

Make sure you preconfigure the device before attempting to connect the device to the network. After preconfiguration, switch off the device before connecting it to the network.

To connect the device to your network:

1. Connect one end of the cable to a regular port and the other to a segment of your network.
2. Power on the device.

Note: Network VirusWall Enforcer can handle various interface speed and duplex mode network traffic. See *Setting the Interface Speed and Duplex Mode* on page 4-9.

Configuring Network VirusWall Enforcer

After preconfiguring Network VirusWall Enforcer, you can configure the device and start protecting your network.

Trend Micro recommends performing the following tasks after preconfiguring a device:

- Change the password for the default accounts
- Activate the device
- Update components
- Configure policy enforcement

For more information, refer to the *Online Help* and the *Administrator's Guide*. See *Document Set* on page ix.

Chapter 5

Troubleshooting and Technical Support

This chapter provides troubleshooting information for issues that may arise during the preconfiguration.

Tip: Refer to the *Administrator's Guide* for answers to frequently asked questions and other troubleshooting tips.

This chapter discusses the following topics:

Device Issues

#	ISSUE	CORRECTIVE ACTION/EXPLANATION
1	`admin` password misplaced or forgotten	You have two options: 1. If the device has registered to Control Manager, you can access the web console and change the password through the Control Manager console using a Control Manager account. 2. You can reload the device image from the provided USB flash drive. Note that this will remove any settings and policies stored on the device. **Note:** Reloading the Network VirusWall Enforcer image will restore the default settings. You can only recover device settings if you exported them to a file earlier.
2	Unable to access the Preconfiguration console remotely	Verify secure console port connections and SSH client software settings. See the *Administrator's Guide* for more information on accessing the Preconfiguration console remotely.
3	Network packet delivery is too slow and seems to be blocked	Network VirusWall Enforcer does not refresh its MAC address table if one of the links fails. The result is a temporary delay in packet delivery.

Getting Technical Support

Trend Micro is committed to providing service and support that exceeds your expectations. You must register your product to qualify for support.

Before Contacting Technical Support

Before contacting technical support, see if these resources can help you address your problem:

- **Product documentation**—the *Administrator's Guide*, *Installation and Deployment Guide*, and *Online Help* provide comprehensive information about Network VirusWall Enforcer. Search these documents for helpful information.
- **Knowledge Base**—a key part of our technical support website, the Trend Micro Knowledge Base contains the latest information about Trend Micro products.

  To search the Knowledge Base, visit:

  http://esupport.trendmicro.com

Contacting Technical Support

In addition to phone support, Trend Micro provides the following resources:

- Email support

  support@trendmicro.com
- Online Help—configuring the product and parameter-specific tips
- Readme—late-breaking product news, installation instructions, known issues, and version specific information
- Knowledge Base—technical information procedures provided by the Support team:

  http://esupport.trendmicro.com
- Product updates and patches

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

To locate the Trend Micro office nearest you, visit:

http://www.trendmicro.com/en/about/contact/overview.htm

Having the following information ready before you contact our support staff can help them resolve problems faster:

- Device model and image (firmware) version
- Deployment setup
- Interface speed and duplex mode settings
- Exact text of any error messages
- Steps to reproduce the problem

Index

E

F

G

H

I

K

L

M

TREND MICRO INCORPORATED

225 E. John Carpenter Freeway, Suite 1500
Irving, Texas 75062 U.S.A.
Phone: +1 (817) 569-8900, Toll-free: (888) 762-8736
Email: support@trendmicro.com

www.trendmicro.com

Item Code: NVEM06872/150310