



# TREND MICRO™ Hosted Email Security

## Web Services Guide

Integrated email threat protection in a hosted service



Messaging Security





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

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The user documentation for Trend Micro™ Hosted Email Security is intended to introduce the main features of the software and installation instructions for your production environment. You should read through it prior to installing or using the software

Detailed information about how to use specific features within the software are available in the online help file and the online Knowledge Base at the Trend Micro web site.

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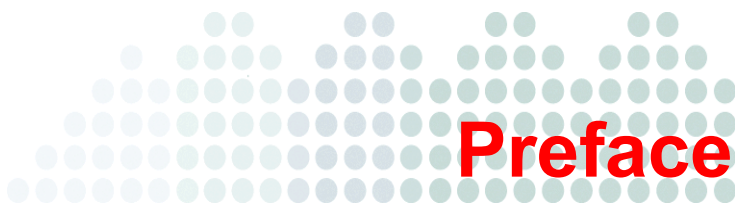
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## Preface


Welcome to the Trend Micro™ Hosted Email Security Web Services Guide. This book contains information about automating Hosted Email Security administrative tasks.

This preface discusses the following topics:

- *Hosted Email Security Documentation* on page viii
- *Audience* on page viii
- *Document Conventions* on page ix

## Hosted Email Security Documentation

The Trend Micro™ Hosted Email Security documentation consists of the following:

**Online Help**—Helps you configure all features through the user interface. You can access the online help by opening the web console and then clicking the help icon (  ).

**Quick Start Card**—Helps you quickly get your service set up.

**Administrator's Guide**—Helps you plan for deployment and configure all service settings.

**Web Services Guide**—Helps you to automate Hosted Email Security administrative tasks.

**Active Directory Synchronization Tool User's Guide**—Helps you to synchronize email accounts from the Active Directory server to the Hosted Email Security server.

**Web End User Quarantine User Guide**—Helps you understand how to manage spam mail held in quarantine using the Trend Micro Web End User Quarantine.

The *Administrator's Guide* and the *Web End User Quarantine User Guide* are available at:

<http://us.trendmicro.com/us/products/enterprise/hosted-email-security>

## Audience

Hosted Email Security documentation is written for Hosted Email Security administrators who want to automate tasks without visiting the web console. The documentation assumes that the reader has in-depth knowledge of email messaging networks, including details related to the following:

- SMTP protocol
- Mail transfer agent (MTA)

The documentation does not assume the reader has any knowledge of antivirus or anti-spam technology.



## Document Conventions

To help you locate and interpret information easily, the Hosted Email Security documentation uses the following conventions..

**TABLE -1. Conventions used in Hosted Email Security documentation**

CONVENTION	DESCRIPTION
ALL CAPITALS	Acronyms, abbreviations, and names of certain commands and keys on the keyboard
<b>Bold</b>	Menus and menu commands, command buttons, tabs, options, and other tasks
Monospace	Examples, sample command lines, program code, and program output
<u>Note:</u>	Configuration notes
<u>Tip:</u>	Recommendations
<u>WARNING!</u>	Reminders on actions or configurations that should be avoided





# Installing the Hosted Email Security Web Services Client

Trend Micro™ Hosted Email Security Web Services provide the mechanism for automating administrative tasks such as importing valid recipient email addresses into Hosted Email Security.

This document guides you through the steps to set up a client to communicate with Hosted Email Security Web Services and to customize the automation of supported Hosted Email Security administrative tasks.

This chapter discusses the following topics:

- *Supported Hosted Email Security Web Services* on page 1-2
- *Installing the Web Services Client* on page 1-3
- *Choosing a Hosted Email Security Web Services Client Program* on page 1-3
- *System Requirements* on page 1-4
- *Downloading a Client Program* on page 1-7

## Supported Hosted Email Security Web Services Applications

One of the most troubling spam problems these days is the reverse NDR attack (Non-Delivery Receipt or bounce message) or more commonly known as backscatter spam. Spammers are exploiting mail servers that reply with courtesy NDRs by sending out spam messages with “spoofed” senders and recipients. The spoofed sender is the actual target of the spam. Mail servers that send NDRs unknowingly become the sources for such backscatter spam.

The most effective way to thwart such an attack is to import your valid recipient email addresses to Hosted Email Security service. The advantage is significant, reducing the risk of being listed by email abuse reputation services such as Trend Micro Email Reputation Services. In addition, this measure greatly reduces the bandwidth consumption in your operating environment due to directory harvest attacks (DHA).

The Hosted Email Security administrative console provides a user directory import function for the mail administrators to import and maintain their valid recipient email addresses. LDIF (LDAP Data Interchange Format) file or CSV (comma-separated value) file formats are accepted. However, if you choose not to use the administrative console, you can use the Hosted Email Security Web services application. In addition to accepting an LDIF and CSV file of valid mail recipients, a sample Hosted Email Security Active Directory Synchronization Tool is also provided for customers who use Active Directory. Refer to [Hosted Email Security Active Directory Synchronization Tool User's Guide](#) for the details.

The mail administrator selects a client program that is suitable for the mail environment to communicate with Hosted Email Security Web services. The client program can import valid mail recipients or list current valid mail recipients in effect in Hosted Email Security for the mail domain. Currently, the following Hosted Email Security Web service clients are available for download:

- Hosted Email Security Active Directory Synchronization Tool, a Microsoft Active Directory client, is available for the Windows environment with Active Directory. This program is a single-purpose client program for importing valid email addresses into Hosted Email Security service.

Refer to [Hosted Email Security Active Directory Synchronization Tool User's Guide](#) for the details.

- Hosted Email Security Web service client (imhs\_web\_svc\_client) is an OS-independent, command-line client that supports various Hosted Email Security Web services applications. Currently, the Hosted Email Security Web service client Hosted Email Security supports email account sync for importing valid recipient email addresses in CSV formats. Hosted Email Security email account sync is functionally equivalent to the user directory import feature on the administrative console.

For details on how to download and install a Hosted Email Security Web services client, see [Installing the Web Services Client](#) on page 1-3.

## Installing the Web Services Client

The Hosted Email Security Web services client programs are implementations of how you can communicate with Hosted Email Security Web services applications from your operating environment.

The topics in this chapter guide you through selecting, installing, configuring, and using an Hosted Email Security Web services client program, including how to:

- Choose a Hosted Email Security Web services client program
- Install the Hosted Email Security Web services client
- Use the Hosted Email Security Web services client to automate your Hosted Email Security administrative tasks

## Choosing a Hosted Email Security Web Services Client Program

Two Hosted Email Security Web services client programs are available:

- An implementation (imhs\_web\_svc\_client - Hosted Email Security Web services client) for communicating with Hosted Email Security Web services applications.
- An Active Directory-specific (single-purpose) tool (Hosted Email Security Active Directory Synchronization Tool) for customers who maintain their valid email recipients using Active Directory in the Windows environment.

Refer to [Hosted Email Security Active Directory Synchronization Tool User's Guide](#) for the details.

Which Hosted Email Security Web services client program is right for you depends on your needs.

If you are interested in automating other Hosted Email Security administrative tasks using Hosted Email Security Web services, you should install the sample client program (`imhs_web_svc_client` - Hosted Email Security Web services client).

If you are using Active Directory to maintain your valid mail recipients and want to automate the process of importing valid recipient email addresses into the Hosted Email Security service for your managed domains, you should install the Hosted Email Security Active Directory Synchronization Tool for importing valid recipient email addresses. Refer to *Hosted Email Security Active Directory Synchronization Tool User's Guide* for the details.

Whereas the Active Directory Synchronization Tool runs only in the Windows environment, the Hosted Email Security Web services client is OS independent.

## System Requirements

Before downloading the selected Hosted Email Security Web services client as described in the next section, check the minimum system requirements in *Chapter 2: Installing Active Directory Synchronization Tool* of *Hosted Email Security Active Directory Synchronization Tool User's Guide*.

## OS-Independent Hosted Email Security Web Services Client

An implementation of Hosted Email Security Web services client, `imhs_web_svc_client`, is provided for your convenience. The client is written in the Ruby scripting language. It is supported across most operating systems.

## Minimum System Requirements and Installation

### Linux or Unix

- Ruby v1.8.6 or later (if Ruby is already installed, you can enter **ruby -v** on a command line to find out the version). If Ruby has not been installed, download Ruby from <http://www.ruby-lang.org/en/downloads/>.
- Follow the instructions to install Ruby.
- Ruby gem (Ruby utility to install additional package) for rest-open-uri. Ruby rest-open-uri gem is an open source Ruby utility that you will need. You can download rest-open-uri gem from the following location:

<https://rubygems.org/gems/rest-open-uri/versions/1.0.0>

For your convenience, it is included in the Hosted Email Security Web services client package you downloaded.

- Install rest-open-uri gem: execute **gem install rest-open-uri** on a command line.
- RPM environment for Linux or **.deb** files for Debian, Ubuntu, and others.
- Hosted Email Security Web services client assumes default Ruby install path is `/usr/bin/ruby`
- Network access to:
  - <https://ws.hes.trendmicro.com/hes/v2.0> if your Hosted Email Security administrative console is [https://\\*.hes.trendmicro.com](https://*.hes.trendmicro.com)
  - <https://ws.hes.trendmicro.eu/hes/v2.0> if your Hosted Email Security administrative console is [https://\\*.hes.trendmicro.eu](https://*.hes.trendmicro.eu)
- If the Ruby environment is behind a firewall, execute **gem install -p <your-proxy-url> rest-open-uri** on a command line after installation. **<your-proxy-url>** is the URL of the proxy server commonly in the form of `http://proxy.yourdomain.com:proxy-port`. For example: `http://proxy.example.com:8080`. The current rest-open-uri is v1.0.0.

## Windows

- Ruby v1.8.6 or later (if Ruby is already installed, you may enter **ruby -v** on a command line to find out the version). If Ruby has not been installed, download Ruby from <http://www.ruby-lang.org/en/downloads/>.
- Follow the instructions to install Ruby.
- Ruby gem (Ruby utility to install additional package) for rest-open-uri. Ruby rest-open-uri gem is an open source Ruby utility that you will need. You can download rest-open-uri gem from the following location:

<https://rubygems.org/gems/rest-open-uri/versions/1.0.0>

For your convenience, it is included in the Windows Hosted Email Security Web services client package that you downloaded.

- Install rest-open-uri gem: Enter **gem install rest-open-uri** at a DOS command prompt.
- Network access to:
  - <https://ws.hes.trendmicro.com/hes/v2.0> if your Hosted Email Security administrative console is [https://\\*.hes.trendmicro.com](https://*.hes.trendmicro.com)
  - <https://ws.hes.trendmicro.eu/hes/v2.0> if your Hosted Email Security administrative console is [https://\\*.hes.trendmicro.eu](https://*.hes.trendmicro.eu)
- If the Ruby environment is behind a firewall, execute **gem install -p <your-proxy-url> rest-open-uri** at a DOS command prompt after installation. **<your-proxy-url>** is the URL of the proxy server commonly in the form of *http://proxy.yourdomain.com:proxy-port*. For example: *http://proxy.example.com:8080*. The current rest-open-uri is v1.0.0.



## Downloading a Client Program

To download the client program:

1. Log on to the Hosted Email Security administrative console.
2. From the Hosted Email Security menu, select **Administration > Web Services & Tools**.

The screenshot shows the Hosted Email Security administrative console. The navigation menu includes Dashboard, Domains, Inbound Protection, Outbound Protection, Quarantine, Logs, Administration, and Help. The current page is Administration > Web Services & Tools. A warning banner states: "Never share your Service Authentication Key with anyone other than authorized Hosted Email Security administrators." The Service Authentication Key section shows User Name: hestest01, Current Key: 25425f482b6fe7990c6b37dfe14886c8f0656, and On: 10/09/2015 11:04:28. The Applications section has a toggle for "Please enable valid recipient checking in Recipient Filter after initial successful sync is completed." which is currently Enabled. The Downloads table lists the following items:

Name	Version	Download
Active Directory Synchronization Tool	2.0.1025	
Active Directory Synchronization Tool Guide	2.0.1025	
Web Services Client	2/28/2014	
Web Services Guide	2/28/2014	

**FIGURE 1-1. Downloading the client program**

3. Select the Web services client program to download.





# Chapter 2

## Using the Hosted Email Security Web Services Client

Using Hosted Email Security Web services programs is an effective way to automate some Hosted Email Security administrative tasks such as periodic import of valid mail recipient email addresses for your mail domains.

There are several things you should be aware of before customizing and using your Hosted Email Security Web services client to communicate with Hosted Email Security Web services.

This chapter contains the following topics:

- *Enabling Hosted Email Security Web Services* on page 2-2
- *Using Active Directory Synchronization Tool to Synchronize Active Directory Email Accounts* on page 2-5
- *Using Command-Line Hosted Email Security Web Services Client to Synchronize Valid Recipient Email Addresses* on page 2-5
- *Summary* on page 2-6

## Enabling Hosted Email Security Web Services

Web services programs in Hosted Email Security are disabled for your mail domains by default. In order to allow the Hosted Email Security Web services client to communicate with them for your managed mail domains, log on to the Hosted Email Security administrative console and enable Hosted Email Security Web services. If access to Hosted Email Security Web services has not been enabled, your installed Hosted Email Security Web services client(s) will be unable to communicate with Hosted Email Security Web services.

### To enable Hosted Email Security Web services:

1. From the Hosted Email Security menu, select **Administration > Web Services & Tools**.
2. If Hosted Email Security Web services applications are not already enabled (“Disabled” is displayed on the **Web Services & Tools** screen), you will need to

enable Hosted Email Security Web services. To enable the Web services applications, you need to have an APIKEY.

The screenshot displays the 'Hosted Email Security' web interface. At the top, there is a navigation bar with options like 'Dashboard', 'Domains', 'Inbound Protection', 'Outbound Protection', 'Quarantine', 'Logs', 'Administration', and 'Help'. The main content area is titled 'Administration > Web Services & Tools'. A warning message states: 'Never share your Service Authentication Key with anyone other than authorized Hosted Email Security administrators.' Below this, the 'Service Authentication Key' section shows 'User Name: hestest01' and 'Current Key: [redacted]' (circled in red). The 'On' date is '07/20/2016 06:28:44' and there is a 'Generate New Key' button. The 'Applications' section has a message: 'Please enable valid recipient checking in Recipient Filter after initial successful sync is completed.' The 'Status' toggle is set to 'Enabled' (circled in red). Below are links for 'Name', 'Import User Directory', and 'Synchronize User Directory'. The 'Downloads' section contains a table:

Name	Version	
Active Directory Synchronization Tool	2.0.1000	↓
Active Directory Synchronization Tool Guide	2.0.1000	↓
Web Services Client	2/29/2014	↓
Web Services Guide	2/28/2014	↓

**FIGURE 2-1. Hosted Email Security Web Services & Tools screen**

3. Make sure you have an APIKEY displayed for Current Key, and then click the **Disabled** toggle button to allow your Hosted Email Security Web Services client to communicate with Hosted Email Security Web services applications.

The Hosted Email Security Web services client uses the APIKEY to authenticate the communication. If an APIKEY is generated on your administrative console, copy and paste the APIKEY to the APIKEY field in the *imhs-config* file. You can find the *imhs-config* file in the directory of Hosted Email Security Web services client program that you have downloaded. Without the APIKEY, your Web services client will be unable to communicate with Hosted Email Security Web services applications.

In addition, you need to enter the correct user name in the `ACCOUNT_NAME` field in the "imhs-config" file. You can find the user name in the Service Authentication Key section of the Web Services & Tools screen.

4. Click **Generate New Key** if no APIKEY was generated before.

For added security, you may choose to periodically generate a new APIKEY by clicking **Generate New Key**. You will then update your Hosted Email Security Web services client with the new authentication APIKEY. Note that once a new APIKEY is generated, the old key becomes obsolete.

## Rate Limit for Hosted Email Security Web Services Access

Since the Web services client communicates with Hosted Email Security Web services programmatically (not through the administrative console on a web browser), Hosted Email Security adopts access rate limiting to prevent unintended access such as denial-of-service attacks or programming errors (for example, infinite loop) in customized Hosted Email Security Web services client programs. Such rate limits protect you from being affected by the Web service client programs of others.

Each customer is limited to a maximum of 50 synchronization requests for Web service email account, per domain per day (UTC time).

## Using Active Directory Synchronization Tool to Synchronize Active Directory Email Accounts

Refer to *Chapter 3: Using Active Directory Synchronization Tool of Hosted Email Security Active Directory Synchronization Tool User's Guide* for the details.

## Using Command-Line Hosted Email Security Web Services Client to Synchronize Valid Recipient Email Addresses

If your organization does not utilize Active Directory to manage your users' email accounts, you may import valid mail recipients in plain-text CSV (comma-separated value). Most LDAP servers have a utility to export the contents of the LDAP database into a CSV file.

The following is an example of periodic importing of user email addresses in a CSV file to Hosted Email Security using the OS-independent Hosted Email Security Web services client, *imhs\_web\_svc\_client*.

```

C:\WINDOWS\system32\cmd.exe
C:\Documents and Settings\simon\Desktop\Ruby\inhs-ws-client>imhs-cmd.rb -a list
-users -d bizenergy.com
accounting@bizenergy.com
hr@bizenergy.com
info@bizenergy.com
postmaster@bizenergy.com
support@bizenergy.com
sysadmin@bizenergy.com
webmaster@bizenergy.com

C:\Documents and Settings\simon\Desktop\Ruby\inhs-ws-client>imhs-cmd.rb -a sync
-users -t csv -f ..\..\bizenergy_com.csv
SUCCESS: added 1 / deleted 0 users to bizenergy.com

C:\Documents and Settings\simon\Desktop\Ruby\inhs-ws-client>imhs-cmd.rb -a list
-users -d bizenergy.com
accounting@bizenergy.com
hr@bizenergy.com
info@bizenergy.com
postmaster@bizenergy.com
shipping@bizenergy.com
support@bizenergy.com
sysadmin@bizenergy.com
webmaster@bizenergy.com

C:\Documents and Settings\simon\Desktop\Ruby\inhs-ws-client>_

```

FIGURE 2-2. Client import CSV

## Summary

Here is a quick summary of how to use Hosted Email Security Web services:

1. Log on to the Hosted Email Security administrative console **Administration > Web Services & Tools** screen. Remember the current APIKEY on this screen. If this is a new administrator account, there will be no APIKEY.
2. Click Generate New Key to generate an APIKEY.
3. Verify that an APIKEY is available and then make sure that Web services applications are “Enabled.”
4. Download the Hosted Email Security Web services client program.
5. Follow the Hosted Email Security Web services client installation procedure to set up the client program. You will need the APIKEY for the setup.
6. Configure the client program for your organization (configure the *imhs-config* file).





# Appendix A

## Hosted Email Security Web Services Applications

The information in this appendix is intended for value-added resellers, professional services providers, and software development partners of Trend Micro. It is not intended for other Hosted Email Security service customers.

The topics in this appendix provide additional information for you to customize and program your Hosted Email Security Web services client to communicate with Hosted Email Security Web services applications. These topics serve as a reference for the sample client program provided by Trend Micro.

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**Note:** Not all APIs are available at the time of writing.

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This appendix includes the following sections:

- *Web Services Applications* on page A-2
- *Provisioning* on page A-2
- *Hosted Email Security Web Services Client* on page A-2

## Web Services Applications

Hosted Email Security Web services provide a set of Application Programming Interfaces (APIs) in REST-ful Web application architecture. The focus of the APIs is on automating repetitive Hosted Email Security administrative tasks.

### Provisioning

Maintaining email user accounts and keeping them consistent across the company mail servers and Hosted Email Security is a repetitive administrative task. Hosted Email Security Web services provide User Directory Management APIs for automating such tasks, including:

- Adding user email address to a managed domain on Hosted Email Security service
- Deleting user email address from a managed domain on Hosted Email Security service
- Listing user email addresses of a managed domain on Hosted Email Security service
- Bulk addition of user email addresses to a Hosted Email Security administrator account
- Listing domain names managed by a Hosted Email Security administrator account
- Listing user email addresses managed by a Hosted Email Security administrator account

### Hosted Email Security Web Services Client

For general-purpose Hosted Email Security Web services communications, Trend Micro provides a sample OS-independent implementation of the Web service client:

***imhs\_web\_svc\_client***.

Hosted Email Security Web services client (***imhs\_web\_svc\_client***) is written in the Ruby OS-independent scripting language. The Ruby client is a full Web service client, with access to both the reporting and provisioning resources of the Hosted Email Security Web services. As such, for provisioning-related deployment, it can act as the upload component by uploading a CSV file of valid user email addresses or by performing a single call to the Web service for each user added or deleted.

For report extraction, the Ruby client can be called with the appropriate parameters to extract the required type of report in either XML or CSV format for saving to a local file. The supporting library of the Ruby client can also be called directly if you want to assemble a custom client-based application. There are Ruby ports for running on \*nix or Windows platforms.





# Appendix B

## Hosted Email Security Web Services Command-Line Reference and Programming Guide

This appendix is for advanced Hosted Email Security administrators only. If your organization plans to use the Hosted Email Security Web services client from a command line in a Unix/Linux or Windows environment and you want to automate the valid email recipient addresses import, you can use this command-line client in a cron job for scheduled tasks. You can also use Windows Task Scheduler on Windows to perform scheduled tasks.

---

**Note:** The target audience of the following usage guide is advanced Hosted Email Security administrators and tool developers. You should be familiar with programming in scripting languages and debugging software in order to understand this material.

---

This appendix includes the following:

- [Maintaining Valid Mail Recipients and Synchronizing to Hosted Email Security](#) on page B-2
- [Programming your own Hosted Email Security Web Services Client](#) on page B-3
- [Hosted Email Security Web Services Client Command Usage Guide](#) on page B-3
- [Examples](#) on page B-4

## Maintaining Valid Mail Recipients and Synchronizing to Hosted Email Security

If you maintain a list of valid mail recipients for your managed mail domains using a plain-text comma-separated values (CSV) file, you can automate such user provisioning to Hosted Email Security by using the Web services client.

For most Hosted Email Security administrators, only the Web services client command action `sync-users` will ever be used. For example, you maintain your managed domain `example.com` in a plain-text (CSV) file `example_com.txt` such as the following:

```
alligator@example.com, Alli Gator
buffalo@example.com, Buffa Lo
crocodile@example.com, Croc O'Dile
donkey@example.com, Don Key
```

**FIGURE B-2.** Example plain text file

All you need to do is to set up a **cron** job that runs a command-line action similar to this:

```
[imhs_admin@localhost]# ./imhs-cmd -a sync-users -t csv -f example_com.txt
```

**FIGURE B-3.** Example cron job command-line action

All you have to do is to continue to maintain your email users in the plain-text file. Email addresses will be synchronized to the Hosted Email Security service periodically (according to your schedule).

## Programming your own Hosted Email Security Web Services Client

Trend Micro does not currently support a programming environment for customers who choose to create their own Hosted Email Security Web services clients.

---

**WARNING!** If you choose to create your own Hosted Email Security Web services, the Trend Micro 24x7 Support staff will be unable to support you in creating, maintaining, or debugging your client program.

---

## Hosted Email Security Web Services Client Command Usage Guide

The following sections describe the usage of `imhs-cmd.rb`.

### Usage:

```
imhs-cmd.rb [options]
```

**TABLE B-2. Specific options**

OPTION	DESCRIPTION
<code>-a, --action ACTION</code>	Directory actions {list-domains list-users add-user delete-user delete-users replace-users merge-users sync-users}
<code>-u, --user [USEREMAIL]</code>	Email address of user
<code>-n, --name [FULLNAME]</code>	Email address of user
<code>-d, --domain [DOMAIN-NAME]</code>	Domain name

**TABLE B-2. Specific options**

OPTION	DESCRIPTION
-t, --type [FILETYPE]	Type of input file {csv}
-f, --file [FILEPATH]	Input file path <path_to_inputfile>
-c, --config [CONFIG_FILEPATH]	Alternate imhs-config.rb file <path_to_configfile>

---

**Note:** Set the account name and API KEY in imhs-config.rb before using.

---

**TABLE B-3. Specific options**

OPTION	DESCRIPTION
-h, --help	Show this message
--version	Show version

## Examples

This section provides usage examples for client commands.

### Synchronizing Your User Directory From a File

For an example of synchronizing your user directory from a plain text CSV file, such as, **example\_com.txt**. In this example, the file named **example\_com.txt** is a CSV file that contains the following entries:

```
alligator@example.com, Alli Gator
buffalo@example.com, Buffa Lo
crocodile@example.com, Croc O'Dile
donkey@example.com, Don Key
```



```
[imhs_admin@localhost]# ./imhs-cmd.rb -a sync-users -t
csv -f
example_com.txt
SUCCESS REPLACE: example.com with 4 users
```

## Listing the Mail Domains

The following is an example of listing the mail domains that you manage:

```
[imhs_admin@localhost]# ./imhs-cmd.rb -a list-domains
example.com
```

## Replacing the Entire User Directory

For an example of replacing the entire user directory of your managed mail domain (**example.com**) from a plain-text CSV (comma-separated-values) file, **UserDirReplaceExample.txt**. In this example, the file named **UserDirReplaceExample.txt** is a CSV file that contains the following entries

```
hr@example.com,Human Resource Dept
jack_customer@example.com,Jack Customer
jill_user@example.com,Jill Manager
tech_support@example.com,Tech Support
us_sales@example.com,US Sales Team
[imhs_admin@localhost]# ./imhs-cmd.rb -a replace-users -t
csv
-f UserDirReplaceExample.txt
SUCCESS REPLACE: example.com with 5 users
```

## Listing the Users of a Mail Domain

The following is an example of listing the users of a mail domain that you manage:

```
[imhs_admin@localhost]# ./imhs-cmd.rb -a list-users -d
example.com
hr@example.com,Human Resource Dept
jack_customer@example.com,Jack Customer
jill_user@example.com,Jill Manager
tech_support@example.com,Tech Support
us_sales@example.com,US Sales Team
```

## Merging In Users

To merge in users of your managed mail domain (**example.com**) from a plain text CSV file, **UserDirMergeExample.txt**. In this example, the file named **UserDirMergeExample.txt** is a CSV file that contains the following entries:

```
bonnie_clyde@example.com,Bonnie Anne Clyde
leo_da_vinci@example.com,Leonardo da Vinci
w_a_mozart@example.com,Wolfgang Amadeus Mozart
[imhs_admin@localhost]# ./imhs-cmd.rb -a merge-users -t
csv -f
UserDirMergeExample.txt
SUCCESS MERGE: example.com with 3 users
```

## Adding a Single User

The following is an example of adding a single user, **orville\_wilbur@example.com**, to your managed email domain (**example.com**):

```
[imhs_admin@localhost]# ./imhs-cmd.rb -a add-user -u
orville_wilbur@example.com
```

```
SUCCESS ADDUSER orville_wilbur@example.com
```

## Deleting a Single User

The following is an example of deleting a single user, **bonnie\_clyde@example.com**, from your managed email domain (**example.com**):

```
[imhs_admin@localhost]# ./imhs-cmd.rb -a delete-user -u
bonnie_clyde@example.com
SUCCESS DELETEUSER bonnie_clyde@example.com.
```

## Deleting Selected Users

For an example of deleting selected users from your managed mail domain (**example.com**) according to the file specified, **UserDirDeleteExample.txt**. In this example, the file named **UserDirDeleteExample.txt** is a CSV file that contains the following entries:

```
jack_customer@example.com,Jack Customer
jill_user@example.com,Jill Manager
[imhs_admin@localhost]# ./imhs-cmd.rb -a delete-users -t
csv -f
UserDirDeleteExample.txt
SUCCESS DELETE : example.com with 2 users.
```





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