TREND MICRO™

5.0 TREND MICRO™ Deep Discovery™ Email Inspector

Administrator's Guide

Advanced Protection Against Targeted Email Threats

Endpoint Security

Network Security

Protected Cloud

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This documentation introduces the main features of the product and/or provides installation instructions for a production environment. Read through the documentation before installing or using the product.

Detailed information about how to use specific features within the product may be available at the Trend Micro Online Help Center and/or the Trend Micro Knowledge Base.

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Preface

Preface

Topics include:

Documentation

The documentation set for Deep Discovery Email Inspector includes the following:

TABLE 1. Product Documentation

DOCUMENT	DESCRIPTION
Administrator's Guide	PDF documentation provided with the product or downloadable from the Trend Micro website. The Administrator's Guide contains detailed instructions on how to deploy, configure and manage Deep Discovery Email Inspector, and provides explanations on Deep Discovery Email Inspector concepts and features.
Installation and Deployment Guide	PDF documentation provided with the product or downloadable from the Trend Micro website. The Installation and Deployment Guide discusses requirements and procedures for installing and deploying Deep Discovery Email Inspector.
Syslog Content Mapping Guide	The Syslog Content Mapping Guide contains information on event logging formats supported by Deep Discovery Email Inspector.
Quick Start Card	The Quick Start Card provides user-friendly instructions on connecting Deep Discovery Email Inspector to your network and on performing the initial configuration.
Readme	The Readme contains late-breaking product information that is not found in the online or printed documentation. Topics include a description of new features, known issues, and product release history.
Online Help	Web-based documentation that is accessible from the Deep Discovery Email Inspector management console. The Online Help contains explanations of Deep Discovery Email Inspector components and features, as well as procedures needed to configure Deep Discovery Email Inspector.

Document	Description
Support Portal	The Support Portal is an online database of problem-solving and troubleshooting information. It provides the latest information about known product issues. To access the Support Portal, go to the following website: http://success.trendmicro.com

View and download Deep Discovery Email Inspector documentation from the Trend Micro Documentation Center:

http://docs.trendmicro.com/en-us/home.aspx/

Audience

The Deep Discovery Email Inspector documentation is written for IT administrators and security analysts. The documentation assumes that the reader has an in-depth knowledge of networking and information security, including the following topics:

- Network topologies
- Email routing
- SMTP

The documentation does not assume the reader has any knowledge of sandbox environments or threat event correlation.

Document Conventions

The documentation uses the following conventions:

TABLE 2. Document Conventions

CONVENTION	DESCRIPTION
UPPER CASE	Acronyms, abbreviations, and names of certain commands and keys on the keyboard
Bold	Menus and menu commands, command buttons, tabs, and options
Italics	References to other documents
`Monospace`	Sample command lines, program code, web URLs, file names, and program output
Navigation > **Path**	The navigation path to reach a particular screen For example, **File** > **Save** means, click **File** and then click **Save** on the interface
 **Note**	Configuration notes
 **Tip**	Recommendations or suggestions
 **Important**	Information regarding required or default configuration settings and product limitations
 **WARNING!**	Critical actions and configuration options

About Trend Micro

Trend Micro, a global leader in cybersecurity, is passionate about making the world safe for exchanging digital information today and in the future. Artfully applying our XGen™ security strategy, our innovative solutions for consumers, businesses, and governments deliver connected security for data centers, cloud workloads, networks, and endpoints.

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Trend Micro customers include 9 of the top 10 Fortune® Global 500 companies across automotive, banking, healthcare, telecommunications, and petroleum industries.

With over 6,500 employees in 50 countries and the world's most advanced global threat research and intelligence, Trend Micro enables organizations to secure their connected world. http://www.trendmicro.com

Chapter 1

Introduction

This chapter describes the product features, capabilities, and security technology.

Topics include:

About Deep Discovery Email Inspector

Deep Discovery Email Inspector stops sophisticated targeted attacks and cyber threats by scanning, simulating, and analyzing suspicious links and attachments in email messages before they can threaten your network. Designed to integrate into your existing email network topology, Deep Discovery Email Inspector can act as a Mail Transfer Agent in the mail traffic flow or as an out-of-band appliance silently monitoring your network for cyber threats and unwanted spam messages.

What's New

TABLE 1-1. New Features in Deep Discovery Email Inspector 5.0

FEATURE	DESCRIPTION
SAML for single sign-on (SSO)	Deep Discovery Email Inspector supports the Security Assertion Markup Language (SAML) authentication standard using Okta and Active Directory Federation Services (ADFS) identify providers to allow users to single sign-on to the Deep Discovery Email Inspector management and End-User Quarantine (EUQ) consoles when they sign in to their organization's portal.
Directory service integration	The enhanced directory service integration allows Deep Discovery Email Inspector to support the following: • LDAPv3-compliant directory service servers • Multiple Active Directory/LDAP servers for user authentication and policy matching • Kerberos authentication for Active Directory integration
Network interface card (NIC) teaming	Deep Discovery Email Inspector supports NIC teaming to enable fault tolerance in the event of a network interface card failure.

Feature	Description
Enhanced policy settings	You can configure policy settings to have Deep Discovery Email Inspector perform the following actions: • Deliver detected messages to a specified SMTP server • Insert a stamp in detected messages based on the message direction (inbound, outbound, or inbound and outbound)
Deep Discovery Director 5.1 SP1 support	Deep Discovery Email Inspector supports integration with Deep Discovery Director 5.1 SP1.
Enhanced Virtual Analyzer	The Virtual Analyzer has been enhanced to include the following features: • Windows 10 19H1 (May 2019 Update), Windows 10 19H2 (November 2019 Update), and Windows Server 2019 image support
Improved detection capability	Deep Discovery Email Inspector provides increased protection by improving its detection capabilities. This release supports the following: • Scam and bulk email message detection using the Trend Micro Email Behavior Analysis (EBA) module • New file type (.jar) for enhanced Predictive Machine Learning integration • Scan for cousin domains in messages to detect spam and phishing messages
Enhanced management console access security	The management console has been enhanced to enforce default password change for the default administrator account upon first logon for account security.
Enhanced message tracking log export	Deep Discovery Email Inspector includes sender IP address and source IP address field information in CVS files when exporting message tracking logs.

Feature	Description
Inline migration support	Deep Discovery Email Inspector provides users with the option of automatically migrating the settings from the following versions to 5.0: • Deep Discovery Email Inspector 3.6 • Deep Discovery Email Inspector 3.5

Features and Benefits

The following sections describe the Deep Discovery Email Inspector features and benefits.

Advanced Detection

Deep Discovery Email Inspector advanced detection technology discovers targeted threats in email messages, including spear-phishing and social engineering attacks.

- Reputation and heuristic technologies catch unknown threats and document exploits
- File hash analysis blocks unsafe files and applications
- Detects threats hidden in password-protected files and shortened URLs
- Predictive machine learning technology detects emerging unknown security risks
- Blocks malicious URLs in email messages at the time of mouse clicks

Visibility, Analysis, and Action

Deep Discovery Email Inspector provides real-time threat visibility and analysis in an intuitive, multi-level format. This allows security professionals to focus on the real risks, perform forensic analysis, and rapidly implement containment and remediation procedures.

Flexible Deployment

Deep Discovery Email Inspector integrates into your existing anti-spam/antivirus network topology by acting as a Mail Transfer Agent in the mail traffic flow or as an out-of-band appliance monitoring your network for cyber threats.

Policy Management

Policy management allows administrators to enforce preventative actions on messages based on scanning conditions. You can create policies to perform the following tasks:

- Delete suspicious email messages
- Block and quarantine suspicious email messages
- Allow certain email messages to pass through to the recipient
- Strip suspicious attachments
- Redirect suspicious links to blocking or warning pages
- Tag the email subject with a customized string
- Notify recipients when a policy rule is matched
- Send copies of detected email messages to archive servers

Custom Threat Simulation Sandbox

The Virtual Analyzer sandbox environment opens files, including password-protected archives and document files, and URLs to test for malicious behavior. Virtual Analyzer is able to find exploit code, Command & Control (C&C) and botnet connections, and other suspicious behaviors or characteristics.

Email Attachment Analysis

Deep Discovery Email Inspector utilizes multiple detection engines and sandbox simulation to investigate file attachments. Supported file types

include a wide range of executable, Microsoft Office, PDF, web content, and compressed files.

Embedded URL Analysis

Deep Discovery Email Inspector utilizes reputation technology, direct page analysis, and sandbox simulation to investigate URLs embedded in an email message.

Email Encryption

Email Encryption allows Deep Discovery Email Inspector to perform the following tasks based on policy settings:

- Decrypt messages encrypted using Trend Micro Identity-Based Encryption (IBE) for scanning
- Encrypt messages for secure delivery in MTA mode

Deep Discovery Email Inspector can decrypt and encrypt messages regardless of the email client or platform from which the messages originated.

Note

When Deep Discovery Email Inspector operates in TAP/BCC mode and receives an encrypted message, Deep Discovery Email Inspector only decrypts and scans the message. Deep Discovery Email Inspector does not encrypt messages in TAP/BCC mode.

Spam Scanning

Spam messages are generally unsolicited messages containing mainly advertising content. Deep Discovery Email Inspector uses the following components to filter email messages for spam:

- Trend Micro Antispam Engine

- Trend Micro spam pattern files

Trend Micro Antispam Engine uses spam signatures and heuristic rules to filter email messages. The Antispam Engine scans email messages and assigns a spam score to each one based on how closely it matches the rules and patterns from the pattern file. Deep Discovery Email Inspector compares the spam score to the selected spam detection level or user-defined detection threshold. When the spam score exceeds the detection level or threshold, Deep Discovery Email Inspector takes action against the spam message.

For example, spammers often use many exclamation marks or more than one consecutive exclamation mark (!!!!) in their email messages. When Deep Discovery Email Inspector detects a message that uses exclamation marks this way, it increases the spam score for that email message.

The Antispam Engine also includes the Email Malware Threat Scan Engine that performs advanced threat scans on email attachments (including script files and Microsoft Office macroware) to detect malware.

Graymail Scanning

Graymail refers to solicited bulk email messages that are not spam. Deep Discovery Email Inspector detects marketing messages and newsletters, social network notifications, and forum notifications as graymail. Deep Discovery Email Inspector identifies graymail messages in two ways:

- Email Reputation Services scoring the source IP address
- Trend Micro Anti-Spam Engine identifying message content

Sender Filtering

You can configure the following sender filtering settings in Deep Discovery Email Inspector to effectively block senders of spam messages at the IP address or sender email address level:

- Approved and blocked senders lists

- Email Reputation Services (ERS)
- Directory harvest attack (DHA) protection
- Bounce attack protection
- SMTP traffic throttling

Sender Authentication

Deep Discovery Email Inspector supports the following sender authentication standards to effectively detect and fight against techniques used in email phishing and spoofing:

- Sender Policy Framework (SPF)
- DomainKeys Identified Mail (DKIM)
- Domain-based Message Authentication, Reporting & Conformance (DMARC)

In addition, you can configure Deep Discovery Email Inspector to sign outgoing messages using DKIM signatures to prevent spoofing.

Content Filtering

You can create content filtering rules in Deep Discovery Email Inspector to:

- Block content that you specify as inappropriate from reaching recipients by analyzing message content and attachments
- Detect and remove active content (such as macros) in Microsoft Office and PDF file attachments

Data Loss Prevention

Data Loss Prevention safeguards an organization's digital assets against accidental or deliberate leakage. Data Loss Prevention allows administrators to:

- Identify the digital assets to protect
- Create policies that limit or prevent the transmission of digital assets through email messages
- Enforce compliance to established privacy standards

End-User Quarantine

Deep Discovery Email Inspector includes the End-User Quarantine (EUQ) feature to improve spam management. Messages that are determined to be spam are quarantined and are available for users to review, delete, release, or approve for delivery. You can configure Deep Discovery Email Inspector to automatically send EUQ digest notifications with inline action links. With the web-based EUQ console, users can manage the spam quarantine of their personal accounts and of distribution lists that they belong to and add senders to the Approved Senders list.

Social Engineering Attack Protection

Social Engineering Attack Protection detects suspicious behavior related to social engineering attacks in email messages. When Social Engineering Attack Protection is enabled, Deep Discovery Email Inspector scans for suspicious behavior in several parts of each email transmission, including the email header, subject line, body, attachments, and the SMTP protocol information.

Password Derivation

Deep Discovery Email Inspector decrypts password-protected archives and document files using a variety of heuristics and customer-supplied keywords.

A New Threat Landscape

Where once attackers were content to simply deface a website or gain notoriety through mass system disruption, they now realize that they can

make significant money, steal important data, or interfere with major infrastructure systems via cyber warfare instead.

A targeted attack is a long-term cyber-espionage campaign against a person or organization to gain persistent access to the target network. This allows them to extract confidential company data and possibly damage the target network. These compromised networks can be used for attacks against other organizations, making it harder to trace the attack back to its originator.

Spear-Phishing Attacks

Spear-phishing attacks combine phishing attacks and targeted malware. Attackers send spear-phishing messages to a few targeted employees with crafted email messages masquerading as legitimate recipients, possibly a boss or colleague. These spear-phishing messages likely contain a link to a malicious website or a malicious file attachment. A file attachment can exploit vulnerabilities in Microsoft™ Word™, Excel™, and Adobe™ products. The file attachment can also be a compressed archive containing executable files. When a recipient opens the file attachment, malicious software attempts to exploit the system. Often, to complete the ruse, the malicious software launches an innocuous document that appears benign.

Once the malicious software runs, it lies dormant on a system or attempts to communicate back to a command-and-control (C&C) server to receive further instructions.

C&C Callback

The following actions usually occur when malicious software installs and communicates back to a C&C server:

- Software called a “downloader” automatically downloads and installs malware.
- A human monitoring the C&C server (attacker) responds to the connection with an action. Software called a “remote access Trojan” (RAT) gives an attacker the ability to examine a system, extract files, download new files to run on a compromised system, turn on a system’s

video camera and microphone, take screen captures, capture keystrokes, and run a command shell.

Attackers will attempt to move laterally throughout a compromised network by gaining additional persistent access points. Attackers will also attempt to steal user credentials for data collection spread throughout the network. If successful, collected data gets exfiltrated out of the network to another environment for further examination.

Attackers move at a slow pace to remain undetected. When a detection occurs, they will temporarily go dormant before resuming activity. If an organization eradicates their presence from the network, the attackers will start the attack cycle all over again.

A New Solution

Deep Discovery Email Inspector prevents spear-phishing attacks and cyber threats, and provides Business Email Compromise (BEC) protection by investigating suspicious links, file attachments, and social engineering attack patterns in email messages before they can threaten your network. Designed to integrate into your existing email network topology, Deep Discovery Email Inspector can act as a mail transfer agent in the mail traffic flow (MTA mode) or as an out-of-band appliance (BCC mode or SPAN/TAP mode) monitoring your network for cyber threats and unwanted spam messages.

Whichever deployment method is chosen, Deep Discovery Email Inspector investigates email messages for suspicious file attachments, embedded links (URLs), spam, content violations, and characteristics. If an email message exhibits malicious behavior, Deep Discovery Email Inspector can block the email message and notify security administrators about the malicious activity.

After Deep Discovery Email Inspector scans an email message for known threats in the Trend Micro Smart Protection Network, it passes suspicious files and URLs to the Virtual Analyzer sandbox environment for simulation. Virtual Analyzer opens files, including password-protected archives and document files, and accesses URLs to test for exploit code, Command &

Control (C&C) and botnet connections, and other suspicious behaviors or characteristics.

After investigating email messages, Deep Discovery Email Inspector assesses the risk using multi-layered threat analysis. Deep Discovery Email Inspector calculates the risk level based on the highest risk or spam score assigned by the Deep Discovery Email Inspector email scanners, Virtual Analyzer, or Trend Micro Smart Protection Network.

Deep Discovery Email Inspector acts upon email messages according to the assigned risk level or spam score, and policy settings. Configure Deep Discovery Email Inspector to block and quarantine the email message, allow the email message to pass to the recipient, strip suspicious file attachments, redirect suspicious links to blocking or warning pages, or tag the email message with a string to notify the recipient. While Deep Discovery Email Inspector monitors your network for threats or unwanted spam messages, you can access dashboard widgets and reports for further investigation.

Virtual Analyzer

Virtual Analyzer is a secure virtual environment that manages and analyzes objects submitted by integrated products, and administrators and investigators (through SSH). Custom sandbox images enable observation of files, URLs, registry entries, API calls, and other objects in environments that match your system configuration.

Virtual Analyzer performs static and dynamic analysis to identify an object's notable characteristics in the following categories:

- Anti-security and self-preservation
- Autostart or other system configuration
- Deception and social engineering
- File drop, download, sharing, or replication
- Hijack, redirection, or data theft
- Malformed, defective, or with known malware traits

- Process, service, or memory object change
- Rootkit, cloaking
- Suspicious network or messaging activity

During analysis, Virtual Analyzer rates the characteristics in context and then assigns a risk level to the object based on the accumulated ratings. Virtual Analyzer also generates analysis reports, suspicious object lists, PCAP files, and OpenIOC files that can be used in investigations.

Advanced Threat Scan Engine

The Advanced Threat Scan Engine (ATSE) uses a combination of pattern-based scanning and heuristic scanning to detect document exploits and other threats used in targeted attacks.

Major features include:

- Detection of zero-day threats
- Detection of embedded exploit code
- Detection rules for known vulnerabilities
- Enhanced parsers for handling file deformities

Predictive Machine Learning

Trend Micro Predictive Machine Learning uses advanced machine learning technology to correlate threat information and perform in-depth file analysis to detect emerging unknown security risks through digital DNA fingerprinting, API mapping, and other file features.

After detecting an unknown or low-prevalence file, the Deep Discovery Email Inspector scans the file using the Advanced Threat Scan Engine (ATSE) to extract file features and sends the report to the Predictive Machine Learning engine, hosted on the Trend Micro Smart Protection Network. Through use of malware modeling, Predictive Machine Learning compares the sample to

the malware model, assigns a probability score, and determines the probable malware type that the file contains.

Deep Discovery Email Inspector can attempt to “Quarantine” the affected file to prevent the threat from continuing to spread across your network.

Predictive Machine Learning is a powerful tool that helps protect your environment from unidentified threats and zero-day attacks.

Web Reputation Services

With one of the largest domain-reputation databases in the world, Trend Micro web reputation technology tracks the credibility of web domains by assigning a reputation score based on factors such as a website's age, historical location changes and indications of suspicious activities discovered through malware behavior analysis, such as phishing scams that are designed to trick users into providing personal information. To increase accuracy and reduce false positives, Trend Micro Web Reputation Services assigns reputation scores to specific pages or links within sites instead of classifying or blocking entire sites, since often, only portions of legitimate sites are hacked and reputations can change dynamically over time.

Social Engineering Attack Protection

Social Engineering Attack Protection detects suspicious behavior related to social engineering attacks in email messages. When Social Engineering Attack Protection is enabled, Deep Discovery Email Inspector scans for suspicious behavior in several parts of each email transmission, including the email header, subject line, body, attachments, and the SMTP protocol information.

Apex Central

Trend Micro Apex Central™ is a central management console that manages Trend Micro products and services at the gateway, mail server, file server, and corporate desktop levels. The Apex Central web-based management

console provides a single monitoring point for managed products and services throughout the network.

Apex Central allows system administrators to monitor and report on activities such as infections, security violations, or virus entry points. System administrators can download and deploy components throughout the network, helping ensure that protection is consistent and up-to-date. Apex Central allows both manual and pre-scheduled updates, and the configuration and administration of products as groups or as individuals for added flexibility.

Deep Discovery Director

Trend Micro Deep Discovery Director is a management solution that enables centralized deployment of product updates, product upgrades, and Virtual Analyzer images to Deep Discovery products, as well as configuration replication and log aggregation for Deep Discovery products. To accommodate different organizational and infrastructural requirements, Deep Discovery Director provides flexible deployment options such as distributed mode and consolidated mode.

For more information, see the **Deep Discovery Director Administrator's Guide**.

Chapter 2

Getting Started

This chapter describes how to get started with Deep Discovery Email Inspector and configure initial settings.

Topics include:

Getting Started Tasks

Getting Started Tasks provides a high-level overview of all procedures required to get Deep Discovery Email Inspector up and running as quickly as possible. Each step links to more detailed instructions later in the document. The getting started process is the same for BCC, SPAN/TAP and MTA modes.

Procedure

1. Configure network settings to access the management console.

   For details, see *Configuring Management Console Access on page 2-5*.

2. Open the management console.

   For details, see *The Management Console on page 2-7*.

3. Activate the Deep Discovery Email Inspector product licenses.

   For details, see *Activating or Renewing Your Product License on page 8-207*.

4. Configure the system time.

   For details, see *Configuring System Time on page 8-178*.

5. Configure network settings.

   For details, see *Configuring Network Settings on page 8-168*.

6. Configure the operation mode.

   For details, see *Operation Modes on page 8-171*.

7. Configure the SMTP server.

   For details, see *Configuring the Notification SMTP Server on page 8-175*.

8. Configure the mail limits and exceptions.

   For details, see *Configuring Limits and Exceptions on page 8-100*.

9. Configure Virtual Analyzer network settings.

For details, see *Configuring Virtual Analyzer Network and Filters on page 8-19*.

10. Import Virtual Analyzer images.

    For details, see *Importing Virtual Analyzer Images on page 8-15*.

> **Important**
>
> At least one Virtual Analyzer image is required to perform analysis.

11. Configure the password to open archive files and document files.

    For details, see *Adding File Passwords on page 8-35*.

12. Configure email routing for downstream MTAs.

    For details, see *Configuring Message Delivery Settings on page 8-97*.

13. Add at least one notification recipient to all critical and important alerts.

    For details, see *Alerts on page 6-2*.

14. (Optional) Configure policies.

    For details, see *Configuring a Policy on page 5-27*.

15. (Optional) Configure policy exceptions.

    For details, see *Policy Exceptions on page 5-78*.

16. (Optional) Register with Apex Central or Deep Discovery Director for central management.

    For details, see *Apex Central on page 8-108* or *Deep Discovery Director on page 8-113*.

17. Configure upstream MTAs or SPAN/TAP devices.

    a. If Deep Discovery Email Inspector is operating in BCC or MTA mode, configure the upstream MTAs to route email traffic to Deep Discovery Email Inspector.

Note

Configuring the upstream MTA requires different settings for MTA mode and BCC mode. See the supporting documentation provided by the MTA server manufacturer for instructions about configuring MTA settings.

- In MTA mode, configure the MTA to forward email traffic to Deep Discovery Email Inspector.
- In BCC mode, configure the MTA to copy email traffic to Deep Discovery Email Inspector.

b. If Deep Discovery Email Inspector is operating in SPAN/TAP mode, configure the SPAN/TAP device to mirror traffic to Deep Discovery Email Inspector.

Note

See the supporting documentation provided by the SPAN/TAP device manufacturer for instructions about configuring settings.

Requirements to Access Deep Discovery Email Inspector

The following table lists the minimum requirements to access the Command Line Interface and the management console that manage Deep Discovery Email Inspector.

TABLE 2-1. System Access Requirements

APPLICATION	REQUIREMENTS	DETAILS
SSH client	SSH protocol version 2	Set the Command Line Interface terminal window size to 80 columns and 24 rows.

Application	Requirements	Details
Internet Explorer™	Versions 10, 11	Use only a supported browser to access the management console. Using the data port IP address you set during the initial configuration, specify the following URL: `https://[Appliance_IP_Address]:443`
Microsoft Edge™	Windows 10	
Mozilla Firefox™	Version 75 or later	
Google Chrome™	Version 81 or later	

Note

- Trend Micro recommends viewing the console using a monitor that supports 1280 x 1024 resolution or greater.
- By default, SSH service is disabled and is not started when enabled. To enable SSH service, see *configure service ssh enable on page B-13*. To start SSH service, see *start service ssh on page B-27*.

Configuring Management Console Access

After completing the installation, the server restarts and loads the Command Line Interface (CLI). Configure Deep Discovery Email Inspector network settings to gain access to the management console.

The following procedure explains how to log on to the CLI and configure the following required network settings:

- Host name
- Management IP address and netmask
- Gateway
- DNS

Procedure

1. Log on to the CLI with the default credentials.
   - User name: `admin`
   - Password: `ddei`
2. At the prompt, type `enable` and press Enter to enter privileged mode.
3. Type the default password, `trend#1`, and then press Enter.

   The prompt changes from > to #.
4. Configure network settings with the following command:

   ```
   configure network basic
   ```
5. Configure the following network settings and press Enter after typing each setting.

   Note

   IPv6 settings are optional.

   - Host name
   - IPv4 address
   - Subnet mask
   - IPv4 gateway
   - Preferred IPv4 DNS
   - Alternate IPv4 DNS
   - IPv6 address
   - Prefix length
   - IPv6 gateway
   - Preferred IPv6 DNS

- Alternate IPv6 DNS

6. Type `Y` to confirm settings and restart.

   Deep Discovery Email Inspector implements specified network settings and then restarts all services.

The initial configuration is complete and the management console is accessible.

Note

You can log on to the CLI later to perform additional configuration, troubleshooting, or maintenance tasks. For details about the CLI, see *Using the Command Line Interface on page B-1*.

The Management Console

Deep Discovery Email Inspector provides a built-in management console that you can use to configure and manage the product.

View the management console using any supported web browser. For information about supported browsers, see *Requirements to Access Deep Discovery Email Inspector on page 2-4*.

For information about configuring required network settings before accessing the management console, see *Configuring Management Console Access on page 2-5*.

To log on, open a browser window and type the following URL:

```
https://<Appliance IP Address>
```

Note

The default management console IP address / subnet mask is `192.168.252.1` / `255.255.0.0`.

You can log on to the Deep Discovery Email Inspector management console using one of the following methods:

- *Logging On Using Local Accounts on page 2-8*
- *Logging On With Single Sign-On on page 2-8*

Logging On Using Local Accounts

Procedure

1. On the **Log On** screen, type the logon credentials (user name and password) for the management console.

   Use the default administrator logon credentials when logging on for the first time:

   - User name: `admin`
   - Password: `ddei`

2. Click **Log On**.

3. If this is the first time you log on using the "admin" account with the default password, change the account password before you can access the management console.

Logging On With Single Sign-On

If you configure the required settings for SAML integration on Deep Discovery Email Inspector, users can access the Deep Discovery Email Inspector management console using their existing identity provider credentials.

For more information, see *SAML Integration on page 8-149*.

Procedure

1. On the **Log On** screen, select a service name from the drop-down list.
2. Click **Single Sign-on (SSO)**.

   The system automatically navigates to the logon page for your organization.
3. Follow the on-screen instructions and provide your account credentials to access the Deep Discovery Email Inspector management console.

Management Console Navigation

The management console consists of the following elements:

TABLE 2-2. Management Console Elements

SECTION	DETAILS
Banner	The management console banner contains: • Product logo and name: Click to go to the dashboard. For details, see *Dashboard Overview on page 3-2*. • Name of the user currently logged on: Click and select **Change password** to change the account password (see *Changing Your Password on page 8-189*) or select **Log off** to log out of the management console. • System time: Displays the current system time and time zone. • Appliance IP address: Displays the IP address of the Deep Discovery Email Inspector appliance. • Network traffic: Displays the incoming and outgoing network throughput.
Main Menu Bar	The main menu bar contains several menu items that allow you to configure product settings. For some menu items, such as **Dashboard**, clicking the item opens the corresponding screen. For other menu items, submenu items appear when you click or mouseover the menu item. Clicking a submenu item opens the corresponding screen.

Section	Details
Context-sensitive Help	Use **Help** to find more information about the screen that is currently displayed.

Chapter 3

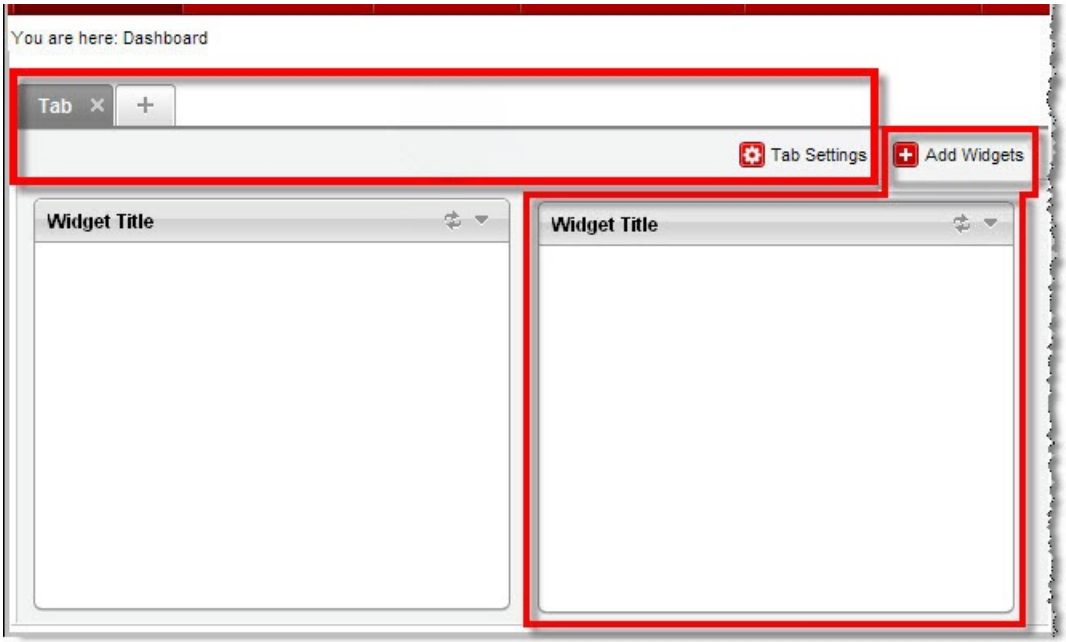
Dashboard

Topics include:

Dashboard Overview

Monitor your network integrity with the dashboard. Each management console user account has an independent dashboard. Changes made to one user account dashboard do not affect other user account dashboards.

The dashboard consists of the following user interface elements:



Element	Description
Tabs	Tabs provide a container for widgets. For details, see *Tabs on page 3-3*.
Widgets	Widgets represent the core dashboard components. For details, see *Widgets on page 3-6*.

Note

The **Add Widget** button appears with a star when a new widget is available.

Click **Play Tab Slide Show** to show a dashboard slide show.

- Tabs provide a container for widgets. For details, see *Tabs on page 3-3*.
- Widgets represent the core dashboard components. For details, see *Widgets on page 3-6*.

Note

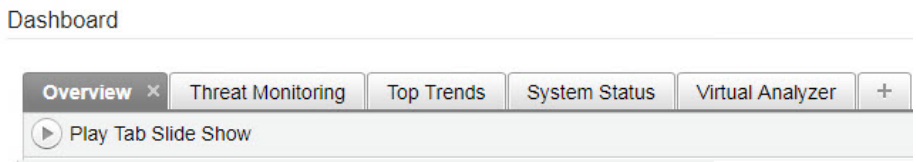
Click **Play Tab Slide Show** to show a dashboard slide show.

Tabs

Tabs provide a container for widgets. Each tab on the dashboard can hold up to 20 widgets. The dashboard supports up to 30 tabs.

Predefined Tabs

The dashboard comes with predefined tabs, each with a set of widgets. You can rename, delete, and add widgets to these tabs.



The predefined tabs include:

- **Overview**
- **Threat Monitoring**

- **Top Trends**
- **System Status**
- **Virtual Analyzer**

Tab Tasks

The following table lists all the tab-related tasks:

Task	Steps
Add a tab	Click the **plus** icon (+) on top of the dashboard. The **New Tab** window displays. For information about this window, see *New Tab Window on page 3-4*.
Edit a tab's settings	Click **Tab Settings**. A window similar to the **New Tab** window opens, where you can edit settings.
Move a tab	Use drag-and-drop to change a tab's position.
Delete a tab	Click the **delete** icon ( ) next to the tab title. Deleting a tab also deletes all the widgets in the tab.

New Tab Window

The **New Tab** window opens when you click the **plus** icon (+) on top of the dashboard.

This window includes the following options:

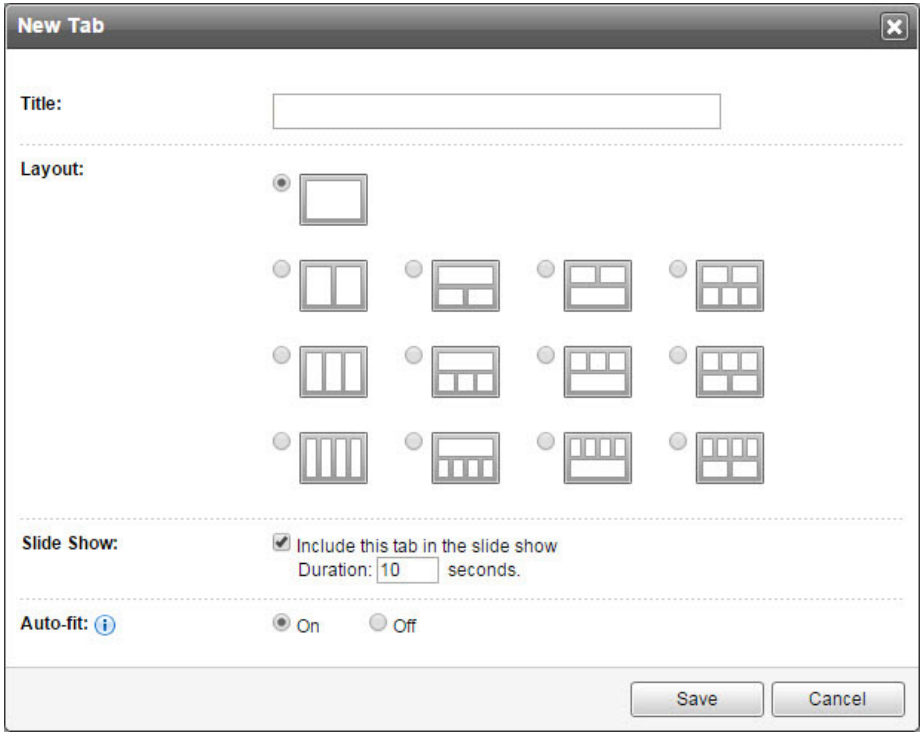


TABLE 3-1. New Tab Tasks

TASK	STEPS
Title	Type the name of the tab.
Layout	Choose from the available layouts.
Slide Show	Select to include the tab in the Dashboard slide show.
Duration	Type the number of seconds to display the tab during the Dashboard slide show.

Task	Steps
Auto-fit	Choose **On** or **Off**. This feature works when there is only one widget in a column. Choose **On** to adjust the height of the single widget to match the highest column.

Widgets

Widgets are the core components of the dashboard. Widgets contain charts and graphs that allow you to monitor the system status and track threats.

Adding Widgets to the Dashboard

The **Add Widgets** screen appears when you add widgets from a tab on the dashboard.

Do any of the following:

Procedure

- To reduce the widgets that appear, click a category from the left side.
- To search for a widget, specify the widget name in the search text box at the top.
- To change the widget count per page, select a number from the **Records** drop-down menu.
- To switch between the Detailed and Summary views, click the display icons ( ) at the top right.
- To select the widget to add to the dashboard, select the check box next to the widget's title.
- To add the selected widgets, click **Add**.

Widget Tasks

All widgets follow a widget framework and offer similar task options.

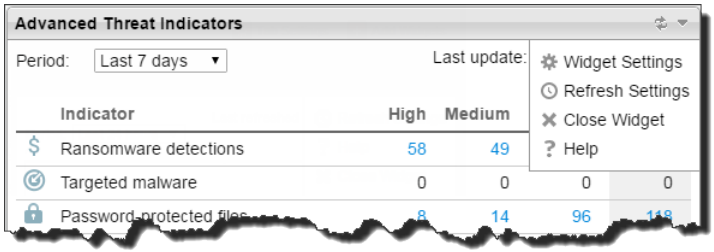
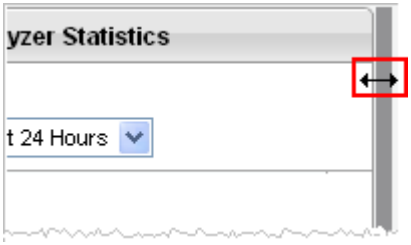
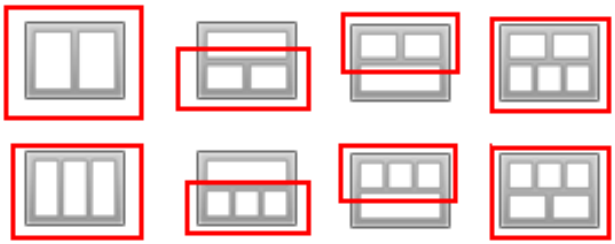


TABLE 3-2. Widget Options Menu

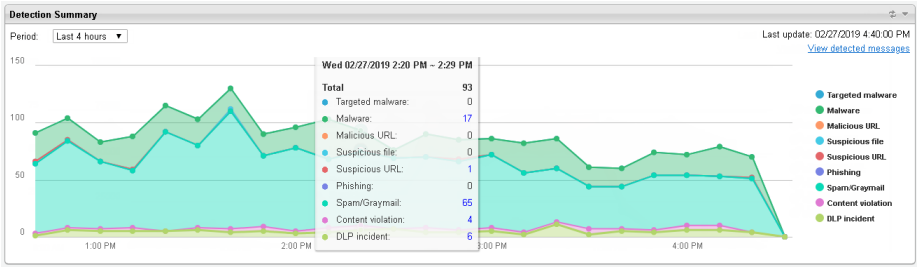
TASK	STEPS
Access widget options	Click the options icon ( ) at the widget's top-right corner to view the menu options.
Edit a widget	Click the edit icon ( ) to change settings.
Refresh widget data	Click the refresh icon ( ) to refresh widget data. Click the refresh settings icon ( ) to set the frequency that the widget refreshes or to automatically refresh widget data.
Get help	Click the question mark icon ( ) to get help. The online help appears explaining how to use the widget.
Delete a widget	Click the delete icon ( ) to close the widget. This action removes the widget from the tab that contains it, but not from any other tabs that contain it or from the widget list in the **Add Widgets** screen.
Move a widget within the same tab	Use drag-and-drop to move the widget to a different location within the tab.
Move a widget to a different tab	Use drag-and-drop to move the widget to the tab title. An option appears to either copy or move the widget to the destination tab location.

Task	Steps
Resize a widget	Point the cursor to the widget's right edge to resize a widget. When you see a thick vertical line and an arrow (as shown in the following image), hold and then move the cursor to the left or right.  You can resize any widget within a multi-column tab (red squares). These tabs have any of the following layouts. 
Change period	If available, click the **Period** drop-down menu to select the time period.

Overview

The **Overview** widgets provide detection summary, quarantined and processed messages, top violated policies, and message queue status information.

Detection Summary Widget



The **Detection Summary** widget displays the numbers of detections for the threat types.

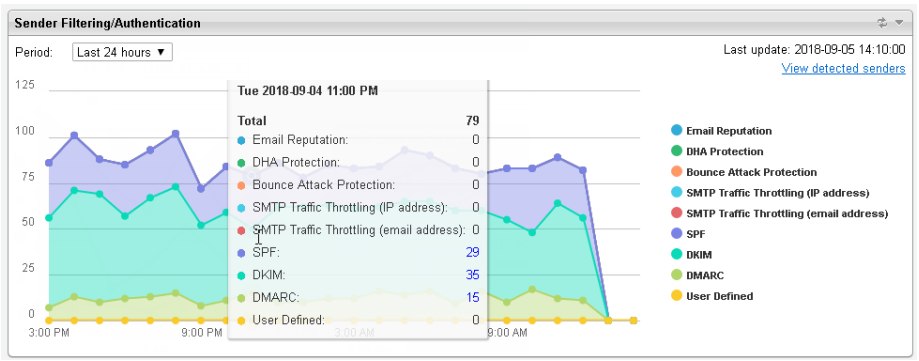
The graph is based on the selected period. The Y-axis represents the detection count. The X-axis represents the period. Mouse-over the points on the graph to view the period and number of detections.

Click a detection category in the legend to hide or show the related data on the graph.

Click **View detected messages** to view all detections.

For general widget tasks, see *Widget Tasks on page 3-7*.

Sender Filtering/Authentication Widget



The **Sender Filtering/Authentication** widget displays the number of detections based on the sender filtering and authentication settings.

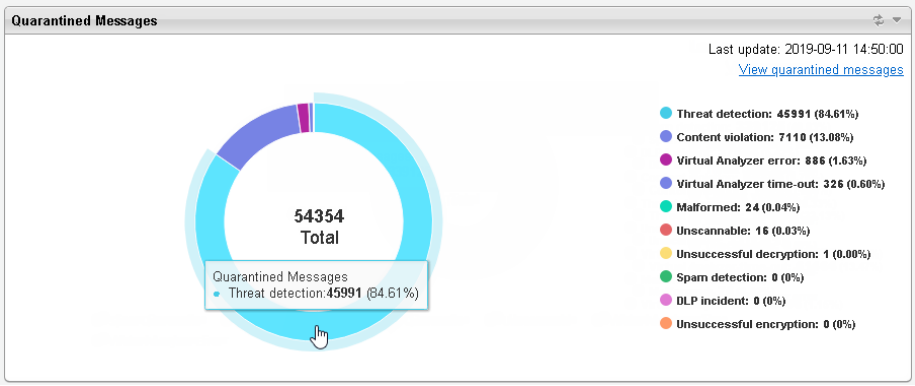
The graph is based on the selected period. The Y-axis represents the detection count. The X-axis represents the period. Mouse-over the points on the graph to view the period and number of detections.

Click a detection category in the legend to hide or show the related data on the graph.

Click **View detected senders** to view the sender filtering/authentication logs.

For general widget tasks, see *Widget Tasks on page 3-7*.

Quarantined Messages Widget



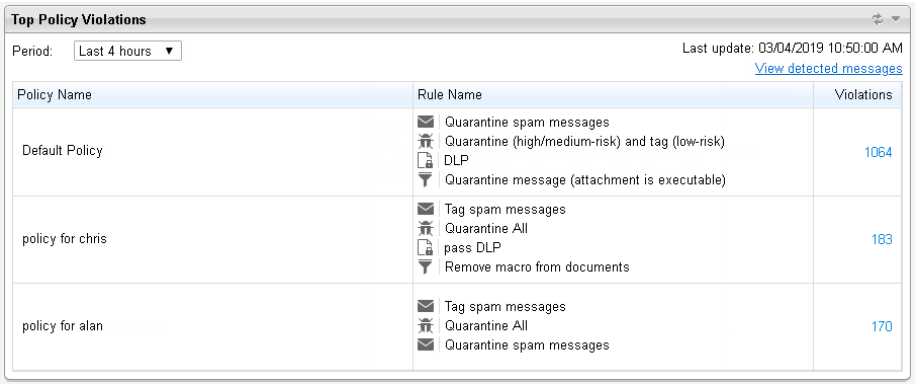
The **Quarantined Messages** widget displays the quarantine folder size and the total number of quarantined messages. Mouse-over a section on the doughnut chart to view the number of quarantined messages for a quarantine reason.

Click a detection category in the legend to hide or show the related data on the graph.

Click **View quarantined messages** to view all quarantined messages.

For general widget tasks, see *Widget Tasks on page 3-7*.

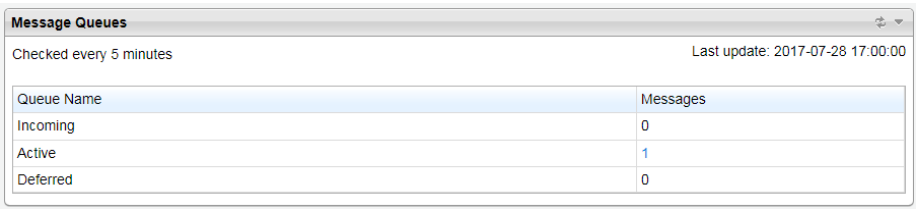
Top Policy Violations Widget



The **Top Policy Violations** widget shows the most common policies and the associated rules that are violated in detected messages based on the selected period. Click a number under **Violations** to view the detected messages for a violated policy.

Click **View detected messages** to view all detected messages.

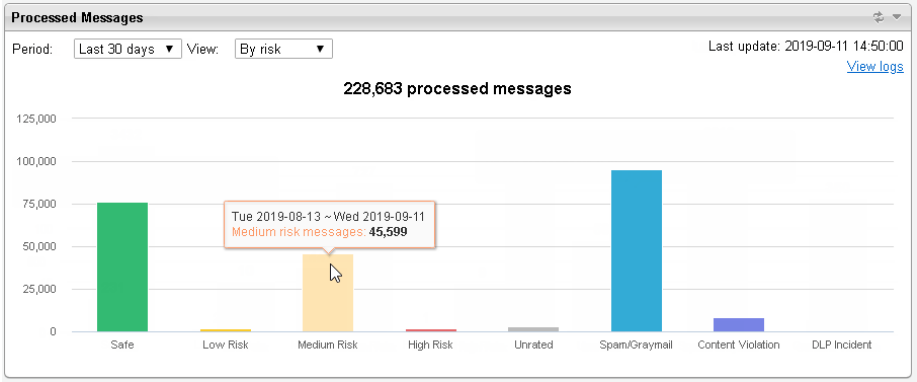
Message Queues Widget



The **Message Queues** widget displays the number of messages that just arrived, the number of messages ready for delivery, and the number of

messages deferred due to delivery failure. Click a number under **Messages** to view message queue logs.

Processed Messages Widget

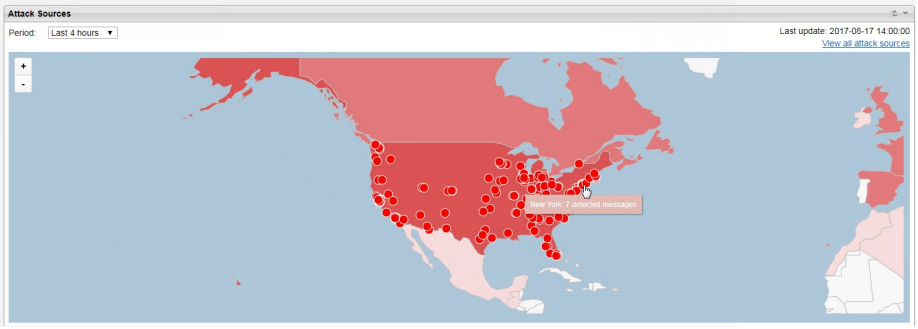


The **Processed Messages** widget displays the number of messages that Deep Discovery Email Inspector processed for each message category or message direction within the selected period. The Y-axis represents the email message count. The X-axis represents the message category or direction.

Threat Monitoring

View **Threat Monitoring** widgets to understand incoming suspicious messages, attack sources, affected recipients, and which messages were quarantined.

Attack Sources Widget



The **Attack Sources** widget shows an interactive map representing all source MTAs that routed suspicious email traffic.

An attack source is the first MTA with a public IP address that routes a suspicious message. For example, if a suspicious message travels the following route: IP1 (sender) > IP2 (MTA: 225.237.59.52) > IP3 (company mail gateway) > IP4 (recipient), Deep Discovery Email Inspector identifies 225.237.59.52 (IP2) as the attack source. By studying attack sources, you can identify regional attack patterns or attack patterns that involve the same mail server.

Mouse-over any point on the map to learn about the events that came from the attack source location.

Click any highlighted region on the map to learn more about attacks originating from that region.

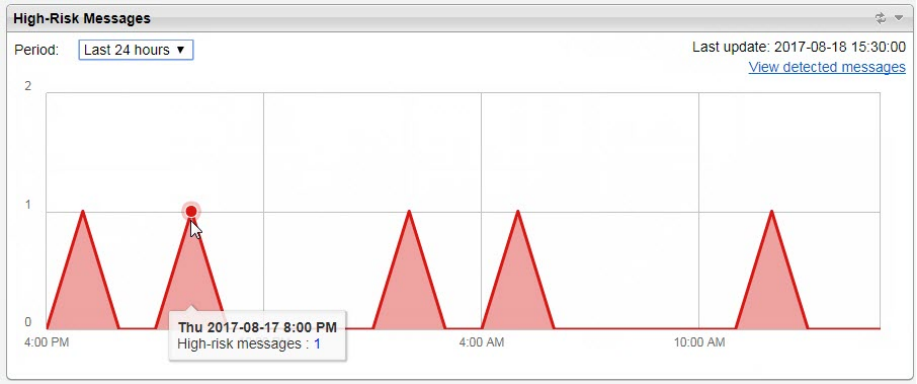
Note

Attacks in the **No data** group are detected attacks with no location information.

For example, if Deep Discovery Email Inspector is unable to obtain a public IP address from the message routing information, no location information is available.

Click **View all attack sources** in the top-right corner to go to the **Attack Sources** screen.

High-Risk Messages Widget



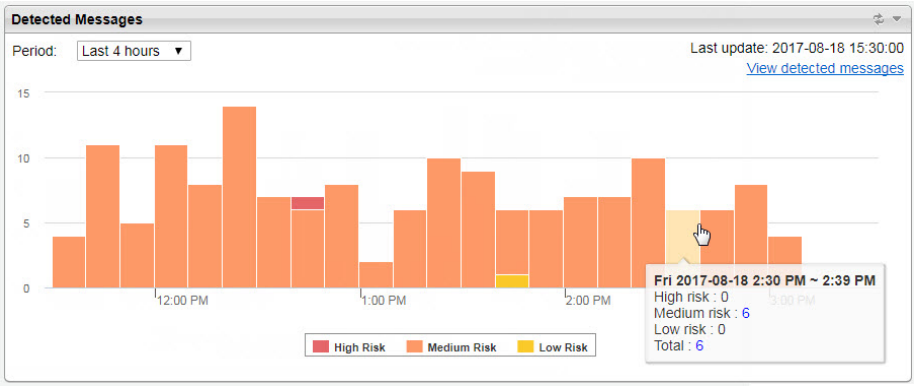
The **High-Risk Messages** widget shows all incoming malicious messages. High-risk messages have malware communications, malicious contact destinations, malicious behavior patterns, or strings that definitively indicate compromise.

The graph is based on the selected period. The Y-axis represents the email message count. The X-axis represents the period. Mouse-over a point on the graph to view the number of high risk messages and the period.

Click **View detected messages** to view all detections.

For general widget tasks, see *Widget Tasks on page 3-7*.

Detected Messages Widget



The **Detected Messages** widget shows all email messages with malicious and suspicious characteristics. Suspicious characteristics include anomalous behavior, false or misleading data, suspicious and malicious behavior patterns, and strings that indicate system compromise but require further investigation.

Note

A similar widget called Email Messages with Advanced Threats is available in Apex Central, which aggregates data from several Deep Discovery Email Inspector appliances.

The graph is based on the selected period. The Y-axis represents the email message count. The X-axis represents the period. Mouse-over a point on the graph to view the number of high risk messages and the period.

Click an item in the widget legend to show or hide data related to that metric.

Click **View detected messages** to view all detections.

For general widget tasks, see *Widget Tasks on page 3-7*.

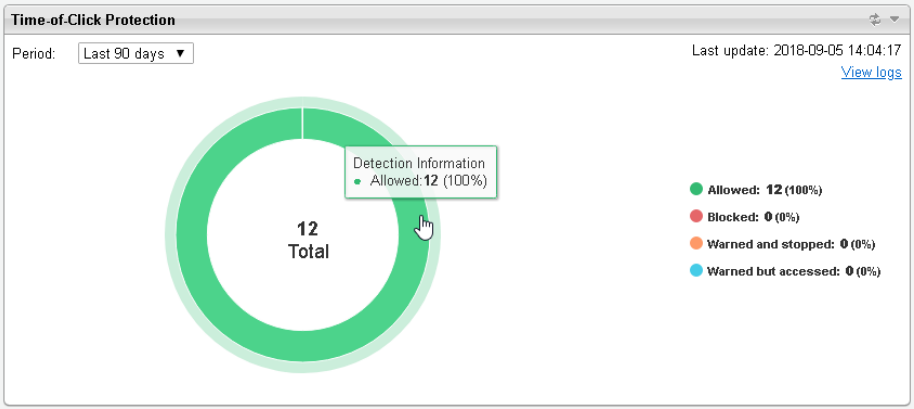
Advanced Threat Indicators

The **Advanced Threat Indicators** widget shows the type, amount, and risk level of advanced threat indicators detected in all email messages.

The table shows detections based on the selected time period. Click a number under **High**, **Medium**, **Low**, or **Total** to learn more about the detections.

For general widget tasks, see *Widget Tasks on page 3-7*.

Time-of-Click Protection Widget



The **Time-of-Click Protection** widget displays the total number of detected URLs at the time of user clicks. Mouse-over a section on the doughnut chart to view the number of detected URLs for a detection action.

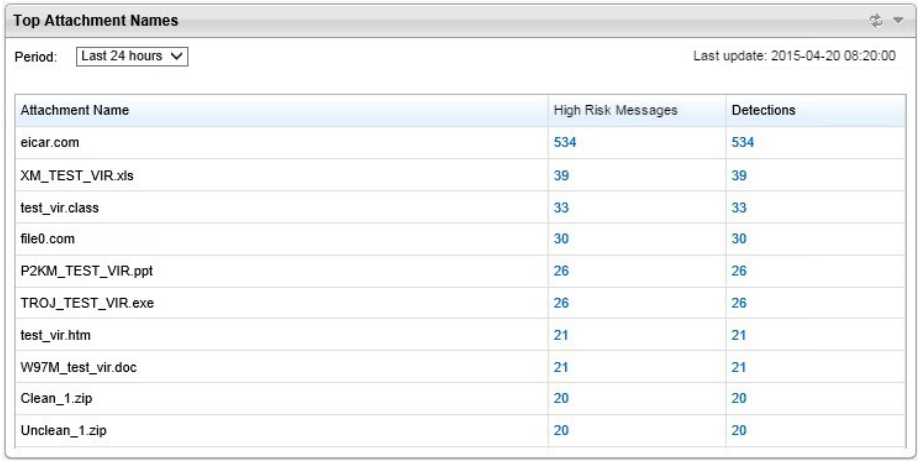
Click a detection action in the legend to hide or show the related data on the graph.

For general widget tasks, see *Widget Tasks on page 3-7*.

Top Trends

View **Top Trends** widgets to understand the top activity in your network, including suspicious message content and callback destinations, to understand the threat characteristics affecting your network.

Top Attachment Names Widget

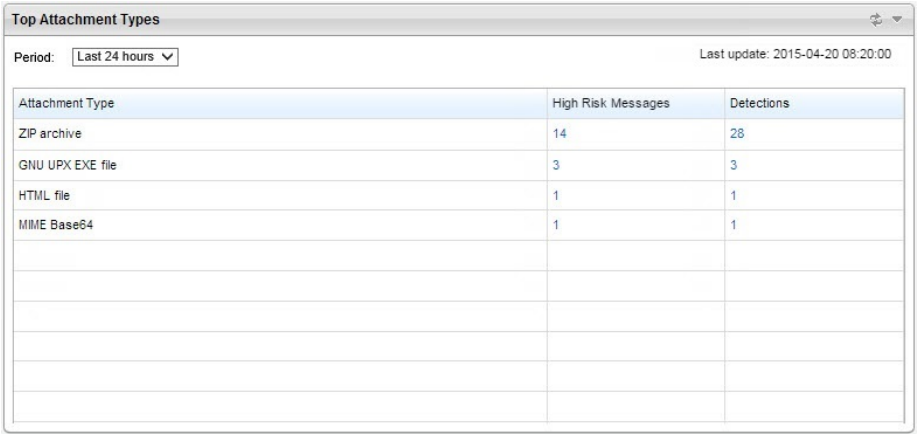


The **Top Attachment Names** widget shows the most common file attachments contained in suspicious and high-risk email messages.

The table shows detections based on the selected time period. Click a number under **Detections** or **High Risk Messages** to learn more about the detections. **Detections** includes all detected email messages, including high-risk messages.

For general widget tasks, see *Widget Tasks on page 3-7*.

Top Attachment Types Widget

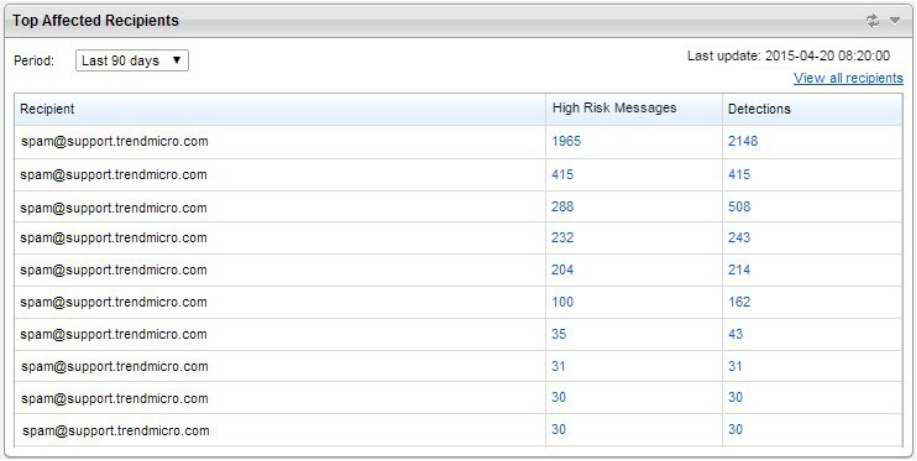


The **Top Attachment Types** widget shows the most common attachment file types contained in detected messages.

The table shows detections based on the selected time period. Click a number under **Detections** or **High Risk Messages** to learn more about the detections. **Detections** includes all detected email messages, including high-risk messages.

For general widget tasks, see *Widget Tasks on page 3-7*.

Top Affected Recipients Widget



The **Top Affected Recipients** widget shows the recipients who received the highest volume of suspicious messages.

Note

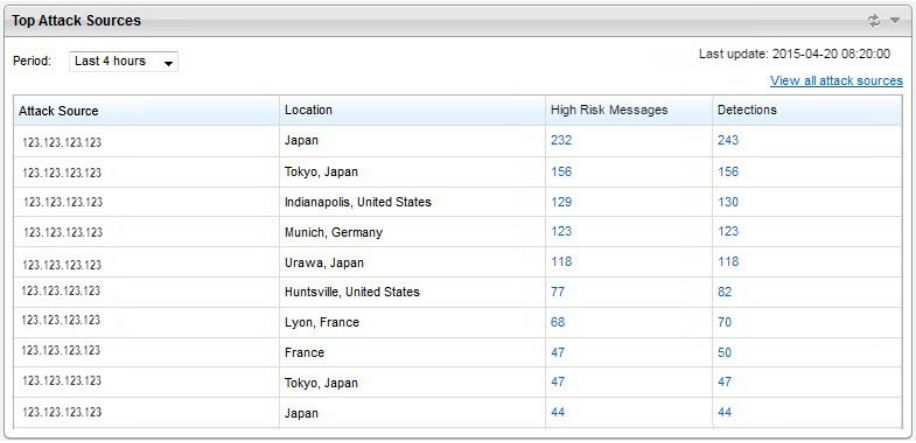
A similar widget called Top Email Recipients of Advanced Threats is available in Apex Central, which aggregates data from several Deep Discovery Email Inspector appliances.

The table shows detections based on the selected time period. Click a number under **Detections** or **High Risk Messages** to learn more about the detections. **Detections** includes all detected email messages, including high-risk messages.

Click **View all recipients** to see all recipients affected by suspicious messages.

For general widget tasks, see *Widget Tasks on page 3-7*.

Top Attack Sources Widget



Attack Source	Location	High Risk Messages	Detections
123.123.123.123	Japan	232	243
123.123.123.123	Tokyo, Japan	156	156
123.123.123.123	Indianapolis, United States	129	130
123.123.123.123	Munich, Germany	123	123
123.123.123.123	Urawa, Japan	118	118
123.123.123.123	Huntsville, United States	77	82
123.123.123.123	Lyon, France	68	70
123.123.123.123	France	47	50
123.123.123.123	Tokyo, Japan	47	47
123.123.123.123	Japan	44	44

The **Top Attack Sources** widget shows the most active IP addresses attacking your network.

An attack source is the first MTA with a public IP address that routes a suspicious message. For example, if a suspicious message travels the following route: IP1 (sender) > IP2 (MTA: 225.237.59.52) > IP3 (company mail gateway) > IP4 (recipient), Deep Discovery Email Inspector identifies 225.237.59.52 (IP2) as the attack source. By studying attack sources, you can identify regional attack patterns or attack patterns that involve the same mail server.

The table shows detections based on the selected time period. Click a number under **Detections** or **High Risk Messages** to learn more about the detections. **Detections** includes all detected email messages, including high-risk messages.

Click **View all attack sources** to see all detected attack sources over the selected time period.

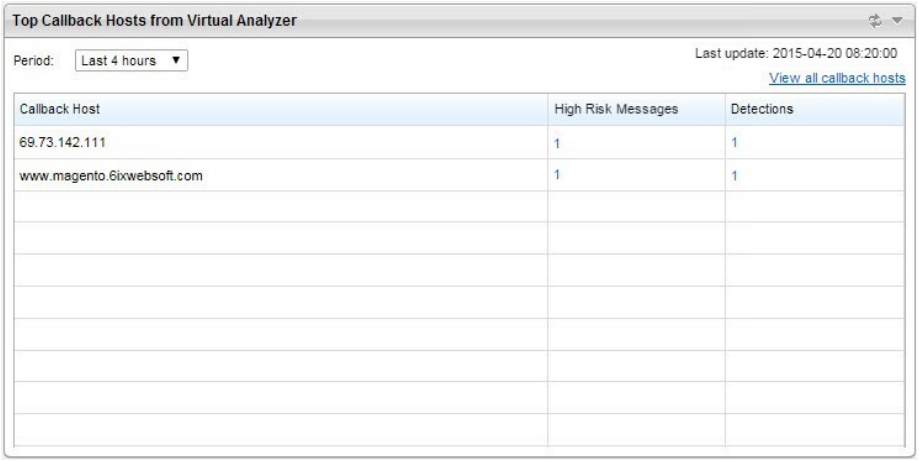
Note

A dash (-) indicates that the location information is not available.

For example, if Deep Discovery Email Inspector is unable to obtain a public IP address from the message routing information, no location information is available.

For general widget tasks, see *Widget Tasks on page 3-7*.

Top Callback Hosts from Virtual Analyzer Widget



The **Top Callback Hosts from Virtual Analyzer** widget shows the most common callback hosts contained in suspicious and high-risk email messages. A callback host is the IP address or host name of a C&C server.

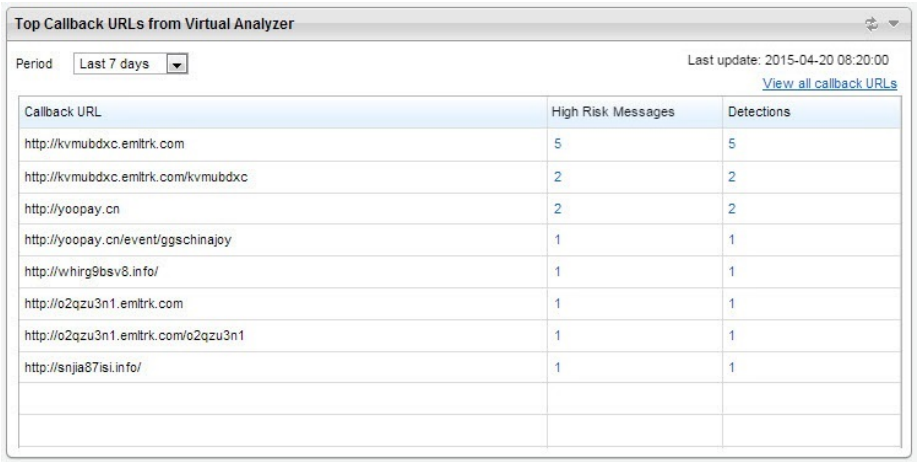
When Virtual Analyzer receives an object (file or URL) from the Deep Discovery Email Inspector email scanners, Virtual Analyzer observes whether the object connects to an external network address. A high-risk object attempts to perform a callback to a known C&C server host. Virtual Analyzer reports all connections (URLs, IP addresses, and host names) made by submitted samples, including possible malware callback and other suspicious connections.

The table shows detections based on the selected time period. Click a number under **Detections** or **High Risk Messages** to learn more about the detections. **Detections** includes all detected email messages, including high-risk messages.

Click **View all callback hosts** to see all suspicious host objects found during analysis.

For general widget tasks, see *Widget Tasks on page 3-7*.

Top Callback URLs from Virtual Analyzer Widget



The **Top Callback URLs from Virtual Analyzer** widget shows the most common callback URLs contained in suspicious and high-risk email messages. A callback URL is the web address of a C&C server.

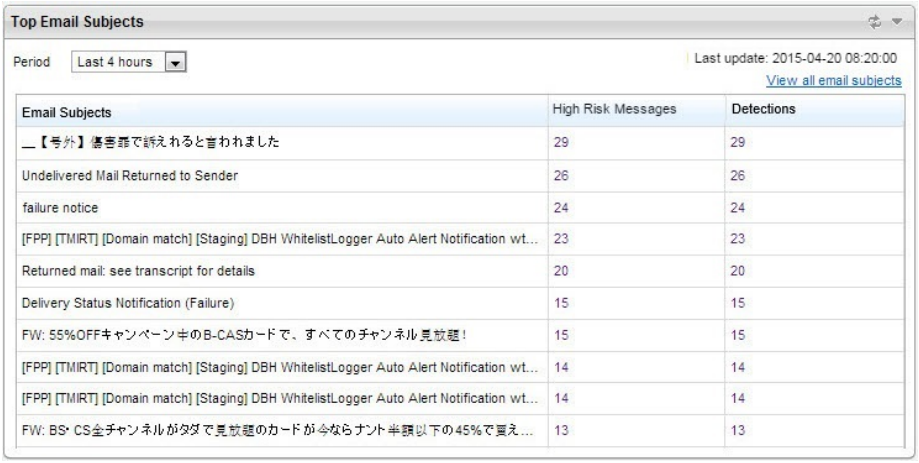
When Virtual Analyzer receives an object (file or URL) from the Deep Discovery Email Inspector email scanners, Virtual Analyzer observes whether the object connects to an external network address. A high-risk object attempts to perform a callback to a known C&C server host. Virtual Analyzer reports all connections (URLs, IP addresses, and host names) made by submitted samples, including possible malware callback and other suspicious connections.

The table shows detections based on the selected time period. Click a number under **Detections** or **High Risk Messages** to learn more about the detections. **Detections** includes all detected email messages, including high-risk messages.

Click **View all callback URLs** to see all suspicious URL objects found during analysis.

For general widget tasks, see *Widget Tasks on page 3-7*.

Top Email Subjects Widget



The **Top Email Subjects** widget shows the most common email message subjects contained in suspicious and high-risk email messages.

The table shows detections based on the selected time period. Click a number under **Detections** or **High Risk Messages** to learn more about the detections. **Detections** includes all detected email messages, including high-risk messages.

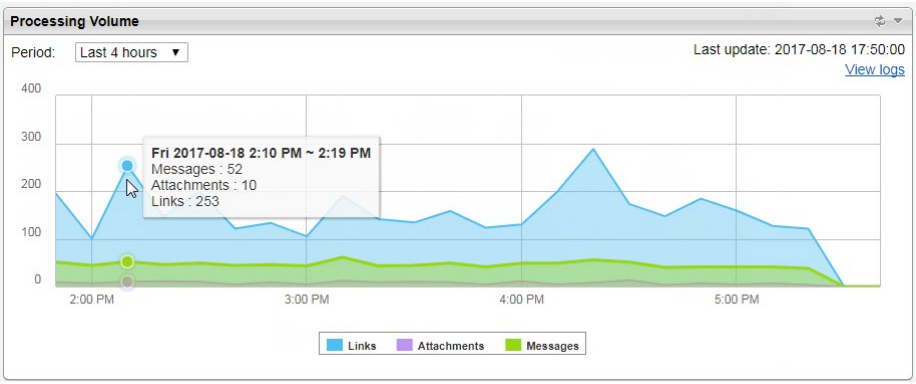
Click **View all email subjects** to see the email subjects in detected messages during the selected time period.

For general widget tasks, see *Widget Tasks on page 3-7*.

System Status

View **System Status** widgets to understand overall email message processing volume during different time periods for different risk levels and the current Deep Discovery Email Inspector appliance hardware status. The widgets graphically show how system performance affects message delivery.

Processing Volume Widget



The **Processing Volume** widget shows all email messages, file attachments, and embedded links that Deep Discovery Email Inspector investigated.

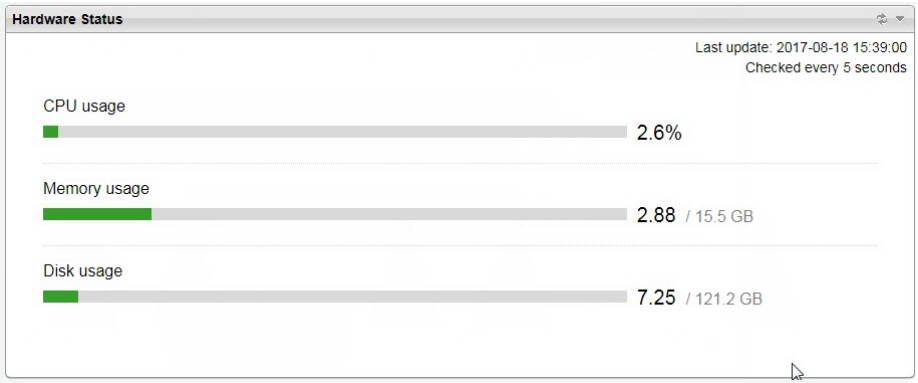
The graph is based on the selected period. The Y-axis represents the total number of processed email messages, attachments, or embedded links. The X-axis represents the period. Mouse-over a point on the graph to view the number of high risk messages and the period. Click on an item in the legend to toggle it on or off in the graph.

Click an item in the widget legend to show or hide data related to that metric.

Click **View logs** to view the message tracking logs.

For general widget tasks, see *Widget Tasks on page 3-7*.

Hardware Status Widget



The **Hardware Status** widget shows the Deep Discovery Email Inspector appliance's current CPU, memory, and disk usage within the last 5 seconds.

Note

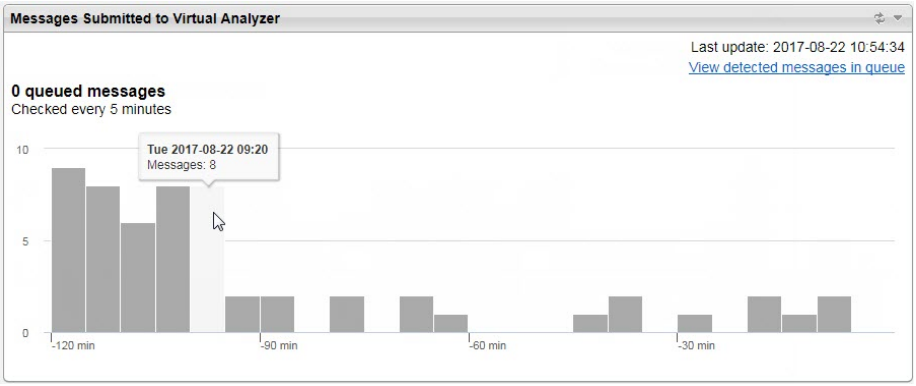
"Disk usage" refers to the amount of data stored on the disk partition.

For general widget tasks, see *Widget Tasks on page 3-7*.

Virtual Analyzer

View **Virtual Analyzer** widgets to assess Virtual Analyzer performance based on processing time, queue size, and the volume of suspicious objects discovered during analysis.

Messages Submitted to Virtual Analyzer Widget



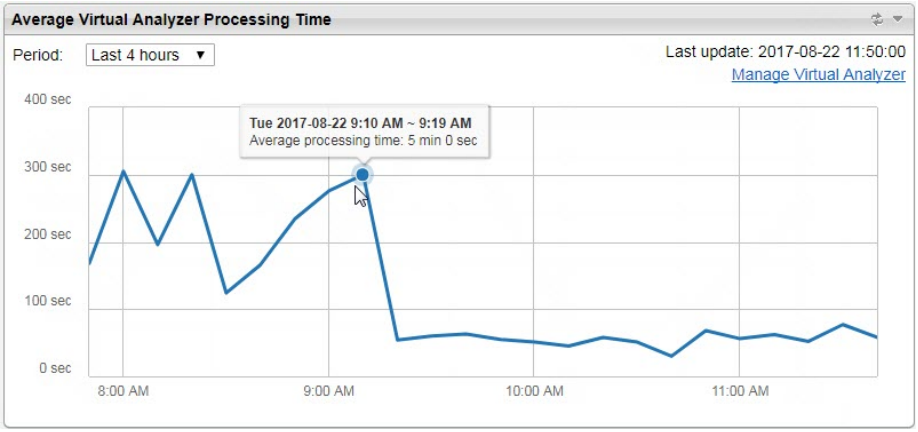
The **Messages Submitted to Virtual Analyzer** widget shows the number of email messages that are submitted to Virtual Analyzer for processing during each 5-minute interval.

The graph is based on the selected period. The Y-axis represents the email message count. The X-axis represents the period. Mouse-over a point on the graph to view the number of messages submitted to Virtual Analyzer and the period.

Click **View detected messages in queue** to view email messages currently undergoing analysis.

For general widget tasks, see *Widget Tasks on page 3-7*.

Average Virtual Analyzer Processing Time Widget



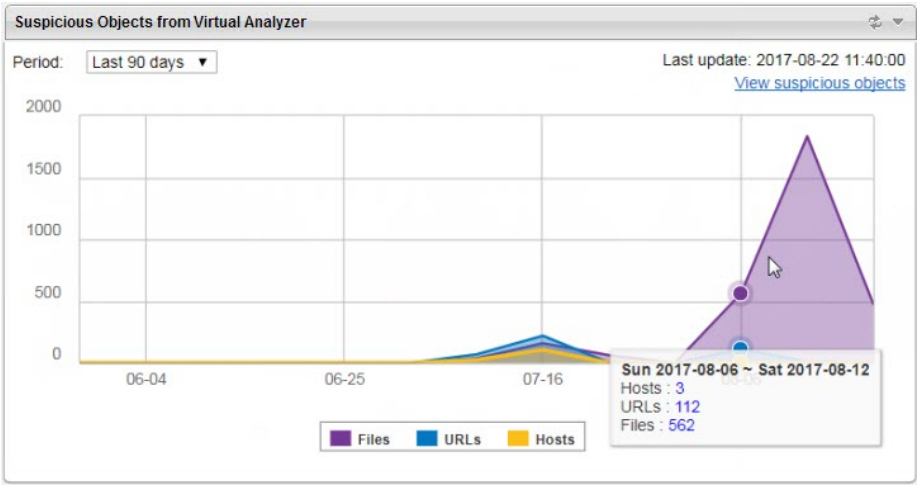
The **Average Virtual Analyzer Processing Time** widget shows the average time in seconds between when Virtual Analyzer receives an object and completes analysis.

The graph is based on the selected period. The Y-axis represents the average length of time required to analyze the object. The X-axis represents the period. Mouse-over a point on the graph to view the number of high risk messages and the period.

Click **Manage Virtual Analyzer** to reallocation instances, to add or remove images, or to make other changes to Virtual Analyzer settings.

For general widget tasks, see *Widget Tasks on page 3-7*.

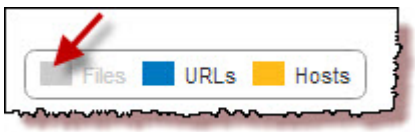
Suspicious Objects from Virtual Analyzer Widget



The **Suspicious Objects from Virtual Analyzer** widget shows the suspicious objects found in Virtual Analyzer. Suspicious objects are objects with the potential to expose systems to danger or loss. Virtual Analyzer detects and analyzes suspicious IP addresses, host names, files, and URLs.

The graph is based on the selected period. The Y-axis represents the number of suspicious object detected. The X-axis represents the period. Mouse-over a point on the graph to view the number of high risk messages and the period.

Click an item in the widget legend to show or hide data related to that metric.



Click **View suspicious objects** to view suspicious objects affecting your network.

For general widget tasks, see *Widget Tasks on page 3-7*.

Chapter 4

Detections

Topics include:

Detected Risk

Detected risk is potential danger exhibited by a suspicious email message.

Deep Discovery Email Inspector assesses email message risk using multi-layered threat analysis. Upon receiving an email message, Deep Discovery Email Inspector email scanners check the email message for known threats in the Trend Micro Smart Protection Network and Trend Micro Advanced Threat Scanning Engine. If the email message has unknown or suspicious characteristics, the email scanners send file attachments and embedded URLs to Virtual Analyzer for further analysis. Virtual Analyzer simulates the suspicious file and URL behavior to identify potential threats. Deep Discovery Email Inspector assigns a risk level to the email message based on the highest risk assigned between the Deep Discovery Email Inspector scanners and Virtual Analyzer.

For details about how Deep Discovery Email Inspector investigates email messages, see *A New Solution on page 1-11*.

Email Message Risk Levels

The following table explains the email message risk levels after investigation. View the table to understand why an email message was classified as high, medium, or low risk.

TABLE 4-1. Email Message Risk Definitions

RISK LEVEL	DESCRIPTION
High	A high-risk email message contains: • Attachments with unknown threats detected as high risk by Virtual Analyzer • Attachments detected as high risk based on YARA rules • Attachments detected as high risk based on suspicious file matching • Attachments detected by Predictive Machine Learning and Email Malware Threat Scan • Business Email Compromise • Links detected as high risk by Virtual Analyzer • Links detected as high risk based on suspicious URL matching
Medium	A medium-risk email message contains: • Known malware • Known phishing threats • Known dangerous links • Attachments detected as medium risk based on YARA rules • Links detected as medium risk based on suspicious URL matching
Low	A low-risk email message contains: • Known highly suspicious or suspicious links (Aggressive mode) • Links detected as low risk by Virtual Analyzer • Attachments detected as low risk by Virtual Analyzer • Attachments detected as low risk based on YARA rules • Links detected as low risk based on suspicious URL matching • Social engineering attacks • Business Email Compromise (BEC) scams

Risk Level	Description
No risk	A no-risk email message: • Contains no suspicious attachments or links • Contains known highly suspicious or suspicious links (Standard mode) • Matches policy exception criteria

Unrated	An unrated email message falls under any of the following categories:
	• Bypassed scanning: Contains an attachment with a compression layer greater than 20 (the file has been compressed over twenty times)
	• Unscannable archive: Contains a password-protected archive that could not be extracted and scanned using the password list or heuristically obtained passwords
	• Unscannable message or attachment: Matches any of the following criteria:
	  • Malformed email format
	  • A system timeout occurred when Virtual Analyzer attempted to analyze the message
	  • A system timeout occurred when Virtual Analyzer attempted to analyze some of the attachments or links and no other risks were detected
	  • Virtual Analyzer was unable to analyze all of the attachments or links and no other risks were detected

Unavailable	Deep Discovery Email Inspector does not assign a risk level to a spam/graymail message or an email message with content violation or DLP incidents.

Virtual Analyzer Risk Levels

The following table explains the Virtual Analyzer risk levels after object analysis. View the table to understand why a suspicious object was classified as high or low risk.

Risk Level	Description
High	The object exhibited highly suspicious characteristics that are commonly associated with malware. Examples: • Malware signatures; known exploit code • Disabling of security software agents • Connection to malicious network destinations • Self-replication; infection of other files • Dropping or downloading of executable files by documents
Low	The object exhibited mildly suspicious characteristics that are most likely benign.
No Risk	The object did not exhibit suspicious characteristics.

Threat Type Classifications

The following table explains the threat types detected during scanning or analysis. View the table to understand the malicious activity affecting your network.

Table 4-2. Email Message Threat Types

Threat Type	Classification
Targeted malware	Malware made to look like they come from someone a user expects to receive email messages from, possibly a boss or colleague
Malware	Malicious software used by attackers to disrupt, control, steal, cause data loss, spy upon, or gain unauthorized access to computer systems
Malicious URL	A hyperlink embedded in an email message that links to a known malicious web site

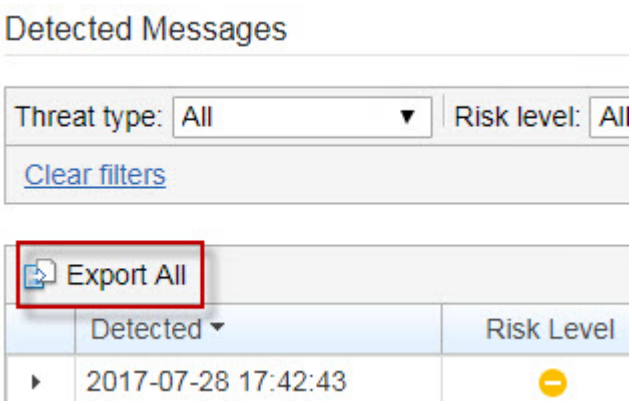
Threat Type	Classification
Suspicious File	A file that exhibits malicious characteristics **Important** Always handle suspicious files with caution.
Suspicious URL	A hyperlink embedded in an email message that links to an unknown malicious website
Phishing	Email messages that seek to fool users into divulging private information by redirecting users to legitimate-looking web sites
Spam/Graymail	Unsolicited spam email messages, often of a commercial nature, sent indiscriminately to multiple individuals Graymail refers to solicited bulk email messages that are not spam
Content violation	Content that you deem inappropriate, such as personal communication or large attachments
DLP incident	Transmission of email messages containing your organization's digital assets

Exporting Search Results

You can export the search results for detected messages and suspicious objects.

Procedure

- Click **Export All** above the search results.



The search results download as a CSV file.

Note

Only the first 50000 entries in the query results are included in the CSV file.

Detected Messages

Detected messages are email messages that contain malicious or suspicious content, embedded links, attachments, or social engineering attack related characteristics. Deep Discovery Email Inspector assigns a risk rating to each email message based on the investigation results.

Query detected messages to:

- Better understand the threats affecting your network and their relative risk
- Find senders and recipients of detected messages
- Understand the email subjects of detected messages

- Research attack sources that route detected messages
- Discover trends and learn about related detected messages
- See how Deep Discovery Email Inspector handled the detected message

Viewing Detected Messages

Gain intelligence about the context of a spear-phishing attack by investigating a wide array of information facets. Review the email headers to quickly verify the email message origin and how it was routed. Investigate attacks trending on your network by correlating common characteristics (examples: email subjects that appear to be your Human Resource department or fake internal email addresses). Based on the detections, change your policy configuration and warn your users to take preventive measures against similar attacks.

Procedure

1. Go to **Detections** > **Detected Messages**.
2. Specify the search criteria.

   See *Detected Message Search Filters on page 4-10*.
3. Press ENTER.

   All email messages matching the search criteria appear.
4. View the results.

Header	Description
▸	Investigate the email message to learn more about potential threats. For details, see *Investigating a Detected Message on page 4-13*.

Header	Description
Detected	View the date and time that the suspicious email message was first detected in Deep Discovery Email Inspector. **Note** There is a short delay between when Deep Discovery Email Inspector receives an email message and when the email message appears on the **Detected Messages** screen.
Risk Level	View the level of potential danger exhibited in a suspicious email message. For details, see *Detected Risk on page 4-2*.
Recipients	View the detected message recipient email addresses.
Email Header (To)	View the primary recipient email address in the email header.
Sender	View the sending email address of the detected message.
Email Header (From)	View the author email address in the email header.
Email Subject	View the email subject of the suspicious email message.
	View the number of email messages with embedded malicious links.
	View the number of file attachments that are detected by policy rules.
Threat	View the name and classification of the discovered threat. For details, see *Threat Type Classifications on page 4-5*.
Action	View the final result after scanning and analyzing the email message. The result is the executed policy action. **Note** In BCC mode and SPAN/TAP mode, the action is always **Monitoring only**.

Detected Message Search Filters

The following table explains the basic search filters for querying suspicious messages. To view the detected messages, go to **Detections** > **Detected Messages**.

Note

Search filters do not accept wildcards. Deep Discovery Email Inspector uses fuzzy logic to match search criteria to email message data.

Filter	Description
Threat type	Select **All** or a threat type from the list. For details, see *Threat Type Classifications on page 4-5*.
Risk level	Select **All** or the email message risk level.
Action	Select **All** or an action from the list. This is the action that Deep Discovery Email Inspector applies on email messages when a scanning condition is matched in a policy rule. For more information, see *Policy Rules on page 5-35*. **Note** In BCC mode and SPAN/TAP mode, the action is always **Monitoring only**.
Period	Select a predefined time range or specify a custom range.

Applying Advanced Filters

In addition to basic filters, you can apply advanced filters to query suspicious messages.

Procedure

1. Click **Show advanced filters**.

2. Specify the information to filter.

Filter	Description
Sender	Specify the sender email address.
Email header (To)	Specify a primary recipient email address in the email header.
Message ID	Specify the unique message ID. Example: `20160603021433.F0304120A7A@example.com`
Subject	Specify the email message subject.
Direction	Specify the message direction.
Rule	Specify a rule name.
Email header (From)	Specify the author email address in the email header.
URL	Specify a URL.
Source IP	Specify the MTA IP address nearest to the email sender. The source IP is the IP address of the attack source, compromised MTA, or a botnet with mail relay capabilities. A compromised MTA is usually a third-party open mail relay used by attackers to send malicious email messages or spam without detection. **Note** The **Source IP** search filter requires an exact-string match. Deep Discovery Email Inspector does not use fuzzy logic to match search results for the source IP address.
File name	Specify an attachment file name.
Data identifier	Specify a data identifier name.
YARA rule name	Specify the name of a YARA rule.
Recipient	Specify a recipient email address. Only one address is allowed.

FILTER	DESCRIPTION
Threat name	Specify the threat name provided by Trend Micro. The dashboard widgets and the **Detections** tab provide information about threat names. For information about threat discovery capabilities, see *Scanning / Analysis on page 8-10*.
Sender IP	Specify the sender IP address. If you deploy Deep Discovery Email Inspector as an edge MTA in your network, the sender IP address is the public IP address of the external MTA nearest to your network. If you deploy Deep Discovery Email Inspector as a non-edge MTA in your network, the sender IP address is the IP address of the MTA nearest to the edge MTA relay server. **Note** The **Sender IP** search filter requires an exact-string match. Deep Discovery Email Inspector does not use fuzzy logic to match search results for the sender IP address.
Policy	Specify a policy name.
DLP template	Specify a DLP template name.
YARA rule file name	Specify the name of a YARA rule file.
Password-protected attachment	Select email messages that contain a password-protected file.
Manual email submissions	Select email messages that are manually submitted to Deep Discovery Email Inspector for analysis by the administrator. For more information, see *Email Submissions on page 8-30*.

3. Click **Search**.

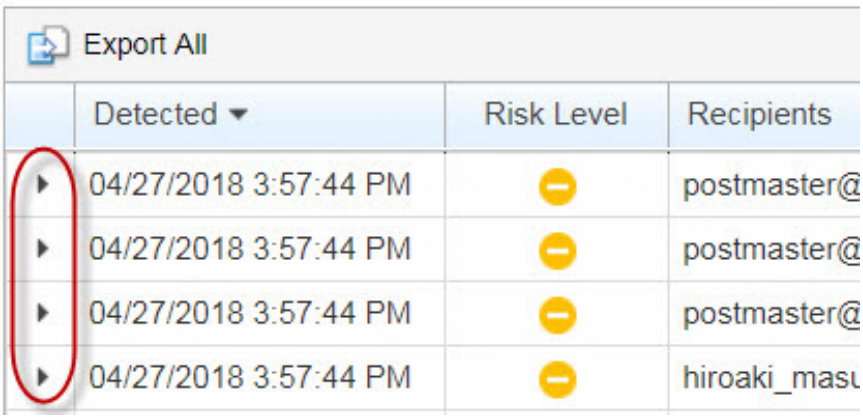
Investigating a Detected Message

Procedure

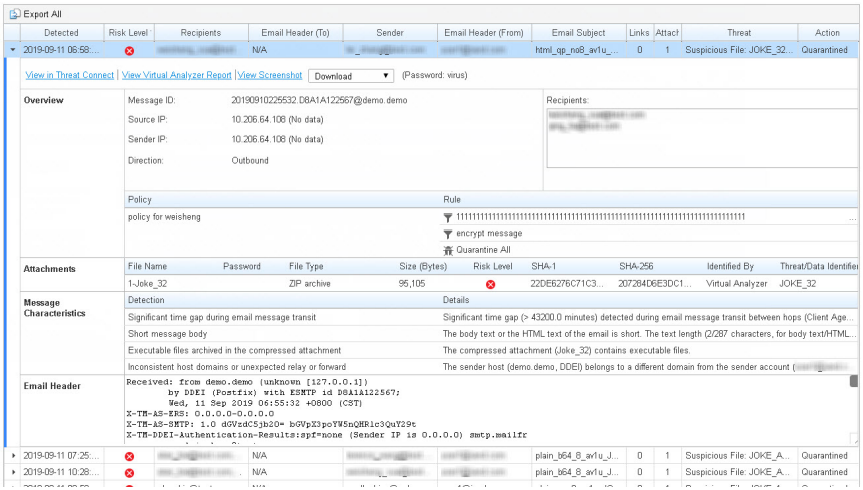
1. Search for the email message.

   See *Viewing Detected Messages on page 4-8*.

2. Click the arrow next to the email message in the table.



The table row expands with more information.



3. Discover the email message details.

   See *Email Message Details on page 4-14*.

Email Message Details

The following table explains the email message details viewable after expanding the search results. The display fields vary depending on the type of detected threats.

Field	Description
View in Threat Connect	Click **View in Threat Connect** to get correlated information about suspicious objects detected in your environment and threat data from the Trend Micro Smart Protection Network, which provides relevant and actionable intelligence.
View Virtual Analyzer Report	Click **View Virtual Analyzer Report** to view the analysis report in HTML or PDF format.

Field	Description
View Screenshot	Click **View Screenshot** to safely display the email message as an image.
Download	Select an option from the drop-down list to download the information for further investigation.
Overview	View the message ID, recipients, last detection time, sender and source IP addresses, and direction of the email message to understand where the message came from and other tracking information. **Note** For sender and source IP addresses, **Unknown** indicates that the detected messages are from an unknown origin (both the location and IP address information is not available), and **No data** indicates that the location information is not available. Get information about the policy rules that the email message violates.
Messages	View the name of the scanning engine and the category for detected email messages that are considered as spam or graymail.
Attachments	Get information about any files attached to the email message, including the file name, password, file type, risk level, SHA-1 and SHA-256 hash values, the scan engine that identified the threat, and the name of detected threats.
YARA Detection	Get information about the detected files based on matched YARA rules in the associated YARA rule files.
Links	Get information about any embedded suspicious URLs that appeared in the email message, including the URL, site category, risk level, extraction source, the scan engine that identified the threat, and the name of detected threats.
Message Characteristics	Get information about any social engineering attack related characteristics that were detected in the email message, including the mail server reputation, gaps between transits, inconsistent recipient accounts, and forged sender addresses or unexpected relay servers, etc.

Field	Description
Content Keyword/ Expression Match	Get information about the content keywords or expressions that are matched in the email message.
DLP Incident	Get information about the data identifiers and DLP templates that are matched in the email message.
Email Header	View the email message header content.

Viewing Affected Recipients

Affected recipients are recipients of malicious or suspicious email messages. Gain intelligence about who in your network is targeted by spear-phishing attacks or social engineering attacks and understand the attack behavior in related messages. Learn if your executive is targeted by the attacks and then raise his/her awareness about the attack pattern. Discovering a community of affected recipients belonging to the same department can indicate that the attacker has access to your company address book.

Procedure

1. Go to **Detections** > **Recipients**.
2. Specify the search criteria.
   - **Recipient** (email address)
   - **Period**
3. Press ENTER.

   All email messages matching the search criteria appear.
4. View the results.

Header	Description
Recipient	View the detected message recipient email addresses.

Header	Description
Detections	View the email messages with malicious or suspicious characteristics. Signature-based detection involves searching for known patterns of data within executable code or behavior analysis. Click the number to see more information about the suspicious message.
High Risk	View the detected messages with malicious characteristics.
Medium Risk	View the detected messages with characteristics that are most likely malicious.
Low Risk	View the detected spam messages or detected messages with content violations or suspicious characteristics.
Spam/Graymail	View the number of detected spam messages or graymail.
Content Violation	View the number of detected messages with content violations.
DLP Incident	View the number of detected messages with DLP incidents.
	View the number of email messages with embedded malicious links.
	View the number of file attachments that are detected by policy rules.
Latest Detection	View the most recent occurrence of the detected message.

Viewing Attack Sources

An attack source is the first MTA with a public IP address that routes a suspicious message. For example, if a suspicious message travels the following route: IP1 (sender) > IP2 (MTA: 225.237.59.52) > IP3 (company mail gateway) > IP4 (recipient), Deep Discovery Email Inspector identifies 225.237.59.52 (IP2) as the attack source. By studying attack sources, you can identify regional attack patterns or attack patterns that involve the same mail server.

Gain intelligence about the prevalence of the attack detections and their relative risk to your network. Learn about the location of the attack,

especially whether the attack source is an MTA in your organization or in a region where your organization does not operate.

Procedure

1. Go to **Detections** > **Attack Sources**.
2. Specify the search criteria.
   - **Attack source** (IP address)
   - **Country**
3. Select the **Period**.
4. Press ENTER.

   All email messages matching the search criteria appear.
5. View the results.

Header	Description
Attack Source	View the IP address of the attack source.
Country	View the country where the attack source is located. **Note** A dash (-) indicates that the location information is not available.
City	View the city where the attack source is located. **Note** A dash (-) indicates that the location information is not available.

Header	Description
Detections	View the email messages with malicious or suspicious characteristics. Signature-based detection involves searching for known patterns of data within executable code or behavior analysis. Click the number to see more information about the suspicious message.
High Risk	View the detected messages with malicious characteristics.
Medium Risk	View the detected messages with characteristics that are most likely malicious.
Low Risk	View the detected spam messages or detected messages with content violations or suspicious characteristics.
Spam/Graymail	View the number of detected spam messages or graymail.
Content Violation	View the number of detected messages with content violations.
DLP Incident	View the number of detected messages with DLP incidents.
	View the number of email messages with embedded malicious links.
	View the number of file attachments that are detected by policy rules.
Latest Detection	View the most recent occurrence of the detected message.

Viewing Senders

Suspicious senders are senders of malicious or suspicious email messages. Find patterns in spoofed sender addresses and learn which social engineering techniques are employed. For example, the sender's email address appears as internal addresses, financial services (PayPal, banks), or other services (Gmail, Taobao, Amazon). Check the sender domain addresses and associated risk level to change policy settings or settings on the anti-spam gateway to block the suspicious sender email addresses at your mail gateway.

Procedure

1. Go to **Detections** > **Senders**.
2. Specify the search criteria.
   - **Sender** (email address)
   - **Period**
3. Press ENTER.

   All email messages matching the search criteria appear.
4. View the results.

Header	Description
Sender	View the sending email address of the detected message.
Detections	View the email messages with malicious or suspicious characteristics. Signature-based detection involves searching for known patterns of data within executable code or behavior analysis. Click the number to see more information about the suspicious message.
High Risk	View the detected messages with malicious characteristics.
Medium Risk	View the detected messages with characteristics that are most likely malicious.
Low Risk	View the detected spam messages or detected messages with content violations or suspicious characteristics.
Spam/Graymail	View the number of detected spam messages or graymail.
Content Violation	View the number of detected messages with content violations.
DLP Incident	View the number of detected messages with DLP incidents.
	View the number of email messages with embedded malicious links.
	View the number of file attachments that are detected by policy rules.

Header	Description
Latest Detection	View the most recent occurrence of the detected message.

Viewing Email Subjects

Suspicious subjects are the email subjects of malicious or suspicious email messages. Find trends in common keywords or other social engineering techniques. Pretexting is the most common way to engage a victim. Look for email subjects that appear familiar to targeted recipients (examples: holiday party invitation, bank statement, or a common subject used in department newsletters) that can trick your users into opening the email message. If users trust the email subject, there is more chance that they will download a malicious attachment or follow a phishing link that appears to be a legitimate request for their domain credentials or customer information.

Procedure

1. Go to **Detections** > **Subjects**.
2. Specify the search criteria.
   - **Email subject**
   - **Period**
3. Press ENTER.

   All email messages matching the search criteria appear.
4. View the results.

Header	Description
Email Subject	View the email subject of the suspicious email message.

Header	Description
Detections	View the email messages with malicious or suspicious characteristics. Signature-based detection involves searching for known patterns of data within executable code or behavior analysis. Click the number to see more information about the suspicious message.
High Risk	View the detected messages with malicious characteristics.
Medium Risk	View the detected messages with characteristics that are most likely malicious.
Low Risk	View the detected spam messages or detected messages with content violations or suspicious characteristics.
Spam/Graymail	View the number of detected spam messages or graymail.
Content Violation	View the number of detected messages with content violations.
DLP Incident	View the number of detected messages with DLP incidents.
	View the number of email messages with embedded malicious links.
	View the number of file attachments that are detected by policy rules.
Latest Detection	View the most recent occurrence of the detected message.

Suspicious Objects

Suspicious objects are objects with the potential to expose systems to danger or loss.

Query Suspicious Objects to:

- Better understand the threats affecting your network and their relative risk
- Assess the prevalence of suspicious hosts, URLs, files, and synchronized suspicious objects

- Learn whether email messages contain embedded links or callback addresses
- Find infected endpoints in your network
- Proactively contain or block infections

Viewing Suspicious Hosts

A suspicious host is an IP address or host name with the potential to expose systems to danger or loss. View suspicious hosts to understand your risk, find related messages, and assess the relative prevalence of the suspicious host.

Procedure

1. Go to **Detections** > **Suspicious Objects** > **Hosts**.
2. Specify the search criteria.
   - **Host** (IP address or host name)
   - **Period**
3. Press ENTER.

   All suspicious objects matching the search criteria appear.
4. View the results.

Header	Description
Host	View the IP address or host name used by the suspicious object.
Port	View the port number used by the suspicious object.
Risk Level	View the level of potential danger in a sample after Virtual Analyzer executes the file or opens the URL.
Related Messages	View the messages containing the same suspicious object.

Header	Description
Latest Message Recipients	View the most recent recipients of the email message containing suspicious objects.
Latest Detection	View the date and time Virtual Analyzer last found the suspicious object in a submitted object.

Viewing Suspicious URLs

A suspicious URL is a web address with the potential to expose systems to danger or loss . View suspicious URLs to understand your risk, find related messages, and see the most recent occurrences.

Procedure

1. Go to **Detections** > **Suspicious Objects** > **URLs**.
2. Specify the search criteria.
   - **URL**
   - **Period**
3. Press ENTER.

   All suspicious objects matching the search criteria appear.
4. View the results.

Header	Description
URL	View the web address of the suspicious object.
Risk Level	View the level of potential danger in a sample after Virtual Analyzer executes the file or opens the URL.
Related Messages	View the messages containing the same suspicious object.

Header	Description
Latest Message Recipients	View the most recent recipients of the email message containing suspicious objects.
Latest Detection	View the date and time Virtual Analyzer last found the suspicious object in a submitted object.

Viewing Suspicious Files

A suspicious file is the associated SHA-1 hash value with the potential to expose systems to danger or loss. View suspicious files to understand your risk, find related messages, and assess the relative prevalence of the suspicious file.

Procedure

1. Go to **Detections** > **Suspicious Objects** > **Files**.
2. Specify the search criteria.
   - **File SHA-1**
   - **Period**
3. Press ENTER.

   All suspicious objects matching the search criteria appear.
4. View the results.

Header	Description
File SHA-1	View the 160-bit hash value that uniquely identifies a file.
Related Messages	View the messages containing the same suspicious object.
Latest Message Recipients	View the most recent recipients of the email message containing suspicious objects.

Header	Description
Latest Detection	View the date and time Virtual Analyzer last found the suspicious object in a submitted object.

Viewing Synchronized Suspicious Objects

Deep Discovery Email Inspector can synchronize suspicious objects with an external source (for example, Apex Central, Deep Discovery Director, or Deep Discovery Analyzer). View synchronized suspicious objects to understand your risk, find related messages, and assess the relative prevalence of the suspicious object.

Note

If Deep Discovery Email Inspector is registered to both Apex Central and Deep Discovery Director 3.0 (or later), Deep Discovery Email Inspector synchronizes suspicious objects from Deep Discovery Director and overwrites existing suspicious objects from Apex Central.

Procedure

1. Go to **Detections** > **Suspicious Objects** > **Synchronized Suspicious Objects**.
2. Specify the search criteria.
   - **Suspicious Object** (IP address, host name, URL, file SHA-1, or file SHA-256)
   - **Period** (time range to filter based on the last synchronized time)
3. Press ENTER.

   All suspicious objects matching the search criteria appear.
4. View the results.

Header	Description
Suspicious Object	View the IP address, host name, URL, file SHA-1, or file SHA-256 associated with the synchronized suspicious object.
Type	View the suspicious object type (Domain, File, IP, or URL).
Risk Level	View the level of potential danger in a sample after Virtual Analyzer executes the file or opens the URL.
Source	View the source of the synchronized suspicious object. The source can be one of the following: • Apex Central • Deep Discovery Analyzer • Deep Discovery Director
User-Defined	View whether the synchronized suspicious object is user-defined or not.
Expiration	View the date and time the object is not considered suspicious.
Last Synchronized	View the date and time the entry was last synchronized with the source.

Quarantine

Deep Discovery Email Inspector quarantines suspicious email messages that meet certain policy criteria. View details about an email message before deciding whether to delete the email message, release it to the intended recipients, or resume processing.

Before deciding which action to perform, query the email messages that Deep Discovery Email Inspector quarantined.

Perform any of the following actions:

- Search for quarantined messages based on a variety of criteria
- Learn more about malicious file attachments and URLs
- Release quarantined messages
- Delete quarantined messages
- Resume processing of messages that are quarantined due to spam detection, content violation, or DLP incidents
- Unloack password-protected files in messages to perform a threat scan

Viewing Quarantined Messages

Procedure

1. Go to **Detections** > **Quarantine**.
2. Specify the search criteria.

   See *Quarantine Search Filters on page 4-29*.
3. Press ENTER.

   All email messages matching the search criteria appear.
4. View the results.

Header	Description
▶	Investigate the email message to learn more about potential threats. For details, see *Investigating a Quarantined Email Message on page 4-33*.

Header	Description
Detected	View the date and time that the suspicious email message was first detected and quarantined in Deep Discovery Email Inspector. **Note** There is a short delay between when Deep Discovery Email Inspector receives an email message and when the email message appears on the **Quarantine** screen.
Risk Level	View the level of potential danger exhibited in a suspicious email message.
Recipients	View the detected message recipient email addresses.
Email Header (To)	View the primary recipient email address in the email header.
Sender	View the sending email address of the detected message.
Email Header (From)	View the author email address in the email header.
Email Subject	View the email subject of the suspicious email message.
	View the number of email messages with embedded malicious links.
	View the number of file attachments that are detected by policy rules.
Threat	View the name and classification of the discovered threat.
Quarantine Reason	View the reason why an email message is quarantined. For more information, see *Quarantine Reasons on page 4-32*.

Quarantine Search Filters

The following table explains the basic search filters for querying the quarantined email messages. To apply advanced filters, see *Applying Advanced Filters on page 4-10*.

To view the quarantine, go to **Detections** > **Quarantine**.

Note

Search filters do not accept wildcards. Deep Discovery Email Inspector uses fuzzy logic to match search criteria to email message data.

Filter	Description
Threat type	Select **All** or a threat type from the list. For details, see *Threat Type Classifications on page 4-5*.
Risk level	Select **All** or the email message risk level.
Quarantine reason	Select **All** or a quarantine reason.
Period	Select a predefined time range or specify a custom range.

Applying Advanced Filters

In addition to basic filters, you can apply advanced filters to query suspicious messages.

Procedure

1. Click **Show advanced filters**.
2. Specify the information to filter.

Filter	Description
Sender	Specify the sender email address.
Email header (To)	Specify a primary recipient email address in the email header.
Message ID	Specify the unique message ID. Example: `20160603021433.F0304120A7A@example.com`

Filter	Description
Subject	Specify the email message subject.
Direction	Specify the message direction.
Rule	Specify a rule name.
Email header (From)	Specify the author email address in the email header.
URL	Specify a URL.
Source IP	Specify the MTA IP address nearest to the email sender. The source IP is the IP address of the attack source, compromised MTA, or a botnet with mail relay capabilities. A compromised MTA is usually a third-party open mail relay used by attackers to send malicious email messages or spam without detection. **Note** The **Source IP** search filter requires an exact-string match. Deep Discovery Email Inspector does not use fuzzy logic to match search results for the source IP address.
File name	Specify an attachment file name.
Data identifier	Specify a data identifier name.
YARA rule name	Specify the name of a YARA rule.
Recipient	Specify a recipient email address. Only one address is allowed.
Threat name	Specify the threat name provided by Trend Micro. The dashboard widgets and the **Detections** tab provide information about threat names. For information about threat discovery capabilities, see *Scanning / Analysis on page 8-10*.

Filter	Description
Sender IP	Specify the sender IP address. If you deploy Deep Discovery Email Inspector as an edge MTA in your network, the sender IP address is the public IP address of the external MTA nearest to your network. If you deploy Deep Discovery Email Inspector as a non-edge MTA in your network, the sender IP address is the IP address of the MTA nearest to the edge MTA relay server. **Note** The **Sender IP** search filter requires an exact-string match. Deep Discovery Email Inspector does not use fuzzy logic to match search results for the sender IP address.
Policy	Specify a policy name.
DLP template	Specify a DLP template name.
YARA rule file name	Specify the name of a YARA rule file.
Password-protected attachment	Select email messages that contain a password-protected file.
Manual email submissions	Select email messages that are manually submitted to Deep Discovery Email Inspector for analysis by the administrator. For more information, see *Email Submissions on page 8-30*.

3. Click **Search**.

Quarantine Reasons

The following table describes the quarantine reasons that display on the **Quarantine** screen.

Quarantine Reason	Description
Content violation	Messages with content that matches a content filtering rule.
DLP incident	Messages with one or more data loss prevention (DLP) policy violations.
Malformed	Messages that cannot be opened for processing.
Spam detection	Messages that are detected as spam/graymail.
Threat detection	Messages that are detected to contain malware.
Unscannable	Messages that are not scannable.
Unsuccessful encryption	Messages that cannot be encrypted.
Unsuccessful decryption	Messages that cannot be decrypted.
Virtual Analyzer error	Messages that are not analyzed because of an unexpected error in Virtual Analyzer (for example, processing time-out).
Virtual Analyzer time-out	Messages that are not analyzed because of processing time-out in Virtual Analyzer.

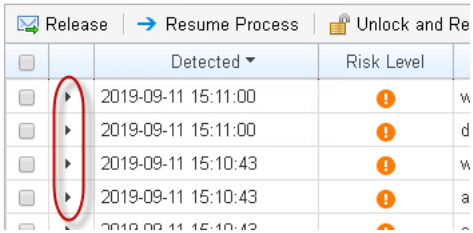
Investigating a Quarantined Email Message

Procedure

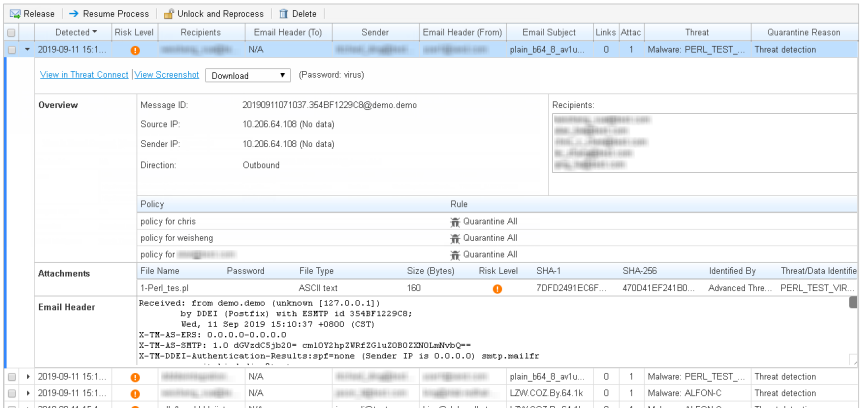
1. Search for the email message.

   See *Viewing Quarantined Messages on page 4-28*.

2. Click the arrow next to the email message in the table.



The table row expands with more information.



3. Discover the email message details.

   See *Quarantined Message Details on page 4-35*.

4. Take action upon the quarantined message.

   - Leave the message in the quarantine.

     Note

     Quarantined messages purge based on the settings configured on the **Storage Maintenance** screen.

     For details, see *Configuring Storage Maintenance on page 8-198*.

- Click **Delete** to purge the email message from the quarantine.
- Click **Release** to deliver the email message.
- Click **Resume Process** to set Deep Discovery Email Inspector to continue message scanning from the last scan checkpoint.

Note

Deep Discovery Email Inspector can only continue processing of messages that were quarantined due to spam detection, content violation, or DLP incidents.

- Click **Unlock and Reprocess** to open password-protected files in unscannable messages using the specified password and the entires on the **File Passwords** screen, and perform threat scans on messages.

Quarantined Message Details

The following table explains the email message details viewable after expanding the search results. The display fields vary depending on the type of detected threats.

Field	Description
View in Threat Connect	Click **View in Threat Connect** to get correlated information about suspicious objects detected in your environment and threat data from the Trend Micro Smart Protection Network, which provides relevant and actionable intelligence.
View Virtual Analyzer Report	Click **View Virtual Analyzer Report** to view the analysis report in HTML or PDF format.
View Screenshot	Click **View Screenshot** to safely display the email message as an image.

Field	Description
Download	Select an option from the drop-down list to download the information for further investigation.
Overview	View the message ID, recipients, last detection time, sender and source IP addresses, and direction of the email message to understand where the message came from and other tracking information. **Note** For sender and source IP addresses, **Unknown** indicates that the detected messages are from an unknown origin (both the location and IP address information is not available), and **No data** indicates that the location information is not available. Get information about the policy rules that the email message violates.
Messages	View the name of the scanning engine and the category for detected email messages that are considered as spam or graymail.
Attachments	Get information about any files attached to the email message, including the file name, password, file type, risk level, SHA-1 and SHA-256 hash values, the scan engine that identified the threat, and the name of detected threats.
YARA Detection	Get information about the detected files based on matched YARA rules in the associated YARA rule files.
Links	Get information about any embedded suspicious URLs that appeared in the email message, including the URL, site category, risk level, extraction source, the scan engine that identified the threat, and the name of detected threats.
Message Characteristics	Get information about any social engineering attack related characteristics that were detected in the email message, including the mail server reputation, gaps between transits, inconsistent recipient accounts, and forged sender addresses or unexpected relay servers, etc.
Content Keyword/ Expression Match	Get information about the content keywords or expressions that are matched in the email message.

Field	Description
DLP Incident	Get information about the data identifiers and DLP templates that are matched in the email message.
Email Header	View the email message header content.

Sender Filtering/Authentication

You can view the list of blocked sender IP addresses and email addresses based on the following settings:

- Email Reputation
- DHA protection
- Bounce attack protection
- SMTP traffic throttling (IP address)
- SMTP traffic throttling (Email address)
- SPF
- DKIM
- DMARC
- User defined

Viewing Sender Filtering/Authentication Detections

You can view the list of sender IP addresses and email address that Deep Discovery Email Inspector blocks on the **Sender Filtering/Authentication** screen under **Detections**.

Procedure

1. Go to **Detections** > **Sender Filtering/Authentication**.

2. Specify one or more search criteria.

   - Select an option from the **Rule** drop-down list.
   - Sender email address or IP address and press ENTER or click the search icon ( ).
   - Select a period from the drop-down list.

   All blocked sender email addresses or IP addresses matching the search criteria appear.

3. View the results.

Header	Description
Detected	View the date and time that Deep Discovery Email Inspector blocks messages from the sender based on a sender filtering/ authentication rule.
IP Address	View the sender IP address resolved domain IP address for the sender that Deep Discovery Email Inspector blocks.
Email Address	View the sender email address that Deep Discovery Email Inspector blocks.
Recipients	View the detected message recipient email addresses.
Rule	View the name of the sender filtering/authentication rule that is matched.
Action	View whether Deep Discovery Email Inspector blocks the sender address temporarily or permanently.
Result	View the sender authentication result based on SPF, DKIM, or DMARC verification.

Tip

You can click **Export** to save the query result to a comma-separated value file.

Chapter 5

Policies

Topics include:

About Policies

A policy is a set of rules that Deep Discovery Email Inspector uses to evaluate email messages. Use policies to determine the actions applied to detected threats and unwanted contents in email messages.

You can configure policies in Deep Discovery Email Inspector to scan messages based on the message direction (inbound, outbound, or inbound or outbound).

The following table describes the required components for a policy.

Component	Description
Policy rules	You can create the following types of rules to enforce your organization's antivirus and other security goals: • Content filtering rules: Evaluates message contents to prevent undesirable content from being delivered to recipients and remove active content (such as macros) from Microsoft Office or PDF file attachments • DLP rules: Prevents the transmission of digital assets through email messages • Antispam rules: Scans messages for spam or graymail • Threat protection rules: Scans messages for viruses and other malware such as spyware and worms By default, Deep Discovery Email Inspector comes with a Default Policy that includes default rule settings to help protect your network from viruses and related Internet threats. **Note** • A threat protection rule does not protect against spam. For best protection against spam, configure an antispam rule and activate Sender Filtering. • To use the content filtering, data loss prevent (DLP), and antispam features, activate the license for Gateway Module. For more information, see *Licenses on page 8-203*.

Component	Description
Policy objects	You can configure the following types of objects to customize traffic handling behavior in policies: • Notifications • Message tags • Redirect pages • Data identifiers • DLP templates • Archive servers
Policy exceptions	Policy exceptions reduce false positives. Configure exceptions to set the limits and actions for email encryption, or classify certain email messages as safe. Specify the safe senders, recipients, and X-header content, add files, URLs, IP addresses and domains, add URL keywords, or specify senders to bypass graymail scanning. Safe email messages are discarded (BCC and SPAN/TAP mode) or delivered to the recipient (MTA mode) without further investigation.

Follow the procedure to create policies in Deep Discovery Email Inspector:

1. (For content filtering and DLP rules) Create data identifiers.

   For more information, see *Data Identifiers on page 5-58*.

2. Create policy rules and notification templates.

   For more information, see *Policy Rules on page 5-35* and *Configuring Recipient Notification on page 5-51*.

3. Create policies to apply on target senders and recipients.

   For more information, see *Configuring a Policy on page 5-27* and *Address Groups on page 5-31*.

4. Specify trusted senders/recipients or objects for policy exceptions.

   For more information, see *Policy Exceptions on page 5-78*.

General Message Scanning Order

When Deep Discovery Email Inspector receives an email message, Deep Discovery Email Inspector applies the scan settings on messages in the following order:

- Approved Senders list
- SMTP traffic throttling
- Sender filtering (Email Reputation Services (ERS), Directory Harvest Attack (DHA), and Bounce Attack)
- Domain-based message authentication (SPF, DKIM, and DMARC)
- Message-level exceptions
- Policy rules:
  - Content filtering rules
  - Data loss prevention (DLP) rules
  - Antispam protection rules
  - Advanced threat protection rules

Note

When you configure the Approved Senders and Blocked Senders lists for sender filtering/authentication, Deep Discovery Email Inspector applies settings to check the senders in the following order:

- For SMTP traffic throttling:
  - Approved Senders list (IP address)
  - Blocked Senders list (user-defined IP address)
  - SMTP traffic throttling (IP address)
  - Approved Senders list (email address)
  - Blocked Senders list (user-defined email address)
  - SMTP traffic throttling (email address)
- For sender filtering (ERS, DHA, and Bounce Attack) and domain-based message authentication (SPF, DKIM, and DMARC):
  - Approved Senders list (IP address and email address)
  - Blocked Senders list (user-defined IP address and email address)
  - Sender filtering (ERS, DHA, Bounce Attack)
  - Domain-based message authentication (SPF, DKIM, and DMARC)

Policy Management Guidelines

Consider the following when configuring policies in Deep Discovery Email Inspector:

- Before you create a policy, create content filtering, data loss prevention (DLP), antispam, and threat protection rules.
- Activate the **Gateway Module** license to enable content filtering and antispam rules. Activate the **Threat Protection** license to enable threat protection rules. If the license for **Gateway Module** is not activated, Deep Discovery Email Inspector disables content filtering and antispam rules.

For more information, see *Licenses on page 8-203*.

- If the domain of a sender address is in the internal domain list, Deep Discovery Email Inspector considers messages from the sender as outbound messages. Deep Discovery Email Inspector applies policies based on the message direction.
- When you configure multiple rules in a policy, Deep Discovery Email Inspector applies the rules on messages in the following order:
  - Content filtering rules
  - Data loss prevention (DLP) rules
  - Antispam protection rules
  - Advanced threat protection rules
- In policies, the terminal actions are **Delete message**, **Block and quarantine**, and **Deliver directly**. For policies with multiple rules, Deep Discovery Email Inspector applies only one terminal action on detected messages. After applying a terminal action on a message for a matched rule, Deep Discovery Email Inspector does not match the message against subsequent rules in the policy.

  For more information, see *Policy Actions on page 5-7*.
- To quarantine phishing messages, select **Quarantine the original message when attachments cannot be stripped** in a threat protection rule.

  For more information, see *Configuring a Threat Protection Rule on page 5-47* and *Policy Actions on page 5-7*.
- A policy must include one threat detection rule. Content filtering, DLP, and antispam rules are optional in a policy.
- If you specify multiple content filtering, data loss prevention (DLP), or antispam rules in a policy, you can set the rule matching priority.
- You can create a policy that applies to all incoming messages to any email addresses in your domain (for example, specify *@domain.com for recipients).

- You can create a policy that applies to all outgoing messages from any email addresses in your domain (for example, specify *@domain.com for senders).
- To prevent a virus leak and ensure that all messages are scanned, Trend Micro recommends that you create one policy that applies to inbound or outbound messages for all recipients and senders, and with the lowest priority in the **Policy List**.
- If Active Directory query times out or an email address is invalid for a message, Deep Discovery Email Inspector applies the policy for all recipients and senders to the message.
- If you configure more than one policy to apply to the same message direction for all recipients and senders in the **Policy List**, Deep Discovery Email Inspector applies the policy with the highest priority.

Policy Actions

The following tables describe the actions Deep Discovery Email Inspector performs for the selected actions in a matched policy rule in each operating mode.

TABLE 5-1. Actions and operation modes: Content filtering rules

ACTION	OPERATION MODE		
	MTA MODE	SPAN/TAP MODE	BCC MODE
Delete message	• Deletes the email message from the mail queue • Does not apply subsequent policy rules in the same policy on the email message	• Deletes the email message from the mail queue	• Deletes the email message from the mail queue

Action	Operation Mode		
	MTA Mode	SPAN/TAP Mode	BCC Mode
	• Does not deliver the email message		
Block and quarantine	• Stores a copy in the quarantine area • Does not apply subsequent rules in the same policy on the email message until you resume the scanning process on the **Detections** > **Quarantine** screen. • You can release a quarantined message using the web console	• Deletes the email message from the mail queue	• Deletes the email message from the mail queue
Strip all attachments	• Replaces suspicious attachments with a text file • If configured, tags the email message subject and inserts the X-header before delivery • Applies subsequent rules in the same policy on the email message.	• Applies subsequent rules in the same policy on the email message.	• Applies subsequent rules in the same policy on the email message.

Action	Operation Mode		
	MTA Mode	SPAN/TAP Mode	BCC Mode
	Note Attachments and extracted URLs from attachments in detected email messages are not sent to Virtual Analyzer for analysis. Only extracted URLs from the message body and subject are sent to Virtual Analyzer for analysis.		
Pass and tag	• Applies subsequent rules in the same policy on the email message • If configured, tags the email message subject and inserts the X-header before delivery	• Applies subsequent rules in the same policy on the email message	• Applies subsequent rules in the same policy on the email message
Deliver directly	• Does not apply subsequent policy rules in the same policy on the email message • Delivers the email message to the	• Deletes the email message from the mail queue	• Deletes the email message from the mail queue

Action	Operation Mode		
	MTA Mode	SPAN/TAP Mode	BCC Mode
	recipient (using the default SMTP server) or to the specified SMTP server		
Encrypt message	• Encrypts messages after applying all other non-terminal actions • Applies subsequent rules in the same policy on the email message	• Not applicable	• Not applicable
Sanitize file	• Removes active content (such as macros) from Microsoft Office files • Applies subsequent rules in the same policy on the email message • If configured, tags the email message subject and inserts the X-header before delivery	• Applies subsequent rules in the same policy on the email message	• Applies subsequent rules in the same policy on the email message
Send notification	• Sends a notification to all message recipients and contact email	• Sends a notification to all message recipients and contact email	• Not applicable

Action	Operation Mode		
	MTA Mode	SPAN/TAP Mode	BCC Mode
	addresses specified in the notification template	addresses specified in the notification template	

Table 5-2. Actions and operation modes: Data loss prevention (DLP) rules

Action	Operation Mode		
	MTA Mode	SPAN/TAP Mode	BCC Mode
Delete message	• Deletes the email message from the mail queue • Does not apply subsequent policy rules in the same policy on the email message • Does not deliver the email message	• Deletes the email message from the mail queue	• Deletes the email message from the mail queue
Block and quarantine	• Stores a copy in the quarantine area • Does not apply subsequent rules in the same policy on the email message until you resume the scanning process on the **Detections** > **Quarantine** screen.	• Deletes the email message from the mail queue	• Deletes the email message from the mail queue

Action	Operation Mode		
	MTA Mode	SPAN/TAP Mode	BCC Mode
	• You can release a quarantined message using the web console		
Strip all attachments	• Replaces suspicious attachments with a text file • Applies subsequent rules in the same policy on the email message. • If configured, tags the email message subject and inserts the X-header before delivery	• Applies subsequent rules in the same policy on the email message.	• Applies subsequent rules in the same policy on the email message.

Action	Operation Mode		
	MTA Mode	SPAN/TAP Mode	BCC Mode
	Note Attachments and extracted URLs from attachments in detected email messages are not sent to Virtual Analyzer for analysis. Only extracted URLs from the message body and subject are sent to Virtual Analyzer for analysis.		
Pass and tag	• Applies subsequent rules in the same policy on the email message • If configured, tags the email message subject and inserts the X-header before delivery	• Applies subsequent rules in the same policy on the email message	• Applies subsequent rules in the same policy on the email message
Deliver directly	• Does not apply subsequent policy rules in the same policy on the email message • Delivers the email message to the	• Deletes the email message from the mail queue	• Deletes the email message from the mail queue

Action	Operation Mode		
	MTA Mode	SPAN/TAP Mode	BCC Mode
	recipient (using the default SMTP server) or to the specified SMTP server		
Encrypt message	• Encrypts messages after applying all other non-terminal actions • Applies subsequent rules in the same policy on the email message	• Not applicable	• Not applicable
Send notification	• Sends a notification to all message recipients and contact email addresses specified in the notification template	• Sends a notification to all message recipients and contact email addresses specified in the notification template	• Not applicable

Table 5-3. Actions and operation modes: Antispam rules

Action	Operation Mode		
	MTA Mode	SPAN/TAP Mode	BCC Mode
Delete message	• Deletes the email message from the mail queue • Does not apply subsequent policy rules in the same policy on	• Deletes the email message from the mail queue	• Deletes the email message from the mail queue

Action	Operation Mode		
	MTA Mode	SPAN/TAP Mode	BCC Mode
	the email message • Does not deliver the email message		
Block and quarantine	• Stores a copy in the quarantine area • Does not apply subsequent rules in the same policy on the email message until you resume the scanning process on the **Detections** > **Quarantine** screen. • You can release a quarantined message using the web console	• Deletes the email message from the mail queue	• Deletes the email message from the mail queue
Pass and tag	• Applies subsequent rules in the same policy on the email message • If configured, tags the email message subject and inserts the X-header before delivery	• Applies subsequent rules in the same policy on the email message	• Applies subsequent rules in the same policy on the email message

Action	Operation Mode		
	MTA Mode	SPAN/TAP Mode	BCC Mode
Deliver directly	• Does not apply subsequent policy rules in the same policy on the email message • Delivers the email message to the recipient (using the default SMTP server) or to the specified SMTP server	• Deletes the email message from the mail queue	• Deletes the email message from the mail queue
Send notification	• Sends a notification to all message recipients and contact email addresses specified in the notification template	• Sends a notification to all message recipients and contact email addresses specified in the notification template	• Not applicable

Table 5-4. Actions and operation modes: Threat protection rules

Action	Operation Mode		
	MTA Mode	SPAN/TAP Mode	BCC Mode
Delete message	• Deletes the email message from the mail queue • Does not deliver the email message	• Deletes the email message from the mail queue	• Deletes the email message from the mail queue

Action	Operation Mode		
	MTA Mode	SPAN/TAP Mode	BCC Mode
Block and quarantine	• Stores a copy in the quarantine area • Does not deliver the email message	• Stores a copy in the quarantine area	• Stores a copy in the quarantine area
Strip attachments, redirect links to blocking page, and tag	• Replaces suspicious attachments with a text file • Redirects suspicious links to a blocking page • If configured, tags the email message subject and inserts the X-header before delivery	• Deletes the email message from the mail queue	• Deletes the email message from the mail queue
Strip attachments, redirect links to warning page, and tag	• Replaces suspicious attachments with a text file • Redirects suspicious links to a warning page • If configured, tags the email message subject and inserts the X-header before delivery	• Deletes the email message from the mail queue	• Deletes the email message from the mail queue

Action	Operation Mode		
	MTA Mode	SPAN/TAP Mode	BCC Mode
	• Delivers the email message to the recipient		
Pass and tag	• If configured, tags the email message subject and inserts the X-header before delivery	• Deletes the email message from the mail queue	• Deletes the email message from the mail queue
Deliver directly	• Does not apply subsequent policy rules in the same policy on the email message • Delivers the email message to the recipient using the specified SMTP server	• Deletes the email message from the mail queue	• Deletes the email message from the mail queue
Quarantine the original message when attachments cannot be stripped	• If no strip attachment action is specified or no attachment exists, sends the message to the quarantine area	• Not applicable	• Not applicable
Quarantine a copy of the original message when stripping attachments or redirecting links	• If a strip attachment action or a redirect link is specified, stores a copy in the quarantine area	• Not applicable	• Not applicable

Action	Operation Mode		
	MTA Mode	SPAN/TAP Mode	BCC Mode
Attempt to clean before stripping attachments	• If a strip attachment action is specified, performs the clean attachment action • If the clean attachment action is not successful or no strip attachment action is selected, deletes the attachment	• Not applicable	• Not applicable
Send notification	• Sends a notification to all message recipients and contact email addresses specified in the notification template	• Sends a notification to all message recipients and contact email addresses specified in the notification template	• Not applicable

Note

- In policies, the terminal actions are **Delete message**, **Block and quarantine**, and **Deliver directly**. For policies with multiple rules, Deep Discovery Email Inspector applies only one terminal action on detected messages. After applying a terminal action on a message for a matched rule, Deep Discovery Email Inspector does not match the message against subsequent rules in the policy.

  For example, if a policy contains one content filtering rule, one antispam protection rule, and one threat protection rule, and Deep Discovery Email Inspector applies the **Delete message** action on a message based on the content filtering rule matched, Deep Discovery Email Inspector does not apply the antispam and threat protection rules on the message.

- For policies with multiple rules, Deep Discovery Email Inspector applies all non-terminal actions on messages for matched rules before delivery or until a terminal action is applied.

  As an example, you configure a policy containing one or more content filtering rules, one or more data loss prevention (DLP) rules, one or more antispam rules, and one threat protection rule. If Deep Discovery Email Inspector applies the **Strip all attachments** action on a message based on the content filtering rule or DLP rule that is first matched, Deep Discovery Email Inspector will continue to scan the messages until a terminal action or all subsequent rules are applied (except Virtual Analyzer submission for attachments).

  If Deep Discovery Email Inspector does not apply a strip attachment action on a message based on one or more preceding rules matched, Deep Discovery Email Inspector will continue to scan the messages until a terminal action or all subsequent rules are applied (including Virtual Analyzer submission for attachments).

- When applying multiple actions on a message, Deep Discovery Email Inspector applies the **Encrypt message** action as the last non-terminal action.

Policy Matching

Deep Discovery Email Inspector first determines the message direction (inbound or outbound) based on the Internal Domains list to apply policies. For more information, see *Internal Domains on page 8-105*.

If more than one policy applies to a recipient or sender, Deep Discovery Email Inspector matches the enabled policy with the highest priority and applies the associated actions.

For example, consider the following policies.

TABLE 5-5. Example policies

PRIORITY	POLICY NAME	TARGET	DIRECTION
1	High_Profile_Recipient	Recipients: • ceo@example.com • cfo@example.com	Inbound
2	High_Profile_Recipient_Sender	Sender: jim@partner.com Recipients: • finance_group (Active Directory) • alex@example.com	Inbound
3	Trusted_Partner	Senders: *@partner.com	Inbound
4	Sales_Team	Recipients: • joe@example.com • larry@exmple.com	Inbound
5	IT_Team	Recipients: IT_group (Active Directory)	Inbound
6	Acquired_Domain	Recipients: *@example.com	Inbound
7	Outbound policy	Senders: *@example.com **Note** The domain "example.com" is in the Internal Domains list.	Outbound

Priority	Policy Name	Target	Direction
8	Default policy	All recipients and senders	Inbound or outbound

The following describes how Deep Discovery Email Inspector matches the policies in a top-down approach based on the message direction and priority settings:

- A message from leo@partner.com to the recipient (joe@example.com) matches the policy *Trusted_Partner*, because this is an inbound message (the domain "partner.com" is not in the Internal Domains list) and the priority for the *Trusted_Partner* inbound policy (matching the sender setting: *@partner.com) is higher than the *Sales_Team* inbound policy (matching the recipient setting: joe@example.com).
- If a message is sent from jim@partner.com to three recipients (ceo@example.com, alex@example.com, and joe@exmple.com), Deep Discovery Email Inspector considers the message as an inbound message (the domain "partner.com" is not in the Internal Domains list) and matches the following inbound policies:
  - *High_Profile_Recipient*: Matching the inbound message direction and recipient ceo@example.com
  - *High_Profile_Recipient_Sender*: Matching the inbound message direction and recipient alex@example.com
  - *Trusted_Partner*: Matching the inbound message direction and recipient joe@exmple.com
- If a message is sent from joe@yahoo.com to four recipients (larry@example.com, alex@example.com, bill@example.com, and jane@newdomain.com) and only bill@example.com belongs to the IT_Team Active Directory group, Deep Discovery Email Inspector considers the message as an inbound message (the domain "yahoo.com" is not in the Internal Domains list) and matches the following policies:

- *Sales_Team*: Matching the inbound message direction and recipient larry@exmple.com
- *Acquired_Domain*: Matching the inbound message direction and recipient alex@example.com
- *IT_Team*: Matching the inbound message direction and recipient bill@example.com
- *Default policy*: Matching the inbound message direction and recipient jane@newdomain.com

- If a message is sent from alex@example.com to two recipients (larry@example.com and jane@newdomain.com), Deep Discovery Email Inspector considers the message as an outbound message (the domain "example.com" is in the Internal Domains list) and matches the *Outbound policy* that has a higher priority than the *Default policy* (matching outbound message direction, sender, and recipients).

Note

Message splintering occurs when a message with multiple recipients results in multiple policy and policy rule matches in Deep Discovery Email Inspector. For more information, see *Policy Splintering on page 5-23*.

Policy Splintering

Deep Discovery Email Inspector includes the intelligent message splintering feature to enable multiple independent policy matches for a message with multiple recipients. Message splintering allows Deep Discovery Email Inspector evaluates each recipient against the policy list in a top-down fashion. When a policy is matched, Deep Discovery Email Inspector splits the message (creating message splinters) into multiple messages for the number of affected recipients.

Deep Discovery Email Inspector creates a message splinter only if a message with multiple recipients matches different policy rules in different policies. If all recipients in a message match the same policy or if recipients match the same policy rule in different policies, Deep Discovery Email Inspector does not create a message splinter.

Consider the following policies.

Policy Name	Rule
Policy A	• Content filter Rule: Tag messages (keyword match) • Spam filter Rule: Delete spam messages • Threat protection Rule: Delete messages (all risk levels)
Policy B	• Content filter Rule: Strip attachments (executable) • Spam filter Rule: Tag spam messages • Threat protection Rule: Delete messages (all risk levels)
Policy C	• Content filter Rule: Tag messages (keyword match) • Content filter Rule: Strip attachments (executable) • Spam filter Rule: Tag spam messages • Threat protection Rule: Quarantine messages (all risk levels)
Policy D	• Content filter Rule: Tag messages (keyword match) • Threat protection Rule: Quarantine messages (all risk levels)

The following scenarios describe how Deep Discovery Email Inspector creates message splinters based on the policy and rule matching:

- A message is sent from joe@test.com to recipients alex@example.com and linda@example.com. If alex@example.com and linda@example.com match *Policy A*, and the message triggers content filtering rule *Tag messages (keyword match)*, Deep Discovery Email Inspector does not create a message splinter because the same policy rule is applied for the same policy matched.
- A message is sent from joe@test.com to recipients jane@example.com, mark@example.com, and leo@example.com. If jane@example.com and mark@example.com match *Policy B*, and leo@example.com matches *Policy C*, and the message triggers policy rules *Strip attachments (executable)* and *Tag spam messages*, Deep Discovery Email Inspector does not create a message splinter because the same policy rules are applied for the matched policies.

- A message is sent from joe@test.com to recipients jane@example.com and bill@example.com. If jane@example.com matches *Policy B* and bill@example.com matches *Policy D*, and the message triggers policy rules *Tag spam messages* and *Tag messages (keyword match)*, Deep Discovery Email Inspector splits the message into two. Deep Discovery Email Inspector applies policy rule *Tag spam messages* to one message for jane@example.com and applies policy rule *Tag messages (keyword match)* to the other message for bill@example.com.

Policy List

Deep Discovery Email Inspector evaluates email messages against the rules defined in policies. You can enforce specific policies on individual or a group of senders or recipients. Deep Discovery Email Inspector matches the policies based on the sender and recipient information in messages and the message directions. When more than one policy is matched for a message, Deep Discovery Email Inspector takes the action of the matched policy rule with the highest priority.

The following table describes the information on the **Policy List** screen.

Field	Description
Priority	View the number to indicate the priority level of the policy. The smaller the number, the higher the priority.
Policy Name	View the name of the policy.
Direction	View the message direction the policy applies to.
Senders	View the list of senders to which the policy is applied.
Recipients	View the list of recipients to which the policy is applied.
Rules	View the list of rules included in the policy.
Archive Server	View the name of the server to archive messages.
Last Updated	View the date and time the policy is updated.

Field	Description
Description	View a description for the policy.
Status	Toggle to enable or disable the policy.

The following table explains the basic search filters for querying policies.

Note

For the **Sender** and **Recipient** search filters, it is recommended you specify a complete email address or the local part. Based on the filters, Deep Discovery Email Inspector searches for sender and recipient email addresses and Active Directory users and groups in policies.

Filter	Description
Status	Select **All** or a status from the list.
Direction	Select the message direction the policy applies to.
Sender	Type a complete sender email address or the local part (characters before the @ symbol) of the email address and click the search icon ( ).
Recipient	Type a complete recipient email address or the local part (characters before the @ symbol) of the email address and click the search icon ( ).
Rule	Type a rule name and click the search icon ( ). The screen displays the entries that contain the text.

You can perform the following actions on the **Policy List** screen:

- **Add**: Creates a new policy
- **Export**: Downloads the policies in a ZIP file
- **Import**: Imports policies that you exported from a source Deep Discovery Email Inspector appliance. This allows you to replicate the

same policy settings across several Deep Discovery Email Inspector appliances.

- **Delete**: Removes the selected policy from the policy list.
- **Copy**: Creates a copy of the selected policy. You can edit the copy to create a customized policy.

Configuring a Policy

You can configure policies to reduce security and productivity threats to your messaging system.

A policy requires the following configuration:

- General settings: Specifies the policy name and the hosts to apply the policy
- Policy rule selection:
  - One threat protection rule
  - (Optional) One or more content filtering, data loss prevention (DLP), or antispam rules

Note

- Before configuring a policy, make sure that you have created the required policy components (internal domains, notifications, and policy rules).
- You can specify trusted senders/recipients or objects for policy exceptions.

  For more information, see *Policy Exceptions on page 5-78*.

Procedure

1. Configure the required policy components:
   - *Notifications on page 5-51*
   - *Policy Rules on page 5-35*

2. Go to **Policies** > **Policy Management**.

   The **Policy List** screen appears.

3. Do one of the following:

   - Click **Add** to create a new policy.
   - Click a policy name to edit the settings.

4. Select **Enabled** to activate the policy.

5. Type a policy name.

6. Type a number to indicate the priority in which Deep Discovery Email Inspector performs the scan. Deep Discovery Email Inspector applies the policy rules to messages according to the order you specify.

7. Type a description for the policy.

8. Select the message direction to apply the policy.

9. Specify the senders and recipients. Select **All** to apply the policy rules to all senders or recipients; otherwise, select **Specify senders** or **Specify recipients** and complete the following steps to configure the address list.

   Note

   If the domain of a sender is in the Internal Domains list, Deep Discovery Email Inspector does not apply the inbound policy on messages from the sender.

   a. Select a type.

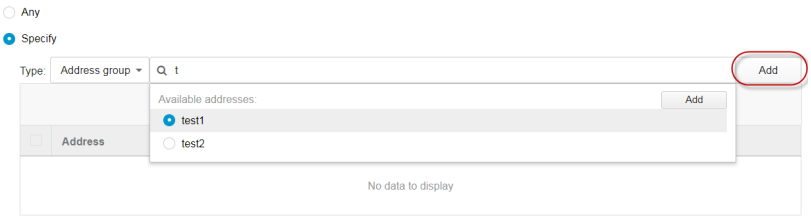
   b. Type the required information.

Type	Description
Email address	Type a valid email address. For example, test@test.com.

Type	Description
LDAP user or group	Type a user or group name and press [Enter] to search the Active Directory for matching user accounts or groups.
Address group	Type an address group name and press [Enter] to search for matching address groups. You can configure address groups to apply the same policies to multiple email addresses. For more information, see *Adding an Address Group on page 5-31*.

c. If required, select an address group or an Active Directory user or group from the search results.

d. Click **Add**.



10. (Optional) Select an option from the **Archive Server** drop-down list to archive a copy of the messages that match the policy. The default option (**None**) disables message archiving.

Note

- If a message matches multiple policies with different archive server settings, Deep Discovery Email Inspector sends a copy of the message to each archive server.
- If a message matches multiple policies with the same archive server setting, Deep Discovery Email Inspector only sends a copy of the message to the archive server.

For more information, see *Archive Servers on page 5-56*.

11. Specify the threat protection rule.
    a. Click the **Threat Protection** tab.
    b. Select an option from the **Rule** drop-down list.
    c. Click **Add**.

> **Note**
> - To view the rule settings, click **View**.
> - For more information about configuring threat protection rules, see *Threat Protection Rules on page 5-46*.

12. (Optional) Specify one or more content filtering rules.
    a. Click the **Content Filtering** tab.
    b. Select an option from the **Rule** drop-down list.
    c. Click **Add**.

> **Note**
> - To view the rule settings, click **View**.
> - For more information about configuring content filtering rules, see *Content Filtering Rules on page 5-35*.

13. (Optional) Specify one or more data loss prevention (DLP) rules.
    a. Click the **DLP** tab.
    b. Select an option from the **Rule** drop-down list.
    c. Click **Add**.

> **Note**
> - To view the rule settings, click **View**.
> - For more information about configuring DLP rules, see *Data Loss Prevention (DLP) Rules on page 5-41*.

14. (Optional) Specify one or more antispam rules.
    a. Click the **Antispam** tab.
    b. Select an option from the **Rule** drop-down list.
    c. Click **Add**.

Note

- To view the rule settings, click **View**.
- For more information about configuring antispam rules, see *Antispam Rules on page 5-43*.

15. Click **Save**.

Address Groups

In a policy, you can configure address groups to include a list of email addresses to which Deep Discovery Email Inspector applies the policy. Address groups allow you to organize multiple email addresses into a single group and apply the same policy to every address in the group.

You can create an address group during policy configuration by adding email addresses individually or importing them from a text file.

To use the same address group on multiple Deep Discovery Email Inspector appliances, you can export an address group from the source Deep Discovery Email Inspector appliance and import the text file on a target Deep Discovery Email Inspector appliance.

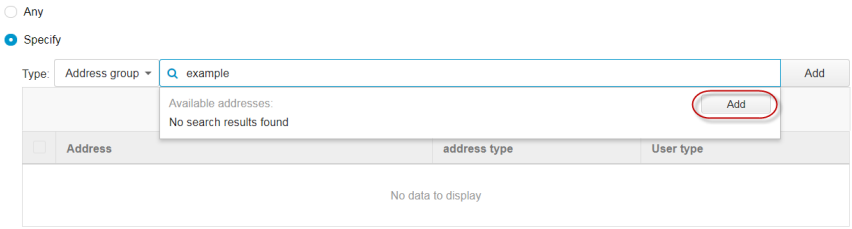
Adding an Address Group

An address group is a collection of user email addresses in your organization. Instead of creating policies to apply policy rules to each address individually, you can create an address group to apply policy rules to several email addresses at the same time.

Procedure

1. On the **Policy List** screen, create or edit a policy.
2. Under **Senders** or **Recipients**, select **Specify**.
3. From the **Type** drop-down list, select **Address group**.
4. Type a group name and press [Enter].

   The system displays the search results in the drop-down list.
5. From the drop-down list, click **Add**.



   The **Add Address Group** screen appears.
6. Type a group name.
7. Do one of the following:
   - Add an individual email address:

     Type an email address and click **Add**.

     Note

     You can use the * wildcard character in email addresses. For example, *@domain.com.
   - Import a list of email addresses:

Note

Deep Discovery Email Inspector can import email addresses from a text file. Ensure that the text file contains only one email address per line. Optionally, use the * wildcard character to specify an email address. For example, *@domain.com.

a. Click **Import**.

b. Select a text file containing the list of email addresses.

c. Click **OK**.

The new entries display in the address list.

8. Click **Save**.

After adding an email address:

- Select an email address and click **Delete** to remove the email address from the address group.
- Click **Export** to save the email addresses in a text file.

Editing an Address Group

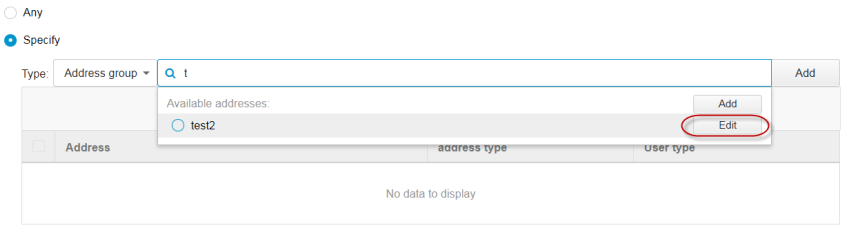
You can configure email addresses in an address group by editing an existing policy.

Procedure

1. On the **Policy List** screen, create or edit a policy.
2. Under **Senders** or **Recipients**, select **Specify**.
3. From the **Type** drop-down list, select **Address group**.
4. Type a group name and press [Enter].

The system displays the search results in the drop-down list.

5. From the drop-down list, move your cursor over an address name and click **Edit**.



The **Edit Address Group** screen appears.

6. Do one of the following:

   - Add an individual email address:

     Type an email address and click **Add**.

     Note

     You can use the * wildcard character in email addresses. For example, *@domain.com.

   - Import a list of email addresses:

     Note

     Deep Discovery Email Inspector can import email addresses from a text file. Ensure that the text file contains only one email address per line. Optionally, use the * wildcard character to specify an email address. For example, *@domain.com.

     a. Click **Import**.

     b. Select a text file containing the list of email addresses.

     c. Click **OK**.

   - Delete an email address: Select an entry and click **Delete**.

- Export the address group: Click **Export** and save the text file on your computer.

7. Click **Save**.

Policy Rules

You can create the following types of rules to enforce your organization's antivirus and other security goals:

- Content filtering rules: Evaluates message contents to prevent undesirable content from being delivered to recipients and remove active content (such as macros) from Microsoft Office or PDF file attachments
- DLP rules: Prevents the transmission of digital assets through email messages
- Antispam rules: Scans messages for spam or graymail
- Threat protection rules: Scans messages for viruses and other malware such as spyware and worms

Optionally, you can copy a predefined policy rule and edit the copy to create a new policy rule.

Content Filtering Rules

Content filtering rules allow you to evaluate and control the delivery of email message on the basis of the message content and attachments. Deep Discovery Email Inspector uses content filtering rules to monitor inbound and outbound messages to check for messages with potentially malicious attachments or the existence of harassing, offensive, or otherwise objectionable message content.

When Deep Discovery Email Inspector detects a message that matches a scanning condition defined in a content filtering rule, Deep Discovery Email

Inspector takes action on the message to prevent undesirable content from being delivered to Microsoft Exchange clients.

You can view the list of content filtering rules on the **Content Filtering Rules** screen. The following table describes the rule information.

Field	Description
Rule Name	View the descriptive name for the rule. Click a rule name to edit the rule settings.
Action	View one or more actions to apply when the rule conditions are matched.
Associated Policies	View the number of policies that include the rule.
Last Updated	View the date and time the entry was last updated.

Configuring a Content Filtering Rule

You can create content filtering rules to evaluate inbound and outbound email messages based on the following scanning conditions:

- Attachment file types, file names, file size, or the number of attachments
- Content in email headers, body, or attachments
- Sender authentication results

Procedure

1. Go to **Policies** > **Policy Management**.
2. Click the **Content Filtering Rules** tab.
3. Do one of the following:
   - Click **Add** to create a new rule.
   - Click a rule name to change the settings.

4. Type a rule name.

5. Configure the scanning conditions.

   a. Under **Attachment**, specify the criteria for attachments.

      For more information, see *Scanning Conditions for Attachments on page 5-38*.

   b. Under **Content**, specify one or more keywords or expressions to match in messages.

      For more information, see *Adding Keyword Lists or Expressions on page 5-40*.

   c. Under **Sender Authentication Results**, select one or more sender authentication protocols; then, select one or more authentication results from the drop-down list.

      Note

      - For sender authentication result settings in content filtering rules to take effect, go to **Administration** > **Sender Filtering/ Authentication** and click the tab for the authentication protocol (**SPF**, **DKIM Authentication**, or **DMARC**). Then, enable the authentication protocol and select **Insert X-Header into email messages**.
      - Deep Discovery Email Inspector matches an email message if an authentication result for each selected sender authentication protocol is matched.

   d. (Optional) Select **Apply rule if sender address does not match message header (From)** to apply the content filtering rule if the sender address and the address in the message header From field do not match.

      Note

      This option is not applicable when Deep Discovery Email Inspector is operating in BCC mode.

6. Specify the **Action**.

   For more information, see *Policy Actions on page 5-7*.

7. (Optional) From the **Send notification** drop-down list, select a notification message to inform recipients about the applied policy action.

   Important

   Deep Discovery Email Inspector only sends recipient notifications when you select **Send notification** and a notification message.

   You can configure notification messages on the **Notifications** screen (go to **Policies** > **Policy Objects** > **Notifications**).

   For more information, see *Configuring Recipient Notification on page 5-51*.

8. Click **Save**.

   After adding a rule, you can:

   - Click a rule name to edit the rule settings.
   - Select a rule and click **Delete** to remove the selected rule.

Scanning Conditions for Attachments

In content filtering rules, you can specify the following scanning conditions to filter email messages with attachments. Deep Discovery Email Inspector matches an email message when all conditions are met.

Setting	Description

File type	Select this option to filter email messages based on the matching option and file types:
	• Matching option:
	  • **Selected attachment types**: Deep Discovery Email Inspector takes action on messages with attachments of the selected file types.
	  • **Not the selected attachment types**: Deep Discovery Email Inspector takes action on messages with attachments that are not of the selected file types.
	• File types:
	  • True file types
	  • Custom file extensions
	  • Password-protected archive files
	Note
	Do not include wildcards in a custom file extension.

File name	Select this option to filter email messages based on file names. Type a file name and press Enter. You can specify more than one file name in the text field. **Note** Do not include wildcards in a file name.
Attachment size	Select this option and configure the following settings to filter email messages based on the attachment size: • Select a comparison symbol • Type a number to represent the attachment size • Select a unit (KB or MB)

Setting	Description
Number of attachments	Select this option and configure the following settings to filter email messages based on the number of attachments detected: • Select a comparison symbol • Type a number to represent the number of attachments

Adding Keyword Lists or Expressions

You can select one or more keyword lists (containing the keywords) and expressions to match in email messages.

Note

Before you can add keyword lists or expressions in a content filtering rule, configure the keyword lists or expressions on the **Data Identifiers** screen.

For more information, see *Configuring a Keyword List on page 5-71* and *Configuring a Customized Expression on page 5-62*.

Procedure

1. Under **Contents**, click **Add**.

   The **Add Keyword List & Expression** screen appears.

2. Select a message section.

3. Configure the required settings for the message section you select.

   - For the **Header** message section, do the following:

     a. Select or specify a message header.

     b. Select a list view option.

     c. Select one or more keyword lists or expressions.

     d. Click **Add**.

Tip

- Repeat the procedure to add more content matching entries.
- You can click the trash can icon () to remove an entry from the table.

- For the **Body** or **Attachment** message section, do the following:
  a. Select a list view option.
  b. Select one or more keyword lists or expressions.

4. Click **Save**.

Data Loss Prevention (DLP) Rules

Deep Discovery Email Inspector evaluates a file or data against a set of Data Loss Prevent (DLP) rules in policies. DLP rules determine files or data that requires protection from unauthorized transmission and the action that Deep Discovery Email Inspector performs after detecting a transmission.

You can start to configure DLP rules after you have configured data identifiers and organized them in DLP templates.

Note

By default, Deep Discovery Email Inspector applies DLP polices on outgoing email messages based on the recipient and sender settings.

Configuring a DLP Rule

You can create a Data Loss Prevention (DLP) rule to specify actions to apply when Deep Discovery Email Inspector detects an unauthorized transmission of data in email messages.

Procedure

1. Go to **Policies** > **Policy Management**.
2. Click the **DLP Rules** tab.
3. Do one of the following:
   - Click **Add** to create a new rule.
   - Click a rule name to change the settings.
4. Type a rule name.
5. Select a list view option.
6. Select one or more templates in the **Available Templates** list.

   The selected items display in the **Selected Templates** list.
7. Specify the **Action**.

   For more information, see *Policy Actions on page 5-7*.
8. (Optional) From the **Send notification** drop-down list, select a notification message to inform recipients about the applied policy action.

   Important

   Deep Discovery Email Inspector only sends recipient notifications when you select **Send notification** and a notification message.

   You can configure notification messages on the **Notifications** screen (go to **Policies** > **Policy Objects** > **Notifications**).

   For more information, see *Configuring Recipient Notification on page 5-51*.
9. Click **Save**.

   After adding a rule, you can:

- Click a rule name to edit the rule settings.
- Select a rule and click **Delete** to remove the selected rule.
- Select a rule and click **Copy** to create a copy of the selected rule. You can edit the copied rule to create a customized rule.

Antispam Rules

Deep Discovery Email Inspector uses antispam rules to scan messages identified as spam or graymail.

For more information, see *Spam Scanning on page 1-6* and *Graymail Scanning on page 1-7*.

Note

- To maximize spam protection, configure Deep Discovery Email Inspector to use Email Reputation Services (ERS) technology.

  For more information, see *Enabling Email Reputation Services on page 8-63*.

- You can configure graymail exceptions to bypass graymail scanning for messages from trusted IP addresses.

  For more information, see *Graymail Exceptions on page 5-84*

The following table describes the fields on the **Antispam Rules** screen.

Field	Description
Rule Name	View the descriptive name for the rule. Click a rule name to edit the rule settings.
Action	View one or more actions to apply when the rule conditions are matched.
Associated Policies	View the number of policies that include the rule.

Field	Description
Last Updated	View the date and time the entry was last updated.

Configuring an Antispam Rule

You can create an antispam rule to specify actions on the following types of potentially unwanted messages:

- Spam
- Graymail

Procedure

1. Go to **Policies** > **Policy Management**.
2. Click the **Antispam Rules** tab.
3. Do one of the following:
   - Click **Add** to create a new rule.
   - Click a rule name to change the settings.
4. Type a rule name.
5. Select the **Spam**, **Graymail**, or both message types and configure the scanning conditions.

Message Type	Description
Spam	Enables Deep Discovery Email Inspector to scan messages for spam based on the spam catch rate or detection threshold you specify. • **High**: This is the most rigorous level of spam detection. Deep Discovery Email Inspector monitors all email messages for suspicious files or text, but there is greater chance of false positives. False positives are those email messages that Deep Discovery Email Inspector filters as spam when they are actually legitimate email messages. • **Medium**: This is the default and recommended setting. Deep Discovery Email Inspector monitors at a high level of spam detection with a moderate chance of filtering false positives. • **Low**: This is most lenient level of spam detection. Deep Discovery Email Inspector only filters the most obvious and common spam messages, but there is a very low chance that it will filter false positives. • **Specify a detection threshold**: Type a threshold value (between 3.0 and 10.0) that represents how critically Deep Discovery Email Inspector analyzes messages to determine if they are spam.
Graymail	Enables Deep Discovery Email Inspector to scan messages against the Email Reputation Services (ERS) score to identify graymail messages. Select one or more message categories that Deep Discovery Email Inspector considers as graymail. **Note** You can add the IP addresses or subnets of trusted senders to the **Graymail Exceptions** list. Email messages from IP addresses or subnets in the list bypass graymail scanning in Deep Discovery Email Inspector. For more information, see *Adding a Graymail Exception on page 5-85*.

6. Specify the **Action**.

For more information, see *Policy Actions on page 5-7*.

7. (Optional) From the **Send notification** drop-down list, select a notification message to inform recipients about the applied policy action.

Important

Deep Discovery Email Inspector only sends recipient notifications when you select **Send notification** and a notification message.

You can configure notification messages on the **Notifications** screen (go to **Policies** > **Policy Objects** > **Notifications**).

For more information, see *Configuring Recipient Notification on page 5-51*.

8. Click **Save**.

After adding a rule, you can:

- Click a rule name to edit the rule settings.
- Select a rule and click **Delete** to remove the selected rule.
- Select a rule and click **Copy** to create a copy of the selected rule. You can edit the copied rule to create a customized rule.

Threat Protection Rules

Deep Discovery Email Inspector uses threat protection rules to provide security controls that ensure protection against threats. You can configure threat protection rules to specify traffic handling behavior and customize notification messages.

Deep Discovery Email Inspector scans messages for virus and other malware using the following scan technology:

- *Virtual Analyzer on page 1-12*

- *Advanced Threat Scan Engine on page 1-13*
- *Predictive Machine Learning on page 1-13*

The following table describes the fields on the **Threat Protection Rules** screen.

Field	Description
Rule Name	View the descriptive name for the rule. Click a rule name to edit the rule settings.
Action	View one or more actions to apply when the rule conditions are matched.
Associated Policies	View the number of policies that include the rule.
Last Updated	View the date and time the entry was last updated.

Configuring a Threat Protection Rule

You can create threat protection rules to scan messages for viruses and other malware such as spyware and worms.

Procedure

1. Go to **Policies** > **Policy Management**.
2. Click the **Threat Protection Rules** tab.
3. Do one of the following:
   - Click **Add** to create a new rule.
   - Click a rule name to change the settings.
4. Type a rule name.
5. Configure the settings for High, Medium, and Low risk, and Unrated messages.

a. For **Unrated** messages, select a detection reason.

b. Specify the **Action**.

   For more information, see *Policy Actions on page 5-7*.

c. (Optional) From the **Send notification** drop-down list, select a notification message to inform recipients about the applied policy action.

   Important

   Deep Discovery Email Inspector only sends recipient notifications when you select **Send notification** and a notification message.

   You can configure notification messages on the **Notifications** screen (go to **Policies** > **Policy Objects** > **Notifications**).

   For more information, see *Configuring Recipient Notification on page 5-51*.

d. (Optional) For low-risk messages, configure the subject tag and X-header settings.

   - **Subject tag**: Specify the string to insert in the subject of email messages.
   - **X-Header**: Specify the text to add to the X-header.

6. (Optional) Under **Advanced Settings**, select one or more of the following settings:

   - Select **Quarantine the original message when attachments cannot be stripped** to store the detected email message in the quarantine when Deep Discovery Email Inspector is unable to strip the attachments. Deep Discovery Email Inspector does not deliver the email message to the recipients.

Note

- This setting only takes effect when Deep Discovery Email Inspector is in MTA mode.
- When you select this option, Deep Discovery Email Inspector also quarantines detected phishing messages.

- Select **Quarantine a copy of the original message when stripping attachments or redirecting links** to store a copy of the detected email message with the attachment and URL in the quarantine for further investigation.

Note

This setting only takes effect when Deep Discovery Email Inspector is in MTA mode.

- Select **Attempt to clean before stripping attachments** to have Deep Discovery Email Inspector clean an attachment first when you also select a strip attachment action for the rule. If Deep Discovery Email Inspector is unable to clean the attachment, Deep Discovery Email Inspector then deletes the attachment.

  Clear the check box to have Deep Discovery Email Inspector immediately delete attachments that are detected as malicious.

Note

This setting only takes effect when Deep Discovery Email Inspector is in MTA mode.

- Select **Prioritize for Virtual Analyzer submission** to submit detected email messages to Virtual Analyzer with high priority.
- Select **Deliver directly** to send email messages that match a policy rule and are not deleted or quarantined to the specified SMTP server.

Note

If you select this setting, you must specify the SMTP server address and port number.

7. Click **Save**.

   After adding a rule, you can:

   - Click a rule name to edit the rule settings.
   - Select a rule and click **Delete** to remove the selected rule.

Policy Objects

Policy objects simplify policy management by storing configurations that can be shared across all policy rules.

The following table describes the policy objects that you can configure in Deep Discovery Email Inspector.

Policy Objects	Description
Notifications	Create messages to notify a recipient or email administrator that Deep Discovery Email Inspector took action on a message or that the message violated Deep Discovery Email Inspector rule scanning conditions.
Replacement File	Specify text (to append to all processes messages) and file name (to replace stripped attachments) to notify a recipient that Deep Discovery Email Inspector took action on a message or that the message violated scanning conditions for rules.
Stamps	Configure up to three stamps to insert into messages based on the message direction.
Redirect pages	Specify a redirect page blocks or warns users from opening suspicious links.

Policy Objects	Description
Archive servers	Configure up to ten archive servers to store email messages based on policy settings.
Data Identifiers	Configure data identifiers (expressions, file attributes, or keywords) that you can apply in content filtering and DLP policy rules.
DLP Templates	Configure DLP templates to include data identifiers and logical operators for use in DLP policy rules.

Notifications

You can configure a notification and associate it with a policy rule. When a rule is matched, Deep Discovery Email Inspector sends the notification to notify specified recipients that an email message was processed and may contain suspicious or malicious content.

The following table describes the information on the **Notifications** screen.

Header	Description
Name	View the name of the notification.
Message	View a portion of the notification message.
Associated Rules	View the number of rules associated with the notification.
Last Updated	View the date and time the entry was last updated.

Configuring Recipient Notification

You can create a recipient notification for use in policy rules.

Procedure

1. Go to **Policies** > **Policy Objects** > **Notifications**.
2. Do one of the following:

- Click **Add** to create a new notification.
- Click a name to change the settings.

3. In the **Name** field, type a descriptive name for the notification.
4. Under **Recipients**, specify the recipients Deep Discovery Email Inspector sends the notification when the associated policy rule is matched.
   - **Original email recipient**: Select this option to send the notification to the intended recipient of a detected email message.
   - **Original email sender**: Select this option to send the notification to the original sender of a detected email message.
   - **Send to all contacts and other notification recipients**: Select this option to send the notification to the email addresses define on the **Contacts** screen and the specified recipients.

     For more information, see *Managing Contacts on page 8-191*.

     (Optional) To send the notification to other recipients, type the email addresses in the **Other notification recipients** text box. Use a semicolon (;) to separate entries.
5. Configure the email notification sent to the recipient after Deep Discovery Email Inspector investigates and acts upon an email message.

   Use the provided tokens to customize your message. For details, see *Recipient Notification Message Tokens on page C-2*.
6. Click **Save**.

   After adding a notification:
   - Click **Copy** to duplicate a selected notification. You can edit the notification settings to create a new notification.
   - Select a notification and click **Delete** to remove the entry from the list.

Replacement File

Deep Discovery Email Inspector uses a replacement file to replace a stripped suspicious attachment in detected messages to notify a recipient that the email message was processed and any suspicious or malicious attachment is removed.

Configuring the Replacement File

Procedure

1. Go to **Policies** > **Policy Objects** > **Replacement File**.
2. Under **Replacement File**, configure the following:
   - **File name**: Specify a file name for the replacement file
   - **Text**: Specify the text to include in the replacement file

   Tip

   You can include tokens from the **Available Tokens** list in the text. Before sending the replacement file, Deep Discovery Email Inspector replaces the tokens with the actual data.
3. Click **Save**.

Message Stamps

A message stamp is inserted in an email message to notify a recipient that Deep Discovery Email Inspector has processed the message.

You can configure up to three message stamps, one for each message direction (inbound, outbound, or inbound and outbound). When a stamp is enabled, Deep Discovery Email Inspector automatically inserts the stamp in messages for the specified message direction.

The following table describes the information on the **Stamps** screen.

Field	Description
Name	View the descriptive name for the stamp.
Content	View the text content of the stamp.
Insert At	View the location in the message body to insert the stamp.
Direction	View the direction of the messages the stamp applies.
Last Updated	View the date and time the entry was last updated.
Status	Toggle to enable or disable the stamp. **Note** If you disable a stamp, Deep Discovery Email Inspector does not insert the stamp in messages in the specified message direction.

Configuring a Message Stamp

You can configure up to three message stamps, one for each message direction (inbound, outbound, or inbound and outbound). When a stamp is enabled, Deep Discovery Email Inspector automatically inserts the stamp in messages for the specified message direction.

Procedure

1. Go to **Policies** > **Policy Objects** > **Stamps**.
2. Do one of the following:
   - Click **Add** to configure a new stamp.
   - Click a stamp name to change the settings.
3. Select a status option to enable or disable the stamp.
4. Type a descriptive name.

5. Select the message location to insert the stamp.
6. Select the message direction to apply the stamp.
7. Type the stamp content in the text field.

   You can format the text content using the formatting settings provided. The **Plain text preview** field displays the read-only, plain text version of the content.
8. Click **Save**.

Redirect Pages

Deep Discovery Email Inspector uses policy actions to determine if a redirect page blocks or warns users from opening suspicious links. You can customize the redirect pages with your own logo, message body, and administrator contact information.

Customizing the Redirect Pages

When using built-in redirect pages, ensure that the message recipients can open the redirect pages. If the redirect pages cannot be opened, check your network configuration or use external redirect pages.

Procedure

1. Go to **Policies** > **Policy Objects** > **Redirect Pages**.
2. Select whether to use external or built-in redirect pages.
   - **Use external redirect pages**: Type the page URL of the **Blocking page** to use
   - **Use built-in redirect pages**: Select to show the **Warning page** or **Blocking page**.

     Do the following to edit the redirect page:

- Select **Use host name in link. Configure the host name to enable this setting.**.

  Tip

  Trend Micro recommends enabling this setting to prevent users from accidentally visiting the malicious website.

  - Click **host name** to redirect to the **System Settings** screen where you can view or change the **Host name** setting under **Host Name / Gateway / DNS**.

    Note

    Save any changes before navigating away from the **Policy** screen.

- Click the **Replace image** ( ) icon to browse and select an image file.

  Important

  Images cannot be bigger than 500x60 pixels and must be in GIF, JPEG, or PNG format.

- Click the **Edit** ( ) icon to open the field for editing.
- Click the **Enable** hyperlink to open the **Administrator Contact Information** fields for editing.

3. Click **Save**.

Archive Servers

You can configure archive servers to store email messages that match a policy. When you enable message archiving for a policy, Deep Discovery Email Inspector automatically sends a copy of matched messages to the specified archive server.

Note

- You can configure up to ten archive servers.
- If a message matches multiple policies with different archive server settings, Deep Discovery Email Inspector sends a copy of the message to each archive server.
- If a message matches multiple policies with the same archive server setting, Deep Discovery Email Inspector only sends a copy of the message to the archive server.

The following table describes the fields on the **Archive Servers** screen.

Field	Description
Server Name	View the descriptive name of the archive server.
Email Address	View the email address of the archive server.
Server Address	View the IP address or FQDN of the archive server.
Port	View the archive server port number.
Associated Policies	View the number of policies that use the archive server.
Last Updated	View the date and time the entry was last updated.

Configuring an Archive Server

You can configure up to ten archive servers to store email messages based on policy settings.

Procedure

1. Go to **Policies** > **Policy Objects**.
2. Click the **Archive Servers** tab.
3. Do one of the following:

- Click **Add** to configure a new archive server.
- Click a server name to change the settings.

4. Type a unique server name (up to 64 characters).
5. Type the email address for the archive server.
6. Configure the SMTP server to send messages for archive. Select one of the following options and configure the required settings:
   - **Specify server address and port**: Select this option to specify SMTP server address and port.

     After you have configured the SMTP server settings, you can click **Test Connection** to test the connection to the server.
   - **Use MX record lookup**: Select this option to search for the SMTP server based on MX records.
7. Click **Save**.

   After adding an archive server, you can:
   - Click a server name to edit the settings.
   - Select a server and click **Delete** to remove the selected entry.

   Note

   You cannot remove an archive server if it is associated with a policy.

Data Identifiers

Digital assets are files and data that an organization must protect against unauthorized transmission. You can define digital assets using the following data identifiers:

Note

You cannot delete a data identifier that a content filtering rule or DLP template is using. Delete the rule or template before deleting the data identifier.

- **Expressions**: Data that has a certain structure.

  For details, see *Expressions on page 5-59*.

- **File attributes**: File properties such as file type and file size.

  For details, see *File Attributes on page 5-65* .

- **Keyword lists**: A list of special words or phrases.

  For details, see *Keyword Lists on page 5-68*.

Expressions

An expression is data that has a certain structure. For example, credit card numbers typically have 16 digits and appear in the format "nnnn-nnnn-nnnn-nnnn", making them suitable for expression-based detections.

You can use predefined and customized expressions in content filtering and DLP rules.

For more information, see *Predefined Expressions on page 5-59* and *Customized Expressions on page 5-60*.

Predefined Expressions

Data Loss Prevention comes with a set of predefined expressions. These expressions cannot be modified or deleted.

Data Loss Prevention verifies these expressions using pattern matching and mathematical equations. After Data Loss Prevention matches potentially sensitive data with an expression, the data may also undergo additional verification checks.

For a complete list of predefined expressions, see the *Data Protection Lists* document at:

http://docs.trendmicro.com/en-us/enterprise/data-protection-reference-documents.aspx.

Viewing Predefined Expressions

Note

Predefined expressions cannot be modified or deleted.

Procedure

1. Go to **Policies** > **Policy Objects** > **Data Identifiers**.
2. Click the **Expressions** tab.
3. Click the expression name.
4. View the settings on the screen that appears.

Customized Expressions

Create customized expressions if none of the predefined expressions meet the company's requirements.

Expressions are a powerful string-matching tool. Become comfortable with expression syntax before creating expressions. Poorly written expressions can dramatically impact performance.

When creating expressions:

- Refer to the predefined expressions for guidance on how to define valid expressions. For example, when creating an expression that includes a date, refer to the expressions prefixed with "Date".
- Note that Data Loss Prevention follows the expression formats defined in Perl Compatible Regular Expressions (PCRE). For more information on PCRE, visit the following website:

  http://www.pcre.org/

- Start with simple expressions. Modify the expressions if they are causing false alarms or fine tune them to improve detections.

You can choose from several criteria when creating expressions. An expression must satisfy the chosen criteria before Deep Discovery Email Inspector subjects it to a content filtering or DLP policy rule. For details about the different criteria options, see *Criteria for Customized Expressions on page 5-61*.

Criteria for Customized Expressions

TABLE 5-6. Criteria Options for Customized Expressions

CRITERIA	RULE	EXAMPLE
None	None	All - Names from US Census Bureau • Expression: [^\w]([A-Z][a-z]{1,12}(\s?,\s?|[\s]|\s([A-Z])\.\s)[A-Z][a-z]{1,12})[^\w]
Specific characters	An expression must include the characters you have specified. In addition, the number of characters in the expression must be within the minimum and maximum limits.	US - ABA Routing Number • Expression: [^\w\\\/\{\.\-=&";]([0123678]\d{8})[^\w-\}+.;&] • Specific characters: 0123456789 • Minimum characters in the expression: 9 • Maximum characters in the expression: 9

Criteria	Rule	Example
Suffix	Suffix refers to the last segment of an expression. A suffix must include the characters you have specified and contain a certain number of characters. In addition, the number of characters in the expression must be within the minimum and maximum limits.	All - Home Address • Expression: \D(\d+\s[a-z.]+\s([a-z]+\s){0,2} (lane|ln|street|st|avenue|ave|road|rd|place|pl|drive|dr|circle| cr|court|ct|boulevard|blvd)\.? [0-9a-z,#\s\.]{0,30}[\s|,][a-z]{2}\ s\d{5}(-\d{4})?)[^\d-] • Suffix characters: 0123456789- • Number of suffix characters: 5 • Minimum characters in the expression: 25 • Maximum characters in the expression: 80
Single- character separator	An expression must have two segments separated by a character. In addition, the number of characters left of the separator must be within the minimum and maximum limits. The number of characters right of the separator must not exceed the maximum limit.	All - Email Address • Expression: [^\w.]([\w\.]{1,20}@[a-z0-9]{2,20}[\.][a-z]{2,5}[a-z\.]{0,10})[^\w.] • Separator: @ • Minimum characters to the left: 3 • Maximum characters to the left: 15 • Maximum characters to the right: 30

Configuring a Customized Expression

Procedure

1. Go to **Policies** > **Policy Objects** > **Data Identifiers**.
2. Click the **Expressions** tab.
3. Do one of the following:
   - Click **Add** to create a new entry.

- Click an entry to change the settings.

4. Type a name. The name must not exceed 256 characters in length and cannot contain a vertical bar (|).
5. Type a description that does not exceed 512 characters.
6. Type the display data format.
7. Type an example for the display data.

   For example, if you are creating an expression for ID numbers, type a sample ID number. This data is used for reference purposes only and will not appear elsewhere in the product.
8. Choose one of the following criteria and configure additional settings for the chosen criteria (see *Criteria for Customized Expressions on page 5-61*):

   - None
   - Specific characters
   - Suffix
   - Single-character separator
9. Test the expression against an actual data.

   For example, if the expression is for a national ID, type a valid ID number in the **Test data** text box, click **Test**, and then check the result.
10. Click **Save** if you are satisfied with the result.

Note

Save the settings only if the testing was successful. An expression that cannot detect any data wastes system resources and may impact performance.

Importing Expressions

Use this option if you have a properly-formatted XML file containing the expressions. You can generate the file by exporting the expressions from either the Deep Discovery Email Inspector appliance you are currently accessing or from another Deep Discovery Email Inspector appliance.

Procedure

1. Go to **Policies** > **Policy Objects** > **Data Identifiers**.
2. Click the **Expressions** tab.
3. Click **Import** and then locate the XML file containing the expressions.
4. Click **Open**.

   A message appears, informing you that importing expressions overwrites existing customized expressions in Deep Discovery Email Inspector.
5. Click **OK** to start the import process.

Exporting Expressions

You can use the export feature to back up all or selected expressions in an XML file.

Procedure

1. Go to **Policies** > **Policy Objects** > **Data Identifiers**.
2. Click the **Expressions** tab.
3. Do one of the following:
   - Select one or more entries and click **Export** to download the XML file containing the selected entries.

- Click **Export All** to download the XML file containing all entries.

File Attributes

File attributes are specific properties of a file. You can use two file attributes when defining data identifiers, namely, file type and file size. For example, a software development company may want to limit the sharing of the company's software installer to the R&D department, whose members are responsible for the development and testing of the software. In this case, the Deep Discovery Email Inspector administrator can create a policy that blocks the transmission of executable files that are 10 to 40 MB in size to all departments except R&D.

By themselves, file attributes are poor identifiers of sensitive files. Continuing the example in this topic, third-party software installers shared by other departments will most likely be blocked. Trend Micro therefore recommends combining file attributes with other DLP data identifiers for a more targeted detection of sensitive files.

For a complete list of supported file types, see the *Data Protection Lists* document at http://docs.trendmicro.com/en-us/enterprise/data-protection-reference-documents.aspx.

Predefined File Attributes List

Data Loss Prevention comes with a predefined file attributes list. This list cannot be modified or deleted. The list has its own built-in conditions that determine if the template should trigger a policy violation.

Configuring File Attributes

Procedure

1. Go to **Policies** > **Policy Objects** > **Data Identifiers**.
2. Click the **File Attributes** tab.

3. Do one of the following:
   - Click **Add** to create a new entry.
   - Click an entry to change the settings.
4. Type a name. The name must not exceed 256 characters in length and cannot contain a vertical bar (|).
5. Type a description that does not exceed 512 characters.
6. Select an option for attachment file type matching:
   - **Selected attachment types**: Deep Discovery Email Inspector takes action on messages with attachments of the selected file types.
   - **Not the selected attachment types**: Deep Discovery Email Inspector takes action on messages with attachments that are not of the selected file types.

   Note

   If an attachment is an archive file containing file types that match any of the selected options, Deep Discovery Email Inspector also takes action on the messages.
7. Select your preferred true file types.
8. If a file type you want to include is not listed, select **Custom file extensions** and then type the file type's extension. Deep Discovery Email Inspector checks files with the specified extension but does not check their true file types. Guidelines when specifying file extensions:
   - Each extension must start with an asterisk (*), followed by a period (.), and then the extension. The asterisk is a wildcard, which represents a file's actual name. For example, `*.pol` matches `12345.pol` and `test.pol`.
   - You can include wildcards in extensions. Use a question mark (?) to represent a single character and an asterisk (*) to represent two or more characters. See the following examples:

     - `*.*m` matches the following files: `ABC.dem`, `ABC.prm`, `ABC.sdcm`

- `*.m*r` matches the following files: `ABC.mgdr`, `ABC.mtp2r`, `ABC.mdmr`

- `*.fm?` matches the following files: `ABC.fme`, `ABC.fml`, `ABC.fmp`

- Be careful when adding an asterisk at the end of an extension as this might match parts of a file name and an unrelated extension. For example: `*.do*` matches `abc.doctor_john.jpg` and `abc.donor12.pdf`.

9. Type the minimum and maximum file sizes and select the unit size. Both file sizes must be whole numbers larger than zero.

Note

To disable file size matching, type "0" in the fields.

10. Click **Save**.

Importing File Attributes

Use this option if you have a properly-formatted XML file containing the file attributes. You can generate the file by exporting the file attributes from either the Deep Discovery Email Inspector appliance you are currently accessing or from another Deep Discovery Email Inspector appliance.

Procedure

1. Go to **Policies** > **Policy Objects** > **Data Identifiers**.
2. Click the **File Attributes** tab.
3. Click **Import** and then locate the XML file containing the file attributes.
4. Click **Open**.

   A message appears, informing you that importing file attributes overwrites existing customized file attributes in Deep Discovery Email Inspector.

5. Click **OK** to start the import process.

Exporting File Attributes

You can use the export feature to back up all or selected file attributes in an XML file.

Procedure

1. Go to **Policies** > **Policy Objects** > **Data Identifiers**.
2. Click the **File Attributes** tab.
3. Do one of the following:
   - Select one or more entries and click **Export** to download the XML file containing the selected entries.
   - Click **Export All** to download the XML file containing all entries.

Keyword Lists

Keywords are special words or phrases. You can add related keywords to a keyword list to identify specific types of data. For example, "prognosis", "blood type", "vaccination", and "physician" are keywords that may appear in a medical certificate. If you want to prevent the transmission of medical certificate files, you can use these keywords in a content filtering or DLP rule and then configure Deep Discovery Email Inspector to block files containing these keywords.

Commonly used words can be combined to form meaningful keywords. For example, "end", "read", "if", and "at" can be combined to form keywords found in source codes, such as "END-IF", "END-READ", and "AT END".

You can use predefined and customized keyword lists. For details, see *Predefined Keyword Lists on page 5-69* and *Customized Keyword Lists on page 5-69*.

Predefined Keyword Lists

Data Loss Prevention comes with a set of predefined keyword lists. These keyword lists cannot be modified or deleted. Each list has its own built-in conditions that determine if the template should trigger a policy violation.

For details about the predefined keyword lists in Data Loss Prevention, see the *Data Protection Lists* document at http://docs.trendmicro.com/en-us/enterprise/data-protection-reference-documents.aspx.

Customized Keyword Lists

Create customized keyword lists if none of the predefined keyword lists meet your requirements.

There are several criteria that you can choose from when configuring a keyword list. A keyword list must satisfy your chosen criteria before Data Loss Prevention subjects it to a policy. Choose one of the following criteria for each keyword list:

- **Any keyword**
- **All keywords**
- **All keywords within <x> characters**
- **Combined score for keywords exceeds threshold**

For details regarding the criteria rules, see *Criteria for Customized Keyword Lists on page 5-69*.

Criteria for Customized Keyword Lists

TABLE 5-7. Criteria for a Keyword List

CRITERIA	RULE
Any keyword	A file must contain at least one keyword in the keyword list.
All keywords	A file must contain all the keywords in the keyword list.

Criteria	Rule
All keywords within <x> characters	A file must contain all the keywords in the keyword list. In addition, each keyword pair must be within <x> characters of each other. For example, your 3 keywords are WEB, DISK, and USB, and the number of characters you specified is 20. If Deep Discovery Email Inspector detects all keywords in the order DISK, WEB, and USB, the number of characters from the “D” (in DISK) to the “W” (in WEB), from the “W” to the “U” (in USB), and from the "D" to the "U" must be 20 characters or less. The following data matches the criteria: DISK####WEB#########USB The following data do not match the criteria: DISK####WEB############USB (23 characters between “D” and “U”) DISK******************WEB****USB (23 characters between “D” and “W”) When deciding on the number of characters, remember that a small number, such as 10, will usually result in a shorter scanning time but will only cover a relatively small area. This may reduce the likelihood of detecting sensitive data, especially in large files. As the number increases, the area covered also increases but the scanning time might be longer.
Combined score for keywords exceeds threshold	A file must contain one or more keywords in the keyword list. If only one keyword was detected, its score must be higher than the threshold. If there are several keywords, their combined score must be higher than the threshold. Assign each keyword a score of 1 to 10. A highly confidential word or phrase, such as "salary increase" for the Human Resources department, should have a relatively high score. Words or phrases that, by themselves, do not carry much weight can have lower scores. Consider the scores that you assigned to the keywords when configuring the threshold. For example, if you have five keywords and three of those keywords are high priority, the threshold can be equal to or lower than the combined score of the three high priority keywords. This means that the detection of these three keywords is enough to treat the file as sensitive.

Configuring a Keyword List

Procedure

1. Go to **Policies** > **Policy Objects** > **Data Identifiers**.
2. Click the **Keyword Lists** tab.
3. Do one of the following:
   - Click **Add** to create a new entry.
   - Click an entry to change the settings.
4. Type a name. The name must not exceed 256 characters in length and cannot contain a vertical bar (|).
5. Type a description that does not exceed 512 characters.
6. Choose one of the following criteria and configure additional settings for the chosen criteria:
   - **Any keyword**
   - **All keywords**
   - **All keywords within <x> characters**
   - **Combined score for keywords exceeds threshold**
7. To manually add keywords to the list:
   a. Type a keyword that contains 3 bytes to 40 characters and specify whether it is case-sensitive.

      For example, you can specify two double-byte characters as a keyword.

   b. Click **Add**.
8. To delete keywords, select the keywords and click **Delete**.
9. Click **Save**.

Importing Keyword Lists

Use this option if you have a properly-formatted XML file containing the keyword lists. You can generate the file by exporting the keyword lists from either the Deep Discovery Email Inspector appliance you are currently accessing or from another Deep Discovery Email Inspector appliance.

Procedure

1. Go to **Policies** > **Policy Objects** > **Data Identifiers**.
2. Click the **Keyword Lists** tab.
3. Click **Import** and then locate the XML file containing the keyword lists.
4. Click **Open**.

   A message appears, informing you that importing keyword lists overwrites existing customized keyword lists in Deep Discovery Email Inspector.
5. Click **OK** to start the import process.

Exporting Keyword Lists

You can use the export feature to back up all or selected keyword lists in an XML file.

Procedure

1. Go to **Policies** > **Policy Objects** > **Data Identifiers**.
2. Click the **Keyword Lists** tab.
3. Do one of the following:
   - Select one or more entries and click **Export** to download the XML file containing the selected entries.

- Click **Export All** to download the XML file containing all entries.

Data Loss Prevention (DLP) Templates

A Data Loss Prevention (DLP) template combines DLP data identifiers and logical operators (And, Or, Except) to form condition statements. Only files or data that satisfy a certain condition statement will be subject to a DLP policy.

For example, a file must be a Microsoft Word file (file attribute) AND must contain certain legal terms (keywords) AND must contain ID numbers (expressions) for it to be subject to the "Employment Contracts" policy. This policy allows Human Resources personnel to send the file to recipients within a domain. Sending the same file to recipients outside the domain is blocked.

You can create your own templates if you have configured data identifiers.

You can also use predefined templates. For details, see *Customized DLP Templates on page 5-74* and *Predefined DLP Templates on page 5-73*.

Note

It is not possible to delete a template that is being used in a DLP policy. Remove the template from the policy before deleting it.

Predefined DLP Templates

Data Loss Prevention comes with the following set of predefined templates that you can use to comply with various regulatory standards. These templates cannot be modified or deleted.

- **GLBA**: Gramm-Leach-Billey Act
- **HIPAA**: Health Insurance Portability and Accountability Act
- **PCI-DSS**: Payment Card Industry Data Security Standard

- **SB-1386**: US Senate Bill 1386
- **US PII**: United States Personally Identifiable Information

For a detailed list on the purposes of all predefined templates, and examples of data being protected, see the *Data Protection Lists* document at http://docs.trendmicro.com/en-us/enterprise/data-protection-reference-documents.aspx.

Customized DLP Templates

Create your own templates if you have configured data identifiers. A template combines data identifiers and logical operators (And, Or, Except) to form condition statements.

For more information and examples on how condition statements and logical operators work, see *Condition Statements and Logical Operators on page 5-74*.

Condition Statements and Logical Operators

Data Loss Prevention evaluates condition statements from left to right. Use logical operators carefully when configuring condition statements. Incorrect usage leads to an erroneous condition statement that will likely produce unexpected results.

See the examples in the following table.

TABLE 5-8. Sample Condition Statements

CONDITION STATEMENT	INTERPRETATION AND EXAMPLE
[Data Identifier1] **And** [Data Identifier 2] **Except** [Data Identifier 3]	A file must satisfy [Data Identifier 1] and [Data Identifier 2] but not [Data Identifier 3]. For example: A file must be [an Adobe PDF document] and must contain [an email address] but should not contain [all of the keywords in the keyword list].

Condition Statement	Interpretation and Example
[Data Identifier 1] **Or** [Data Identifier 2]	A file must satisfy [Data Identifier 1] or [Data Identifier 2]. For example: A file must be [an Adobe PDF document] or [a Microsoft Word document].
Except [Data Identifier 1]	A file must not satisfy [Data Identifier 1]. For example: A file must not be [a multimedia file].

As the last example in the table illustrates, the first data identifier in the condition statement can have the "Except" operator if a file must not satisfy all of the data identifiers in the statement. In most cases, however, the first data identifier does not have an operator.

Creating a DLP Template

Procedure

1. Go to **Policies** > **Policy Objects** > **DLP Templates**.
2. Do one of the following:
   - Click **Add** to create a new entry.
   - Click an entry to change the settings.
3. Type a name. The name must not exceed 256 characters in length and cannot contain a vertical bar (|).
4. Type a description that does not exceed 512 characters.
5. Under **Condition Statement**, do the following to create a condition statement:
   a. Select a logical operator.

Note

Use logical operators carefully when configuring condition statements. Incorrect usage leads to an erroneous condition statement that will likely produce unexpected results. For examples of correct usage, see *Condition Statements and Logical Operators on page 5-74*.

b. Select a data identifier type.

c. Select a data identifier.

Tip

To search for a data identifier, type the full or partial name of the data identifier.

d. For expressions, specify the number of occurrences.

e. To add additional conditions, click the add icon ().

To remove a condition from the statement, click the delete icon ().

f. Click **Add** to add the condition statement to the **Template Definition** table.

6. Under **Template Definition**, select a logical operator for each definition.

Note

Use logical operators carefully when configuring condition statements. Incorrect usage leads to an erroneous condition statement that will likely produce unexpected results. For examples of correct usage, see *Condition Statements and Logical Operators on page 5-74*.

7. To delete a definition from the template, click the trash bin icon.

8. Click **Save**.

Importing DLP Templates

Use this option if you have a properly-formatted XML file containing the DLP templates. You can generate the file by exporting DLP templates from either the Deep Discovery Email Inspector appliance you are currently accessing or from another Deep Discovery Email Inspector appliance.

Note

Importing DLP templates overwrites existing customized DLP templates in Deep Discovery Email Inspector.

Procedure

1. Go to **Policies** > **Policy Objects** > **DLP Templates**.
2. Click **Import** and then locate the XML file containing the DLP templates and the associated data identifiers.
3. Click **Open**.

   A confirmation screen appears.
4. Click **Import** to start the import process.

Exporting DLP Templates

You can use the export feature to back up all or selected data loss prevention (DLP) templates in an XML file.

Procedure

1. Go to **Policies** > **Policy Objects** > **DLP Templates**.
2. Do one of the following:
   - Select one or more entries and click **Export** to download the XML file containing the selected DLP templates and the associated data identifiers.

- Click **Export All** to download the XML file containing all DLP templates and data identifiers (even if a data identifier is not used in a DLP template).

Policy Exceptions

Policy exceptions reduce false positives. Configure exceptions to set the limits and actions for email encryption, or classify certain email messages as safe. Specify the safe senders, recipients, and X-header content, add files, URLs, IP addresses and domains, add URL keywords, or specify senders to bypass graymail scanning. Safe email messages are discarded (BCC and SPAN/TAP mode) or delivered to the recipient (MTA mode) without further investigation.

Configuring Message Exceptions

Deep Discovery Email Inspector considers messages with any of the specified senders, recipients, or X-headers in the exception list safe and bypasses policy rules on these messages. However, Deep Discovery Email Inspector still applies sender filtering and sender authentication settings on these messages.

Procedure

1. Go to **Policies** > **Exceptions** > **Messages**.
2. Specify email message exception criteria.
   - **Senders**
   - **Recipients**
   - **X-header**

Note

Deep Discovery Email Inspector ignores case-sensitivity for X-header exceptions.

Deep Discovery Email Inspector supports the use of the wildcard asterisk (*) character to specify an entire domain. For example, to create a **Senders** exception for the domain `abc.com`, type the following:

```
*@abc.com
```

3. Click **Save**.

Managing Object Exceptions

Perform any of the following tasks to manage object exceptions.

Procedure

- Specify search filters to control the display and to view existing exceptions.

  The following table describes the **Source** filter options.

Option	Description
All	Displays all object exceptions.
Local	Displays object exceptions that are added manually on Deep Discovery Email Inspector.
Apex Central	Displays object exceptions that are synchronized from Apex Central.
Web service	Displays object exceptions that are imported through the HTTP web service.
Deep Discovery Director	Displays object exceptions that are synchronized from Deep Discovery Director.

Note

- If Deep Discovery Email Inspector is registered to Apex Central, Deep Discovery Email Inspector synchronizes object exceptions from Apex Central every 10 minutes.
- If Deep Discovery Email Inspector is registered to both Apex Central and Deep Discovery Director 3.0 (or later), Deep Discovery Email Inspector synchronizes object exceptions from Deep Discovery Director and overwrites existing object exceptions from Apex Central.

- Modify the objects considered safe.

  The following table describes the actions on object exceptions.

Action	Description
Add	Add a new object to the exceptions list. Optionally include a note to help you better understand the object exception. For more information, see *Adding an Object Exception on page 5-81*.

Action	Description
Import	Select the CSV file to import. The format for each line is: <type>,<object>,[source],[notes] • <type> values: IP address, Domain, URL, Files • <object> values: IP address, domain, URL, or SHA-1 hash value • (Optional) [source] value: "local" • (Optional) [notes]: Any additional information in any format Valid CSV examples: • Links,www.example.com,local,customer can view this site • IP address,10.10.10.10,,HR address • Files,3395856CE81F2B7382DEE72602F798B642F14140,local,SHA-1 of CA certificate • Domain,example.com,,Added For more information, see *Importing Object Exceptions on page 5-83*.
Delete	Delete the selected objects.
Delete All	Delete all objects.
Export	Export the selected objects.
Export All	Export the entire exceptions list to a CSV file.

Adding an Object Exception

Deep Discovery Email Inspector passes email messages containing only safe files, URLs, IP addresses, and domains without further investigation. If an email message contains one safe URL and another unknown URL, Deep

Discovery Email Inspector investigates the unknown URL. Virtual Analyzer also ignores safe files and URLs during sandbox analysis.

Procedure

1. Go to **Policies** > **Exceptions** > **Objects**.
2. Click **Add**.
3. Specify file, URL, IP address, or domain exception criteria.
   - For files, select **File** for the type and then specify the SHA-1 hash value.

     Note

     Threat Connect correlates suspicious objects detected in your environment and threat data from the Trend Micro Smart Protection Network to provide relevant and actionable intelligence.
   - For URLs, select **URL** for the type and then specify the web address.

     Note

     Specify a complete URL or use a wildcard (*) for subdomains.
   - For IP addresses, select **IP address** for the type and then specify the web address.
   - For domains, select **Domain** for the type and then specify the web address.
4. (Optional) Specify a note.
5. (Optional) Click **Add More** to specify multiple file, URL, IP address, or domain exception criteria at the same time.
   a. Specify file, URL, IP address, or domain exception criteria.
   b. Click **Add to List**. The criterion is added to the object list.

6. Click **Save**.

   After adding an object exception:

   - Click **Delete** to delete the selected entry.
   - Click **Delete All** to delete all entries in the list.
   - Click **Export** to download the selected entry as a CSV file.
   - Click **Export All** to download list as a CSV file.

Importing Object Exceptions

You can import exceptions from a properly-formatted CSV file.

Procedure

1. Go to **Policies** > **Exceptions** > **Objects**.
2. Click **Import**.
3. Do one of the following:

   - If you are importing exceptions for the first time, click **Download sample CSV**, save and populate the CSV file with objects (see the instructions in the CSV file), browse and then select the CSV file.
   - If you have imported exceptions previously, save another copy of the CSV file, populate it with new objects, browse and then select the CSV file.

4. Click **Import**.

   The imported exceptions display in the list with **Web service** as the source.

Configuring URL Keyword Exceptions

URLs that contain any of the specified keywords are considered one-click URLs and will not be accessed by Deep Discovery Email Inspector.

Note

- Detected one-click URLs are scanned by Web Reputation Services. Deep Discovery Email Inspector does not submit these URLs to Virtual Analyzer for analysis.
- You can add URLs to the exception list on the **Objects** tab.

  For more information, see *Adding an Object Exception on page 5-81*

Procedure

1. Go to **Policies** > **Exceptions** > **URL Keywords**.
2. Specify URL keywords.

   Note

   - URL keywords are not case sensitive.
   - Specify one keyword per line.
3. Click **Save**.

Graymail Exceptions

Graymail refers to solicited bulk email messages that are not spam. Deep Discovery Email Inspector can detect marketing messages and newsletters and social network notifications as graymail based on policy rules.

Email messages from IP addresses or subnets in the Graymail Exceptions list bypass graymail scanning in Deep Discovery Email Inspector.

Adding a Graymail Exception

Deep Discovery Email Inspector bypasses graymail scanning on email messages from IP addresses and subnets that you add to the Graymail Exceptions list.

Procedure

1. Go to **Policies** > **Exceptions** > **Graymail Exceptions**.
2. Click **Add**.

   The **Add Graymail Exception** screen appears.
3. Type an IPv4/IPv6 address or subnet.
4. Type a description for the exception.
5. (Optional) To add more entries, click **Add More** and do the following:

   To delete an entry from the list, click the icon ( ) in the **Action** column.
6. Click **Save**.

   After adding a graymail exception:

   - Click **Delete All** to delete all entries in the list.
   - Click **Export All** to download list as a CSV file.
   - To remove one or more entries, select the entries and click **Delete**.
   - To export one or more entries as a CSV file, select the entries and click **Export**.

Importing Graymail Exceptions

You can import graymail exceptions from a properly-formatted CSV file.

Procedure

1. Go to **Policies** > **Exceptions** > **Graymail Exceptions**.
2. Click **Import**.

   A file selection screen appears.
3. Select a CSV file.
4. Click **Open** to import the CSV file.

   After importing graymail exceptions:

   - Click **Delete All** to delete all entries in the list.
   - Click **Export All** to download list as a CSV file.

Configuring Email Encryption Exceptions

Deep Discovery Email Inspector does not encrypt or decrypt messages that meet the thresholds or conditions you specify on the **Email Encryption Exceptions** screen.

Procedure

1. Go to **Policies** > **Exceptions** > **Email Encryption Exceptions**.
2. Under **Scanning Criteria**, configure the limits for encrypted and decrypted messages that Deep Discovery Email Inspector processes.

Field	Description
Maximum encrypted message size	Specify the maximum size for encrypted messages **Note** This setting applies to both inbound and outbound messages. When a message meets the maximum threshold, Deep Discovery Email Inspector applies the specified actions on the message.
Maximum decrypted message size	Specify the maximum size for decrypted messages **Note** This setting applies to both inbound and outbound messages. When a message meets the maximum threshold, Deep Discovery Email Inspector applies the specified actions on the message.
Maximum recipients	Specify the maximum number of recipients in messages **Note** This setting applies to both inbound and outbound messages. When a message meets the maximum threshold, Deep Discovery Email Inspector applies the specified actions on the message.
Unsuccessful encryption for outbound messages	Select this option to apply the action specifed under **Actions** on outbound messages that Deep Discovery Email Inspector cannot encrypt.
Unsuccessful decryption for outbound messages	Select this option to apply the action specifed under **Actions** on outbound messages that Deep Discovery Email Inspector cannot decrypt.

3. Under **Actions**, configure the actions to apply on messages that reach the specified thresholds and outbound messages that Deep Discovery Email Inspector cannot encrypt or decrypt.

Field	Description
Action	Select one of the following actions to apply to messages: • **Delete message**: Deletes the email message from the mail queue • **Block and quarantine**: Stores a copy in the quarantine area • **Pass and tag**: If configured, tags the email message subject and inserts the X-header before delivery
Subject tag	If you select the **Pass and tag** action, specify the string to insert in the subject of messages.
X-Header	If you select the **Pass and tag** action, specify the text to add to the X-header.

4. Click **Save**.

Chapter 6

Alerts and Reports

Topics include:

Alerts

Alerts provide immediate intelligence about the state of Deep Discovery Email Inspector. Alerts are classified into three categories:

- Critical alerts are triggered by events that require immediate attention
- Important alerts are triggered by events that require observation
- Informational alerts are triggered by events that require limited observation (most likely benign)

The threshold to trigger each alert is configurable.

Note

For information about available message tokens in alert notifications, see *Alert Notification Message Tokens on page C-3*.

Critical Alerts

The following table explains the critical alerts triggered by events requiring immediate attention. Deep Discovery Email Inspector considers malfunctioning sandboxes, stopped services, unreachable relay MTAs, and license expiration as critical problems.

TABLE 6-1. Critical Alerts

NAME	CRITERIA (DEFAULT)	CHECKING INTERVAL (DEFAULT)
Virtual Analyzer Stopped	Virtual analyzer is unable to recover **Note** This alert is only available when using a local Virtual Analyzer.	Immediate

Name	Criteria (Default)	Checking Interval (Default)
Service Stopped	A service has stopped and cannot be restarted	Immediate
Relay MTAs Unreachable	All relay MTAs for a domain are unreachable	Once every 5 minutes
License Expiration	License is about to expire or has expired	Immediate

Important Alerts

The following table explains the important alerts triggered by events that require observation. Deep Discovery Email Inspector considers traffic surges, suspicious message detections, hardware capacity changes, certain sandbox queue activity, and component update issues as important events.

Table 6-2. Important Alerts

Name	Criteria (Default)	Checking Interval (Default)
Suspicious Messages Identified	1 or more messages detected with threats	Once every 5 minutes
Watchlisted Recipients at Risk	1 or more messages detected with threats sent to watchlist recipients	Once every 5 minutes
Quarantined Messages with Detected Threats	At least 10 messages quarantined	Once every 30 minutes
Long Message Delivery Queue	At least 500 messages in delivery queue	Once every 5 minutes
High CPU Usage	CPU usage is at least 90%	Once every 5 minutes

Name	Criteria (Default)	Checking Interval (Default)
Long Virtual Analyzer Submission Queue	At least 20 messages in queue for Virtual Analyzer submission with a wait time of 5 minutes	Immediate
Long Virtual Analyzer Processing Time	Average Virtual Analyzer processing time is greater than 15 minutes	Once every hour
Low Free Disk Space	Disk space is 5GB or less	Once every 30 minutes
Component Update/Rollback Unsuccessful	An update/rollback was not successful	Immediate
Email Messages Timed Out Without Analysis Results	At least 1 email message timed out without analysis results	Once every 5 minutes
Email Message Encryption/ Decryption Unsuccessful	At least 1 message with unsuccessful encryption or decryption	Once every 5 minutes
Low Free Threat Quarantine Disk Space	Free quarantine disk space left to store messages with detected threats is 10% or less	Once every 30 minutes
High Memory Usage	Memory usage is at least 90%	Once every 5 minutes
Long Message Deferred Queue	At least 100 messages in deferred queue	Once every 5 minutes
Low Free Spam Quarantine Disk Space	Free quarantine disk space left to store spam messages is 10% or less	Once every 30 minutes
Account Locked	One or more accounts have been locked	Immediate
Unsuccessful DKIM Signing	At least 5 messages with unsuccessful DKIM signing	Once every 5 minutes

Name	Criteria (Default)	Checking Interval (Default)
Connection Issue	Unable to establish connection to a required resource	Once every 30 minutes

Informational Alerts

The following table explains the alerts triggered by events that require limited observation. Surges in detection and processing, and completed updates are most likely benign events.

Table 6-3. Informational Alerts

Name	Criteria (Default)	Checking Interval (Default)
Threat Detection Surge	At least 10 messages detected	Once every hour
Processing Surge	At least 20,000 messages processed	Once every hour
Component Update/Rollback Successful	An update/rollback was successfully completed	Immediate
Data Loss Prevention Incident	At least 10 messages with DLP rule violations	Once every hour

Configuring Alert Notifications

Add at least one notification recipient for all critical and important alerts.

Note

Configure the SMTP server to send notifications. For details, see *Configuring the Notification SMTP Server on page 8-175*.

Procedure

1. Go to **Alerts / Reports** > **Alerts** > **Rules**.
2. Click the name of an alert under the **Rule** column.

   The alert rule configuration screen appears.
3. Configure the alert parameters.

   For details, see *Alert Notification Parameters on page 6-7*.
4. Click **Save**.
5. Click **Back** to return to the **Alert Rules** screen.

Viewing Triggered Alerts

Procedure

1. Go to **Alerts / Reports** > **Alerts** > **Triggered Alerts** .
2. Specify the search criteria.
   - **Level**
   - **Type**
   - **Rule Name**
   - **Period**
3. View alert details.

Header	Description
Triggered	The date and time when the alert occurred
Level	The importance of the alert: critical, important, or informational
Rule	The name of the alert rule

Header	Description
Criteria	The alert rule criteria that triggered the alert
Count	The number or duration of triggered alert occurrences. Click a number to display related log entries.
Notification Recipients	The most recent alert notification recipients
Notification Subject	The most recent alert notification subject

Managing Alerts

Perform any of the following tasks to manage alerts.

Procedure

- Specify search filters to control the display and view existing exceptions.
- Export or purge triggered alerts after review.

Option	Description
 Delete	Delete the selected alerts.
 Export All	Export up to 50000 alerts to a CSV file.

Alert Notification Parameters

All triggered alert rules can notify recipients with a custom email message. Some alerts have additional parameters, including message count, checking interval, or risk level.

Critical Alert Parameters

Note

For explanations about available message tokens in each alert, see *Alert Notification Message Tokens on page C-3*.

TABLE 6-4. Virtual Analyzer Stopped

PARAMETER	DESCRIPTION
Status	Select an option to enable or disable the alert.
Alert level	Displays the alert level in email messages.
Recipients	Specify the recipients who will receive the triggered alert email message.
Subject	Specify the subject of the triggered alert email message.
Message	Specify the body of the triggered alert email message. Use the following tokens to customize your message: • `%ConsoleURL%` • `%DateTime%` • `%DeviceIP%` • `%DeviceName%`

TABLE 6-5. Service Stopped

PARAMETER	DESCRIPTION
Status	Select an option to enable or disable the alert.
Alert level	Displays the alert level in email messages.
Recipients	Specify the recipients who will receive the triggered alert email message.
Subject	Specify the subject of the triggered alert email message.

Parameter	Description
Message	Specify the body of the triggered alert email message. Use the following tokens to customize your message: • %ConsoleURL% • %DateTime% • %DeviceIP% • %DeviceName% • %ServiceName%

Table 6-6. Relay MTAs Unreachable

Parameter	Description
Status	Select an option to enable or disable the alert.
Alert level	Displays the alert level in email messages.
Recipients	Specify the recipients who will receive the triggered alert email message.
Subject	Specify the subject of the triggered alert email message.
Message	Specify the body of the triggered alert email message. Use the following tokens to customize your message: • %ConsoleURL% • %DateTime% • %DeviceName% • %DeviceIP% • %MessageList% • %MTAList%

TABLE 6-7. License Expiration

PARAMETER	DESCRIPTION
Status	Select an option to enable or disable the alert.
Alert level	Displays the alert level in email messages.
Recipients	Specify the recipients who will receive the triggered alert email message.
Subject	Specify the subject of the triggered alert email message.
Message	Specify the body of the triggered alert email message. Use the following tokens to customize your message: • %ConsoleURL% • %DateTime% • %DaysBeforeExpirationATD% • %DaysBeforeExpirationSEG% • %DeviceName% • %DeviceIP% • %ExpirationDateATD% • %ExpirationDateSEG% • %LicenseStatusATD% • %LicenseStatusSEG% • %LicenseTypeATD% • %LicenseTypeSEG%

Important Alert Parameters

Note

For explanations about available message tokens in each alert, see *Alert Notification Message Tokens on page C-3*.

TABLE 6-8. Suspicious Messages Identified

PARAMETER	DESCRIPTION
Status	Select an option to enable or disable the alert.
Alert level	Displays the alert level in email messages.
Email messages	Specify the email message threshold that will trigger the alert.
Risk level	Select the risk level that will trigger the alert.
Alert frequency	View the time interval that Deep Discovery Email Inspector checks for the alert rule criteria.
Recipients	Specify the recipients who will receive the triggered alert email message.
Subject	Specify the subject of the triggered alert email message.
Message	Specify the body of the triggered alert email message. Use the following tokens to customize your message: • `%ConsoleURL%` • `%DateTime%` • `%DeviceIP%` • `%DeviceName%` • `%MessageList%`

TABLE 6-9. Watchlisted Recipients at Risk

PARAMETER	DESCRIPTION
Status	Select an option to enable or disable the alert.
Alert level	Displays the alert level in email messages.
Recipient watchlist	Add recipients to the watchlist. The alert triggers when any watchlist recipient receives a suspicious or malicious email message.
Email messages	Specify the email message threshold that will trigger the alert.
Risk level	Select the risk level that will trigger the alert.

Parameter	Description
Alert frequency	View the time interval that Deep Discovery Email Inspector checks for the alert rule criteria.
Recipients	Specify the recipients who will receive the triggered alert email message.
Subject	Specify the subject of the triggered alert email message.
Message	Specify the body of the triggered alert email message. Use the following tokens to customize your message: • %ConsoleURL% • %DateTime% • %DeviceIP% • %DeviceName% • %MessageList%

Table 6-10. Quarantined Messages with Detected Threats

Parameter	Description
Status	Select an option to enable or disable the alert.
Alert level	Displays the alert level in email messages.
Quarantined messages	Specify the quarantine message threshold that will trigger the alert.
Risk level	Select the risk level that will trigger the alert.
Alert frequency	View the time interval that Deep Discovery Email Inspector checks for the alert rule criteria.
Recipients	Specify the recipients who will receive the triggered alert email message.
Subject	Specify the subject of the triggered alert email message.

Parameter	Description
Message	Use the following tokens to customize your message: • %MessageList% • %DateTime% • %DeviceName% • %DeviceIP% • %ConsoleURL%

Table 6-11. Long Message Delivery Queue

Parameter	Description
Status	Select an option to enable or disable the alert.
Alert level	Displays the alert level in email messages.
Email messages	Specify the email message threshold that will trigger the alert.
Alert frequency	View the time interval that Deep Discovery Email Inspector checks for the alert rule criteria.
Recipients	Specify the recipients who will receive the triggered alert email message.
Subject	Specify the subject of the triggered alert email message.
Message	Specify the body of the triggered alert email message. Use the following tokens to customize your message: • %ConsoleURL% • %DateTime% • %DeliveryQueue% • %DeviceIP% • %DeviceName% • %QueueThreshold%

TABLE 6-12. High CPU Usage

PARAMETER	DESCRIPTION
Status	Select an option to enable or disable the alert.
Alert level	Displays the alert level in email messages.
Average CPU usage	Specify the threshold for the average CPU usage that will trigger the alert.
Alert frequency	View the time interval that Deep Discovery Email Inspector checks for the alert rule criteria.
Recipients	Specify the recipients who will receive the triggered alert email message.
Subject	Specify the subject of the triggered alert email message.
Message	Specify the body of the triggered alert email message. Use the following tokens to customize your message: • `%ConsoleURL%` • `%CPUThreshold%` • `%CPUUsage%` • `%DateTime%` • `%DeviceIP%` • `%DeviceName%`

TABLE 6-13. Long Virtual Analyzer Submission Queue

PARAMETER	DESCRIPTION
Status	Select an option to enable or disable the alert.
Alert level	Displays the alert level in email messages.
Submissions	Select email message threshold that will trigger the alert.
Alert frequency	View the time interval that Deep Discovery Email Inspector checks for the alert rule criteria.

Parameter	Description
Average wait time	Select the average wait time threshold for samples waiting in the submission queue during the past hour that will trigger the alert.
Recipients	Specify the recipients who will receive the triggered alert email message.
Subject	Specify the subject of the triggered alert email message.
Message	Specify the body of the triggered alert email message. Use the following tokens to customize your message: • %ConsoleURL% • %DeviceIP% • %DeviceName% • %DateTime% • %SandboxQueue% • %SandboxQueueThreshold%

Table 6-14. Long Virtual Analyzer Processing Time

Parameter	Description
Status	Select an option to enable or disable the alert.
Alert level	Displays the alert level in email messages.
Average processing time	Select the average time threshold required to process samples in the sandbox queue during the past hour that will trigger the alert.
Alert frequency	View the time interval that Deep Discovery Email Inspector checks for the alert rule criteria.
Recipients	Specify the recipients who will receive the triggered alert email message.
Subject	Specify the subject of the triggered alert email message.

PARAMETER	DESCRIPTION
Message	Specify the body of the triggered alert email message. Use the following tokens to customize your message: • %ConsoleURL% • %AveSandboxProc% • %DateTime% • %DeviceIP% • %DeviceName% • %SandboxProcThreshold%

TABLE 6-15. Low Free Disk Space

PARAMETER	DESCRIPTION
Status	Select an option to enable or disable the alert.
Alert level	Displays the alert level in email messages.
Free Disk space	The lowest disk space threshold in GB that triggers the alert.
Alert frequency	View the time interval that Deep Discovery Email Inspector checks for the alert rule criteria.
Recipients	Specify the recipients who will receive the triggered alert email message.
Subject	Specify the subject of the triggered alert email message.
Message	Specify the body of the triggered alert email message. Use the following tokens to customize your message: • %ConsoleURL% • %DateTime% • %DeviceIP% • %DeviceName% • %DiskSpace%

TABLE 6-16. Component Update/Rollback Unsuccessful

PARAMETER	DESCRIPTION
Status	Select an option to enable or disable the alert.
Alert level	Displays the alert level in email messages.
Recipients	Specify the recipients who will receive the triggered alert email message.
Subject	Specify the subject of the triggered alert email message.
Message	Specify the body of the triggered alert email message. Use the following tokens to customize your message: • `%ConsoleURL%` • `%ComponentList%` • `%DateTime%` • `%DeviceIP%` • `%DeviceName%`

TABLE 6-17. Email Messages Timed Out Without Analysis Results

PARAMETER	DESCRIPTION
Status	Select an option to enable or disable the alert.
Alert level	Displays the alert level in email messages.
Email messages	Specify the email message threshold that will trigger the alert.
Alert frequency	View the time interval that Deep Discovery Email Inspector checks for the alert rule criteria.
Recipients	Specify the recipients who will receive the triggered alert email message.
Subject	Specify the subject of the triggered alert email message.

Parameter	Description
Message	Specify the body of the triggered alert email message. Use the following tokens to customize your message: • %MessageList% • %DateTime% • %DeviceName% • %DeviceIP% • %ConsoleURL%

Table 6-18. Email Message Encryption/Decryption Unsuccessful

Parameter	Description
Status	Select an option to enable or disable the alert.
Alert level	Displays the alert level in email messages.
Email messages	Specify the email message threshold that will trigger the alert.
Alert frequency	View the time interval that Deep Discovery Email Inspector checks for the alert rule criteria.
Recipients	Specify the recipients who will receive the triggered alert email message.
Subject	Specify the subject of the triggered alert email message.
Message	Specify the body of the triggered alert email message. Use the following tokens to customize your message: • %MessageList% • %DateTime% • %DeviceName% • %DeviceIP% • %ConsoleURL%

TABLE 6-19. Low Free Threat Quarantine Disk Space

PARAMETER	DESCRIPTION
Status	Select an option to enable or disable the alert.
Alert level	Displays the alert level in email messages.
Free threat quarantine disk space	The lowest disk space threshold that triggers the alert. **Note** **Free threat quarantine disk space** refers to the percentage of space remaining on the disk partition to store messages with detected threats.
Alert frequency	View the time interval that Deep Discovery Email Inspector checks for the alert rule criteria.
Recipients	Specify the recipients who will receive the triggered alert email message.
Subject	Specify the subject of the triggered alert email message.
Message	Specify the body of the triggered alert email message. Use the following tokens to customize your message: • `%DiskSpace%` • `%DateTime%` • `%DeviceName%` • `%DeviceIP%` • `%ConsoleURL%`

TABLE 6-20. High Memory Usage

PARAMETER	DESCRIPTION
Status	Select an option to enable or disable the alert.
Alert level	Displays the alert level in email messages.

Parameter	Description
Average memory usage	Select the threshold for avergae memory usage that will trigger the alert. **Note** **Free disk space** refers to the amount of space remaining on the disk partition.
Alert frequency	View the time interval that Deep Discovery Email Inspector checks for the alert rule criteria.
Recipients	Specify the recipients who will receive the triggered alert email message.
Subject	Specify the subject of the triggered alert email message.
Message	Specify the body of the triggered alert email message. Use the following tokens to customize your message: • `%MemoryThreshold%` • `%MemoryUsage%` • `%DateTime%` • `%DeviceIP%` • `%DeviceName%` • `%ConsoleURL%`

Table 6-21. Long Message Deferred Queue

Parameter	Description
Status	Select an option to enable or disable the alert.
Alert level	Displays the alert level in email messages.
Deferred messages	Specify the email message threshold that will trigger the alert.
Alert frequency	View the time interval that Deep Discovery Email Inspector checks for the alert rule criteria.

Parameter	Description
Recipients	Specify the recipients who will receive the triggered alert email message.
Subject	Specify the subject of the triggered alert email message.
Message	Specify the body of the triggered alert email message. Use the following tokens to customize your message: • %ConsoleURL% • %DateTime% • %DeferredQueue% • %DeviceIP% • %DeviceName% • %QueueThreshold%

Table 6-22. Low Free Spam Quarantine Disk Space

Parameter	Description
Status	Select an option to enable or disable the alert.
Alert level	Displays the alert level in email messages.
Free spam quarantine disk space	The lowest disk space threshold that triggers the alert. **Note** **Free spam quarantine disk space** refers to the percentage of space remaining on the disk partition to store spam messages.
Alert frequency	View the time interval that Deep Discovery Email Inspector checks for the alert rule criteria.
Recipients	Specify the recipients who will receive the triggered alert email message.
Subject	Specify the subject of the triggered alert email message.

Parameter	Description
Message	Specify the body of the triggered alert email message. Use the following tokens to customize your message: • %DiskSpace% • %DateTime% • %DeviceName% • %DeviceIP% • %ConsoleURL%

Table 6-23. Account Locked

Parameter	Description
Status	Select an option to enable or disable the alert.
Alert level	Displays the alert level in email messages.
Recipients	Specify the recipients who will receive the triggered alert email message.
Subject	Specify the subject of the triggered alert email message.
Message	Specify the body of the triggered alert email message. Use the following tokens to customize your message: • %Account% • %DeviceName% • %DeviceIP% • %DateTime% • %ConsoleURL%

Table 6-24. Unsuccessful DKIM Signing

Parameter	Description
Status	Select an option to enable or disable the alert.

Parameter	Description
Alert level	Displays the alert level in email messages.
Email messages	Specify the email message threshold that will trigger the alert.
Alert frequency	View the time interval that Deep Discovery Email Inspector checks for the alert rule criteria.
Recipients	Specify the recipients who will receive the triggered alert email message.
Subject	Specify the subject of the triggered alert email message.
Message	Specify the body of the triggered alert email message. Use the following tokens to customize your message: • `%TotalMessages%` • `%Interval%` • `%DateTime%` • `%DeviceName%` • `%DeviceIP%` • `%ConsoleURL%`

Table 6-25. Connection Issue

Parameter	Description
Status	Select an option to enable or disable the alert.
Alert level	Displays the alert level in email messages.
Alert frequency	View the time interval that Deep Discovery Email Inspector checks for the alert rule criteria.
Monitored services	Select one or more services to monitor.
Recipients	Specify the recipients who will receive the triggered alert email message.
Subject	Specify the subject of the triggered alert email message.

Parameter	Description
Message	Specify the body of the triggered alert email message. Use the following tokens to customize your message: • %ServiceList% • %DateTime% • %DiagnosisTip% • %DeviceName% • %DeviceIP% • %ConsoleURL%

Informational Alert Parameters

Note

For explanations about available message tokens in each alert, see *Alert Notification Message Tokens on page C-3*.

Table 6-26. Threat Detection Surge

Parameter	Description
Status	Select an option to enable or disable the alert.
Alert level	Displays the alert level in email messages.
Detected messages	Select the detections threshold that will trigger the alert.
Alert frequency	View the time interval that Deep Discovery Email Inspector checks for the alert rule criteria.
Recipients	Specify the recipients who will receive the triggered alert email message.
Subject	Specify the subject of the triggered alert email message.

Parameter	Description
Message	Specify the body of the triggered alert email message. Use the following tokens to customize your message: • %ConsoleURL% • %DateTime% • %DetectionCount% • %DetectionThreshold% • %DeviceIP% • %DeviceName% • %Interval%

Table 6-27. Processing Surge

Parameter	Description
Status	Select an option to enable or disable the alert.
Alert level	Displays the alert level in email messages.
Processed messages	The email message threshold that triggers the alert.
Alert frequency	View the time interval that Deep Discovery Email Inspector checks for the alert rule criteria.
Recipients	Specify the recipients who will receive the triggered alert email message.
Subject	Specify the subject of the triggered alert email message.

Parameter	Description
Message	Specify the body of the triggered alert email message. Use the following tokens to customize your message: • %ConsoleURL% • %DateTime% • %DeviceIP% • %DeviceName% • %Interval% • %ProcessingCount% • %ProcessingThreshold%

Table 6-28. Component Update/Rollback Successful

Parameter	Description
Status	Select an option to enable or disable the alert.
Alert level	Displays the alert level in email messages.
Recipients	Specify the recipients who will receive the triggered alert email message.
Subject	Specify the subject of the triggered alert email message.
Message	Specify the body of the triggered alert email message. Use the following tokens to customize your message: • %ConsoleURL% • %ComponentList% • %DateTime% • %DeviceIP% • %DeviceName%

TABLE 6-29. Data Loss Prevention Incident

PARAMETER	DESCRIPTION
Status	Select an option to enable or disable the alert.
Alert level	Displays the alert level in email messages.
Detected messages	Select the detections threshold that will trigger the alert.
DLP templates to monitor	Select a list view option and one or more DLP templates to monitor.
Alert frequency	View the time interval that Deep Discovery Email Inspector checks for the alert rule criteria.
Recipients	Specify the recipients who will receive the triggered alert email message.
Subject	Specify the subject of the triggered alert email message.
Message	Specify the body of the triggered alert email message. Use the following tokens to customize your message: • %DetectionCount% • %DetectionThreshold% • %Interval% • %MessageList% • %DateTime% • %DeviceIP% • %DeviceName% • %ConsoleURL%

Reports

Deep Discovery Email Inspector provides reports to assist in mitigating threats and optimizing system settings. Generate reports on demand or set a

daily, weekly, or monthly schedule. Deep Discovery Email Inspector offers flexibility in specifying the content for each report.

The reports generate in PDF format.

Scheduling Reports

Scheduled reports automatically generate according to the configured schedules.

Note

Configure the SMTP server to send notifications. For details, see *Configuring the Notification SMTP Server on page 8-175*.

Procedure

1. Go to **Alerts / Reports** > **Reports** > **Schedules**.
2. Enable a scheduled report by selecting the associated interval.
   - **Generate daily report**
   - **Generate weekly report**
   - **Generate monthly report**
3. Specify when to generate the report.

   Note

   When a monthly report schedule is set to generate reports on the 29th, 30th, or 31st day, the report generates on the last day of the month for months with fewer days. For example, if you select 31, the report generates on the 28th (or 29th) in February, and on the 30th in April, June, September, and November.
4. Specify the recipients.

Note

Separate multiple recipients with a semicolon.

5. Optional: Select the **Include detailed information** check box to include a list containing the high-risk messages, alerts, and suspicious objects found during analysis.

6. Click **Save**.

Generating On-Demand Reports

Procedure

1. Go to **Alerts / Reports** > **Reports** > **On Demand** .

2. Configure report settings.

Option	Description
Period	Select the scope and start time for report generation.
Include detailed information	Optional: Select the check box to include a list containing the high-risk messages, alerts, and suspicious objects found during analysis.
Recipients	Specify the recipients. Separate multiple recipients with a semicolon.

3. Click **Generate**.

   The report generates and the following actions occur:

   - The report appears at **Alerts / Reports** > **Reports** > **Generated Reports**.
   - Report notifications are sent to recipients.

Chapter 7

Logs

Topics include:

Time-Based Filters and DST

When querying logs using time-based filters, the query assumes that the selected time range is based on the current Daylight Savings Time (DST) status. For example, if the time shifts from 2 a.m. back to 1 a.m. for DST and you query 0100-0159 after DST, the query matches the logs from the new 0100-0159 after the shift. Even though the local times match, the query results do not show logs matching the pre-DST time.

Email Message Tracking

Track any email message that passed through Deep Discovery Email Inspector, including blocked and delivered messages. Deep Discovery Email Inspector records message details, including the sender, recipients, and the taken policy action.

Message tracking logs indicate if an email message was received or sent by Deep Discovery Email Inspector. Message tracking logs also provide evidence about Deep Discovery Email Inspector investigating an email message.

Querying Message Tracking Logs

Procedure

1. Go to **Logs** > **Message Tracking**.
2. Specify the search criteria.

Note

No wildcards are supported. Deep Discovery Email Inspector uses fuzzy logic to match search results.

Filter	Description
Period	Select a predefined time range or specify a custom range.
Recipients	Specify a recipient email address. Only one address is allowed.
Email header (To)	Specify a primary recipient email address in the email header.
Sender	Specify the sender email address.
Email header (From)	Specify the author email address in the email header.
Subject	Specify the email message subject.
Direction	Specify the message direction.
Message ID	Specify the unique message ID. Example: `20160603021433.F0304120A7A@example.com`
Source IP	Specify the MTA IP address nearest to the email sender. The source IP is the IP address of the attack source, compromised MTA, or a botnet with mail relay capabilities. A compromised MTA is usually a third-party open mail relay used by attackers to send malicious email messages or spam without detection.
Risk level	Select **All** or the email message risk level.

Filter	Description
Latest status	Select any of the following check boxes: • **Deleted**: Messages that were deleted based on content filtering or threat protection rules, or from the **Quarantine**. • **Delivered/Processing completed**: Messages that were delivered. In BCC mode and SPAN/TAP mode, email messages with this status are discarded. • **Delivery unsuccessful**: Messages that could not be delivered. In BCC mode and SPAN/TAP mode, email messages are never delivered. • **Quarantined**: Messages that were quarantined in keeping with your Deep Discovery Email Inspector policies. In BCC mode and SPAN/TAP mode, email messages are never quarantined. • **Queued for delivery**: Messages that are pending delivery. In BCC mode and SPAN/TAP mode, email messages with this status are queued to be discarded. • **Queued for sandbox analysis**: Messages that are pending analysis.

3. Click **Query**.

   Logs matching the search criteria appear in the table. The query results include message ID, recipients, sender, subject, risk level, latest status, and received timestamp.

   Note

   You can clear the search criteria by clicking **Clear filters**.

4. View the results.

   - Click the ▷ icon next to a row to view detailed information about the email message.

Field	Description
Message details	Source IP: Displays the MTA IP address nearest to the email message sender.

Field	Description
	Example: `123.123.123.123`.

Processing history	View how Deep Discovery Email Inspector processed the email message. The following are the possible processing actions:
	• **Action set to 'pass'**:
	  • The **Pass** policy action was applied to the email message.
	  • A copy of the email message was released by the user. This only applies if the **Strip attachments, redirect links to blocking page, and tag** and **Strip attachments, redirect links to warning page, and tag** policies were applied to the original email message.
	• **Deleted**: The email message was deleted based on content filtering or threat protection rules, or from the **Quarantine**.
	• **Delivered**: The email message was delivered.
	• **Not analyzed**: Virtual Analyzer was unable to complete the analysis for the reason specified.
	• **Processing completed**: Analysis was completed and the email message was discarded. This is the final status in BCC and SPAN/TAP mode.
	• **Quarantined** (reason): The email message was quarantined in keeping with your Deep Discovery Email Inspector policies. In BCC mode and SPAN/TAP mode, email messages are never quarantined.
	• **Queued for delivery**: The email message is pending delivery. In BCC mode and SPAN/TAP mode, email messages with this status are queued to be discarded.
	• **Received**: The email message was received by Deep Discovery Email Inspector.

Field	Description
	• **Sent for analysis**: The email message was sent to Virtual Analyzer for analysis. • **Stripped**: Attachments were stripped from the email message and it was passed for delivery.
Action	Do any of the following: Quarantined Message: • **View in Quarantine** • **Release from Quarantine** • **View in Detected Messages** Non-Quarantined Message, with high/medium/low risk level: **View in Threat Messages** No Risk Message: **No Action Links**

Note

Deep Discovery Email Inspector sorts logs using **UTC 0** time, even if the display is in local time.

5. Perform additional actions.

   - Click **Export** to save the query results in a CSV file.

     Note

     Only the first 50000 entries in the query results are included in the CSV file.

   - The panel at the bottom of the screen shows the total number of objects. If all objects cannot be displayed at the same time, use the pagination controls to view the objects that are hidden from view.

MTA Events

View connection details about Postfix and SMTP activity on your network.

Note

Deep Discovery Email Inspector automatically purges logs when there are a total of 100 log files that are each 51200KB. The most recent 10 logs can be queried.

Querying MTA Event Logs

Procedure

1. Go to **Logs** > **MTA**.
2. Specify the time range to query logs.
3. Click **Query**.

   All logs matching the time criteria appear in the table.
4. View the results.

Field	Description
Timestamp	The date and time when the event occurred
Description	The log event description

Note

Deep Discovery Email Inspector sorts logs using **UTC 0** time, even if the display is in local time.

5. Perform additional actions.
   - Click **Export to CSV** to save the query results in a CSV file.

- The panel at the bottom of the screen shows the total number of objects. If all objects cannot be displayed at the same time, use the pagination controls to view the objects that are hidden from view.

System Events

View details about user access, policy modification, network setting changes, and other events that occurred using the Deep Discovery Email Inspector management console.

Deep Discovery Email Inspector maintains two system event log types:

- Update events: All component update events
- Audit logs: All user access events
- EUQ logs: All End-User Quarantine events

Note

- Deep Discovery Email Inspector purges logs based on the settings you configure on the **Storage Maintenance** screen.

  For details, see *Configuring Storage Maintenance on page 8-198*.

- For a list of system event logs available, see *System Event Logs on page G-1*.

Querying System Event Logs

Procedure

1. Go to **Logs** > **System**.
2. Specify the time range to query logs.
3. View the results.

Field	Description
Timestamp	The date and time when the event occurred
Event Type	Deep Discovery Email Inspector records the following system event log types: • Update events • Audit logs • EUQ logs
Description	The log event description

Note

Deep Discovery Email Inspector sorts logs using **UTC 0** time, even if the display is in local time.

4. Perform additional actions.
   - From the **Show** drop-down menu at the top-right side, select an event type to filter the results.
   - Click **Export** to save the query results in a CSV file.
   - The panel at the bottom of the screen shows the total number of objects. If all objects cannot be displayed at the same time, use the pagination controls to view the objects that are hidden from view.

Message Queue Logs

When Deep Discovery Email Inspector receives an email message, the message is stored in one of the following message queues:

- Incoming: Stores email messages waiting to be processed and delivered
- Active: Stores email messages that Deep Discovery Email Inspector has opened for processing

- Deferred: Stores email messages that Deep Discovery Email Inspector cannot deliver after processing

You can view the message queue logs to determine when a message was added to a message queue and perform actions (deliver, reroute, or delete) on selected messages.

The following table describes the information on the **Message Queue Logs** screen.

Field	Description
Received	View the time the message was received
Type	View the message queue type
Message ID	View the unique ID for the email message
Sender	View the sender email address
Recipient(s)	View the email address of the message recipient
Subject	View the message subject
Size (Bytes)	View the message size in bytes
Archive/MTA Server	View the address of the archive server or MTA server to which Deep Discovery Email Inspector sends the message
Message Type	View the message type
Last Delivery Status	View the status of the last delivery action performed

Querying Message Queue Logs

You can search for messages in the message queues and deliver, reroute, or delete the messages.

Procedure

1. Go to **Logs** > **Message Queue**.

2. Specify the search criteria.

Note

- If you do not specify a search criteria, the system displays up to the latest 10000 log entries on the **Message Queue** screen.
- You can clear the search criteria by clicking **Clear filters**.

Filter	Description
Type	Select a message queue type.
Recipient(s)	Specify a recipient email address. Only one address is allowed.
Subject	Specify the email message subject.
Message Type	Select one of the following options: • **All**: All notifications and archive messages • **System generated**: Notifications and archive messages that are sent from Deep Discovery Email Inspector. • **Received**: Messages that are received and scanned by Deep Discovery Email Inspector.
Sender	Specify the sender email address.
Message ID	Specify the unique message ID. Example: `20160603021433.F0304120A7A@example.com`
Archive/MTA server	Specify the address of an archive server or MTA server.

3. Click **Query**.

   Logs matching the search criteria appear in the table.

4. (Optional) Select one or more messages and click to perform one of the following actions:

   - **Deliver**: Click this option to deliver the selected messages to recipients. You can check the delivery status in the log table.

- **Deliver All**: Click this option to deliver all messages in the deferred message queue to recipients.
- **Reroute**: Click this option to reroute the selected messages to an SMTP server you specify.

  Note

  For more information, see *Rerouting Messages in Message Queues on page 7-12*.

- **Reroute All**: Click this option to reroute all messages in the deferred and incoming queues to the SMTP server you specify.

  Note

  For more information, see *Rerouting Messages in Message Queues on page 7-12*.

- **Delete**: Click this option to delete the selected messages

Rerouting Messages in Message Queues

Note

Message reroute settings only take effect when Deep Discovery Email Inspector is in MTA mode.

On the **Message Queue Logs** screen, you can reroute selected or all messages in the deferred and incoming message queues to an SMTP server that you specify.

Procedure

1. Go to **Logs** > **Message Queue**.
2. Do one of the following:

- Select one or more entries and click **Reroute** to reroute the selected messages.
- Select **Reroute All** to reroute all messages in the deferred and incoming queues.

3. A dialog box appears if a message is in the active message queue. Click **OK**.
4. On the **Specify SMTP Server** screen that appears, specify the IP address or fully qualified domain name and port number of an SMTP server to forward email messages.
5. Click **Reroute**.

Email Submission Logs

When you submit message samples to Deep Discovery Email Inspector for analysis, you can view the submission results in the logs.

Querying Email Submission Logs

Procedure

1. Go to **Logs** > **Email Submission**.
2. Specify the search criteria.

Filter	Description
Risk level	Select **All** or the email message risk level.
Period	Select a predefined time range or specify a custom range.
Message ID	Specify the unique message ID. Example: `20160603021433.F0304120A7A@example.com`

Filter	Description
Email header (From)	Specify the author email address in the email header.
Submitter name	Specify the user account name.
Subject	Specify the email message subject.
Email header (To)	Specify a primary recipient email address in the email header.
Recipients	Specify a recipient email address. Only one address is allowed.

3. Click **Query**.

   Logs matching the search criteria appear in the table. The query results include received timestamp, message ID, submitter, subject, risk level, links to view detailed detection information (if available), and analysis completion time.

   Note

   You can clear the search criteria by clicking **Clear**.

Time-of-Click Protection Logs

The Time-of-Click Protection logs provide detailed information on URL detections and the actions that Deep Discovery Email Inspector performed at the time of user clicks.

Querying Time-of-Click Protection Logs

Procedure

1. Go to **Logs** > **Time-of-Click Protection**.

2. Specify the search criteria. To apply advanced filters, see *Applying Advanced Filters on page 7-15*.

Filter	Description
Action	Select an action performed on detected URLs.
Period	Select a predefined time range or specify a custom range.
URL	Specify a keyword to search for URLs and click **Query**.

Logs matching the search criteria appear in the table.

Note

You can clear the search criteria by clicking **Cancel**.

Applying Advanced Filters

In addition to basic filters, you can apply advanced filters to query logs.

Procedure

1. Click **Advanced filters**.

   The advanced filters appear.

2. Specify the information to filter.

Filter	Description
Message ID	Specify the unique message ID. Example: `20160603021433.F0304120A7A@example.com`
Email header (From)	Specify the author email address in the email header.
Sender	Specify one or more sender email addresses. Use a semicolon to separate multiple entries.

Filter	Description
Subject	Specify the email message subject.
Email header (To)	Specify one or more primary recipient email addresses in the email header. Use a semicolon to separate multiple entries.
Recipients	Specify one or more recipient email addresses. Use a semicolon to separate multiple entries.

3. Click **Query**.

Chapter 8

Administration

Topics include:

Component Updates

Download and deploy product components used to investigate threats. Because Trend Micro frequently creates new component versions, perform regular updates to address the latest spear-phishing attacks and social engineering attack patterns.

Components

The **Components** tab shows the security components currently in use.

TABLE 8-1. Components

COMPONENT	DESCRIPTION
Advanced Threat Correlation Pattern	The Advanced Threat Correlation Pattern contains a list of file features that are not relevant to any known threats.
Advanced Threat Scan Engine for Deep Discovery (Linux, 64-bit) Advanced Threat Scan Engine for Deep Discovery (Linux, 32-bit)	The Advanced Threat Scan Engine protects against viruses, malware, and exploits to vulnerabilities in software such as Java and Flash. Integrated with the Trend Micro Virus Scan Engine, the Advanced Threat Scan Engine employs signature-based, behavior-based, and aggressive heuristic detection.
Antispam Engine (Enterprise Linux, 32-bit)	The Trend Micro Antispam Engine detects spam and phishing content in email messages and email attachments. The Antispam Engine also includes the Email Malware Threat Scan Engine that performs advanced threat scans on email attachments (including script files and Microsoft Office macroware) to detect malware.
Antispam Pattern	The Antispam Pattern identifies the latest spam in email messages and email attachments.

Component	Description
Contextual Intelligence Query Handler (Linux, 32-bit) Contextual Intelligence Query Handler (Linux, 64-bit)	The Contextual Intelligence Query Handler processes the behaviors identified by the Contextual Intelligence Engine and sends the report to the Predictive Machine Learning engine.
Deep Discovery Malware Pattern	The Deep Discovery Malware Pattern contains the detection routines for virus and malware scanning. Trend Micro updates the Deep Discovery Malware Pattern regularly with detection routines for new identified threats. Deep Discovery Email Inspector also uses the Deep Discovery Malware Pattern to detect and protect organizations against mass-mailing attacks.
Trusted Certificate Authorities	Trusted Certificate Authorities Pattern provides the trusted certificate authorities to verify PE signatures.
IntelliTrap Exception Pattern	The IntelliTrap Exception Pattern contains detection routines for safe compressed executable (packed) files to reduce the amount of false positives during IntelliTrap scanning.
IntelliTrap Pattern	The IntelliTrap Pattern contains the detection routines for compressed executable (packed) file types that are known to commonly obfuscate malware and other potential threats.
Network Content Correlation Pattern	The Network Content Correlation Pattern implements detection rules defined by Trend Micro.
Network Content Inspection Engine (Linux, User mode, 64-bit)	The Network Content Inspection Engine is used to perform network scanning.
Network Content Inspection Pattern	The Network Content Inspection Pattern is used by the Network Content Inspection Engine to perform network scanning.
Script Analyzer Pattern (Deep Discovery)	The Script Analyzer Pattern is used during analysis of web page scripts to identify malicious code.

Component	Description
Spyware/Grayware Pattern	The Spyware/Grayware Pattern identifies unique patterns of bits and bytes that signal the presence of certain types of potentially undesirable files and programs, such as adware and spyware, or other grayware.
Virtual Analyzer Sensors	The Virtual Analyzer Sensors are a collection of utilities used to execute and detect malware and to record behavior in Virtual Analyzer.
Virtual Analyzer Configuration Pattern	The Virtual Analyzer Configuration Pattern contains configuration information for Virtual Analyzer, such as supported threat types and supported file types.

Update Source

Deep Discovery Email Inspector downloads components from the Trend Micro ActiveUpdate server, the default update source. Deep Discovery Email Inspector can be configured to download components from another update source specifically set up in your organization.

Note

If Deep Discovery Email Inspector is registered to Apex Central, you can configure Deep Discovery Email Inspector to download directly from Apex Central. For details on how a Apex Central server can act as an update source, see the *Trend Micro Apex Central Administrator's Guide*.

Configuring the Update Source

Frequently update components to receive protection from the latest threats. By default, components automatically receive updates from the Trend Micro ActiveUpdate server. Receive updates from another Internet location by configuring a different update source.

Procedure

1. Go to **Administration** > **Component Updates** > **Source**.
2. Configure the update source settings.
   - **Trend Micro ActiveUpdate server**

     Obtain the latest components from the Trend Micro ActiveUpdate server (default).
   - **Other update source**

     Specify a different update source location. The update source URL must begin with “http://” or “https//:”.

     Example: `http://update.mycompany.com`.

     Note

     The update source does not support UNC path format.
3. Click **Save**.

Updating Components

Update components to immediately download the component updates from the update source server. For information about the update source, see *Configuring the Update Source on page 8-4*.

Procedure

1. Go to **Administration** > **Component Updates** > **Components**.
2. Select one or more components.
3. Click **Update**.
4. At the confirmation message, click **OK**.

Rolling Back Components

Roll back components to revert all components to the most recent version.

Procedure

1. Go to **Administration** > **Component Updates** > **Components**.
2. Select one or more components.
3. Click **Roll Back**.

   The components revert to the most recent version.
4. At the confirmation message, click **OK**.

Scheduling Component Updates

Procedure

1. Go to **Administration** > **Component Updates** > **Schedule**.

   The **Schedule** tab appears.
2. Enable the scheduled update.
3. Select the update interval.
4. Click **Save**.

Product Updates

Use the **Product Updates** screen to apply hotfixes and patches, or perform a firmware upgrade to Deep Discovery Email Inspector.

System Updates

After an official product release, Trend Micro releases system updates to address issues, enhance product performance, or add new features.

TABLE 8-2. System Updates

SYSTEM UPDATE	DESCRIPTION
Hotfix	A hotfix is a workaround or solution to a single customer-reported issue. Hotfixes are issue-specific, and are not released to all customers. **Note** A new hotfix may include previous hotfixes until Trend Micro releases a patch.
Security patch	A security patch focuses on security issues suitable for deployment to all customers. Non-Windows patches commonly include a setup script.
Patch	A patch is a group of hotfixes and security patches that solve multiple program issues. Trend Micro makes patches available on a regular basis.

Your vendor or support provider may contact you when these items become available. Check the Trend Micro website for information on new hotfix, patch, and service pack releases:

http://downloadcenter.trendmicro.com/

Managing Patches

From time to time, Trend Micro releases a new firmware version for a reported known issue or an upgrade that applies to the product. Find available firmware versions at http://downloadcenter.trendmicro.com.

You can install a patch file on Trend Micro using one of the following methods:

- The Deep Discovery Email Inspector management console
- Plan deployment from Deep Discovery Director. For more information, see the Deep Discovery Director documentation.

Procedure

1. Go to **Administration** > **Product Updates** > **Hotfixes / Patches**.
2. Under **History**, verify the software version number.
3. Manage the product patch.
   - Upload a patch by browsing to the patch file provided by Trend Micro Support and then clicking **Install** under **Install Hotfix / Patch**.
   - Roll back a patch by clicking **Roll Back** under **History**. After rollback, Deep Discovery Email Inspector uses the most recent previous configuration. For example, rolling back patch 3 returns Deep Discovery Email Inspector to a patch 2 state.

Upgrading Firmware

From time to time, Trend Micro releases a new firmware version for a reported known issue or an upgrade that applies to the product. Find available firmware versions at http://downloadcenter.trendmicro.com.

Updating the firmware ensures that Deep Discovery Email Inspector has access to new and improved security features when they become available.

You can upgrade the firmware on Deep Discovery Email Inspector using one of the following methods:

- The Deep Discovery Email Inspector management console
- Plan deployment from Deep Discovery Director. For more information, see the Deep Discovery Director documentation.

Note

Ensure that you have finished all management console tasks before proceeding. The upgrade process may take some time to complete, and upgrading from Deep Discovery Email Inspector 3.6 or 3.5 to Deep Discovery Email Inspector 5.0 may take an hour or more. Trend Micro recommends starting the upgrade during off-peak office hours. Installing the update restarts Deep Discovery Email Inspector.

Procedure

1. Back up configuration settings.

   Backing Up or Restoring a Configuration on page 8-192

2. Obtain the firmware image.

   - Download the Deep Discovery Email Inspector firmware image from the Trend Micro Download Center at:

     http://downloadcenter.trendmicro.com

   - Obtain the firmware package from your Trend Micro reseller or support provider.

3. Save the image to any folder on a computer.
4. Go to **Administration** > **Product Updates** > **Firmware**.
5. Next to **Software version**, verify your firmware version.
6. Browse for the firmware update package.
7. Click **Install**.

   Tip

   You can access the command line interface to view the installation process.

   After the installation is complete, Deep Discovery Email Inspector automatically restarts and the command line interface appears.

8. Perform the following post-installation steps:
   - Clear the browser cache.
   - Manually log onto the web console.
   - If Deep Discovery Email Inspector is using an internal Virtual Analyzer that connects to the Internet through a proxy server, reconfigure the proxy settings for the internal Virtual Analyzer.

Scanning / Analysis

Use the **Scanning / Analysis** screen to configure settings for the following features:

- *Virtual Analyzer on page 1-12*
- *File Passwords on page 8-33*
- *Smart Protection on page 8-37*
- *Smart Feedback on page 8-42*
- *YARA Rules on page 8-43*
- *Time-of-Click URL Protection on page 8-47*
- *Business Email Compromise on page 8-49*
- *Cousin Domains on page 8-51*

Email Scanning

When an email message enters your network, Deep Discovery Email Inspector gathers security intelligence from several Trend Micro Smart Protection Network services to investigate the email message's risk level.

- Analyzing file attachments

  See *Advanced Threat Scan Engine on page 1-13*.

- Analyzing embedded links (URLs)

  See *Web Reputation Services on page 1-14*.

- Social Engineering Attack Protection

  See *Social Engineering Attack Protection on page 1-9*.

- Predictive Machine Learning

  See *Predictive Machine Learning on page 1-13*.

- Business Email Compromise Protection

  See *Business Email Compromise on page 8-49*.

After scanning the email message for suspicious files, URLs, and characteristics, Deep Discovery Email Inspector correlates the results to either assign a risk level and immediately execute a policy action based on the risk level, or send the file, URL and message samples to Virtual Analyzer for further analysis.

Note

The file password settings affect both Deep Discovery Email Inspector email scanners and Virtual Analyzer.

Virtual Analyzer

Virtual Analyzer is a secure virtual environment that manages and analyzes objects submitted by integrated products, and administrators and investigators (through SSH). Custom sandbox images enable observation of files, URLs, registry entries, API calls, and other objects in environments that match your system configuration.

Virtual Analyzer performs static and dynamic analysis to identify an object's notable characteristics in the following categories:

- Anti-security and self-preservation
- Autostart or other system configuration

- Deception and social engineering
- File drop, download, sharing, or replication
- Hijack, redirection, or data theft
- Malformed, defective, or with known malware traits
- Process, service, or memory object change
- Rootkit, cloaking
- Suspicious network or messaging activity

During analysis, Virtual Analyzer rates the characteristics in context and then assigns a risk level to the object based on the accumulated ratings. Virtual Analyzer also generates analysis reports, suspicious object lists, PCAP files, and OpenIOC files that can be used in investigations.

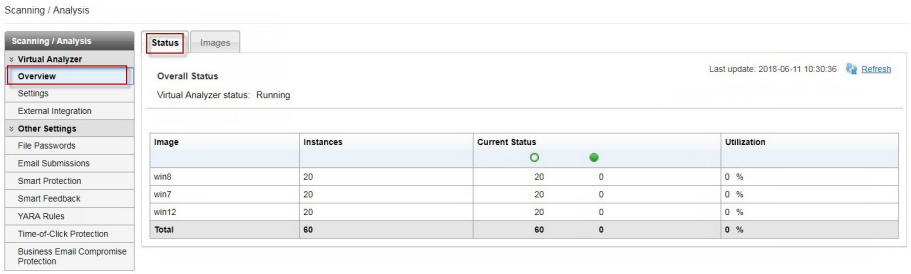
Virtual Analyzer Overview

The **Overview** screen varies depending on whether Deep Discovery Email Inspector is configured to use the internal or external Virtual Analyzer sandbox environment.

If Deep Discovery Email Inspector is using an external Virtual Analyzer, you can configure the integration settings and check the status of the external Virtual Analyzer sandbox environment on the **External Integration** screen.

If Deep Discovery Email Inspector is using an internal Virtual Analyzer, click **Status** to check the status of the Virtual Analyzer sandbox environment.

View the table to understand the real-time status of Virtual Analyzer and the sandbox images.



Virtual Analyzer Statuses

The following table describes the Virtual Analyzer statuses.

TABLE 8-3. Virtual Analyzer Statuses

STATUS	DESCRIPTION
Initializing...	Virtual Analyzer is preparing the sandbox environment.
Starting...	Virtual Analyzer is starting all sandbox instances.
Stopping...	Virtual Analyzer is stopping all sandbox instances.
Running	Virtual Analyzer is analyzing samples.
No images	No images have been imported into Virtual Analyzer.
Modifying instances...	Virtual Analyzer is increasing or decreasing the number of instances for one or more images.
Importing images...	Virtual Analyzer is importing an image.

Overall Status Table

The Virtual Analyzer **Overall Status** table shows the allocated instances, status (busy or idle), and the utilization information for each sandbox image.

TABLE 8-4. Overall Status Table Descriptions

HEADER	DESCRIPTION
Image	Permanent image name
Instances	Number of deployed sandbox instances
Current Status	Distribution of idle and busy sandbox instances
Utilization	Overall utilization (expressed as a percentage) based on the number of sandbox instances currently processing samples

Virtual Analyzer Images

Virtual Analyzer does not contain any images by default. You must import an image before Virtual Analyzer can analyze samples.

Virtual Analyzer supports Open Virtualization Format Archive (OVA) files.

Note

Before importing custom images, verify that you have secured valid licenses for all included platforms and applications.

Use the Image Preparation Tool to check that an image has the correct virtual machine settings, supported platforms and required applications before importing the image to Virtual Analyzer. For details about the Image Preparation Tool, see the *Virtual Analyzer Image Preparation User's Guide* at http://docs.trendmicro.com/en-us/enterprise/virtual-analyzer-image-preparation.aspx.

Virtual Analyzer Image Preparation

Virtual Analyzer does not contain any images by default. To analyze samples, you must prepare and import at least one image in the Open Virtual Appliance (OVA) format.

You can use existing VirtualBox or VMware images, or create new images using VirtualBox. For details, see Chapters 2 and 3 of the *Virtual Analyzer*

Image Preparation User's Guide at http://docs.trendmicro.com/en-us/enterprise/virtual-analyzer-image-preparation.aspx.

Before importing, validate and configure images using the Virtual Analyzer Image Preparation Tool. For details, see Chapter 4 of the *Virtual Analyzer Image Preparation User's Guide*.

The hardware specifications of your product determine the number of images that you can import and the number of instances that you can deploy per image.

Importing Virtual Analyzer Images

Virtual Analyzer supports OVA files between 1GB and 20GB in size.

Note

Virtual Analyzer stops analysis and keeps all samples in the queue whenever an image is added or deleted, or when instances are modified.

If Deep Discovery Email Inspector is registered to Deep Discovery Director, you can also import an image to Deep Discovery Email Inspector through image deployment from Deep Discovery Director.

Procedure

1. Go to **Administration** > **Scanning / Analysis** > **Virtual Analyzer** > **Overview** > **Images**.
2. Click **Import**.

   The **Import Image** screen appears.
3. Specify a name in the **Image** field.
4. Specify the number of instances for this image.
5. Select an image source and configure the applicable settings.
   - **Local or network folder**

     See *Importing an Image from a Local or Network Folder on page 8-16*.

- **HTTP or FTP server**

  See *Importing an Image from an HTTP or FTP Server on page 8-17*.

Importing an Image from a Local or Network Folder

The following procedure explains how to import an image into Virtual Analyzer from a local or network folder. Before importing an image, verify that your computer has established a connection to Deep Discovery Email Inspector. From the **Images** screen, check the connection status under **Step 1** on the management console.

Procedure

1. Select **Local or network folder**.
2. Specify an image name with a maximum of 260 characters/bytes.
3. Click **Connect**.
4. Once connected, import the image using the Virtual Analyzer Image Import Tool.
   a. Click **Download Image Import Tool**.
   b. Open the file `VirtualAnalyzerImageImportTool.exe`.
   c. Specify the Deep Discovery Email Inspector management IP address.

      Note

      For information about configuring the Deep Discovery Email Inspector management IP address, see *Configuring Network Settings on page 8-168*.

   d. Click **Browse** and select the image file.
   e. Click **Import**.

      The import process will stop if:

- The connection to the device was interrupted
- Memory allocation was unsuccessful
- Windows socket initialization was unsuccessful
- The image file is corrupt

5. Wait for import to complete.

Note

Virtual Analyzer deploys the imported image to sandbox instances immediately after the image uploads.

Importing an Image from an HTTP or FTP Server

The following procedure explains how to import an image into Virtual Analyzer from an HTTP or FTP server. For information about adding images, see *Importing Virtual Analyzer Images on page 8-15*.

Procedure

1. Select **HTTP or FTP server**.
2. Specify the HTTP or FTP URL settings.

Option	Description
URL	Specify the HTTP or FTP URL. Example: `ftp://custom_ftp:1080/tmp/test.ova`
User name	Optional: Specify the user name if authentication is required.
Password	Optional: Specify the password if authentication is required.
Anonymous Login	Optional: Select to disable the user name and password, and authenticate anonymously.

3. Click **Import**.

4. Wait for deployment to complete.

> **Note**
>
> Virtual Analyzer deploys instances immediately.

Deleting Virtual Analyzer Images

Procedure

1. Go to **Administration** > **Scanning / Analysis** > **Virtual Analyzer** > **Overview** > **Images**
2. Select an image by selecting the box in the left column.
3. Click **Delete**.

   The image is removed.

Modifying Instances

Procedure

1. Go to **Administration** > **Scanning / Analysis** > **Virtual Analyzer** > **Overview** > **Images**.
2. Click **Modify**.

   The **Modify Instances** screen appears.
3. Modify the instances allocated to any image.
4. Click **Save**.

Configuring Virtual Analyzer Network and Filters

To reduce the number of files and messages in the Virtual Analyzer queues, configure filters for Virtual Analyzer submission.

Note

- Object analysis is paused and settings are disabled whenever Virtual Analyzer is being configured.
- Forcing file analysis and performing message filtering for Virtual Analyzer submission can impact system performance.

Procedure

1. Go to **Administration** > **Scanning / Analysis** > **Virtual Analyzer**.
2. Specify **Settings**.

Option	Description
Network Connection	**Note** This section is available when Deep Discovery Email Inspector is using an internal Virtual Analyzer. When the internal Virtual Analyzer is set to connect to the Internet through a proxy server, reconfigure proxy settings after a configuration restore or firmware update on Deep Discovery Email Inspector. From the **Network type** drop-down list, select how Virtual Analyzer connects to the network. For information about network types, see *Virtual Analyzer Network Types on page 8-22*. If you select the **Custom Network** type, select a specific port for Virtual Analyzer traffic from the **Sandbox port** drop-down list and click **Configure IPv4 settings** to configure the network settings. If a proxy server is required for the internal Virtual Analyzer to connect to the Internet, select **Use a dedicated proxy server** from the drop-down list and provide the following information: • **Server address** • **Port** • **Proxy server requires authentication**: If authentication is required, select this check box and type the user name and password.
File Submission Filters	**Files**: Select the file types to have Virtual Analyzer perform one of the following actions: • Submit only highly suspicious files • Submit highly suspicious files and force analyze all selected file types To reduce the likelihood of false-positive detections, select **Do not analyze files found safe by the Certified Safe Software Service**. For details, see *Certified Safe Software Service on page 8-21*.

Option	Description
URL Submission Filters	By default, URLs found safe are first submitted to the URL pre-filter before submitting to Virtual Analyzer. For messages with safe URLs, you can add one or more subject keywords to filter these messages for Virtual Analyzer submission. Safe URLs in matched messages are sent directly to Virtual Analyzer, bypassing the URL pre-filter. **Keyword**: Type a subject keyword and click **Add** to add the keyword to the list. To delete a keyword from the list, select an entry and click **Delete**. **Note** You can specify up to 50 keywords.
Timeout Setting	Select how long Virtual Analyzer should wait before timing out a submitted object. By default, when the submission timeout is reached, Virtual Analyzer sends out submitted objects waiting in the queue without analysis. Timed out objects still receive risk levels from other scan engines. You can configure threat protection rules in policies to perform actions on timed out objects. For more information, see *Configuring a Threat Protection Rule on page 5-47*.

3. Click **Save**.

Certified Safe Software Service

Certified Safe Software Service (CSSS) is the Trend Micro cloud database of known safe files. Trend Micro datacenters are queried to check submitted files against the database.

Enabling CSSS prevents known safe files from entering the Virtual Analyzer queue. This process:

- Saves computing time and resources

- Reduces the likelihood of false positive detections

Tip

CSSS is enabled by default. Trend Micro recommends using the default settings.

Virtual Analyzer Network Types

When simulating file and URL behavior, Virtual Analyzer uses its own analysis engine to determine the risk of an object. The selected network type also determines whether submitted objects can connect to the Internet.

After configuring the network connection, click **Test Internet Connectivity** to verify that Virtual Analyzer can connect to the Internet.

Note

Internet access improves analysis by allowing samples to access C&C callback addresses or other external links.

Network Type	Description
Management network	Direct Virtual Analyzer traffic through the management port. **Important** Enabling connections to the management network may result in malware propagation and other malicious activity in the network.

Network Type	Description
Custom network	Virtual Analyzer connects to the Internet using a port other than the management port. **Note** Trend Micro recommends using an environment isolated from the management network, such as a test network with Internet connection but without proxy settings, proxy authentication, and connection restrictions.
No network access	Isolate Virtual Analyzer traffic within the sandbox environment. The environment has no connection to an outside network. **Note** Virtual Analyzer has no Internet connection and relies only on its analysis engine. No URLs are submitted for analysis.

Virtual Analyzer File Submission Filters

In addition to highly suspicious files, Virtual Analyzer can also scan for a variety of file types.

The following table shows the displayed file categories, contained full file types, and file extensions.

Table 8-5. Virtual Analyzer File Submission Filters

Displayed File Category	Full File Type	Example File Extensions

Flash and other multimedia	Scalable Vector Graphics (SVG)
	Adobe™ Shockwave™ Flash file
	Apple QuickTime media
		`.svg`
		`.swf`
		`.mov`

HTML	Hypertext Markup Language file	`.htm` `.html`

Displayed File Category	Full File Type	Example File Extensions
	Web page archive file	.xht .xhtml .mht .mhtml
Java	Java Archive (JAR) Java class file	.jar .class
Office	Microsoft™ Word™ document Microsoft™ OLE document Microsoft™ Office Word™ (2007 or later) document Microsoft™ Powerpoint™ presentation Microsoft™ Office PowerPoint™ (2007 or later) presentation Microsoft™ Excel™ spreadsheet Microsoft™ Office Excel™ (2007 or later) spreadsheet Microsoft™ Office™ 2003 XML file Microsoft™ Word™ 2003 XML document Microsoft™ Excel™ 2003 XML spreadsheet Microsoft™ PowerPoint™ 2003 XML presentation Microsoft™ Publisher 2016 Hancom™ Hancell spreadsheet Hancom™ Hangul Word Processor (HWP) document Hancom™ Hangul Word Processor (2014 or later) (HWPX) document JustSystems™ Ichitaro™ document JungUm™ Global document Microsoft™ Outlook™ Item	.doc .dot .docx .dotx .pps .ppsx .ppt .pptx .pub .xla .xls .xlsx .xlt .xlm .cell .xml .xlsb .xltx .hwp .hwpx

Displayed File Category	Full File Type	Example File Extensions
	Microsoft™ symbolic link format Microsoft™ Excel web query file Comma-separated values (CSV) file **Note** Only CSV files with suspicious DDEAuto commands are submitted to Virtual Analyzer for analysis.	.jtd .gul .msg .slk .iqy .csv
Office with Macros	Microsoft™ Office Word™ (2007 or later) macro-enabled document Microsoft™ Office PowerPoint™ (2007 or later) macro-enabled presentation Microsoft™ Office Excel™ (2007 or later) macro-enabled spreadsheet	.docm .dotm .potm .ppam .ppsm .pptm .xlam .xlsm .xltm
Other document formats	Compiled HTML (CHM) help file Microsoft™ Windows™ Shell Binary Link shortcut Microsoft™ Rich Text Format (RTF) document	.chm .lnk .rtf
PDF	Adobe™ Portable Document Format (PDF)	.pdf
Scripts	Microsoft™ Windows™ Batch file Microsoft™ Windows™ Command Script file JavaScript™ file JavaScript™ encoded script file HTML Application file	.bat .cmd .js .jse .hta

Displayed File Category	Full File Type	Example File Extensions
	Microsoft™ Windows™ PowerShell script file Visual Basic™ encoded script file Visual Basic™ script file Microsoft™ Windows™ script file Internet shortcut file **Note** Only plain text or generic script files with .js or .vbs true file types are submitted to Virtual Analyzer for analysis.	.ps1 .vbe .vbs .wsf .url
Windows executables	AMD™ 64-bit DLL file Microsoft™ Windows™ 16-bit DLL file Microsoft™ Windows™ 32-bit DLL file Executable file (EXE) AMD™ 64-bit EXE file DIET DOS EXE file Microsoft™ DOS EXE file IBM™ OS/2 EXE file LZEXE DOS EXE file MIPS EXE file MSIL Portable executable file Microsoft™ Windows™ 16-bit EXE file Microsoft™ Windows™ 32-bit EXE file ARJ compressed EXE file ASPACK 1.x compressed 32-bit EXE file ASPACK 2.x compressed 32-bit EXE file	.com .cpl .crt .dll .drv .exe .ocx .scr .sys

Displayed File Category	Full File Type	Example File Extensions
	GNU UPX compressed EXE file LZH compressed EXE file LZH compressed EXE file for ZipMail MEW 0.5 compressed 32-bit EXE file MEW 1.0 compressed 32-bit EXE file MEW 1.1 compressed 32-bit EXE file PEPACK compressed executable PKWARE™ PKLITE™ compressed DOS EXE file PETITE compressed 32-bit executable file PKZIP compressed EXE file WWPACK compressed executable file	

Virtual Analyzer can scan the files that match the supported file types in an archive file. The following table lists the supported archive file types.

Table 8-6. Archive file types

True File Type	Full File Type	Example File Extensions
7ZIP	7-zip archive	`.7z`
ACE	WinAce archive	`.ace`
AMG	Fujitsu AMG archive	`.amg`
ARJ	ARJ archive	`.arj`
BINHEX	BinHex file	`.hqx`
BZIP2	BZIP2 archive	`.bz2` `.bzip2`
CAB	Microsoft™ Cabinet file	`.cab`

True File Type	Full File Type	Example File Extensions
CPIO	CPIO archive	.cpio .cpgz
GZIP	GNU ZIP archive	.gzip .gz
ICS	iCalendar file	.ics
LHA	LHARC compressed archive	.lha .lharc
LZH	Lempel-Ziv-Welch (LZW) Compressed Amiga archive	.lzh
MIME	Multipurpose Internet Mail Extensions (MIME) Base64 file	.eml .email
MSG	Microsoft™ Outlook™ Item	.msg
RAR	Roshal Archive (RAR) archive	.rar
SIT	Smith Micro™ StuffIt archive	.sit .sitx
TAR	TAR archive	.tar .tgz
TNEF	Microsoft™ Outlook™ Transport Neutral Encapsulation Format (TNEF) file	.tnef .winmail.dat .win.dat
UDF	Universal Disk Format file	.iso
UUCODE	Uuencode file	.uue
VCS	vCalendar file	.vcs
XZ	XZ archive	.xz

True File Type	Full File Type	Example File Extensions
ZIP	PKWARE PKZIP archive (ZIP)	`.zip`

The following table lists the Mac file types that Deep Discovery Email Inspector automatically submits to the external Mac sandbox for analysis, regardless of the submission settings. These files are not submitted to the internal Virtual Analyzer.

Note

If you configure Deep Discovery Email Inspector to use an external Virtual Analyzer and select the Java file category, Deep Discovery Email Inspector also submits Java archive (`.jar`) and class (`.class`) files to the external Mac sandbox for analysis.

Table 8-7. Mac file types

True File Type	Full File Type	Example File Extensions
DMG	Apple disk image file	`.dmg`
PKG	Mac OS X installation file	`.pkg`
Mach-O	Mach object file	`.o`

Configuring an External Virtual Analyzer

You can configure Deep Discovery Email Inspector to integrate with Deep Discovery Analyzer to perform suspicious object analysis.

Procedure

1. Go to **Administration** > **Scanning / Analysis** > **Virtual Analyzer** > **External Integration**.
2. In the **Source** drop-down, select **External**.

3. In the **Server address** field, provide the IP address or FQDN of the Deep Discovery Analyzer server.
4. If your company uses a proxy server, select **Connect using a proxy server**.

Note

For information about configuring proxy settings, see *Configuring Proxy Settings on page 8-174*.

5. Type the API key.
6. (Optional) Click **Test Connection** to verify the server settings.
7. Click **Save**.

Email Submissions

You can manually upload email message samples (in EML or MSG format) directly to Deep Discovery Email Inspector for analysis.

After the file upload process is complete, you can view the message summary information (for example, email header, recipients, policies matched, etc.). After submitting to Virtual Analyzer and the analysis process is complete, you can view the submission results by querying the email submission logs.

Note

- Deep Discovery Email Inspector supports message samples in EML and MSG formats only.
- For manually submitted message samples, Deep Discovery Email Inspector does NOT perform the following actions:
  - Send message copies to archive servers or detection notifications as specified in matched policies
  - Analyze content based on Email Reputation Service (ERS) or sender filtering/authentication settings
  - Generate message tracking logs
  - Quarantine and generate log entries for End-User Quarantine (EUQ)
  - Send email submission logs to syslog servers, Apex Central, or Deep Discovery Director

    If a threat detection occurs on submitted message samples, Deep Discovery Email Inspector sends the detection logs to syslog servers, Apex Central, or Deep Discovery Director.
  - Deliver messages when Deep Discovery Email Inspector is configured in MTA mode

Manually Submitting Email Message Samples

You can send suspicious email message samples in EML or MSG format to Deep Discovery Email Inspector for analysis.

Procedure

1. Go to **Administration** > **Scanning / Analysis** > **Other Settings** > **Email Submissions**.

   The **Email Submissions** screen appears.

2. Do one of the following:
   - Click **Select** to locate the `.eml` or `.msg` file to upload.

- Drag and drop an `.eml` or `.msg` file into the panel area.

The management console displays the following information in the **Message Details** section.

Field	Description
Message ID	View the unique message ID.
Email Header (From)	View the author email address in the email header.
Email Header (To)	View the primary recipient email address in the email header.
Email Subject	View the email subject of the suspicious email message.
Message body	View the body (up to 4K in length) of the email message.
Polices	View the policies and rules that are matched. For more information on how Deep Discovery Email Inspector matches policies, see *Policy Matching on page 5-20* and *Policy Splintering on page 5-23*.

3. Click **Submit**.

   You can view the submission results on the **Email Submission Logs** screen.

   For more information, see *Querying Email Submission Logs on page 7-13*.

URL Scanning

By default, Deep Discovery Email Inspector scans URLs in email messages and performs actions based on the risk levels and reputation scores.

Deep Discovery Email Inspector performs URL scanning for the following functions:

- Web Reputation Services
- Time-of-Click protection

- Suspicious object matching
- Virtual Analyzer analysis
- URL exceptions

Depending on your application needs, you can manually disable URL scanning in Deep Discovery Email Inspector.

WARNING!

Disabling URL scanning will severely affect the ability of Deep Discovery Email Inspector to detect and analyze malicious URLs.

Disabling URL Scanning

Depending on your application needs, you can manually disable URL scanning in Deep Discovery Email Inspector.

WARNING!

Disabling URL scanning will severely affect the ability of Deep Discovery Email Inspector to detect and analyze malicious URLs.

Procedure

1. Go to **Administration** > **Scanning / Analysis** > **Other Settings** > **URL Scanning**.
2. Select **Disable URL Scanning**.
3. Click **Save**.

File Passwords

Always handle suspicious files with caution. Trend Micro recommends adding such files to a password-protected archive file or password-protecting document files from being opened before transporting the files across the

network. Deep Discovery Email Inspector can also heuristically discover passwords in email messages to extract files.

Deep Discovery Email Inspector uses user-specified passwords to extract files or open password-protected documents. For better performance, list commonly used passwords first.

For information on the password-protected file types Deep Discovery Email Inspector supports, see *Password-protected File Types on page 8-35*.

Note

- File passwords are stored as unencrypted text.
- After you register Deep Discovery Email Inspector to Deep Discovery Director, you can only export file passwords on the **File Passwords** screen. Deep Discovery Email Inspector automatically synchronizes file password settings from Deep Discovery Director and overwrites existing file password settings that you have configured.

The following table describes the tasks that you can perform on the **File Passwords** screen.

Task	Description
Configure analysis timeout	Type the number of minutes in the **Analysis timeout** field to quarantine a message when Deep Discovery Email Inspector is unable to open and analysis a password-protected file in the message within the specified time.
Add a password	Click **Add Password** to add a password to the list. For more information, see *Adding File Passwords on page 8-35*.
Import passwords	Click **Import Passwords** to import passwords from a selected file. For more information, see *Importing File Passwords on page 8-36*.
Export all passwords	Click **Export Passwords** to export all file passwords and save the file on your computer.

Password-protected File Types

Deep Discovery Email Inspector supports the following password-protected archive file types:

- 7z
- arj
- rar
- zip

Deep Discovery Email Inspector supports the following password-protected document file types:

- doc
- docx
- pdf
- ppt
- pptx
- xls
- xlsx

Adding File Passwords

A maximum of 100 passwords is allowed.

Procedure

1. Go to **Administration** > **Scanning / Analysis** > **Other Settings** > **File Passwords**.
2. Click **Add Password**.
3. Type a password with only ASCII characters.

Note

Passwords are case-sensitive and must not contain spaces.

4. Optional: Click **Add Password** and type another password.
5. Optional: Drag and drop the password to move it up or down the list.
6. Optional: Delete a password by clicking the x icon beside the corresponding text box.
7. Click **Save**.

Importing File Passwords

You can add up to 100 passwords in Deep Discovery Email Inspector.

Procedure

1. Go to **Administration** > **Scanning / Analysis** > **Other Settings** > **File Passwords**.

   The **File Passwords** screen appears.

2. Click **Import Passwords**.

   The **Import Passwords** window appears.

3. Browse and select the file to import.

   Note

   Click **Download sample file** to view a sample of a properly formatted file.

   Deep Discovery Email Inspector checks the entries in the selected file to identify any invalid or duplicate passwords.

4. Click **Import**.

Smart Protection

Trend Micro Smart Protection technology is a next-generation, in-the-cloud protection solution providing File and Web Reputation Services. By integrating Web Reputation Services, Deep Discovery Email Inspector can obtain reputation data for websites that users attempt to access. Deep Discovery Email Inspector logs URLs that Smart Protection technology verifies to be fraudulent or known sources of threats and then uploads the logs for report generation.

Deep Discovery Email Inspector connects to a Smart Protection source to obtain web reputation data.

Reputation services are delivered through the Trend Micro Smart Protection Network and Smart Protection Server. The following table provides a comparison.

TABLE 8-8. Smart Protection Sources

BASIS OF COMPARISON	TREND MICRO SMART PROTECTION NETWORK	SMART PROTECTION SERVER
Purpose	A globally scaled, Internet-based infrastructure that provides File and Web Reputation Services to Trend Micro products that integrate smart protection technology	Localizes the File and Web Reputation Services to the corporate network to optimize efficiency. The Smart Protection Server also provides the following: • Certified Safe Software Service • Community File Reputation • Web Inspection Service • Web Reputation Service • Predictive Machine Learning engine • Community Domain/IP Reputation Service **Note** The Dynamic URL Scanning service is only available on the Smart Protection Network.
Administration	Hosted and maintained by Trend Micro	Installed and managed by Trend Micro product administrators
Connection protocol	HTTP	HTTP and HTTPS

Basis of Comparison	Trend Micro Smart Protection Network	Smart Protection Server
Usage	Use if you do not plan to install Smart Protection Server To configure Smart Protection Network as source, see *Configuring Smart Protection Settings on page 8-40* .	Use as primary source and the Smart Protection Network as an alternative source For guidelines on setting up Smart Protection Server and configuring it as source, see *Setting Up Smart Protection Server on page 8-40* and *Configuring Smart Protection Settings on page 8-40*.

About Smart Protection Server

Consideration	Description
Deployment	If you have previously installed a Smart Protection Server for use with another Trend Micro product, you can use the same server for Deep Discovery Email Inspector. While several Trend Micro products can send queries simultaneously, the Smart Protection Server may become overloaded as the volume of queries increases. Make sure that the Smart Protection Server can handle queries coming from different products. Contact your support provider for sizing guidelines and recommendations.
IP Address	Smart Protection Server and the VMware ESX/ESXi server (which hosts the Smart Protection Server) require unique IP addresses. Check the IP addresses of the VMware ESX/ESXi server and Deep Discovery Email Inspector to make sure that these IP addresses are not assigned to the Smart Protection Server.
Installation	For installation instructions and requirements, refer to the *Installation and Upgrade Guide* for Trend Micro Smart Protection Server at http://docs.trendmicro.com/en-us/enterprise/smart-protection-server.aspx.

Setting Up Smart Protection Server

Procedure

1. Install Smart Protection Server on a VMware ESX/ESXi server.

   For more information, see http://docs.trendmicro.com/en-us/enterprise/smart-protection-server.aspx.

2. Configure Smart Protection Server settings from the Deep Discovery Email Inspector management console.

   For more information, see *Configuring Smart Protection Settings on page 8-40*.

Note

- Smart Protection Server may not have reputation data for all URLs because it cannot replicate the entire Smart Protection Network database. When updated infrequently, Smart Protection Server may also return outdated reputation data.
- Enabling this option improves the accuracy and relevance of the reputation data.
- Disabling this option reduces the time and bandwidth to obtain the data.

Configuring Smart Protection Settings

Procedure

1. Go to **Administration** > **Scanning / Analysis** > **Other Settings** > **Smart Protection**.
2. Select **Connect to Smart Protection Server for Web Reputation Services**.
3. Configure the Smart Protection Server.

a. Specify the Smart Protection Server IP address or fully qualified domain name.

   Obtain the IP address by going to **Smart Protection** > **Reputation Services** > **Web Reputation** on the Smart Protection Server console.

   The IP address forms part of the URL listed on the screen.

b. Select **Connect using a proxy server** if proxy settings for Deep Discovery Email Inspector have been configured for use with Smart Protection Server connections.

Note

If proxy settings are disabled, Smart Protection Server will connect to Deep Discovery Email Inspector directly.

c. Specify the port number.

4. Click **Test Connection** to verify that specified Smart Protection Server can connect to global services.

Important

Deep Discovery Email Inspector supports global services when connecting to Smart Protection Server version 3.0 Patch 2 or later.

5. (Optional) Select **Connect to global services using Smart Protection Server** to configure Deep Discovery Email Inspector to query global Smart Protection services.

   - If your organization uses a CA certificate, select **Use certificate** and click **Browse** to select the certificate file; then, click **Import** to import the certificate file.
     - If your organization uses a Certificate Revocation List (CRL), select **Use CRL** and click **Browse** to select the CRL file; then, click **Import** to import the Certificate Revocation List file.

6. Click **Save**.

Smart Feedback

Deep Discovery Email Inspector integrates the new Trend Micro Feedback Engine. This engine sends threat information to the Trend Micro Smart Protection Network, which allows Trend Micro to identify and protect against new threats. Participation in Smart Feedback authorizes Trend Micro to collect certain information from your network, which is kept in strict confidence.

Information collected by Smart Feedback:

- Product ID and version
- URLs suspected to be fraudulent or possible sources of threats
- Metadata of detected files (file type, file size, SHA-1 hash value, and SHA-1 hash value of parent file)
- Detection logs (from Advanced Threat Scan Engine, Predictive Machine Learning engine, Virtual Analyzer, Script Analyzer, and Antispam Engine)
- Sample of the following detected file types: bat, class, cmd, dll, exe, htm, html, jar, js, lnk, macho, mov, ps1, svg, swf, url, vbe, vbs, wsf
- Macros in Microsoft Office files

Enabling Smart Feedback

Procedure

1. Go to **Administration** > **Scanning / Analysis** > **Other Settings** > **Smart Feedback**.
2. Select Smart Feedback settings.
   - Select **Enable Smart Feedback (recommended)** to send anonymous information to Trend Micro from your network.
   - Select **Send suspicious files to Trend Micro** to send suspicious files found as high-risk to Trend Micro for further investigation.

For details about detected risk levels, see *Virtual Analyzer Risk Levels on page 4-4*.

3. Click **Save**.

YARA Rules

Deep Discovery Email Inspector uses YARA rules to identify malware. YARA rules are malware detection patterns that are fully customizable to identify targeted attacks and security threats specific to your environment.

Deep Discovery Email Inspector supports a maximum of 5,000 enabled YARA rules regardless of the number of YARA rule files. On the top-right corner of the YARA rule table, the **Rules in use** field indicates the number of YARA rules currently enabled in the system.

Important

After you register Deep Discovery Email Inspector to Deep Discovery Director, Deep Discovery Email Inspector automatically synchronizes YARA rule settings from Deep Discovery Director and overwrites existing YARA rule settings that you have configured.

The following table shows information about YARA rule files.

TABLE 8-9. YARA Rules

FIELD	DESCRIPTION
File name	Name of the YARA rule file.
Risk level	Risk level of the YARA rules.
Rules	Number of YARA rules contained in the YARA rule file.
Files to analyze	File types to analyze using the YARA rules in the YARA rule file.
Last Updated	Date and time the YARA rule file was last updated.
Status	Toggle to enable or disable the YARA rule file.

Creating a YARA Rule File

Deep Discovery Email Inspector supports YARA rules that follow version 3.10.0 of the official specifications. YARA rules are stored in plain text files that can be created using any text editor.

For more information about writing YARA rules, visit the following site:

https://yara.readthedocs.io/en/v3.10.0/writingrules.html

A YARA rule file must fulfill certain requirements before it can be added to Virtual Analyzer for malware detection:

- File name must be unique
- File content cannot be empty

The following example shows a simple YARA rule:

```
rule NumberOne
{
meta:
desc = "Sonala"
weight = 10
strings:
$a = {6A 40 68 00 30 00 00 6A 14 8D 91}
$b = {8D 4D B0 2B C1 83 C0 27 99 6A 4E 59 F7 F9}
$c = "UVODFRYSIHLNWPEJXQZAKCBGMT"
condition:
$a or $b or $c
}
```

The following table lists the different parts of the YARA rule and how they are used:

TABLE 8-10. YARA Rule Parts and Usage

PART	USAGE
rule	The YARA rule name. Must be unique and cannot contain spaces.
meta:	Indicates that the "meta" section begins. Parts in the meta section do not affect detection.

PART	USAGE
desc	Optional part that can be used to describe the rule.
weight	Optional part that must be between 1 and 10 that determines the risk level if rule conditions are met: • 1 to 9 = Low risk • 10 = High risk **Note** The weight value does not correspond to the risk level assigned by Deep Discovery Email Inspector.
strings:	Indicates that the "strings" section begins. Strings are the main means of detecting malware.
$a / $b / $c	Strings used to detect malware. Must begin with a $ character followed by one of more alphanumeric characters and underscores.
condition:	Indicates that the "condition" section begins. Conditions determine how your strings are used to detect malware.
$a or $b or $c	Conditions are Boolean expressions that define the logic of the rule. They tell the condition under which a submitted object satisfies the rule or not. Conditions can range from the typical Boolean operators `and`, `or` and `not`, to relational operators `>=`, `<=`, `<`, `>`, `==` and `!=`. Arithmetic operators (`+`, `-`, `*`, `\`, `%`) and bitwise operators (`&`, `|`, `<<`, `>>`, `~`, `^`) can be used on numerical expressions.

Adding a YARA Rule File

Procedure

1. Go to **Administration** > **Scanning / Analysis** > **Other Settings** > **YARA Rules**.
2. Click **Add** to add a YARA rule file.

   The **Add YARA Rule File** window appears.

3. In the new window that opens, configure the following:

   a. **Rule file**: Browse and select a YARA rule file to add.

   b. **Risk level**: Select the detection risk level for the YARA rules in the file.

   c. **Files to analyze**: Type or select file types that Virtual Analyzer processes specific to this YARA rule file.

4. Click **Add** when you have selected the YARA rule file to add and the file types to analyze.

   Virtual Analyzer validates the YARA rule file before adding it. For details about creating valid YARA rule files, see *Creating a YARA Rule File on page 8-44*.

Editing a YARA Rule File

Procedure

1. Go to **Administration** > **Scanning / Analysis** > **Other Settings** > **YARA Rules**.
2. Click a file name to edit a YARA rule file.

   The **Edit YARA Rule File** window appears.
3. Make changes to the settings.
4. Click **Save**.

Deleting a YARA Rule File

Procedure

1. Go to **Administration** > **Scanning / Analysis** > **Other Settings** > **YARA Rules**.

2. Select one or several YARA rule files to remove.
3. Click **Delete**.

Exporting a YARA Rule File

Procedure

1. Go to **Administration** > **Scanning / Analysis** > **Other Settings** > **YARA Rules**.
2. Select a YARA rule file to export.

   Note

   You can export only one YARA rule at a time.

3. Click **Export**.

Time-of-Click URL Protection

Deep Discovery Email Inspector provides Time-of-Click protection against malicious URLs in email messages. When this feature is enabled, Deep Discovery Email Inspector rewrites URLs in email messages for further analysis. Trend Micro Smart Protection Network (SPN) analyzes a rewritten URL every time the URL is clicked and applies specified actions based on the risk levels of the URLs.

Configuring Time-of-Click Protection Settings

Enable Time-of-Click Protection and specify actions for each URL rating on the **Time-of-Click Protection** screen.

Procedure

1. Go to **Administration** > **Scanning / Analysis** > **Other Settings** > **Time-of-Click Protection**.
2. Select **Enable Time-of-Click Protection** to activate this feature and rewrite URLs that Virtual Analyzer considers safe and unrated URLs in email messages for further analysis.
3. (Optional) Select **Rewrite all safe URLs** to also rewrite URLs that Web Reputation Services (WRS) consider safe in email messages for further analysis.
4. Specify an action for each URL rating.

Field	Description
High risk	Select an action (**Allow**, **Warn**, or **Block**) to take on dangerous URLs. The default action is **Block**. High-risk URLs are verified to be fraudulent or known sources of threats.
Medium risk	Select an action (**Allow**, **Warn**, or **Block**) to take on highly suspicious URLs. The default action is **Block**. Medium-risk URLs are suspected to be fraudulent or possible sources of threats.
Low risk	Select an action (**Allow**, **Warn**, or **Block**) to take on suspicious URLs. The default action is **Warn**. Low-risk URLs are associated with spam or possibly compromised.
Unrated	Select an action (**Allow**, **Warn**, or **Block**) to take on untested URLs. The default action is **Warn**. While Trend Micro actively tests URLs for safety, users may encounter unrated pages when visiting new or less popular web sites. Blocking access to unrated pages can improve safety but can also prevent access to safe pages.

5. Click **Save**.

Business Email Compromise

Using Business Email Compromise (BEC) scams, an attacker gains access to a corporate email account and spoofs the owner's identity to initiate fraudulent wire transfers. The attacker typically uses the identity of a top-level executive to trick the target or targets into sending money into the attacker's account. Also known as Man-in-the-Email scams, BEC scams often target businesses that regularly send wire transfers to international clients and may involve the use of malware, social engineering, or both.

With the integrated Antispam Engine, Deep Discovery Email Inspector performs the following to effectively protect organizations against BEC scams:

- Scan email messages from specified high-profile users to block social engineering attacks
- Check sender and recipient domain information to prevent email message spoofing
- Bypass email messages from approved senders to enhance detection

Adding a High-Profile User

Add high-profile user names to allow Deep Discovery Email Inspector to scan email messages for potential social engineering attacks.

High-profile users are top-level executives in your organization. For example, CEOs, CFOs, or managers.

Procedure

1. Go to **Administration** > **Scanning / Analysis** > **Other Settings** > **Business Email Compromise Protection**.
2. Under **High-Profile Users**, type the user name.

Note

- You can type up to 30 UTF-8 encoded characters for family, given, and middle names. Do not use hash "#" or semi-colon ";" characters.
- Specifying complete user names is important. Deep Discovery Email Inspector performs both partial and complete matches on message display names.

  For example, if you add a high-profile user name *John A. Smith*, Deep Discovery Email Inspector blocks forged email messages that use *John A Smith*, *John Smith*, or *Smith John* as the display name.

3. Click **Add**.
   - You can add up to 500 high-profile user names.
   - To delete a user name, select the entry and click **Delete**.

Adding an Internal Domain

Add all internal domains you use in your organization to allow Deep Discovery Email Inspector to detect potential email message spoofing.

Procedure

1. Go to **Administration** > **Scanning / Analysis** > **Other Settings** > **Business Email Compromise Protection**.
2. Under **Internal Domains**, type a domain name (for example, `domain.com`).

   You can specify up to 255 printable ASCII characters for the domain name. Do not use semi-colon ";" characters.
3. Click **Add**.
   - You can add up to 500 domains.
   - To delete a domain, select the entry and click **Delete**.

Adding an Approved Sender

You can add the email addresses of senders that you trust to reduce false-positives and enhance Business Email Compromise (BEC) scam detections. Deep Discovery Email Inspector does not scan messages from approved sender for BEC scams.

Note

You can add up to 1000 senders that you trust to bypass BEC scam detection in Deep Discovery Email Inspector.

Procedure

1. Go to **Administration** > **Scanning / Analysis** > **Other Settings** > **Business Email Compromise Protection**.
2. Under **Approved Senders**, type a sender email address (up to 255 characters).
3. Click **Add**.

   To remove an approved sender from the list, select the entry and click **Delete**.

Cousin Domains

A cousin domain (or look-alike domain) is a domain that looks deceptively similar to a legitimate target domain, which is well-known or familiar to users. Cousin domains are often used in phishing attacks to steal sensitive or confidential information from users. Cousin domains are usually created by replacing one or more characters (for example, replacing the letter "l" with the number "1") or adding or removing an extra character in the domain name. Without careful inspection of the email addresses, users may not notice the trick and think that an email message is sent from a legitimate domain being forged.

Using the advanced antispam engine, Deep Discovery Email Inspector can scan domains in email messages (`from` and `replyto` headers) based on the settings you configure to detect spam and phishing messages.

Configuring Cousin Domain Settings

On the **Cousin Domains** screen, you can configure legitimate sender domains and the detection threshold setting that Deep Discovery Email Inspector uses to detect cousin domains in email messages.

Procedure

1. Go to **Administration** > **Scanning / Analysis** > **Other Settings** > **Cousin Domains**.
2. Add one or more legitimate sender domains. Do the following:
   a. Type a domain name (for example, `domain.com`).

      You can specify up to 255 printable ASCII characters for the domain name. Do not use semi-colon ";" characters.

   b. Click **Add**.

      - You can add up to 1000 domains.
      - To delete a domain, select the entry and click **Delete**.
3. Select a detection threshold.

   - **Aggressive**: This option provides the most number of detections based on fuzzy matches. This is the most rigorous level of spam and phishing detection.
   - **Normal**: This is the default and recommended setting. This option provides a moderate number of detections.
   - **Conservative**: This option provides the most accurate detections based on near-exact matches.

4. (Optional) Specify one or more domains that Deep Discovery Email Inspector excludes from scanning. Type a domain and press [Enter] to add an entry.
5. Click **Save**.

Sender Filtering/Authentication Settings

With sender filtering and sender authentication, Deep Discovery Email Inspector filters and validate senders of incoming email messages to effectively block spam messages.

Note

Sender filtering and sender authentication settings take effect only when Deep Discovery Email Inspector is deployed in MTA mode.

The following table describes the settings that you can configure.

Setting	Description
Approved Senders	A list of trusted senders that bypass sender filtering and sender authentication settings in Deep Discovery Email Inspector
Blocked Senders	A list of senders that Deep Discovery Email Inspector blocks permanently or temporarily
Email Reputation	When deployed as an edge MTA, Deep Discovery Email Inspector filters connections from senders when establishing SMTP sessions based on the reputation of the sender IP addresses. When deployed as a non-edge MTA, Deep Discovery Email Inspector filters connections from senders of the last relay MTA based on the reputation of the sender IP addresses in the email message header.

Setting	Description
DHA protection	Prevents senders from using a directory harvest attack (DHA) to obtain user email addresses for spam message transmission based on one of the following information: • Sender IP address (when Deep Discovery Email Inspector is deployed as an edge MTA) • Sender IP address in the email message header (when Deep Discovery Email Inspector is deployed as a non-edge MTA)
Bounce attack protection	Blocks senders if the number of returned email messages reaches the specified threshold based on the following information: • Sender IP address (when Deep Discovery Email Inspector is deployed as an edge MTA) • Sender IP address in the email message header (when Deep Discovery Email Inspector is deployed as a non-edge MTA)
SMTP traffic throttling	Blocks messages from a sender based on the IP address or email address for a certain time when the number of connections or messages reaches the specified threshold
Sender Policy Framework (SPF)	A sender authentication feature that prevents spoofing and phishing by allowing only messages that are sent from authorized servers for a domain based on the following information: • Sender IP address (when Deep Discovery Email Inspector is deployed as an edge MTA) • Sender IP address in the email message header (when Deep Discovery Email Inspector is deployed as a non-edge MTA)
DomainKeys Identified Mail (DKIM) authentication	A sender authentication feature that prevents spoofing and phishing by verifying signatures in incoming messages
DomainKeys Identified Mail (DKIM) signatures	A list of DKIM signatures that Deep Discovery Email Inspector adds to message headers in outgoing messages

Setting	Description
Domain-based Message Authentication, Reporting & Conformance (DMARC)	A sender authentication feature that verifies message senders for specified domains to prevent spoofing

Sender Filter Order of Evaluation

Before Deep Discovery Email Inspector applies scanning settings on messages, message sender email addresses and IP addresses first go through Approved Senders and Blocked Senders list filtering. Sender email addresses and IP addresses are evaluated until the first match is found.

- By default, Deep Discovery Email Inspector applies sender filtering and sender authentication settings in the following order:
  - For SMTP traffic throttling:
    - Approved Senders list (IP address)
    - Blocked Senders list (user-defined IP address)
    - SMTP traffic throttling (IP address)
    - Approved Senders list (email address)
    - Blocked Senders list (user-defined email address)
    - SMTP traffic throttling (email address)
  - For sender filtering (ERS, DHA, and Bounce Attack) and domain-based message authentication (SPF, DKIM, and DMARC):
    - Approved Senders list (IP address and email address)
    - Blocked Senders list (user-defined IP address and email address)
    - Sender filtering (ERS , DHA, Bounce Attack)

    - Domain-based message authentication (SPF, DKIM, and DMARC)

- If a sender IP address or email address is not in the Approved Senders list and does not match user-defined entries in the Blocked Senders list, Deep Discovery Email Inspector applies sender filtering and sender authentication settings in the following order:
    - SMTP traffic throttling (IP address and email address)
    - Email Reputation Services (ERS)
    - Directory harvest attack (DHA) protection
    - Bounce attack protection
    - Sender Policy Framework (SPF)
    - DomainKeys Identified Mail (DKIM)
    - Domain-based Message Authentication, Reporting & Conformance (DMARC)
- If a sender IP address or email address is in the Approved Senders list, Deep Discovery Email Inspector does not apply user-defined entries in the Blocked Senders list, and sender filtering (ERS, DHA, and bounce attack) and sender authentication (SPF, DKIM, and DMARC) settings on messages from the sender.
- If a sender IP address or email address matches a user-defined entry in the Blocked Senders list, Deep Discovery Email Inspector blocks messages from the sender without scanning.
- When you enable both IP address-based and email address-based SMTP traffic throttling, Deep Discovery Email Inspector blocks messages from a sender if both conditions are met:
    - The sender IP address is in the Blocked Senders list
    - The sender email address is in the Approved Senders list

SMTP Error Codes

When Deep Discovery Email Inspector blocks an email message based on Sender Filtering settings, Deep Discovery Email Inspector sends the following SMTP error codes to the upstream MTA.

Note

Make sure that the upstream MTA can take the necessary pre-configured actions upon receiving these error codes. For example, creating an event log or sending notifications to senders.

Blocking Feature	SMTP Error Code	Message
Sender Filtering/Authentication settings (DHA Protection, Bounce Attack Protection, SMTP Traffic Throttling, SPF, DKIM, DMARC)	421	Block temporarily (Sender Filtering/ Authentication)
	521	Block permanently (Sender Filtering/Authentication)
Email Reputation Service	450	Temporary denial of connection (450) for Zombie matches (ERS)
	550	Permanent denial of connection (550) for RBL+ matches (ERS)

Approved Senders List

The Approved Senders list contains trusted senders that bypass sender filtering and sender authentication settings in Deep Discovery Email Inspector.

Note

- Deep Discovery Email Inspector matches senders against the Approved Senders and Blocked Senders lists only in MTA mode.
- Deep Discovery Email Inspector still checks incoming SMTP traffic from approved senders using Trend Micro Email Reputation Services (ERS) without blocking the traffic.
- For information on how Deep Discovery Email Inspector filters senders based on the Approved Senders and Blocked Senders list, see *Sender Filter Order of Evaluation on page 8-55*.

The following table describes the tasks that you can perform on the **Approved Senders** list.

Task	Description
Add a sender	Click **Add** to add a sender to the list. For more information, see *Adding Approved Senders on page 8-59*.
Delete senders	Select one or more senders and click **Delete**.

The following table describes the Approved Senders list.

Header	Description
IP Address	View the sender IP address or resolved domain IP address that bypasses sender filtering and sender authentication settings in Deep Discovery Email Inspector.
Domain/Email Address	View the sender domain or email address.
Resource Record	View the type of resource record for a sender domain.
Last Updated	View when the entry was last updated.

Adding Approved Senders

You can add one or more senders to the Approved Senders list. Deep Discovery Email Inspector does not apply sender filtering and sender authentication settings on messages from approved senders.

Important

- Deep Discovery Email Inspector does not apply sender filtering and sender authentication settings on messages with IP addresses, domain-resolved IP addresses, or email addresses that match an entry in the Approved Senders list.
- For SMTP traffic throttling, Deep Discovery Email Inspector checks the senders against the Approved Senders and Blocked Senders lists in the following order:
  - Approved Senders list (IP address)
  - Blocked Senders list (user-defined IP address)
  - SMTP traffic throttling (IP address)
  - Approved Senders list (email address)
  - Blocked Senders list (user-defined email address)
  - SMTP traffic throttling (email address)

Note

You can add up to 2048 entries to the list.

Procedure

1. Go to **Administration** > **Sender Filtering/Authentication** > **Approved Senders**.

   The **Approved Senders** screen appears.

2. Click **Add**.

   The **Add Approved Senders** screen appears.

3. Select and configure one of the following:

   - **Domain**: Select this option to specify the domain of the senders. You can select one or more **Resource record** types.

     Note

     Deep Discovery Email Inspector regularly resolves the specified domain, and adds the resolved IP addresses in an entry in the Approved Senders list or updates the resolved IP addresses in the entry.

   - **IP address or subnet**: Select this option to specify the IPv4/IPv6 address of a sender or the subnet of multiple senders.
   - **Email address**: Select this option to specify the email address of the sender.

     Tip

     Deep Discovery Email Inspector support email domains. For example, `*@example.com` indicates all email addresses in `example.com` domain.

4. Click **Save**.

Blocked Senders List

Deep Discovery Email Inspector blocks messages from sender IP addresses, resolved IP address, or email addresses in the Blocked Senders list.

A sender is added to the Blocked Senders list in one of the following ways:

- Automatically when a message from the sender is detected based on the sender filtering (DHA protection, bounce attack protection, and SMTP traffic throttling).
- Manually by the administrator

Note

- Deep Discovery Email Inspector matches senders against the Approved Senders and Blocked Senders lists only in MTA mode.
- Deep Discovery Email Inspector automatically removes a sender from the list after the blocking expiry time is reached.
- The time period filter setting is not applicable for user-defined entries when you select **User defined** or **All** from the **Rule** drop-down list
- For information on how Deep Discovery Email Inspector filters senders based on the Approved Senders and Blocked Senders list, see *Sender Filter Order of Evaluation on page 8-55*.

The following table describes the tasks that you can perform on the **Blocked Senders** list.

Task	Description
Filter the list	Filter the list based on the selected rule type and time period.
Search for a sender	Type a keyword to search for a sender.
Add a sender	Click **Add** to add a sender to the list. For more information, see *Adding Blocked Senders on page 8-62*.
Delete senders	Select one or more senders and click **Delete**.
Move senders to the Approved Senders list	Select one or more senders and click **Move to Approved Senders**. For more information, see *Approved Senders List on page 8-57*.

The following table describes the Blocked Senders list.

Header	Description
IP Address	View the sender IP address resolved domain IP address for the sender that Deep Discovery Email Inspector blocks.
Domain/Email Address	View the sender domain or email address.

Header	Description
Rule	View the name of the sender filtering/authentication rule that is matched.
Resource Record	View the type of resource record for a sender domain.
Action	View whether Deep Discovery Email Inspector blocks the sender address temporarily or permanently.
Expiration	View when Deep Discovery Email Inspector stops temporarily block senders. When the temporary blocking action expires, Deep Discovery Email Inspector removes a sender from the list.
Last Updated	View when the entry was last updated.

Adding Blocked Senders

Important

For SMTP traffic throttling, Deep Discovery Email Inspector checks the senders against the Approved Senders and Blocked Senders lists in the following order:

- Approved Senders list (IP address)
- Blocked Senders list (user-defined IP address)
- SMTP traffic throttling (IP address)
- Approved Senders list (email address)
- Blocked Senders list (user-defined email address)
- SMTP traffic throttling (email address)

Note

You can add up to 2048 entries to the list.

Procedure

1. Go to **Administration** > **Sender Filtering/Authentication** > **Blocked Senders**.

   The **Blocked Senders** screen appears.

2. Click **Add**.

   The **Add Blocked Senders** screen appears.

3. Select and configure one of the following:

   - **Domain**: Select this option to specify the domain of the senders. You can select one or more **Resource record** types.

     Note

     Deep Discovery Email Inspector regularly resolves the specified domain, and adds the resolved IP addresses as a user-defined entry in the Blocked Senders list or updates the resolved IP addresses in the entry.

   - **IP address or subnet**: Select this option to specify the IPv4/IPv6 address of a sender or the subnet of multiple senders.

   - **Email address**: Select this option to specify the email address of the sender.

     Tip

     Deep Discovery Email Inspector support email domains. For example, `*@example.com` indicates all email addresses in `example.com` domain.

4. Click **Save**.

Enabling Email Reputation Services

Deep Discovery Email Inspector uses Email Reputation Services (ERS) technology to maximize spam protection. ERS technology allows Deep

Discovery Email Inspector to determine spam based on the reputation of the originating Mail Transfer Agent (MTA). With ERS enabled, all inbound SMTP traffic is checked by the IP databases to see whether the originating IP address is clean or it has been blocked as a known spam vector.

Note

For Email Reputation Services to function properly, all address translation on inbound SMTP traffic must occur after traffic passes through Deep Discovery Email Inspector. If NAT or PAT takes place before the inbound SMTP traffic reaches Deep Discovery Email Inspector, Deep Discovery Email Inspector always treats the local address as the originating MTA. ERS only blocks connections from suspect MTA public IP addresses, not private or local addresses.

Procedure

1. Go to **Administration** > **Sender Filtering/Authentication** > **Email Reputation**.
2. Select **Enable Email Reputation Services**.
3. Visit the Email reputation management console at https://ers.trendmicro.com/ to access global spam information, view statistics, manage Email reputation settings, and perform service settings.

Configuring DHA Protection Settings

Configure DHA protection settings to prevent senders from using a directory harvest attack (DHA) to obtain user email addresses for spam message transmission.

Note

- Before you enable this feature, configure Microsoft Active Directory settings.

  For more information, see *Configuring an LDAP Server on page 8-147*.

- When SMTP traffic volume is extremely high, Deep Discovery Email Inspector might not precisely block email messages based on the configuration due to the time delay between rule trigger and activation.

Procedure

1. Go to **Administration** > **Sender Filtering/Authentication** > **DHA Protection**.
2. Select **Enable directory harvest attack protection**.
3. Configure the following settings.

Field	Description
Monitoring duration	Select the number of hours that Deep Discovery Email Inspector monitors email traffic to see if the percentage of messages signaling a DHA threat exceeds the specified threshold.
Rate	Type the maximum percentage of messages with detected threats (the numerator).
Total messages	Type the total number of messages (received from the same sender) that Deep Discovery Email Inspector uses to calculate the threshold percentage (the denominator).
Recipient threshold	Type the maximum number of recipients allowed.
Non-existing recipients	Type the he maximum number of non-existent recipients allowed for the threshold value. DHA often include randomly generated email addresses in the receiver list.

Field	Description
Action	Select one of the following block actions: • **Block temporarily**: Blocks messages from the IP address temporarily and allow the upstream MTA to try again after the block duration ends • **Block permanently**: Never allow another message from the IP address and do not allow the upstream MTA to try again
Blocking duration	If you select the **Block temporarily** action, select the number of hours to block. **Note** After blocking a sender for the specified time, Deep Discovery Email Inspector removes the sender from the Blocked Senders list.

For example, if you configure the following settings:

- Monitoring duration: 1 hour
- Rate: 20
- Total messages: 100
- Recipient threshold: 10
- Non-existing recipients: 5

During each one-hour period that DHA protection is active, Deep Discovery Email Inspector starts blocking senders when it receives more than 20% of the messages that were sent to more than 10 recipients (with more than five of the recipients not in your organization) and the total number of messages exceeds 100.

4. Click **Save**.

   To use the default settings, click **Restore Default** to discard your configuration.

Configuring Bounce Attack Protection Settings

You can configure bounce attack protection settings to block senders if the number of returned email messages reaches the specified threshold.

Note

- Before you enable this feature, configure Microsoft Active Directory settings.

  For more information, see *Configuring an LDAP Server on page 8-147*.

- Deep Discovery Email Inspector considers an email message with non-existing recipient as a bounce attack attempt.

- When SMTP traffic volume is extremely high, Deep Discovery Email Inspector might not precisely block email messages based on the configuration due to the time delay between rule trigger and activation.

Procedure

1. Go to **Administration** > **Sender Filtering/Authentication** > **Bounce Attack Protection**.
2. Select **Enable bounce attack protection**.
3. Configure the following settings.

Field	Description
Monitoring duration	Select the number of hours that Deep Discovery Email Inspector monitors email traffic to see if the percentage of messages signaling a bounce attack exceeds the specified threshold.
Rate	Type the maximum percentage of messages with detected threats (the numerator).
Total messages	Type the total number of messages (received from the same sender) that Deep Discovery Email Inspector uses to calculate the threshold percentage (the denominator).

Field	Description
Action	Select one of the following block actions: • **Block temporarily**: Blocks messages from the IP address temporarily and allow the upstream MTA to try again after the block duration ends • **Block permanently**: Never allow another message from the IP address and do not allow the upstream MTA to try again
Blocking duration	If you select the **Block temporarily** action, select the number of hours to block. **Note** After blocking a sender for the specified time, Deep Discovery Email Inspector removes the sender from the Blocked Senders list.

For example, if you configure the following settings:

- Monitoring duration: 1 hour
- Rate: 20
- Total messages: 100

During each one-hour period that blocking for bounced mail is active, Deep Discovery Email Inspector starts blocking senders when more than 20% of the messages it receives are bounced messages and the total number of messages exceeds 100.

4. Click **Save**.

   To use the default settings, click **Restore Default** to discard your configuration.

Configuring SMTP Traffic Throttling Settings

Configure SMTP traffic throttling settings to block messages from a single IP address or sender email address for a certain time when the number of connections or messages reaches the specified threshold.

Note

- Disable SMTP traffic throttling when you deploy Deep Discovery Email Inspector as a non-edge MTA in your network.
- When SMTP traffic volume is extremely high, Deep Discovery Email Inspector might not precisely block email messages based on the configuration due to the time delay between rule trigger and activation.
- For information on how Deep Discovery Email Inspector blocks messages based on the Approved Senders and Blocked Senders lists, see *Sender Filter Order of Evaluation on page 8-55*.

Procedure

1. Go to **Administration** > **Sender Filtering/Authentication** > **SMTP Traffic Throttling**.
2. Select one or both of the following options:
   - **Enable SMTP traffic throttling based on sender IP addresses**: Monitors traffic based on sender IP addresses
   - **Enable SMTP traffic throttling based on sender email addresses**: Monitors traffic based on sender email addresses

     Note

     If you enable SMTP traffic throttling based on email addresses, Deep Discovery Email Inspector does not apply SMTP traffic throttling settings on traffic from sender email addresses in the Approved Senders list.
3. Configure the following settings.

Field	Description
Maximum connections	Type the maximum number of connections allowed for a single IP address.
Maximum messages	Type the maximum number of messages allowed from a single IP address or email address.
Blocking duration	Select the number of hours to block. **Note** After blocking a sender for the specified time, Deep Discovery Email Inspector removes the sender from the Blocked Senders list.

4. Click **Save**.

   To use the default settings, click **Restore Default** to discard your configuration.

Sender Policy Framework (SPF)

Sender Policy Framework (SPF) is an email validation system that detects spoofing and phishing by verifying servers that are authorized to send email messages for a domain. Using SPF, Deep Discovery Email Inspector can verify the "envelop from" addresses in email messages against a list of authorized sending IP addresses and determine if an email message has been forged.

SPF requires the owner of a domain to publish the email sending policy (for example, which email servers are used to send email messages from that domain) in an SPF record in the Domain Name System (DNS). When Deep Discovery Email Inspector receives an email message claiming to come from that domain, Deep Discovery Email Inspector checks the SPF records to verify whether the email message complies with the domain's stated policy. For example, if the message comes from an unknown server, the email message can be considered as fake.

Evaluation of an SPF record can return any of the following results.

Result	Description
Pass	The SPF record designates the host to be allowed to send.
Fail	The SPF record has designated the host as not being allowed to send.
SoftFail	The SPF record has designated the host as not being allowed to send but is in transition.
Neutral	The SPF record specifies explicitly that nothing can be said about validity.
None	The domain does not have an SPF record or the SPF record does not evaluate to a result.
PermError	A permanent error has occurred (for example, badly formatted SPF record).
TempError	A transient error has occurred.

Configuring SPF Settings

Configure Sender Policy Framework (SPF) settings to allow Deep Discovery Email Inspector to determine whether a sender is permitted to send email messages for a domain, before delivering the email messages to the intended recipients.

Note

Deep Discovery Email Inspector is unable to perform HELO/EHLO identification if it is deployed as a non-edge MTA.

Procedure

1. Go to **Administration** > **Sender Filtering/Authentication** > **SPF**.
2. Select **Enable Sender Policy Framework (SPF)**.
3. For **HELO/EHLO identity**, select **Enabled** to check the sender information in HELO/EHLO commands; otherwise, select **Disabled**.

4. To add verification result into the message header, select **Insert X-Header into email messages**.

5. Specify the sender domains to verify. Select **All** to perform SPF record checking for messages from all sender domains; otherwise, select **Specify sender domains** and complete the following steps to add sender domains to the verification list.

   a. Type a domain.

   b. Click **Add**.

   Note

   - Enabling SPF validation for all domains may affect system performance.
   - To remove a sender domain from the list, select the entry and click **Delete**.

6. Specify the action to perform based on the verification result.

   - **Bypass**: Select this option to allow Deep Discovery Email Inspector to continue processing of the message.
   - **Block temporarily**: Select this option to temporarily block the message. The sender can send the same message to Deep Discovery Email Inspector to perform the verification again.
   - **Block permanently**: Select this option to permanently block the message. When a new message is received from the sender, Deep Discovery Email Inspector performs the verification again.

7. Click **Save**.

DomainKeys Identified Mail (DKIM)

DomainKeys Identified Mail (DKIM) is an email validation system that detects email spoofing by validating a domain name identity associated with a message through cryptographic authentication. In addition, DKIM is used

to ensure the integrity of incoming messages or ensure that a message has not been tampered with in transit.

To ensure the validity and integrity of email messages, DKIM uses a public and private key pair system. A public and private key pair is created for the sending domain. The private key is stored securely on the mail server and used to sign outgoing messages. The public key is stored and published in the Domain Name System (DNS). When an email message is sent, the mail server uses the private key to digitally sign it, which is a part of the message header. When the email message is received, the DKIM signature can be verified against the public key on the domain's DNS.

Deep Discovery Email Inspector implements DKIM authentication only in the following scenarios:

- Verifies DKIM signatures for incoming messages from specified sender domains or from all senders.
- Adds DKIM signatures to outgoing message headers to prevent spoofing only when the value of the “From” field in the message header is the same as the MAIL FROM address (envelope sender).

Configuring DKIM Authentication Settings

Deep Discovery Email Inspector verifies DomainKeys Identified Mail (DKIM) signatures in incoming email messages and applies actions on messages that fail to pass signature verification. If a message's DKIM signature passes verification, the message will continue to the next step in the message delivery process.

Procedure

1. Go to **Administration** > **Sender Filtering/Authentication** > **DKIM Authentication**.
2. Select **Enable DomainKeys Identified Mail (DKIM) authentication**.
3. To add verification result into the message header, select **Insert X-Header into email messages**.

4. Select the maximum number of signatures to verify in a message.

Note

- If a message contains more than the maximum number of signatures you select, Deep Discovery Email Inspector terminates the DKIM authentication process for the message.
- Selecting a larger number of signatures to verify may require more processing load.

5. Specify the sender domains to verify. Select **All** to verify DKIM signatures in messages from all sender domains; otherwise, select **Specify sender domains** and complete the following steps to add sender domains to the verification list.

   a. Type a domain.

   b. Click **Add**.

Note

To remove a sender domain from the list, select the entry and click **Delete**.

6. Specify the action to perform based on the verification result.

   - **Bypass**: Select this option to allow Deep Discovery Email Inspector to continue processing of the message.
   - **Block temporarily**: Select this option to temporarily block the message. The sender can send the same message to Deep Discovery Email Inspector to perform the verification again.
   - **Block permanently**: Select this option to permanently block the message. When a new message is received from the sender, Deep Discovery Email Inspector performs the verification again.

7. Click **Save**.

DKIM Signatures

You can configure Deep Discovery Email Inspector to add a digital signature to outgoing message headers to prevent spoofing. Recipients can verify that the email messages from a specific domain are authorized by the domain's administrator and that the messages, including attachments, have not been modified during transport.

Important

If you configure Deep Discovery Email Inspector to sign an incoming message that already contains digital signatures from other email services (for example, Gmail) or MTAs, Deep Discovery Email Inspector removes all existing signatures from the message before adding the new signature and sending the message.

On the management console, you can add or delete DKIM signatures and import or export DKIM signature files.

The following table describes the tasks that you can perform on the **DKIM Signatures** screen.

Task	Description
Add a DKIM signature	Configure DKIM signature settings to sign outgoing messages from a domain. For more information, see *Configuring a DKIM Signature on page 8-76*.
Edit a DKIM signature	Click a domain to edit the settings.
Delete a DKIM signature	Select an entry and click **Delete** to remove it from the list.
Import a list of DKIM signatures	You can import a list of DKIM signatures from another Deep Discovery Email Inspector appliance. For more information, see *Importing DKIM Signatures on page 8-78*.

Task	Description
Export the list of DKIM signatures	Click **Export** to save the list of DKIM signatures to a file. You can use the exported file to replicate the same settings across multiple Deep Discovery Email Inspector appliances on your network.

Configuring a DKIM Signature

You can add or edit a DKIM signature that Deep Discovery Email Inspector uses to all outgoing messages from a specific domain.

Procedure

1. Go to **Administration** > **Sender Filtering/Authentication** > **DKIM Signatures**.
2. Do one of the following:
   - Click **Add** to add a new signature.
   - Click a domain to edit the signature.
3. Select **Enable DKIM signature**.
4. Configure the general settings.

Field	Description
Domain	Type the domain where messages are sent. For example, domain.com or *.domain.com
SDID	Type the signing domain identifier. For example, domain.com.
Headers to sign	Select one or more headers to sign, or add a custom header.

Field	Description
Private key	Select one of the following: • **Import existing key**: Select this option and click **Select** to locate a private key file to import. • **Generate**: Select this option and select a key length have Deep Discovery Email Inspector create a private key. **Note** After saving the settings, use the generated DNS TXT record name and DNS TXT record value to publish the key pair to your DNS server.

5. (Optional) Configure the advanced settings.

Field	Description
Header canonicalization	Select a cononicalization algorithm: • **Relaxed**: Select this option to allow common modifications such as whitespace replacement or header field line rewrapping. • **Simple**: Select this option to allow no modifications in the header.
Body canonicalization	Select a cononicalization algorithm: • **Relaxed**: Select this option to allow common modifications such as whitespace replacement. • **Simple**: Select this option to allow no modifications in the body.
Signature expiration	Type the number of days that the signature will be valid.
Body length	Type the number of bytes allowed for the email body.
AUID	Type the Agent or User Identifier on behalf of which SDID is taking responsibility.

Field	Description
Sub-domain exceptions	Type a sub-domain to be excluded from DKIM signing and press ENTER.

6. Click **Save**.

Note

If you specify Deep Discovery Email Inspector to create a private key, use the generated DNS TXT record name and DNS TXT record value to publish the key pair to your DNS server.

Importing DKIM Signatures

You can import a list of DKIM signatures from another Deep Discovery Email Inspector appliance.

Procedure

1. Go to **Administration** > **Sender Filtering/Authentication** > **DKIM Signatures**.
2. Click **Import**.

   The **Import DKIM Signatures** screen appears.
3. Click **Select** to locate the file containing the list of DKIM signatures.
4. Specify the password.
5. Click **Import**.

Domain-based Message Authentication, Reporting & Conformance (DMARC)

Domain-based Message Authentication, Reporting and Conformance (DMARC) is an email validation system designed to detect and prevent email

spoofing. DMARC is intended to combat certain techniques often used in phishing and email spam, such as email messages with forged sender addresses that appear to originate from legitimate organizations. DMARC provides a way to authenticate email messages for specific domains, send feedback to senders, and conform to a published policy.

DMARC is designed to fit into the existing inbound email authentication process of Deep Discovery Email Inspector. DMARC helps email recipients to determine if the purported message aligns with what the recipient knows about the sender. If not, DMARC includes guidance on how to handle the non-aligned messages.

DMARC requires the following:

- A message that passes the SPF check
- A message that passes the DKIM authentication check
- Alignment of identifier domains

  Identifier alignment requires that a domain authenticated by SPF and DKIM is the same as the message header domain or parent domain.

By configuring DMARC settings, Deep Discovery Email Inspector allows you to specify actions to take on messages and add enforced peers to make sure email messages from certain sender domains always pass DMARC authentication.

Configuring DMARC Settings

Use the **DMARC** screen to configure DMARC settings for certain domains and specify the actions based on the DMARC authentication results.

Procedure

1. Go to **Administration** > **Sender Filtering/Authentication** > **DMARC**.
2. Select **Enable Domain-based Message Authentication, Reporting & Conformance (DMARC)**.

3. To add verification result into the message header, select **Insert X-Header into email messages**.

4. (Optional) Select **Send daily reports to senders** and configure the following settings to send aggregated reports of unsuccessful authentications to the senders on a daily basis.

Field	Description
Organization name	Type the name or domain of the sending organization.
Email address	Type the email address that Deep Discovery Email Inspector uses to send the reports.
Contact information	Type the contact information (for example, phone number or URL).

5. Specify the sender domains to verify. Select **All** to check messages from all sender domains; otherwise, select **Specify sender domains**and complete the following steps to add sender domains to the verification list.

   a. Type a domain (with or without wildcard). For example, domain.com or *.domain.com.

   b. Click **Add**.

Note

To remove a sender domain from the list, select the entry and click **Delete**.

6. Specify the action to perform based on the verification result.

   - **Bypass**: Select this option to allow Deep Discovery Email Inspector to continue processing of the message.
   - **Block temporarily**: Select this option to temporarily block the message. The sender can send the same message to Deep Discovery Email Inspector to perform the verification again.

- **Block permanently**: Select this option to permanently block the message. When a new message is received from the sender, Deep Discovery Email Inspector performs the verification again.

7. Click **Save**.

End-User Quarantine

Deep Discovery Email Inspector includes the End-User Quarantine (EUQ) feature to improve spam management. Messages that are determined to be spam are quarantined and are available for users to review, delete, release, or approve for delivery. You can configure Deep Discovery Email Inspector to automatically send EUQ digest notifications with inline action links. With the web-based EUQ console, users can manage the spam quarantine of their personal accounts and of distribution lists that they belong to and add senders to the Approved Senders list.

For quarantine storage maintenance, you can manually remove data or configure automatic data purge thresholds.

For more information, see *Configuring Storage Maintenance on page 8-198*.

Note

When Deep Discovery Email Inspector is registered to Deep Discovery Director 5.0 (or later), Deep Discovery Director provides central management of End-User Quarantine settings. After registration is successful, Deep Discovery Email Inspector performs the following actions:

- Obtains EUQ settings from Deep Discovery Director and prevents manual configuration of EUQ settings on the management console
- Stops sending EUQ digests
- Disables EUQ console access

Configuring User Quarantine Access Settings

You can configure Deep Discovery Email Inspector to allow users to access the EUQ console and manage quarantined messages.

Note

When Deep Discovery Email Inspector is registered to Deep Discovery Director 5.0 (or later), Deep Discovery Director provides central management of End-User Quarantine settings. After registration is successful, Deep Discovery Email Inspector performs the following actions:

Procedure

1. Go to **Administration** > **End-User Quarantine**.
2. Click the **User Quarantine Access** tab.
3. Select **Enable EUQ console access**.
4. Select an authentication method for EUQ console access.
   - **LDAP**: Select this option to authenticate users based on their LDAP account credentials for EUQ console access. When you select this option, you can specify the following settings:
     - Select **Enable distribution list EUQ management** to allow users to manage the EUQ of distribution lists that they belong to.
     - Select **Allow only users in selected groups to access the EUQ console** to enable EUQ console access for selected LDAP groups.

       You can type a keyword in the text box and click **Query** to search for user groups. Click a group name in the **Available Groups** list to add to the**Selected Groups** list.

       Tip

       To remove a group, click the group name in the **Selected Groups** list.

Note

Configure LDAP integration settings before using an LDAP server for user authentication.

For more information, see *Configuring an LDAP Server on page 8-147*.

- **SAML**: Select this option to authenticate users based on SAML single sign-on account credentials from an identity provider.

  To have Deep Discovery Email Inspector send EUQ digest notifications to only users in selected user groups, select **Send EUQ digest notifications to only users in the selected LDAP groups.** and add one or more user groups to the Selected Groups list.

- **SMTP**: Select this option to authenticate users based on their email address account credentials for EUQ console access.

  Click **+ Add** to add an SMTP server.

  For more information, see *Adding an SMTP Server for EUQ Authentication on page 8-84*.

5. Under **Advanced Settings**, configure the following settings:

   - From the **Maximum approved senders per user** drop-down list, select the maximum number of approved sender email address that users can add on the EUQ console.

   - Select **Deliver released messages directly without reprocessing** to allow users to release quarantined messages directly to recipients without scanning.

     Note

     If you do not select this option, users can still release quarantined messages by clicking inline action links in EUQ digest notifications or on the EUQ console. However, Deep Discovery Email Inspector scans these messages before delivery. Depending on the scanning results, Deep Discovery Email Inspector may quarantine these messages again.

6. Click **Save**.

   After you select the **Enable EUQ console access** option, you can click the URL or send the URL to users to access the EUQ console.

   For more information, see *Accessing the End-User Quarantine Console on page 8-88*.

Adding an SMTP Server for EUQ Authentication

On the **End-User Quarantine** screen, you can add one or more SMTP servers for EUQ authentication.

Procedure

1. Go to **Administration** > **End-User Quarantine**.

   The **End-User Quarantine** screen appears.

2. Select **Use SMTP server for EUQ authentication**.

3. Click **+ Add**.

   The **Add SMTP Server** screen appears.

4. Configure the SMTP server settings.

Field	Description
Domain	Type the domain name to use for EUQ console authentication. You can use an asterisk character (*) in a domain name.
Server address	Type the server IP address or FQDN.
Port	Type the server port.
Encryption method	Select a data encryption method (**None**, **StartTLS**, or **SSL/TLS**) from the drop-down list.

5. Click **Add**.

EUQ Digest

An EUQ digest is a notification that Deep Discovery Email Inspector sends to inform users about email messages that were detected as spam and temporarily stored in the EUQ.

Note

- When Deep Discovery Email Inspector is registered to Deep Discovery Director 5.0 (or later), Deep Discovery Director provides central management of End-User Quarantine settings. After registration is successful, Deep Discovery Email Inspector performs the following actions:
- Deep Discovery Email Inspector sends EUQ digests only if there are new quarantined messages since the last digest.
- If Active Directory authentication is enabled, Deep Discovery Email Inspector does not send EUQ digests to user groups (or distribution lists).
- If SMTP authentication is enabled and a detected message is sent to a distribution list, Deep Discovery Email Inspector sends EUQ digests to the distribution list.

An EUQ digest provides the following information:

- Total spam message count: Total number of new email messages in the EUQ since the last notification
- New spam message size: Size of the new email messages in the EUQ since the last notification
- Message list: Summary of email messages detected as spam.
  - Sender: The sender email address
  - Subject: The email subject

- Size: The message size, including attachments
- Received: The time the message was received
- Actions: Links that users can click to apply actions to quarantine messages or to add sender email address to the approved list

Note

Inline action links display only if you enable this feature on the **EUQ Digest** screen.

Inline Action Links

You can configure Deep Discovery Email Inspector to include inline action links in EUQ digest notifications. Users can click the links in EUQ digest notifications to manage quarantined messages without having to access the EUQ console.

Inline action links allows users to perform the following actions on quarantined messages:

- Delete: Deletes the message and the associated attachments
- Release: Releases the message directly from the quarantine.
- Release and add to Approved Senders list: Releases the message directly from quarantine and adds the sender email address to the Approved Senders list.

Important

If you select the **Deliver released messages directly without scanning** option on the **User Quarantine Access** screen, Deep Discovery Email Inspector delivers released messages to recipients without scanning.

For more information, see *Configuring User Quarantine Access Settings on page 8-82*.

Note

Inline action links remain active in forwarded messages. Inline action links in digest notifications expire and become inaccessible when the time for the next digest notification is reached.

Configuring EUQ Digest Settings

You can configure Deep Discovery Email Inspector to send EUQ digests to notify users of new messages that are detected as spam.

Procedure

1. **Administration** > **End-User Quarantine**.
2. Click the **EUQ Digest** tab.
3. Select **Enable EUQ digest notifications**.
4. From the **Notification frequency** drop-down list, select the number of hours Deep Discovery Email Inspector waits before sending an EUQ digest notification.
5. Select **Enable inline action** to allow users to apply actions from the EUQ digest.
6. Configure the settings for the digest notification template.

Field	Description
Subject	Type the subject for the notification email message.

Field	Description
Content	Type the content for the notification email message. You can include the following tokens in the message: • %USER_NAME% • %TOTAL_SPAM_COUNT% • %TOTAL_SPAM_SIZE% • %START_TIME% • %END_TIME%

7. Click **Save**.

End-User Quarantine Console

When you configure the End-User Quarantine settings, Deep Discovery Email Inspector provides the EUQ console that allows users to perform the following tasks:

- Manage the spam quarantine of their personal accounts
- Manage the spam quarantine of Active Directory distribution lists that they belong to
- Add senders to the Approved Senders list

Note

You can enable EUQ console access on the **User Quarantine Access** screen.

For more information, see *Configuring User Quarantine Access Settings on page 8-82*.

Accessing the End-User Quarantine Console

Access the EUQ console to manage quarantined spam messages and the Approved Senders list.

Procedure

1. In a web browser, type the Deep Discovery Email Inspector server address with the port number `4459`.

   `https://<target server IP address>:4459`

2. Do one of the following:

   - To log on using a local user account:

     a. Specify the logon credentials (user name and password).

     The following table describes the logon user name format depending on the authentication method.

Authentication Method	Logon Name Format
Active Directory	Domain credentials in one of the following formats: • User Principal Name (UPN) For example, `user1@domain.com`. • Down-level logon name For example, `domain\user1`.
• SMTP • OpenLDAP • Domino	A valid email address

     b. Click **Log On**.

   - To log on with single sign-on:

     a. Select a service name from the drop-down list.

     b. Click **Single Sign-on (SSO)**.

     The system automatically navigates to the logon page for your organization.

c. Follow the on-screen instructions and provide your account credentials to access the Deep Discovery Email Inspector management console.

Viewing Quarantined Messages

You can view the list of quarantined email messages that Deep Discovery Email Inspector considers as spam/graymail for your account.

Access the EUQ console to display the **Quarantined Messages** screen.

For more information, see *Accessing the End-User Quarantine Console on page 8-88*.

The following table describes the fields.

Field	Description
▶	View detailed message information such as message size, message ID, attachment file name, and message content (up to the first 2K of the content).
Sender	View the sending email address of the detected message.
Recipient	View the detected message recipient email address.
Email Subject	View the email subject of the suspicious email message.
Detected	View the date and time that the suspicious email message was detected.

You can perform one of the following actions to manage quarantined messages:

- **Release**: Select one or more messages and click **Release** to release the selected messages.
- **Release and Approve Sender**: Select one or more messages and click **Release and Approve Sender** to release the selected messages and adds the sender email addresses to the Approved Senders list.

- **Delete**: Select one or more messages and click **Delete** to remove the selected message from the quarantine folder.

Important

- Deep Discovery Email Inspector sends a released message directly to the intended recipient without reprocessing the message.
- To allow users to deliver released messages directly from without scanning, select **Deliver released messages directly without scanning** on the **User Quarantine Access** screen.

  For more information, see *Configuring User Quarantine Access Settings on page 8-82*.
- After deleting a message, you cannot recover the message.

Adding Approved Senders

You can configure the Approved Senders list on the End-User Quarantine console to reduce false-positives for spam detections.

Note

The Approved Senders list has priority over the Blocked Senders list. If a sender IP address is in both the Blocked Senders list and the Approved Senders list, Deep Discovery Email Inspector does not block messages from the sender.

For more information, see *Blocked Senders List on page 8-60*.

Procedure

1. Access the EUQ console.

   For more information, see *Accessing the End-User Quarantine Console on page 8-88*
2. Click the **Approved Senders** tab.
3. To add an entry to the list, type an email address in the text field and click **Add**.

You can click **Delete** to remove a selected entry from the list.

4. Click **Save**.

Viewing Quarantined Messages for Distribution Lists

You can view the list of quarantined email messages that Deep Discovery Email Inspector considers as spam/graymail for the email distribution lists that you belong to.

Procedure

1. Access the EUQ console.

   For more information, see *Accessing the End-User Quarantine Console on page 8-88*

2. Click the **Distribution List Quarantine** tab.

   The following table describes the fields.

Field	Description
Sender	View the sending email address of the detected message.
Recipient	View the detected message recipient email address.
Email Subject	View the email subject of the suspicious email message.
Detected	View the date and time that the suspicious email message was detected.

   You can perform one of the following actions to manage quarantined messages:

   - **Query**: Click to filter messages based on the specified LDAP group name.
   - **Release**: Select one or more messages and click **Release** to release the selected messages.

- **Delete**: Select one or more messages and click **Delete** to remove the selected message from the quarantine folder.

Important

- Deep Discovery Email Inspector sends a released message directly to the intended recipient without reprocessing the message.

  When you release a message for a distribution list, the message is sent to all recipients in the distribution list.

- To allow users to deliver released messages directly from without scanning, select **Deliver released messages directly without scanning** on the **User Quarantine Access** screen.

  For more information, see *Configuring User Quarantine Access Settings on page 8-82*.

- After deleting a message, you cannot recover the message.

Mail Settings

Topics include:

Message Delivery

Deep Discovery Email Inspector maintains a routing table based on domains and email addresses. Deep Discovery Email Inspector uses this routing table to route email messages (with matching recipient domains or email addresses) to specified destination servers or to destination servers that match specified mail exchanger records (MX records).

There are two message delivery methods:

- Look up MX record

  When delivering an email message using MX record lookup, Deep Discovery Email Inspector queries the specified MX record, and then delivers the email message to the destination server identified by the MX record.

- Specify servers

  When delivering an email message using specified servers, Deep Discovery Email Inspector first sends the email message to the destination server with the highest priority. If the server is unavailable, Deep Discovery Email Inspector chooses the remaining servers in descending order of their priority. If multiple destination servers have the same priority, Deep Discovery Email Inspector randomly selects a server for message delivery.

Email messages destined to unspecified domains and email addresses are routed based on the records in the Domain Name Server (DNS). For example, if the delivery domain includes “example.com” and the associated SMTP server is `10.10.10.10` on port 25, then all email messages sent to “example.com” deliver to the SMTP server at `10.10.10.10` using port 25.

Configuring SMTP Connection Settings

Configure SMTP connection settings to control which MTAs and mail user agents are allowed to connect to the server.

Note

Connection control settings take priority over mail relay settings.

Procedure

1. Go to **Administration** > **Mail Settings** > **Connections**.
2. Specify the **SMTP Interface** settings.

Option	Description
Port	Specify the listening port of the SMTP service.
Disconnect after { } minutes of inactivity	Specify a time-out value.
Simultaneous connections	Click **No limit** or **Allow up to { } connections** and specify the maximum allowed connections.

3. Specify the **Connection Control** settings.
   a. Select a connections "deny list" or "permit list".
      - Select **Accept all, except the following list** to configure the "deny list".
      - Select **Deny all, except the following list** to configure the "permit list".
   b. Select an option and then specify the IP addresses.

Option	Description
Single computer	Specify an IPv4 or IPv6 address, and then click **[>>]** to add it to the list.
Group of computers	i. Select the IP version. ii. Type the **Subnet address**. iii. If IPv4 was selected, type the **Subnet mask**. iv. Click **[>>]** to add it to the list.

Option	Description
Import from File	Click to import an IP list from a file. The following list shows sample content of an IP list text file: 192.168.1.1 192.168.2.0:255.255.255.0 192.168.3.1:255.255.255.128 192.168.4.100 192.168.5.32:255.255.255.192

4. Specify the **Transport Layer Security** settings.

   See *Configuring TLS Settings on page 8-96*.

5. Click **Save**.

Configuring TLS Settings

Transport Layer Security (TLS) provides a secure communication channel between hosts over the Internet, ensuring the privacy and integrity of the data during transmission.

For details about TLS settings, see *Transport Layer Security on page A-1*.

Note

Deep Discovery Email Inspector supports TLS 1.2 and earlier versions.

Procedure

1. Go to **Administration** > **Mail Settings** > **Connections**.
2. Go to the bottom of the page to the section titled **Transport Layer Security**.
3. Select **Enable incoming TLS**.

This option allows the Deep Discovery Email Inspector SMTP Server to provide Transport Layer Security (TLS) support to SMTP email relays, but does not require that email relays use TLS encryption to establish the connection.

4. Select **Only accept SMTP connections through TLS** for Deep Discovery Email Inspector to only accept secure incoming connections.

   This option enables the Deep Discovery Email Inspector SMTP server to accept messages only through a TLS connection.

5. Click a **Browse** button next to one of the following:

Option	Description
CA certificate	The CA certificate verifies an SMTP email relay. However, Deep Discovery Email Inspector does not verify the email relay and only uses the CA certificate for enabling the TLS connection.
Private key	The SMTP email relay creates the session key by encrypting a random number using the Deep Discovery Email Inspector SMTP server's public key. The Deep Discovery Email Inspector SMTP server then uses the private key to decrypt the random number in order to establish the secure connection. This key must be uploaded to enable a TLS connection.
SMTP server certification	SMTP email relays can generate session keys with the Deep Discovery Email Inspector SMTP server public key. Upload the key to enable a TLS connection.

6. Select **Enable outgoing TLS**.

7. Click **Save**.

Configuring Message Delivery Settings

The following procedure explains how to configure message delivery settings for downstream mail servers.

For more information about configuring connections, importing message delivery settings, and setting message rules, see *Mail Settings on page 8-93*.

Specify settings for email message delivery to Deep Discovery Email Inspector downstream mail servers. Deep Discovery Email Inspector checks the recipient domains or email addresses, determines destination servers, and sends the message to the next SMTP host for the matched domain or email address.

Procedure

1. Go to **Administration** > **Mail Settings** > **Message Delivery**.
2. Click **Add**.

   The **Add Delivery Profile** screen appears.
3. Select the status of the delivery profile.
4. Specify the recipient domain or email address. Type a wildcard (*) to manage email message delivery from a domain and any subdomains.
   - * (Include all domains)
   - `example.com` (Include only example.com)
   - `*.example.com` (Include example.com and any subdomains)
5. Select either of the following from the **Destination servers** drop-down list:
   - **Look up MX record**: Specify the MX record name, and a port number when connecting through a non-default port.
   - **Specify server**: Specify the IP address or fully qualified domain name, port number, and priority to forward email messages.

Note

- The lower the priority value, the higher the priority.
- Optionally add multiple destination servers by clicking on **Add server**.
- To disable a destination server, click on the check mark for the server behind the **Priority** field. Then the check mark becomes a dash mark. To enable the server again, click the dash mark.

6. Click **Save**.

Importing Message Delivery Settings

Use this option if you have a properly formatted `.xml` file containing message delivery settings. Optionally, export existing settings from the management console, or download a sample XML from the **Import Delivery Profiles** screen and generate a file according to the exported file.

Specify settings for email message delivery to Deep Discovery Email Inspector downstream mail servers. Deep Discovery Email Inspector checks the recipient domains or email addresses, determines destination servers, and sends the message to the next SMTP host for the matched domain or email address.

Procedure

1. Go to **Administration** > **Mail Settings** > **Message Delivery**.
2. Click **Import**.

   The **Import Delivery Profiles** screen appears.
3. Click **Browse** to locate the file to import.
4. Select one of the options:
   - Merge with existing profiles: Add the imported profiles into the current message delivery list.

- Replace existing profiles: Overwrite all existing profiles with the profiles in the XML file.

5. Click **Continue**.

   The profiles are added to the **Message Delivery** list.

Configuring Limits and Exceptions

Set limits on the email messages that Deep Discovery Email Inspector processes to:

- Improve performance by reducing the total number of email messages required to process
- Restrict senders of relayed messages and recipient domains to prevent Deep Discovery Email Inspector from acting as an open mail relay

Note

Connection control settings take priority over mail relay settings.

Procedure

1. Go to **Administration** > **Mail Settings** > **Limits and Exceptions**.
2. Specify the **Message Limits** settings:

Option	Description
Maximum message size	Specify maximum message size from 1 to 2047 MB.
Maximum number of recipients	Specify number of recipients from 1 to 99,999.

3. Specify the **Permitted Recipient Domains**.

   Do one of the following:

   - Add an single domain:

a. Type a domain name.

b. Click > to include the entry in the **Permitted recipient domains** list.

- Import a list of domains:

Note

Deep Discovery Email Inspector can import domain names from a text file. Ensure that the text file contains only one email address per line.

a. Click **Import From File**.

b. Select a text file and click **OK**.

The new entries appear in the **Permitted recipient domains** list.

Note

- To export the permitted recipient domain list, click **Export** and save the text file on your computer. To replicate the same permitted recipient domain settings on several Deep Discovery Email Inspector appliances, import the text file on the target appliances.
- Deep Discovery Email Inspector bypasses SPF and DKIM verifications for domains you configure in the **Permitted Recipient Domains** list.

  For more information, see *Sender Policy Framework (SPF) on page 8-70* and *DomainKeys Identified Mail (DKIM) on page 8-72*.

4. Specify the **Permitted Senders of Relayed Mail**.

- **Deep Discovery Email Inspector only**
- **Hosts in the same subnet**
- **Hosts in the same address class**

Note

When this option is selected, Deep Discovery Email Inspector will check if the IP address of Deep Discovery Email Inspector and hosts are in the same address class and subnet.

- Deep Discovery Email Inspector will only allow hosts to relay messages if they are in the same address class and subnet.

  For example:

  - Class A: The Deep Discovery Email Inspector IP address is 10.1.2.3, and the hosts' IP address is 10.1.2.x.

    Class B: The Deep Discovery Email Inspector IP address is 172.31.2.3, and the hosts' IP address is 172.31.x.x.

    Class C: The Deep Discovery Email Inspector IP address is 192.168.10.3, and the hosts' IP address is 192.168.10.x.

- Deep Discovery Email Inspector will not allow hosts to relay messages if they are in the same address class, but not in the same subnet.

  For example:

  - Class A: The Deep Discovery Email Inspector IP address is 10.1.2.3, and the hosts' IP address is 11.2.3.x.

    Class B: The Deep Discovery Email Inspector IP address is 172.31.2.3, and the hosts' IP address is 172.32.x.x.

    Class C: The Deep Discovery Email Inspector IP address is 192.168.10.3, and the hosts' IP address is 192.168.11.x.

- **Specified IP addresses**

Note

Import settings from a file by clicking **Import from a File**.

Export settings to a file by clicking **Export**.

5. Click **Save**.

Configuring the SMTP Greeting Message

The SMTP greeting message presents to the mail relay whenever Deep Discovery Email Inspector establishes an SMTP session.

Procedure

1. Go to **Administration** > **Mail Settings** > **SMTP Greeting**
2. In the text box, specify a greeting message.
3. Click **Save**.

Edge MTA Relay Servers

When you deploy Deep Discovery Email Inspector as a non-edge MTA in your network, you can specify the edge MTA servers that relay external email messages to Deep Discovery Email Inspector on your internal network.

The following table describes information on the **Edge MTA Relay Servers** screen.

Header	Description
IP address/Domain	View the IP address or domain name of the edge MTA relay server.
Description	View a description for the edge MTA relay server.

Note

- If you deploy Deep Discovery Email Inspector as an edge MTA in your network, the sender IP address is the public IP address of the external MTA nearest to your network.
- If you deploy Deep Discovery Email Inspector as a non-edge MTA in your network, the sender IP address is the IP address of the MTA nearest to the edge MTA relay server.

Configuring Edge MTA Relay Servers

When Deep Discovery Email Inspector is not deployed as an edge MTA in your network, configure the edge MTA relay servers.

Note

You can configure up to 256 edge MTA relay servers.

Procedure

1. Go to **Administration** > **Mail Settings**.
2. Click the **Edge MTA Relay Servers**.
3. Click **Add**.

   The **Add Edge MTA Relay Server** screen appears.
4. Configure the settings.

Field	Description
IP address/Domain	Type the IP address or domain name for the edge MTA relay server.
Description	Type a description for the entry.

5. (Optional) To add more entries, click **Add More** and do the following:

   To delete an entry from the list, click the icon ( ) in the **Action** column.
6. Click **Save**.

   A new entry displays in the edge MTA relay servers list.

   To remove one or more entries, select the entries and click **Delete**.

Internal Domains

You can configure the internal domain list to allow Deep Discovery Email Inspector determine whether a message is inbound or outbound.

If the domain of a sender address is in the internal domain list, Deep Discovery Email Inspector considers messages from the sender as outbound messages. Deep Discovery Email Inspector applies policies based on the message direction.

Note

If you do not add any entries in the internal domain list, Deep Discovery Email Inspector considers all messages as inbound messages by default.

Adding Internal Domains

You can add up to 1024 internal domains.

Procedure

1. Go to **Administration** > **Mail Settings** > **Internal Domains**.
2. Click **Add**.
3. Type a domain. You can use the * wildcard character as a prefix in the domain.

   For example, example.com, sub.example.com, or *.example.com.
4. Type additional information for the domain.
5. (Optional) Specify a note.
6. (Optional) Click **Add more** to add more domains.
7. Click **Save**.
8. (Optional) Select **Include permitted recipient domains** to set the recipient domains you specify on the **Limits and Exceptions** screen as internal domains.

For more information, see *Configuring Limits and Exceptions on page 8-100*.

9. Click **Save**.

   After adding a domain:

   - Click **Delete** to remove the selected entry.
   - Click **Export** to download all entries as a CSV file.

Importing Internal Domains

You can import internal domains from a properly-formatted CSV file.

Procedure

1. Go to **Administration** > **Mail Settings** > **Internal Domains**.
2. Click **Import**.
3. Click **Select File** to locate the file to import
4. Select one of the following options:
   - **Merge with current list**: Add the imported entries into the existing internal domain list.
   - **Overwrite current list**: Replace all entries with entries in the CSV file.
5. Click **Import**.

   The imported entries display in the list.

Integrated Products/Services

Deep Discovery Email Inspector integrates with the following products and services:

Integrated Trend Micro Products

For seamless integration, make sure that the Trend Micro products that integrate with Deep Discovery Email Inspector run the required or recommended versions.

TABLE 8-11. Trend Micro Products and Services that Integrate with Deep Discovery Email Inspector

PRODUCT/ SERVICE	VERSION
Deep Discovery Director	• 5.1 SP1
Deep Discovery Analyzer	• 6.9 • 6.8
Apex Central	• 2019
Control Manager	• 7.0 with the latest hotfix installed
Smart Protection Server	• 3.3 • 3.2

PRODUCT/ SERVICE	VERSION
TippingPoint Security Management System (SMS)	• 5.3 • 5.2

Apex Central

Apex Central is a software management solution that gives you the ability to control antivirus and content security programs from a central location, regardless of the program's physical location or platform. This application can simplify the administration of a corporate antivirus and content security policy.

Note

Ensure that both Deep Discovery Email Inspector and the Apex Central server belong to the same network segment. If Deep Discovery Email Inspector is not in the same network segment as Apex Central, configure the port forwarding settings for Deep Discovery Email Inspector.

For details about Apex Central features, see *Apex Central Features on page 8-109*.

On Deep Discovery Email Inspector, use the **Administration** > **Integrated Products/Services** > **Apex Central** tab to perform the following tasks:

- Register to an Apex Central server.

  For details, see *Registering to Apex Central on page 8-110*.

- Check the connection status between Deep Discovery Email Inspector and Apex Central.
- Unregister from an Apex Central server.

  For details, see *Unregistering from Apex Central on page 8-112*.

- Synchronize suspicious objects with Apex Central.

Note

If you register Deep Discovery Email Inspector to both Deep Discovery Director 5.0 (or later) and Apex Central, Deep Discovery Email Inspector synchronizes suspicious objects and exception lists from Deep Discovery Director only. You can check the synchronization status on the Deep Discovery Director management console.

Apex Central Features

Apex Central offers the following features:

TABLE 8-12. Apex Central Features

FEATURE	APEX CENTRAL SCREEN
Log data aggregation	**Log Aggregation Settings**
Suspicious object data aggregation	**Suspicious Objects**
Reports	• One-time report: **One-time Reports** • Scheduled report: **Scheduled Reports**
Notifications	**Event Notifications**
Single sign-on (SSO)	**Products**
Product component updates	**Products**
Exceptions	**Virtual Analyzer Objects**

For details, see the *Trend Micro Apex Central Administrator's Guide*.

Apex Central Components

TABLE 8-13. Apex Central Components

COMPONENT	DESCRIPTION
Apex Central server	The computer upon which the Apex Central application is installed. This server hosts the web-based Apex Centralproduct console

Component	Description
Management Communication Protocol (MCP) Agent	An application installed along with Deep Discovery Email Inspector that allows Apex Central to manage the product. The agent receives commands from the Apex Central server, and then applies them to Deep Discovery Email Inspector. It also collects logs from the product, and sends them to Apex Central. The Apex Central agent does not communicate with the Apex Central server directly. Instead, it interfaces with a component called the Communicator.
Entity	A representation of a managed product (such as Deep Discovery Email Inspector) on the Apex Central console's product directory tree. The product directory tree includes all managed entities.

Registering to Apex Central

Procedure

1. Go to **Administration** > **Integrated Products/Services** > **Apex Central**.
2. Configure **General** settings.
   - View the registration status.
   - Specify the display name that identifies Deep Discovery Email Inspector in the Apex Central Product Directory.

   Tip

   Use the host name or specify a unique and meaningful name to help you quickly identify Deep Discovery Email Inspector.
3. Configure **Server Settings**.

Option	Description
Server address	Type the Apex Central server FQDN or IP address.
Port	Type the port number that the MCP agent uses to communicate with Apex Central.

Option	Description
	Select **Use HTTPS** if the Apex Central security is set to medium or high. Medium: Trend Micro allows HTTPS and HTTP communication between Apex Central and the MCP agent of managed products. High: Trend Micro only allows HTTPS communication between Apex Central and the MCP agent of managed products.
User name and password	Type the logon credentials for the IIS server used by Apex Central if your network requires authentication.
Connect using a proxy server	Optionally select **Connect using a proxy server**. For details, see *Configuring Proxy Settings on page 8-174*.

4. (Optional) Configure **Incoming Connections from Apex Central** settings.

   a. Select **Receive connections through a NAT device** to use a NAT device.

   b. Type the IP address of the NAT device.

   c. Type the port number.

5. (Optional) Under **Suspicious Object Synchronization**, do the following:

   a. Select **Synchronize suspicious objects from Apex Central**.

   b. Type an API Key.

   Note

   Log on to Apex Central to obtain an API key.

   Deep Discovery Email Inspector synchronizes suspicious object lists from Apex Central every 20 seconds, and displays the time of the last synchronization.

Attention

- You can only choose to synchronize suspicious objects with one source. If you enable Deep Discovery Email Inspector to synchronize with Apex Central, you will not receive suspicious objects from any other external sources.
- If you register Deep Discovery Email Inspector to both Deep Discovery Director 5.0 (or later) and Apex Central, Deep Discovery Email Inspector synchronizes suspicious objects and exception lists from Deep Discovery Director only. You can check the synchronization status on the Deep Discovery Director management console.
- If you unregister Deep Discovery Email Inspector from Deep Discovery Director and Deep Discovery Email Inspector is still registered to Apex Central, you must configure the settings again to synchronize suspicious objects from Apex Central.
- If you are using an external sandbox, verify that the external sandbox is configured to send suspicious objects to Apex Central before selecting this option.

6. Click **Save**.

Deep Discovery Email Inspector registers to Apex Central.

To verify the registration, on Apex Central go to **Directories** > **Products**.

Unregistering from Apex Central

Procedure

1. Go to **Administration** > **Integrated Products/Services** > **Apex Central**.
2. Under **General**, click the **Unregister** button.

Note

Use this option to unregister Deep Discovery Email Inspector from Apex Central. After unregistering, Deep Discovery Email Inspector can register to another Apex Central.

Deep Discovery Email Inspector unregisters from Apex Central.

To verify the result, on Apex Central go to **Directories** > **Products**.

Deep Discovery Director

Trend Micro Deep Discovery Director is a management solution that enables centralized deployment of product updates, product upgrades, and Virtual Analyzer images to Deep Discovery products, as well as configuration replication and log aggregation for Deep Discovery products. To accommodate different organizational and infrastructural requirements, Deep Discovery Director provides flexible deployment options such as distributed mode and consolidated mode.

For more information, see the **Deep Discovery Director Administrator's Guide**.

Deep Discovery Email Inspector supports integration with Deep Discovery Director 5.0 and later versions.

The Deep Discovery Director screen displays the following information:

TABLE 8-14. Deep Discovery Director Fields

FIELD	INFORMATION
Status	The following appliance statuses can be displayed: • Not registered: The appliance is not registered to Deep Discovery Director. • Registering: The appliance is registering to Deep Discovery Director. • Registered | Connected: The appliance is registered and connected to Deep Discovery Director. • Registered | Unable to connect: The appliance is registered to Deep Discovery Director, but unable to connect. Verify that the Deep Discovery Director network settings are valid. • Registered | Untrusted fingerprint: The appliance is registered to Deep Discovery Director, but the connection was interrupted. To restore the connection, trust the new fingerprint. • Unregistering: The appliance is unregistering from Deep Discovery Director.
Last connected	The last time this appliance connected to Deep Discovery Director.
Host name	The host name of this appliance.
Server address	The Deep Discovery Director server address.
Port	The Deep Discovery Director port.
API key	The Deep Discovery Director API key.
Fingerprint (SHA-256)	The Deep Discovery Director fingerprint.
Connect using a proxy server	Select to use the system proxy settings to connect to Deep Discovery Director.

Deep Discovery Director Registration Considerations

Consider the following when registering to integrate with Deep Discovery Director:

- Integration with Deep Discovery Director for Virtual Analyzer image deployment requires additional disk space. After registering Deep Discovery Email Inspector to Deep Discovery Director 5.0 (or later), configure Deep Discovery Email Inspector to delete logs when the total free disk space is less than 20%.
- If you register Deep Discovery Email Inspector to both Deep Discovery Director 5.0 (or later) and Apex Central, Deep Discovery Email Inspector synchronizes suspicious objects and exception lists from Deep Discovery Director only. You can check the synchronization status on the Deep Discovery Director management console.
- When Deep Discovery Email Inspector is registered to Deep Discovery Director 5.0 (or later), Deep Discovery Director provides central management of End-User Quarantine settings. After registration is successful, Deep Discovery Email Inspector performs the following actions:
    - Synchronizes YARA rule settings from Deep Discovery Director and overwrites existing YARA rule settings that you have configured
    - Obtains EUQ settings from Deep Discovery Director and prevents manual configuration of EUQ settings on the management console
    - Stops sending EUQ digests
    - Disables EUQ console access

For more information, see the **Deep Discovery Director Administrator's Guide**.

Registering to Deep Discovery Director

The following procedure is for registering to Deep Discovery Director. If you have already registered and want to change the connection settings, you must first unregister.

Procedure

1. Go to **Administration** > **Integrated Products/Services** > **Deep Discovery Director**.
2. Configure **Connection Settings**.

Option	Description
Server address	Type the server address for Deep Discovery Director.
Port	Type the server port number for Deep Discovery Director. The default port number is 443.
API key	Type the API key for Deep Discovery Director. **Note** You can find this information on the **Help** screen on the management console of Deep Discovery Director.

3. (Optional) If you have configured proxy settings for Deep Discovery Email Inspector and want to use these settings for Deep Discovery Director connections, select **Connect using a proxy server**.

   Note

   This setting can be changed after registering to Deep Discovery Director.

   To update this setting without unregistering from Deep Discovery Director, click **Update Settings**.

4. Click **Register**.

   The **Status** changes to **Registered | Connected**.

Note

If the Deep Discovery Director fingerprint changes, the connection is interrupted and the **Trust** button appears. To restore the connection, verify that the Deep Discovery Director fingerprint is valid and then click **Trust**.

After the registration process is complete, the **Test Connection** button appears. You can click **Test Connection** to test the connection to Deep Discovery Director.

Important

Integration with Deep Discovery Director for Virtual Analyzer image deployment requires additional disk space. After registering Deep Discovery Email Inspector to Deep Discovery Director 5.0 (or later), configure Deep Discovery Email Inspector to delete logs when the total free disk space is less than 20%.

For more information, see *Configuring Storage Maintenance on page 8-198*.

Unregistering from Deep Discovery Director

Follow this procedure to unregister from Deep Discovery Director or before registering to another Deep Discovery Director.

Procedure

1. Go to **Administration** > **Integrated Products/Services** > **Deep Discovery Director**.
2. Click **Unregister**.

   The **Status** changes to **Not registered**.

Threat Intelligence Sharing

Deep Discovery Email Inspector can share threat intelligence data (such as suspicious URLs) with other products or services (for example, a Blue Coat ProxySG device) through HTTP or HTTPS web service.

Note

When Deep Discovery Email Inspector is registered to Apex Central, Deep Discovery Email Inspector does not include user-defined suspicious objects synchronized from Apex Central in the shared threat intelligence data.

Configuring Threat Intelligence Sharing Settings

Procedure

1. On the Deep Discovery Email Inspector management console, go to **Administration** > **Integrated Products/Services** > **Threat Intelligence Sharing**.
2. Select **Enable Threat Intelligence Sharing to allow integrated products/services to obtain information from Deep Discovery Email Inspector**.
3. Under **Criteria**, select the risk level of the objects to be included in the threat intelligence data file.
4. (Optional) By default, Deep Discovery Email Inspector shares threat intelligence data through HTTPS web service. You can also enable HTTP web service for data sharing. Under **Server Settings**, select **Share information using HTTP (in addition to HTTPS)** and specify the HTTP port number.
5. (Optional) Under **Schedule Settings**, select **Enabled** for **Scheduled file generation** and configure the schedule settings.
6. Click **Save**.
7. Click **Generate Now**.

Note

After the file generation is successfully, you can click the URL to download the threat intelligence data file to view the content.

8. Configure an integrated product/service (for example, Blue Coat ProxySG device) to obtain threat intelligence data from Deep Discovery Email Inspector. For more information, see the documentation for the integrated product/service.

Auxiliary Products/Services

To help provide effective detection and blocking at the perimeter, Deep Discovery Email Inspector can distribute Virtual Analyzer suspicious objects list to auxiliary products and services.

Deep Discovery Email Inspector integrates with the following solutions:

TABLE 8-15. Solutions that integrate with Deep Discovery Email Inspector

NAME	VERSION
Trend Micro TippingPoint Security Management System (SMS)	SMS 5.2 or 5.3
Check Point Open Platform for Security (OPSEC)	Check Point R80.10
IBM Security Network Protection (XGS)	XGS 5.2
Palo Alto Panorama	PAN-OS 7.0.1
Palo Alto Firewalls	PAN-OS 4.1.0

Note

- Deep Discovery Email Inspector supports only one auxiliary product/service at a time.
- Deep Discovery Email Inspector does not synchronize user-defined suspicious objects with supported auxiliary products and services.
- When enabled, Deep Discovery Email Inspector distributes the list of selected suspicious object types every 10 minutes.

Trend Micro TippingPoint Security Management System (SMS)

Both Deep Discovery Email Inspector and Apex Central can send suspicious objects to Trend Micro TippingPoint SMS. Deep Discovery Email Inspector sends each suspicious object with the following optional information:

- Risk level: Severity of each suspicious object attempt
- Product Name: Trend Micro Deep Discovery Email Inspector (not configurable)
- Appliance Host Name: Trend Micro Deep Discovery Email Inspector host name (not configurable)

Trend Micro TippingPoint SMS uses reputation filters to apply block, permit, or notify actions across an entire reputation group. For more information about reputation filters, refer to your Trend Micro TippingPoint documentation.

Configuring Trend Micro TippingPoint Security Management System (SMS)

Procedure

1. On the Deep Discovery Email Inspector management console, go to **Administration** > **Integrated Products/Services** > **Auxiliary Products/Services**.

2. Select **Trend Micro TippingPoint Security Management System (SMS)**.
3. Under **Object Distribution**, select **Enable**.
4. Under **Server Settings**, provide the following information:
   - Server name

     Note

     The server name must be the FQDN or IPv4 address of the auxiliary product.

   - User name: Existing authentication credential
   - Password: Existing authentication credential

   TABLE 8-16. Valid Character Sets

	USER NAME	PASSWORD
Minimum length	1 character	1 character
Maximum length	15 characters	15 characters

5. (Optional) Click **Test Connection**.
6. To send object information from Deep Discovery Email Inspector to this product/service, configure the following criteria:
   - Object type:
     - Suspicious Object
       - IPv4 address
       - Domain

     Note

     You must select at least one object.

   - Risk level:

- High only
- High and medium
- High, medium, and low

7. Click **Save**.

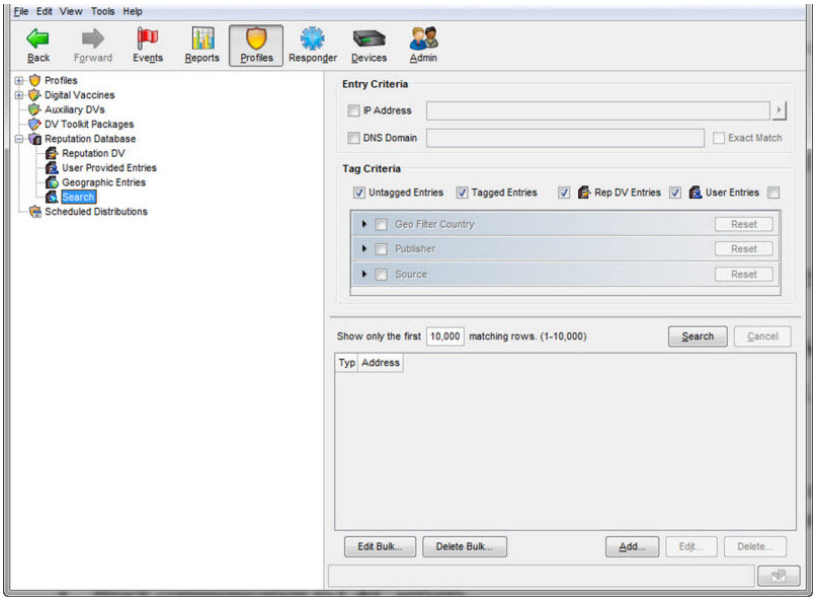
   The following table displays the mappings between the data columns in Deep Discovery Email Inspector and the tag categories in the TippingPoint reputation database.

TABLE 8-17. Tag categories added to the reputation database

COLUMN	TAG CATEGORY
Product Name	Trend Micro Publisher
Appliance Host Name	Trend Micro Source
Object Type	Trend Micro Detection Category
Risk Level	Trend Micro Severity

8. (Optional) To view distributed suspicious objects in Trend Micro TippingPoint SMS, do the following:

   a. On the **Profile** tab, go to **Reputation Database** > **Search**.



b. On the **Entry Criteria** screen, type search parameters and then click **Search**.

Suspicious objects distributed by Deep Discovery Email Inspector are displayed.

Check Point Open Platform for Security (OPSEC)

Check Point Open Platform for Security (OPSEC) manages network security through an open, extensible management framework.

Deep Discovery Email Inspector integrates with Check Point OPSEC via the Suspicious Activities Monitoring (SAM) API.

The SAM API implements communications between the SAM client (Deep Discovery Email Inspector) and the Check Point firewall, which acts as a SAM Server. Deep Discovery Email Inspector uses the SAM API to request that the Check Point firewall take specified actions for certain connections.

For example, Deep Discovery Email Inspector may ask Check Point OPSEC to block a connection with a client that is attempting to issue illegal commands or repeatedly failing to log on.

Configuring Check Point Open Platform for Security (OPSEC)

Procedure

1. On the Deep Discovery Email Inspector management console, go to **Administration** > **Integrated Products/Services** > **Auxiliary Products/Services**.
2. Select **Check Point Open Platform for Security (OPSEC)**.
3. Under **Object Distribution**, select **Enable**.
4. Under **Server Settings**, select a connection type.

   Note

   Ensure that your network configuration allows Deep Discovery Email Inspector to connect to the Check Point appliance.

   Deep Discovery Email Inspector may connect to the Check Point appliance through the secured connection port or clear connection port that is configured on the Check Point appliance. Deep Discovery Email Inspector also pulls the certificate from the Check Point appliance through port 18210.

   If you selected **Secured connection**, the **OPSEC application name** and **SIC one-time password** settings appear.

5. Type a server name.

   Note

   The server name must be the FQDN or IPv4 address of the auxiliary product.

6. If you selected **Secured connection**, type the **OPSEC application name** and **SIC one-time password**.

For more details, see *Configuring a Secured Connection on page 8-135*.

Note

If the one-time password is reset on the Check Point appliance, the new one-time password must be different than the previous one-time password.

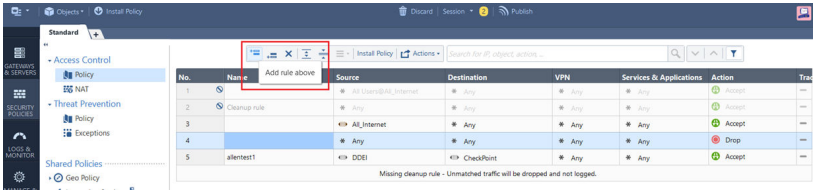
7. Type the port.

Note

This port must be the same port that is configured on the security gateway. For details, see *Preconfiguring a Security Gateway on page 8-133*.

8. (Optional) Click **Test Connection**.
9. To send object information from Deep Discovery Email Inspector to this product/service, configure the following criteria:
   - Object type:
     - Suspicious Object
       - IPv4 address
   - Risk level:
     - High only
     - High and medium
     - High, medium, and low
10. Click **Save**.
11. On your Check Point firewall appliance, preconfigure a security gateway. For details see *Preconfiguring a Security Gateway on page 8-133*.
12. Go to Check Point SmartConsole and do the following to configure your Check Point appliance for deploying suspicious objects from Deep Discovery Email Inspector:

a. On the **SECURITY POLICIES** tab, go to **Access Control** > **Policy**.

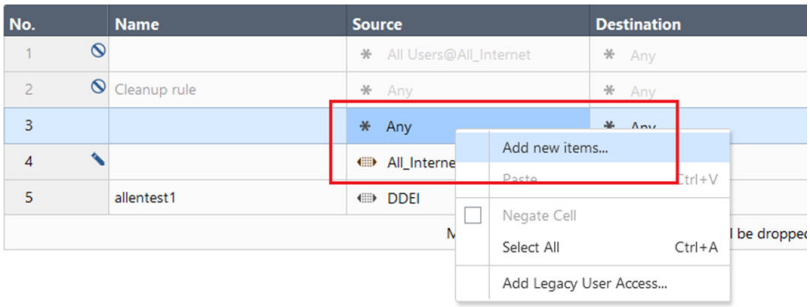


b. To add a rule, click the **Add rule above** icon.

c. To configure the new policy, right-click the action.

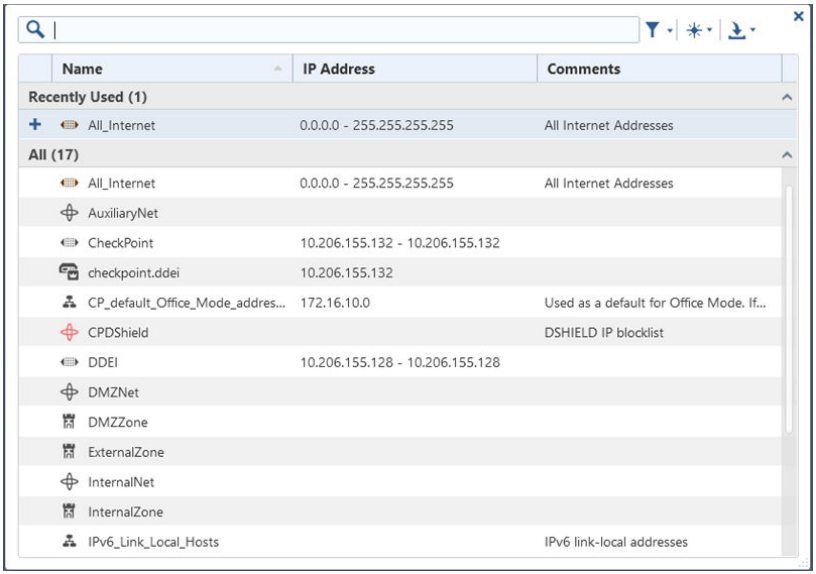
d. Change the action to **Accept**.

e. Right-click the source.

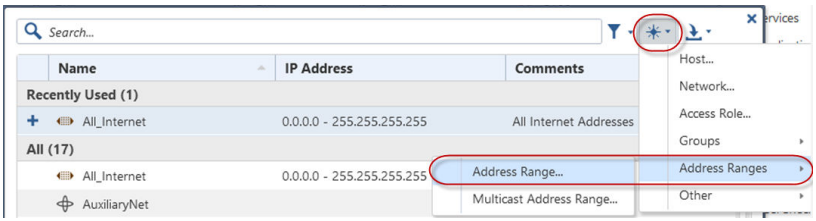


f. Select **Add new items...**.

The following screen appears.

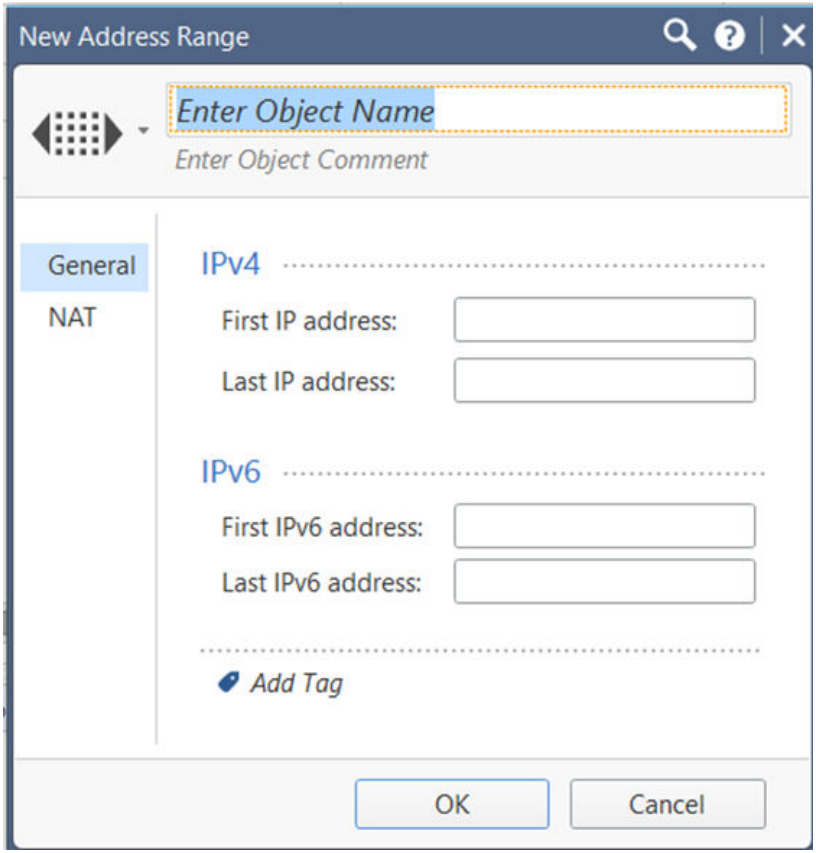


g. Click the new icon ( ).



h. Select **Address Ranges** > **Address Range...**.

The **New Address Range** window appears.



i. In the **Enter Object Name** field, type `DDEI`.

j. In **First IP address**, type the Deep Discovery Email Inspector IP address.

k. In **Last IP address**, type the Deep Discovery Email Inspector IP address.

l. Click **OK**.

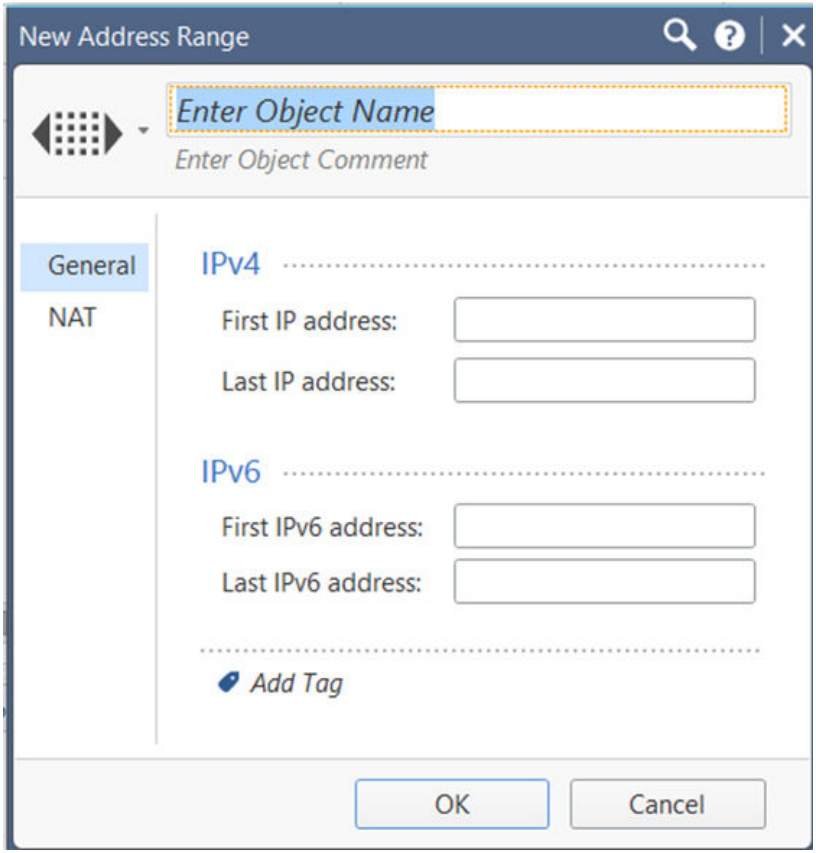
m. Right-click the destination.

n. Select **Add new items...**.

o. Click the new icon ( ).

p. Select **Address Ranges** > **Address Range...**.

The **New Address Range** window appears.



q. In the **Enter Object Name** field, type `CheckPoint`.

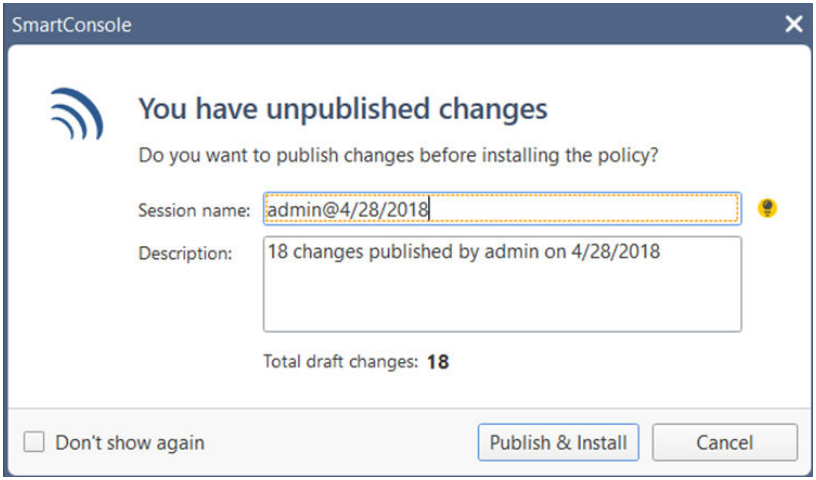
r. In **First IP address**, type the CheckPoint IP address.

s. In **Last IP address**, type the CheckPoint IP address.

t. Click **OK**.

u. Click **Install Policy**.

The following window opens.



v. Click **Publish & Install**.

The target gateway installs.

w. Click **Install**.

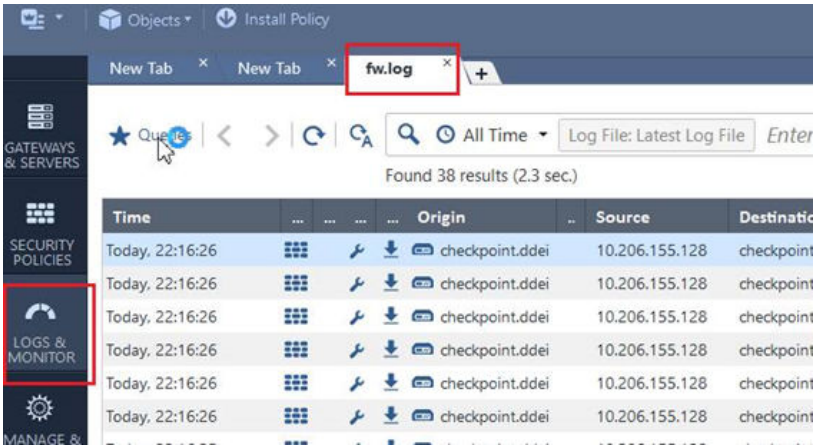
The Check Point appliance is enabled to receive suspicious objects from Deep Discovery Email Inspector.

13. On the Deep Discovery Email Inspector management console, configure the following criteria to send suspicious object information from Deep Discovery Email Inspector to this product/service:

- Object type:
  - Suspicious Object
    - IPv4 address

- Risk level:
  - High only
  - High and medium
  - High, medium, and low

14. Under **Advanced Settings**, click one of the following actions:
    - **Reject**: Packets will be rejected and a notification sent to the communicating peer that the packet has been rejected.
    - **Drop**: Packets will be dropped without sending the communicating peer a notification.
    - **Notify**: A notification about the defined activity will be sent but the activity will not be blocked.
15. Click **Save**.
16. (Optional) Click **Distribute Now** to distribute suspicious objects to Check Point immediately.
17. To view suspicious objects distributed by Deep Discovery Email Inspector on Check Point SmartView Monitor, do the following:
    a. On Check Point SmartConsole, go to **Logs & Monitor**.
    b. Add a new tab.

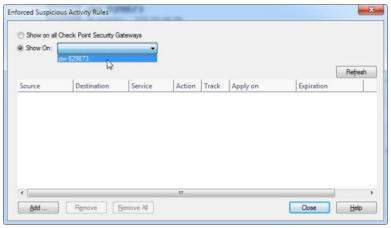


c. Click **Tunnels & User Monitoring** to open SmartView Monitor.

d. Click the **Launch Menu** icon and go to **Tools** > **Suspicious Activity Rules**.

   The **Enforced Suspicious Activity Rules** window opens.

e. At **Show On**, select the target Check Point appliance name.



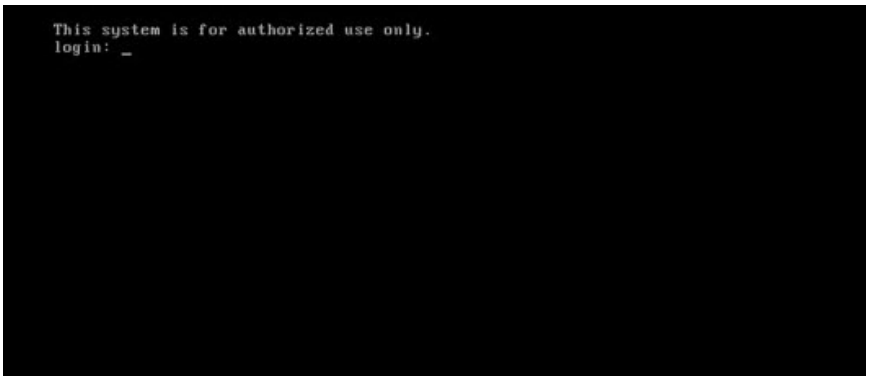
f. Click **Refresh**.

Suspicious objects distributed by Deep Discovery Email Inspector are displayed.

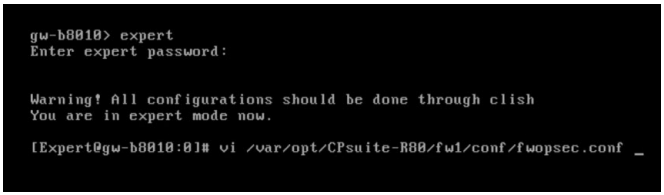
Preconfiguring a Security Gateway

Procedure

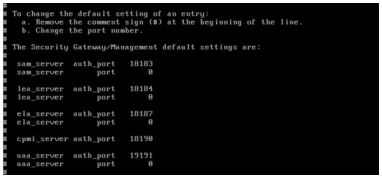
1. Log on to your Check Point appliance.



2. (Optional) Set a password for expert mode.
3. Type the password to enter expert mode.



4. Use the vi editor to open `/var/opt/CPsuite-R80/fw1/conf/fwopsec.conf`.



Note

The image of the default configuration is for reference only. The actual file contents may vary.

5. In `fwopsec.conf`, configure the SAM communication mode ports using one of the following options:

   - Secured connection (default port)
     - No changes in `fwopsec.conf` are necessary. The default port 18183 is used for the **sam_server auth_port** setting.

       Note

       On Deep Discovery Email Inspector, verify that the **Check Point Open Platform for Security (OPSEC) Port** setting at **Administration** > **Integrated Products/Services** > **Auxiliary Products/Services** is also 18183.

   - Secured connection (user-defined port)
     - In `fwopsec.conf`, remove the comment sign (#) from `sam_server auth_port: 18183` and then change the port number.

       Note

       Configure the same port in `fwopsec.conf` and in the **Check Point Open Platform for Security (OPSEC) Port** setting on Deep Discovery Email Inspector at **Administration** > **Integrated Products/Services** > **Auxiliary Products/Services**.

   - Clear connection (user-defined port)
     - In `fwopsec.conf`, remove the comment sign (#) from `sam_server port: 0` and then change the port number.

Note

Configure the same port in `fwopsec.conf` and in the **Check Point Open Platform for Security (OPSEC) Port** setting on Deep Discovery Email Inspector at **Administration** > **Integrated Products/Services** > **Auxiliary Products/Services**.

6. If changes were made to the `fwopsec.conf` file, save the `fwopsec.conf` file and restart your Check Point appliance.

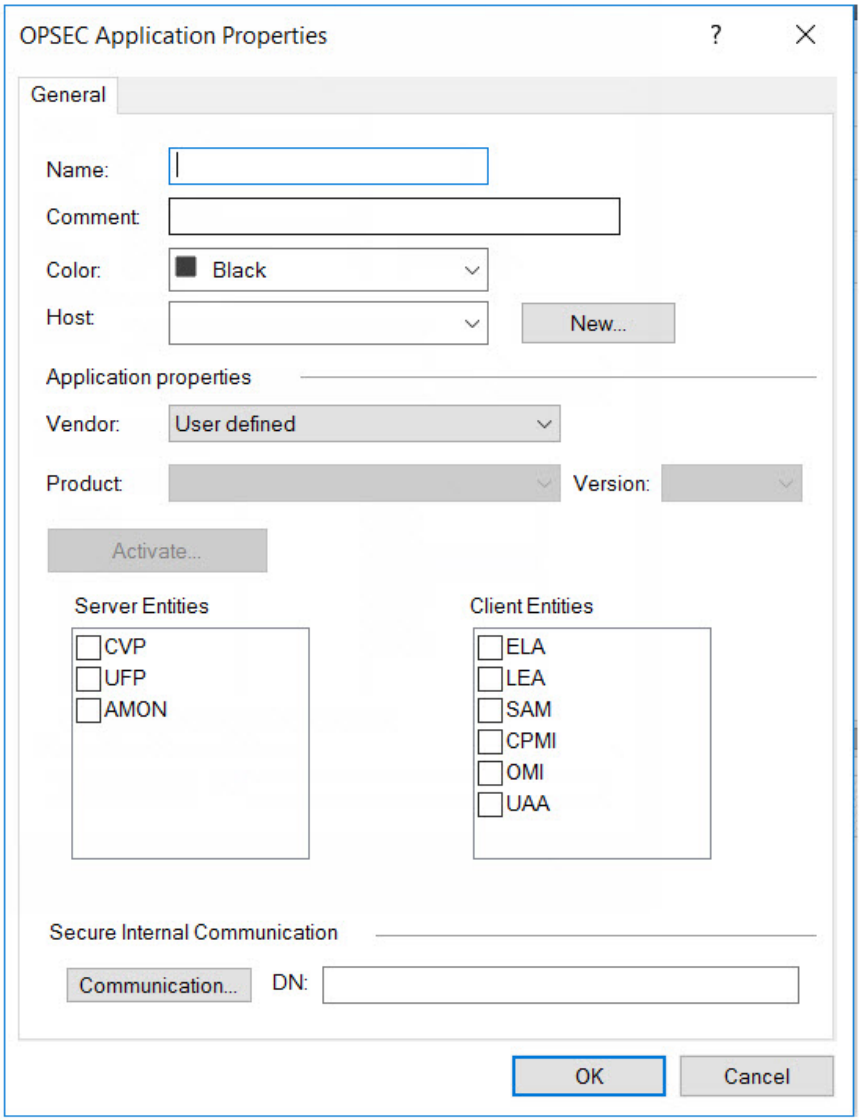
Configuring a Secured Connection

Procedure

1. Open the Check Point SmartConsole and click the main menu icon ().

2. Go to **New object** > **More object types** > **Server** > **OPSEC Application** > **New Application...**.

The **OPSEC Application Properties** window appears.



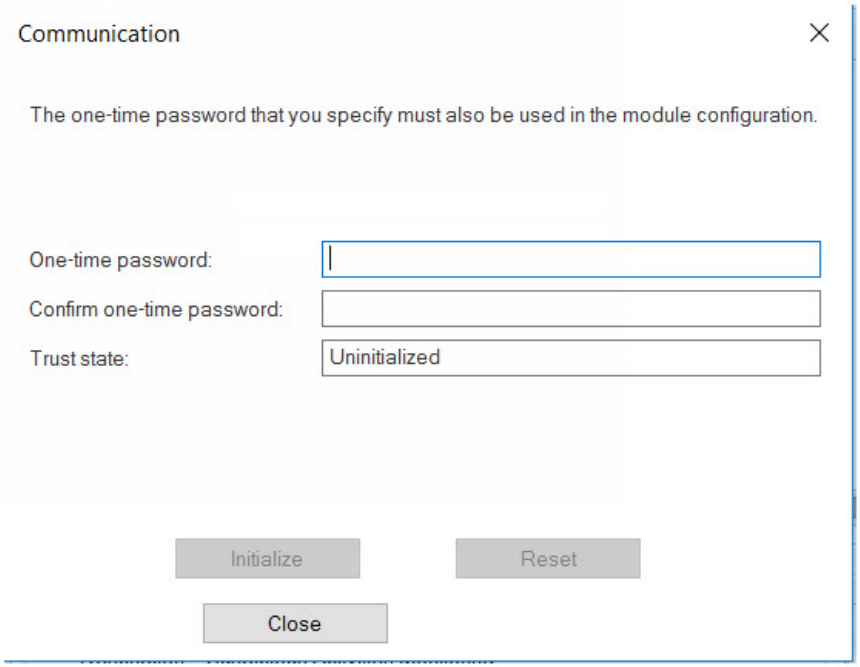
3. Type a **Name**.

Note

- Use this name as the **OPSEC application name** in Deep Discovery Email Inspector.
- The application name must be less than 101 characters, start with an English alphabetical letter, and contain only English alphabetical letters, periods, underscores, or dashes.

4. Select a **Host**.
5. Under **Client Entities**, select **SAM**.
6. Click **Communication...**.

   The **Communication** window appears.



7. Type a password in **One-time password** and type the same password in **Confirm one-time password**.

   Note

   Use this password as the **SIC one-time password** in Deep Discovery Email Inspector.

   Note

   If the one-time password is reset on the Check Point appliance, the new one-time password must be different than the previous one-time password.

8. Click **Initialize**.

   The **Trust state** becomes **Initialized but trust not established**.

9. Install the user definition.

   a. In the **Check Point SmartConsole** main window, click  and select **Install database...**.

      The **Install database** window appears.

   b. Choose the installation components and then click **OK**.

      The user definition starts installing.

IBM Security Network Protection

IBM Security Network Protection (XGS), provides a web services API that enables third-party applications such as Deep Discovery Email Inspector to directly submit suspicious objects. IBM XGS can perform the following functions:

- Quarantine hosts infected with malware
- Block communication to C&C servers

- Block access to URLs found to be distributing malware

To integrate Deep Discovery Email Inspector with IBM XGS, configure a generic agent to do the following:

- Accept alerts that adhere to a specific schema
- Create quarantine rules based on a generic ATP translation policy

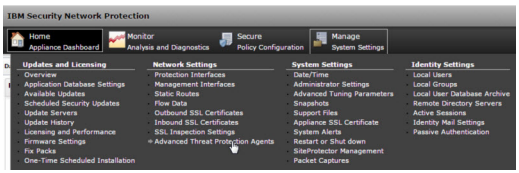
The ATP translation policy allows several categories of messages to take different actions on IBM XGS, including blocking and alerting.

Configuring IBM Security Network Protection

Procedure

1. On the IBM XGS console, do the following to configure the generic agent:

   a. Go to **Manage System Settings** > **Network Settings** > **Advanced Threat Protection Agents**.



   The **Advanced Threat Protection Agents** window opens.

   b. Click **New**.

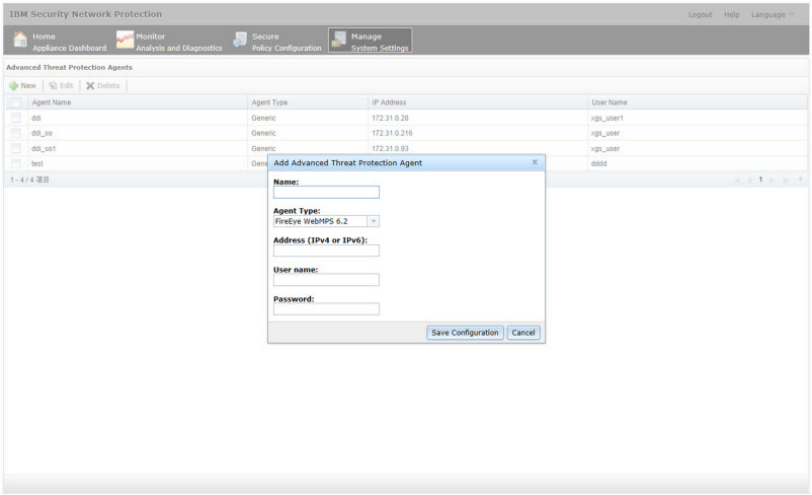
   c. Provide the following information:

      - Name: Type a name
      - Agent Type: Select **Generic**
      - Address: Deep Discovery Email Inspector management port IP address in IPv4 or IPv6 format

- User name: Existing authentication credential
- Password: Existing authentication credential

TABLE 8-18. Valid Character Sets

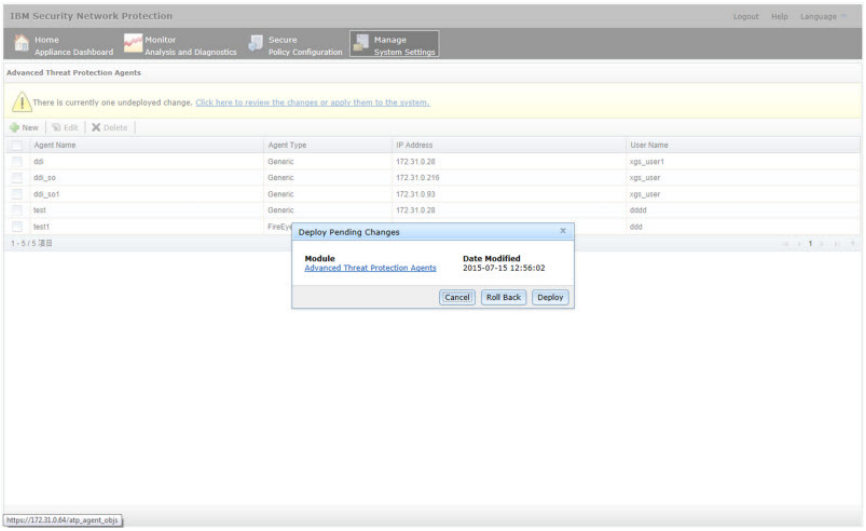
	USER NAME	PASSWORD
Minimum length	1 character	1 character
Maximum length	15 characters	15 characters



2. Click **Save Confirmation**.

   The **Deploy Pending Changes** window opens.

3. To apply changes to IBM XGS, click **Deploy**.



The new agent appears in the **Advanced Threat Protection Agents** list.

4. On the Deep Discovery Email Inspector management console, go to **Administration** > **Integrated Products/Services** > **Auxiliary Products/Services**.
5. Select **Configuring IBM Security Network Protection (XGS)**.
6. Under **Object Distribution**, select **Enable**.
7. Under **Server Settings**, provide the following information:
   - Server name

     Note

     The server name must be the FQDN or IPv4 address of the auxiliary product.

   - User name: Existing authentication credential
   - Password: Existing authentication credential

TABLE 8-19. Valid Character Sets

	USER NAME	PASSWORD
Minimum length	1 character	1 character
Maximum length	15 characters	15 characters

8. (Optional) Click **Test Connection**.
9. To send object information from Deep Discovery Email Inspector to this product/service, configure the following criteria:
   - Object type:
     - Suspicious Object
       - IPv4 address
       - URL

     Note
     You must select at least one object.
   - Risk level:
     - High only
     - High and medium
     - High, medium, and low
10. Click **Save**.
11. (Optional) On the IBM XGS console, go to **Secure Policy Configuration** > **Security Policies** > **Active Quarantine Rules** to view suspicious objects and C&C callback addresses sent by Deep Discovery Email Inspector to IBM XGS.

Note

Suspicious objects with a low risk level do not appear in the IBM XGS **Active Quarantine Rules**. To view all suspicious objects sent by Deep Discovery Email Inspector, go to **Security Policy Configuration** > **Advanced Threat Policy** and specify the following settings:

- **Agent Type**: **Generic**
- **Alert Type**: **Reputation**
- **Alert Severity**: **Low**

Suspicious objects and C&C callback addresses distributed by Deep Discovery Email Inspector are displayed.

Palo Alto Panorama or Firewalls

Palo Alto Networks® firewalls identify and control applications, regardless of port, protocol, encryption (SSL or SSH) or evasive characteristics. Panorama™ is a centralized policy and device management system that allows administrators to control Palo Alto Networks firewalls.

Deep Discovery Email Inspector can send IPv4, domain, and URL suspicious objects to the URL category of Palo Alto Firewall or Palo Alto Panorama™ as match criteria allow for exception-based behavior.

Use URL categories in policies as follows:

- Identify and allow exceptions to general security policies for users who belong to multiple groups within Active Directory

  Example: Deny access to malware and hacking sites for all users, while allowing access to users that belong to the security group.

- Allow access to streaming media category, but apply quality of service policies to control bandwidth consumption
- Prevent file download and upload for URL categories that represent higher risks

Example: Allow access to unknown sites, but prevent upload and download of executable files from unknown sites to limit malware propagation.

- Apply SSL decryption policies that allow encrypted access to finance and shopping categories, but decrypt and inspect traffic to all other URL categories.

Configuring Palo Alto Panorama and Firewalls

Procedure

1. On the Deep Discovery Email Inspector management console, go to **Administration** > **Integrated Products/Services** > **Auxiliary Products/Services**.
2. Select **Palo Alto Panorama or Firewalls**.
3. Under **Object Distribution**, select **Enable**.
4. Under **Server Settings**, provide the following information:
   - Server name

     Note

     The server name must be the FQDN or IPv4 address of the auxiliary product.

   - Server type
   - User name: Existing authentication credential
   - Password: Existing authentication credential

TABLE 8-20. Valid Character Sets

	USER NAME	PASSWORD
Minimum length	1 character	1 character

	USER NAME	PASSWORD
Maximum length	15 characters	15 characters

5. (Optional) Click **Test Connection**.

6. To send object information from Deep Discovery Email Inspector to this product/service, configure the following criteria:

   - Object type:
     - Suspicious Object
       - URL
       - IPv4 address
       - Domain

     Note

     You must select at least one object.

   - Risk level:
     - High only
     - High and medium
     - High, medium, and low

7. (Optional) Under **Advanced Settings**, customize URL category names:

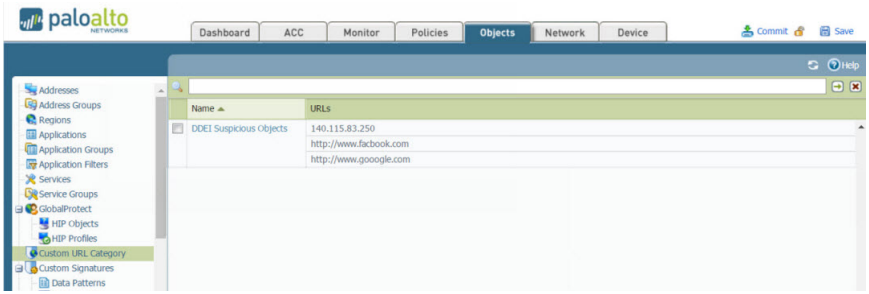
   URL category names must include a minimum of one character and a maximum of 31 characters, and may include the following characters:

   - Uppercase (A-Z)
   - Lowercase (a-z)
   - Numeric (0-9)
   - Special characters: - _

- Space

8. Click **Save**.

9. (Optional) To view suspicious objects sent by Deep Discovery Email Inspector on the Palo Alto product console, go to **Objects** > **Custom URL Category** (or **Objects** > **Custom Objects** > **URL Category**).



Suspicious objects distributed by Deep Discovery Email Inspector are displayed.

LDAP

Deep Discovery Email Inspector integrates with an LDAP server for user-group definition and administrator privileges.

Deep Discovery Email Inspector supports the following types of directory servers:

- Microsoft Active Directory on Windows Server 2016 and 2019
- Microsoft AD Global Catalog on Windows Server 2016 and 2019
- IBM Domino V9 and V10
- OpenLDAP

The following table describes the tasks that you can perform on the **LDAP** screen.

Task	Description
Add an LDAP server	Click **Add** to add a new directory server. Deep Discovery Email Inspector supports up to ten directory servers. For more information, see *Configuring an LDAP Server on page 8-147*.
Edit an LDAP server	Click a server name to edit the settings. For more information, see *Configuring an LDAP Server on page 8-147*.
Enable or disable an LDAP server	Toggle the button in the **Status** column to: • Enable the LDAP server that you selected to enable on the configuration screen • Disable both primary and secondary LDAP servers
Synchronize directory information	Click **Sync All** to synchronize directory information with all the LDAP servers.
Delete a directory server	Click **Delete** to remove one or more selected entries.

Configuring an LDAP Server

Procedure

1. Obtain the information required to configure LDAP integration from the server administrator.
2. Go to **Administration** > **Integrated Products/Services** > **LDAP**.
3. Do one of the following:
   - Click **Add** to add a new entry.
   - Click a name to change the server settings.
4. Select a server type.
5. Select to enable one or both primary and secondary servers.

6. Configure the server settings (server address, access protocol, and port number).

Note

Trend Micro recommends using the following default ports:

- For Microsoft Active Directory, Domino, or OpenLDAP:
  - **SSL**: 636
  - **STARTTLS**: 389
- For Microsoft AD Global Catalog:
  - **SSL**: 3269
  - **STARTTLS**: 3268

7. Configure administrative settings for the LDAP server.

   The following table provides the configuration recommendations for each supported LDAP server type.

LDAP Server Type	User Account (Example)	Base Distinguished Name (Example)	Authentication Method
Active Directory	user1@domain.com (UPN)	dc=domain, dc=com	• Simple • Advanced (with Kerberos)
Active Directory Global Catalog	user1@domain.com (UPN)	dc=domain, dc=com dc=domain1,dc=com (if multiple unique domains exist)	• Simple • Advanced (with Kerberos)
OpenLDAP	cn=manager, dc=test1, dc=com	dc=test1, dc=com	Simple
IBM Domino	user1/domain	Not applicable	Simple

a. Type the base distinguished name.

b. Select an email address attribute option to apply policy settings based on the address information.

c. Type the user name.

d. Type the password.

e. (Optional) If your organization uses a CA certificate, select **Use CA certificate** and click **Select** to locate the CA certificate file.

f. In the Authentication Method section, select **Simple** or **Advanced**.

For Active Directory, select **Advanced** and configure the required settings.

8. (Optional) Click **Test Connection** to verify that a connection to the LDAP server can be established using the specified information.

9. Click **Save**.

SAML Integration

Security Assertion Markup Language (SAML) is an open authentication standard that allows for the secure exchange of user identity information from one party to another. SAML supports single sign-on (SSO), a technology that allows for a single user login to work across multiple applications and services. When you configure SAML settings in Deep Discovery Email Inspector, users signing in to your organization's portal can seamlessly sign in to Deep Discovery Email Inspector without an existing Deep Discovery Email Inspector account.

In SAML single sign-on, a trust relationship is established between the identity provider (IdP) and the service provider (SP) by using SAML metadata files. The identity provider contains the user identity information stored on a directory server. The service provider (which in this case is Deep Discovery Email Inspector) uses the user identity information from the identity provider for user authentication and authorization.

Deep Discovery Email Inspector supports the following identity providers for single sign-on:

- Microsoft Active Directory Federation Services (AD FS) 4.0 or 5.0
- Okta
- To connect Deep Discovery Email Inspector to your organization environment for single-sign-on, complete the following:

  1. Access the Deep Discovery Email Inspector management console to obtain the service provider metadata file.

     For more information, see *Service Provider Metadata and Certificate on page 8-150*.

  2. In your identity provider:

     a. Configure the required settings for single sign-on.

     b. Obtain the federation metadata file.

     For more information, see *Configuring Active Directory Federation Services on page 8-155* and *Configuring Okta on page 8-152*.

  3. In Deep Discovery Email Inspector:

     a. Import the federation metadata file for your identity provider.

        For more information, see *Configuring Identity Provider Settings on page 8-151*.

     b. Create SAML user groups.

        For more information, see *SAML Groups on page 8-189*.

Service Provider Metadata and Certificate

Obtain the service provider metadata from Deep Discovery Email Inspector to provide to your identity provider.

On the **SAML Authentication** screen, the Service Provider section displays the following service provider information:

- **Entity ID**: Identifies the service provider application
- **Single Sign On URL**: The endpoint URL responsible for receiving and parsing a SAML assertion (also referred to as "Assertion Consumer Service")
- **Single Sign Off URL**: The endpoint URL responsible for initiating the SAML logout process
- **Certificate**: The encryption certificate (verification certificate) in X.509 format

You can click the following in the Service Provide section:

- **Download Metadata**: Downloads the Deep Discovery Email Inspector metadata file. You can import the metadata file on an Active Directory Federal Services (ADFS) identity provider.
- **Download Certificate**: Downloads the Deep Discovery Email Inspector certificate file. You can import the certificate file on an OKTA identity provider.
- **Update Certificate**: Uploads a new certificate on Deep Discovery Email Inspector.

  Deep Discovery Email Inspector supports certificates in X.509 PEM format.

Configuring Identity Provider Settings

Note

- Before you add an identity provider, obtain the federation metadata file from your identity provider.
- You can add up to four identity providers in Deep Discovery Email Inspector, two for the management console and two for the EUQ console.

Procedure

1. Go to **Administration** > **Integrated Products/Services** > **SAML Authentication**.
2. In the Identity Provider section, do one of the following:
   - Click **Add** to add a new entry.
   - Click an identity provider name to change the settings.
3. Select a status option to enable or disable the identity provider settings.
4. Type a descriptive name for the identity provider.
5. Type a description.
6. Click **Select** and choose the federation metadata file obtained from your identity provider.

   After importing the federation metadata file, the system displays the identity provider information.
7. Click **Save**.

Configuring Okta

Okta is a standards-compliant OAuth 2.0 authorization server that provides cloud identity solutions for your organization. Okta is a single sign-on provider that allows you to manage user access to Deep Discovery Email Inspector.

This section describes how to configure Okta as a SAML (2.0) identity provider for Deep Discovery Email Inspector to use.

Before you begin configuring Okta, make sure that:

- You have a valid subscription with Okta that handles the sign-in process and that eventually provides the authentication credentials to the Deep Discovery Email Inspector management console.

- You are logged on to the management console as a Deep Discovery Email Inspector administrator.

Procedure

1. Log in to your Okta organization as a user with administrative privileges.
2. Click **Admin** in the upper right, and then navigate to **Applications** > **Applications**.
3. Click **Add Application**, and then click **Create New App**.

   The **Create a New Application Integration** screen appears.
4. Select **Web** as the **Platform** and **SAML 2.0** as the **Sign on method**, and then click **Create**.
5. On the **General Settings** screen, type a name for Deep Discovery Email Inspector in **App name**, for example, "Deep Discovery Email Inspector", and click **Next**.
6. On the **Configure SAML** screen, specify the following:
   a. Type the Deep Discovery Email Inspector address in the **Single sign on URL** field.
   b. Select **Use this for Recipient URL and Destination URL**.
   c. Specify the Audience URI in **Audience URI (SP Entity ID)** based on your serving site:
   d. For **Assertion Encryption**, select **Encrypted**.
   e. For **Encryption Certificate**, click **Browse files** to select the certificate file that you obtained from Deep Discovery Email Inspector.

      For more information, see *Service Provider Metadata and Certificate on page 8-150*.
   f. (Optional) In the **ATTRIBUTE STATEMENTS (OPTIONAL)** section, specify the following for EUQ console access onDeep Discovery Email Inspector:

- **Name**: The value configured on Deep Discovery Email Inspector.

  Note

  Make sure you specify the same claim value for an email address in your identity provider and Deep Discovery Email Inspector.

- **Value**: The name of specified attribute

g. In the **Group Attribute Statements (Optional)** section, specify the following:

- **Name**: DDEI_GROUP
- **Filter**: Matches regex ^(.*)*$

h. Click **Next**.

7. On the **Feedback** screen, click **I'm an Okta customer adding an internal app**, select **This is an internal app that we have created**, and then click **Finish**.

   The **Sign On** tab of your newly created Deep Discovery Email Inspector application appears.

8. Click **Identity Provider Metadata** to download the metadata file from Okta.

   Note

   Import this metadata file to Deep Discovery Email Inspector.

9. Assign the application to groups and add people to groups.

   a. Select **Directory** > **Groups**.

   b. Click the groups that you want to assign the application to, and then click **Manage Apps**.

      The **Assign Applications** screen appears.

c. Locate Deep Discovery Email Inspector you added and click **Assign**.

d. Click **Manage People**.

   The **Add People to Groups** screen appears.

e. Locate the user you want to allow access to Deep Discovery Email Inspector and add the user to the Deep Discovery Email Inspector group.

f. Confirm that the application is assigned to the user and group.

   After assigning an application to a group, the system automatically assigns the application to all users in the group.

g. Repeat the above steps to assign the application to more groups as necessary.

You are now ready to configure Okta for single sign-on and create the required SAML groups in the Deep Discovery Email Inspector management console.

Configuring Active Directory Federation Services

This section describes how to configure a federation server using Active Directory Federation Services (AD FS) to work with Deep Discovery Email Inspector.

Note

Deep Discovery Email Inspector supports connecting to the federation server using AD FS 4.0 and 5.0.

Active Directory Federation Services (AD FS) provides support for claims-aware identity solutions that involve Windows Server and Active Directory technology. AD FS supports the WS-Trust, WS-Federation, and Security Assertion Markup Language (SAML) protocols.

Before you begin configuring AD FS, make sure that:

- You have a Windows Server installed with AD FS 4.0 or AD FS 5.0 to serve as a federation server.
- You are logged on to the management console as a Deep Discovery Email Inspector administrator.
- You have obtained the metadata file from Deep Discovery Email Inspector.

Procedure

1. Go to **Start** > **All Programs** > **Administrative Tools** to open the AD FS management console.
2. Click **AD FS** in the left navigation, and under the **Action** area on the right, click **Add Relying Party Trust...**.
3. Complete settings on each tab of the **Add Relying Party Trust Wizard** screen.
   a. On the **Welcome** tab, select **Claims aware** and click **Start**.
   b. On the **Select Data Source** tab, select **Import data about the relying party from a file**, click **Browse** to select the metadata file you obtain from Deep Discovery Email Inspector; then, click **Next**.
   c. On the **Specify Display Name** tab, specify a display name for Deep Discovery Email Inspector, for example, "Deep Discovery Email Inspector", and click **Next**.
   d. On the **Choose Access Control Policy** tab, select **Permit everyone** or **Permit specific group**. If you select **Permit specific group**, select one or more groups in **Policy**. Then, click **Next**.
   e. On the **Ready to Add Trust** tab, click **Next**.
   f. On the **Finish** tab, select **Open the Edit Claim Rules dialog for this relying party trust when the wizard closes** and click **Close**.

      The **Edit Claim Rules** screen appears.
4. On the **Issuance Transform Rules** tab, click **Add Rule...**.

5. Complete settings on each tab of the **Add Transform Claim Rule Wizard** screen to configure the claim rules for the LDAP attributes listed in the following table.

   a. On the **Choose Rule Type** tab, select **Send LDAP Attributes as Claims** from the **Claim rule template** drop-down list, and click **Next**.

   b. On the **Configure Claim Rule** tab, specify a claim rule name in the **Claim rule name** text box, and select **Active Directory** from the **Attribute store** drop-down list.

   c. Select the **User-Principal-Name** LDAP attribute and specify **Name ID** as the outgoing claim type for the attribute.

   d. Click **OK**.

TABLE 8-21. LDAP ATTRIBUTES

WEB CONSOLE	LDAP ATTRIBUTE	OUTGOING CLAIM TYPE	REQUIRED
Management	User-Principal-Name	Name ID	Yes
EUQ	User-Principal-Name	Name ID	Yes
EUQ	E-Mail-Addresses	<user-defined value> For example, EUQ_Email.	No
EUQ	Proxy-Addresses	<user-defined value> For example, EUQ_PROXY_Email.	No

6. Configure settings for each AD group that you permitted in step 3d and customize the settings based on your requirements.

Note

Make sure you set the outgoing claim type as `DDEI_GROUP`.

a. Click **Add Rule...**.

The **Add Transform Claim Rule Wizard** screen appears.

b. On the **Choose Rule Type** tab, select **Send Group Membership as a Claim** from the **Claim rule template** drop-down list, and click **Next**.

The **Configure Claim Rule** tab appears.

c. For **Claim rule name**, type the name of the AD group.

d. For **User's group**, click **Browse** and then select the AD group.

e. For **Outgoing claim type**, select `DDEI_GROUP`.

f. For **Outgoing claim value**, type the name of the AD group.

g. Click **Apply** and then click **OK**.

TABLE 8-22. Group membership rules

CLAIM RULE NAME	USER GROUP	OUTGOING CLAIM TYPE	OUTGOING CLAIM VALUE
<user-defined rule name>	<user group name in ADFS>	DDEI_GROUP	<user-defined value> **Note** This value must be the same as the SAML group name you configure on Deep Discovery Email Inspector.

7. Click **Apply** and then **OK**.

Configuring Endpoints for Single Sign-on through AD FS

Before endpoints can access Deep Discovery Email Inspector using single sign-on through Active Directory Federation Services (AD FS), configure the web browser settings on each endpoint to trust both Deep Discovery Email Inspector and the federation server.

You can configure the web browser settings on endpoints manually or through group policies.

The following provides the procedure for endpoints running Windows 10. Steps may vary depending on the Windows version.

Procedure

1. On an endpoint, open the **Control Panel** from the Start menu.
2. Click **Network and Internet** > **Internet Options**.

   The Internet Properties screen appears.
3. Click the **Security** tab.
4. Select **Local intranet** and click **Sites**.
5. Click **Advanced**.
6. In the **Add this website to the zone** field, type FQDN or IP address of the account federation server and click **Add**.
7. Repeat Step 6 to add the FQDN or IP address of Deep Discovery Email Inspector to the Websites list.
8. Click **Close**.
9. Click **OK**.
10. Click **OK**.

Log Settings

Deep Discovery Email Inspector maintains system logs that provide summaries of system events, including component updates and appliance restarts. Go to **Administration** > **Integrated Products/Services** > **Syslog** to configure Deep Discovery Email Inspector to send logs to a syslog server.

Deep Discovery Email Inspector can send logs to up to three syslog servers after saving the logs to its database. Only logs saved after enabling a syslog server will be sent to that server. Previous logs are excluded.

The following table describes the tasks you can perform on the **Log Settings** screen.

Task	Description
Add server profile	Click **Add** to Create a new syslog server profile. For more information, see *Adding a Syslog Server on page 8-160*.
Edit existing server profiles	Click a server profile name to view or modify the settings. For more information, see *Editing Syslog Server Profiles on page 8-162*.
Delete existing server profiles	Select one or more server profiles and click **Delete** to remove the selected entries from the table.

Adding a Syslog Server

Procedure

1. Go to **Administration** > **Integrated Products/Services** > **Syslog**.

   The **Log Settings** screen appears.

2. Click **Add**.

   The **Add Syslog Server Profile** settings appear.

3. Type a profile name for the syslog server.

4. Type the host name or IP address of the syslog server.
5. Type the port number.
6. Select the protocol to be used when transporting log content to the syslog server.
   - TCP
   - UDP
   - SSL
7. Select the format in which event logs should be sent to the syslog server.
   - **CEF**: Common Event Format (CEF) is an open log management standard developed by HP ArcSight. CEF comprises a standard prefix and a variable extension that is formatted as key-value pairs.
   - **LEEF**: Log Event Extended Format (LEEF) is a customized event format for IBM Security QRadar. LEEF comprises an LEEF header, event attributes, and an optional syslog header.
   - **Trend Micro Event Format (TMEF)**: Trend Micro Event Format (TMEF) is a customized event format developed by Trend Micro and is used by Trend Micro products for reporting event information.
8. Select the scope of the data that will be logged.
   - **Detections**
   - **Alerts**
   - **Virtual Analyzer analysis logs**
   - **System events**
   - **Message tracking**
   - **Sender Filtering/Authentication**
   - **MTA events**

9. Click **Save**.

Editing Syslog Server Profiles

Procedure

1. Go to **Administration** > **Integrated Products/Services** > **Syslog**.

   The **Log Settings** screen appears.

2. Click a syslog server profile hyperlink.

   The **Edit Syslog Server Profile** screen appears.

3. Make the required changes.

4. Click **Save**.

SFTP

You can configure Deep Discovery Email Inspector to send Virtual Analyzer detection information to a secure FTP (SFTP) server.

Procedure

1. Go to **Administration** > **Integrated Products/Services** > **SFTP**.

2. Select **Send detection information to SFTP server**.

3. Configure the following settings.

Field	Description
Authentication method	Select an option from the drop-down list.
IP address / Domain	Type the server IP address or domain name.
Port	Type the port number.

Field	Description
User name	Type the user name to access the SFTP server.
Password	Type the password for the user account to access the SFTP server.
Path	Specify the directory on the SFTP server to upload files.
Encryption	Type the password to encrypt the ZIP file for upload.
Certificate	Click **Select** to locate and upload a certificate.
Passphrase	Type a passphrase to protect the certificate.

4. Under **Criteria**, select to send the following detection information to the SFTP server:
   - Investigation packages for safe email messages
   - Data type (threat sample, original email message, or report)
5. Click **Save**.

Email Encryption

With Email Encryption, Deep Discovery Email Inspector encrypts messages using Trend Micro Identity-Based Encryption (IBE). For example, when the domain **a.com** is registered with Trend Micro for encryption and decryption and **user1@a.com** sends a message with private information to **user2@b.com**, Deep Discovery Email Inspector encrypts the message sent to **user2@b.com**. You can configure a policy rule to encrypt messages containing private information.

Tip

Before using Email Encryption, Trend Micro recommends you configure Deep Discovery Email Inspector to synchronize the system time with an NTP server to ensure standard time and date data.

Note

When Deep Discovery Email Inspector is registered to Deep Discovery Director 5.1 (or later), Deep Discovery Director provides central management of the Email Encryption settings. After registration is successful, Deep Discovery Email Inspector obtains Email Encryption settings (including the registered email domains) from Deep Discovery Director and prevents manual configuration of the settings on the management console.

Important

When Email Encryption is enabled, the number of email messages that Deep Discovery Email Inspector encrypts and decrypts may affect system performance. If there is a high volume of email messages in your organization, Trend Micro recommends the following:

- Configure policies with content filtering rules to encrypt specific outgoing email messages
- Set up a dedicated Deep Discovery Email Inspector appliance to perform email encryption and decryption

For assistance with performance sizing, contact Trend Micro Technical Support.

To configure Email Encryption settings in Deep Discovery Email Inspector, do the following:

1. Register one or more domains to the Trend Micro Email Encryption server.

   For more information, see *Registering Domains for Email Encryption on page 8-165*.

2. Configure default sender address for message signing.

   For more information, see *Configure Default Email Identity for Message Signing on page 8-167*.

3. (Optional) Configure Email Encryption exceptions.

   For more information, see *Configuring Email Encryption Exceptions on page 5-86*.

4. Configure content filtering or Data Loss Prevention (DLP) rules with the **Encrypt message** action.

   For more information, see *Configuring a Content Filtering Rule on page 5-36* and *Configuring a DLP Rule on page 5-41*.

Registering Domains for Email Encryption

For email encryption to work, you must register one or more domains to the Trend Micro Email Encryption Server.

Note

- If the produce license for Gateway Module is expired, Deep Discovery Email Inspector prevents you from configuring settings on the **Email Encryption** screen and removes the specified domain owner email addresses from the Trend Micro Email Encryption Server.
- When you register a domain to the Trend Micro Email Encryption Server for the first time, Deep Discovery Email Inspector is also registered to the server.
- You cannot re-register a domain that is already registered to the Trend Micro Email Encryption Server.
- You can add and register up to 300 domains to the Trend Micro Email Encryption Server.

Procedure

1. Go to **Administration** > **Integrated Products/Services** > **Email Encryption**.
2. In the **Domain List** section, review the domain registration procedure information.
3. Click **Add**.
4. On the **Add Domain** screen, do the following:

a. If this is the first time you are adding a domain, specify the email address to receive domain ownership verification key files from Trend Micro.

Note

After the first domain is registered to the Trend Micro Email Encryption Server successfully, you can update the email address in the **Appliance Information** section.

b. Select an input option and do one of the following to add a domain to the **Selected Domains** list:

- Type a domain in the text field and press Enter.
- Select a domain from the list.

c. Click **Save**.

Note

- You can add up to 10 domains at a time.
- Domains and their sub-domains are treated as unique entries. Sub-domains must be added separately to the domain list.
- Wildcards cannot be used to include sub-domains.
- LDAP groups (entries starting with" LDAP") cannot be added to the domain list.

5. If you are the registered owner of a domain in the domain list, reply to the confirmation message from Trend Micro.

Trend Micro sends the message to the following email addresses to verify ownership of the domain:

- `postmaster@<domain>`
- `webmaster@<domain>`
- The email address returned from a WHOIS lookup for the domain

6. When your domain is approved, Trend Micro sends the key file to the specified email address. To upload the key file, do the following:

   a. In the **Domain List** section, click **Import Key File**.

   b. Click **Select File** and select the key file.

   c. Click **Import**.

   Note

   Trend Micro sends a key file for each added domain to the specified email address. If you do not receive a message with the key file for a domain within three working days, contact your sales representative.

   Tip

   After you have registered a domain, you can click **Delete** to remove a domain from the list. To add the delete domain to the list, you must perform the domain registration steps again.

7. If this is the first time you are registering a domain to the Trend Micro Email Encryption Server, check that the gateway ID information displays under **Appliance Information**.

Configure Default Email Identity for Message Signing

The default sender address is used when Deep Discovery Email Inspector tries to encrypt a message sent from a sender domain that is not in the Domain List. Deep Discovery Email Inspector signs these messages with the default sender address.

Procedure

1. Go to **Administration** > **Integrated Products/Services** > **Email Encryption**.
2. Under **Default Email Identify for Message Signing**, type the default sender address.

3. Click **Save**.

System Settings

Topics include:

Network Settings

Use this screen to configure the host name, the IPv4 and IPv6 addresses of the Deep Discovery Email Inspector appliance, and other network settings.

Configuring Network Settings

Perform initial network configurations with the Command Line Interface (CLI). Use the management console to make changes to the network interface settings.

Procedure

1. Go to **Administration** > **System Settings** > **Network**.
2. Specify the host name.

3. Specify the network settings.

Option	Description

IP address and Subnet mask / prefix length	Specify the network interface IP settings for the management network, custom network, and mail network.
	• **Management network**: The management network handles the management console, SSH connections, and Trend Micro updates. Mail traffic can pass through the management network and by default it is the only network that routes mail. Use only the management port (eth0).
	• **Custom network**: The custom network handles sandbox analysis. This network should be an isolated network without connection restrictions so that malicious samples do not affect other networks. Use any available network interface (eth1, eth2, or eth3) that is not configured for the mail network.
	• **Mail network**: The mail network handles mail routing and monitoring. Use a network interface that is not configured for the custom network.
	  • (Optional) For BCC or MTA mode, use any available network interface (eth1, eth2, or eth3).
	  • For SPAN/TAP mode, use the eth2 or eth3 network interface.
	Note
	For information on operation mode configuration, see *Operation Modes on page 8-171*.

Gateway / DNS	Specify the general network settings that affect all interfaces, including the gateway and DNS settings.

4. Click **Save**.

Configuring NIC Teaming

A network interface card (NIC) team is a software-based virtual network interface that provides fault tolerance in the event of a network interface card failure. On Deep Discovery Email Inspector, you can group one or more network interface cards in a NIC team.

Note

- Deep Discovery Email Inspector supports NIC teaming for active/backup mode only.
- The management port is always bind to the eth0 interface. When grouped with the eth0 interface, the other network interface acts as a backup interface.
- To function in SPAN/TAP mode, Deep Discovery Email Inspector requires at least three network interface cards that are not selected for NIC teaming.

Procedure

1. Go to **Administration** > **System Settings** > **NIC Teaming**.
2. Under the NIC Teaming section, do the following:
   a. Toggle the status button to enable a NIC team.
   b. Select one or more network interface cards to add to the NIC team.

   Note

   - You can group up to two network interface card in a NIC team.
   - A network interface card can only belong to one NIC team.
3. Click **Save**.

   The system automatically restarts. This may take some time. Wait for the process to complete before you can access the management console again.

Operation Modes

Deep Discovery Email Inspector can act as a Mail Transfer Agent (MTA mode), or as an out-of-band appliance (BCC mode or SPAN/TAP mode).

For details, see the Deep Discovery Email Inspector *Installation and Deployment Guide*.

To configure the operation mode, go to **Administration** > **System Settings** > **Operation Mode**.

Note

The internal Postfix server cannot be used to send email notifications in BCC or SPAN/TAP mode.

For more information on specifying an external SMTP server, see *Configuring the Notification SMTP Server on page 8-175*.

TABLE 8-23. Operation Modes

MODE	DESCRIPTION
MTA mode (Default)	As an inline MTA, Deep Discovery Email Inspector protects your network from harm by blocking malicious email messages in the mail traffic flow. Deep Discovery Email Inspector delivers safe email messages to recipients.
BCC mode	As an out-of-band appliance, Deep Discovery Email Inspector receives mirrored traffic from an upstream MTA to monitor your network for cyber threats. Deep Discovery Email Inspector discards all replicated email messages without delivery.

Mode	Description
SPAN/TAP mode	As an out-of-band appliance, Deep Discovery Email Inspector receives mirrored traffic from a SPAN/TAP device to monitor your network for cyber threats. Deep Discovery Email Inspector discards all replicated email messages without delivery. If you select **SPAN/TAP mode**, you must add at least one monitoring rule. For more information, see *Monitoring Rules for SPAN/TAP Mode on page 8-173*. **Note** Deep Discovery Email Inspector virtual appliances installed in Microsoft Hyper-V do not support SPAN/TAP mode.

The following table lists the availability of the features in each operating mode.

Feature/Service	MTA mode	BCC mode	SPAN/TAP mode
Message modification (tag, stamp, strip, clean up, rewrite URL, add X-headers, sanitize file, encrypt message, etc.)	Yes	No	No
Message notification	Yes	No	Yes (using an external SMTP server)
Message delivery	Yes	No	No
Message quarantine	Yes	No	No
Message archiving	Yes	No	No
DKIM signing	Yes	No	No
End-User Quarantine	Yes	No	No
Sender authentication (SPF, DKIM, DMARC)	Yes	No	No

Feature/Service	MTA mode	BCC mode	SPAN/TAP mode
Email Reputation Services (ERS)	Yes	No	No
Sender filtering	Yes	No	No
Alerts	Yes	Yes	Yes
Alert notification and reports	Yes	Yes (using an external SMTP server)	Yes (using an external SMTP server)
Queue management	Yes	Yes	Yes
Deep Discovery Director integration	Yes	Yes	Yes

Monitoring Rules for SPAN/TAP Mode

When SPAN/TAP mode is selected, you can add a maximum of 10 monitoring rules. The monitoring rules specify the SMTP traffic that Deep Discovery Email Inspector monitors for cyber threats.

Adding a Monitoring Rule

Procedure

1. Go to **Administration** > **System Settings** > **Operation Mode**.
2. Click **Add Rule**.

   The **Add SPAN/TAP Mode Rule** window appears.
3. Type the **Source IP address**, **Destination IP address**, and **SMTP port** to monitor.

   Note

   If a field is empty, all SMTP traffic for that option is monitored.

   For example, when **Source IP address** is empty, SMTP traffic from all sources is monitored.

4. Click **Add**.

Editing a Monitoring Rule

Procedure

1. Go to **Administration** > **System Settings** > **Operation Mode**.
2. Select a monitoring rule and click **Edit**.

   The **Edit SPAN/TAP Mode Rule** window appears.
3. Make the changes.
4. Click **Edit**.

Deleting a Monitoring Rule

Procedure

1. Go to **Administration** > **System Settings** > **Operation Mode**.
2. Select a monitoring rule and click **Delete**.

Configuring Proxy Settings

Configuring proxy settings affects:

- Certified Safe Software Service
- Community File Reputation
- Component updates (pattern files and scan engines)
- Product license registration
- Script Analyzer Engine

- Web Reputation queries
- Web Inspection Service
- Time-of-Click protection
- Predictive Machine Learning Engine

Procedure

1. Go to **Administration** > **System Settings** > **Proxy**.

   The **Proxy** screen appears.

2. Specify the proxy server settings.

Option	Description
Check box	Select **Use a proxy server to connect to the Internet**.
Type	Select the proxy protocol: • **HTTP** • **SOCKS4** • **SOCKS5**
Server address	Specify the proxy server host name or IP address.
Port	Specify the port that the proxy server uses to connect to the Internet.
User name	Optional: Specify the user name for administrative access to the proxy server.
Password	Optional: Specify the corresponding password.

3. Click **Save**.

Configuring the Notification SMTP Server

Deep Discovery Email Inspector uses the SMTP server settings to send alert notifications and reports.

For details about processing SMTP traffic, see *Mail Settings on page 8-93*.

Procedure

1. Go to **Administration** > **System Settings** > **SMTP**.
2. Type the **Sender email address**.
3. Specify the SMTP server settings.

Option	Description
Internal postfix server	Select this option to use the postfix server embedded in Deep Discovery Email Inspector as an SMTP server. **Note** Internal postfix is not available when operating in BCC mode and SPAN/TAP mode.
External SMTP server	Select this option to specify a standalone SMTP server, such as Microsoft Exchange.
Server address	Type the external SMTP server host name, IPv4 address or IPv6 address.
Port	Type the external SMTP server port number.
Connection security	Select a security protocol if required for the connection.

Option	Description
SMTP server requires authentication	Select this option if connection to the SMTP server requires authentication. **Note** • Make sure that you configure the user name and password correctly. An external SMTP server may refuse connection from Deep Discovery Email Inspector after the maximum number of unsuccessful authentication attempts has been reached. • Clicking **Test Connection** checks the connection from Deep Discovery Email Inspector to the external SMTP server, but does not verify SMTP server authentication.
User name	Type the user name used for authentication. **Note** This option is only available if **SMTP server requires authentication** is selected.
Password	Type the password used for authentication. **Note** This option is only available if **SMTP server requires authentication** is selected.

4. Click **Save**.
5. (Optional) To test the connection to the external SMTP server, do the following:
   a. Click **Test Connection**.
   b. Type the recipient email address.
   c. Click **OK**.

Note

Deep Discovery Email Inspector does not send a test email message to the recipient.

Configuring System Time

Network Time Protocol (NTP) synchronizes computer system clocks across the Internet. Configure NTP settings to synchronize the server clock with an NTP server, or manually set the system time.

Procedure

1. Go to **Administration** > **System Settings** > **Time**.
2. Set the system time.
   - To synchronize with an NTP server, select **Synchronize appliance time with an NTP server** and then specify the domain name or IP address of the NTP server.
   - To manually set the system time, select **Set time manually** and then select the date and time or select the time zone.
   - To display the date and time in another format, select the format from the **Date and time format** drop-down list.
3. Click **Save**.

SNMP

Simple Network Management Protocol (SNMP) is a protocol that supports monitoring of devices attached to a network for conditions that merit administrative attention.

A Simple Network Management Protocol (SNMP) trap is a method of sending notifications to network administrators who use management consoles that support this protocol.

On Deep Discovery Email Inspector, use the **Administration** > **System Settings** > **SNMP** tab to perform the following tasks:

- Configure the appliance to send trap messages

  For details, see *Configuring Trap Messages on page 8-179*.

- Configure the appliance to listen for manager requests

  For details, see *Configuring Manager Requests on page 8-181*.

Configuring Trap Messages

A SNMP Trap Message is the notification message sent to the SNMP server when events that require administrative attention occur.

Procedure

1. Go to **Administration** > **System Settings** > **SNMP**.
2. Under **Trap Messages**, select **Send SNMP trap messages**.
3. Specify the trap message settings.

Option	Description
Manager server address	Specify the manager server address.
SNMP version	Select the SNMP version: • SNMPv1/SNMPv2c • SNMPv3 If you use SNMPv3, configure the SNMP server as follows: • Context Name: `""` (default context) • Context Engine ID: `<Auto>` • (Optional) MD5 Authentication protocol: `HMAC-MD5` • (Optional) DES Privacy protocol: `CBC-DES`

Option	Description
Community name	Specify a community name.
Security model	**Note** This field is only available for SNMPv3. Select the security model: • No authentication or privacy • Authenticated • Authenticated with privacy
User name	**Note** This field is only available for SNMPv3. Specify the user name.
Password	**Note** This field is only available for SNMPv3. Specify the password.
Privacy passphrase	**Note** This field is only available for SNMPv3. Specify the privacy passphrase.

4. Click **Save**.
5. (Optional) Click **Download MIB** to download the Management Information Database (MIB) files.
   - Users can open the MIB files to view all network objects that can be monitored and managed using the SNMP protocol, or import them into management consoles that support this protocol.

- For a list of Deep Discovery Email Inspector supported SNMP object identifiers (OID), see *SNMP Object Identifiers on page E-1*.

Configuring Manager Requests

SNMP managers can use SNMP protocol commands to request Deep Discovery Email Inspector system information.

Procedure

1. Go to **Administration** > **System Settings** > **SNMP**.
2. Under **Manager Requests**, select **Listen for requests from SNMP managers**.
3. Specify the manager request settings.

Option	Description
Device location	Specify the location of this appliance.
Administrator contact	Specify the administrator contact of this appliance.
SNMP version	Select the SNMP version: • SNMPv1/SNMPv2c • SNMPv3 If you use SNMPv3, configure the SNMP server as follows: • Context Name: `""` (default context) • Context Engine ID: `<Auto>` • (Optional) MD5 Authentication protocol: `HMAC-MD5` • (Optional) DES Privacy protocol: `CBC-DES`
Allowed community names	Specify a maximum of 5 community names.

Option	Description
Security model	**Note** This field is only available for SNMPv3. Select the security model: • No authentication or privacy • Authenticated • Authenticated with privacy
User name	**Note** This field is only available for SNMPv3. Specify the user name.
Password	**Note** This field is only available for SNMPv3. Specify the password.
Privacy passphrase	**Note** This field is only available for SNMPv3. Specify the privacy passphrase.
Trusted manager server addresses	Specify a maximum of 32 trusted manager server addresses.

4. Click **Save**.

5. (Optional) Click **Download MIB** to download the Management Information Database (MIB) files.

   - Users can open the MIB files to view all network objects that can be monitored and managed using the SNMP protocol, or import them into management consoles that support this protocol.

- For a list of Deep Discovery Email Inspector supported SNMP object identifiers (OID), see *SNMP Object Identifiers on page E-1*.

Configuring Session Timeout Setting

Deep Discovery Email Inspector automatically logs you out of the management console after a period of inactivity. The default session timeout period is 30 minutes.

To configure the session timeout, go to **Administration** > **System Settings** > **Session Timeout** and select an option from the drop-down list.

Accounts / Contacts

Deep Discovery Email Inspector uses role-based administration to grant and control access to the management console where they can perform administrative tasks.

To use role-based administration, you create custom accounts and assign a specific role to each account. A role defines the level of access to the management console.

By creating custom accounts and assigning specific management console privileges to the accounts, you can present account users only the tools and permissions necessary to perform specific tasks.

To enhance account security for management console access, Deep Discovery Email Inspector automatically locks an account after five unsuccessful logon attempts. To use the account again to log onto the management console, the user can wait for 10 minutes or request an administrator to unlock the account.

Additionally, as part of contacts administration, you can configure a list of recipients in the contact list. The contact list is used by default when sending alert notifications and reports.

Managing Accounts

Deep Discovery Email Inspector has a default administrator account ("admin") that has full administrative access.

The default administrator account can perform the following tasks:

- Add new administrator accounts
- Lock or unlock an account

Accounts assigned the administrative role can create additional accounts and assign these accounts the **Administrator** role or the **Operator** role. Administrators can delegate tasks to different administrators and operators to reduce bottlenecks in Deep Discovery Email Inspector administration.

Administrator accounts can additionally edit or delete existing accounts.

Account Role Classifications

Role	Description
Administrator	Users have complete access to the features and settings contained in the menu items. • **Dashboard** • **Detections** • **Policies** • **Alerts / Reports** • **Logs** • **Administration** • **Help**

Role	Description
Investigator	Users can view certain features and settings contained in the menu items, but cannot make any administrative modifications. • **Dashboard** • **Detections** • **Alerts / Reports** > **Reports** > **Generated Reports** • **Alerts / Reports** > **Alerts** > **Triggered Alerts** • **Logs** • **Help**
Operator	Users can view certain features and settings contained in the menu items, but cannot make any administrative modifications. • **Dashboard** • **Detections** (no access to message body) • **Alerts / Reports** > **Reports** > **Generated Reports** • **Alerts / Reports** > **Alerts** > **Triggered Alerts** • **Logs** • **Help**

Adding a Local User Account

Procedure

1. Go to **Administration** > **Accounts / Contacts** > **Accounts**.
2. Click **Add**.

   The **Add Account** screen appears.
3. Toggle the **Status** of this account.
4. Select **Local user** from the **Type** drop-down list.

5. Specify the account user name and password.
6. Select a **Role** for this account. The role determines the level of access this account has.

   See *Account Role Classifications on page 8-184*.
7. Click **Save**.

   The new account is added to the **Accounts** list.

Adding an Active Directory User Account or Group

Note

Microsoft Active Directory settings have to be configured before an Active Directory user account or group can be added.

For details, see *LDAP on page 8-146*.

Procedure

1. Go to **Administration** > **Accounts / Contacts** > **Accounts**.
2. Click **Add**.

   The **Add Account** screen appears.
3. Toggle the **Status** of this account.
4. Select **LDAP user or group** as the **Type** for this account.
5. Type a user or group name and click **Search** to search the LDAP server for matching user accounts or groups.

   Matching user accounts and groups are displayed in the results table.

Note

User accounts are not displayed in the results table if:

- The user account's User Principle Name (UPN) is not specified on the LDAP server
- The user account is disabled on the LDAP server

6. Select the LDAP user account or group to add.
7. Select a **Role** for this account. The role determines the level of access this account has.

   See *Account Role Classifications on page 8-184*.
8. Click **Save**.

   The new account is added to the **Accounts** list.

Editing Accounts

Change account permissions to adjust settings for a role revision or other organizational changes.

Procedure

1. Go to **Administration** > **Accounts / Contacts** > **Accounts**.
2. Click the account name hyperlink.
3. Make the required changes.
4. Click **Save**.

Deleting Accounts

Delete accounts to adjust settings for a role revision or other organizational changes.

Note

You can only delete custom accounts. You cannot delete the default Deep Discovery Email Inspector administrator account.

Procedure

1. Go to **Administration** > **Accounts / Contacts** > **Accounts**.
2. Select the account to remove.
3. Click **Delete**.
4. At the confirmation message, click **OK**.

Unlocking a Locked Account

Deep Discovery Email Inspector automatically locks an account after five unsuccessful logon attempts. You can use ad administrator account to manually unlock the account.

Note

If an account is locked, the user can log in again after 10 minutes and Deep Discovery Email Inspector will unlock the account. The account remains locked if the user does not try to log in again after 10 minutes.

Procedure

1. Go to **Administration** > **Accounts / Contacts** > **Accounts**.
2. Select a locked account.
3. Click **Unlock**.

Changing Your Password

Note

You cannot use the management console to change the password for the following:

- Microsoft Active Directory accounts
- Trend Micro Apex Central single sign-on (SSO) accounts
- SAML SSO accounts

Procedure

1. On the management console banner, click your account name.

   The **Change Password** screen appears.

2. Specify password settings.
   - **Old password**
   - **New password**
   - **Confirm password**
3. Click **Save**.

SAML Groups

Once Deep Discovery Email Inspector and the identity provider have established a trust relationship, Deep Discovery Email Inspector can access the user identities on the identity provider's directory server. However, before Deep Discovery Email Inspector can actually perform user authentication and authorization using the user identity information, you need to configure account types and SAML groups using groups, roles and claims.

The following provides a configuration overview to map a SAML account from identity provider to a user role in Deep Discovery Email Inspector:

1. Create user accounts.

   a. Create user accounts.

   b. Create user groups and assign user accounts to the groups.

   For more information, see the documentation that comes with your identity provider.

2. In Deep Discovery Email Inspector, create SAML groups with the specified roles and claims.

   For more information, see *Configuring SAML Groups on page 8-190*.

Configuring SAML Groups

Configure SAML groups in Deep Discovery Email Inspector to map to user groups in your identity provider.

Procedure

1. Go to **Administration** > **Accounts / Contacts** > **SAML**.
2. Do one of the following:
   - Click **Add** to create a SAML group.
   - Click the name of a SAML group to configure the settings.
3. Select a status option to enable or disable the SAML group.
4. Type a claim value.

   Important

   A claim value identifies the role of a user in the response sent by the identity provider. Make sure you specify the same claim value for a user group in your identity provider and Deep Discovery Email Inspector.

5. (Optional) Type a description for the SAML group.

6. Select the role and associated permissions of the SAML group.
   - **Administrator**: Users have full access to submitted objects, analysis results, and product settings
   - **Investigator**: Users have read-only access to submitted objects, analysis results, and product settings, but can submit objects and download the investigation package, including submitted objects
   - **Operator**: Users have read-only access to submitted objects, analysis results, and product settings
   - **EUQ**: Users have full access to the EUQ console only
7. Click **Save**.

Managing Contacts

Type the email addresses of notification contacts that are sent alert notifications and reports.

For details, see *Scheduling Reports on page 6-28* and *Configuring Alert Notifications on page 6-5*.

System Maintenance

Go to the **System Maintenance** screen to perform the following operations:

- *Backing Up or Restoring a Configuration on page 8-192*
- *Configuring Storage Maintenance on page 8-198*
- *Debug Logs on page 8-201*
- *Testing Network Connections on page 8-202*

Backing Up or Restoring a Configuration

Export settings from the management console to back up the Deep Discovery Email Inspector configuration. If a system failure occurs, you can restore the settings by importing the configuration file that you previously backed up.

Important

Deep Discovery Email Inspector only supports restoring configurations from other Deep Discovery Email Inspector servers with a compatible license status and with the same firmware version, hardware model, and locale. For example, you cannot restore a server running version 5.0 with a configuration file backed up from a server running version 3.2 or earlier versions.

For more information on compatible licenses, see *License Compatibility on page 8-193*.

Note

When exporting/importing your settings, the database will be locked. Therefore, all Deep Discovery Email Inspector actions that depend on database access will not function.

Trend Micro recommends:

- Backing up the current configuration before each import operation
- Performing the operation when Deep Discovery Email Inspector is idle. Importing and exporting affects Deep Discovery Email Inspector performance.

Back up settings to create a copy of Deep Discovery Email Inspector appliance configuration to restore the configuration in another Deep Discovery Email Inspector appliance or to revert to the backup settings at a later time. Replicate a configuration across several Deep Discovery Email Inspector appliances by restoring the same configuration file into each appliance.

License Compatibility

The following table indicates compatible product licenses. You can only restore configuration files backed up from other Deep Discovery Email Inspector servers with a compatible license, and with the same firmware version, hardware model, and locale.

TABLE 8-24. License compatibility

LICENSE ACTIVATION	ADVANCED THREAT PROTECTION + GATEWAY MODULE	GATEWAY MODULE ONLY	ADVANCED THREAT PROTECTION ONLY
ADVANCED THREAT PROTECTION + GATEWAY MODULE	Compatible	Compatible	Compatible
GATEWAY MODULE ONLY	Not compatible	Compatible	Not compatible
ADVANCED THREAT PROTECTION ONLY	Not compatible	Not compatible	Compatible

Backup Recommendations

Trend Micro recommends exporting your settings to:

- Keep a backup

  If Deep Discovery Email Inspector cannot recover from a critical problem, import your configuration backup after restoring the device to automatically implement the pre-failure configuration.

- Replicate settings across several devices

  If you have several devices on your network, you do not need to separately configure most settings.

Backing Up a Configuration

During export, do not:

- Access other management console screens or modify any settings
- Perform any database operations
- Start/stop any services on the device or in the group to which the device belongs
- Launch other export or import tasks

You can back up settings from the screens and tabs listed in the following table.

TABLE 8-25. Backed up configuration settings

SCREEN	TAB
Dashboard	Settings for all widgets only
Policies > **Policy Management**	**Policy List**
	Content Filtering Rules
	DLP Rules
	Antispam Rules
	Threat Protection Rules
Policies > **Policy Objects**	**Notifications**
	Replacement File
	Redirect Pages
	Archive Servers
	Data Identifiers
	DLP Templates

Screen	Tab
Policies > **Exceptions**	**Messages**
	Objects (local object exceptions only)
	URL Keywords
	Graymail Exceptions
	Email Encryption Exceptions
Alerts / Reports > **Alerts**	**Rules**
Alerts / Reports > **Reports**	**Schedules**
Administration > **Component Updates**	**Schedule**
	Source
Administration > **System Settings**	**Operation Mode**
	Proxy
	SMTP
	Time (date and time format and NTP server settings only)
	SNMP
	Session Timeout
Administration > **Mail Settings**	**Connections**
	Message Delivery
	Limits and Exceptions
	SMTP Greeting
	Edge MTA Relay Servers
	Internal Domains

Screen	Tab
Administration > **Integrated Products/ Services**	**Syslog**
	LDAP
	SFTP
Administration > **Scanning / Analysis**	**Settings** (Submission Filters , URL Submission Filtering, and Timeout Setting sections only)
	File Passwords
	Smart Protection
	Smart Feedback
	YARA Rules
	Time-of-Click Protection
	Business Email Compromise Protection
	URL Scanning
Administration > **Sender Filtering/ Authentication**	**Approved Senders**
	Blocked Senders
	DHA Protection
	Email Reputation
	Bounce Attack Protection
	SMTP Traffic Throttling
	SPF
	DKIM Authentication
	DKIM Signatures
	DMARC

Screen	Tab
Administration > **End-User Quarantine**	**User Quarantine Access**
	EUQ Digest
Administration > **System Maintenance**	**Storage Maintenance**
Administration > **Accounts / Contacts**	**Accounts**
	Contacts

Procedure

1. Go to **Administration** > **System Maintenance** > **Back Up / Restore**.
2. Next to **Configuration Settings Backup**, click **Export**.

   A **File Download** window appears.
3. Click **Save** to save the configuration file to local storage.

Restoring a Configuration

Restoring Deep Discovery Email Inspector settings replaces the original settings and rules, such as message delivery settings, with the imported configuration.

During import, do not:

- Access other management console screens or modify any settings.
- Perform any database operations.
- Start/stop any services on the device or in the group to which the device belongs.
- Launch other export or import tasks.

Note

For information on the settings that you can restore, see *Backing Up a Configuration on page 8-193*.

Procedure

1. Go to **Administration** > **System Maintenance** > **Back Up / Restore**.
2. Next to **Restore Configuration Settings**, click **Choose File** or **Browse** and locate the file.
3. Click **Restore**.

   All services restart. Depending on the settings and rules to restore, this may take some time.

Configuring Storage Maintenance

Storage Maintenance allows you to control the size of your quarantine folders and the amount of log data that the system saves. You can also view the current usage information for the quarantined folders.

Procedure

1. Go to **Administration** > **System Maintenance** > **Storage Maintenance**.
2. Specify the global quarantine settings.
   - **Global quarantine folder size**: Specify the size of the global quarantine folder in GB

Note

Depending on your version of the Deep Discovery Email Inspector appliance, configure the global quarantine folder size as follows:

- Deep Discovery Email Inspector 7100/7200: The quarantine folder size must be a value between 1 and 100
- Deep Discovery Email Inspector 9100/9200: The quarantine folder size must be a value between 1 and 400

- **Delete message attachments, links, and analysis reports when the free global quarantine space is equal to or lower than**: Specify the quarantine space threshold for automatic file deletion

Note

The threshold value must be between 10 and 50.

Deep Discovery Email Inspector purges 10% more than the specified percentage.

3. Specify the End-User Quarantine (EUQ) settings.

- **Remove all data (including messages and approved senders)**: Click **Remove** to delete all data in the EUQ database
- **End-User Quarantine folder size**: Specify the size of the quarantine folder in GB
- **Delete message attachments, links, and analysis reports when the free End-User Quarantine space is equal to or lower than**: Specify the EUQ space threshold for automatic file deletion

Note

The threshold value must be between 10 and 50.

Deep Discovery Email Inspector purges 10% more than the specified percentage.

- **Maximum quarantined message age**: Specify the number of days to keep quarantined spam messages

Note

The specified value must be between 1 and 60.

4. Specify the log settings.

   - **Delete logs older than**: Specify the number of days to keep logs

     Note

     The specified value must be between 3 and 366.

   - **Delete logs when the total free disk space is equal to or lower than**: Specify the disk space threshold for automatic log deletion

     Note

     The threshold value must be between 10 and 50.

     Deep Discovery Email Inspector purges 10% more than the specified percentage.

     Important

     Integration with Deep Discovery Director for Virtual Analyzer image deployment requires additional disk space. After registering Deep Discovery Email Inspector to Deep Discovery Director 5.0 (or later), configure Deep Discovery Email Inspector to delete logs when the total free disk space is less than 20%.

5. Click **Save**.

Powering Off or Restarting Deep Discovery Email Inspector

The **Power Off / Restart** screen provides options to power off or restart the Deep Discovery Email Inspector appliance and its associated services.

Procedure

1. Go to **Administration** > **System Maintenance** > **Power Off / Restart**.
2. Do one of the following:
   - To shut down the Deep Discovery Email Inspector appliance, click **Power Off**.
   - To restart Deep Discovery Email Inspector, click **Restart**.
3. Click **OK** to confirm.

Debug Logs

Deep Discovery Email Inspector creates debug logs that include information Trend Micro Support uses to troubleshoot problems.

Exporting Debugging Files

Export your debugging file to provide information to Trend Micro Support for troubleshooting a problem.

Procedure

1. Go to **Administration** > **System Maintenance** > **Debug Logs** .
2. Select the number of days to export.
3. Click **Export**.
4. Wait for the export to complete. The time required depends on the amount of data to export.

Configuring Log Level

Configure the log level to save information that you can provide to Trend Micro Support for troubleshooting a problem.

Procedure

1. Go to **Administration** > **System Maintenance** > **Debug Logs** .
2. Select the log level.
   - Debug
   - Error
3. Click **Save**.

Testing Network Connections

You can use the **Network Services Diagnostics** screen to test the network connections for the internal Virtual Analyzer and other network services.

Procedure

1. Go to **Administration** > **System Maintenance** > **Network Services Diagnostics**.
2. Select one or more enabled services and click **Test**.

   Note

   You can enable the **Smart Protection Server** option by configuring settings on the **Smart Protection** screen.

   For more information, see *Configuring Smart Protection Settings on page 8-40*.

   Wait for the connection test to complete. The time required depends on the network environment and the number of services selected. View the connection test result in the **Result** column.

Licenses

The **License** screen displays license information and accepts valid Activation Codes for the feature sets in Deep Discovery Email Inspector.

- **Advanced Threat Protection**
- **Gateway Module**

The following table lists the features or services available for each feature set.

Feature/Service	Advanced Threat Protection	Gateway Module
Auxiliary products/services integration	Yes	No
Community File Reputation	Yes	No
File password analyzer	Yes	No
Internal Virtual Analyzer	Yes	No
Office macro scanning	Yes	No
Predictive Machine Learning	Yes	No
Time-of-Click protection	Yes	No
Threat intelligence sharing	Yes	No
Web service API	Yes	No
YARA rules	Yes	No
Antispam/graymail protection	No	Yes
Content filtering	No	Yes
Data loss prevention (DLP)	No	Yes
DKIM signatures	No	Yes

Feature/Service	Advanced Threat Protection	Gateway Module
Email Encryption	No	Yes
Email Reputation Services (ERS)	No	Yes
End-User Quarantine	No	Yes
Sender filtering	No	Yes

Note

Other features (for example, ActiveUpdate, suspicious object detections, and Social Engineering Attack Protection, etc.) not listed in the table are available in both feature sets.

Maintenance Agreement

A Maintenance Agreement is a contract between your organization and Trend Micro, regarding your right to receive technical support and product updates in consideration for the payment of applicable fees. When you purchase a Trend Micro product, the License Agreement you receive with the product describes the terms of the Maintenance Agreement for that product.

Typically, 90 days before the Maintenance Agreement expires, you will be alerted of the pending discontinuance. You can update your Maintenance Agreement by purchasing renewal maintenance from your reseller, Trend Micro sales, or on the Trend Micro Online Registration URL:

https://olr.trendmicro.com/registration/

Activation Codes

Use a valid Activation Code to enable your product. A product will not be operable until activation is complete. An Activation Code has 37 characters (including the hyphens) and appears as follows:

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

If you received a Registration Key instead of an Activation Code, use it to register the product at:

https://olr.trendmicro.com/registration/

A Registration Key has 22 characters (including the hyphens) and appears as follows:

xx-xxxx-xxxx-xxxx-xxxx

After registration, your Activation Code is sent via email.

Product License Status

Your product license status changes from when you first acquire the product to when you must renew the license. Some of these statuses require intervention in order to maintain all product functionality. You can evaluate the product without activating a product license.

Status	Description
Evaluation	Deep Discovery Email Inspector has full product functionality for a limited trial period. The trial period is based on the Maintenance Agreement.
Not Activated	Technical support and component updates are not available. Deep Discovery Email Inspector passes all email messages without investigation until the product license is activated.
Activated	Deep Discovery Email Inspector has full product functionality and component updates for the license period. Technical Support is available based on the Maintenance Agreement.

Status	Description
Expired	The license is no longer valid. After the grace period lapses, product functionality is limited. • For evaluation licenses, component updates and scanning are not available. • For full licenses, technical support and component updates are not available. Scanning is maintained with outdated components. **WARNING!** Outdated components significantly reduce product detection capabilities.

Viewing Your Product License

Monitor the status of your product licenses on the **License** screen.

Procedure

1. Go to **Administration** > **License**.

   The following table describes the license information.

Field	Description
Status	The current state of your product license. For information about the product license statuses, see *Product License Status on page 8-205*.
Type	The license type includes full and trial licenses. The Maintenance Agreement defines the available license type.
Expiration date	The date that the license expires.

Field	Description
Activation Code	The Activation Code has 37 characters (including the hyphens) and appears as follows: xx-xxxx-xxxxx-xxxxx-xxxxx-xxxxx-xxxxx For details, see *Activation Codes on page 8-204*.

2. Under **License Details**:
   - Click **View details** to display the Trend Micro Online Registration website.
   - Click **Refresh** to manually synchronize the license expiration date.

Activating or Renewing Your Product License

Procedure

1. Go to **Administration** > **License**.
2. Click **New Activation Code**.

   The **Activation Code** screen displays.
3. Specify the new Activation Code.
4. If you are activating the license for the first time, read the license agreement and select **I have read and accept the terms of the Trend Micro License Agreement**.
5. Click **Save**.

   The Deep Discovery Email Inspector component activates.
6. View your product license.

   See *Viewing Your Product License on page 8-206*.

About Deep Discovery Email Inspector

Use the **About** screen in **Help** → **About** to view the firmware version, API key, and other product details.

Chapter 9

Technical Support

Learn about the following topics:

Troubleshooting Resources

Before contacting technical support, consider visiting the following Trend Micro online resources.

Using the Support Portal

The Trend Micro Support Portal is a 24x7 online resource that contains the most up-to-date information about both common and unusual problems.

Procedure

1. Go to http://success.trendmicro.com.
2. Select from the available products or click the appropriate button to search for solutions.
3. Use the **Search Support** box to search for available solutions.
4. If no solution is found, click **Contact Support** and select the type of support needed.

   Tip

   To submit a support case online, visit the following URL:

   https://success.trendmicro.com/smb-new-request

   A Trend Micro support engineer investigates the case and responds in 24 hours or less.

Threat Encyclopedia

Most malware today consists of blended threats, which combine two or more technologies, to bypass computer security protocols. Trend Micro combats this complex malware with products that create a custom defense strategy.

The Threat Encyclopedia provides a comprehensive list of names and symptoms for various blended threats, including known malware, spam, malicious URLs, and known vulnerabilities.

Go to http://about-threats.trendmicro.com/us/threatencyclopedia#malware to learn more about:

- Malware and malicious mobile code currently active or "in the wild"
- Correlated threat information pages to form a complete web attack story
- Internet threat advisories about targeted attacks and security threats
- Web attack and online trend information
- Weekly malware reports

Contacting Trend Micro

In the United States, Trend Micro representatives are available by phone or email:

Address	Trend Micro, Incorporated 225 E. John Carpenter Freeway, Suite 1500 Irving, Texas 75062 U.S.A.
Phone	Phone: +1 (817) 569-8900 Toll-free: (888) 762-8736
Website	http://www.trendmicro.com
Email address	support@trendmicro.com

- Worldwide support offices:

  http://www.trendmicro.com/us/about-us/contact/index.html

- Trend Micro product documentation:

http://docs.trendmicro.com

Speeding Up the Support Call

To improve problem resolution, have the following information available:

- Steps to reproduce the problem
- Appliance or network information
- Computer brand, model, and any additional connected hardware or devices
- Amount of memory and free hard disk space
- Operating system and service pack version
- Version of the installed agent
- Serial number or Activation Code
- Detailed description of install environment
- Exact text of any error message received

Sending Suspicious Content to Trend Micro

Several options are available for sending suspicious content to Trend Micro for further analysis.

Email Reputation Services

Query the reputation of a specific IP address and nominate a message transfer agent for inclusion in the global approved list:

https://ers.trendmicro.com/

Refer to the following Knowledge Base entry to send message samples to Trend Micro:

https://success.trendmicro.com/solution/1112106

File Reputation Services

Gather system information and submit suspicious file content to Trend Micro:

https://success.trendmicro.com/solution/1059565

Record the case number for tracking purposes.

Web Reputation Services

Query the safety rating and content type of a URL suspected of being a phishing site, or other so-called "disease vector" (the intentional source of Internet threats such as spyware and malware):

http://global.sitesafety.trendmicro.com/

If the assigned rating is incorrect, send a re-classification request to Trend Micro.

Other Resources

In addition to solutions and support, there are many other helpful resources available online to stay up to date, learn about innovations, and be aware of the latest security trends.

Download Center

From time to time, Trend Micro may release a patch for a reported known issue or an upgrade that applies to a specific product or service. To find out whether any patches are available, go to:

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

If a patch has not been applied (patches are dated), open the Readme file to determine whether it is relevant to your environment. The Readme file also contains installation instructions.

Documentation Feedback

Trend Micro always seeks to improve its documentation. If you have questions, comments, or suggestions about this or any Trend Micro document, please go to the following site:

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

Appendices

Appendices

Appendix A

Transport Layer Security

Topics include:

About Transport Layer Security

Transport Layer Security (TLS) provides a secure communication channel between hosts over the Internet, ensuring the privacy and integrity of the data during transmission.

Two hosts (the Deep Discovery Email Inspector appliance and the email relay) establish a TLS session as follows:

1. The sending host requests a secure connection with the receiving host by sending a cipher list.
2. The two hosts establish a connection.
3. The receiving host selects one cipher and replies with its digital certificate signed by a Certificate Authority (CA).
4. The sending host verifies the identity with the trusted CA certificate and generates the session keys by encrypting a message using a public key.
5. The receiving host decrypts the message using the corresponding private key.
6. The sending host's identity verifies when the receiving host can decrypt the message with the private key.
7. The TLS session establishes and email messages passed between the hosts are encrypted.

Tip

By default, Deep Discovery Email Inspector does not apply TLS or email encryption, nor does it verify email relay host identities. Enable TLS for Deep Discovery Email Inspector to encrypt incoming email messages.

Deploying Deep Discovery Email Inspector in TLS Environments

Enable the TLS settings for messages entering and exiting Deep Discovery Email Inspector.

Procedure

1. Review the prerequisites.

   See *Prerequisites for Using TLS on page A-3*.

2. Enable incoming TLS.

   See *Configuring TLS Settings for Incoming Messages on page A-4*.

3. Enable outgoing TLS.

   See *Configuring TLS Settings for Outgoing Messages on page A-5*.

Prerequisites for Using TLS

Establishing the TLS infrastructure requires that the organization has its own Certificate Authority (CA) key or is able to sign all generated certificate requests by an external CA. Private keys and certificate requests must be generated for each SMTP server in the network. The certificate requests should be signed by the CA.

Obtaining a Digital Certificate

To obtain a digital certificate,apply for the certificate and public/private key pairs from a certificate authority.

Note

Deep Discovery Email Inspector provides a default certificate and key file.

Ensure that the Certificate Format is Valid

- Deep Discovery Email Inspector only supports the PEM certificate format.
- Ensure that the signed certificate contains both the private key and certificate information.

Configuring TLS Settings for Incoming Messages

Deep Discovery Email Inspector applies TLS to messages that enter and exit the server where Deep Discovery Email Inspector is installed. Message traffic exits Deep Discovery Email Inspector to downstream MTA that deliver the email messages to recipients.

Procedure

1. Go to **Administration** > **Mail Settings** > **Connections**.
2. Go to the bottom of the page to the section titled **Transport Layer Security**.
3. Select **Enable Incoming TLS**.

   This option allows the Deep Discovery Email Inspector SMTP Server to provide Transport Layer Security (TLS) support to SMTP email relays, but does not require that email relays use TLS encryption to establish the connection.
4. Select **Only accept SMTP connections through TLS** for Deep Discovery Email Inspector to only accept secure incoming connections.

   This option enables the Deep Discovery Email Inspector SMTP server to accept messages only through a TLS connection.

5. Click a **Browse** button next to one of the following:

Option	Description
CA certificate	The CA certificate verifies an SMTP email relay. However, Deep Discovery Email Inspector does not verify the email relay and only uses the CA certificate for enabling the TLS connection.
Private key	The SMTP email relay creates the session key by encrypting a random number using the Deep Discovery Email Inspector SMTP server's public key. The Deep Discovery Email Inspector SMTP server then uses the private key to decrypt the random number in order to establish the secure connection. This key must be uploaded to enable a TLS connection.
SMTP server certification	SMTP email relays can generate session keys with the Deep Discovery Email Inspector SMTP server public key. Upload the key to enable a TLS connection.

6. Click **Save**.

Configuring TLS Settings for Outgoing Messages

Deep Discovery Email Inspector applies TLS to messages that enter and exit Deep Discovery Email Inspector. Message traffic exits Deep Discovery Email Inspector to downstream MTAs that deliver the email messages to recipients.

Procedure

1. Go to **Administration** > **Mail Settings** > **Connections**.
2. Go to the bottom of the page to the section titled **Transport Layer Security**.
3. Select **Enable outgoing TLS**.

4. Click **Save**.

Creating and Deploying Certificates

This section introduces how to create and deploy certificates in Deep Discovery Email Inspector for Transport Layer Security (TLS) environments.

Important

Create the certificate on a separate machine running Linux, not on the Deep Discovery Email Inspector appliance. After creating the certificate, upload the certificate through the Deep Discovery Email Inspector management console at **Administration** > **Mail Settings** > **Connections** in the **Transport Layer Security** section.

Creating the Certificate Authority Key and Certificate

Organizations that do not have existing CA infrastructure can obtain a CA private key and certificate through a well-known, external service, such as VeriSign™, or execute the following procedure to generate their own CA private key and certificate.

```
#openssl req -x509 -days 365 -newkey rsa:1024 -keyout /tmp/
root_key.pem -out /tmp/root_req.pem

Generating a 1024 bit RSA private key

.....................++++++

.............++++++

writing new private key to '/tmp/root_key.pem'

Enter PEM pass phrase:Trend

-----

You are about to be asked to enter information that will be
incorporated into your certificate request.
```

```
What you are about to enter is what is called a Distinguished
Name or a DN.

There are quite a few fields but you can leave some blank

For some fields there will be a default value,

If you enter '.', the field will be left blank.

-----

Country Name (2 letter code) [GB]:DE

State or Province Name (full name) [Berkshire]:Bavaria

Locality Name (eg, city) [Newbury]:Munich

Organization Name (eg, company) [My Company Ltd]: Trend Micro

Organizational Unit Name (eg, section) []:Global Training

Common Name (eg, your name or your server's host name) []:EF

Email Address []:email@domain.com
```

After the completion of this procedure, the `/tmp/root_key.pem` file contains the private key encrypted with the "Trend" password. The `/tmp/root_key.pem` file contains the self-signed certificate that must be distributed to all clients and servers. Both are stored in the PEM-format.

WARNING!

The Organization (O) field for the CA and key owners must be the same.

After obtaining a CA private key and certificate:

- Deploy the CA certificate on all servers.
- Have all certificates issued in your organization signed by the CA.

Creating the Deep Discovery Email Inspector Private Key and Certificate

Create the Deep Discovery Email Inspector private key and certificate to secure the communication channel.

```
# openssl genrsa -out /tmp/ddei_key.pem

Generating RSA private key, 1024 bit long modulus

.....................++++++

....++++++

e is 65537 (0x10001)

# openssl req -new -key /tmp/ddei_key.pem -out /tmp/ddei_req.pem

You are about to be asked to enter information that will be
incorporated into your certificate request.

What you are about to enter is what is called a Distinguished
Name or a DN.

There are quite a few fields but you can leave some blank

For some fields there will be a default value,

If you enter '.', the field will be left blank.

-----

Country Name (2 letter code) [GB]:DE

State or Province Name (full name) [Berkshire]:Bavaria

Locality Name (eg, city) [Newbury]:Munich

Organization Name (eg, company) [My Company Ltd]:Trend Micro

Organizational Unit Name (eg, section) []:Global Training

Common Name (eg, your name or your server's host name)
[]:linux.course.test
```

```
Email Address []:<Enter>

Please enter the following 'extra' attributes to be sent with
your certificate request

A challenge password []:<Enter>

An optional company name []:<Enter>
```

After completing this procedure, the `/tmp/ddei_key.pem` file contains the Deep Discovery Email Inspector (`linux.course.test`) private key in PEM-format. The `/tmp/ddei_req.pem` file contains the unsigned certificate (certificate request) in the PEM-format.

WARNING!

The Common Name (CN) field for the key owner must be equal to the FQDN or be the same as the name specified in the domain-based delivery.

Creating the Keys and Certificates for Other Servers

Keys and certificates for other communicating servers must be created if they do not exist. The following procedure describes the key and certificate generation for host `linux.course.test`.

```
# openssl genrsa -out /tmp/linux_key.pem 1024

Generating RSA private key, 1024 bit long modulus

.....................................++++++

.............++++++

e is 65537 (0x10001)

# openssl req -new -key /tmp/linux_key.pem -out /tmp/linux_req.pem

You are about to be asked to enter information that will be
incorporated into your certificate request.

What you are about to enter is what is called a Distinguished
Name or a DN.
```

```
There are quite a few fields but you can leave some blank

For some fields there will be a default value

If you enter '.', the field will be left blank.

-----

Country Name (2 letter code) [GB]:DE

State or Province Name (full name) [Berkshire]:Bavaria

Locality Name (eg, city) [Newbury]:Munich

Organization Name (eg, company) [My Company Ltd]:Trend Micro

Organizational Unit Name (eg, section) []:Global Training

Common Name (eg, your name or your server's host name)
[]:linux.course.test

Email Address []:<Enter>

Please enter the following 'extra' attributes to be sent with
your certificate request

A challenge password []:<Enter>

An optional company name []:<Enter>
```

After completing this procedure, the `/tmp/linux_key.pem` file contains the linux.course.test private key in PEM-format. The `/tmp/linux_req.pem` file contains the unsigned certificate (certificate request) in the PEM-format.

Signing the Deep Discovery Email Inspector Certificate

Signing the certificate is optional. The certificate must be signed if you do not want to distribute all the certificates on systems and only distribute the CA certificate. To confirm that the Deep Discovery Email Inspector certificate is trusted by the CA, you need to sign the Deep Discovery Email Inspector certificate request by the CA private key (`/tmp/root_key.pem`) but before doing this you need to set up the OpenSSL environment for CA:

Procedure

1. Update the OpenSSL configuration file `/etc/pki/tls/openssl.cnf`.

   Find the definition of the [CA_default]/ dir parameter and change it to `/etc/pki/CA`:

   ```
   [ CA_default ]

   dir = /etc/pki/CA # Where everything is kept
   ```

2. Create the empty index.txt file in the `/etc/pki/CA` directory:

   ```
   # touch /etc/pki/CA/index.txt
   ```

3. Create the serial file with initial content in the `/etc/pki/CA` directory:

   ```
   # echo "01" > /etc/pki/CA/serial
   ```

4. Sign the certificate:

   ```
   #openssl ca -days 365 -cert /tmp/root_req.pem -keyfile /tmp/
   root_key.pem -in /tmp/ddei_req.pem -out /tmp/ddei_cert.pem -
   outdir /tmp

   Using configuration from /etc/pki/tls/openssl.cnf

   Enter pass phrase for /tmp/root_key.pem:Trend

   Check that the request matches the signature

   Signature ok

   Certificate Details:

   Serial Number: 1 (0x1)

   Validity

   Not Before: Oct 22 09:35:52 2010 GMT

   Not After : Oct 22 09:35:52 2011 GMT

   Subject:

   countryName = DE
   ```

```
stateOrProvinceName = Bavaria

organizationName = Trend Micro

organizationalUnitName = Global Training

commonName = ddei.course.test

X509v3 extensions:

X509v3 Basic Constraints:

CA:FALSE

Netscape Comment:

X509v3 Subject Key Identifier:

82:15:B8:84:9C:40:8C:AB:33:EE:A4:BA:9C:2E:F6:7E:C0:DC:E8:1C
X509v3

Authority Key Identifier:

keyid:5B:B4:06:4D:8D:12:D0:B3:36:A7:6B:3A:FD:F2:C8:83:4A:DD
:AA: BD

Certificate is to be certified until Oct 22 09:35:52 2011
GMT (365 days)

Sign the certificate? [y/n]:y

1 out of 1 certificate requests certified, commit? [y/n]y

Write out database with 1 new entries

Data Base Updated

#
```

The file contains the Deep Discovery Email Inspector certificate signed by the CA. You need to distribute this file to all servers and clients communicating with Deep Discovery Email Inspector.

Uploading Certificates

The TLS support provided by Deep Discovery Email Inspector uses the same set of keys for upstream and downstream directions. The CA certificate can be one of the following:

- The real CA certificate used to sign all public keys of all email relays communicating with Deep Discovery Email Inspector.
- Individual certificates of all email relays communicating with Deep Discovery Email Inspector.

Procedure

1. Go to **Administration** > **Mail Settings** > **Connections**.
2. Under **Transport Layer Security**, do the following:
   a. Select **Enable incoming TLS**.
   b. Click **Choose File** or **Browse** next to the type of certificate to upload.
   c. Click **Upload**.
3. Click **Save**.

Appendix B

Using the Command Line Interface

Topics include:

Using the CLI

Use the Command Line Interface (CLI) perform the following tasks:

- Configure initial settings, such as the device IP address and host name
- Restart the device
- View device status
- Debug and troubleshoot the device

Note

Do not enable scroll lock on your keyboard when using HyperTerminal. If scroll lock is enabled, you cannot enter data.

Entering the CLI

To log on to the CLI, either connect directly to the server or connect using SSH.

Procedure

- To connect directly to the server:
  a. Connect a monitor and keyboard to the server.
  b. Log on to the CLI.

  Note

  The default credentials are:

  - User name: `admin`
  - Password: `ddei`

- If the SSH service is enabled, do the following to connect using SSH:

a. Verify the computer you are using can ping Deep Discovery Email Inspector's IP address.

b. Use an SSH client to connect to Deep Discovery Email Inspector's IP address and TCP port 22.

Note

The default IP address / subnet mask is `192.168.252.1` / `255.255.0.0`.

Command Line Interface Commands

The Deep Discovery Email Inspector CLI commands are separated into two categories: normal and privileged commands. Normal commands are basic commands to obtain system information and to perform simple tasks. Privileged commands provide full configuration control and advanced monitoring and debugging features. Privileged commands are protected by the **`enable`** command and password.

Entering Privileged Mode

WARNING!

Enter the shell environment only if your support provider instructs you to perform debugging operations.

Procedure

1. Log on to the CLI.

   See *Entering the CLI on page B-2*.

2. At the prompt, type `enable` and press ENTER to enter privileged mode.

3. Type the default password, `trend#1`, and then press ENTER.

The prompt changes from > to #.

CLI Command Reference

The following tables explain the CLI commands.

Note

CLI commands require privileged mode. For details, see *Entering Privileged Mode on page B-3*.

configure product management-port

TABLE B-1. configure product management-port

Set the management port IP address	
Syntax: `configure product management-port [ipv4 | ipv6] <ip> <mask>`	
View	Privileged
Parameters	**ipv4**: Configure IPv4 settings **ipv6**: Configure IPv6 settings **<ip>**: IP address for the interface **<mask>**: Network mask for the NIC
Example:	
To set the management port IPv4 address: `configure product management-port ipv4 192.168.10.21 255.255.255.0`	

configure product operation-mode

TABLE B-2. configure product operation-mode

Set the Deep Discovery Email Inspector operation mode **Note** Deep Discovery Email Inspector virtual appliances installed in Microsoft Hyper-V do not support SPAN/TAP mode.	
Syntax: `configure product operation-mode [BCC | MTA | TAP]`	
View	Privileged
Parameters	**BCC**: Deploy in BCC mode **MTA**: Deploy in MTA mode **TAP**: Deploy in SPAN/TAP mode
Example:	
To deploy in BCC mode: `configure product operation-mode BCC`	

configure network basic

TABLE B-3. configure network basic

Configures basic network settings, including host name, IP address, subnet mask, gateway, and DNS.	
Syntax: `configure network basic`	
View	Privileged
Parameters	None
Examples:	

```
***Network Configuration***

Specify value for each item and press ENTER. Settings apply to the
management port (Eth0) and require a restart.

Host name: mail.com

IPv4 address: 10.64.70.151

Subnet mask: 255.255.254.0

IPv4 gateway: 10.64.70.1

Preferred IPv4 DNS: 10.64.1.55

Alternate IPv4 DNS: 10.64.1.54

IPv6 address:

Prefix length:

IPv6 gateway:

Preferred IPv6 DNS:

Alternate IPv6 DNS:

Confirm changes and restart (Y/N):
```

configure network dns

TABLE B-4. configure network dns

Configures DNS settings for the Deep Discovery Email Inspector device.	
Syntax: `configure network dns [ipv4 | ipv6] <dns1> <dns2>`	
View	Privileged

Parameters	**ipv4**: Configure IPv4 settings **ipv6**: Configure IPv6 settings **<dns1>**: Primary DNS server **<dns2>**: Secondary DNS server  **Note** Use a space to separate the primary and secondary DNS value.
Examples:	
To configure the primary DNS with an IP address of 192.168.10.21: `configure network dns ipv4 192.168.10.21`	
To configure the primary and secondary DNS with the following values: • Primary DNS: `192.168.10.21` • Secondary DNS: `192.168.10.22` `configure network dns ipv4 192.168.10.21 192.168.10.22`	

configure network hostname

TABLE B-5. configure network hostname

Configures the host name for the Deep Discovery Email Inspector device.	
Syntax: `configure network hostname <hostname>`	
View	Privileged
Parameters	**<hostname>**: The host name or fully qualified domain name (FQDN) for the Deep Discovery Email Inspector device
Examples:	
To change the host name of the Deep Discovery Email Inspector device to test.host.com: `configure network hostname test.example.com`	

configure network interface

TABLE B-6. configure network interface

Configures the IP address for the network interface card (NIC).	
Syntax: `configure network interface [ipv4 | ipv6] <interface> <ip> <mask>`	
View	Privileged
Parameters	**ipv4**: Configure IPv4 settings **ipv6**: Configure IPv6 settings **<interface>**: NIC name **<ip>**: IP address for the interface **<mask>**: Network mask for the NIC
Example:	
To configure an NIC with the following values: • Interface: `eth0` • IPv4 address: `192.168.10.10` • IPv4 subnet mask: `255.255.255.0` `configure network interface ipv4 eth0 192.168.10.10 255.255.255.0`	

configure network teaming reinit

TABLE B-7. configure network teaming reinit

Disables network interface card (NIC) teaming and restores network card configuration	
Syntax: `configure network teaming reinit`	
View	Privileged
Parameters	None

Example:
To disable NIC teaming: `configure network teaming reinit`

configure network route add

TABLE B-8. configure network route add

Adds a new route entry	
Syntax: `configure network route add [ipv4 | ipv6] <ip_prefixlen> <via> <dev>`	
View	Privileged
Parameters	**ipv4**: Configure IPv4 settings **ipv6**: Configure IPv6 settings **<ip_prefixlen>**: Destination network ID with format IP_Address/ Prefixlen **<via>**: IP address of the next hop **<dev>**: Device name
Example:	
To add a new route entry: `configure network route add ipv4 172.10.10.0/24 192.168.10.1 eth1`	

configure network route default

TABLE B-9. configure network route default

Sets the default route
Syntax: `configure network route default [ipv4 | ipv6] <gateway>`

View	Privileged
Parameter	**ipv4**: Configure IPv4 settings **ipv6**: Configure IPv6 settings **<gateway>**: IP address of default gateway
Example:	
To set the default route for the Deep Discovery Email Inspector appliance: `configure network route default ipv4 192.168.10.1`	

configure network route del

TABLE B-10. configure network route del

Deletes a route	
Syntax: `configure network route del [ipv4 | ipv6] <ip_prefixlen> <via> <dev>`	
View	Privileged
Parameters	**ipv4**: Configure IPv4 settings **ipv6**: Configure IPv6 settings **<ip_prefixlen>**: Destination network ID with format IP_Address/Prefixlen **<via>**: IPv4 address of the next hop **<dev>**: Device name
Example:	
To delete a route for the Deep Discovery Email Inspector appliance: `configure network route del ipv4 172.10.10.0/24 192.168.10.1 eth1`	

configure network route del default/default ipv6

TABLE B-11. configure network route del default/default ipv6

Deletes the default IPv6 gateway	
Syntax: `configure network route del default ipv6 <gateway> <device>`	
View	Privileged
Parameters	gateway: IPv6 Address of the default gateway device: Link local to IPv6 default gateway
Example: To delete the default IPv6 gateway fe80::20c:29ff:fe75:b579 on device eth0: `configure network route del default ipv6 fe80::20c:29ff:fe75:b579 eth0`	

configure service nscd disable

TABLE B-12. configure service nscd disable

Disables the name service cache daemon (nscd) at system startup.	
Syntax: `configure service nscd disable`	
View	Privileged
Parameters	None
Example:	
To disable the name service cache daemon at system startup: `configure service nscd disable`	

configure service nscd enable

TABLE B-13. configure service nscd enable

Enables the name service cache daemon (nscd) at system startup.	
Syntax: `configure service nscd enable`	
View	Privileged
Parameters	None
Example:	
To enable the name service cache daemon at system startup: `configure service nscd enable`	

configure service ssh disable

TABLE B-14. configure service ssh disable

Disables SSH on all network interface cards (NIC).	
Syntax: `configure service ssh disable`	
View	Privileged
Parameters	None
Examples:	
To disable SSH on all NICs: `configure service ssh disable`	

configure service ssh enable

TABLE B-15. configure service ssh enable

Enables SSH on one specific network interface card (NIC).	
Syntax: `configure service ssh enable`	
View	Privileged
Parameters	None
Examples:	
To enable SSH: `configure service ssh enable`	

configure service ssh port

TABLE B-16. configure service ssh port

Change SSH service port.	
Syntax: `configure service ssh port <port>`	
View	Privileged
Parameters	port: configure the SSH service port <port>: SSH service port number
Example: To change the SSH service port to 56743: `configure service ssh port 56743`	

configure service ntp

TABLE B-17. configure service ntp

Synchronize the Deep Discovery Email Inspector system time with an NTP server.	
Syntax: `configure service ntp [enable | disable | server-address <address>]`	
View	Privileged
Parameters	**enable**: Enable NTP **disable**: Disable NTP **server-address**: Configure the NTP server address **<address>**: Specify the FQDN or IP address of the NTP server
Examples:	
To configure the NTP server address as 192.168.10.21: `configure service ntp server-address 192.168.10.21`	
To enable synchronization with the NTP server: `configure service ntp enable`	

configure system date

TABLE B-18. configure system date

Configures the time and date and saves the data in CMOS.	
Syntax: `configure system date <date> <time>`	
View	Privileged
Parameters	**<date>**: Set the date using the following format: **yyyy-mm-dd** **<time>**: Set the time with the following format: **hh:mm:ss**
Example:	

To set the date to August 12, 2010 and the time to 3:40 PM: `configure system date 2010-08-12 15:40:00`

configure system password enable

TABLE B-19. configure system password enable

To change the password required to enter Privileged mode.	
Syntax: `configure system password enable`	
View	Privileged
Parameters	None
Examples:	
To change the password required to enter Privileged mode: `configure system password enable`	

configure system timezone

TABLE B-20. configure system timezone

Configures the time zone used by Deep Discovery Email Inspector.	
Syntax: `configure system timezone <region> <city>`	
View	Privileged
Parameters	**<region>**: Region name **<city>**: City name
Example:	

To configure the Deep Discovery Email Inspector appliance to use the time zone for the following location:

Region: America

City: New York

```
configure system timezone America New_York
```

TABLE B-21. Time Zone Setting Examples

REGION/COUNTRY	CITY
Africa	Cairo
	Harare
	Nairobi

Region/Country	City
America	Anchorage
	Bogota
	Buenos_Aires
	Caracas
	Chicago
	Chihuahua
	Denver
	Godthab
	Lima
	Los_Angeles
	Mexico_City
	New_York
	Noronha
	Phoenix
	Santiago
	St_Johns
	Tegucigalpa

Region/Country	City
Asia	Almaty
	Baghdad
	Baku
	Bangkok
	Calcutta
	Colombo
	Dhaka
	Hong_Kong
	Irkutsk
	Jerusalem
	Kabul
	Karachi
	Katmandu
	Krasnoyarsk
	Kuala_Lumpur
	Kuwait
	Magadan
	Manila
	Muscat
	Rangoon
	Seoul
	Shanghai

Region/Country	City
Asia (Continued)	Singapore
	Taipei
	Tehran
	Tokyo
	Yakutsk
Atlantic	Azores
Australia	Adelaide
	Brisbane
	Darwin
	Hobart
	Melbourne
	Perth
Europe	Amsterdam
	Athens
	Belgrade
	Berlin
	Brussels
	Bucharest
	Dublin
	Moscow
	Paris

Region/Country	City
Pacific	Auckland
	Fiji
	Guam
	Honolulu
	Kwajalein
	Midway
US	Alaska
	Arizona
	Central
	East-Indiana
	Eastern
	Hawaii
	Mountain
	Pacific

enable

Table B-22. enable

Enters privileged mode so privileged commands can be provided.	
Syntax: `enable`	
View	Normal
Parameters	None
Example:	

To enter privileged mode: `enable`

exit

TABLE B-23. exit

Exits privileged mode. Exits the session for those not in privileged mode.	
Syntax: `exit`	
View	Normal
Parameters	None
Example:	
To exit privileged mode or to exit the session when not in privileged mode: `exit`	

help

TABLE B-24. help

Displays the CLI help information.	
Syntax: `help`	
View	Normal
Parameters	None
Example:	

To display the CLI help information: `help`

history

TABLE B-25. history

Displays the current session's command line history.	
Syntax: `history [limit]`	
View	Normal
Parameters	**[limit]**: Specifies the size of the history list for the current session Specifying "0" retains all commands for the session.
Example:	
To specify six commands for the size of the history list: `history 6`	

logout

TABLE B-26. logout

Logs out of the current CLI session.	
Syntax: `logout`	
View	Normal
Parameters	None
Example:	

To logout from the current session: `logout`

ping

TABLE B-27. ping

Pings a specified host.	
Syntax: `ping [-c num_echos] [-i interval] <dest>`	
View	Normal
Parameters	**[-c num_echos]**: Specifies the number of echo requests to be sent. Default value is 5. **[-i interval]**: Specifies the delay interval in seconds between each packet. Default value is 1 second. **<dest>**: Specifies the destination host name or IP address
Examples:	
To ping the IP address 192.168.1.1: `ping 192.168.1.1`	
To ping the host remote.host.com: `ping remote.host.com`	

ping6

TABLE B-28. ping6

Pings a specified IPv6 host through interface eth0.
Syntax: `ping6 [-c num_echos] [-i interval] <dest>`

View	Normal
Parameters	**[-c num_echos]**: Specifies the number of echo requests to be sent. Default value is 5. **[-i interval]**: Specifies the delay interval in seconds between each packet. Default value is 1 second. **<dest>**: Specifies the destination host name or IP address
Examples:	
To ping the IPv6 address fe80::21a:a5ff:fec1:1060: `ping6 fe80::21a:a5ff:fec1:1060`	
To ping the host remote.host.com: `ping6 remote.host.com`	

start task postfix drop

TABLE B-29. start task postfix drop

Deletes a specified message or all messages in the email message queue.	
Syntax: `start task postfix drop { <mail_id> | all }`	
View	Privileged
Parameters	**<mail_id>**: Specifies the message ID in the postfix queue to delete
Examples:	
To delete email message D10D4478A5 from the email message queue: `start task postfix drop D10D4478A5`	
To delete all email messages from the email message queue: `start task postfix drop all`	

start task postfix flush

TABLE B-30. start task postfix flush

Attempts to deliver all queued email messages.	
Syntax: `start task postfix flush`	
View	Privileged
Parameters	None
Example:	
To deliver all queued email messages: `start task postfix flush`	

start task postfix queue

TABLE B-31. start task postfix queue

Displays all email messages queued in Postfix.	
Syntax: `start task postfix queue`	
View	Privileged
Parameters	None
Example:	
To display all Postfix queued email messages: `start task postfix queue`	

start service nscd

TABLE B-32. start service nscd

Starts the name service cache daemon (nscd).	
Syntax: `start service nscd`	
View	Privileged
Parameters	None
Example:	
To start the name service cache daemon: `start service nscd`	

start service postfix

TABLE B-33. start service postfix

Starts the Postfix mail system	
Syntax: `start service postfix`	
View	Privileged
Parameters	None
Example:	
To start the Postfix mail system: `start service postfix`	

start service product

TABLE B-34. start service product

Starts the Product service system.	
Syntax: `start service product`	
View	Privileged
Parameters	None
Example:	
To start the Product service system: `start service product`	

start service ssh

TABLE B-35. start service ssh

Starts the ssh service system.	
Syntax: `start service ssh`	
View	Privileged
Parameters	None
Example:	
To start the ssh service system: `start ssh service`	

stop process core

TABLE B-36. stop process core

Stops a running process and generates a core file.	
Syntax: `stop process core <pid>`	
View	Privileged
Parameters	**<pid>**: The process ID
Example:	
To stop a process with ID 33: `stop process core 33`	

stop service nscd

TABLE B-37. stop service nscd

Stops the name service cache daemon (nscd).	
Syntax: `stop service nscd`	
View	Privileged
Parameters	None
Example:	
To stop the name service cache daemon: `stop service nscd`	

stop service postfix

TABLE B-38. stop service postfix

Stops the Postfix mail system.	
Syntax: `stop service postfix`	
View	Privileged
Parameters	None
Example:	
To stop the Postfix mail system: `stop service postfix`	

stop service product

TABLE B-39. stop service product

Stops the Product service system.	
Syntax: `stop service product`	
View	Privileged
Parameters	None
Example:	
To stop the Product service system: `stop service product`	

stop service ssh

TABLE B-40. stop service ssh

Stops the ssh service system.	
Syntax: `stop service ssh`	
View	Privileged
Parameters	None
Example:	
To stop the ssh service system: `stop ssh service`	

reboot

TABLE B-41. reboot

Reboots the Deep Discovery Email Inspector appliance immediately or after a specified delay.	
Syntax: `reboot [time]`	
View	Privileged
Parameters	**[time]**: Specifies the delay, in minutes, to reboot the Deep Discovery Email Inspector appliance
Examples:	
To reboot the Deep Discovery Email Inspector appliance immediately: `reboot`	
To reboot the Deep Discovery Email Inspector appliance after 5 minutes: `reboot 5`	

resolve

TABLE B-42. resolve

Resolves an IPv4 address from a host name or resolves a host name from an IPv4 address.	
Syntax: `resolve <dest>`	
View	Privileged
Parameter	**<dest>**: Specifies the IPv4 address or host name to resolve
Examples:	
To resolve the host name from IP address 192.168.10.1: `resolve 192.168.10.1`	
To resolve the IP address from host name parent.host.com: `resolve parent.host.com`	

show storage statistic

TABLE B-43. show storage statistic

Displays the file system disk space usage.	
Syntax: `show storage statistic [partition]`	
View	Normal
Parameters	**[partition]**: Specify a partition. This is optional.
Example:	
To display the file system disk space usage of the Deep Discovery Email Inspector appliance: `show storage statistic`	

show network

TABLE B-44. show network

Displays various Deep Discovery Email Inspector network configurations.	
Syntax: `show network [arp <address> | connections | dns | dns ipv6| hostname | interface | route | route ipv4 | route default ipv4 | route default ipv6]`	
View	Normal
Parameters	**arp**: Displays the value returned by the Address Resolution Protocol (ARP) for the given address. **<address>**: FQDN or IP address that will be resolved with the Address Resolution Protocol (ARP). **connections**: Displays the current network connections of the Deep Discovery Email Inspector appliance. **dns**: Displays the DNS IP address of the Deep Discovery Email Inspector appliance. **dns ipv6**: Displays system DNS configuration for IPv6. **hostname**: Displays the host name of the Deep Discovery Email Inspector appliance. **interface**: Displays the network interface card (NIC) status and configuration. **route**: Displays IP address route table. **route ipv4**: Displays system IPv4 route table. **route default ipv4**: Displays default IPv4 route table. **route default ipv6**: Display default IPv6 route table.
Examples:	
To display the ARP information for the address 10.2.23.41: `show network arp 10.2.23.41`	

To display the current network connections of the Deep Discovery Email Inspector appliance: `show network connections`
To display the DNS configuration: `show network dns`
To display system DNS configuration for IPv6: `show network dns ipv6`
To display the host name of the Deep Discovery Email Inspector appliance: `show network hostname`
To display the NIC status and configuration: `show network interface`
To display the IP address route table: `show network route`
To display system IPv4 route table: `show network route ipv4`
To display system default IPv4 gateway: `show network route default ipv4`
To display system default IPv6 gateway: `show network route default ipv6`

show kernel

TABLE B-45. show kernel

Displays the OS kernel information of the Deep Discovery Email Inspector appliance.	
Syntax: `show kernel {messages | modules | parameters | iostat}`	
View	Normal

Parameters	**messages**: Displays kernel messages. **modules**: Displays kernel modules. **parameters**: Displays kernel parameters. **iostat**: Displays CPU statistics and I/O statistics for devices and partitions.
Examples:	
To display the OS kernel's messages: `show kernel messages`	
To display the OS kernel's modules: `show kernel modules`	
To display the OS kernel's parameters: `show kernel parameters`	
To display the CPU statistics and I/O statistics: `show kernel iostat`	

show service

TABLE B-46. show service

Displays the Deep Discovery Email Inspector service status.	
Syntax: `show service [ntp <enabled | server-address> | ssh | nscd]`	
View	Normal
Parameters	**nscd**: Displays the status of the name service cache daemon. **ntp enabled**: Displays the system NTP service status. **ntp server-address**: Displays the system NTP service server address. **ssh**: Displays the status of SSH.

Examples:
To display the name service cache daemon status: `show service nscd`
To display the NTP service status: `show service ntp`
To display the SSH status: `show service ssh`

show memory

TABLE B-47. show memory

Displays the system memory information.	
Syntax: `show memory [vm | statistic]`	
View	Normal
Parameters	**vm**: Displays virtual memory statistics **statistic**: Displays system memory statistics
Examples:	
To display the virtual memory statistics: `show memory vm`	
To display the system memory statistics: `show memory statistic`	

show process

TABLE B-48. showprocess

Displays the status of the processes that are currently running.

Syntax: `show process [top | stack | itrace | trace] [pid]`	
View	Normal
Parameters	**top**: Displays the status of the processes that are currently running and system related processes **stack**: Print a stack trace of a running process **itrace**: Trace the library call **trace**: Trace system calls and signals **pid**: The process id number
Examples:	

To display the status of the processes that are currently running:
`show process`
To display the stack trace of process 1233:
`show process stack 1233`
To display the system call of process 1233:
`show process trace 1233`
To display the library call of process 1233:
`show process itrace 1233`	

show product-info

TABLE B-49. show product-info

Displays the product information.	
Syntax: `show product-info [management-port | operation-mode | service-status | version`	
View	Normal

Parameters	**management-port**: Displays the management port's IP address and subnet mask **operation-mode**: Displays the operation mode of Deep Discovery Email Inspector **service-status**: Displays the status of services **version**: Displays the product version
Examples:	
To display the management port's IP address and mask: `show product-info management-port` To display the operation mode: `show product-info operation-mode` To display the status of the service: `show-product-info service-status` To display the build version of Deep Discovery Email Inspector: `show product-info version`	

show system

TABLE B-50. show system

Displays various system settings.	
Syntax: `show system [date | timezone [continent | city | country]| uptime | version]`	
View	Normal

Parameters	**date**: Displays the current time and date. **timezone**: Displays the timezone settings. You can optionally specify the timezone information to view: • **continent**: Displays the system continent • **city**: Displays the system city • **country**: Displays the system country **uptime**: Displays how long the Deep Discovery Email Inspector appliance has been running. **version**: Displays version number for the Deep Discovery Email Inspector appliance.
Examples:	
To display the current time and date of the Deep Discovery Email Inspector appliance: `show system date`	
To display the timezone settings: `show system timezone`	
To display the continent of the Deep Discovery Email Inspector appliance: `show system timezone continent`	
To display the city of the Deep Discovery Email Inspector appliance: device's city: `show system timezone city`	
To display the country of the Deep Discovery Email Inspector appliance: `show system timezone country`	
To display how long Deep Discovery Email Inspector has been running: `show system uptime`	
To display the version number of the Deep Discovery Email Inspector appliance: `show system version`	

shutdown

TABLE B-51. shutdown

Specifies shutting down the Deep Discovery Email Inspector appliance immediately or after a specified delay.	
Syntax: `shutdown [time]`	
View	Privileged
Parameters	**[time]**: Shuts down the Deep Discovery Email Inspector appliance after a specified delay in minutes.
Examples:	
To shut down the Deep Discovery Email Inspector appliance immediately: `shutdown`	
To shut down the Deep Discovery Email Inspector appliance after a 5 minute delay: `shutdown 5`	

traceroute

TABLE B-52. traceroute

Displays the tracking route to a specified destination.	
Syntax: `traceroute [-h hops] <dest>`	
View	Normal
Parameters	**[-h hops]**: Specifies the maximum number of hops to the destination. The minimum number is 6. **<dest>**: Specifies the remote system to trace
Examples:	

To display the route to IP address 172.10.10.1 with a maximum of 6 hops: `traceroute 172.10.10.1`
To display the route to IP address 172.10.10.1 with a maximum of 30 hops: `traceroute -h 30 172.10.10.1`

Appendix C

Notification Message Tokens

Add message tokens to customize email message notifications.

Topics include:

Recipient Notification Message Tokens

Deep Discovery Email Inspector sends recipient notifications to inform recipients that an email message contained a detected threat. After acting upon an email message, Deep Discovery Email Inspector sends recipient notifications based on the detected risk level. Use the following table to customize your recipient notifications with message tokens.

Note

For information about configuring recipient notifications, see *Configuring Recipient Notification on page 5-51*.

TABLE C-1. Message Tokens

TOKEN	DESCRIPTION	EXAMPLE
%Action%	The action that Deep Discovery Email Inspector took on the processed message	• Block and quarantine • Strip attachments, redirect links to blocking page, and tag • Strip attachments, redirect links to warning page, and tag • Pass and tag • Pass with no action
%AttachmentNames%	The top ten detected attachments	important.doc
%ConsoleURL%	The Deep Discovery Email Inspector management console URL.	https://192.168.252.1/loginPage.ddei
%DateTime%	The date and time that the alert was triggered	2014-03-21 03:34:09
%DeviceIP%	The IP address of the Deep Discovery Email Inspector appliance	123.123.123.123
%DeviceName%	The host name of the Deep Discovery Email Inspector appliance	example.com

Token	Description	Example
%Risk%	The email message's risk level	• High • Medium • Low • Unavailable
%Sender%	The sending email address	senderemail@example.com
%Subject%	The subject of the email message	Your dream job!
%ThreatNames%	The top ten detected threats	Spam/Graymail

Alert Notification Message Tokens

The following table explains the tokens available for alert notifications. Use the table to customize your alert notifications with message tokens.

Note

Not every alert notification can accept every message token. Review the alert's parameter specifications before using a message token. For details, see *Alert Notification Parameters on page 6-7*.

Table C-2. Message Tokens

Token	Description	Notes
%Account%	The user name of the account that Deep Discovery Email Inspector locks	Where allowed: • System: Account Locked Examples: • JohnDoe • Test

Token	Description	Notes
%Action%	The action that Deep Discovery Email Inspector took on the processed message	Where allowed: • Policy: Recipient Notifications Examples: • Policy: Recipient Notifications • Pass and tag
%AveSandboxProc%	The average time in minutes it takes to queue and analyze messages in the past hour	Where allowed: • System: Long Virtual Analyzer Processing Time Examples: • 3 • 2
%ComponentList%	The list of components.	Where allowed: • System: Component Update/ Rollback Successful • System: Component Update/ Rollback Unsuccessful Examples: • Network Content Inspection Engine/ 0x48000204/ 9.862.1107 • Network Content Inspection Engine/ 0x48000204/ Unknown
%ConsoleURL%	The Deep Discovery Email Inspector management console URL.	Where allowed: • All Example: • https://192.168.252.1/ loginPage.ddei

Token	Description	Notes
%CPUThreshold%	The maximum CPU usage as a percentage allowed before Deep Discovery Email Inspector sends an alert notification	Where allowed: • System: High CPU Usage Examples: • 95 • 85
%CPUUsage%	The total CPU utilization as a percentage	Where allowed: • System: High CPU Usage Examples: • 80 • 65
%DateTime%	The date and time that the Deep Discovery Email Inspector received the email message	Where allowed: • All Examples: • 2014-03-21 03:34:09 • 2014-06-15 11:31:22
%DaysBeforeExpirationATD%	The number of days before the product license for Advanced Threat Protection expires	Where allowed: • System: License Expiration Examples: • 4 • 123
%DaysBeforeExpirationSEG%	The number of days before the product license for Gateway Module expires	Where allowed: • System: License Expiration Examples: • 4 • 123

Token	Description	Notes
%DeferredQueue%	The number of email messages in the deferred queue waiting for Deep Discovery Email Inspector to process.	Where allowed: • System: Long Message Deferred Queue Example: • 100
%DeliveryQueue%	The number of email messages in the delivery queue waiting for Deep Discovery Email Inspector to process.	Where allowed: • System: Long Message Delivery Queue Examples: • 100 • 600
%DetectionCount%	The number of messages detected with suspicious characteristics during the specified period of time	Where allowed: • System: Detection Surge Examples: • 50 • 200
%DetectionThreshold%	The maximum number of messages detected to have suspicious characteristics before Deep Discovery Email Inspector sends an alert notification	Where allowed: • System: Detection Surge Examples: • 50 • 40
%DeviceIP%	The IP address of the Deep Discovery Email Inspector appliance	Where allowed: • All Example: • 123.123.123.123

Token	Description	Notes
%DeviceName%	The host name of the Deep Discovery Email Inspector appliance	Where allowed: • All Example: • example.com
%DiagnosisTip%	Recommendations on how to resolve the issue	Where allowed: • System: Connection Issue
%DiskSpace%	The lowest amount of disk space in GB before Deep Discovery Email Inspector send an alert notification	Where allowed: • System: Low Free Disk Space • System: Low Free Quarantine Disk Space Examples: • 2 • 30
%ExpirationDateATD%	The day the product license for Advanced Threat Protection expires	Where allowed: • System: License Expiration Examples: • 2014-03-21 03:34:09 • 2014-06-15 11:31:22
%ExpirationDateSEG%	The day the product license for Gateway Module expires	Where allowed: • System: License Expiration Examples: • 2014-03-21 03:34:09 • 2014-06-15 11:31:22

Token	Description	Notes
%Interval%	The frequency that Deep Discovery Email Inspector checks the message processing volume in minutes	Where allowed: • System: Detection Surge • System: Processing Surge Examples: • 15 • 10
%LicenseStatusATD%	The current status of the product license for Advanced Threat Protection	Where allowed: • System: License Expiration Examples: • Evaluation • Not Activated • Activated • Expired • Grace Period For details, see *Product License Status on page 8-205*.
%LicenseStatusSEG%	The current status of the product license for Gateway Module	Where allowed: • System: License Expiration Examples: • Evaluation • Not Activated • Activated • Expired • Grace Period For details, see *Product License Status on page 8-205*.

Token	Description	Notes
%LicenseTypeATD%	The Advanced Threat Protection product license type	Where allowed: • System: License Expiration Examples: • Full • Trial
%LicenseTypeSEG%	The Gateway Module product license type	Where allowed: • System: License Expiration Examples: • Full • Trial
%MemoryThreshold%	The maximum memory usage as a percentage allowed before Deep Discovery Email Inspector sends an alert notification.	Where allowed: • System: High Memory Usage Example: 90
%MemoryUsage%	The total memory utilization as a percentage.	Where allowed: • System: High Memory Usage Example: 90

Token	Description	Notes
%MessageList%	The list of detected messages, which includes the risk level, threat name, action taken, message ID, recipients, sender, recipient, subject, top three most risky attachment details, and when the message was received. This token also provides the names of detected threats for the following alert notifications: • Security: Suspicious Message Identified • Security: Watchlisted Recipients at Risk • System: Quarantined Messages • Security: Data Loss Prevention Incident	Where allowed: • Security: Suspicious Message Identified • Security: Watchlisted Recipients at Risk • System: Quarantined Messages • Security: Data Loss Prevention Incident Examples: • `==========` `Risk: High (Suspicious File)` `Action: Action set to 'pass'` `Threat Name: EMERGING-THREAT_GENERIC.ERS|VA` `Message ID: <E1fk6FQ-00073X-Ns@funimo.com>` `Recipients: relay@njrelay.itlab.trendmicro.` `Subject: Our Order#6501732` `Attachment: 65017832.xls (Excel 95 or 97 sp` `archive)` `Detected: 2018-07-30 19:41:23` `==========` • `==========` `Risk: Medium (Malicious URL)` `Action: Quarantined` `Threat Name: LOW-REPUTATION-URL_BLOCKED-LIS` `Message ID: <20180903210849.3B4D93A06C9@dde` `Recipients: bvt@ddei.com Sender: test@test.` `Subject: Te_%*s'<>?|\@~$%^&#$!`~(=-+<>;:.){` `Detected: 2018-09-03 21:08:51` `==========` • `==========` `Message ID: <5C32BC03.9090201@test.com>` `Recipients: test@test.com;test@test1.com` `Sender: test@test.com` `Subject: 1033` `Attachment: (Link only)` `DLP templates (Data identifiers):` `templateName (China: Mobile Phone Number)` `Detected: 2019-02-25 01:07:42` `==========`

Token	Description	Notes
%MTAList%	The list of unreachable MTAs. Each MTA appears as an IP address and the port number.	Where allowed: • System: Relay MTAs Inaccessible Examples: • [1.1.1.1]:99 • [7.7.7.7]:77
%ProcessingCount%	The total number of processed messages over the specified period of time	Where allowed: • System: Processing Surge Examples: • 50 • 200
%ProcessingThreshold%	The maximum number of processed messages during the specified time frame before Deep Discovery Email Inspector sends an alert notification	Where allowed: • System: Processing Surge Examples: • 100 • 40
%QueueThreshold%	The maximum number of messages in the delivery queue before Deep Discovery Email Inspector sends an alert notification	Where allowed: • System: Long Message Delivery Queue Examples: • 100 • 40

Token	Description	Notes
%SandboxProcThreshold%	The maximum amount of time allocated for average sandbox processing before Deep Discovery Email Inspector sends an alert notification	Where allowed: • System: Long Virtual Analyzer Processing Time Examples: • 15 • 30
%SandboxQueue%	The email message count in the sandbox queue waiting to be analyzed by Virtual Analyzer	Where allowed: • System: Long Virtual Analyzer Submission Queue Examples: • 30 • 75
%SandboxQueueThreshold%	The maximum number of messages in the sandbox queue before Deep Discovery Email Inspector sends an alert notification	Where allowed: • System: Long Virtual Analyzer Submission Queue Examples: • 100 • 75
%ServiceList%	The list of services affected by the connection issue	Where allowed: • System: Connection Issue Example: • Internal Virtual Analyzer network (eth1, No proxy)
%ServiceName%	The stopped Deep Discovery Email Inspector service Where allowed: • System: Service Stopped	Where allowed: • System: Service Stopped Example: • scanner

Token	Description	Notes
%TotalMessages%	The total number of messages with unsuccessful DKIM signing	Where allowed: • System: Unsuccessful DKIM Signing Example: • 10 • 25

Appendix D

Connections and Ports

Service Addresses and Ports

Deep Discovery Email Inspector accesses several Trend Micro services to obtain information about emerging threats and to manage your existing Trend Micro products. The following table describes each service and provides the required address and port information accessible to the product version in your region.

TABLE D-1. Service Addresses and Ports

SERVICE	DESCRIPTION	ADDRESS AND PORT
ActiveUpdate Server	Provides updates for product components, including pattern files. Trend Micro regularly releases component updates through the Trend Micro ActiveUpdate server.	`http://ddei50-p.activeupdate.trendmicro.com/activeupdate:80` `https://ddei50-p.activeupdate.trendmicro.com/activeupdate:443`
Certified Safe Software Service (CSSS)	Verifies the safety of files. Certified Safe Software Service reduces false positives, and saves computing time and resources.	`https://grid-global.trendmicro.com:443/ws/level-0/files:443`
Community File Reputation	Determines the prevalence of detected files. Prevalence is a statistical concept referring to the number of times a file was detected by Trend Micro sensors at a given time.	`ddei500-en-census.trendmicro.com:80`
Community Domain/IP Reputation Service	Determines the prevalence of detected domains and IP addresses. Prevalence is a statistical concept referring to the number of times a domain or IP address was detected by Trend Micro sensors at a given time.	`ddei500-en-domaincensus.trendmicro.com:80`
Customer Licensing Portal	Manages your customer information, subscriptions, and product or service license.	`licenseupdate.trendmicro.com:80` `clp.trendmicro.com:443`

Service	Description	Address and Port
Dynamic URL Scanning	Performs real-time analysis of URLs to detect zero-day attacks.	`ddei5-0-en.url.trendmicro.com:80`

Email Encryption	Encrypts and decrypts email messages with registered domains using Identity-Based Encryption (IBE) for secure private information delivery.	`http://root.ibe-ta.com:80`
		`http://public.ibe-ta.com:80`
		`http://ppconfig.ibe-ta.com:80`

Predictive Machine Learning engine	Through use of malware modeling, Predictive Machine Learning compares samples to the malware models, assigns a probability score, and determines the probable malware type that a file contains.	`ddei50-en-f.trx.trendmicro.com:443`
Smart Feedback	Shares anonymous threat information with the Smart Protection Network, allowing Trend Micro to rapidly identify and address new threats. Trend Micro Smart Feedback may include product information such as the product name, ID, and version, as well as detection information including file types, SHA-1 hash values, URLs, IP addresses, and domains.	`ddei500-en.fbs25.trendmicro.com:443`
Time-of-Click Protection	Detects unknown URLs in email messages by rewriting and analyzing URLs at the time of user clicks to protect users against link-based malware and phishing attacks.	`ddei5-0-ctp.trendmicro.com`

Service	Description	Address and Port
Threat Connect	Correlates suspicious objects detected in your environment and threat data from the Trend Micro Smart Protection Network. The resulting intelligence reports enable you to investigate potential threats and take actions pertinent to your attack profile.	`ddei5-threatconnect.trendmicro.com:443`
Web Inspection Service	Web Inspection Service is an auxiliary service of Web Reputation Services, providing granular levels of threat results and comprehensive threat names to users. The threat name and severity can be used as filtering criteria for proactive actions and further intensive scanning.	`ddei5-0-en-wis.trendmicro.com:443`

Web Reputation Services	Tracks the credibility of web domains. Web Reputation Services assigns reputation scores based on factors such as a website's age, historical location changes, and indications of suspicious activities discovered through malware behavior analysis.	`ddei5-0-en.url.trendmicro.com:80`
		`ddei5-0-en-backup.url.trendmicro.com:80`
		`ddei5-0-usbx-en.url.trendmicro.com:80` (for use by internal Virtual Analyzer)
		`ddei5-0-usbx-en-backup.url.trendmicro.com:80` (for use by internal Virtual Analyzer)

Ports Used by the Appliance

The following table shows the ports that are used with Deep Discovery Email Inspector and why they are used.

TABLE D-2. Ports used by Deep Discovery Email Inspector

PORT	PROTOCOL	FUNCTION	PURPOSE
22	TCP	Listening	Endpoints connect to Deep Discovery Email Inspector through SSH.
25	TCP	Listening	MTAs and mail servers connect to Deep Discovery Email Inspector through SMTP.
53	TCP/UDP	Outbound	Deep Discovery Email Inspector uses this port for: • DNS resolution • Sender authentication (SPF, DKIM, DMARC) query
80	TCP	Listening and outbound	Deep Discovery Email Inspector connects to other computers and integrated Trend Micro products and hosted services through this port. • Connect to the Customer Licensing Portal to manage the product licenses • Query Community File Reputation Services • Query Community Domain/IP Reputation Services • Query Web Reputation Services through the Smart Protection Network • Upload virtual analyzer images to Deep Discovery Email Inspector using the image import tool • Communicate with Trend Micro Apex Central if Deep Discovery Email Inspector is registered over HTTP

Port	Protocol	Function	Purpose
123	UDP	Outbound	Deep Discovery Email Inspector connects to the NTP server to synchronize time.
161	UDP	Listening	Deep Discovery Email Inspector uses this port to listen for requests from SNMP managers.
162	UDP	Outbound	Deep Discovery Email Inspector connects to SNMP mangers to send SNMP trap messages.

Port	Protocol	Function	Purpose
443	TCP	Listening and outbound	Deep Discovery Email Inspector uses this port to: • Query Predictive Machine Learning engine • Query Web Inspection Service • Access the management console with a computer through HTTPS • Communicate with Trend Micro Apex Central • Connect to the Smart Protection Network and query Web Reputation Services • Connect to Trend Micro Threat Connect • Send anonymous threat information to Smart Feedback • Update components by connecting to the ActiveUpdate server • Send product usage information to Trend Micro feedback servers • Verify the safety of files through the Certified Safe Software Service • Communicate with Deep Discovery Director • Share threat intelligence information and exception list with other products
4459	TCP	Listening and outbound	Endpoints connect to the End-User Quarantine console on Deep Discovery Email Inspector through this port.

Port	Protocol	Function	Purpose
5274	TCP	Outbound	Deep Discovery Email Inspector uses this port as the default port to connect to the Smart Protection Server for web reputation services.
User-defined	N/A	Outbound	Deep Discovery Email Inspector uses specified ports to: • Send logs to syslog servers • Share threat intelligence with integrated products/services • Upload detection logs to SFTP servers • Communicate with and Check Point Open Platform for Security (OPSEC) • Connect to an LDAP server for third-party authentication and LDAP query

Appendix E

SNMP Object Identifiers

Topics include:

SNMP Query Objects

TABLE E-1. memTotalSwap

ITEM	DESCRIPTION
OID	.1.3.6.1.4.1.2021.4.3
Object name	memTotalSwap
Description	The total amount of swap space configured for this host.

TABLE E-2. memAvailSwap

ITEM	DESCRIPTION
OID	.1.3.6.1.4.1.2021.4.4
Object name	memAvailSwap
Description	The amount of swap space currently unused or available.

TABLE E-3. memTotalReal

ITEM	DESCRIPTION
OID	.1.3.6.1.4.1.2021.4.5
Object name	memTotalReal
Description	The total amount of real/physical memory installed on this host.

TABLE E-4. memAvailReal

ITEM	DESCRIPTION
OID	.1.3.6.1.4.1.2021.4.6
Object name	memAvailReal
Description	The amount of real/physical memory currently unused or available.

TABLE E-5. memTotalFree

ITEM	DESCRIPTION
OID	.1.3.6.1.4.1.2021.4.11
Object name	memTotalFree
Description	The total amount of memory free or available for use on this host. This value typically covers both real memory and swap space or virtual memory.

TABLE E-6. memMinimumSwap

ITEM	DESCRIPTION
OID	.1.3.6.1.4.1.2021.4.12
Object name	memMinimumSwap
Description	The minimum amount of swap space expected to be kept free or available during normal operation of this host. If this value (as reported by 'memAvailSwap(4)') falls below the specified level, then 'memSwapError(100)' will be set to 1 and an error message made available via 'memSwapErrorMsg(101)'.

TABLE E-7. memShared

ITEM	DESCRIPTION
OID	.1.3.6.1.4.1.2021.4.13
Object name	memShared
Description	The total amount of real or virtual memory currently allocated for use as shared memory. This object will not be implemented on hosts where the underlying operating system does not explicitly identify memory as specifically reserved for this purpose.

TABLE E-8. memBuffer

ITEM	DESCRIPTION
OID	.1.3.6.1.4.1.2021.4.14

Item	Description
Object name	memBuffer
Description	The total amount of real or virtual memory currently allocated for use as memory buffers. This object will not be implemented on hosts where the underlying operating system does not explicitly identify memory as specifically reserved for this purpose.

Table E-9. memCached

Item	Description
OID	.1.3.6.1.4.1.2021.4.15
Object name	memCached
Description	The total amount of real or virtual memory currently allocated for use as cached memory. This object will not be implemented on hosts where the underlying operating system does not explicitly identify memory as reserved for this purpose.

Table E-10. memSwapError

Item	Description
OID	.1.3.6.1.4.1.2021.4.100
Object name	memSwapError
Description	Indicates whether the amount of available swap space (as reported by 'memAvailSwap(4)') is less than the minimum (specified by 'memMinimumSwap(12)').

Table E-11. memSwapErrorMsg

Item	Description
OID	.1.3.6.1.4.1.2021.4.101
Object name	memSwapErrorMsg
Description	Describes whether the amount of available swap space (as reported by 'memAvailSwap(4)') is less than the minimum (specified by 'memMinimumSwap(12)').

TABLE E-12. dskIndex

ITEM	DESCRIPTION
OID	.1.3.6.1.4.1.2021.9.1.1
Object name	dskIndex
Description	Integer reference number (row number) for the disk mib.

TABLE E-13. dskPath

ITEM	DESCRIPTION
OID	.1.3.6.1.4.1.2021.9.1.2
Object name	dskPath
Description	Path where the disk is mounted.

TABLE E-14. dskDevice

ITEM	DESCRIPTION
OID	.1.3.6.1.4.1.2021.9.1.3
Object name	dskDevice
Description	Path of the device for the partition.

TABLE E-15. dskMinimum

ITEM	DESCRIPTION
OID	.1.3.6.1.4.1.2021.9.1.4
Object name	dskMinimum
Description	Minimum space required on the disk (in kBytes) before the errors are triggered. Either this or dskMinPercent is configured via the agent's snmpd.conf file.

TABLE E-16. dskMinPercent

ITEM	DESCRIPTION
OID	.1.3.6.1.4.1.2021.9.1.5
Object name	dskMinPercent
Description	Percentage of minimum space required on the disk before the errors are triggered. Either this or dskMinimum is configured via the agent's snmpd.conf file.

TABLE E-17. dskTotal

ITEM	DESCRIPTION
OID	.1.3.6.1.4.1.2021.9.1.6
Object name	dskTotal
Description	Total size of the disk/partition (kBytes).

TABLE E-18. dskAvail

ITEM	DESCRIPTION
OID	.1.3.6.1.4.1.2021.9.1.7
Object name	dskAvail
Description	Available disk space.

TABLE E-19. dskUsed

ITEM	DESCRIPTION
OID	.1.3.6.1.4.1.2021.9.1.8
Object name	dskUsed
Description	Disk space used.

TABLE E-20. dskPercent

ITEM	DESCRIPTION
OID	.1.3.6.1.4.1.2021.9.1.9
Object name	dskPercent
Description	Percentage of space used on disk.

TABLE E-21. dskPercentNode

ITEM	DESCRIPTION
OID	.1.3.6.1.4.1.2021.9.1.10
Object name	dskPercentNode
Description	Percentage of inodes used on disk.

TABLE E-22. dskErrorFlag

ITEM	DESCRIPTION
OID	.1.3.6.1.4.1.2021.9.1.100
Object name	dskErrorFlag
Description	Error flag indicating that the disk or partition is under the minimum required space configured for it.

TABLE E-23. dskErrorMsg

ITEM	DESCRIPTION
OID	.1.3.6.1.4.1.2021.9.1.101
Object name	dskErrorMsg
Description	A text description providing a warning and the space left on the disk.

TABLE E-24. ssSwapIn

ITEM	DESCRIPTION
OID	.1.3.6.1.4.1.2021.11.3

Item	Description
Object name	ssSwapIn
Description	The average amount of memory swapped in from disk, calculated over the last minute.

Table E-25. ssSwapOut

Item	Description
OID	.1.3.6.1.4.1.2021.11.4
Object name	ssSwapOut
Description	The average amount of memory swapped out to disk, calculated over the last minute.

Table E-26. ssIOSent

Item	Description
OID	.1.3.6.1.4.1.2021.11.5
Object name	ssIOSent
Description	The average amount of data written to disk or other block devices, calculated over the last minute. This object has been deprecated in favour of 'ssIORawSent(57)', which can be used to calculate the same metric, but over any desired time period.

Table E-27. ssIOReceive

Item	Description
OID	.1.3.6.1.4.1.2021.11.6
Object name	ssIOReceive
Description	The average amount of data read from disk or other block devices, calculated over the last minute. This object has been deprecated in favour of 'ssIORawReceived(58)', which can be used to calculate the same metric, but over any desired time period.

TABLE E-28. ssSysInterrupts

ITEM	DESCRIPTION
OID	.1.3.6.1.4.1.2021.11.7
Object name	ssSysInterrupts
Description	The average rate of interrupts processed (including the clock) calculated over the last minute. This object has been deprecated in favour of 'ssRawInterrupts(59)', which can be used to calculate the same metric, but over any desired time period.

TABLE E-29. ssSysContext

ITEM	DESCRIPTION
OID	.1.3.6.1.4.1.2021.11.8
Object name	ssSysContext
Description	The average rate of context switches, calculated over the last minute. This object has been deprecated in favour of 'ssRawContext(60)', which can be used to calculate the same metric, but over any desired time period.

TABLE E-30. ssCpuUser

ITEM	DESCRIPTION
OID	.1.3.6.1.4.1.2021.11.9
Object name	ssCpuUser
Description	The percentage of CPU time spent processing user-level code, calculated over the last minute. This object has been deprecated in favour of 'ssCpuRawUser(50)', which can be used to calculate the same metric, but over any desired time period.

TABLE E-31. ssCpuSystem

ITEM	DESCRIPTION
OID	.1.3.6.1.4.1.2021.11.10

Item	Description
Object name	ssCpuSystem
Description	The percentage of CPU time spent processing system-level code, calculated over the last minute. This object has been deprecated in favour of 'ssCpuRawSystem(52)', which can be used to calculate the same metric, but over any desired time period.

Table E-32. ssCpuIdle

Item	Description
OID	.1.3.6.1.4.1.2021.11.11
Object name	ssCpuIdle
Description	The percentage of processor time spent idle, calculated over the last minute. This object has been deprecated in favour of 'ssCpuRawIdle(53)', which can be used to calculate the same metric, but over any desired time period.

Table E-33. ssCpuRawUser

Item	Description
OID	.1.3.6.1.4.1.2021.11.50
Object name	ssCpuRawUser
Description	The number of 'ticks' (typically 1/100s) spent processing user-level code. On a multi-processor system, the 'ssCpuRaw*' counters are cumulative over all CPUs, so their sum will typically be N*100 (for N processors).

Table E-34. ssCpuRawNice

Item	Description
OID	.1.3.6.1.4.1.2021.11.51
Object name	ssCpuRawNice

Item	Description
Description	The number of 'ticks' (typically 1/100s) spent processing reduced-priority code. This object will not be implemented on hosts where the underlying operating system does not measure this particular CPU metric. On a multi-processor system, the 'ssCpuRaw*' counters are cumulative over all CPUs, so their sum will typically be N*100 (for N processors).

Table E-35. ssCpuRawSystem

Item	Description
OID	.1.3.6.1.4.1.2021.11.52
Object name	ssCpuRawSystem
Description	The number of 'ticks' (typically 1/100s) spent processing system-level code. On a multi-processor system, the 'ssCpuRaw*' counters are cumulative over all CPUs, so their sum will typically be N*100 (for N processors). This object may sometimes be implemented as the combination of the 'ssCpuRawWait(54)' and 'ssCpuRawKernel(55)' counters, so care must be taken when summing the overall raw counters.

Table E-36. ssCpuRawIdle

Item	Description
OID	.1.3.6.1.4.1.2021.11.53
Object name	ssCpuRawIdle
Description	The number of 'ticks' (typically 1/100s) spent idle. On a multi-processor system, the 'ssCpuRaw*' counters are cumulative over all CPUs, so their sum will typically be N*100 (for N processors).

Table E-37. ssCpuRawWait

Item	Description
OID	.1.3.6.1.4.1.2021.11.54
Object name	ssCpuRawWait

Item	Description
Description	The number of 'ticks' (typically 1/100s) spent waiting for IO. This object will not be implemented on hosts where the underlying operating system does not measure this particular CPU metric. This time may also be included within the 'ssCpuRawSystem(52)' counter. On a multi-processor system, the 'ssCpuRaw*' counters are cumulative over all CPUs, so their sum will typically be N*100 (for N processors).

Table E-38. ssCpuRawKernel

Item	Description
OID	.1.3.6.1.4.1.2021.11.55
Object name	ssCpuRawKernel
Description	The number of 'ticks' (typically 1/100s) spent processing kernel-level code. This object will not be implemented on hosts where the underlying operating system does not measure this particular CPU metric. This time may also be included within the 'ssCpuRawSystem(52)' counter. On a multi-processor system, the 'ssCpuRaw*' counters are cumulative over all CPUs, so their sum will typically be N*100 (for N processors).

Table E-39. ssCpuRawInterrupt

Item	Description
OID	.1.3.6.1.4.1.2021.11.56
Object name	ssCpuRawInterrupt
Description	The number of 'ticks' (typically 1/100s) spent processing hardware interrupts. This object will not be implemented on hosts where the underlying operating system does not measure this particular CPU metric. On a multi-processor system, the 'ssCpuRaw*' counters are cumulative over all CPUs, so their sum will typically be N*100 (for N processors).

TABLE E-40. ssIORawSent

ITEM	DESCRIPTION
OID	.1.3.6.1.4.1.2021.11.57
Object name	ssIORawSent
Description	Number of blocks sent to a block device.

TABLE E-41. ssIORawReceived

ITEM	DESCRIPTION
OID	.1.3.6.1.4.1.2021.11.58
Object name	ssIORawReceived
Description	Number of blocks received from a block device.

TABLE E-42. ssRawInterrupts

ITEM	DESCRIPTION
OID	.1.3.6.1.4.1.2021.11.59
Object name	ssRawInterrupts
Description	Number of interrupts processed.

TABLE E-43. ssRawContexts

ITEM	DESCRIPTION
OID	.1.3.6.1.4.1.2021.11.60
Object name	ssRawContexts
Description	Number of context switches.

TABLE E-44. ssCpuRawSoftIRQ

ITEM	DESCRIPTION
OID	.1.3.6.1.4.1.2021.11.61

Item	Description
Object name	ssCpuRawSoftIRQ
Description	The number of 'ticks' (typically 1/100s) spent processing software interrupts. This object will not be implemented on hosts where the underlying operating system does not measure this particular CPU metric. On a multi-processor system, the 'ssCpuRaw*' counters are cumulative over all CPUs, so their sum will typically be N*100 (for N processors).

Table E-45. ssRawSwapIn

Item	Description
OID	.1.3.6.1.4.1.2021.11.62
Object name	ssRawSwapIn
Description	Number of blocks swapped in.

Table E-46. ssRawSwapOut

Item	Description
OID	.1.3.6.1.4.1.2021.11.63
Object name	ssRawSwapOut
Description	Number of blocks swapped out.

Table E-47. productVersion

Item	Description
OID	.1.3.6.1.4.1.6101.3004.1.1
Object name	productVersion
Description	Returns the Deep Discovery Email Inspector version.

TABLE E-48. productBuild

ITEM	DESCRIPTION
OID	.1.3.6.1.4.1.6101.3004.1.2
Object name	productBuild
Description	Returns the Deep Discovery Email Inspector build number.

TABLE E-49. productHotfix

ITEM	DESCRIPTION
OID	.1.3.6.1.4.1.6101.3004.1.3
Object name	productHotfix
Description	Returns the Deep Discovery Email Inspector hotfix number.

TABLE E-50. patternIndex

ITEM	DESCRIPTION
OID	.1.3.6.1.4.1.6101.3004.2.1.1
Object name	patternIndex
Description	Returns the pattern index.

TABLE E-51. patternID

ITEM	DESCRIPTION
OID	.1.3.6.1.4.1.6101.3004.2.1.2
Object name	patternID
Description	Returns the pattern ID.

TABLE E-52. patternName

ITEM	DESCRIPTION
OID	.1.3.6.1.4.1.6101.3004.2.1.3

Item	Description
Object name	patternName
Description	Returns the pattern name.

Table E-53. patternVersion

Item	Description
OID	.1.3.6.1.4.1.6101.3004.2.1.4
Object name	patternVersion
Description	Returns the pattern version.

Table E-54. deliveryQueue

Item	Description
OID	.1.3.6.1.4.1.6101.3004.3.1
Object name	deliveryQueue
Description	Returns the delivery queue number.

Table E-55. virtualAnalyzerQueue

Item	Description
OID	.1.3.6.1.4.1.6101.3004.3.2
Object name	virtualAnalyzerQueue
Description	Returns the Virtual Analyzer queue number.

Table E-56. ifIndex

Item	Description
OID	.1.3.6.1.4.1.6101.3004.4.1.1
Object name	ifIndex
Description	Returns the interface index.

TABLE E-57. ifDescr

ITEM	DESCRIPTION
OID	.1.3.6.1.4.1.6101.3004.4.1.2
Object name	ifDescr
Description	Returns the interface description.

TABLE E-58. ifReceiveThroughput

ITEM	DESCRIPTION
OID	.1.3.6.1.4.1.6101.3004.4.1.3
Object name	ifReceiveThroughput
Description	Returns the interface receiving throughput.

TABLE E-59. ifTransmitThroughput

ITEM	DESCRIPTION
OID	.1.3.6.1.4.1.6101.3004.4.1.4
Object name	ifTransmitThroughput
Description	Returns the interface transmitting throughput.

SNMP Traps

TABLE E-60. coldStart

ITEM	DESCRIPTION
OID	.1.3.6.1.6.3.1.1.5.1.0
Object name	coldStart
Description	A coldStart trap signifies that the SNMP entity, supporting a notification originator application, is reinitializing itself and that its configuration may have been altered.

TABLE E-61. linkDown

ITEM	DESCRIPTION
OID	.1.3.6.1.6.3.1.1.5.3.0
Object name	linkDown
Description	A linkDown trap signifies that the SNMP entity, acting in an agent role, has detected that the ifOperStatus object for one of its communication links is about to enter the down state from some other state (but not from the notPresent state). This other state is indicated by the included value of ifOperStatus.

TABLE E-62. linkUp

ITEM	DESCRIPTION
OID	.1.3.6.1.6.3.1.1.5.4.0
Object name	linkUp
Description	A linkUp trap signifies that the SNMP entity, acting in an agent role, has detected that the ifOperStatus object for one of its communication links left the down state and transitioned into some other state (but not into the notPresent state). This other state is indicated by the included value of ifOperStatus.

TABLE E-63. nsNotifyShutdown

ITEM	DESCRIPTION
OID	.1.3.6.1.4.1.8072.4.0.2
Object name	nsNotifyShutdown
Description	An indication that the agent is in the process of being shut down.

TABLE E-64. vaStoppedNotification

ITEM	DESCRIPTION
OID	.1.3.6.1.4.1.6101.3004.5.0.1
Object name	vaStoppedNotification

ITEM	DESCRIPTION
Description	Notification to indicate that Virtual Analyzer is not available.

TABLE E-65. serviceStoppedNotification

ITEM	DESCRIPTION
OID	.1.3.6.1.4.1.6101.3004.5.0.2
Object name	serviceStoppedNotification
Description	Notification to indicate that a service has stopped and cannot be restarted.

TABLE E-66. unreachableMTANotification

ITEM	DESCRIPTION
OID	.1.3.6.1.4.1.6101.3004.5.0.3
Object name	unreachableMTANotification
Description	Notification to indicate that relay MTAs for a domain cannot be reached.

TABLE E-67. suspiciousMsgNotification

ITEM	DESCRIPTION
OID	.1.3.6.1.4.1.6101.3004.5.0.4
Object name	suspiciousMsgNotification
Description	Notification to indicate that one or more email messages are detected with threats.

TABLE E-68. watchlistNotification

ITEM	DESCRIPTION
OID	.1.3.6.1.4.1.6101.3004.5.0.5
Object name	watchlistNotification

Item	Description
Description	Notification to indicate that one or more email messages detected with threats are sent to watchlist recipients.

Table E-69. deliveryQueueNotification

Item	Description
OID	.1.3.6.1.4.1.6101.3004.5.0.6
Object name	deliveryQueueNotification
Description	Notification to indicate that the number of email messages on the delivery queue has reached the maximum threshold.

Table E-70. cpuUsageNotification

Item	Description
OID	.1.3.6.1.4.1.6101.3004.5.0.7
Object name	cpuUsageNotification
Description	Notification to indicate that the CPU usage level has reached the maximum threshold.

Table E-71. vaQueueNotification

Item	Description
OID	.1.3.6.1.4.1.6101.3004.5.0.8
Object name	vaQueueNotification
Description	Notification to indicate that the number of email messages on the Virtual Analyzer queue has reached the maximum threshold.

Table E-72. vaProcessTimeNotification

Item	Description
OID	.1.3.6.1.4.1.6101.3004.5.0.9
Object name	vaProcessTimeNotification

ITEM	DESCRIPTION
Description	Notification to indicate that the average Virtual Analyzer processing time is greater than the maximum threshold.

TABLE E-73. diskSpaceNotification

ITEM	DESCRIPTION
OID	.1.3.6.1.4.1.6101.3004.5.0.10
Object name	diskSpaceNotification
Description	Notification to indicate that the available disk space is less than the minimum threshold.

TABLE E-74. updateFailedNotification

ITEM	DESCRIPTION
OID	.1.3.6.1.4.1.6101.3004.5.0.11
Object name	updateFailedNotification
Description	Notification to indicate that a component update was unsuccessful.

TABLE E-75. updateSuccessNotification

ITEM	DESCRIPTION
OID	.1.3.6.1.4.1.6101.3004.5.0.12
Object name	updateSuccessNotification
Description	Notification to indicate that a component update was successful.

TABLE E-76. ntpFailedNotification

ITEM	DESCRIPTION
OID	.1.3.6.1.4.1.6101.3004.5.0.13
Object name	ntpFailedNotification

Item	Description
Description	Notification to indicate that time synchronization with an NTP server is not successful.

Table E-77. vaProcessTimeoutNotification

Item	Description
OID	.1.3.6.1.4.1.6101.3004.5.0.14
Object name	vaProcessTimeoutNotification
Description	Notification to indicate that an analysis process has timed out with no analysis result.

Table E-78. quarantineDiskSpaceNotification

Item	Description
OID	.1.3.6.1.4.1.6101.3004.5.0.15
Object name	quarantineDiskSpaceNotification
Description	Notification to indicate that the available disk space for quarantined files has reached the minimum threshold.

Table E-79. msgQuarantinedNotification

Item	Description
OID	.1.3.6.1.4.1.6101.3004.5.0.16
Object name	msgQuarantinedNotification
Description	Notification to indicate that one or more email messages are quarantined.

Table E-80. memUsageNotification

Item	Description
OID	.1.3.6.1.4.1.6101.3004.5.0.17
Object name	memUsageNotification

Item	Description
Description	Notification to indicate that the memory usage level has reached the maximum threshold.

Table E-81. deferredQueueNotification

Item	Description
OID	.1.3.6.1.4.1.6101.3004.5.0.18
Object name	deferredQueueNotification
Description	Notification to indicate that the number of email messages on the deferred queue has reached the maximum threshold.

Table E-82. spamQuarantineSpaceNotification

Item	Description
OID	.1.3.6.1.4.1.6101.3004.5.0.19
Object name	spamQuarantineSpaceNotification
Description	Notification to indicate that the available disk space for spam quarantined files has reached the minimum threshold.

Table E-83. accountLockedNotification

Item	Description
OID	.1.3.6.1.4.1.6101.3004.5.0.20
Object name	accountLockedNotification
Description	Notification to indicate that an account has been locked.

Table E-84. failedDKIMSignNotification

Item	Description
OID	.1.3.6.1.4.1.6101.3004.5.0.21
Object name	failedDKIMSignNotification

Item	Description
Description	Notification to indicate that the number of messages with unsuccessful DKIM signing has reached the maximum threshold.

Table E-85. connectionIssueNotification

Item	Description
OID	.1.3.6.1.4.1.6101.3004.5.0.22
Object name	connectionIssueNotification
Description	Notification to indicate that the appliance is unable to establish connection to a required resource.

Table E-86. dataLossPreventionNotification

Item	Description
OID	.1.3.6.1.4.1.6101.3004.5.0.23
Object name	dataLossPreventionNotification
Description	Notification to indicate that the number of messages with selected templates has reached the minimum threshold.

Table E-87. encryptionExceptionNotification

Item	Description
OID	.1.3.6.1.4.1.6101.3004.5.0.24
Object name	encryptionExceptionNotification
Description	Notification to indicate that the number of messages that Deep Discovery Email Inspector cannot encrypt or decrypt has reached the maximum threshold.

Table E-88. vaStoppedMsg

Item	Description
OID	.1.3.6.1.4.1.6101.3004.5.1.1

Item	Description
Object name	vaStoppedMsg
Description	Message to indicate that Virtual Analyzer is not available.

Table E-89. serviceStoppedMsg

Item	Description
OID	.1.3.6.1.4.1.6101.3004.5.1.2
Object name	serviceStoppedMsg
Description	Message to indicate that a service has stopped and cannot be restarted.

Table E-90. unreachableMTAMsg

Item	Description
OID	.1.3.6.1.4.1.6101.3004.5.1.3
Object name	unreachableMTAMsg
Description	Message to indicate that relay MTAs for a domain cannot be reached.

Table E-91. suspiciousMsgMsg

Item	Description
OID	.1.3.6.1.4.1.6101.3004.5.1.4
Object name	suspiciousMsgMsg
Description	Message to indicate that one or more email messages are detected with threats.

Table E-92. watchlistMsg

Item	Description
OID	.1.3.6.1.4.1.6101.3004.5.1.5
Object name	watchlistMsg

Item	Description
Description	Message to indicate that one or more email messages detected with threats are sent to watchlist recipients.

Table E-93. deliveryQueueMsg

Item	Description
OID	.1.3.6.1.4.1.6101.3004.5.1.6
Object name	deliveryQueueMsg
Description	Message to indicate that the number of email messages on the delivery queue has reached the maximum threshold.

Table E-94. cpuUsageMsg

Item	Description
OID	.1.3.6.1.4.1.6101.3004.5.1.7
Object name	cpuUsageMsg
Description	Message to indicate that the CPU usage level has reached the maximum threshold.

Table E-95. vaQueueMsg

Item	Description
OID	.1.3.6.1.4.1.6101.3004.5.1.8
Object name	vaQueueMsg
Description	Message to indicate that the number of email messages on the Virtual Analyzer queue has reached the maximum threshold.

Table E-96. vaProcessTimeMsg

Item	Description
OID	.1.3.6.1.4.1.6101.3004.5.1.9
Object name	vaProcessTimeMsg

Item	Description
Description	Message to indicate that the average Virtual Analyzer processing time is greater than the maximum threshold.

Table E-97. diskSpaceMsg

Item	Description
OID	.1.3.6.1.4.1.6101.3004.5.1.10
Object name	diskSpaceMsg
Description	Message to indicate that the available disk space is less than the minimum threshold.

Table E-98. updateFailedMsg

Item	Description
OID	.1.3.6.1.4.1.6101.3004.5.1.11
Object name	updateFailedMsg
Description	Message to indicate that a component update was unsuccessful.

Table E-99. updateSuccessMsg

Item	Description
OID	.1.3.6.1.4.1.6101.3004.5.1.12
Object name	updateSuccessMsg
Description	Message to indicate that a component update was successful.

Table E-100. ntpFailedMsg

Item	Description
OID	.1.3.6.1.4.1.6101.3004.5.1.13
Object name	ntpFailedMsg

Item	Description
Description	Message to indicate that time synchronization with an NTP server is not successful.

Table E-101. vaProcessTimeoutMsg

Item	Description
OID	.1.3.6.1.4.1.6101.3004.5.1.14
Object name	vaProcessTimeoutMsg
Description	Message to indicate that an analysis process has timed out with no analysis result.

Table E-102. quarantineDiskSpaceMsg

Item	Description
OID	.1.3.6.1.4.1.6101.3004.5.1.15
Object name	quarantineDiskSpaceMsg
Description	Message to indicate that the available disk space for quarantined files has reached the minimum threshold.

Table E-103. msgQuarantinedMsg

Item	Description
OID	.1.3.6.1.4.1.6101.3004.5.1.16
Object name	msgQuarantinedMsg
Description	Message to indicate that one or more email messages are quarantined.

Table E-104. memUsageMsg

Item	Description
OID	.1.3.6.1.4.1.6101.3004.5.1.17
Object name	memUsageMsg

Item	Description
Description	Message to indicate that the memory usage level has reached the maximum threshold.

Table E-105. deferredQueueMsg

Item	Description
OID	.1.3.6.1.4.1.6101.3004.5.1.18
Object name	deferredQueueMsg
Description	Message to indicate that the number of email messages on the deferred queue has reached the maximum threshold.

Table E-106. spamQuarantineSpaceMsg

Item	Description
OID	.1.3.6.1.4.1.6101.3004.5.1.19
Object name	spamQuarantineSpaceMsg
Description	Message to indicate that the available disk space for spam quarantined files has reached the minimum threshold.

Table E-107. accountLockedMsg

Item	Description
OID	.1.3.6.1.4.1.6101.3004.5.1.20
Object name	accountLockedMsg
Description	Message to indicate that an account has been locked.

Table E-108. failedDKIMSignMsg

Item	Description
OID	1.3.6.1.4.1.6101.3004.5.1.21
Object name	failedDKIMSignMsg

Item	Description
Description	Message to indicate that the number of messages with unsuccessful DKIM signing has reached the maximum threshold.

Table E-109. connectionIssueMsg

Item	Description
OID	.1.3.6.1.4.1.6101.3004.5.1.22
Object name	connectionIssueMsg
Description	Message to indicate that the appliance is unable to establish connection to a required resource.

Table E-110. dataLossPreventionMsg

Item	Description
OID	.1.3.6.1.4.1.6101.3004.5.1.23
Object name	dataLossPreventionMsg
Description	Message to indicate that the number of messages with detected DLP incidents has reached the specified threshold.

Table E-111. encryptionExceptionMsg

Item	Description
OID	.1.3.6.1.4.1.6101.3004.5.1.24
Object name	encryptionExceptionMsg
Description	Message to indicate that the number of messages that Deep Discovery Email Inspector cannot encrypt or decrypt has reached the maximum threshold.

Registration Objects

OID	Description
.1.3.6.1.4.1.2021	UC Davis
.1.3.6.1.4.1.6101	Trend Micro, Inc.
.1.3.6.1.6.3.1.1.5.1	SNMPv2-MIB MIB
.1.3.6.1.4.1.8072	NET-SNMP-AGENT-MIB
.1.3.6.1.4.1.6101.999	TMCM
.1.3.6.1.4.1.6101.3001	TMTM
.1.3.6.1.4.1.6101.3004	DeepDiscoveryEmailInspector

Appendix F

IPv6 Support in Deep Discovery Email Inspector

This appendix is required reading for users who plan to deploy Deep Discovery Email Inspector in an environment that supports IPv6 addressing. This appendix contains information on the extent of IPv6 support in Deep Discovery Email Inspector.

Deep Discovery Email Inspector assumes that the reader is familiar with IPv6 concepts and the tasks involved in setting up a network that supports IPv6 addressing.

IPv6 support for Deep Discovery Email Inspector started in version 2.1. Earlier Deep Discovery Email Inspector versions do not support IPv6 addressing. IPv6 support is automatically enabled after installing or upgrading Deep Discovery Email Inspector.

The following Deep Discovery Email Inspector features support IPv6:

- Email message processing (receiving and delivering)
- Management console and CLI access
- Notification SMTP
- SPAN/TAP mode

- Syslog server
- Sender filtering settings (Approved Senders, Email Reputation, DHA Protection, Bounce Attack Protection, SMTP Traffic Throttling)
- Sender authentication settings (SPF only)
- Edge relay MTA servers

Configuring IPv6 Addresses

The CLI and management console allow you to configure an IPv6 address. The following are some configuration guidelines.

- Deep Discovery Email Inspector accepts standard IPv6 address presentations.

  For example:

  `2001:0db7:85a3:0000:0000:8a2e:0370:7334`

  `2001:db7:85a3:0:0:8a2e:370:7334`

  `2001:db7:85a3::8a2e:370:7334`

  `::ffff:192.0.2.128`

  Note

  Deep Discovery Email Inspector does not accept link-local IPv6 addresses.

- When the IPv6 address is part of a URL, enclose the address in square brackets ([]).

Configurable IPv6 Addresses

IPv6 addresses are configurable on the management console and CLI.

Management Console IPv6 Addresses

IPv6 addresses are configurable on the following management console screens:

- **Administration** > **System Settings** > **Network**
- **Administration** > **System Settings** > **SMTP**

- **Administration** > **Mail Settings** > **Connections**
- **Administration** > **Mail Settings** > **Message Delivery**
- **Administration** > **Mail Settings** > **Limits and Exceptions**
- **Administration** > **Integrated Products/Services** > **Syslog**
- **Administration** > **System Settings** > **Operation Mode** (SPAN/TAP mode rules)
- **Administration** > **Sender Filtering/Authentication** > **Approved Senders**
- **Administration** > **Mail Settings** > **Edge MTA Relay Servers**

CLI IPv6 Addresses

IPv6 addresses are configurable using the following CLI commands:

- *configure product management-port on page B-4*
- *configure network basic on page B-5*
- *configure network dns on page B-6*
- *configure network interface on page B-8*
- *configure network route add on page B-9*
- *configure network route default on page B-9*
- *configure network route del on page B-10*

Appendix G

System Event Logs

The following table lists the system event logs in Deep Discovery Email Inspector.

TABLE G-1. System event logs

ID	LOG TYPE	MESSAGE
11001	Update events	Product Updates: {USER} installed hot fix {VERSION} from {IP}
11002	Update events	Product Updates: {USER} rolled back hot fix {VERSION} from {IP}
11003	Update events	Product Updates: Appliance firmware upgraded by {USER} from {IP}
12001	Update events	Deep Discovery Director: Hotfix update successful
12002	Update events	Deep Discovery Director: Firmware update successful
12003	Update events	Deep Discovery Director: Virtual Analyzer image import successful
12004	Update events	Deep Discovery Director: Configuration update successful

ID	Log Type	Message
12005	Update events	Deep Discovery Director: Unregistered by Deep Discovery Director administrator
12101	Update events	Deep Discovery Director: Suspicious object synchronization with Apex Central disabled
12201	Update events	Deep Discovery Director: End-User Quarantine configuration disabled
130xx	Update events	ActiveUpdate: {COMPONENT} downloaded manually by {USER} from {IP}
131xx	Update events	ActiveUpdate: {COMPONENT} unsuccessfully downloaded manually by {USER} from {IP}
132xx	Update events	ActiveUpdate: {COMPONENT} downloaded by scheduled update
133xx	Update events	ActiveUpdate: {COMPONENT} unsuccessfully downloaded by scheduled update
134xx	Update events	ActiveUpdate: {COMPONENT} rolled back to version {VERSION} by {USER} from {IP}
135xx	Update events	ActiveUpdate: {COMPONENT} unsuccessfully rolled back by {USER} from {IP}
136xx	Update events	ActiveUpdate Exception - Apply {COMPONENT} {VERSION} to local scanner failed
20101	Audit log	System started
20102	Audit log	System stopped
20201	Audit log	Service started
20202	Audit log	Service stopped
20301	Audit log	License: {NAME} license expired, grace period ends on {DATE}
20302	Audit log	License: {NAME} license expired
20303	Audit log	License: {NAME} license updated

ID	Log Type	Message
20401	Audit log	System Maintenance: Device powered off by {USER} from {IP}
20402	Audit log	System Maintenance: Device restarted by {USER} from {IP}
20501	Audit log	Logon: 'admin' logged on from {HOST} via SSH
20502	Audit log	Logon: Attempted logon with user name ('admin') from {HOST} via SSH
20503	Audit log	Logon: 'root' logged on from {HOST} with token {NAME} via SSH
20504	Audit log	Logon: Attempted logon with user name ('root') from {HOST} via SSH
20505	Audit log	Logon: 'admin' logged off from {HOST} via SSH
20506	Audit log	Logon: 'root' logged off from {HOST} with token {NAME} via SSH
20507	Audit log	Logon: Attempted logon with user name {USER} from {HOST} via SSH
30101	Audit log	Active update source setting was changed
30102	Audit log	Active update schedule setting was changed
30201	Audit log	System Settings: Host name saved as {NAME} by {USER} from {IP}
30202	Audit log	System Settings: {INTERFACE} IPv4 address and subnet mask were saved as {SUBNET} by {USER} from {IP}
30203	Audit log	System Settings: {INTERFACE} IPv6 address and prefix length were saved as {IP}/{LENGTH} by {USER} from {IP}
30204	Audit log	System Settings: {INTERFACE} IPv4 gateway saved as {GATEWAY} by {USER} from {IP}
30205	Audit log	System Settings: {INTERFACE} IPv6 gateway saved as {GATEWAY} by {USER} from {IP}

ID	Log Type	Message
30206	Audit log	System Settings: {INTERFACE} primary IPv4 DNS server saved as {IP} and secondary IPv4 DNS server saved as {IP} by {USER} from {IP}
30207	Audit log	System Settings: {INTERFACE} primary IPv6 DNS server saved as {IP} and secondary IPv6 DNS server saved as {IP} by {USER} from {IP}
30208	Audit log	System Settings: {INTERFACE} IPv4 address and subnet mask deleted by {USER} from {IP}
30209	Audit log	System Settings: NIC teaming settings changed by {USER} from {IP}
30301	Audit log	System Settings: Operation mode saved as {MODE} by {USER} from {IP}
30401	Audit log	System Settings: Proxy settings modified by {USER} from {IP}
30402	Audit log	System Settings: Proxy settings unsuccessfully modified by {USER} from {IP}
30501	Audit log	System Settings: SMTP server settings modified by {USER} from {IP}
30601	Audit log	System Settings: System time zone saved as {ZONE} by {USER} from {IP}
30602	Audit log	System Settings: NTP server synchronization enabled by {USER} from {IP}
30603	Audit log	System Settings: NTP server synchronization disabled by {USER} from {IP}
30604	Audit log	System Settings: System time saved as {TIME} by {USER} from {IP}
30605	Audit log	System Settings: Database time zone saved as {ZONE} by {USER} from {IP}
30606	Audit log	System Settings: NTP server saved as {NAME} by {USER} from {IP}
30701	Audit log	System Settings: SNMP settings modified by {USER} from {IP}

ID	Log Type	Message
30702	Audit log	System Settings: SNMP MIB files downloaded by {USER} from {IP}
30703	Audit log	System setting: Session timeout setting modified by {USER} from {IP}
30801	Audit log	Mail Settings: SMTP Connection setting saved by {USER} from {IP}
30802	Audit log	Mail Settings: TLS certificate uploaded by {USER} from {IP}
30803	Audit log	Mail Settings: TLS certificate downloaded by {USER} from {IP}
30901	Audit log	Mail Settings: Delivery profiles exported by {USER} from {IP}
30902	Audit log	Mail Settings: Delivery profiles unsuccessfully exported by {USER} from {IP}
30903	Audit log	Mail Settings: Delivery profiles imported by {USER} from {IP}
30904	Audit log	Mail Settings: Mail Settings: Delivery profiles unsuccessfully imported due to maximum entries (256) exceeded
30905	Audit log	Mail Settings: Delivery profiles unsuccessfully imported by {USER} from {IP}
30906	Audit log	Mail Settings: Delivery profile added by {USER} from {IP}
30907	Audit log	Mail Settings: Delivery profile modified by {USER} from {IP}
30908	Audit log	Mail Settings: Delivery profile deleted by {USER} from {IP}
31001	Audit log	Mail Settings: Mail settings modified by {USER} from {IP}
31101	Audit log	Mail Settings: SMTP server greeting saved by {USER} from {IP}
31102	Audit log	Mail Settings: Internal domain settings modified by {USER} from {IP}
31103	Audit log	Mail Settings: Internal domains imported by {USER} from {IP}
31104	Audit log	Mail Settings: Internal domain '%s' added through a policy by {USER} from {IP}

ID	Log Type	Message
31201	Audit log	Log Settings: {NAME} syslog server profile created by {USER} from {IP}
31202	Audit log	Log Settings: {NAME} syslog server profile deleted by {USER} from {IP}
31203	Audit log	Log Settings: {NAME} syslog server profile modified by {USER} from {IP}
31204	Audit log	Log Settings: {NAME} enabled by {USER} from {IP}
31205	Audit log	Log Settings: {NAME} disabled by {USER} from {IP}
31206	Audit log	Integrated Products/Services: {USER} synchronized data for all LDAP servers from {IP}
31207	Audit log	Integrated Products/Services: {USER} enabled LDAP server {NAME} from {IP} Log Settings: {NAME} disabled by {USER} from {IP}
31208	Audit log	Integrated Products/Services: {USER} disabled LDAP server {NAME} from {IP}
31301	Audit log	Integrated Products/Services: SFTP Upload settings modified by {USER} from {IP}
31402	Audit log	Integrated Products/Services: {USER} added LDAP server {NAME} from {IP}
31403	Audit log	Integrated Products/Services: {USER} modified LDAP server {NAME} from {IP}
31404	Audit log	Integrated Products/Services: {USER} deleted LDAP server {NAME} from {IP}
31405	Audit log	Integrated Products/Services: {USER} synchronized data for LDAP server {NAME} from {IP}
31406	Audit log	Integrated Products/Services: {USER} synchronized data for all LDAP servers from {IP}
31407	Audit log	Integrated Products/Services: {USER} enabled LDAP server {NAME} from {IP}

ID	Log Type	Message
31408	Audit log	Integrated Products/Services: {USER} disabled LDAP server {NAME} from {IP}
31501	Audit log	Integrated Products/Services: Threat Intelligent Sharing settings modified by {USER} from {IP}
31502	Audit log	Integrated Products/Services: {USER} generate suspicious objects list from {IP}
31601	Audit log	Integrated Products/Services: Auxiliary Products/Services settings modified by {USER} from {IP}
31602	Audit log	Integrated Products/Services: {USER} clicked Auxiliary Products/Services > Distribute Now from {IP}
31701	Audit log	Systems Settings: Apex Central settings modified by {USER} from {IP}
31702	Audit log	System Settings: Suspicious object synchronization enabled by {USER} from {IP}
31703	Audit log	System Settings: Suspicious object synchronization disabled by {USER} from {IP}
31801	Audit log	System Settings: Proxy settings for Deep Discovery Director modified by {USER} by {IP}
31802	Audit log	System Settings: Registered to Deep Discovery Director by {USER} from {IP}
31803	Audit log	System Settings: Unregistered from Deep Discovery Director by {USER} from {IP}
31804	Audit log	System Settings: Deep Discovery Director fingerprint trusted by {USER} from {IP}
31901	Audit log	Scanning / Analysis: Image imported by {USER} from {IP}
31902	Audit log	Scanning / Analysis: Image deleted by {USER} from {IP}
31903	Audit log	Scanning / Analysis: Number of instances for each Virtual Analyzer image modified by {USER} from {IP}

ID	Log Type	Message
32001	Audit log	Scanning / Analysis: Virtual Analyzer settings modified by {USER} from {IP}
32101	Audit log	Scanning / Analysis: {PRODUCT NAME} registered to the external Virtual Analyzer
32102	Audit log	Scanning / Analysis: Unable to register to the external Virtual Analyzer
32103	Audit log	Scanning / Analysis: {PRODUCT NAME} unregistered from the external Virtual Analyzer
32104	Audit log	Scanning / Analysis: Virtual Analyzer external integration settings modified by {USER} from ''%s''
32201	Audit log	Scanning / Analysis: File Passwords setting was modified by {USER} from {IP}
32301	Audit log	Scanning / Analysis: Smart Protection settings modified by {USER} from {IP}
32401	Audit log	Scanning / Analysis: Smart Feedback settings modified by {USER} from {IP}
32501	Audit log	Scanning / Analysis: {USER} added YARA rule {NAME} from {IP}
32502	Audit log	Scanning / Analysis: {USER} modified YARA rule {NAME} from {IP}
32503	Audit log	Scanning / Analysis: {USER} deleted YARA rule {NAME} from {IP}
32504	Audit log	Scanning / Analysis: {USER} modified status for YARA rule {NAME} from {IP}
32510	Audit log	Scanning / Analysis: Time-of-Click settings modified by {USER} from {IP}
32520	Audit log	Scanning / Analysis: High-Profile Users settings modified by {USER} from {IP}
32521	Audit log	Scanning / Analysis: Internal Domains settings modified by {USER} from {IP}

ID	Log Type	Message
32522	Audit log	Scanning / Analysis: Approved Senders settings modified by {USER} from {IP}
32523	Audit log	Scanning / Analysis: Cousin Domains settings modified by {USER} from {IP}
32530	Audit log	Scanning / Analysis: URL Scanning setting modified by {USER} from {IP}
32601	Audit log	System Maintenance: Configuration imported by {USER} from {IP}
32602	Audit log	System Maintenance: Configuration unsuccessfully imported by {USER} from {IP}
32603	Audit log	System Maintenance: Configuration exported by {USER} from {IP}
32604	Audit log	System Maintenance: Configuration unsuccessfully exported by {USER} from {IP}
32701	Audit log	System Maintenance: Data purge started automatically
32702	Audit log	System Maintenance: Data purge completed ({MIN} min {SEC} s)
32703	Audit log	System Maintenance: Storage maintenance setting modified by {USER} from {IP}
32801	Audit log	System Maintenance: System log level setting modified by {USER} from {IP}
32901	Audit log	Accounts / Contacts: {USER} created the account {NAME} from {IP}
32902	Audit log	Accounts / Contacts: {USER} deleted the account {NAME} from {IP}
32903	Audit log	Accounts / Contacts: {USER} modified the account {NAME} from {IP}
32904	Audit log	Accounts / Contacts: {USER} unlocked the account {NAME} from {IP}

ID	Log Type	Message
33001	Audit log	Logon: {USER} logged on as {ROLE} role from {IP}
33002	Audit log	Logon: {USER} logged off from {IP}
33003	Audit log	Logon: Attempted logon with an invalid user name ({USER}) or password from {IP}
33004	Audit log	Logon: Attempted logon with a disabled user name ({USER}) from {IP}
33005	Audit log	Logon: Attempted logon with a locked user name {NAME} from {IP}
33006	Audit log	Logon: Unlocked user name {NAME} from {IP}
33007	Audit log	RDQA Logon: ''{USER}'' logged on as {NAME} role from {IP}
33008	Audit log	RDQA Logon: ''{USER}" logged off
33009	Audit log	RDQA Logon: Attempted logon with an invalid user name ''{USER}'' or password from {IP}
33010	Audit log	RDQA Logon: Attempted logon with a disabled user name ''{USER}'' from {IP}
33011	Audit log	RDQA Logon: Attempted logon with a locked user name ''{USER}'' from {IP}
33012	Audit log	RDQA Logon: Unlocked user name ''{USER}'' from {IP}
33101	Audit log	Accounts / Contacts: Contacts for alert notifications and reports modified by {USER} from {IP}
33201	Audit log	Accounts / Contacts: {USER} modified the password for {NAME} from {IP}
33202	Audit log	Accounts / Contacts: {USER} added SAML group {NAME} from {IP}
33203	Audit log	Accounts / Contacts: {USER} modified SAML group {NAME} from {IP}
33204	Audit log	Accounts / Contacts: {USER} deleted SAML group {NAME} from {IP}

ID	Log Type	Message
33205	Audit log	Accounts / Contacts: {USER} enabled SAML group {NAME} from {IP}
33206	Audit log	Accounts / Contacts: {USER} disabled SAML group {NAME} from {IP}
33301	Audit log	License: {NAME} license activated by {USER} from {IP}
33302	Audit log	License: Attempted to activate {NAME} license using an invalid Activation Code by {USER} from {IP}
33303	Audit log	License: {NAME} license updated by {USER} from {IP}
33401	Audit log	Policy: Policy setting changed by {USER} from {IP}
33402	Audit log	Policy: {USER} added policy {NAME} from {IP}
33403	Audit log	Policy: {USER} modified policy {NAME} from {IP}
33404	Audit log	Policy: {USER} imported policies from {IP}
33405	Audit log	Policy: {USER} deleted policy {NAME} from {IP}
33406	Audit log	Policy: {USER} copied policy {NAME} from {IP}
33407	Audit log	Policy: {USER} enabled policy {NAME} from {IP}
33408	Audit log	Policy: {USER} disabled policy {NAME} from {IP}
33409	Audit log	Policy: {USER} modified priority setting of policy {NAME} from {PRIORITY} to {PRIORITY} from {IP}
33410	Audit log	Policy: {USER} added content filtering rule {NAME} from {IP}
33411	Audit log	Policy: {USER} updated content filtering rule {NAME} from {IP}
33412	Audit log	Policy: {USER} copied content filtering rule {NAME} from {IP}
33413	Audit log	Policy: {USER} deleted content filtering rule {NAME} from {IP}
33414	Audit log	Policy: {USER} added antispam rule {NAME} from {IP}
33415	Audit log	Policy: {USER} updated antispam rule {NAME} from {IP}
33416	Audit log	Policy: {USER} copied antispam rule {NAME} from {IP}

ID	Log Type	Message
33417	Audit log	Policy: {USER} deleted antispam rule {NAME} from {IP}
33418	Audit log	Policy: {USER} added advanced threat protection rule {NAME} from {IP}
33419	Audit log	Policy: {USER} updated advanced threat protection rule {NAME} from {IP}
33420	Audit log	Policy: {USER} copied advanced threat protection rule {NAME} from {IP}
33421	Audit log	Policy: {USER} deleted advanced threat protection rule {NAME} from {IP}
33422	Audit log	Policy: {USER} added policy notification {NAME} from {IP}
33423	Audit log	Policy: {USER} modified policy notification {NAME} from {IP}
33424	Audit log	Policy: {USER} deleted some policy notifications from {IP}
33425	Audit log	Policy: {USER} copied policy notification {NAME} from {IP}
33426	Audit log	Policy: {USER} added archive server {NAME} from {IP}
33427	Audit log	Policy: {USER} modified archive server {NAME} from {IP}
33428	Audit log	Policy: {USER} deleted some archive servers from {IP}
33429	Audit log	Policy: {USER} added DLP rule {NAME} from {IP}
33430	Audit log	Policy: '{USER} updated DLP rule {NAME} from {IP}
33431	Audit log	Policy: {USER} copied DLP rule {NAME} from {IP}
33432	Audit log	Policy: {USER} deleted DLP rule {NAME} from {IP}
33433	Audit log	Policy Objects: {USER} added expression {NAME} from {IP}
33434	Audit log	Policy Objects: {USER} updated expression {NAME} from {IP}
33435	Audit log	Policy Objects: {USER} copied expression {NAME} from {IP}
33436	Audit log	Policy Objects: {USER} deleted expression {NAME} from {IP}
33437	Audit log	Policy Objects: {USER} imported expression file from {IP}

ID	Log Type	Message
33438	Audit log	Policy Objects: {USER} added file attribute {NAME} from {IP}
33439	Audit log	Policy Objects: {USER} updated file attribute {NAME} from {IP}
33440	Audit log	Policy Objects: {USER} copied file attribute {NAME} from {IP}
33441	Audit log	Policy Objects: {USER} deleted file attribute {NAME} from {IP}
33442	Audit log	Policy Objects: {USER} imported file attribute file from {IP}
33443	Audit log	Policy Objects: {USER} added keyword list {NAME} from {IP}
33444	Audit log	Policy Objects: {USER} updated keyword list {NAME} from {IP}
33445	Audit log	Policy Objects: {USER} copied keyword list {NAME} from {IP}
33446	Audit log	Policy Objects: {USER} deleted keyword list {NAME}from {IP}
33447	Audit log	Policy Objects: {USER} imported keyword list file from {IP}
33448	Audit log	Policy Objects: {USER} added template {NAME} from {IP}
33449	Audit log	Policy Objects: {USER} updated template {NAME} from {IP}
33450	Audit log	Policy Objects: {USER} copied template {NAME} from {IP}
33451	Audit log	Policy Objects: {USER} deleted template {NAME} from {IP}
33452	Audit log	Policy Objects: {USER} imported template file from {IP}
33453	Audit log	Policy Objects: {USER} added policy stamp {NAME} from {IP}
33454	Audit log	Policy Objects: {USER} modified policy stamp {NAME} from {IP}
33455	Audit log	Policy Objects: {USER} deleted some policy stamps from {IP}
33456	Audit log	Policy Objects: {USER} enabled policy stamp {NAME} from {IP}
33457	Audit log	Policy Objects: {USER} disabled policy stamp {NAME} from {IP}
33501	Audit log	Policy: Policy exception settings modified by {USER} from {IP}
33502	Audit log	Policy: Graymail exception settings modified by {USER} from {IP}

ID	Log Type	Message
33601	Audit log	Alerts: Alert rule settings modified by {USER} from {IP}
33701	Audit log	Report: Report settings changed by {USER} from {IP}
33801	Audit log	Detected Messages: Message {NAME} downloaded by {USER} from {IP}
33802	Audit log	Detected Messages: Investigation package {NAME} downloaded by {USER} from {IP}
33901	Audit log	Quarantine: MsgID {ID} released by {USER} from {IP}
33902	Audit log	Quarantine: MsgID {ID} deleted by {USER} from {IP}
33903	Audit log	Quarantine: Resumed processing message {ID} by {USER} from {IP}
33904	Audit log	Quarantine: Message {ID} unlocked and reprocessed by {USER} from {IP}
34001	Audit log	Unable to distribute suspicious objects to Check Point OPSEC. Verify that the Check Point OPSEC settings are correct and that no network problem exists.
34002	Audit log	Unable to distribute suspicious objects to Trend Micro TippingPoint SMS. Verify that the Trend Micro TippingPoint SMS settings are correct and that no network problem exists.
34003	Audit log	Unable to distribute suspicious objects to IBM Security Network Protection XGS. Verify that the IBM Security Network Protection XGS settings are correct and that no network problem exists.
34004	Audit log	Unable to distribute suspicious objects to Palo Alto Panorama or Firewalls. Verify that the Palo Alto Panorama or Firewalls settings are correct and that no network problem exists.
34005	Audit log	Unable to generate suspicious objects list. Verify that the Threat Intelligence Sharing settings are correct.
34101	Audit log	End-User Quarantine: EUQ settings modified by {USER} from {IP}

ID	Log Type	Message
34102	Audit log	End-User Quarantine: User Quarantine Access settings modified by {USER} from {IP}
34103	Audit log	End-User Quarantine: EUQ Digest settings modified by {USER} from {IP}
34201	Audit log	Sender Filtering: Approved Senders list modified by {USER} from {IP}
34202	Audit log	Sender Filtering: ERS settings modified by {USER} from {IP}
34203	Audit log	Sender Filtering: DHA protection settings modified by {USER} from {IP}
34204	Audit log	Sender Filtering: Bounced attack protection settings modified by {USER} from {IP}
34205	Audit log	Sender Filtering: SMTP traffic throttling settings modified by {USER} from {IP}
34206	Audit log	Sender Filtering: Blocked Senders list modified by {USER} from {IP}
34207	Audit log	Sender Filtering: Some Blocked Senders list entries moved to Approved Senders list by {USER} from {IP}
34208	Audit log	Sender Filtering: SPF settings modified by {USER} from {IP}
34209	Audit log	Sender Filtering: DKIM Authentication settings modified by {USER} from {IP}
34210	Audit log	Sender Filtering: DKIM Signatures settings modified by {USER} from {IP}
34211	Audit log	Sender Filtering: DMARC settings modified by {USER} from {IP}
35001	Audit log	Message Queues: Messages deleted by {USER} from {IP}
35002	Audit log	Message Queues: Messages delivered by {USER} from {IP}
35003	Audit log	Message Queues: All messages delivered by {USER} from {IP}
35004	Audit log	Message Tracking: Investigation package {NAME} downloaded by {USER} from {IP}

ID	Log Type	Message
35005	Audit log	Email Submissions: Message submitted by {USER} from {IP}
35006	Audit log	Message Queues: Messages rerouted by to {IP} by {USER} from {IP}
35007	Audit log	Message Queues: All messages rerouted by to {IP} by {USER} from {IP}
35011	Audit log	Integrated Products/Services: Registered to Email Encryption server by {USER} from {IP}
35012	Audit log	Integrated Products/Services: Domain {DOMAIN} added to Email Encryption server by {USER} from {IP}
35013	Audit log	Integrated Products/Services: Domain {DOMAIN} deleted from Email Encryption server by {USER} from {IP}
35014	Audit log	Integrated Products/Services: Key file uploaded to Email Encryption server for domain {DOMAIN} by {USER} from {IP}
35016	Audit log	Integrated Products/Services: Default sender modified to {SENDER} for Email Encryption by {USER} from {IP}
35017	Audit log	Integrated Products/Services: Email address modified to {EMAIL} for Email Encryption by {USER} from {IP}
35021	Audit log	Integrated Products/Services: {USER} added identity provider server {NAME} from {IP}
35022	Audit log	Integrated Products/Services: {USER} modified identity provider server {NAME} from {IP}
35023	Audit log	Integrated Products/Services: {USER} deleted identity provider server {NAME} from {IP}
35024	Audit log	Integrated Products/Services: {USER} enabled identity provider server {NAME} from {IP}
35025	Audit log	Integrated Products/Services: {USER} disabled identity provider server {NAME} from {IP}
35026	Audit log	Integrated Products/Services: {USER} updated certificate for management console from {IP}

ID	Log Type	Message
35027	Audit log	Integrated Products/Services: {USER} updated certificate for EUQ console from {IP}
35028	Audit log	Logon: {USER} logged on via identity provider server {NAME} as {ROLE} from {IP}
35029	Audit log	Logon: {USER} logged off via identity provider server {NAME} from {IP}
41001	EUQ log	EUQ: {USER} logged on from {IP}
41002	EUQ log	EUQ: {USER} logged off from {IP}
41003	EUQ log	EUQ: MsgID {ID} released by {USER} from {IP}
41004	EUQ log	EUQ: MsgID {ID} deleted by {USER} from {IP}
41005	EUQ log	EUQ: Approved Senders list modified by {USER} from {IP}
41006	EUQ log	EUQ: {USER} logged on via identity provider server {NAME} from {IP}
41007	EUQ log	EUQ: {USER} logged off via identity provider server {NAME} from {IP}

Appendix H

Sender Authentication Error Codes

This appendix includes the error codes for each sender authentication protocols.

Sender Policy Framework (SPF) Error Codes

TABLE H-1. SPF Error Code Classification

ERROR TYPE	ERROR CODES
Invalid SPF record	3~25, 27~32
No SPF record	2
Internal error	-99, 1, 26

TABLE H-2. SPF Error Codes

ERROR CODE	MESSAGE
-99	Internal error
1	Insufficient memory
2	No SPF record
3	Syntax error
4	Modifiers contain prefixes

Error Code	Message
5	Invalid characters found
6	Unknown mechanisms found
7	Invalid option found
8	Invalid CIDR length
9	Required option is missing
10	Internal error
11	Invalid %-escape character
12	Invalid macro variable
13	Subdomain truncation depth too large
14	Invalid delimiter character
15	Option string too long
16	Excessive mechanisms
17	Excessive modifiers
18	Excessive DNS lookups used in mechanisms
19	Invalid IPv4 address
20	Invalid IPv6 address
21	Invalid mechanism prefix
22	SPF result is unknown
23	Uninitialized variable
24	Modifier not found
25	Required setting not configured
26	DNS lookup unsuccessful
27	Invalid hostname or format

Error Code	Message
28	Invalid or missing TLD in hostname
29	Ignore mechanisms after "all:"
30	SPF result is permerror when an include recursive query returns none
31	Recursive include
32	Multiple SPF or TXT records found
51	IP address is 0.0.0.0
52	from and ehlo parameters are null
53	none rule matched
54	neutral rule matched
55	softfail rule matched
56	fail rule matched
57	temperror rule matched
58	permerror rule matched

DomainKeys Identified Mail (DKIM) Error Codes

Table H-3. DKIM Error Code Classification

Error Type	Error Codes
Invalid DKIM record	1, 23~24, 116, 34, 36, 38, 40, 41, 42, 43, 46, 108, 111
No DKIM record	22, 103, 104
Invalid DKIM signature	2~5, 7~21, 25~27, 31~33, 44~45, 102, 105
DKIM signature mismatch	28, 37, 101
Internal error	-1, 6, 39, 107, 112~115 and all others

TABLE H-4. DKIM Error Codes

ERROR CODE	MESSAGE	RESULT
-1	Internal error	PermError
0	Successful	Pass
1	Unsupported version	Fail
2	Invalid domain (d=/i=)	PermError
3	Signature expired	Fail
4	Signature in the future	Fail
5	x= < t=	Fail
6	Obsolete	Fail
7	Invalid c= value in header	Neutral
8	Invalid c= value in body	Neutral
9	Missing a= value	PermError
10	Invalid a= value	Neutral
11	Missing h= value	PermError
12	Invalid l= value	Neutral
13	Invalid q= value	Neutral
14	Invalid q= option	Neutral
15	Missing d=value	PermError
16	d= value is empty	Neutral
17	Missing s= value	PermError
18	s= value is empty	Neutral
19	Missing b= value	PermError
20	b= value is empty	Neutral

Error Code	Message	Result
21	b= value is corrupt	PermError
22	No key found in DNS	None
23	Bad DNS reply	Neutral
24	Unsuccessful DNS reply	TempError
25	Missing bh= value	PermError
26	bh= value is empty	Neutral
27	Bad bh= value	PermError
28	Signature mismatch	Fail
29	Unauthorized subdomain	TempError
30	Multiple records returned	TempError
31	h= value is empty	Neutral
32	Missing required entries in h= value	Neutral
33	l= value exceeds body size	Neutral
34	Signing required not met	Neutral
35	Unknown key version	Neutral
36	Unknown key hash	Neutral
37	Signature-key hash mismatch	PermError
38	Not an email key	Neutral
39	Obsolete	Fail
40	Missing key type	Neutral
41	Unknown key type	Neutral
42	Key revoked	PermError
43	Undecodable key	PermError

Error Code	Message	Result
44	Missing v= tag	PermError
45	v= tag is empty	Fail
46	Insufficient key bits	PermError
101	Bad signature	Fail
102	No signature available	Fail
103	Public key not found	None
104	No domain key to verify	None
105	Syntax error	Fail
106	Resource unavailable	Fail
107	Internal error	Fail
108	Key revoked	Fail
109	Invalid function parameter	Fail
110	Function not implemented	Fail
111	Unable to retrieve key	Fail
112	Callback request rejected	Fail
113	Invalid callback result	Fail
114	Callback timeout	Fail
115	Callback timeout	Fail
116	Multiple DNS replies	Fail

Domain-based Message Authentication, Reporting & Conformance (DMARC) Error Codes

TABLE H-5. DMARC Error Code Classification

ERROR TYPE	ERROR CODES
Invalid DMARC record	2~5, 11
No DMARC record	1, 6, 9, 10, 12
Authentication unsuccessful	13
Alignment check unsuccessful	21
Internal error	7, 8

TABLE H-6. DMARC Error Codes

ERROR CODE	MESSAGE
0	Successful
1	No data
2	NULL context received
3	Invalid v= value
4	Invalid p= value
5	Missing p= value
6	No domain found
7	Unable to allocate memory
8	Not a macro
9	No DMARC record
10	Domain does not exist
11	Recoverable DNS error
12	Undefined TLD type

Error Code	Message
13	From: domain not available
14	No DMARC record found for custom policy
15	Accept message based on policy settings
16	Reject message based on policy settings
17	Quarantine message based on policy settings
18	Monitor message and generate report based on policy settings
19	Apply domain policy ('p')
20	Apply sub-domain policy ('sp')
21	Alignment check unsuccessful

Appendix I

Glossary

Term	Definition
ActiveUpdate Server	Provides updates for product components, including pattern files. Trend Micro regularly releases component updates through the Trend Micro ActiveUpdate server.
Advanced Threat Scan Engine Advanced Threat Scan Engine (64-bit)	The Advanced Threat Scan Engine protects against viruses, malware, and exploits to vulnerabilities in software such as Java and Flash. Integrated with the Trend Micro Virus Scan Engine, the Advanced Threat Scan Engine employs signature-based, behavior-based, and aggressive heuristic detection.
Affected Recipient	A recipient of malicious or suspicious email messages.

Term	Definition
Alert	An occurrence of an event or set of events triggering a predefined condition. Alerts have the following levels of importance: • Critical Alert A message about an event that requires immediate attention. • Important Alert A message about an event that does not require immediate attention, but should be observed. • Informational Alert A message about an event that is most likely benign.
Archive	A file composed of one or more files that have been concatenated, compressed, or encrypted for portability or storage. An “archive” may also be called a “compressed file”.
Archive file password	A password to decrypt an archive.
Attack source	The first mail server with a public IP address that routes a suspicious message. For example, if a suspicious message routes from IP1 (sender) to IP2 (MTA: 225.237.59.52) to IP3 (company mail gateway) to IP4 (recipient), Deep Discovery Email Inspector identifies 225.237.59.52 (IP2) as the attack source. By studying attack sources, you can identify regional attack patterns or attack patterns that involve the same mail server.
Attacker	An individual, group, organization, or government that conducts or has the intent to conduct harmful activities.
Authentication	The verification of the identity of a person or a process. Authentication ensures that the system delivers the digital data transmissions to the intended receiver. Authentication also assures the receiver of the integrity of the message and its source (where or whom it came from). The simplest form of authentication requires a user name and password to gain access to a particular account. Other authentication protocols are secret-key encryption, such as the Data Encryption Standard (DES) algorithm, or public-key systems using digital signatures.

Term	Definition
Bot	A program that infects computers connected to the Internet, allowing them to be remotely controlled by an attacker. Bot-controlled computers become part of a network of compromised machines that are exploited by the attacker for malicious activities.
Botnet	A botnet (short for “bot network”) is a network of hijacked zombie computers controlled remotely by an attacker. The attacker uses the network to send spam and launch Denial of Service attacks, and may rent the network out to other cybercriminals. If one of the computers targeted becomes compromised, the attacker can often take control of that computer and add it to the botnet.
BCC mode	A Deep Discovery Email Inspector operation mode. Deep Discovery Email Inspector operates as an out-of-band appliance. Deep Discovery Email Inspector silently monitors mirrored email traffic received from an upstream mail server and notifies security administrators about discovered threats.
Callback address	An external IP address, host name, or URL that an object requests (“calls back to”) during scanning or analysis. Malware connected to a C&C server often sends requests to it in order to carry out harmful activities. The host name or IP address that an object requests may be called a “callback host”. A URL that an object requests may be called a “callback URL”.
Command-and-Control (C&C) server	The central server (s) for a botnet or entire network of compromised devices used by a malicious bot to propagate malware and infect a host.
Compromised MTA	A compromised MTA is usually a third-party open mail relay that attackers can use to send malicious email messages or spam without detection because the mail relay does not check the source or destination for known users.
Certified Safe Software Service (CSSS)	Verifies the safety of files. Certified Safe Software Service reduces false positives, and saves computing time and resources.

Term	Definition
Communicator	The communications backbone of the Apex Central system. Communicator is part of the Apex Central Management Infrastructure. Commands from the Apex Central server to Deep Discovery Email Inspector, and status reports from Deep Discovery Email Inspector to the Apex Central server all pass through this component.
Data port	A hardware port that accesses resources available on a network.
Detection	A discovered event, file, or network address. Detections include unusual, undesired, suspicious, unknown, and malicious behaviors and connections.
Event	An observable, measurable occurrence in a system or network.
False positive	A detection that is determined to be high risk but is actually benign.
File submission rule	A set of criteria and conditions used to reduce the number of files in the Virtual Analyzer queue. File submission rules check files based on detection types, detection rules, and file properties.
IntelliTrap	A Trend Micro utility that helps reduce the risk of viruses entering the network by blocking real-time compressed executable files and pairing them with other malware characteristics.
IntelliTrap Exception Pattern	The IntelliTrap Exception Pattern contains detection routines for safe compressed executable (packed) files to reduce the amount of false positives during IntelliTrap scanning.
IntelliTrap Pattern	The IntelliTrap Pattern contains the detection routines for compressed executable (packed) file types that are known to commonly obfuscate malware and other potential threats.
Log	An official record of events occurring in a system or network.
Management console	A web-based user interface for managing a product.
Management port	A hardware port that connects to the management network.

Term	Definition
Message ID	A unique identifier for a digital message, most commonly a globally unique identifier used in email messages. Message IDs must have a specific format (subset of an email address) and be globally unique. A common technique used by many message systems is to use a time and date stamp along with the local host's domain same.
Message stamp	Text added at the beginning or end of the email message.
Message tag	Text added to the subject line of the email message.
MTA mode	A Deep Discovery Email Inspector operation mode. Deep Discovery Email Inspector can act as a Mail Transfer Agent (MTA) in the mail traffic flow. As an inline MTA, Deep Discovery Email Inspector directly protects your network from harm by blocking malicious email messages.
Notification	A message triggered by an event in an endpoint or network.
Permitted sender	An email sender approved by Deep Discovery Email Inspector as being safe.
Permitted sender of relayed mail	An endpoint permitted or denied connection to the appliance based on the IP address of a single endpoint or any endpoint in an IP address range.
Port	The following term has multiple definitions depending upon its context: • Hardware A socket on an endpoint to connect to a removable device, cable, or other external equipment. • TCP/IP Networking An access channel by which software applications can use hardware resources in parallel.
Report	A compilation of data generated from selectable criteria, used to provide the user with needed information.

Term	Definition
Sample	A potentially malicious file or URL submitted to Virtual Analyzer. Virtual Analyzer opens the file or accesses the link in the sample to analyze the risk level. If Virtual Analyzer finds any additional links or files while analyzing a sample, Virtual Analyzer also analyzes them. Example: If a user submits an archive that contains multiple files to Virtual Analyzer, Virtual Analyzer will analyze the archive as well as all of the encrypted files.
Sandbox image	A template used to deploy sandbox instances in Virtual Analyzer. A sandbox image includes an operating system, installed software, and other settings necessary for that specific computing environment.
Sandbox instance	A single virtual machine based on a sandbox image.
Script Analyzer Engine Script Analyzer Pattern	The Script Analyzer Pattern is used during analysis of web page scripts to identify malicious code.
Smart Feedback	Shares anonymous threat information with the Smart Protection Network, allowing Trend Micro to rapidly identify and address new threats. Trend Micro Smart Feedback may include product information such as the product name, ID, and version, as well as detection information including file types, SHA-1 hash values, URLs, IP addresses, and domains.
Smart Protection Network	Rapidly and accurately identifies new threats, delivering global threat intelligence to all Trend Micro products and services. The Smart Protection Network cloud data mining framework advances in the depth and breadth allow Trend Micro to look in more places for threat data, and respond to new threats more effectively, to secure data wherever it resides.
Social engineering	A form of attack to psychologically manipulate a person to perform actions or divulge confidential information. A type of confidence trick for the purpose of information gathering, fraud, or system access, it differs from a traditional "con" in that it is often one of many steps in a more complex fraud scheme.
Source IP address	The IP address of the mail server nearest to the email sender. Examples: gateway mail server, compromised mail server, botnet with mail relay capabilities

Term	Definition
SPAN/TAP mode	A Deep Discovery Email Inspector operation mode. Deep Discovery Email Inspector operates as an out-of-band appliance. Deep Discovery Email Inspector silently monitors mirrored email traffic received from a switch or network tap and notifies security administrators about discovered threats.
Spear phishing	A type of targeted attack where an attacker sends an email message masquerading as a known or legitimate entity to gain personal information from a targeted person. Spear phishing significantly raises the chances that targets will read a message that will allow to compromise a target network. In many cases, spear-phishing emails use attachments made to appear as legitimate documents because sharing via email is a common practice among large enterprises and government organizations.
Spyware Pattern	The Spyware Pattern identifies spyware and grayware in messages and attachments.
Threat Connect	Correlates suspicious objects detected in your environment and threat data from the Trend Micro Smart Protection Network. The resulting intelligence reports enable you to investigate potential threats and take actions pertinent to your attack profile.
Threat Knowledge Base	The Threat Knowledge Base provides information for threat correlation.
True file type	The kind of data stored in a file, regardless of the file extension. Example: A text file may have an extension of HTML, CSV, or TXT, but its true file type remains the same.
Unscannable Archive	A password-protected archive that cannot be extracted and scanned using a custom-defined password list or heuristically obtained passwords.
Viewer account	An account that can view detection and system information, but does not have access to most configuration screens on the management console.
Virtual Analyzer	An isolated virtual environment used to manage and analyze samples. Virtual Analyzer observes sample behavior and characteristics, and then assigns a risk level to the sample.
Virtual Analyzer Sensors	The Virtual Analyzer Sensors are a collection of utilities used to execute and detect malware and to record behavior in Virtual Analyzer.

Term	Definition
Virus Pattern	The Trend Micro Virus Scan Engine protects against viruses and malware in files through heuristic, signature-based, and behavior-based detection. Trend Micro updates the virus pattern files as soon as detection routines for new threats are available.
Web Reputation Services	Tracks the credibility of web domains. Web Reputation Services assigns reputation scores based on factors such as a website's age, historical location changes, and indications of suspicious activities discovered through malware behavior analysis.
Widget Framework	The Widget Framework provides the template for Deep Discovery Email Inspector widgets.

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