TREND MICRO™

5.3 Patch 1

TREND MICRO™ Deep Discovery™ Director (Consolidated Mode)

Administrator's Guide

Breakthrough Protection Against APTs and Targeted Attacks

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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

Welcome to the Trend Micro Deep Discovery Director (Consolidated Mode) *Administrator's Guide*. This guide contains information about product settings.

Documentation

The documentation set for Deep Discovery Director (Consolidated Mode) includes the following:

TABLE 1. Product Documentation

DOCUMENT	DESCRIPTION
Administrator's Guide	The Administrator's Guide contains detailed instructions on how to configure and manage Deep Discovery Director (Consolidated Mode), and explanations on Deep Discovery Director (Consolidated Mode) concepts and features.
Syslog Content Mapping Guide	The Syslog Content Mapping Guide provides information about log management standards and syntaxes for implementing syslog events in Deep Discovery Director (Consolidated Mode).
Automation API Guide	A PDF document that explains how to use Deep Discovery Director (Consolidated Mode) Automation APIs.
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 Director (Consolidated Mode) management console. The Online Help contains explanations of Deep Discovery Director (Consolidated Mode) components and features, as well as procedures needed to configure Deep Discovery Director (Consolidated Mode).
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: https://success.trendmicro.com

View and download product documentation from the Trend Micro Online Help Center:

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

Audience

The Deep Discovery Director (Consolidated Mode) 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
- Database management
- Antivirus and content security protection

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

Convention	Description
 **Note**	Configuration notes
 **Tip**	Recommendations or suggestions
 **Important**	Information regarding required or default configuration settings and product limitations
 **WARNING!**	Critical actions and configuration options

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Chapter 1

Introduction

This chapter introduces Trend Micro™ Deep Discovery™ Director (Consolidated Mode) 5.3 Patch 1 and the new features in this release.

About Deep Discovery Director (Consolidated Mode)

Trend Micro Deep Discovery Director is a management solution that enables the following:

- Centralized deployment of hotfixes, critical patches, firmware, and Virtual Analyzer images
- Configuration replication
- Log aggregation
- Realtime threat detection monitoring and correlation
- Threat intelligence management and sharing

To accommodate different organizational and infrastructural requirements, Deep Discovery Director provides flexible deployment options.

Deep Discovery Director also supports out-of-the-box integration with Deep Discovery Analyzer, Deep Discovery Email Inspector, Deep Discovery Inspector, Deep Discovery Web Inspector, and Deep Discovery Director - Network Analytics.

What's New

TABLE 1-1. What's New in Deep Discovery Director (Consolidated Mode) 5.3 Patch 1

FEATURE/ ENHANCEMENT	DETAILS
Support for Linux-based Virtual Analyzer images	Deep Discovery Director (Consolidated Mode) now supports deployment of Linux-based Virtual Analyzer images to managed Deep Discovery appliances.

Feature/ Enhancement	Details
Centralized configuration of Network Asset settings	Deep Discovery Director (Consolidated Mode) now supports syncing of Network Asset settings to managed Deep Discovery Inspector and Deep Discovery Director - Network Analytics appliances.
Network Analytics alert for Suspicious Objects	Deep Discovery Director (Consolidated Mode) can now send alert notifications when correlated events have been found for user-defined suspicious objects.
Enhanced management console navigation	The **Domain Exceptions**, **Priority Watch List**, **Registered Domains**, **Network Groups**, and **Registered Services** Network Analytics settings can now be found under **Appliances** > **Network Assets**. Network Analytics status information and data source configuration screens remain under **Administration** > **Network Analytics**.
Support for multiple LDAP servers	Deep Discovery Director (Consolidated Mode) 5.3 Patch 1 now supports integrating with multiple Lightweight Directory Access Protocol (LDAP) servers. Access the LDAP management screen under **Administration** > **Integrated Products/Services** > **LDAP**.

Features and Benefits

Deep Discovery Director (Consolidated Mode) includes the following features:

Feature or Benefit	Details
Trend Micro Vision One™ integration	Deep Discovery Director (Consolidated Mode) integrates with **Trend Micro Vision One** to enable Deep Discovery appliances to send their activity data, and to enable **Trend Micro Vision One** to gain access to Network Analytics correlation data.

Feature or Benefit	Details
MITRE ATT&CK™ Framework Tactics and Techniques information	Deep Discovery Director (Consolidated Mode) detection details and analysis reports include MITRE ATT&CK™ framework Tactics and Techniques information.
Advanced threat analysis	Deep Discovery Director (Consolidated Mode) can integrate with multiple Deep Discovery Director (Internal Network Analytics Version) servers operating in Deep Discovery Director (Standalone Network Analytics Mode) or Deep Discovery Director - Network Analytics as a Service to provide advanced threat analysis using correlation data.
Deep Discovery Inspector log aggregation	Deep Discovery Director (Consolidated Mode) aggregates Deep Discovery Inspector detection logs. Using the same intuitive multi-level format, the Deep Discovery Director (Consolidated Mode) management console provides real-time threat visibility and analysis. This allows security professionals to focus on the real risks, perform forensic analysis, and rapidly implement containment and remediation procedures.
Deep Discovery Email Inspector log aggregation	Deep Discovery Director (Consolidated Mode) aggregates Deep Discovery Email Inspector detection, email message tracking and MTA logs. Using the same intuitive multi-level format that Deep Discovery Email Inspector users are accustomed to, the Deep Discovery Director (Consolidated Mode) management console provides real-time threat visibility and analysis.
Product intelligence	Deep Discovery Director (Consolidated Mode) consolidates suspicious objects and C&C callback addresses from registered Deep Discovery appliances.
Custom intelligence	Deep Discovery Director (Consolidated Mode) can distribute YARA rules to registered appliances and import threat intelligence using the Structured Threat Information eXpression (STIX 1.x, 2.0) format. You can also add user-defined suspicious objects that have not yet detected on your network, as well as exceptions that you consider harmless.
Feed management	Deep Discovery Director (Consolidated Mode) allows you to subscribe to and monitor intelligence feeds for threat information that can be used to complement your product and custom intelligence.

Feature or Benefit	Details
Threat intelligence sharing	Deep Discovery Director (Consolidated Mode) can share threat intelligence data with other products or services through TAXII (1.x, 2.0), OpenDXL, and HTTP or HTTPS web service.
Auxiliary products and services	To help provide effective detection and blocking at the perimeter, Deep Discovery Director (Consolidated Mode) can distribute threat intelligence data to auxiliary products and services.
File passwords syncing	Deep Discovery Director (Consolidated Mode) can configure and sync **File Passwords** settings with registered Deep Discovery Analyzer and Deep Discovery Email Inspector appliances.
Email encryption management	Deep Discovery Director (Consolidated Mode) can configure and sync Email Encryption feature related settings to registered Deep Discovery Email Inspector appliances.
Dashboard	The **Dashboard** screen and Deep Discovery appliance widgets allow administrators to view network integrity, system threat data, and email message detection and security information.
Detections	The **Detections** screen provides access to real-time information about various detection categories.
Appliance logs	The **Logs** screen where users can find Deep Discovery appliance related logs such as **Email Message Tracking**, **MTA**, and **Message Queue** logs.
Syslog	The **Syslog** screen allows Deep Discovery Director (Consolidated Mode) to send suspicious objects lists and detection and appliance related logs in CEF and LEEF to up to three **Syslog** servers.
System alerts	Administrators can view the details of triggered alerts directly on the management console. Custom rules can be created to be alerted of specific threats.
Reports	Deep Discovery Director (Consolidated Mode) can generate scheduled and on-demand **Network Security** and **Email Security** reports.
Simple Network Management Protocol	Deep Discovery Director (Consolidated Mode) supports Simple Network Management Protocol (SNMP) and can use it to send SNMP trap messages to notify administrators about events that require attention, and to listen to SNMP manager requests for system information and status updates.

Feature or Benefit	Details
Role-based access control	Built-in roles allow administrators to control which management console screens and features can be accessed. Custom roles can be created to control which appliances a role can see and manage, and which email message detections a role can see.
Storage configuration	Administrators can add extra available disk space to Deep Discovery Director (Consolidated Mode) partitions to increase the number of logs or repository files that can be stored.
Directory	The **Directory** displays information about Deep Discovery appliances that are registered to Deep Discovery Director (Consolidated Mode).
Plans	Plans define the scope and schedule of deployments to target appliances.
Repository	The **Repository** screen displays all update, upgrade, and **Virtual Analyzer** image files hosted by the server. Upload and delete files from here.
Component updates	Deep Discovery Director (Consolidated Mode) uses components to display related information about detections.
Updates	The **Updates** screen enables you to install hotfixes, patches and firmware upgrades to Deep Discovery Director (Consolidated Mode). After an official product release, Trend Micro releases system updates to address issues, enhance product performance, or add new features.
LDAP server integration	Deep Discovery Director (Consolidated Mode) allows **LDAP** accounts to access the management console.
SAML for single sign-on (SSO)	Deep Discovery Director (Consolidated Mode) 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 Director (Consolidated Mode) console when they sign in to their organization's portal.
System Logs	Deep Discovery Director (Consolidated Mode) maintains system logs that provide summaries about user access, setting changes, and other configuration modifications that occurred using the management console.

Feature or Benefit	Details
Quarantined Messages screen	Deep Discovery Director (Consolidated Mode) provides access to quarantined email messages in the enhanced Detections section.
Email message queue management	Deep Discovery Director (Consolidated Mode) can be used to manage the email queue of registered Deep Discovery Email Inspector appliances.
End-User Quarantine	Deep Discovery Director (Consolidated Mode) includes the End-User Quarantine (EUQ) feature to improve spam management.
Trend Micro Apex Central™ integration	Deep Discovery Director (Consolidated Mode) integrates with Apex Central for the express purpose of retrieving endpoint analysis reports to provide Deep Discovery Director - Network Analytics as a Service with even more data for more thorough advanced threat analysis.
Web API access	Deep Discovery Director (Consolidated Mode) now allows the creation of user accounts that are only allowed system access via web API. Web API can be used to automate certain threat intelligence related tasks.

Chapter 2

Deployment and Installation

This chapter contains information about the requirements and procedures for deploying and installing Deep Discovery Director (Consolidated Mode).

System Requirements

TABLE 2-1. System Requirements

REQUIREMENT	MINIMUM SPECIFICATIONS
Hardware	• Network interface card: 1 with E1000 or VMXNET 3 adapter **Important** • Deep Discovery Director (Consolidated Mode) does not support the VMXNET 2 (Enhanced) adapter type. • For port binding, specify the same adapter type to use for all network interface cards. • SCSI Controller: LSI Logic Parallel • CPU: 1.8GHz (at least 2 cores) • Memory: 10GB • Hard disk: 150GB **Note** • The minimum specifications are calculated using 30 days of detection log storage for 1 Deep Discovery appliance as basis. • The CPU, memory, and hard disk requirements increase with the number of Deep Discovery appliances Deep Discovery Director (Consolidated Mode) is expected to aggregate detection and appliance logs from. For details, see *Recommended System Requirements on page 2-3*. • Trend Micro recommends adding 50GB to the hard disk requirement for each Deep Discovery Email Inspector appliance Deep Discovery Director (Consolidated Mode) is expected to aggregate logs from.

Requirement	Minimum Specifications
Software	• Hypervisor: VMware vSphere ESXi 6.0/6.5/6.7 or Microsoft Hyper-V in Windows Server 2016/2019 • Guest operating system: CentOS Linux 6/7 (64-bit) or Red Hat Enterprise Linux 7 (64-bit)
Ports	• TCP 443 (Deep Discovery Director connection) • UDP 123 (default NTP server connection)

Certificate	• Self-signed
	• PEM format
	• Certificate only or certificate and private key in the same file
	• Certificate chain supported
	Encryption methods:
	• Private key: RSA algorithm only
	• Certificate: Digest size of 256 (SHA-256) or higher
	Generation command example (CentOS):
	`# openssl genpkey -algorithm RSA -out key.pem -pkeyopt rsa_keygen_bits:2048`
	`# openssl req -new -key key.pem -out csr.pem`
	`# openssl req -x509 -sha256 -days 365 -key key.pem -in csr.pem -out certificate.pem`
	`# cat key.pem >> certificate.pem`

Recommended System Requirements

The CPU, memory, and hard disk requirements increase with the number of Deep Discovery appliances Deep Discovery Director (Consolidated Mode) is expected to aggregate detection and appliance logs from.

Note

The hard disk requirements are calculated using 180 days of detection log storage as basis. The longer detection logs are to be stored, the more disk space is required.

Number of DDI1100/DDEI7100 appliances	CPU (Cores)	Memory (GB)	Hard Disk (GB)
5	4	16	600
15	8	28	1200
25	12	40	1800

Installing Deep Discovery Director

Important

Deep Discovery Director (Consolidated Mode) supports installation under either legacy Basic Input/Output System (BIOS) or Unified Extensible Firmware Interface (UEFI).

- Changing the setting after installation causes Deep Discovery Director (Consolidated Mode) to be unable to boot.
- Deep Discovery Director (Consolidated Mode) must be reinstalled to change the setting.

Procedure

1. Create a custom virtual machine with the following minimum specifications:
   - Virtual machine hardware version: 8
   - Guest operating system: CentOS Linux 6/7 (64-bit) or Red Hat Enterprise Linux 7 (64-bit)
   - CPU: 1 virtual socket with 2 cores
   - Memory: 10GB
   - Network interface card: 1 with E1000 or VMXNET 3 adapter

Important

- Deep Discovery Director (Consolidated Mode) does not support the VMXNET 2 (Enhanced) adapter type.
- For port binding, specify the same adapter type to use for all network interface cards.

- SCSI Controller: LSI Logic Parallel
- Hard disk: 150GB

2. Open the virtual machine console, and then power on the virtual machine.
3. Connect the CD/DVD device of the virtual machine to the Deep Discovery Director (Consolidated Mode) ISO image file, and then boot the virtual machine from the CD/DVD drive.

   The Deep Discovery Director (Consolidated Mode) Installation screen appears.
4. Select **Install software**.

   The **Install Deep Discovery Director Software** screen appears.
5. Select **Install in consolidated mode**.

   The **Install in Consolidated Mode** screen appears.
6. Select one of the following installation options:

   - **Install base version**: This version can manage all Deep Discovery family appliances. Does not have internal **Network Analytics** but can register to Deep Discovery Director - Network Analytics as a Service.
   - **Install no internal Network Analytics, no log receiving capability version**: This version can manage all Deep Discovery family appliances but does not have internal **Network Analytics** nor log receiving capability.

Note

This option is permanent. Deep Discovery Director (Consolidated Mode) must be reinstalled to change this option.

The **Disk Selection** screen appears.

7. Click **Continue**.

   The **Hardware Profile** screen appears.

8. Click **Continue**.

   The **Disk Space Configuration** screen appears.

9. (Optional) Modify the disk space configuration, and then click **Continue**.

   The **Repartition Disks** confirmation message appears.

10. Click **Continue**.

    The installation starts.

Configuring Network Settings

Procedure

1. Log on to the preconfiguration console.

   The following are the default credentials:

   - User name: admin
   - Password: admin

   The **Main Menu** screen appears.

2. Select **Configure network settings** and then press **ENTER**.

   The **Configure Network Settings** screen appears.

3. Configure the following required settings:
   - IPv4 address
   - Subnet mask
   - IPv4 gateway
   - DNS server 1

   Note

   Only IPv4 settings can be configured on the preconfiguration console. To configure IPv6 and port binding, use the **Network** screen on the management console.

4. Press **TAB** to navigate to **Save**, and then press **ENTER**.

   The **Main Menu** screen appears after the settings are successfully saved.

Logging on to the Management Console

Procedure

1. Open a browser window and connect to the server address provided on the preconfiguration console.

   The management console logon screen appears.

2. Type the following default credentials:
   - User name: admin
   - Password: admin

   Important

   Trend Micro recommends changing the password after logging on to the management console for the first time.

3. Click **Log on**.

   The management console appears.

Deployment Overview of Integrated Solution

Deep Discovery Director - Network Analytics as a Service is part of an integrated solution that provides advanced threat analysis by correlating threat events over time and identifying how the threat started and advanced in your network.

Three Trend Micro products are required in the integrated solution:

- Deep Discovery Director - Network Analytics as a Service

  Provides correlation data and advanced threat analysis about threats detected by Deep Discovery Inspector.

- Deep Discovery Inspector

  Provides network meta data and the detection logs that the service uses to make data correlations and advanced threat analysis.

- Deep Discovery Director (Consolidated Mode)

  The service is deployed and managed using the Deep Discovery Director (Consolidated Mode) console. Deep Discovery Director (Consolidated Mode) also provides access to the **Correlation Data** screen where correlated data and analysis results are displayed.

Pre-deployment Checklist

Deep Discovery Director - Network Analytics as a Service is a cloud-based solution that is integrated with Deep Discovery Director (Consolidated Mode) and Deep Discovery Inspector.

The service is licensed and managed using the Deep Discovery Director (Consolidated Mode) console. Advanced analytics data that is provided by the

service is displayed on the **Correlation Data** screen that is accessed using the Deep Discovery Director (Consolidated Mode) console.

After the license is activated, you can use the Deep Discovery Director (Consolidated Mode) console to select which Deep Discovery Inspector appliances to use as connected sources. Connected sources are used to collect data for advanced analytics correlation.

All Deep Discovery Inspector appliances that are used as connected sources must be registered with the Deep Discovery Director (Consolidated Mode) appliance.

Each Deep Discovery Director (Consolidated Mode) appliance can manage one service. Each service can use one or more integrated Deep Discovery Inspector appliances as connected sources.

As part of the network analytics solution, the **Correlation Data** screen provides access to endpoint analysis reports provided by Apex Central. Deep Discovery Director (Consolidated Mode) must be added as an appliance on Apex Central so that it can retrieve endpoint analysis reports.

TABLE 2-2. Pre-deployment Checklist

REQUIREMENT	DETAILS
Deep Discovery Director (Consolidated Mode) 5.0 or later	Provides management and access.
Deep Discovery Inspector 5.5 or later	Provides network meta data and detection logs used for correlation and advanced analysis.
Obtained Deep Discovery Director - Network Analytics as a Service activation code	Obtain from Trend Micro.

Requirement	Details
Completed prerequisite configuration on Deep Discovery Director (Consolidated Mode)	You must ensure that the Deep Discovery Director (Consolidated Mode) license is activated and that basic configuration is complete before deploying Deep Discovery Director - Network Analytics as a Service. Deep Discovery Director (Consolidated Mode) configuration should include the following: • Network • Proxy (if used) • SMTP server (used for alerts) • NTP date and time • Certificate • Automatic backup configuration
Registered Deep Discovery Inspector to Deep Discovery Director (Consolidated Mode)	All Deep Discovery Inspector appliances that will send detection logs for advanced analysis and correlation must be registered with the Deep Discovery Director (Consolidated Mode) appliance. Do this from the Deep Discovery Inspector console.
Added Deep Discovery Director (Consolidated Mode) as an appliance on Apex Central	Deep Discovery Director (Consolidated Mode) must be added as an appliance on Apex Central to receive endpoint analysis reports. Do this from the Apex Central console.
Internet-enabled computer	Used to access the Deep Discovery Director (Consolidated Mode) management console, which you will use to deploy the service.

Chapter 3

Dashboard

Learn about information that displays on the **Dashboard** screen in the following topics:

Dashboard Overview

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

Customize the Deep Discovery Director (Consolidated Mode) dashboard with available widgets to provide timely and accurate system status and threat information about your network.

Tabs

Tabs provide a container for widgets.

The dashboard supports up to 30 tabs. Each tab on the dashboard can contain up to 8 widgets.

Tab Tasks

Task	Steps
Add a tab	Click the plus icon at the top of the dashboard.
Rename a tab	1. Select the tab you wish to rename. 2. Click the menu icon beside the tab title and then select **Rename**. 3. Type a name with a maximum of 64 characters.
Move a tab	Drag a tab's title to change the tab's position.
Delete a tab	1. Select the tab you wish to delete. 2. Click the menu icon beside the tab title and then select **Delete**.

Widgets

Widgets are the core components of the dashboard. Widgets contain visual charts and graphs that allow you to track threats and associate them with the logs accumulated from one or several sources.

Widgets can be customized to provide a clear snapshot of network health and vulnerabilities.

Widget Tasks

Task	Steps
Add widgets to the dashboard	To add widgets to the dashboard, do any of the following: • Select the tab you wish to add widgets to, click the menu icon beside the tab title, and then select **Add Widgets**. • Select the tab you wish to add widgets to, click the gear icon in the top-right corner of the screen, and then select **Add Widgets**. • On newly created tabs, click **Add a widget.** The **Add Widgets** screen displays. For details, see *Adding Widgets to the Dashboard on page 3-4*.
Create a new widget	Create a new, customized widget to track and monitor information of interest to you. For details, see *Creating a Widget on page 3-5*.
Refresh a widget	Click the menu icon in the top-right corner of the widget, and then select the refresh icon. **Note** Widget views refresh automatically. Different widgets can have different refresh times.

Task	Steps
Edit a widget	Click the menu icon in the top-right corner of the widget, and then select the edit icon. The **Edit Widget** dialog displays. For more details, see *Editing a Widget on page 3-6*. **Note** Different types of widgets have different settings to configure.
Delete a widget	Click the menu icon in the top-right corner of the widget, and then select the delete icon. **Note** Widgets can also be deleted from the **Add Widgets** screen. Deleting a widget from the **Add Widgets** screen affects all instances that are already on the dashboard, and the deleted widgets cannot be restored.
Move a widget	Drag a widget's title change the widget's position.
Resize a widget	Drag the resize icon in the bottom-right corner of the widget to resize the widget.

Adding Widgets to the Dashboard

Procedure

1. Go to the **Dashboard** screen and do any of the following:

   - Select the tab you wish to add widgets to, click the menu icon beside the tab title, and then select **Add Widgets**.
   - Select the tab you wish to add widgets to, click the gear icon in the top-right corner of the screen, and then select **Add Widgets**.
   - On newly created tabs, click **Add a widget.**

   The **Add Widgets** screen displays.

2. To find a widget to add, do any of the following:
   - To reduce the number of widgets displayed, select a category from the drop-down list.
   - To search for a widget, type the widget name or partial widget name in the search text box at the top of the screen.

Tip

You can also create custom widgets to add to the dashboard. For details, see *Creating a Widget on page 3-5*.

3. Select the widgets to add to the dashboard. Each tab on the dashboard can contain up to 8 widgets.
4. Click **Add**.

   The selected widgets are added to the dashboard.

Creating a Widget

Procedure

1. Go to the **Dashboard** screen and select any tab.
2. Click the gear icon in the top-right corner of the screen, and then select **Create New Widget**.

   The **Create New Widget** screen displays.
3. Configure the following:
   a. Type a unique name for this widget.
   b. Select the filter to use for this widget. Only **Network Detections** and **Email Messages** saved searches can be selected.
   c. Type a description for this widget.

d. Select the chart type and configure the data to display.

Note

- Different chart types have different settings to configure.
- Regardless of the selected time period, example charts are generated using data from only the last 24 hours.

4. Click **Save**.

   The widget is created and added to the **Add Widgets** screen.

Editing a Widget

Procedure

1. Go to the **Dashboard** screen and select the tab that contains the widget you want to edit.
2. Click the menu icon in the top-right corner of the widget, and then select the edit icon.

   The **Edit Widget** dialog displays.
3. Configure the widget.

Note

- Different types of widgets have different settings to configure.
- No example charts are displayed in the dialog.

4. Click **OK**.

Deep Discovery Inspector Widgets

Deep Discovery Director (Consolidated Mode) includes the following Deep Discovery Inspector widgets:

TABLE 3-1. Deep Discovery Inspector Widgets

WIDGET	DESCRIPTION
Threats at a Glance	This widget displays actionable information about six key metrics and links to the corresponding detection logs.
Top Affected Hosts	This widget displays hosts with the highest severity rating by severity in the last 1 hour/24 hours/7 days/14 days/30 days/90 days.
Scanned Traffic by Protocol Type	This widget displays total traffic volume by protocol, in the last 1 hour/24 hours/7 days/14 days/30 days/90 days.
Threat Geographic Map - C&C Communications	This widget displays a graphical representation of the affected hosts with C&C communication detections on a virtual world map within the last 1 hour/24 hours/7 days/14 days/30 days/90 days.

Threats at a Glance

This widget displays actionable information about six key metrics and links to the corresponding detection logs.

TABLE 3-2. Threats at a Glance

METRIC	SOURCE	DESCRIPTION
Targeted attact detections	Affected Hosts	• Counts Affected Hosts • Associated with the **Targeted Attack detections** preset search Click a value to drill down to the **Affected Hosts** screen.

Metric	Source	Description
C&C communication detections	Affected Hosts	• Counts Affected Hosts • Associated with the **C&C Communication detections** preset search Click a value to drill down to the **Affected Hosts** screen.
Lateral movement detections	Affected Hosts	• Counts Affected Hosts • Associated with the **Lateral Movement detections** preset search Click a value to drill down to the **Affected Hosts** screen.
Ransomware	Network Detections	• Counts detections • Associated with the **Ransomware** preset search Click on a value to drill down to the **Network Detections** screen.
Potential threats	Network Detections	• Counts detections • Associated with the **Potential Threats** preset search Click on a value to drill down to the **Network Detections** screen.
Email threats	Network Detections	• Counts detections • Associated with the **Email Threats** preset search Click on a value to drill down to the **Network Detections** screen.

The default time period is **Last 24 hours**.

Click the menu icon in the top-right corner of the widget, and then select the edit icon to configure the widget.

Top Affected Hosts

This widget displays hosts with the highest severity rating by severity in the last 1 hour/24 hours/7 days/14 days/30 days/90 days.

The default time period is **Last 24 hours**.

Click the menu icon in the top-right corner of the widget, and then select the edit icon to configure the widget.

Scanned Traffic by Protocol Type

This widget displays total traffic volume by protocol, in the last 1 hour/24 hours/7 days/14 days/30 days/90 days.

The default time period is **Last 24 hours**.

Click the menu icon in the top-right corner of the widget, and then select the edit icon to configure the widget.

Threat Geographic Map - C&C Communications

This widget displays a graphical representation of the affected hosts with C&C communication detections on a virtual world map within the last 1 hour/24 hours/7 days/14 days/30 days/90 days.

The **Threat Geographic Map - C&C Communications** displays regions with affected hosts as a solid red circle.

The default time period is **Last 24 hours**.

Click the menu icon in the top-right corner of the widget, and then select the edit icon to configure the widget.

Network Top YARA Rule Detections

This widget displays the YARA rule files with the highest detection counts in network detections in the last 1 hour/24 hours/7 days/14 days/30 days/90 days.

The default time period is **Last 24 hours**.

Click the menu icon in the top-right corner of the widget, and then select the edit icon to configure the widget.

Deep Discovery Email Inspector Widgets

Deep Discovery Director (Consolidated Mode) includes the following Deep Discovery Email Inspector widgets:

TABLE 3-3. Deep Discovery Email Inspector Widgets

WIDGET	DESCRIPTION
Email Message Detection Summary	This widget displays the number of detections for different threat types.
Email Message Advanced Threat Indicators	This widget displays the type, amount, and risk level of advanced threat indicators detected in all email messages.
Email Message Attack Sources	This widget shows an interactive map representing all source MTAs that routed suspicious email traffic.

Email Message Detection Summary

This widget displays the number of detections for different 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 legent to hide or show the related data on the graph.

The default time period is **Last 24 hours**.

Click the menu icon in the top-right corner of the widget, and then select the edit icon to configure the widget.

Email Message Advanced Threat Indicators

This widget displays 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.

The default time period is **Last 24 hours**.

Click the menu icon in the top-right corner of the widget, and then select the edit icon to configure the widget.

Note

In the **Edit Widget** dialog, select **Unavailable** from the **Display data** drop-down list to display detections with **Unavailable** risk level.

Email Message Attack Sources

This 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: 203.0.113.1) > IP3 (company mail gateway) > IP4 (recipient), Deep Discovery Email Inspector identifies 203.0.113.1 (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.

The default time period is **Last 24 hours**.

Click the menu icon in the top-right corner of the widget, and then select the edit icon to configure the widget.

Email Message Top YARA Rule Detections

This widget displays the YARA rule files with the highest detection counts in email messages in the last 1 hour/24 hours/7 days/14 days/30 days/90 days.

The default time period is **Last 24 hours**.

Click the menu icon in the top-right corner of the widget, and then select the edit icon to configure the widget.

Chapter 4

Detections

Learn about information that displays on the **Detections** screen in the following topics:

About the Detections Screen

The **Detections** screens provide access to realtime information about the following detection categories.

TABLE 4-1. Detections

DETECTION CATEGORIES	DESCRIPTION
Affected Hosts	Hosts that have been involved in one or more phases of a targeted attack. For details, see *Affected Hosts on page 4-11*. For details about the Host Severity scale, see *Host Severity on page 4-3*.
Network Detections	Hosts with detections from all event logs, including global intelligence, user-defined lists, and other sources. For details, see *Network Detections on page 4-52*.
Email Messages	Email messages that contain malicious or suspicious content, embedded links, attachments, or social engineering attack related characteristics. For details, see *Email Messages on page 4-81*. For details about email message risk levels, see *Email Message Risk Levels on page 4-6*. For details about email message threat type classifications, see *Email Message Threat Type Classifications on page 4-8*.
Quarantined Messages	Email messages that have been quarantined because they meet certain policy criteria. For details, see *Quarantined Messages on page 4-96*. For details about quarantine reasons, see *Quarantine Reasons on page 4-101*.

Detection Categories	Description
Correlated Events	Events that show one or more attack patterns derived from the correlated data of multiple detections in your network. For details, see *Correlated Events on page 4-109*. **Note** Review and understand for which protocols Deep Discovery Director - Network Analytics provides correlation data, and why it might not display any correlation data. • *Protocols That Support Advanced Analysis Using Correlation Data on page 4-10* • *Reasons Why No Correlations Are Found on page 4-10*

Host Severity

In Deep Discovery Inspector, host severity is the impact on a host as determined from aggregated detections by Trend Micro products and services.

Investigating beyond event security, the host severity numerical scale exposes the most vulnerable hosts and allows you to prioritize and quickly respond.

Host severity is based on the aggregation and correlation of the severity of the events that affect a host. If several events affect a host and have no detected connection, the host severity will be based on the highest event severity of those events. However, if the events have a detected correlation, the host severity level will increase accordingly.

For example: Of five events affecting a host, the highest risk level is moderate. If the events have no correlation, the host severity level will be

based on the moderate risk level of that event. However, if the events are correlated, then the host severity level will increase based on the detected correlation.

The host severity scale consolidates threat information from multiple detection technologies and simplifies the interpretation of overall severity. You can prioritize your responses based on this information and your related threat response policies.

TABLE 4-2. Host Severity Scale

CATEGORY	LEVEL	DESCRIPTION
Critical Host exhibits behavior that **definitely** indicates host is compromised	10	Host shows evidence of compromise including but not limited to the following: • Data exfiltration • Multiple compromised hosts/servers
	9	Host exhibits an indication of compromise from APTs including but not limited to the following: • Connection to an IP address associated with a known APT • Access to a URL associated with a known APT • A downloaded file associated with a known APT • Evidence of lateral movement
	8	Host may exhibit the following: • A high severity network event • Connection to a C&C Server detected by Web Reputation Services • A downloaded file rated as high risk by Virtual Analyzer

Category	Level	Description
Major Host is targeted by a known malicious behavior or attack and exhibits behavior that **likely** indicates host is compromised	7	Host may exhibit the following: • Inbound malware downloads; no evidence of user infection • An inbound Exploit detection
	6	Host may exhibit the following: • Connection to a dangerous site detected by Web Reputation Services
	5	Host may exhibit the following: • A downloaded medium- or low-risk potentially malicious file with no evidence of user infection
	4	Host may exhibit the following: • A medium severity network event • A downloaded file rated as medium risk by Virtual Analyzer
Minor Host exhibits anomalous or suspicious behavior that may be benign or indicate a threat	3	Host may exhibit the following: • Repeated unsuccessful logon attempts or abnormal patterns of usage • A downloaded or propagated packed executable or suspicious file • Evidence of running IRC, TOR, or outbound tunneling software
	2	Host may exhibit the following: • A low severity network event • Evidence of receiving an email message that contains a dangerous URL • A downloaded file rated as low risk by Virtual Analyzer

Category	Level	Description
Trivial Host exhibits normal behavior that may be benign or indicate a threat in future identification of malicious activities	1	Host may exhibit the following: • An informational severity network event • Connection to a site rated as untested or to a new domain detected by Web Reputation Services • Evidence of a running disruptive application such as P2P

Email Message Risk Levels

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.

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 4-3. 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.

Email Message 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 4-4. 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
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

Protocols That Support Advanced Analysis Using Correlation Data

Deep Discovery Director - Network Analytics provides correlation data for the following protocols:

- HTTP
- HTTPS
- SSL
- FTP / FTP Data
- RDP
- SMB/SMB2
- KRB5
- SMTP

Reasons Why No Correlations Are Found

There are certain reasons why Deep Discovery Director - Network Analytics reports that no correlations are found, including the following:

- Invalid data received causing fatal error. Please try again.
- Invalid session. Please re-login to Deep Discovery Director and try again.
- Invalid parameters found while attempting to find correlations. Try again later after errors are resolved.
- Client errors were encountered while attempting to find correlations. Try again later after errors are resolved.
- Invalid response while attempting to find correlations. Try again later after errors are resolved.
- Internal errors were encountered while attempting to find correlations. Try again later after errors are resolved.

- No correlation provided because the selected incident originated from a client in the safe server list.
- No correlation provided because the protocol for the selected event is not supported.
- Currently, no correlation has been found for the selected incident. The system is still attempting to find correlations.
- No correlations have been found for the selected incident. No further attempts to find correlations will be made.
- No correlation provided because the selected event could not be found.
- No correlation provided because the selected suspicious object is in the domain exception list.
- Invalid data received causing fatal error. Please try again.
- No correlation graph rendered due to no data.

Affected Hosts

The **Affected Hosts** screens display information about hosts that have been involved in one or more phases of a targeted attack.

Investigating beyond event security, the host severity numerical scale exposes the most vulnerable hosts and allows you to prioritize and quickly respond. For details about the **Host Severity** scale, see *Host Severity on page 4-3*.

Access different information about **Affected Hosts** on the following views:

1. **Affected Hosts** view:
   - Displays a summary of affected hosts by attack phase
   - Provides access to **Host Details** views

     By default, Deep Discovery Director (Consolidated Mode) searches the **Affected Hosts** view by **IP Address** and **Host Name**.

2. **Host Details** view:
   - Displays host event details in chronological order
   - Provides access to **Detection Details** views
   - By default, Deep Discovery Director (Consolidated Mode) searches the **Affected Hosts - Host Details** view by **Peer Host**.
3. **Detection Details** view:
   - Displays details of each detected threat
   - Provides access to different information panels, depending on search and other filter criteria and settings

Display Options and Search Filters

To customize the display, apply the following display options and search filters:

TABLE 4-5. Display Options and Search Filters: Affected Hosts

FILTER OPTION	DESCRIPTION	
Detection severity	Filter options include the following detection severity settings:	
	High	Displays high severity detections
	Medium	Displays medium severity detections
	Low	Displays low severity detections
	Informational	Displays informational detections
	All detection severity levels	Displays all detections

Filter Option	Description
Period	**Last 24 hours**
	Last 7 days
	last 14 days
	Last 30 days
	Last 60 days
	Custom range
Data source	Select which appliances to include as data source.
Customize Columns	Customize the display by hiding or displaying columns.
Basic search	Search for an IP address or host name. **Note** Type a case-insensitive keyword in the basic search field to search a partial host match.

Saved Searches	Search by saved search criteria.
	• The **Affected Hosts** view includes the following built-in saved searches:
	  • **Targeted Attack detections**
	  • **C&C Communication detections**
	  • **Lateral Movement detections**
	• The **Host Details** view includes the following preset searches:
	  • **Threats**
	  • **Known Threats**
	  • **Potential Threats**
	  • **Ransomware**
	  • **YARA Rule Detections**

Filter Option	Description
Advanced Search	Search by user-defined criteria sets. Each set includes one or more of the following: • Attributes • Operators • Associated values For details, see *Affected Hosts Advanced Search Filter on page 4-36*.

Viewing Affected Hosts

Procedure

1. Go to **Detections** > **Affected Hosts**.

   The **Affected Hosts** screen appears.

2. Select the detection severity level by using the drop-down control.

3. Select a time period.

4. Select which appliances to include as data source.

5. (Optional) Click the **More** icon beside **Advanced**, select **Customize columns**, select the columns to hide or display, and then click **Apply** to return to the modified **Affected Hosts** screen.

   Table 4-6. Host Information Columns

Column Name	Preselected	Description
IP Address	X	IP address of the affected host
Host Name	X	Computer name of the host

Column Name	Preselected	Description
MAC Address		Media Access Control address of a network node
Network Group	X	Network group that an IP address/host is assigned
Host Severity	X	Highest impact on a host determined from aggregated detections by Trend Micro products and services For details about the **Host Severity**scale, see *Host Severity on page 4-3*.
Most Notable Threat	X	Threat description of the highest severity detection
Latest Detection	X	Most recent detection, based on timestamp

Note

The default **IP Address**, **Host Severity** and **Latest Detection** columns cannot be removed.

Table 4-7. Notable Statistics Columns

Column Name	Preselected	Description
Targeted Attack		A threat that aims to exfiltrate data from a target system For details, see *APT Attack Sequence on page 4-17*.

TABLE 4-8. Attack Phase Columns

COLUMN NAME	PRESELECTED	DESCRIPTION
Intelligence Gathering	X	Attackers identify and research target individuals using public sources (for example, social media websites) and prepare a customized attack.
Point of Entry	X	The initial compromise is typically from zero-day malware delivered via social engineering (email, IM, or drive-by download). A backdoor is created and the network can now be infiltrated. Alternatively, a website exploitation or direct network hack may be employed.
C&C Communication	X	C&C communication is typically used throughout the attack, allowing the attacker to instruct and control the malware used, and to exploit compromised machines, move laterally within the network, and exfiltrate data.
Lateral Movement	X	Once inside the network, an attacker compromises additional machines to harvest credentials, escalate privilege levels, and maintain persistent control.
Asset/Data Discovery	X	Several techniques (such as port scanning) are used to identify the noteworthy servers and the services that house the data of interest.
Data Exfiltration	X	Once sensitive information is gathered, the data is funneled to an internal staging server where it is chunked, compressed, and often encrypted for transmission to external locations under an attacker's control.
Unknown Attack Phase	X	Detection is triggered by a rule that is not associated with an attack phase.

6. To run a basic search, type an IP address or host name in the search text box, and then press ENTER or click the magnifying glass icon.

   By default, Deep Discovery Director (Consolidated Mode) searches **Affected Hosts** by **IP Address** and **Host Name**.

7. To run a saved search, click the **Saved Searches** icon, and then select a saved search.

   Deep Discovery Director (Consolidated Mode) provides the following built-in saved searches:

   TABLE 4-9. Built-in Saved Searches

NAME	FILTER OPTIONS
Targeted Attack detections	Notable events in targeted attack
C&C Communication detections	Notable events in C&C communication
Lateral Movement detections	Notable events in lateral movement

8. To create and apply an advanced search filter, click **Advanced**.

   For details, see *Affected Hosts Advanced Search Filter on page 4-36*.

9. (Optional) Click the **More** icon beside **Advanced**, select **Export**, select a delimiter to use, and then click **OK** to export and download the currently filtered list of affected hosts to a CSV file with the chosen delimiter.

APT Attack Sequence

Targeted attacks and advanced persistent threats (APTs) are organized, focused efforts that are custom-created to penetrate enterprises and government agencies for access to internal systems, data, and other assets. Each attack is customized to its target, but follows a consistent life cycle to infiltrate and operate inside an organization.

In targeted attacks, the APT life cycle follows a continuous process of six key phases.

TABLE 4-10. APT Attack Sequence

PHASE	DESCRIPTION
Intelligence Gathering	Identify and research target individuals using public sources (for example, social media websites) and prepare a customized attack
Point of Entry	An initial compromise typically from zero-day malware delivered via social engineering (email/IM or drive-by download) A backdoor is created and the network can now be infiltrated. Alternatively, a website exploitation or direct network hack may be employed.
Command & Control (C&C) Communication	Communications used throughout an attack to instruct and control the malware used C&C communication allows the attacker to exploit compromised machines, move laterally within the network, and exfiltrate data.
Lateral Movement	An attack that compromises additional machines Once inside the network, an attacker can harvest credentials, escalate privilege levels, and maintain persistent control beyond the initial target.
Asset/Data Discovery	Several techniques (for example, port scanning) used to identify noteworthy servers and services that house data of interest
Data Exfiltration	Unauthorized data transmission to external locations Once sensitive information is gathered, the data is funneled to an internal staging server where it is chunked, compressed, and often encrypted for transmission to external locations under an attacker's control.

Deep Discovery Inspector is purpose-built for detecting APT and targeted attacks. It identifies malicious content, communications, and behavior that may indicate advanced malware or attacker activity across every stage of the attack sequence.

Viewing Affected Hosts - Host Details

Procedure

1. Go to **Detections** > **Affected Hosts** and click any detection link.

   Details about the host are displayed.

2. Select the detection severity level by using the drop-down control.

3. Select a time period.

4. Select which appliances to include as data source.

5. (Optional) Click the **More** icon beside **Advanced**, select **Customize columns**, select the columns to hide or display, and then click **Apply** to return to the modified **Host Details** screen.

TABLE 4-11. General Columns

COLUMN NAME	PRESELECTED
Timestamp	X
Details	X
Data Source	X
Source Host	
Destination Host	
Interested Host	
Interested Network Group	
Peer Host	X
Peer Network Group	
Peer IP Country/Region	
User Account	

Note

The default **Timestamp**, **Details**, and **Threat Description** columns cannot be removed.

TABLE 4-12. Email Columns

COLUMN NAME	PRESELECTED
Sender	
Recipients	
Email Subject	

TABLE 4-13. Detection Information Columns

COLUMN NAME	PRESELECTED
Threat Description	X
Detection Name	X
Threat (Virtual Analyzer)	
Reference	
Detection Type	
Protocol	X
Transport Layer Security (TLS)	
Detection Severity	X
Attack Phase	X
Tactics	X
URL Category	
Direction	X
Notable Object	X
YARA Rule File Name	

6. To run a basic search, type an IP address or host name in the search text box, and then press ENTER or click the magnifying glass icon.

   By default, Deep Discovery Director (Consolidated Mode) searches **Affected Hosts** - **Host Details** by **Peer Host**.

7. To run a saved search, click the **Saved Searches** icon, and then select a saved search.

   Deep Discovery Director (Consolidated Mode) provides the following built-in saved searches:

TABLE 4-14. Built-in Saved Searches

NAME	FILTER OPTIONS
Threats	Detection type options include the following: • Malicious Content • Malicious Behavior • Suspicious Behavior • Exploit • Grayware • Malicious URL
Known Threats	File Detection Types: Known Malware

Potential Threats	• Virtual Analyzer Result: Has analysis results
	• File Detection type options include the following:
	  • Highly Suspicious File
	  • Heuristic Detection

Ransomware	Detection name options include the following: • Ransomware-related detections
YARA Rule Detections	YARA Rule File Name: Has YARA rule file name

8. To create and apply an advanced search filter, click **Advanced**.

For details, see *About Affected Hosts - Host Details Advanced Search Filter on page 4-41*.

9. Click **Export** to export the currently filtered list of host details.

   The **Export** dialog appears.

10. Confirm the filters and select a delimiter to use.

11. Click **OK** to export and download the currently filtered list of host details to a CSV file with the chosen delimiter.

Viewing Affected Hosts - Detection Details

Procedure

1. To view **Affected Hosts** detection details for any event, click the icon under the **Details** column on the **Affected Hosts - Host Details** screen.

   Detection details about the event are displayed.

2. In the **Connection Details** section, you may do the following:

   - Click **View in Threat Connect** to connect with **Threat Connect**, where you can search for current information about the threat.
   - Click **Download** and then select **Detected File** to download a password protected ZIP archive containing the detected file.
   - If a packet capture has been enabled and the detection matched a packet capture rule, click **Download** and then select **PCAP File** to download a password protected ZIP archive containing the pcap file.

     In the pcap file, the comment "Detected Packet" in the "pkt_comment" field marks the packet that triggered the detection.
   - Click **Download** and then select **All** to download a password protected ZIP archive containing the detected file, the packet capture file, and the connection details.

Important

Suspicious files must always be handled with caution. Extract the detected file and pcap file at your own risk.

The password for the zip archive is "virus".

3. In the **File Analysis Result** section, you may do the following:

   - Click **View Virtual Analyzer Report** to view the Virtual Analyzer report.
   - Click **Download** and then select **Virtual Analyzer Report** to download the Virtual Analyzer report.
   - Click **Download** and then select **Investigation Package** to download a password protected ZIP archive containing the investigation package.
   - Click **Download** and then select **Detected File** to download a password protected ZIP archive containing the detected file.
   - Click **Download** and then select **All** to download a password protected ZIP archive containing the detected file, the Virtual Analyzer report, and the investigation package.

Important

Suspicious files must always be handled with caution. Extract the detected file at your own risk.

The password for the zip archive is "virus".

4. In the **Suspicious Object and Related File Analysis Result** section, view suspicious object and related analyzed file information.

Affected Hosts - Detection Details

Deep Discovery Inspector logs the details of each threat it detects. The **Detection Details** screen may contain the following information, depending on search and other filter criteria and settings.

Affected Hosts - Detection Details - Connection Details

The **Connection Details** section of the **Affected Hosts - Detection Details** screen can contain the following information:

- *Affected Hosts - Detection Details - Detection Information on page 4-25*
- *Affected Hosts - Detection Details - Connection Summary on page 4-27*
- *Affected Hosts - Detection Details - Protocol Information on page 4-28*
- *Affected Hosts - Detection Details - File Information on page 4-29*
- *Affected Hosts - Detection Details - Additional Information on page 4-30*

Click **View in Threat Connect** to connect with Threat Connect, where you can search for current information about the threat.

Click **Download** and then select **Detected File** to download a password protected ZIP archive containing the detected file.

If a packet capture has been enabled and the detection matched a packet capture rule, click **Download** and then select **PCAP File** to download a password protected ZIP archive containing the pcap file. In the pcap file, the comment "Detected Packet" in the "pkt_comment" field marks the packet that triggered the detection.

Click **Download** and then select **All** to download a password protected ZIP archive containing the detected file and the packet capture file.

Important

- Suspicious files and pcap files must always be handled with caution. Extract the detected file and pcap file at your own risk. Trend Micro recommends analyzing the files in an isolated environment.
- The password for the zip archive is "virus".

Affected Hosts - Detection Details - Detection Information

Information provided in the **Detection Information** section may include the following:

- Activity detected
- Attack phase
- Correlation Rule ID (ICID)
- Detection name
- Detection rule ID

Tip

Click the detection rule number to view more details about the rule in the Threat Encyclopedia.

- Detection severity
- Detection type
- Event class
- MITRE ATT&CK™ Framework
  - Tactics
  - Techniques

Tip

Click the tactic or technique to view more details on the MITRE website.

Important

MITRE information displayed on Deep Discovery Director (Consolidated Mode) is based on ATT&CK™ v6. The information may be different when displayed on products that use a different version of ATT&CK™.

- Notable Object
- Protocol
- Reference
- Targeted attack campaign
- Targeted attack related
- Threat
- Threat description
- Timestamp
- URL category
- Virtual Analyzer risk level

Note

Additional information may appear for specific correlated incidents.

TABLE 4-15. Detection Types

DETECTION TYPES	DESCRIPTION
Correlated Incident	Events/detections that occur in a sequence or reach a threshold and define a pattern of activity

Detection Types	Description
Disruptive Application	Any peer-to-peer, instant messaging, or streaming media applications considered to be disruptive because they may do the following: • Affect network performance • Create security risks • Distract employees
Exploit	Network and file-based attempts to access information
Grayware	Adware/grayware detections of all types and confidence levels
Malicious Behavior	Behavior that definitely indicates compromise with no further correlation needed, including the following: • Positively-identified malware communications • Known malicious destination contacted • Malicious behavioral patterns and strings
Malicious Content	File signature detections
Malicious URL	Websites that try to perform malicious activities
Suspicious Behavior	Behavior that could indicate compromise but requires further correlation to confirm, including the following: • Anomalous behavior • False or misleading data • Suspicious and malicious behavioral patterns and strings

Affected Hosts - Detection Details - Connection Summary

Information provided in the **Connection Summary** section may include the following:

- A graphical display that includes the direction of the event and other information. The **Client** in the diagram is the host that initiated the connection.
- Host details may include the following:

- Host name
- IP address and port
- Last logon user
- MAC address
- Network group
- Network zone
- Operating system

Affected Hosts - Detection Details - Protocol Information

Information provided in the **Protocol Information** section may include the following:

- BOT command
- BOT URL
- Certificate Information
  - Issued To
    - Common name
    - Organization
    - Organizational unit
  - Issued By
    - Common name
    - Organization
    - Organizational unit
- Domain name
- Host name

- HTTP referer
- ICMP code
- ICMP type
- IRC channel name
- IRC nick name
- Message ID
- Protocol
- Queried domain
- Recipients
- Sender
- SNI host name
- Subject
- Target share
- Transport Layer Security (TLS)
- URL
- User agent
- User name

Affected Hosts - Detection Details - File Information

Information provided in the **File Information** section may include the following:

- File name
- File SHA-1
- File SHA-256

- File size

Affected Hosts - Detection Details - Additional Information

Information provided in the **Additional Information** section may include the following:

- Attempted to disrupt connection
- Detected by
- Mitigation
- Fingerprinting
  - JA3 hash value
  - JA3S hash value
- VLAN ID

Affected Hosts - Detection Details - File Analysis Result

The **File Analysis Result** section of the **Affected Hosts - Detection Details** screen contains the following information:

- *Affected Hosts - Detection Details - File Analysis Result - File Information on page 4-31*
- *Affected Hosts - Detection Details - File Analysis Result - YARA Detections on page 4-32*
- *Affected Hosts - Detection Details - File Analysis Result - Notable Characteristics on page 4-33*

Click **View Virtual Analyzer Report** to view the Virtual Analyzer report.

Click **Download** and then select **Virtual Analyzer Report** to download the Virtual Analyzer report.

Tip

Viewing or downloading the Virtual Analyzer report may take longer than the other options. Allocate more time for the Virtual Analyzer report to appear or download.

Click **Download** and then select **Investigation Package** to download a password protected ZIP archive containing the investigation package.

Important

Suspicious files must always be handled with caution. Extract the detected file at your own risk.

The password for the zip archive is "virus".

Click **Download** and then select **Detected File** to download a password protected ZIP archive containing the detected file.

Click **Download** and then select **All** to download a password protected ZIP archive containing the detected file, the Virtual Analyzer report, and the investigation package.

Affected Hosts - Detection Details - File Analysis Result - File Information

Information provided in the **File Analysis Result** - **File Information** section of the **Detection Details** window may include the following:

- Child files
  - File name / URL
  - File size (bytes)
  - Type
  - File SHA-1
  - File SHA-256
- File name

- File size
- File type
- File MD5
- File SHA-1
- File SHA-256
- MITRE ATT&CK™ Framework
  - Tactics
  - Techniques

Tip

Click the tactic or technique to view more details on the MITRE website.

Important

MITRE information displayed on Deep Discovery Director (Consolidated Mode) is based on ATT&CK™ v6. The information may be different when displayed on products that use a different version of ATT&CK™.

- Threat
- Virtual Analyzer risk level

Affected Hosts - Detection Details - File Analysis Result - YARA Detections

Information provided in the **File Analysis Result** - **YARA Detections** section of the Detection Details window may include the following:

- YARA Rule File
- YARA Rules

Affected Hosts - Detection Details - File Analysis Result - Notable Characteristics

Information provided in the **File Analysis Result** - **Notable Characteristics** section of the **Detection Details** window may include characteristics that are commonly associated with malware. Characteristics are grouped into the following categories:

- Anti-security, self-preservation
- Autostart or other system reconfiguration
- Deception, social engineering
- File drop, download, sharing, or replication
- Hijack, redirection, or data theft
- Malformation or other known malware traits
- Process, service, or memory object change
- Rootkit, cloaking
- Suspicious network or messaging activity
- Other notable characteristic

Affected Hosts - Detection Details - Suspicious Object and Related File Analysis Result

The **Suspicious Object and Related File Analysis Result** section of the **Affected Hosts - Detection Details** screen contains the following information:

Affected Hosts - Detection Details - Suspicious Object Information

Information provided in the **Suspicious Object Information** section may include the following:

- Related analyzed file
- Suspicious object

- Type
- Virtual Analyzer risk level

Affected Hosts - Detection Details - Related Analyzed File Information

Information provided in the **Related Analyzed File Information** section of the **Detection Details** window may include the following:

- Child files
  - File name
  - File size (bytes)
  - File type
  - File SHA-1
- File name
- File size
- File type
- File MD5
- File SHA-1
- File SHA-256
- MITRE ATT&CK™ Framework
  - Tactics
  - Techniques

Tip

Click the tactic or technique to view more details on the MITRE website.

Important

MITRE information displayed on Deep Discovery Director (Consolidated Mode) is based on ATT&CK™ v6. The information may be different when displayed on products that use a different version of ATT&CK™.

- Threat
- Virtual Analyzer risk level

YARA Detections

- YARA Rule File
- YARA Rules

Notable characteristics that are commonly associated with malware. Characteristics are grouped into the following categories:

- Anti-security, self-preservation
- Autostart or other system reconfiguration
- Deception, social engineering
- File drop, download, sharing, or replication
- Hijack, redirection, or data theft
- Malformation or other known malware traits
- Process, service, or memory object change
- Rootkit, cloaking
- Suspicious network or messaging activity
- Other notable characteristic

Affected Hosts Advanced Search Filter

Use the advanced search filter to create and apply customized searches on detections displayed on the following screens:

- **Affected Hosts**

  For details, see *About Affected Hosts Advanced Search Filter on page 4-36*.

- **Affected Hosts - Host Details**

  For details, see *About Affected Hosts - Host Details Advanced Search Filter on page 4-41*.

About Affected Hosts Advanced Search Filter

To view specific data, select from the following optional attributes and operators and type an associated value.

TABLE 4-16. Search Filter Criteria: Affected Hosts

ATTRIBUTE	OPERATOR	ACTION
Host Name	**Contains/Does not contain/Starts with/Equals**	Type a value
IP Address	**Contains/Does not contain/Equals**	Type a value
	In range/Not in range	Type a range
MAC Address	**In/Not in**	Type a value
Network Group	**Contains/Does not contain/Equals**	Type a value
Notable Events	**In**	Select one or more of the following: • **Targeted Attack** • **C&C Communication** • **Lateral Movement**

For details, see the following:

Adding an Affected Hosts Advanced Search Filter

Procedure

1. To create an **Affected Hosts** advanced search filter, go to **Detections** > **Affected Hosts**, and then click **Advanced**.
2. Select an attribute and an associated operator.
3. Do one of the following to provide an action:
   - Type a value in the text box.
   - Select a value from the drop-down list.

Tip

Type a keyword to search a partial match.

For details, see *About Affected Hosts Advanced Search Filter on page 4-36*.

Note

You can add multiple criteria entries by pressing ENTER after typing a value.

4. (Optional) Click **AND** or **OR** to include other criteria sets in the search filter.
5. Click **Apply**.

   The **Affected Hosts** screen updates and displays data filtered by the search criteria. All search criteria sets are displayed in a summary.
6. To save the search, do the following:
   a. Click the **Save** icon and select **Save as**.

      The **Save As** dialog appears.

   b. Type a name and an optional description, and then click **Save**.

The name of the new saved search is added to the list of saved searches.

Note

A saved search includes any search filter you create and the current customized column settings.

7. (Optional) Click the right-arrow icon beside the saved searches drop-down list to close the advanced search feature.

Editing an Affected Hosts Saved Search

Procedure

1. To edit an **Affected Hosts** saved search, go to **Detections** > **Affected Hosts**, and then click the **Saved Searches** icon.
2. Select a saved search to edit.
3. To edit the saved search, do one of the following:
   - Click the edit icon on the right side of the screen.
   - Click **Advanced**
4. Select an attribute and an associated operator.
5. Do one of the following to provide an action:
   - Type a value in the text box.
   - Select a value from the drop-down list.

Tip

Type a keyword to search a partial match.

For details, see *About Affected Hosts Advanced Search Filter on page 4-36*.

Note

You can add multiple criteria entries by pressing ENTER after typing a value.

6. (Optional) Click **AND** or **OR** to include other criteria sets in the search filter.
7. Click **Apply**.

   The **Affected Hosts** screen updates and displays data filtered by the search criteria. All search criteria sets are displayed in a summary.
8. To save the edited saved search, click the **Save** icon and do one of the following:
   - To save the edited saved search with the same name, select **Save**.
   - To save the edited saved search with a new name, select **Save as** and do the following:

   a. In the **Save as** dialog that appears, type a name and an optional description, and then click **Save**.

      The name of the new saved search is added to the list of saved searches.

      Note

      A saved search includes any search filter you create and the current customized column settings.
9. (Optional) Click the right-arrow icon beside the saved searches drop-down list to close the advanced search feature.

Deleting an Affected Hosts Saved Searches

Procedure

1. To delete a **Affected Hosts** saved search, go to **Detections** > **Affected Hosts** and click the **Saved Searches** icon.

2. Click the delete icon beside the saved search to be deleted.

Note

Built-in filters cannot be deleted.

Importing Affected Hosts Saved Searches

Procedure

1. To import one or more **Affected Hosts** saved searches, go to **Detections** > **Affected Hosts**, and then click the **Saved searches** icon.
2. Click **Import** at the top of the **Saved searches** drop-down menu.

   The **Import To Saved Searches** dialog appears.
3. Click **Select** to locate the file containing the saved searches.

   The file is uploaded and validated.
4. Click **Import**.

Note

Importing overwrites existing saved searches with the same names.

The imported saved searches appear in the **Saved searches** drop-down menu.

Exporting Affected Hosts Saved Searches

Procedure

1. To export one or more **Affected Hosts** saved searches, go to **Detections** > **Affected Hosts**, and then click the **Saved searches** icon.

2. Click **Export** at the top of the **Saved searches** drop-down menu.

   The **Export Saved Searches** dialog appears.

3. Select each saved search that you want to export or select the check box at the top of the column to export all saved searches. By default, all saved searches are selected for export.

   Note

   Built-in filters cannot be exported.

4. Click **Export**.

   The saved searches file download begins.

About Affected Hosts - Host Details Advanced Search Filter

To view specific data, select from the following optional attributes and operators and type an associated value.

TABLE 4-17. Search Filter Criteria: Affected Hosts - Host Details

ATTRIBUTE	OPERATOR	ACTION
Peer Host	**Contains/Does not contain/Starts with/Equals**	Type a value
Peer IP Address	**Contains/Does not contain/Equals**	Type a value
	In range/Not in range	Type a range
Peer MAC Address	**In/Not in**	Type a value
Peer Network Group	**Contains/Does not contain/Equals**	Type a value
Peer IP Country/Region	**In/Not in**	Select one or more peer IP countries

Attribute	Operator	Action
User Account	**Has user account/No user account**	
	Contains/Does not contain	Type a value
Protocol	**In/Not in**	Select one or more protocols
Transport Layer Security (TLS)	**Equals**	Select one of the following: • **Over SSL/TLS** • **Not over SSL/TLS**
Direction	**Equals**	Select one of the following: • **Internal** • **External**
Threat/ Detection/ Reference	**Contains/Does not contain/Starts with/Equals**	Type a value
Detection Rule ID	**In/Not in**	Type a value
YARA Rule File Name	**Has YARA rule file name/No YARA rule file name**	
	Contains/Does not contain/Equals	Type a value
Correlation Rule ID (ICID)	**In/Not in**	Type a value

Attribute	Operator	Action
Detection Type	**In/Not in**	Select one or more of the following: • **Malicious Content** • **Malicious Behavior** • **Suspicious Behavior** • **Exploit** • **Grayware** • **Malicious URL** • **Disruptive Application** • **Correlated Incident**
Attack Phase	**In/Not in**	Select one or more of the following: • **Intelligence Gathering** • **Point of Entry** • **C&C Communication** • **Lateral Movement** • **Asset/Data Discovery** • **Data Exfiltration** • **Unknown Attack Phase**

Attribute	Operator	Action
Tactics	**Has tactics/No tactics**	
	In/Not in	Select one or more of the following: • **Initial Access** • **Execution** • **Persistence** • **Privilege Escalation** • **Defense Evasion** • **Credential Access** • **Discovery** • **Lateral Movement** • **Collection** • **Exfiltration** • **Command and Control** • **Impact**

Attribute	Operator	Action
URL Category	**In/Not in**	Select one or more URL categories: • **Adware** • **C&C Server** • **Disease Vector** • **Coin Miners** • **Illegal or Prohibited Content** • **Malicious Domain** • **Malware Accomplice** • **Phishing** • **Proxy Avoidance and Anonymizers** • **Ransomware** • **Scam** • **Spyware**
C&C List Source	**In/Not in**	Select one or more of the following: • **Global Intelligence** • **Virtual Analyzer** • **User-defined** • **Relevance Rule**
C&C Callback Address	**Contains/Does not contain/Equals**	Type a value
C&C Risk Level	**In/Not in**	Select one or more of the following: • **Low** • **Medium** • **High**

Attribute	Operator	Action
Virtual Analyzer Result	**Has analysis results/No analysis results**	
PCAP File	**Has PCAP file/No PCAP file**	
Is Targeted Attack Related	**Equals**	Select one of the following: • **Yes** • **No**
File Detection Type	**In**	Select one or more of the following: • **Highly Suspicious File** • **Heuristic Detection** • **Known Malware**
File Path/File Name	**Has file name/No file name**	
	Contains/Does not contain/Equals	Type a value
File SHA-1	**Has file SHA-1/No file SHA-1/**	
	Contains/Does not contain	Type a value
File SHA-256	**Has file SHA-256/No file SHA-256**	
	Contains/Does not contain	Type a value
Domain/URL	**Has network object/No network object**	
	Contains/Does not contain/Equals	Type a value
Suspicious Object/Deny List Entity/ User-Defined SO	**Contains/Does not contain/Stars with/Equals**	Type a value
Sender (Email)	**Has sender/No sender**	
	Contains/Does not contain/Equals	Type a value

Attribute	Operator	Action
Recipient (Email)	**Has recipient/No recipient**	
	Contains/Does not contain/Equals	Type a value
Message ID (Email)	**Has message ID/No message ID**	
	Contains/Does not contain	Type a value
Subject (Email)	**Has subject/No subject**	
	Contains/Does not contain	Type a value

For details, see the following:

Adding an Affected Hosts - Host Details Advanced Search Filter

Procedure

1. Go to **Detections** > **Affected Hosts**.
2. To display **Affected Hosts - Host Details**, do one of the following:
   - Click any detection link associated with an affected host.
   - Click the IP address of an affected host.

   Details about the host are displayed.
3. Click **Advanced**.
4. Select an attribute and an associated operator.
5. Do one of the following to provide an action:
   - Type a value in the text box.
   - Select a value from the drop-down list.

Tip

Type a keyword to search a partial match.

For details, see *About Affected Hosts - Host Details Advanced Search Filter on page 4-41*.

Note

You can add multiple criteria entries by pressing ENTER after typing a value.

6. (Optional) Click **AND** or **OR** to include other criteria sets in the search filter.

7. Click **Apply**.

   The **Affected Hosts - Host Details** screen updates and displays data filtered by the search criteria. All search criteria sets are displayed in a summary.

8. To save the search, do the following:

   a. Click the **Save** icon and select **Save as**.

      The **Save As** dialog appears.

   b. Type a name and an optional description, and then click **Save**.

      The name of the new saved search is added to the list of saved searches.

      Note

      A saved search includes any search filter you create and the current customized column settings.

9. (Optional) Click the right-arrow icon beside the saved searches drop-down list to close the advanced search feature.

Editing an Affected Hosts - Host Details Saved Search

Procedure

1. Go to **Detections** > **Affected Hosts**.
2. To display **Affected Hosts - Host Details**, do one of the following:
   - Click any detection link associated with an affected host.
   - Click the IP address of an affected host.

   Details about the host are displayed.
3. Click the **Saved Searches** icon.
4. Select a saved search to edit.
5. To edit the saved search, do one of the following:
   - Click the edit icon on the right side of the screen.
   - Click **Advanced**
6. Select an attribute and an associated operator.
7. Do one of the following to provide an action:
   - Type a value in the text box.
   - Select a value from the drop-down list.

Tip

Type a keyword to search a partial match.

For details, see *About Affected Hosts - Host Details Advanced Search Filter on page 4-41*.

Note

You can add multiple criteria entries by pressing ENTER after typing a value.

8. (Optional) Click **AND** or **OR** to include other criteria sets in the search filter.

9. Click **Apply**.

   The **Affected Hosts - Host Details** screen updates and displays data filtered by the search criteria. All search criteria sets are displayed in a summary.

10. To save the edited saved search, click the **Save** icon and do one of the following:

    - To save the edited saved search with the same name, select **Save**.
    - To save the edited saved search with a new name, select **Save as** and do the following:

    a. In the **Save as** dialog that appears, type a name and an optional description, and then click **Save**.

       The name of the new saved search is added to the list of saved searches.

       Note

       A saved search includes any search filter you create and the current customized column settings.

11. (Optional) Click the right-arrow icon beside the saved searches drop-down list to close the advanced search feature.

Deleting an Affected Hosts - Host Details Saved Search

Procedure

1. Go to **Detections** > **Affected Hosts**.
2. To display **Affected Hosts - Host Details**, do one of the following:
   - Click any detection link associated with an affected host.

- Click the IP address of an affected host.

Details about the host are displayed.

3. Click the **Saved Searches** icon.
4. Click the delete icon beside the saved search to be deleted.

Note

Built-in filters cannot be deleted.

Importing Affected Hosts - Host Details Saved Searches

Procedure

1. Go to **Detections** > **Affected Hosts** and click any detection link.
2. Click the **Saved Searches** icon.
3. Click **Import**.

   The **Import To Saved Searches** dialog appears.
4. Click **Select** to locate the file containing the saved searches.

   The file is uploaded and validated.
5. Click **Import**.

Note

- Only saved searches that were created on the Deep Discovery Director (Consolidated Mode) **Affected Hosts - Host Details** screen can be imported.
- Importing overwrites existing saved searches with the same names.

The imported saved searches appear in the **Saved searches** drop-down menu.

Exporting Affected Hosts - Host Details Saved Searches

Procedure

1. Go to **Detections** > **Affected Hosts** and click any detection link.
2. Click the **Saved Searches** icon.
3. Click **Export**.

   The **Export Saved Searches** dialog appears.
4. Select each saved search that you want to export or select the check box at the top of the column to export all saved searches. By default, all saved searches are selected for export.

   Note

   Built-in filters cannot be exported.
5. Click **Export**.

   The saved searches file download begins.

Network Detections

The **Network Detections** screen displays a list of hosts that have experienced an event in a user-defined time period. Detections are displayed from global intelligence, user-defined lists, and other sources.

By default, Deep Discovery Director (Consolidated Mode) searches **Network Detections** by **Source Host**, **Destination Host** and **Interested Host**.

Display Options and Search Filters

To customize the display, apply the following display options and search filters:

TABLE 4-18. Display Options and Search Filters: Network Detections

FILTER OPTION	DESCRIPTION	
Detection severity	Filter options include the following detection severity settings:	
	High	Displays high severity detections
	Medium	Displays medium severity detections
	Low	Displays low severity detections
	Informational	Displays informational detections
	All detection severity levels	Displays all detections
Period	**Last 24 hours**	
	Last 7 days	
	last 14 days	
	Last 30 days	
	Last 60 days	
	Custom range	
Data source	Select which appliances to include as data source.	
Customize Columns	Customize the display by hiding or displaying columns.	

Filter Option	Description
Basic search	Search for an IP address or host name. **Note** Type a case-insensitive keyword in the basic search field to search a partial host match.
Saved Searches	Search by saved search criteria. The **Network Detections** view includes the following preset searches: • **Threats** • **Known Threats** • **Potential Threats** • **Email Threats** • **Ransomware** • **YARA Rule Detections**
Advanced Search	Search by user-defined criteria sets. Each set includes one or more of the following: • Attributes • Operators • Associated values For details, see *Network Detections Advanced Search Filter on page 4-72*.

Viewing Network Detections

Procedure

1. Go to **Detections** > **Network Detections**.

2. Select the detection severity level by using the drop-down control.
3. Select a time period.
4. Select which appliances to include as data source.
5. (Optional) Click the **More** icon beside **Advanced**, select **Customize columns**, select the columns to hide or display, and then click **Apply** to return to the modified **Network Detections** screen.

TABLE 4-19. General Columns

COLUMN NAME	PRESELECTED
Timestamp	X
Data Source	X
Details	X
Source Host	X
Destination Host	X
Interested Host	X
Interested Network Group	
Peer Host	
Peer Network Group	
Peer IP Country/Region	
User Account	

Note

The default **Timestamp** and **Details** columns cannot be removed.

TABLE 4-20. Email Columns

COLUMN NAME	PRESELECTED
Sender	
Recipients	
Email Subject	

TABLE 4-21. Detection Information Columns

COLUMN NAME	PRESELECTED
Threat Description	X
Detection Name	X
Threat (Virtual Analyzer)	
Reference	
Detection Type	
Protocol	X
Transport Layer Security (TLS)	
Detection Severity	X
Attack Phase	X
Tactics	X
URL Category	
Direction	
Notable Object	X
YARA Rule File Name	

Note

The default **Threat Description** column cannot be removed.

6. To run a basic search, type an IP address or host name in the search text box, and then press ENTER or click the magnifying glass icon.

   By default, Deep Discovery Director (Consolidated Mode) searches **Network Detections** by **Source Host**, **Destination Host**, and **Interested Host**.

7. To run a saved search, click the **Saved Searches** icon, and then select a saved search.

   Deep Discovery Director (Consolidated Mode) provides the following built-in saved searches:

TABLE 4-22. Built-in Saved Searches

NAME	FILTER OPTIONS
Threats	Detection type options include the following: • Malicious Content • Malicious Behavior • Suspicious Behavior • Exploit • Grayware • Malicious URL
Known Threats	File Detection Types: Known Malware

Potential Threats	• Virtual Analyzer Result: Has analysis results
	• File Detection type options include the following:
	  • Highly Suspicious File
	  • Heuristic Detection

NAME	FILTER OPTIONS
Email Threats	Protocol options include the following: • IMAP4 • POP3 • SMTP
Ransomware	Detection name options include the following: • Ransomware-related detections
YARA Rule Detections	YARA Rule File Name: Has YARA rule file name

8. To create and apply an advanced search filter, click **Advanced**.

   For details, see *Network Detections Advanced Search Filter on page 4-72*.

9. (Optional) Click the **More** icon beside **Advanced**, select **Export**, select a delimiter to use, and then click **OK** to export and download the currently filtered list of network detections to a CSV file with the chosen delimiter.

Viewing Network Detections - Detection Details

Procedure

1. To view **Network Detections** detection details for any event, click the icon under the **Details** column on the **Network Detections** screen.

   Detection details about the event are displayed.

2. In the **Connection Details** section, you may do the following:

   - Click **View in Threat Connect** to connect with **Threat Connect**, where you can search for current information about the threat.
   - Click **Download** and then select **Detected File** to download a password protected ZIP archive containing the detected file.

- If a packet capture has been enabled and the detection matched a packet capture rule, click **Download** and then select **PCAP File** to download a password protected ZIP archive containing the pcap file.

  In the pcap file, the comment "Detected Packet" in the "pkt_comment" field marks the packet that triggered the detection.

- Click **Download** and then select **All** to download a password protected ZIP archive containing the detected file, the packet capture file, and the connection details.

Important

Suspicious files must always be handled with caution. Extract the detected file and pcap file at your own risk.

The password for the zip archive is "virus".

3. In the **File Analysis Result** section, you may do the following:

   - Click **View Virtual Analyzer Report** to view the Virtual Analyzer report.
   - Click **Download** and then select **Virtual Analyzer Report** to download the Virtual Analyzer report.
   - Click **Download** and then select **Investigation Package** to download a password protected ZIP archive containing the investigation package.
   - Click **Download** and then select **Detected File** to download a password protected ZIP archive containing the detected file.
   - Click **Download** and then select **All** to download a password protected ZIP archive containing the detected file, the Virtual Analyzer report, and the investigation package.

Important

Suspicious files must always be handled with caution. Extract the detected file at your own risk.

The password for the zip archive is "virus".

4. In the **Suspicious Object and Related File Analysis Result** section, view suspicious object and related analyzed file information.

Network Detections - Detection Details

Deep Discovery Inspector logs the details of each threat it detects. The **Detection Details** screen may contain the following information, depending on search and other filter criteria and settings.

Network Detections - Detection Details - Connection Details

The **Connection Details** section of the **Network Detections - Detection Details** screen can contain the following information:

- *Network Detections - Detection Details - Detection Information on page 4-61*
- *Network Detections - Detection Details - Connection Summary on page 4-63*
- *Network Detections - Detection Details - Protocol Information on page 4-64*
- *Network Detections - Detection Details - File Information on page 4-65*
- *Network Detections - Detection Details - Additional Information on page 4-66*

Click **View in Threat Connect** to connect with Threat Connect, where you can search for current information about the threat.

Click **Download** and then select **Detected File** to download a password protected ZIP archive containing the detected file.

If a packet capture has been enabled and the detection matched a packet capture rule, click **Download** and then select **PCAP File** to download a password protected ZIP archive containing the pcap file. In the pcap file, the

comment "Detected Packet" in the "pkt_comment" field marks the packet that triggered the detection.

Click **Download** and then select **All** to download a password protected ZIP archive containing the detected file and the packet capture file.

Important

- Suspicious files and pcap files must always be handled with caution. Extract the detected file and pcap file at your own risk. Trend Micro recommends analyzing the files in an isolated environment.
- The password for the zip archive is "virus".

Network Detections - Detection Details - Detection Information

Information provided in the **Detection Information** section may include the following:

- Activity detected
- Attack phase
- Correlation Rule ID (ICID)
- Detection name
- Detection rule ID
- Detection severity
- Detection type
- Event class
- MITRE ATT&CK™ Framework
  - Tactics
  - Techniques

Tip

Click the tactic or technique to view more details on the MITRE website.

Important

MITRE information displayed on Deep Discovery Director (Consolidated Mode) is based on ATT&CK™ v6. The information may be different when displayed on products that use a different version of ATT&CK™.

- Notable Object
- Protocol
- Reference
- Targeted attack campaign
- Targeted attack related
- Threat
- Threat description
- Timestamp
- URL category
- Virtual Analyzer risk level

Note

Additional information may appear for specific correlated incidents.

TABLE 4-23. Detection Types

DETECTION TYPES	DESCRIPTION
Correlated Incident	Events/detections that occur in a sequence or reach a threshold and define a pattern of activity

Detection Types	Description
Disruptive Application	Any peer-to-peer, instant messaging, or streaming media applications considered to be disruptive because they may do the following: • Affect network performance • Create security risks • Distract employees
Exploit	Network and file-based attempts to access information
Grayware	Adware/grayware detections of all types and confidence levels
Malicious Behavior	Behavior that definitely indicates compromise with no further correlation needed, including the following: • Positively-identified malware communications • Known malicious destination contacted • Malicious behavioral patterns and strings
Malicious Content	File signature detections
Malicious URL	Websites that try to perform malicious activities
Suspicious Behavior	Behavior that could indicate compromise but requires further correlation to confirm, including the following: • Anomalous behavior • False or misleading data • Suspicious and malicious behavioral patterns and strings

Network Detections - Detection Details - Connection Summary

Information provided in the **Connection Summary** section may include the following:

- A graphical display that includes the direction of the event and other information. The **Client** in the diagram is the host that initiated the connection.
- Host details may include the following:

- Host name
- IP address and port
- Last logon user
- MAC address
- Network group
- Network zone
- Operating system

Network Detections - Detection Details - Protocol Information

Information provided in the **Protocol Information** section may include the following:

- BOT command
- BOT URL
- Certificate Information
  - Issued To
    - Common name
    - Organization
    - Organizational unit
  - Issued By
    - Common name
    - Organization
    - Organizational unit
- Domain name
- Host name

- HTTP referer
- ICMP code
- ICMP type
- IRC channel name
- IRC nick name
- Message ID
- Protocol
- Queried domain
- Recipients
- Sender
- SNI host name
- Subject
- Target share
- Transport Layer Security (TLS)
- URL
- User agent
- User name

Network Detections - Detection Details - File Information

Information provided in the **File Information** section may include the following:

- File name
- File SHA-1
- File SHA-256

- File size

Network Detections - Detection Details - Additional Information

Information provided in the **Additional Information** section may include the following:

- Attempted to disrupt connection
- Detected by
- Mitigation
- Fingerprinting
  - JA3 hash value
  - JA3S hash value
- VLAN ID

Network Detections - Detection Details - File Analysis Result

The **File Analysis Result** section of the **Network Detections - Detection Details** screen contains the following information:

- *Network Detections - Detection Details - File Analysis Result - File Information on page 4-67*
- *Network Detections - Detection Details - File Analysis Result - YARA Rule Detections on page 4-68*
- *Network Detections - Detection Details - File Analysis Result - Notable Characteristics on page 4-69*

Click **View Virtual Analyzer Report** to view the Virtual Analyzer report.

Click **Download** and then select **Virtual Analyzer Report** to download the Virtual Analyzer report.

Tip

Viewing or downloading the Virtual Analyzer report may take longer than the other options. Allocate more time for the Virtual Analyzer report to appear or download.

Click **Download** and then select **Investigation Package** to download a password protected ZIP archive containing the investigation package.

Important

Suspicious files must always be handled with caution. Extract the detected file at your own risk.

The password for the zip archive is "virus".

Click **Download** and then select **Detected File** to download a password protected ZIP archive containing the detected file.

Click **Download** and then select **All** to download a password protected ZIP archive containing the detected file, the Virtual Analyzer report, and the investigation package.

Network Detections - Detection Details - File Analysis Result - File Information

Information provided in the **File Analysis Result** - **File Information** section of the **Detection Details** window may include the following:

- Child objects
  - File name / URL
  - File size (bytes)
  - Type
  - File SHA-1
  - File SHA-256
- File name

- File size
- File type
- File MD5
- File SHA-1
- File SHA-256
- MITRE ATT&CK™ Framework
  - Tactics
  - Techniques

Tip

Click the tactic or technique to view more details on the MITRE website.

Important

MITRE information displayed on Deep Discovery Director (Consolidated Mode) is based on ATT&CK™ v6. The information may be different when displayed on products that use a different version of ATT&CK™.

- Threat
- Virtual Analyzer risk level

Network Detections - Detection Details - File Analysis Result - YARA Rule Detections

Information provided in the **File Analysis Result** - **YARA Detections** section of the Detection Details window may include the following:

- YARA Rule File
- YARA Rules

Network Detections - Detection Details - File Analysis Result - Notable Characteristics

Information provided in the **File Analysis Result** - **Notable Characteristics** section of the **Detection Details** window may include characteristics that are commonly associated with malware. Characteristics are grouped into the following categories:

- Anti-security, self-preservation
- Autostart or other system reconfiguration
- Deception, social engineering
- File drop, download, sharing, or replication
- Hijack, redirection, or data theft
- Malformation or other known malware traits
- Process, service, or memory object change
- Rootkit, cloaking
- Suspicious network or messaging activity
- Other notable characteristic

Network Detections - Detection Details - Suspicious Object and Related File Analysis Result

The **Suspicious Object and Related File Analysis Result** section of the **Network Detections - Detection Details** screen contains the following information:

Network Detections - Detection Details - Suspicious Object Information

Information provided in the **Suspicious Object Information** section may include the following:

- Related analyzed file
- Virtual Analyzer risk level

- Suspicious object
- Type

Network Detections - Detection Details - Related Analyzed File Information

Information provided in the **Related Analyzed File Information** section of the **Detection Details** window may include the following:

- Child objects
  - File name
  - File size (bytes)
  - Type
  - File SHA-1
  - File SHA-256
- File name
- File size
- File type
- File MD5
- File SHA-1
- File SHA-256
- MITRE ATT&CK™ Framework
  - Tactics
  - Techniques

Tip

Click the tactic or technique to view more details on the MITRE website.

Important

MITRE information displayed on Deep Discovery Director (Consolidated Mode) is based on ATT&CK™ v6. The information may be different when displayed on products that use a different version of ATT&CK™.

- Threat
- Virtual Analyzer risk level

YARA Detections

- YARA Rule File
- YARA Rules

Notable characteristics that are commonly associated with malware. Characteristics are grouped into the following categories:

- Anti-security, self-preservation
- Autostart or other system reconfiguration
- Deception, social engineering
- File drop, download, sharing, or replication
- Hijack, redirection, or data theft
- Malformation or other known malware traits
- Process, service, or memory object change
- Rootkit, cloaking
- Suspicious network or messaging activity
- Other notable characteristic

Network Detections Advanced Search Filter

To view specific data, select from the following optional attributes and operators, and type an associated value.

TABLE 4-24. Search Criteria: Network Detections

ATTRIBUTE	OPERATOR	ACTION
Host Name	**Contains/Does not contain/Starts with/Equals**	Type a value
Interested Host	**Contains/Does not contain/Starts with/Equals**	Type a value
Peer Host	**Contains/Does not contain/Starts with/Equals**	Type a value
IP Address	**Contains/Does not contain/Equals**	Type a value
	In range/Not in range	Type a range
Interested IP Address	**Contains/Does not contain/Equals**	Type a value
	In range/Not in range	Type a range
Peer IP Address	**Contains/Does not contain/Equals**	Type a value
	In range/Not in range	Type a range
Peer IP Country/Region	**In/Not in**	Select one or more peer IP countries
MAC Address	**In/Not in**	Type a value
Network Group	**Contains/Does not contain/Equals**	Type a value
User Account	**Has user account/No user account**	
	Contains/Does not contain	Type a value
Protocol	**In/Not in**	Select one or more protocols

Attribute	Operator	Action
Transport Layer Security (TLS)	**Equals**	Select one of the following: • **Over SSL/TLS** • **Not over SSL/TLS**
Direction	**Equals**	Select one of the following: • **Internal** • **External**
Threat/ Detection/ Reference	**Contains**/**Does not contain**/**Equals**	Type a value
Detection Rule ID	**In**/**Not in**	Type a range
YARA Rule File Name	**Has YARA rule file name**/**No YARA rule file name**	
	Contains/**Does not contain**/**Equals**	Type a value
Correlation Rule ID (ICID)	**In**/**Not in**	Type a value
Detection Type	**In**/**Not in**	Select one or more of the following: • **Malicious Content** • **Malicious Behavior** • **Suspicious Behavior** • **Exploit** • **Grayware** • **Malicious URL** • **Disruptive Application** • **Correlated Incident**

Attribute	Operator	Action
Attack Phase	**In/Not in**	Select one or more of the following: • **Intelligence Gathering** • **Point of Entry** • **C&C Communication** • **Lateral Movement** • **Asset/Data Discovery** • **Data Exfiltration** • **Unknown Attack Phase**
Tactics	**Has tactics/No tactics**	
	In/Not in	Select one or more of the following: • **Initial Access** • **Execution** • **Persistence** • **Privilege Escalation** • **Defense Evasion** • **Credential Access** • **Discovery** • **Lateral Movement** • **Collection** • **Exfiltration** • **Command and Control** • **Impact**
URL Category	**In/Not in**	Select one or more URL categories

Attribute	Operator	Action
C&C List Source	**In/Not in**	Select one or more of the following: • **Global Intelligence** • **Virtual Analyzer** • **User-defined** • **Relevance Rule**
C&C Callback Address	**Contains/Does not contain**	Type a value
C&C Risk Level	**In/Not in**	Select one or more of the following: • **Low** • **Medium** • **High** • **Unknown**
Virtual Analyzer Result	**Has analysis results/No analysis results**	
PCAP File	**Has PCAP file/No PCAP file**	
Is Targeted Attack Related	**Equals**	Select one of the following: • **Yes** • **No**
File Detection Type	**In**	Select one or more of the following: • **Highly Suspicious File** • **Heuristic Detection** • **Known Malware**
File Path/File Name	**Has file name/No file name**	
	Contains/Does not contain/Equals	Type a value

Attribute	Operator	Action
File SHA-1	**Has file SHA-1/No file SHA-1/**	
	Contains/Does not contain	Type a value
File SHA-256	**Has file SHA-256/No file SHA-256**	
	Contains/Does not contain	Type a value
Domain/URL	**Contains/Does not contain/Equals**	Type a value
Suspicious Object/Deny List Entity/ User-Defined SO	**Contains/Does not contain/Starts with/Equals**	Type a value
Sender (Email)	**Has sender/No sender**	
	Equals/Contains/Does not contain	Type a value
Recipient (Email)	**Has recipient/No recipient**	
	Equals/Contains/Does not contain	Type a value
Message ID (Email)	**Has message ID/No message ID**	
	Contains/Does not contain	Type a value
Subject (Email)	**Has subject/No subject**	
	Contains/Does not contain	Type a value

For details, see the following:

Adding a Network Detections Advanced Search Filter

Procedure

1. To create an **Network Detections** advanced search filter, go to **Detections** > **Network Detections**, and then click **Advanced**.

2. Select an attribute and an associated operator.
3. Do one of the following to provide an action:
   - Type a value in the text box.
   - Select a value from the drop-down list.

Tip

Type a keyword to search a partial match.

For details, see *Network Detections Advanced Search Filter on page 4-72*.

Note

You can add multiple criteria entries by pressing ENTER after typing a value.

4. (Optional) Click **AND** or **OR** to include other criteria sets in the search filter.
5. Click **Apply**.

   The **Network Detections** screen updates and displays data filtered by the search criteria. All search criteria sets are displayed in a summary.
6. To save the search, do the following:
   a. Click the **Save** icon and select **Save as**.

      The **Save As** dialog appears.

   b. Type a name and an optional description, and then click **Save**.

      The name of the new saved search is added to the list of saved searches.

Note

A saved search includes any search filter you create and the current customized column settings.

7. (Optional) Click the right-arrow icon beside the saved searches drop-down list to close the advanced search feature.

Editing a Network Detections Saved Search

Procedure

1. To edit an **Network Detections** saved search, go to **Detections** > **Network Detections**, and then click the **Saved Searches** icon.
2. Select a saved search to edit.
3. To edit the saved search, do one of the following:
   - Click the edit icon on the right side of the screen.
   - Click **Advanced**
4. Select an attribute and an associated operator.
5. Do one of the following to provide an action:
   - Type a value in the text box.
   - Select a value from the drop-down list.

   Tip

   Type a keyword to search a partial match.

   For details, see *Network Detections Advanced Search Filter on page 4-72*.

   Note

   You can add multiple criteria entries by pressing ENTER after typing a value.
6. (Optional) Click **AND** or **OR** to include other criteria sets in the search filter.

7. Click **Apply**.

   The **Network Detections** screen updates and displays data filtered by the search criteria. All search criteria sets are displayed in a summary.

8. To save the edited saved search, click the **Save** icon and do one of the following:

   - To save the edited saved search with the same name, select **Save**.
   - To save the edited saved search with a new name, select **Save as** and do the following:

   a. In the **Save as** dialog that appears, type a name and an optional description, and then click **Save**.

      The name of the new saved search is added to the list of saved searches.

      Note

      A saved search includes any search filter you create and the current customized column settings.

9. (Optional) Click the right-arrow icon beside the saved searches drop-down list to close the advanced search feature.

Deleting a Network Detections Saved Search

Procedure

1. To delete a **Network Detections** saved search, go to **Detections** > **Network Detections** and click the **Saved Searches** icon.
2. Click the delete icon beside the saved search to be deleted.

Note

Built-in filters cannot be deleted.

Importing Network Detections Saved Searches

Procedure

1. To import one or more **Network Detections** saved searches, go to **Detections** > **Network Detections**, and then click the **Saved searches** icon.
2. Click **Import** at the top of the **Saved searches** drop-down menu.

   The **Import To Saved Searches** dialog appears.
3. Click **Select** to locate the file containing the saved searches.

   The file is uploaded and validated.
4. Click **Import**.

   Note

   Importing overwrites existing saved searches with the same names.

   The imported saved searches appear in the **Saved searches** drop-down menu.

Exporting Network Detections Saved Searches

Procedure

1. To export one or more **Network Detections** saved searches, go to **Detections** > **Network Detections**, and then click the **Saved searches** icon.

2. Click **Export** at the top of the **Saved searches** drop-down menu.

   The **Export Saved Searches** dialog appears.

3. Select each saved search that you want to export or select the check box at the top of the column to export all saved searches. By default, all saved searches are selected for export.

   Note

   Built-in filters cannot be exported.

4. Click **Export**.

   The saved searches file download begins.

Email Messages

The **Email Messages** screen displays a list of email messages that have been detected to 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 email 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

Display Options and Search Filters

To customize the display, apply the following display options and search filters:

TABLE 4-25. Display Options and Search Filters: Email Messages

FILTER OPTION	DESCRIPTION	
Risk level	Filter options include the following risk level settings:	
	High	Displays high-risk email messages
	Medium	Displays medium-risk email messages
	Low	Displays low-risk email messages
	Unavailable	Displays spam/graymail messages and email messages with content violation
	All	Displays all email messages
Period	**Last 24 hours**	
	Last 7 days	
	last 14 days	
	Last 30 days	
	Last 60 days	
	Custom range	
Monitored domain	Select domains from which email messages should be displayed	
Basic search	Type a case-insensitive keyword in the basic search field to search a partial sender, email header (from), recipient or email header (to) match.	
Saved Searches	Search by saved search criteria.	

Filter Option	Description
Advanced Search	Search by user-defined criteria sets. Each set includes one or more of the following: • Attributes • Operators • Associated values
Customize Columns	Customize the display by hiding or displaying columns.

Viewing Email 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** > **Email Messages**.

   The **Email Messages** screen appears.

2. Select the risk level by using the drop-down control.

3. Select a time period.

4. Select domains from which email messages should be displayed.

5. (Optional) Click the **More** icon beside **Advanced**, select **Customize columns**, select the columns to hide or display, and then click **Apply** to return to the modified **Email Messages** screen.

6. To run a basic search, type a keyword in the search text box, and then press ENTER or click the magnifying glass icon.

   By default, Deep Discovery Director (Consolidated Mode) searches **Email Messages** by **Recipients**, **Email Header (To)**, **Sender**, **Email Header (From)**.

7. To run a saved search, click the **Saved Searches** icon, and then select a saved search.

   By default, Deep Discovery Director (Consolidated Mode) provides the following built-in saved searches:

TABLE 4-26. Built-in Saved Searches

NAME	FILTER OPTIONS
Virtual Analyzer Result Available	Identified by: Virtual Analyzer
Suspicious Message Identified	Threat type options include the following: • Targeted malware • Malware • Malicious URL • Suspicious File • Suspicious URL • Phishing
Spam/Graymail	Threat Type: Spam/Graymail
Content Violation	Threat Type: Content violation
Password-protected Attachment	Has password-protected attachment
YARA Rule Detections	YARA Rule File Name: Has YARA rule file name

8. To create and apply an advanced search filter, click **Advanced**.

   For details, see *Email Messages Advanced Search Filter on page 4-90*.

9. (Optional) Click the **More** icon beside **Advanced**, select **Export**, select a delimiter to use, and then click **OK** to export and download the currently filtered list of email messages to a CSV file with the chosen delimiter.

Viewing Email Messages - Detection Details

Procedure

1. To view detection details for any email message, click the icon under the **Details** column on the **Email Messages** screen.

   Details about the email message are displayed.

2. In the **Message Details** section, you may do the following:

   - Click **View Virtual Analyzer Report** to view the analysis report in HTML format.
   - Click **View in Threat Connect** to connect with **Threat Connect**, where you can search for current information about the threat.
   - Click **View Screenshot** to safely display the email message as an image.
   - Click **Download** and then select **Detection Details** to download the detection details as CSV file.
   - Click **Download** and then select **Detected Message** to download a password protected ZIP archive containing the detected email message.
   - Click **Download** and then select **Virtual Analyzer Report** to download the Virtual Analyzer report in PDF format.
   - Click **Download** and then select **Investigation Package** to download a password protected ZIP archive containing the investigation package.

- Click **Download** and then select **All** to download a password protected ZIP archive containing the detection details, detected message, Virtual Analyzer report, and investigation package.

Important

Suspicious files must always be handled with caution. Extract any archives at your own risk.

The password for the zip archive is "virus".

3. View details and information about the email message in the **Overview**, **Messages**, **Attachments**, **Links**, **Message Characteristics**, **Content Keyword/Expression Match**, **DLP Incident**, and **Email Header** sections.

Email Messages - Detection Details

Deep Discovery Email Inspector logs the details of each email message it detects. The **Detection Details** screen may contain the following information, depending on search and other filter criteria and settings:

Email Messages - Detection Details - Overview

View the message ID, recipients, last detection time, and sender and source IP addresses of the email message to understand where the message came from and other tracking information.

Get information about policy rules that the email message violates.

Information provided in the **Overview** section may include the following:

- Risk level
- Timestamp
- Threat type
- Message ID
- Email subject

- Source IP
- Sender IP
- Sender
- Recipients
- Email header (from)
- Email header (to)
- Direction
- Action
- Policy
- Rule

Email Messages - Detection Details - Messages

View the name of the scanning engine and the category for detected email messages that are considered as spam or graymail.

Information provided in the **Messages** section may contain the following:

- Identified by
- Category
- Threat name

Email Messages - Detection Details - Attachments

Get information about any files attached to the email message, including the file name, password, file type, risk level, SHA-1 value, the scan engine that identified the threat, and the name of detected threats.

Information provided in the **Attachments** section may contain the following:

- File name

- Password
- File type
- Size (bytes)
- Risk level
- SHA-1
- SHA-256
- Identified by
- Threat/Data Identifier

Email Messages - Detection Details - YARA Rule Detections

Get information about the detected files based on matched YARA rules in the associated YARA rule files.

Information provided in the **YARA Rule Detections** section may contain the following:

- File Name
- Source File Name
- YARA Rule Name
- YARA Rule File Name
- File SHA-1
- File SHA-256

Email Messages - Detection Details - Links

Get information about any embedded suspicious URLs that appeared in the email message, including the URL, site category, risk level, the scan engine that identified the threat, and the name of detected threats.

Information provided in the **Links** section may contain the following:

- URL
- Extraction source
- Site category
- Risk level
- Identified by
- Threat name

Email Messages - Detection Details - 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.

Information provided in the **Message Characteristics** section may contain the following:

- Detection
- Details

Email Messages - Detection Details - Content Keyword/Expression Match

Get information about the content keywords or expressions that are matched in the email message.

Information in the **Content Keyword/Expression Match** section may contain the following:

- Data Identifier
- Location

Email Messages - Detection Details - DLP Incident

Get information about the data identifiers and DLP templates that are matched in the email message.

Information in the **DLP Incident** section may contain the following:

- DLP Template
- Data Identifier
- Location

Email Messages - Detection Details - Email Header

View the email message header content. This information is the same as if you viewed the header in your local email client.

Email Messages Advanced Search Filter

To view specific data, select from the following optional attributes and operators, and type an associated value.

TABLE 4-27. Search Criteria: Email Messages

ATTRIBUTE	OPERATOR	ACTION
Sender	**Equals**/**Contains**/**Does not contain**	Type a value
Recipient	**Equals**/**Contains**/**Does not contain**	Type a value
Email Header (From)	**Has from**/**No from**	
	Equals/**Contains**/**Does not contain**	Type a value
Email Header (To)	**Equals**/**Contains**/**Does not contain**	Type a value
Source IP	**Contains**/**Does not contain**/**Equals**	Type a value
	In range/**Not in range**	Type a range

Attribute	Operator	Action
Source IP Country/Region	**In**/**Not in**	Select one or more source IP countries
Sender IP	**Contains**/**Does not contain**/**Equals**	Type a value
	In range/**Not in range**	Type a range
Sender IP Country/Region	**In**/**Not in**	Select one or more source IP countries
Message ID	**Contains**/**Does not contain**	Type a value
Subject	**Has subject**/**No subject**	
	Equals/**Contains**/**Does not contain**	Type a value
Direction	**Equals**	Select a direction
URL	**Has URL**/**No URL**	
	Equals/**Like**/**Contains**/**Does not contain**	Type a value
File name	**Has file name**/**No file name**	
	Equals/**Contains**/**Does not contain**	Type a value
Has Password-protected Attachment	**Yes**/**No**	
File SHA-1	**Contains**/**Does not contain**/**Equals**	Type a value
File SHA-256	**Contains**/**Does not contain**/**Equals**	Type a value
Threat Name	**Contains**/**Does not contain**/ **Equals**/**Starts with**	Type a value
Threat Type	**In**/**Not in**	Select one or more threat types
Identified By	**In**/**Not in**	Select one or more identification sources

ATTRIBUTE	OPERATOR	ACTION
Suspicious Object	**Contains**/**Does not contain**/ **Equals**/**Starts with**	Type a value
Policy	**Equals**/**Contains**/**Does not contain**	Type a value
Policy Rule	**Equals**/**Contains**/**Does not contain**	Type a value
YARA Rule File Name	**Has YARA rule file name**/**No YARA rule file name**	
	Contains/**Does not contain**/**Equals**	Type a value
Data Identifier	**Equals**/**Contains**/**Does not contain**	Type a value
DLP Template	**Equals**/**Contains**/**Does not contain**	Type a value
Is Manual Email Submission	**Yes**/**No**	
Action	**In**/**Not in**	Select one or more actions

For details, see the following:

Adding an Email Messages Advanced Search Filter

Procedure

1. To create an **Email Messages** advanced search filter, go to **Detections** > **Email Messages**, and then click **Advanced**.
2. Select an attribute and an associated operator.
3. Do one of the following to provide an action:
   - Type a value in the text box.
   - Select a value from the drop-down list.

Tip

Type a keyword to search a partial match.

Note

You can add multiple criteria entries by pressing ENTER after typing a value.

4. (Optional) Click **AND** or **OR** to include other criteria sets in the search filter.
5. Click **Apply**.

   The **Email Messages** screen updates and displays data filtered by the search criteria. All search criteria sets are displayed in a summary.
6. To save the search, do the following:

   a. Click the **Save** icon and select **Save as**.

      The **Save As** dialog appears.

   b. Type a name and an optional description, and then click **Save**.

      The name of the new saved search is added to the list of saved searches.

      Note

      A saved search includes any search filter you create and the current customized column settings.
7. (Optional) Click the right-arrow icon beside the saved searches drop-down list to close the advanced search feature.

Editing an Email Messages Saved Search

Procedure

1. To edit an **Email Messages** saved search, go to **Detections** > **Email Messages**, and then click the **Saved searches** icon.
2. Select a saved search to edit.

3. To edit the saved search, do one of the following:
   - Click the edit icon on the right side of the screen.
   - Click **Advanced**
4. Select an attribute and an associated operator.
5. Do one of the following to provide an action:
   - Type a value in the text box.
   - Select a value from the drop-down list.

Tip

Type a keyword to search a partial match.

Note

You can add multiple criteria entries by pressing ENTER after typing a value.

6. (Optional) Click **AND** or **OR** to include other criteria sets in the search filter.
7. Click **Apply**.

   The **Email Messages** screen updates and displays data filtered by the search criteria. All search criteria sets are displayed in a summary.
8. To save the edited saved search, click the **Save** icon and do one of the following:
   - To save the edited saved search with the same name, select **Save**.
   - To save the edited saved search with a new name, select **Save as** and do the following:

   a. In the **Save as** dialog that appears, type a name and an optional description, and then click **Save**.

   The name of the new saved search is added to the list of saved searches.

Note

A saved search includes any search filter you create and the current customized column settings.

9. (Optional) Click the right-arrow icon beside the saved searches drop-down list to close the advanced search feature.

Deleting an Email Messages Saved Search

Procedure

1. To delete a **Email Messages** saved search, go to **Detections** > **Email Messages** and click the **Saved searches** icon.
2. Click the delete icon beside the saved search to be deleted.

Note

Built-in filters cannot be deleted.

Importing Email Messages Saved Searches

Procedure

1. To import one or more **Email Messages** saved searches, go to **Detections** > **Email Messages**, and then click the **Saved searches** icon.
2. Click **Import** at the top of the **Saved searches** drop-down menu.

   The **Import To Saved Searches** dialog appears.
3. Click **Select** to locate the file containing the saved searches.

   The file is uploaded and validated.
4. Click **Import**.

Note

Importing overwrites existing saved searches with the same names.

The imported saved searches appear in the **Saved searches** drop-down menu.

Exporting Email Messages Saved Searches

Procedure

1. To export one or more **Email Messages** saved searches, go to **Detections** > **Email Messages**, and then click the **Saved searches** icon.
2. Click **Export** at the top of the **Saved searches** drop-down menu.

   The **Export Saved Searches** dialog appears.
3. Select each saved search that you want to export or select the check box at the top of the column to export all saved searches. By default, all saved searches are selected for export.

   Note

   Built-in filters cannot be exported.
4. Click **Export**.

   The saved searches file download begins.

Quarantined Messages

The **Quarantined Messages** screen displays a list of email messages that have been quarantined by Deep Discovery Email Inspector because they 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.

Display Options and Search Filters

To customize the display, apply the following display options and search filters:

TABLE 4-28. Display Options and Search Filters: Quarantined Messages

FILTER OPTION	DESCRIPTION	
Risk level	Filter options include the following risk level settings:	
	High	Displays high-risk email messages
	Medium	Displays medium-risk email messages
	Low	Displays low-risk email messages
	Unavailable	Displays spam/graymail messages and email messages with content violation
	Unrated	Displays email messages where the email format was invalid or that contained unscannable attachments or links
	All	Displays all email messages
Period	**Last 24 hours**	
	Last 7 days	
	last 14 days	
	Last 30 days	
	Last 60 days	
	Custom range	
Monitored domain	Select domains from which email messages should be displayed	

Filter Option	Description	
Quarantine Reason	Filter options include the following quarantine reasons:	
	All	Displays all email messages
	Content violation	Messages with content that matches a content filtering rule
	DLP incident	Messages that contain 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
	Unknown	Messages with unknown threats
	Unscannable	Messages that are not scannable
	Unsuccessful decryption	Messages that cannot be decrypted.
	Unsuccessful encryption	Messages that cannot be encrypted.
	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

Filter Option	Description	
Threat type	Filter options include the following threat type classifications:	
	All	Displays all email messages
	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
	Suspicious File	A file that exhibits malicious characteristics
	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	Policy violations that can lead to data loss
Basic search	Type a case-insensitive keyword in the basic search filed to search a partial sender or recipient match.	

Filter Option	Description
Advanced Search	Search by user-defined criteria sets. Each set includes one or more of the following: • Attributes • Associated values

Viewing Quarantined Messages

Procedure

1. Go to **Detections** > **Quarantined Messages**.

   The **Quarantined Messages** screen appears.

2. Select the risk level by using the drop-down control.

3. Select a time period.

4. Select domains from which email messages should be displayed.

5. Select the quarantine reasons by using the drop-down control.

6. Select the threat type by using the drop-down control.

7. To run a basic search, type a keyword in the search text box, and then press ENTER or click the magnifying glass icon.

   By default, Deep Discovery Director (Consolidated Mode) searches **Quarantined Messages** by **Recipients**, **Email Header (To)**, **Sender**, and **Email Header (From)**.

8. To create and apply an advanced search filter, click **Advanced**.

   For details, see *Quarantined Messages Advanced Search Filter on page 4-106*.

Quarantine Reasons

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

TABLE 4-29. Quarantine Reasons

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 decryption	Messages that cannot be decrypted.
Unsuccessful encryption	Messages that cannot be encrypted.
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.

Viewing Quarantined Messages - Detection Details

Procedure

1. To view detection details for any quarantined message, click the icon under the **Details** column on the **Quarantined Messages** screen.

   Details about the quarantined message are displayed.

2. In the **Message Details** section, you may do the following:

   - Click **View Virtual Analyzer Report** to view the analysis report in HTML format.
   - Click **View in Threat Connect** to connect with **Threat Connect**, where you can search for current information about the threat.
   - Click **View Screenshot** to safely display the email message as an image.
   - Click **Download** and then select **Detection Details** to download the detection details as CSV file.
   - Click **Download** and then select **Detected Message** to download a password protected ZIP archive containing the detected email message.
   - Click **Download** and then select **Virtual Analyzer Report** to download the Virtual Analyzer report in PDF format.
   - Click **Download** and then select **Investigation Package** to download a password protected ZIP archive containing the investigation package.
   - Click **Download** and then select **All** to download a password protected ZIP archive containing the detection details, detected message, Virtual Analyzer report, and investigation package.

   Important

   Suspicious files must always be handled with caution. Extract any archives at your own risk.

   The password for the zip archive is "virus".

3. View details and information about the quarantined message in the **Overview**, **Messages**, **Attachments**, **Links**, **Message Characteristics**, **Content Keyword/Expression Match**, **DLP Incident**, and **Email Header** sections.

Quarantined Messages - Detection Details

The **Detection Details** screen may contain the following information, depending on search and other filter criteria and settings:

Quarantined Messages - Detection Details - Overview

View the message ID, recipients, last detection time, and sender and source IP addresses of the quarantined message to understand where the message came from and other tracking information.

Get information about policy rules that the quarantined message violates.

Information provided in the **Overview** section may include the following:

- Risk level
- Timestamp
- Threat type
- Message ID
- Email subject
- Source IP
- Sender IP
- Sender
- Recipients
- Email header (from)
- Email header (to)
- Direction
- Action
- Policy
- Rule

Quarantined Messages - Detection Details - Messages

Information provided in the **Messages** section may contain the following:

- Identified by
- Category
- Threat name

Quarantined Messages - Detection Details - Attachments

Get information about any files attached to the quarantined message, including the file name, password, file type, risk level, SHA-1 value, the scan engine that identified the threat, and the name of detected threats.

Information provided in the **Attachments** section may contain the following:

- File name
- Password
- File type
- Size (bytes)
- Risk level
- SHA-1
- SHA-256
- Identified by
- Threat/Data Identifier

Quarantined Messages - Detection Details - YARA Rule Detections

Get information about the detected files based on matched YARA rules in the associated YARA rule files.

Information provided in the **YARA Rule Detections** section may contain the following:

- File Name
- Source File Name
- YARA Rule Name
- YARA Rule File Name
- File SHA-1
- File SHA-256

Quarantined Messages - Detection Details - Links

Get information about any embedded suspicious URLs that appeared in the quarantined message, including the URL, site category, risk level, the scan engine that identified the threat, and the name of detected threats.

Information provided in the **Links** section may contain the following:

- URL
- Extraction source
- Site category
- Risk level
- Identified by
- Threat name

Quarantined Messages - Detection Details - Message Characteristics

Get information about any social engineering attack related characteristics that were detected in the quarantined message, including the mail server reputation, gaps between transits, inconsistent recipient accounts, and forged sender addresses or unexpected relay servers, etc.

Information provided in the **Message Characteristics** section may contain the following:

- Detection
- Details

Quarantined Messages - Detection Details - Content Keyword/ Expression Match

Get information about the content keywords or expressions that are matched in the quarantined message.

Information in the **Content Keyword/Expression Match** section may contain the following:

- Data Identifier
- Location

Quarantined Messages - Detection Details - DLP Incident

Get information about the data identifiers and DLP templates that are matched in the quarantined message.

Information in the **DLP Incident** section may contain the following:

- DLP Template
- Data Identifier
- Location

Quarantined Messages - Detection Details - Email Header

View the quarantined message header content. This information is the same as if you viewed the header in your local email client.

Quarantined Messages Advanced Search Filter

Use the advanced search filter to create and apply customized searches.

For details, see the following:

- *Adding a Quarantined Messages Advanced Search Filter on page 4-107*

To view specific data, select from the following optional attributes and provide an action.

TABLE 4-30. Search Criteria: Quarantined Messages

ATTRIBUTE	ACTION
Sender	Type a value
Recipient	Type a value
Source IP	Type a value
Sender IP	Type a value
Email Header (From)	Type a value
Email Header (To)	Type a value
Message ID	Type a value
Subject	Type a value
Threat Name	Type a value
Is Manual Email Submission	Select **Yes** or **No**

Adding a Quarantined Messages Advanced Search Filter

Procedure

1. To create an **Quarantined Messages** advanced search filter, go to **Detections** > **Quarantined Messages**, and then click **Advanced**.
2. Select an attribute and an associated operator.
3. Do one of the following to provide an action:
   - Type a value in the text box.

- Select a value from the drop-down list.

4. (Optional) Click **AND** to include other criteria sets in the search filter.
5. Click **Apply**.

   The **Quarantined Messages** screen updated and displays data filtered by the search criteria. All search criteria sets are displayed in a summary.

6. (Optional) Click the right-arrow icon beside the saved searches drop-down list to close the advanced search feature.

Managing Quarantined Messages

Procedure

1. Go to **Detections** > **Quarantined Messages**.

   The **Quarantined Messages** screen appears.

2. Select one or more email messages and then click one of the following:

   - **Release**: Deliver the selected messages directly to the intended recipients without reprocessing the messages.
   - **Resume**: Continue processing the selected messages.

     Note

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

   - **Delete**: Delete the selected messages. Deleted messages cannot be recovered.

   The selected action is immediately submitted as task to the Deep Discovery Email Inspector appliances that store the selected messages.

Correlated Events

The **Correlated Events** screen displays a list of events that show one or more attack patterns derived from the correlated data of multiple detections in your network.

Display Options and Search Filters

To customize the display, apply the following display options and search filters:

TABLE 4-31. Display Options and Search Filters: Correlated Events

FILTER OPTION	DESCRIPTION	
Severity	Filter options include the following severity settings:	
	High	Displays high severity events
	Medium	Displays medium severity events
	Low	Displays low severity events
	All	Displays all events
Period	**Last 24 hours**	
	Last 7 days	
	last 14 days	
	Last 30 days	
	Last 60 days	
	Custom range	

Filter Option	Description	
Attack Pattern	Filter options include the following attack patterns:	
	All attack patterns	Displays all events
	Brute Force Authentication	Displays events with brute force authentication attack patterns
	C&C Callback	Displays events with C&C callback attack patterns
	Data Exfiltration	Displays events with data exfiltration attack patterns
	Lateral Movement	Displays events with lateral movement attack patterns
	Malicious Transfer	Displays events with malicious transfer attack patterns
	Other Malicious Activities	Displays events with malicious activity attack patterns
	Vulnerability Exploit	Displays events with vulnerability exploit attack patterns
Basic search	Search for an interested IP address.	

Viewing Correlated Events

Procedure

1. Go to **Detections** > **Correlated Events**.

   The **Correlated Events** screen appears.

2. Select the severity level by using the drop-down control.

3. Select the attack patterns by using the drop-down control.

4. Select a time period.
5. To run a basic search, type an IP address or host name in the search text box, and then press ENTER or click the magnifying glass icon.

Viewing Correlated Events - Correlation Data

Procedure

1. To view correlation data, click the **Correlation Data** icon () under **Details** on the **Correlated Events** screen.

   Note

   The **Correlation Data** icon is grayed out when correlation data is unavailable.

2. Use the following sections for advanced analysis of malicious activity:

   - **Summary**

     Displays the severity, the number of detected internal hosts and Indicators of Compromise (IOCs), the assigned attack patterns, and provides a high-level overview of the malicious activity of the correlation data.

   - **Correlation Graph**

     Provides a visual representation of correlations made between the correlated event selected in Deep Discovery Director and other related events as they occurred over time.

   - **Transaction and IOC Details**

     Provides details about each transaction represented in the correlation graph, and each detected Indicator of Compromise (IOC). Transactions are listed from oldest transaction at the top to the most recent transaction at the bottom. IOCs are listed from oldest first seen at the top to the most recent first seen at the bottom.

Tip

- Information displayed in the **Correlation Data** screen is created dynamically. The number of correlations and details about interactions and malicious activity between hosts presented in this screen can change over time. You can access the correlation data for a specific detection at a later time to see if additional analysis details are available.
- When Deep Discovery Director (Consolidated Mode) is integrated with more than one Deep Discovery Director (Internal Network Analytics Version) server operating in Deep Discovery Director (Standalone Network Analytics Mode), multiple sets of correlation data may exist for a single correlated event. Switch between the correlation data generated by each Deep Discovery Director (Standalone Network Analytics Mode) server by clicking on the **Network Analytics** server display name and IP address and selecting the desired server.

3. For details on how to use the information displayed in the **Correlation Data** screen to assist in advanced analysis, see *Analyzing Correlation Data Information on page 4-112*.

Analyzing Correlation Data Information

Learn how to use the information displayed in the **Correlation Data** screen to assist in advanced analysis in the following topics.

Overview of the Correlation Data Screen

The **Correlation Data** screen consists of the following main sections:

- **Summary**
- **Correlation Graph**
- **Transaction and IOC Details**

Summary

The **Summary** section displays the severity, the number of detected internal hosts and Indicators of Compromise (IOCs), and the attack patterns, and

provides a high-level overview of the malicious activity of the correlated event.

To export the correlation data of this correlated event, click **Export** and then select **Printer-friendly** or **CSV**.

Click on the help icon (?) and then select **Tutorial** to display an on-screen tutorial that describes each section of the **Correlation Data** screen step-by-step. Use **Next** and **Back** to navigate the tutorial, or click **Skip** to end it immediately.

The **Summary** section can be collapsed and expanded by clicking on the collapse (^) and expand icons (v).

See *Reviewing the Summary on page 4-114*.

Correlation Graph

The **Correlation Graph** section provides a visual representation of correlations made between the correlated event or suspicious object selected in Deep Discovery Director and other related events as they occurred over time.

Click on the filter icon (▼) located next to the **Playback Bar** to display or hide the advanced search filter.

See *Analysis Using the Correlation Graph on page 4-117*.

Transaction and IOC Details

The **Transaction and IOC Details** section provides details about each transaction represented in the correlation graph, and each detected Indicator of Compromise (IOC)

Transactions are listed from oldest transaction at the top to the most recent transaction at the bottom. Listed transactions might have occurred in a single day or might span several months, depending on the correlations found by Deep Discovery Director - Network Analytics. IOCs are listed from oldest first seen at the top to the most recent first seen at the bottom.

The **Transaction and IOC Details** section can be collapsed and expanded by clicking on the collapse (›) and expand icons (‹).

See *Analysis Using the Transaction and IOC Details on page 4-132*.

Reviewing the Summary

The **Summary** section displays the severity, the number of detected internal hosts and Indicators of Compromise (IOCs), and the attack patterns, and provides a high-level overview of the malicious activity of the correlated event.

Procedure

1. Review the severity, detection counts, attack patterns, and activity summary.

Severity	The severity assigned by Deep Discovery Director - Network Analytics to the event and related correlations. Deep Discovery Director - Network Analytics uses a number of factors to assign severity, including proprietary analysis.
Internal Hosts and Indicators of Compromise detection count	The detection count numbers allow you to quickly determine the scope of the correlated event.
Attack patterns	The attack patterns for the correlated event or suspicious object selected in Deep Discovery Director.

Activity summary	The activity summary is broken up by attack pattern and provides the following information: • Protocols on which activities were detected. • Number of detected Suspicious Objects (SOs) and Indicators of Compromise (IOCs). • Hosts which were involved in suspicious or malicious activity. Activity might be between internal hosts and external servers or might include lateral activity between internal hosts. Internal hosts are defined by the **Network Groups** list. **Note** • To provide an accurate analysis of correlation data, it is important to specify your internal networks and hosts in the **Network Groups** list. • By default, private networks are considered trusted and are set internally as trusted. You only need to add non-private IP addresses to the **Network Groups** list. • The activity with the **Trigger Event** label is the focal point of this correlated event and contains the IP address found in the **Interested Host** field of the **Correlated Events** screen. • Additional hosts that participated in the suspicious activity. • Additional suspicious objects when viewing correlation data for suspicious objects.

2. (Optional) Perform one of the following actions on individual summary items:

ITEM	ACTION
Internal Hosts detection number	Click the detection number and then click on the **Copy to clipboard** icon ( ) to copy the entire list to your clipboard, or click on the **Focus** icon ( ) to focus on the item in the **Correlation Graph**.

ITEM	ACTION
Indicators of Compromise detection number	Click the detection number and then click on the **Copy to clipboard** icon ( ) to copy the value to your clipboard.
Attack patterns	Hover over an attack pattern to highlight only activities related to that attack pattern in the summary.
IP addresses and domains	Hover over the triangle icon ( ) and select one of the following: • **Focus**: Focus on the item in the **Correlation Graph**. • **Copy to clipboard**: Copy the value to your clipboard. • **View network detection events**: Open the **Network Detections** screen in a new browser tab with filters matching this object applied. • **Threat Connect**: Open **Trend Micro Threat Connect** in a new browser tab with a query for this object. • **DomainTools (WHOIS)**: Open **DomainTools** in a new browser tab with a query for this IP address or domain. • **VirusTotal**: Open **VirusTotal** in a new browser tab with a query for this object.

3. (Optional) Click **Export** and then select one of the following options to export the correlation data of this correlated event.

   - **Printer-friendly**: Displays your system's printer dialog. Modify settings and then click **Print**.
   - **CSV**: Select a delimiter and then click **Export** to export and download the correlation data of this correlated event to a CSV file with the chosen delimiter.

   Note

   If any advanced search filter is applied, export is limited to the currently filtered correlation data.

Analysis Using the Correlation Graph

Open the **Correlation Data** screen from Deep Discovery Director to see the **Correlation Graph** for the selected event.

The **Correlation Graph** is a visual representation of correlations made between the trigger event selected in Deep Discovery Director and other related events as they occurred over time.

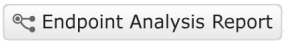
Procedure

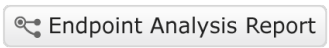
- From the main screen, perform initial analysis:

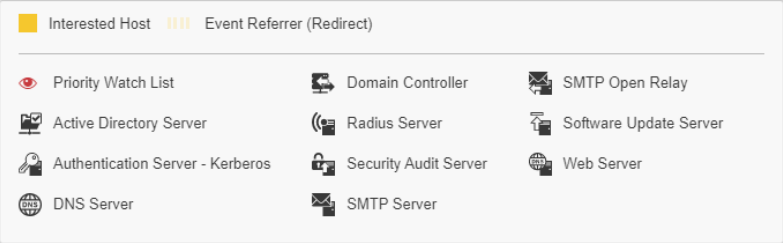
Element in Correlation Graph
 **Figure 4-1. Playback Bar / Time Slider** Click on the playback bar to view the time line for the correlated events. Deep Discovery Director - Network Analytics draws the oldest correlation event first and continues through to the latest correlation. Use the time line sliders to view correlated events over a selected time frame. The graph displays only the correlations within the selected time frame. • Adjust the time frame by clicking on the left and right grab bars on the time line and dragging them to the desired location. • To move the entire time frame, click inside the current time frame and drag the frame toward the left or the right. • The correlations displayed in the graph (and resultant transaction details) change according to event data found within the selected time frame.
Click on the filter icon ( ) located next to the **Playback Bar** to display or hide the advanced search filter. Use the advanced search filter to create and apply customized searches. For details, see *Correlation Graph Advanced Search Filter on page 4-122*.

Element in Correlation Graph
Correlation Line Each correlation graph contains one or more correlation lines that correlate malicious or suspicious activity between a source and destination. • Each correlation line represents one or more transactions between two hosts. • The thickness of the line is proportional to the number of transactions occurring between the hosts. • Correlation lines can be between an internal host and external server or between two internal hosts (lateral movement). • Each correlation line is labeled with the protocols used in transactions between the hosts. An arrow within the correlation line indicates the direction of the transactions, from source to destination. Correlation lines involving email senders are labeled as **Suspicious Email Activity**.

Element in Correlation Graph

Internal hosts
• Internal hosts are identified by IP address; the host name and logged on user are also supplied if known.
Icons representing relevant information might be displayed next to an internal host. For example, if the internal host is on the priority watch list or on a registered service list, the graph displays the appropriate icon.
• Hover over the downward triangle icon () located next to each internal host and external server to view a list of additional actions you can perform for that host.
  • **Copy to clipboard**: Copy the value to your clipboard.
  • **View network detection events**: Open the **Network Detections** screen in a new browser tab with filters matching this object applied.
• Deep Discovery Director attempts to retrieve an endpoint analysis report for hosts on the priority watch list and for the host that is the Interested IP in the trigger event. If there is a report, the icon is located beneath the internal host. Click on the **Endpoint Analysis Report** icon () to open the report provided by Apex Central.
  **Note**
  • Deep Discovery Director must be integrated with Apex Central before the **Endpoint Analysis Report** icon becomes available in the correlation graph.
  For details, see *Configuring Apex Central Settings on page 9-9*.

Element in Correlation Graph
External servers • External servers are identified by IP address; the domain name is also supplied if known. Email senders are identified by email address and are always displayed at the top of the **External Servers** side. Other relevant information might be displayed for external hosts. • Hover over the downward triangle icon ( ) located next to each external server to view a list of additional actions you can perform for that host. • **Copy to clipboard**: Copy the value to your clipboard. • **View network detection events**: Open the **Network Detections** screen in a new browser tab with filters matching this object applied. • **Threat Connect**: Open **Trend Micro Threat Connect** in a new browser tab with a query for this object. • **DomainTools (WHOIS)**: Open **DomainTools** in a new browser tab with a query for this IP address or domain. • **VirusTotal**: Open **VirusTotal** in a new browser tab with a query for this object.
Special Icons Additional icons provide information about elements in the correlation graph. • **Priority Watch List** icon: • **Endpoint Analysis Report** icon:  Deep Discovery Director attempts to retrieve an endpoint analysis report for hosts on the priority watch list and for the host that is the Interested IP in the trigger event. If there is a report, the icon is located beneath the internal host. Deep Discovery Director (Consolidated Mode) retrieves the report from Apex Central, which is integrated with Apex One. Apex One provides the endpoint sensor feature. There are several statuses for retrieving the report:

Element in Correlation Graph
Legend Provides a list of icons used in the correlation graph, including the following: • The color of the correlation line for the interested host • Whether the graph contains hosts on the priority watch list • Registered services icons indicating that the hosts in the graphs are members of that list      **Figure 4-2. Legend**
Interested Host Represents the focal point of this correlated event. The interaction is generally between an internal host and external server and is identified by the yellow line connecting the source and destination. **Note** Suspicious Object detections selected from Deep Discovery Director generally do not generate a **Interested Host** correlation.

Element in Correlation Graph
Activity Legend Identifies key activities for the internal host and external server participants in the graph. • Activities vary for each specific correlation graph. • Can include activities similar to the following: Brute Force Authentication, C&C Callback, Data Exfiltration, Lateral Movement, Malicious Transfer, Other Malicious Activities, and Vulnerability Exploit. • Some activities correspond to “Reason” in Deep Discovery Inspector logs.
Participant Icons You can determine the activities in which each internal host or external server participated by checking the presence of an icon in the corresponding activity column. Hover over an internal host or external server to see the activities in which they are participants highlighted in blue.

Correlation Graph Advanced Search Filter

Use the advanced search filter to create and apply customized searches.

The following table outlines the actions available for the advanced search filter.

Action	Description
Toggle panel visibility	Click on the filter icon ( ) located next to the **Playback Bar** to display or hide the advanced search filter.
Apply a saved search filter	With the advanced search filter panel displayed, click on the **Saved Search** drop-down list ( ) and then select a saved advanced search filter to apply to the **Correlation Graph**.
Add an advanced search filter	With the advanced search filter panel displayed, add an advanced search filter to apply to the **Correlation Graph**. For details, see *Adding a Correlation Graph Advanced Search Filter on page 4-123*.

Action	Description
Save an advanced search filter	With any filter applied and the advanced search filter panel hidden, click the **Save** icon (), and then select **Save** or **Save as** to save the advanced search filter.
Edit an advanced search filter	With any filter applied and the advanced search filter panel hidden, click the **Edit** icon () to display the advanced search filter panel, and then edit the search criteria. Click the **Save** button ( ) and select **Save** to save the advanced search filter.
Clear filter	With any advanced search filter applied, click the **Clear** icon () to clear the advanced search filter.

Adding a Correlation Graph Advanced Search Filter

Procedure

1. To create an **Correlation Graph** advanced search filter, go to **Detections** > **Correlated Events**, and then click on the **Correlation Data** icon () under **Details**.
2. Click on the filter icon () located next to the **Playback Bar** to display the advanced search filter.
3. Select an attribute and an associated operator.
4. Do one of the following to provide an action:
   - Type a value in the text box.
   - Select a value from the drop-down list.

Tip

Type a keyword to search a partial match.

For details, see *Network Detections Advanced Search Filter on page 4-72*.

Note

You can add multiple criteria entries by pressing ENTER after typing a value.

5. (Optional) Click **AND** or **OR** to include other criteria sets in the search filter.

6. Click **Apply**.

   The **Correlation Graph** is updated and displays data filtered by the search criteria. All search criteria sets are displayed above the **Correlation Graph**.

7. Click the **Save** button ( ) and select **Save as**.

   The **Save As** dialog appears.

8. Type a name and an optional description, and then click **Save**.

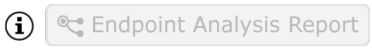
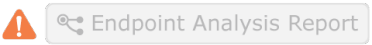
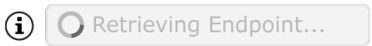
   The name of the new saved search is added to the list of saved searches.

Endpoint Analysis Reports - Status Details

The **Endpoint Analysis Report** icon can display the following statuses:

TABLE 4-32. Endpoint Analysis Report - Status Details

ICON	MESSAGE	DESCRIPTION
Endpoint Analysis Report	Report retrieved on <date + time>.	The report was retrieved with new data and is ready to open.
		The report was retrieved with existing data and is ready to open.
		The retrieval of existing data is pending.

Icon	Message	Description
	There is no correlational report for this host.	There is no correlation report with new data for this host. Additionally, an existing report does not exist.
	Cannot retrieve latest correlational report. [Error code]	You can click to open existing report.
	Cannot retrieve correlational report. [Error code]	There is no data to retrieve.
	Retrieving Endpoint Analysis Report. Please wait.	There is a report to retrieve.
	Report retrieval failed. Trying to retrieve report again. [Error code]	Deep Discovery Director is trying to retrieve the report again.

The following table describes the error codes that can appear and how to resolve the issues.

Table 4-33. Error Code Descriptions and Solutions

Error Code	Description	Solution
4	Retrieval of the Endpoint Analysis Report has timed out.	Verify that there are no connection issues between Deep Discovery Director (Consolidated Mode), Deep Discovery Director - Network Analytics as a Service, and Apex Central.
11352		
11356		
11351	Apex Central encountered an unexpected error.	Verify that Apex Central works normally.
11353	The Endpoint Sensor license is invalid.	Verify that the Endpoint Sensor license status is normal on Apex Central.

Error Code	Description	Solution
11354	Apex Central could not find the target endpoint.	Verify that Endpoint Sensor and installation of security agents are enabled in Apex Central.
11355	The operating system of the endpoint is not supported.	None. Endpoint Analysis Reports can only be generated on endpoints running Windows operating systems.

Endpoint Analysis Report

The criteria that were used to generate the endpoint analysis report are displayed at the top of the screen.

Tip

Click the down-arrow icon in the title bar to hide or display the criteria.

The endpoint analysis report includes the following tabs:

- *Analysis Chains on page 4-126*
- *Object Details on page 4-131*

Analysis Chains

The **Analysis Chains** tab displays the root cause analysis and also highlights additional information which might be beneficial to the investigation.

Information	Description
Target Endpoint	Displays details about the endpoint where the root cause chain occurred.
First Observed Object	Object that most likely created the matched object. This is often the entry point of a targeted attack. Hover over an object and click  to locate the object in the root cause analysis.

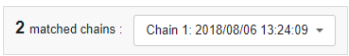
Information	Description
Matched Objects	Displays the object or a list of objects matching the investigation criteria. Hover over an object and click  to locate the object in the root cause analysis.
Noteworthy Objects	Highlights objects in the chain that are possibly malicious, based on existing Trend Micro intelligence. The value counts the number of unique noteworthy objects in the chain. Hover over the value to view the list of noteworthy objects. Hover over an object and click  to locate the object in the root cause analysis.
Root cause analysis area	Displays the root cause analysis map.

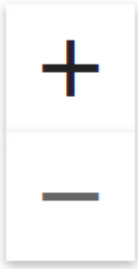
The root cause analysis area displays a visual analysis of the objects involved in an event.

Note

If the number of nodes in the root cause chain exceeds the presentation limit, only the main root cause chains are displayed.

To move around, click and drag the area to your preferred direction. This area also provides the following navigation options.

	A root cause analysis can contain one or more matched root cause chains. Click the drop down to view other root cause chains for the selected endpoint.

	Click to enter full screen mode. Click again to exit full screen mode.
	Click to zoom in or zoom out.
	Hover to view an explanation of the symbols appearing in the root cause chain.

Hover over an object in the root cause analysis area to view additional details. Click an object to display a side panel with the following tabs:

- The **Profile** tab shows the details applicable for the selected object type.

  Some objects may show only a limited set of details, or may not have any details available at the time of execution.

  The tab also displays additional options for **Matched Objects** and **Noteworthy Objects**:

  - **Add to Suspicious Objects List**: Adds the object to the **User-Defined Suspicious Object** list. The following object types can be added to the list:

    - IP addresses
    - URLs

- File SHA-1
- Domains

- The **Related Objects** tab displays all the dependencies of the matched object.

  These are the objects required to run the matched object. This tab displays the following details:

Property	Description
Action	Action done by the object.
Logged	Date and time of the recorded action.
Rating	Rating assigned to the object based on Trend Micro intelligence.
Destination path	Target destination of the object.

The following options are available to manage the **Related Objects** tab:

- The tab provides a drop down that can filter objects based on the specified action. Click the drop down to view all available actions.
- Click **Show detail** to view more details about the object.

Root Cause Analysis Icons

The analysis chain shows object types using the following icons:

Icon	Name	Description
	First Observed Object	Marks an object that most likely created the matched object
	Matched Criteria	Marks objects matching the investigation criteria
	Normal Object	Marks objects that have been verified to not pose a threat These are usually common system files.

Icon	Name	Description
	Unrated Object	Marks objects that have not yet been rated
	Suspicious Object	Marks objects that exhibit behaviors that are similar to known threats
	Malicious Object	Marks objects that match a known threat
	Boot	Objects that launch during system startup
	Browser	Objects that are capable of displaying web pages, usually a web browser
	Email client	Objects that can send and receive email messages, usually an email client or server
	Email message	Objects identified through use of the Cloud App Security integration email correlation feature
	File	Objects that are files on the disk
	Network	Objects related to network connections or the Internet
	Process	Objects that are processes running during the time of execution
	Registry	Objects that are registry keys, entries or data
	Event	Indicates actions done by the object

Icon	Name	Description
	Association	Indicates relationships between two objects

Object Details

The **Object Details** tab presents information as a table. It also organizes the objects into the following tabs:

- **Objects**: Objects involved in the execution of the matched object, grouped by their parent processes. Click ▸ to expand the list.
- **Noteworthy objects**: Objects in the chain that are possibly malicious, based on existing Trend Micro intelligence
- **File events**: Objects in the chain that are files
- **Registry events**: Objects in the chain that are registry keys, data and entries
- **IP address / DNS events**: Objects that are IP addresses or DNS events

The table provides the following details:

Column	Description
Recorded Object	Name of the recorded object. Click the object name to view more details.
PID	Process ID of the recorded object.
Recorded	Date and time when the object became involved in the chain.
Activity	Action done by the object. Click the object name to view more details.
Object Reputation	Rating assigned to the object based on Trend Micro intelligence.

Use the following options to manage the table:

- On the **Objects** tab, click the filter icon ( ) to filter the table according to the specified criteria.
- On the **Noteworthy Objects**, **File events**, **Registry Events**, and **IP Address / DNS events** tabs, sort the table by clicking on the **Recorded** and **Object Reputation** columns.

Analysis Using the Transaction and IOC Details

The **Transaction and IOC Details** section provides information about transactions and IOCs from the **Correlation Graph** section.

The oldest transactions are listed first. IOCs are listed by highest risk level first and then by first seen time.

Procedure

- Scroll through the **Transactions** and **IOCs** lists to identify information useful for analysis.
- Click on a correlation line in the **Correlation Graph** section to display a summary and to filter and limit the transactions and IOCs that are displayed in the **Transaction and IOC Details** section to ones that are directly related to the selected correlation line.

  Tip

  Click on an empty space in the **Correlation Graph** section to remove the filter.

- Click on an internal host, external server, or email sender in the **Correlation Graph** section to display details about the selected internal host, external server, or email sender in the **Transaction and IOC Details** section.

  Tip

  Click on an empty space in the **Correlation Graph** section to revert the **Transaction and IOC Details** section back to normal.

- Perform one of the following actions on **Transaction and IOC Details** section items:

Item	Action
IP addresses, domains, URLs, and hash values	Hover over the triangle icon ( ) and select one of the following: **Note** Depending on the location of the item on the screen, not all actions may be available. • **Focus**: Focus on the item in the **Correlation Graph**. • **Copy to clipboard**: Copy the value to your clipboard. • **View network detection events**: Open the **Network Detections** screen in a new browser tab with filters matching this object applied. • **Threat Connect**: Open **Trend Micro Threat Connect** in a new browser tab with a query for this object. • **DomainTools (WHOIS)**: Open **DomainTools** in a new browser tab with a query for this IP address or domain. • **VirusTotal**: Open **VirusTotal** in a new browser tab with a query for this object.
Deep Discovery Inspector rules	Click on a rule with a hyperlink to open the **Trend Micro Threat Encyclopedia** page for that rule in a new browser tab.

Viewing Correlated Events - Detection Details

Procedure

1. To view detection details for any event, click the **Details** icon under the **Details** column on the **Correlated Events** screen.

Note

The **Details** icon may not appear because:

- The related detection logs have been purged
- The current user account's role cannot see and manage appliances with related detections
- Appliances with related detections have been moved to the **Unmanaged** group
- Appliances with related detections have been unregistered from Deep Discovery Director (Consolidated Mode)

Detection details about the event are displayed.

2. In the **Connection Details** section, you may do the following:

   - Click **View in Threat Connect** to connect with **Threat Connect**, where you can search for current information about the threat.
   - Click **Download** and then select **Connection Details** to download a CSV file of the connection details.
   - Click **Download** and then select **Detected File** to download a password protected ZIP archive containing the detected file.
   - If a packet capture has been enabled and the detection matched a packet capture rule, click **Download** and then select **PCAP File** to download a password protected ZIP archive containing the pcap file.

     In the pcap file, the comment "Detected Packet" in the "pkt_comment" field marks the packet that triggered the detection.
   - Click **Download** and then select **All** to download a password protected ZIP archive containing the detected file, the packet capture file, and the connection details.

Important

Suspicious files must always be handled with caution. Extract the detected file and pcap file at your own risk.

The password for the zip archive is "virus".

3. In the **File Analysis Result** section, you may do the following:
   - Click **View Virtual Analyzer Report** to view the Virtual Analyzer report.
   - Click **Download** and then select **Virtual Analyzer Report** to download the Virtual Analyzer report.
   - Click **Download** and then select **Investigation Package** to download a password protected ZIP archive containing the investigation package.
   - Click **Download** and then select **Detected File** to download a password protected ZIP archive containing the detected file.
   - Click **Download** and then select **All** to download a password protected ZIP archive containing the detected file, the Virtual Analyzer report, and the investigation package.

Important

Suspicious files must always be handled with caution. Extract the detected file at your own risk.

The password for the zip archive is "virus".

4. In the **Suspicious Object and Related File Analysis Result** section, view suspicious object and related analyzed file information.

Correlated Events - Detection Details

Deep Discovery Inspector logs the details of each threat it detects. The **Detection Details** screen may contain the following information, depending on search and other filter criteria and settings.

- *Correlated Events - Detection Details - Connection Details on page 4-136*
- *Correlated Events - Detection Details - File Analysis Result on page 4-141*
- *Correlated Events - Detection Details - Suspicious Object and Related File Analysis Result on page 4-143*

Correlated Events - Detection Details - Connection Details

The **Connection Details** section of the **Correlated Events - Detection Details** screen can contain the following information:

- *Correlated Events - Detection Details - Detection Information on page 4-137*
- *Correlated Events - Detection Details - Connection Summary on page 4-139*
- *Correlated Events - Detection Details - Protocol Information on page 4-139*
- *Correlated Events - Detection Details - File Information on page 4-140*
- *Correlated Events - Detection Details - Additional Information on page 4-141*

Click **View in Threat Connect** to connect with Threat Connect, where you can search for current information about the threat.

Click **Download** and then select **Connection Details** to download a CSV file of the connection details.

Click **Download** and then select **Detected File** to download a password protected ZIP archive containing the detected file.

If a packet capture has been enabled and the detection matched a packet capture rule, click **Download** and then select **PCAP File** to download a password protected ZIP archive containing the pcap file. In the pcap file, the comment "Detected Packet" in the "pkt_comment" field marks the packet that triggered the detection.

Click **Download** and then select **All** to download a password protected ZIP archive containing the detected file, the packet capture file, and the connection details.

Important

- Suspicious files and pcap files must always be handled with caution. Extract the detected file and pcap file at your own risk. Trend Micro recommends analyzing the files in an isolated environment.
- The password for the zip archive is "virus".

Correlated Events - Detection Details - Detection Information

Information provided in the **Detection Information** section may include the following:

- Activity detected
- Attack phase
- Correlation Rule ID (ICID)
- Detection name
- Detection rule ID
- Detection severity
- Event class
- Notable Object
- Protocol
- Reference
- Targeted attack campaign
- Targeted attack related
- Threat
- Threat description
- Detection type
- Timestamp

- URL category
- Virtual Analyzer risk level

Note

Additional information may appear for specific correlated incidents.

TABLE 4-34. Detection Types

DETECTION TYPES	DESCRIPTION
Correlated Incident	Events/detections that occur in a sequence or reach a threshold and define a pattern of activity
Disruptive Application	Any peer-to-peer, instant messaging, or streaming media applications considered to be disruptive because they may do the following: • Affect network performance • Create security risks • Distract employees
Exploit	Network and file-based attempts to access information
Grayware	Adware/grayware detections of all types and confidence levels
Malicious Behavior	Behavior that definitely indicates compromise with no further correlation needed, including the following: • Positively-identified malware communications • Known malicious destination contacted • Malicious behavioral patterns and strings
Malicious Content	File signature detections
Malicious URL	Websites that try to perform malicious activities

Detection Types	Description
Suspicious Behavior	Behavior that could indicate compromise but requires further correlation to confirm, including the following: • Anomalous behavior • False or misleading data • Suspicious and malicious behavioral patterns and strings

Correlated Events - Detection Details - Connection Summary

Information provided in the **Connection Summary** section may include the following:

- A graphical display that includes the direction of the event and other information. The **Client** in the diagram is the host that initiated the connection.
- Host details may include the following:
  - Host name
  - IP address and port
  - Last logon user
  - MAC address
  - Network group
  - Network zone
  - Operating system

Correlated Events - Detection Details - Protocol Information

Information provided in the **Protocol Information** section may include the following:

- BOT command
- BOT URL

- Domain name
- Host name
- HTTP referer
- ICMP code
- ICMP type
- IRC channel name
- IRC nick name
- Message ID
- Protocol
- Queried domain
- Recipients
- Sender
- Subject
- Target share
- Transport Layer Security (TLS)
- URL
- User agent
- User name

Correlated Events - Detection Details - File Information

Information provided in the **File Information** section may include the following:

- File name
- File SHA-1

- File SHA-256
- File size

Correlated Events - Detection Details - Additional Information

Information provided in the **Additional Information** section may include the following:

- Attempted to disrupt connection
- Detected by
- Mitigation
- VLAN ID

Correlated Events - Detection Details - File Analysis Result

The **File Analysis Result** section of the **Correlated Events - Detection Details** screen contains the following information:

- *Correlated Events - Detection Details - File Analysis Result - File Information on page 4-142*
- *Correlated Events - Detection Details - File Analysis Result - Notable Characteristics on page 4-143*

Click **View Virtual Analyzer Report** to view the Virtual Analyzer report.

Click **Download** and then select **Virtual Analyzer Report** to download the Virtual Analyzer report.

Tip

Viewing or downloading the Virtual Analyzer report may take longer than the other options. Allocate more time for the Virtual Analyzer report to appear or download.

Click **Download** and then select **Investigation Package** to download a password protected ZIP archive containing the investigation package.

Important

Suspicious files must always be handled with caution. Extract the detected file at your own risk.

The password for the zip archive is "virus".

Click **Download** and then select **Detected File** to download a password protected ZIP archive containing the detected file.

Click **Download** and then select **All** to download a password protected ZIP archive containing the detected file, the Virtual Analyzer report, and the investigation package.

Correlated Events - Detection Details - File Analysis Result - File Information

Information provided in the **File Analysis Result** - **File Information** section of the **Detection Details** screen may include the following:

- Child objects
  - File name / URL
  - File size (bytes)
  - Type
  - File SHA-1
  - File SHA-256
- File name
- File size
- File type
- File MD5
- File SHA-1
- File SHA-256
- Threat

- Virtual Analyzer risk level

Correlated Events - Detection Details - File Analysis Result - Notable Characteristics

Information provided in the **File Analysis Result** - **Notable Characteristics** section of the **Detection Details** screen may include characteristics that are commonly associated with malware. Characteristics are grouped into the following categories:

- Anti-security, self-preservation
- Autostart or other system reconfiguration
- Deception, social engineering
- File drop, download, sharing, or replication
- Hijack, redirection, or data theft
- Malformation or other known malware traits
- Process, service, or memory object change
- Rootkit, cloaking
- Suspicious network or messaging activity
- Other notable characteristic

Correlated Events - Detection Details - Suspicious Object and Related File Analysis Result

The **Suspicious Object and Related File Analysis Result** section of the **Correlated Events - Detection Details** screen contains the following information:

- *Correlated Events - Detection Details - Suspicious Object Information on page 4-144*
- *Correlated Events - Detection Details - Related Analyzed File Information on page 4-144*

Correlated Events - Detection Details - Suspicious Object Information

Information provided in the **Suspicious Object Information** section may include the following:

- Related analyzed file
- Virtual Analyzer risk level
- Suspicious object
- Type

Correlated Events - Detection Details - Related Analyzed File Information

Information provided in the **Related Analyzed File Information** section of the **Detection Details** screen may include the following:

- Child objects
  - File name
  - File size (bytes)
  - Type
  - File SHA-1
  - File SHA-256
- File name
- File size
- File type
- File MD5
- File SHA-1
- File SHA-256
- Threat
- Virtual Analyzer risk level

Notable characteristics that are commonly associated with malware. Characteristics are grouped into the following categories:

- Anti-security, self-preservation
- Autostart or other system reconfiguration
- Deception, social engineering
- File drop, download, sharing, or replication
- Hijack, redirection, or data theft
- Malformation or other known malware traits
- Process, service, or memory object change
- Rootkit, cloaking
- Suspicious network or messaging activity
- Other notable characteristic

Ignore Rules

The **Ignore Rules** feature allows you to hide specific detection logs from the management console, and to ignore those detection logs when displaying information.

Ignore Rules Tasks

Task	Steps
Create an ignore rule	Ignore rules are created using the **Network Detections** or **Email Messages Advanced Search** filter. For details, see *Creating an Ignore Rule on page 4-146*.
View rule details	Hover on any text in the **Criteria** or **Description** columns to view the details of the ignore rule.

Task	Steps
Delete rule	Select one or more ignore rules to delete and then click **Delete**.
Toggle rule status	Click on the toggle in the **Status** column to enable or disable the ignore rule. **Important** By default, ignore rules are disabled. Enabling a rule causes matching detection logs to be hidden from the management console, and to be ignored when displaying information.

Creating an Ignore Rule

Procedure

1. To create an ignore rule, go to **Detections** > **Network Detections** or **Detections** > **Email Messages**, and then click **Advanced**.
2. Select an attribute and an associated operator.
3. Do one of the following to provide an action:
   - Type a value in the text box.
   - Select a value from the drop-down list.

   Tip
   Type a keyword to search a partial match.

   Note
   You can add multiple criteria entries by pressing ENTER after typing a value.
4. (Optional) Click **AND** or **OR** to include other criteria sets in the search filter.

5. Click **Create Ignore Rule**.

   The **Create Ignore Rule** dialog appears.

6. Type a name for this rule.

7. (Optional) Type a description for this rule.

8. Click **Save**.

   The ignore rule is created and can be enabled from the **Detections** > **Ignore Rules** screen.

Chapter 5

Threat Intelligence

Learn about threat intelligence and related tasks in the following topics.

Product Intelligence

Deep Discovery Director (Consolidated Mode) consolidates threat intelligence from managed appliances.

Synchronized Suspicious Objects

The **Synchronized Suspicious Objects** screen displays a list of suspicious objects detected by Virtual Analyzer.

Suspicious object detections can be sorted by **Object**, **Type**, **Risk Level**, **Sync Source**, **Expiration**, and **Detections**.

Viewing Synchronized Suspicious Objects

View synchronized suspicious objects to understand your risk, find related detections, and assess the relative prevalence of the suspicious object.

Procedure

1. Go to **Threat Intelligence** > **Product Intelligence** > **Synchronized Suspicious Objects**.

   The **Synchronized Suspicious Objects** screen appears.

2. Click the drop-down for detection type and then select one of the following detection types:

   - **All** (default)
   - **IP addresses**
   - **URLs**
   - **File SHA-1**
   - **Domains**

3. To run a search, type an IP address, domain, URL or SHA-1 hash value in the search text box, and then press ENTER or click the magnifying glass icon.

4. (Optional) Click a number in the **Network Detections** or **Email Messages** column to drill-down to the **Network Detections** or **Email Messages** screen with filters applied.

   Note

   The **Network Detections** number only includes detections from Deep Discovery Inspector appliances. The **Email Messages** number only includes email messages from Deep Discovery Email Inspector appliances.

5. (Optional) To configure detections-related display settings, hover over the **Network Detections** or **Email Messages** icon in the column title and select **Display Settings**.

   a. Select a time period.

   b. Select which appliances to include as data source, and domains from which email messages should be displayed.

      Note

      The time period, data source, and monitored domain filters only affect the **Detections** numbers.

   c. Click **Apply**.

6. (Optional) Click on the column titles to sort the list of synchronized suspicious objects.

Exporting Synchronized Suspicious Objects

The **Synchronized Suspicious Objects** list can be exported in CSV format for offline viewing.

Procedure

1. Go to **Threat Intelligence** > **Product Intelligence** > **Synchronized Suspicious Objects**.

   The **Synchronized Suspicious Objects** screen appears.

2. (Optional) Apply filters and search keywords as required.

   For details, see *Viewing Synchronized Suspicious Objects on page 5-2*.

3. Click **Export** to export the currently filtered list of synchronized suspicious objects.

   The **Export** dialog appears.

4. Confirm the filters and select a delimiter to use.

   - **Comma**
   - **Semicolon**
   - **Space**
   - **Tab**

5. Click **Export** to export and download the currently filtered list of synchronized suspicious objects to a CSV file with the chosen delimiter.

Moving Synchronized Suspicious Objects to Exceptions

Objects that you consider harmless can be moved to the **Exceptions** list. Exceptions are considered safe and will not be added to the **Synchronized Suspicious Objects** list if detected by Virtual Analyzer in the future.

Note

Objects may appear in both the **Exceptions** and **Synchronized Suspicious Objects** lists while newly registered Deep Discovery appliances are still syncing threat intelligence.

Procedure

1. Go to **Threat Intelligence** > **Product Intelligence** > **Synchronized Suspicious Objects**.

   The **Synchronized Suspicious Objects** screen appears.

2. (Optional) Apply filters and search keywords as required.

   For details, see *Viewing Synchronized Suspicious Objects on page 5-2*.

3. Select one or more objects that you consider harmless and then click **Move to Exceptions**.

   The **Move To Exceptions** dialog appears.

4. Click **Move** to move the selected objects to the **Exceptions** list.

Expiring Synchronized Suspicious Objects

Expire objects to remove them from the **Synchronized Suspicious Objects** list. If the same object is detected by Virtual Analyzer in the future, it will be added to the **Synchronized Suspicious Objects** list again.

Procedure

1. Go to **Threat Intelligence** > **Product Intelligence** > **Synchronized Suspicious Objects**.

   The **Synchronized Suspicious Objects** screen appears.

2. (Optional) Apply filters and search keywords as required.

   For details, see *Viewing Synchronized Suspicious Objects on page 5-2*.

3. Select one or more objects that you want to remove from the **Synchronized Suspicious Objects** list and then click **Expire Now**.

   The **Expire Now** dialog appears.

4. Click **Expire** to remove the selected objects from the **Synchronized Suspicious Objects** list.

Setting Synchronized Suspicious Objects to Never Expire

Objects that you consider harmful can be set to never expire and will never be removed from the **Synchronized Suspicious Objects** list.

Procedure

1. Go to **Threat Intelligence** > **Product Intelligence** > **Synchronized Suspicious Objects**.

   The **Synchronized Suspicious Objects** screen appears.

2. (Optional) Apply filters and search keywords as required.

   For details, see *Viewing Synchronized Suspicious Objects on page 5-2*.

3. Select one or more objects that you consider harmful and then click **Never Expire**.

   The **Never Expire** dialog appears.

4. Click **Never Expire** to set the selected objects to never expire and never remove from the **Synchronized Suspicious Objects** list.

Configuring Expiration Settings

By default, synchronized suspicious objects expire in 21 days. Newly synced suspicious objects can be configured to expire earlier.

Procedure

1. Go to **Threat Intelligence** > **Product Intelligence** > **Synchronized Suspicious Objects**.

   The **Synchronized Suspicious Objects** screen appears.

2. Click the gear icon above the **Expiration** column.

   The **Expiration Settings** dialog appears.

3. Select **Set newly synced suspicious objects to expire in:**, and then select a days value from the drop-down list.

4. Click **Save**.

C&C Callback Addresses

The **C&C Callback Addresses** screen displays a list of C&C callback addresses identified by Deep Discovery Inspector scan engine pattern and rule matches.

C&C callback address detections can be sorted by **Callback Address**, **C&C Risk Level**, **Type**, **Sync Source**, **Latest Callback**, and **Callbacks**.

Viewing C&C Callback Addresses

Procedure

1. Go to **Threat Intelligence** > **Product Intelligence** > **C&C Callback Addresses**.

   The **C&C Callback Addresses** screen appears.

2. Click the drop-down for detection type and then select one of the following detection types:

   - **All** (default)
   - **IP addresses**
   - **URLs**
   - **Domains**

3. To configure display settings, hover over the **Callbacks** column title and select **Display Settings**.

The **Display Settings** dialog appears.

4. Select a time period.
5. Select which appliances to include as data source.

Note

The time period and data source filters only affect the **Callbacks** numbers.

6. To run a partial match search, type a case-insensitive keyword in the search text box, and then press ENTER or click the magnifying glass icon.
7. (Optional) Click a number in the **Callbacks** column to drill-down to the **Network Detections** screen with filters applied.
8. (Optional) Click on the column titles to sort the list of C&C callback addresses.

Exporting C&C Callback Addresses

The **C&C Callback Addresses** list can be exported in CSV format for offline viewing.

Procedure

1. Go to **Threat Intelligence** > **Product Intelligence** > **C&C Callback Addresses**.

   The **C&C Callback Addresses** screen appears.
2. (Optional) Apply filters and search keywords as required. For details, see *Viewing C&C Callback Addresses on page 5-7*.
3. Click **Export** to export the currently filtered list of C&C callback addresses.

   The **Export** appears.

4. Confirm the filters and select a delimiter to use.
   - **Comma**
   - **Semicolon**
   - **Space**
   - **Tab**
5. Click **Export** to export and download the currently filtered list of C&C callback addresses to a CSV file with the chosen delimiter.

Copying C&C Callback Addresses to User-Defined Suspicious Objects

C&C callback addresses that you consider harmful can be copied to the **User-Defined Suspicious Objects** list.

Procedure

1. Go to **Threat Intelligence** > **Product Intelligence** > **C&C Callback Addresses**.

   The **C&C Callback Addresses** screen appears.
2. (Optional) Apply filters and search keywords as required. For details, see *Viewing C&C Callback Addresses on page 5-7*.
3. Select one or more C&C callback addresses that you consider harmful and then click **Copy to User-Defined SO**.

   The **Copy to User-Defined Suspicious Objects** dialog appears.
4. Click **Copy** to copy the selected C&C callback addresses to the **User-Defined Suspicious Objects** list.

Copying C&C Callback Addresses to Exceptions

C&C callback addresses that you consider harmless can be copied to the **Exceptions** list.

Procedure

1. Go to **Threat Intelligence** > **Product Intelligence** > **C&C Callback Addresses**.

   The **C&C Callback Addresses** screen appears.

2. (Optional) Apply filters and search keywords as required. For details, see *Viewing C&C Callback Addresses on page 5-7*.

3. Select one or more C&C callback addresses that you consider harmless and then click **Copy to Exceptions**.

   The **Copy to Exceptions** dialog appears.

4. Click **Copy** to copy the selected C&C callback addresses to the **Exceptions** list.

Custom Intelligence

Deep Discovery products provide different ways to protect against suspicious objects not yet identified within your network:

- *YARA Rules on page 5-11*
- *STIX on page 5-16*
- *User-Defined Suspicious Objects on page 5-19*

Deep Discovery Director (Consolidated Mode) allow you to exclude objects from the **Synchronized Suspicious Objects** list based on the file SHA-1 hash value, IP address, domain or URL:

- *Exceptions on page 5-27*

YARA Rules

Deep Discovery products use 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 Director (Consolidated Mode) supports a maximum of 5,000 YARA rules regardless of the number of YARA rule files.

The following table shows information about YARA rule files.

TABLE 5-1. YARA Rules

COLUMN	DESCRIPTION
File Name	Name of the YARA rule file.
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.
Risk Level	Risk level of the YARA rules. **Note** Only Deep Discovery Email Inspector utilizes these risk levels.
Description	Description of the YARA rule file.
Last Updated	Date and time the YARA rule file was last updated.
Updated By	The account that last updated the YARA rule file.
Network Detections	Click a number to drill-down to the **Network Detections** screen with filters applied. The number only includes detections from Deep Discovery Inspector appliances.
Email Messages	Click a number to drill-down to the **Email Messages** screen with filters applied. The number only includes email messages from Deep Discovery Email Inspector appliances.

Creating a YARA Rule File

Deep Discovery Director (Consolidated Mode) 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 5-2. 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 products. • The weight value is ignored 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

YARA rules on managed appliances will be overwritten after syncing with Deep Discovery Director (Consolidated Mode). To ensure that no YARA rules are lost, export them from the managed appliances and add them to Deep Discovery Director (Consolidated Mode).

Procedure

1. Go to **Threat Intelligence** > **Custom Intelligence** > **YARA Rules**.

   The **YARA Rules** screen appears.

2. Click **Add**.

   The **Add YARA Rule File** dialog appears.

3. Click **Select** to locate a YARA rule file to add.

4. To specify the file types that Virtual Analyzer processes specific to this YARA rule file, select or type to search a file type and press ENTER. Select **All file types** to let Virtual Analyzer process all file types with this YARA rule file.

   Note

   - Trend Micro recommends only specifying the file types targeted by the YARA rules. The **All file types** option includes additional file types that are not supported by Virtual Analyzer. Only Deep Discovery Email Inspector utilizes those additional file types.
   - File types that are not supported by Virtual Analyzer can be added as custom file types. Only Deep Discovery Email Inspector utilizes custom file types.

5. Select the risk level for the YARA rules in the file.

   Note

   Only Deep Discovery Email Inspector utilizes these risk levels.

6. (Optional) Type a description for this YARA rule file.

7. Click **Add**.

   The YARA rule file appears in the **YARA Rules** list. Registered appliances receive the updated **YARA Rules** list during the next synchronization.

Editing a YARA Rule File

Procedure

1. Go to **Threat Intelligence** > **Custom Intelligence** > **YARA Rules**.

   The **YARA Rules** screen appears.

2. Click the file name of the YARA rule file you want to edit.

   The **Edit YARA Rule File** dialog appears.

3. Modify the settings.

4. Click **Save**.

Exporting YARA Rule Files

The YARA rule files can be exported for use in other YARA compatible products.

Procedure

1. Go to **Threat Intelligence** > **Custom Intelligence** > **YARA Rules**.

   The **YARA Rules** screen appears.

2. Do one of the following to export the YARA rule files:

   - To export all YARA rule files, click **Export** without selecting any YARA rule files.
   - To export specific YARA rule files, select the YARA rule files to export and click **Export Selected**.

   Deep Discovery Director (Consolidated Mode) creates a ZIP archive with the YARA rule files.

Note

Regardless of the original encoding used when the YARA rule files were imported, exported YARA rule files will always use UTF-8 encoding.

3. Download and save the ZIP archive.

Deleting YARA Rule Files

Delete unused YARA rule files to reduce the number of rules in use, or to free up database disk space.

Procedure

1. Go to **Threat Intelligence** > **Custom Intelligence** > **YARA Rules**.

   The **YARA Rules** screen appears.

2. Select one or more YARA rule files to delete and then click **Delete**.

   The YARA rule files are deleted from the **YARA Rules** list. Registered appliances receive the updated **YARA Rules** list during the next synchronization.

STIX

Deep Discovery Director (Consolidated Mode) enables you to import objects to the **User-Defined Suspicious Objects** list using the **Structured Threat Information eXpression (STIX)** format.

The following table shows information about STIX files.

TABLE 5-3. STIX

COLUMN	DESCRIPTION
File Name	Name of the STIX file.

Column	Description
Description	Description of the STIX file.
Version	Version of the STIX file.
Imported	Date and time the STIX file was imported.
Imported By	The Deep Discovery Director (Consolidated Mode) account or TAXII client IP address that imported the STIX file.

Importing Objects From STIX

Procedure

1. Go to **Threat Intelligence** > **Custom Intelligence** > **STIX**.

   The **STIX** screen appears.

2. Click **Import**.

   The **Import Objects From STIX** dialog appears.

3. Click **Select** to locate a STIX file to import.

4. (Optional) Type a description for this STIX file.

5. Click **Import**.

Note

- Only IP addresses, domains, URLs, file SHA-1 hash values, and file SHA-256 hash values will be added to the **User-Defined Suspicious Objects** list.
- When using STIX 1.x, only `Indicators` whose `Confidence` is not `Medium`, `Low`, `None`, or `Unknown` will be added to the **User-Defined Suspicious Objects** list.
- When using STIX 2.0, only `"indicator"` type objects that are not labeled as `"anomalous-activity"`, `"anonymization"`, `"benign"`, or `"compromised"`, and that are not revoked will be added to the **User-Defined Suspicious Objects** list.
- The STIX file and object information can be shared as part of threat intelligence.

The objects appear in the **User-Defined Suspicious Objects** list. Registered appliances receive the updated **User-Defined Suspicious Objects** list during the next synchronization.

Exporting STIX Files

The STIX files can be exported for use in other STIX compatible products.

Procedure

1. Go to **Threat Intelligence** > **Custom Intelligence** > **STIX**.

   The **STIX** screen appears.

2. Do one of the following to export the STIX files:
   - To export all STIX files, click **Export** without selecting any STIX files.
   - To export specific STIX files, select the STIX files to export and click **Export Selected**.

Deep Discovery Director (Consolidated Mode) creates a ZIP archive with the STIX files.

Deleting STIX Files

Procedure

1. Go to **Threat Intelligence** > **Custom Intelligence** > **STIX**.

   The **STIX** screen appears.

2. Select one or more STIX files to delete and then click **Delete**.

   The STIX files are deleted from the **STIX** list.

   Note

   Deleting the STIX files does not affect already imported objects.

User-Defined Suspicious Objects

The **User-Defined Suspicious Objects** list allows you to define suspicious file SHA-1 hash value, suspicious file SHA-256 hash value, IP address, URL, and domain objects that Deep Discovery products with Virtual Analyzer have not yet detected on your network. Supported Deep Discovery products can take action on the objects found in the list to prevent the spread of unknown threats.

Viewing User-Defined Suspicious Objects

Procedure

1. Go to **Threat Intelligence** > **Custom Intelligence** > **User-Defined Suspicious Objects**.

The **User-Defined Suspicious Objects** screen appears.

2. Click the drop-down for detection type and then select one of the following detection types:
   - **All** (default)
   - **IP addresses**
   - **URLs**
   - **File SHA-1**
   - **File SHA-256**
   - **Domains**
3. To run a search, type an IP address, domain, URL, SHA-1 hash value, SHA-256 hash value, or description keyword in the search text box, and then press ENTER or click the magnifying glass icon.
4. (Optional) Click a number in the **Network Detections** or **Email Messages** column to drill-down to the **Network Detections** or **Email Messages** screen with filters applied.

   Note

   The **Network Detections** number only includes detections from Deep Discovery Inspector appliances. The **Email Messages** number only includes email messages from Deep Discovery Email Inspector appliances.

5. (Optional) To configure display settings, hover over the **Network Detections** or **Email Messages** icon in the column title and select **Display Settings**.
   a. Select a time period.
   b. Select which appliances to include as data source, and domains from which email messages should be displayed.

Note

The time period, data source, and monitored domain filters only affect the **Detections** numbers.

6. (Optional) Click on the column titles to sort the list of user-defined suspicious objects.

Viewing User-Defined Suspicious Objects - Correlation Data

Deep Discovery Director - Network Analytics is a transparent solution that provides advanced threat analysis using correlation data. If a suspicious object has correlation data, you can access it through Deep Discovery Director.

Procedure

1. Go to **Threat Intelligence** > **Custom Intelligence** > **User-Defined Suspicious Objects**.
2. To view correlation data, click the **Correlation Data** icon ( ) under **Details**.

Note

- The **Correlation Data** icon is grayed out when correlation data is unavailable.
- Deep Discovery Director - Network Analytics only stores correlation data for suspicious objects for a limited time, even if the suspicious objects are set to never expire.
- Deep Discovery Inspector appliances from which you want to collect correlated data must enabled as connected sources.

The **Correlation Data** screen appears.

3. Use the following sections for advanced analysis of malicious activity:

- **Summary**

  Displays the severity, the number of detected internal hosts and Indicators of Compromise (IOCs), the assigned attack patterns, and provides a high-level overview of the malicious activity of the correlation data.

- **Correlation Graph**

  Provides a visual representation of correlations made between the correlated event selected in Deep Discovery Director and other related events as they occurred over time.

- **Transaction and IOC Details**

  Provides details about each transaction represented in the correlation graph, and each detected Indicator of Compromise (IOC). Transactions are listed from oldest transaction at the top to the most recent transaction at the bottom. IOCs are listed from oldest first seen at the top to the most recent first seen at the bottom.

Tip

Information displayed in the **Correlation Data** screen is created dynamically. The number of correlations and details about interactions and malicious activity between hosts presented in this screen can change over time. You can access the correlation data for a specific detection at a later time to see if additional analysis details are available.

4. For details on how to use the information displayed in the **Correlation Data** screen to assist in advanced analysis, see *Analyzing Correlation Data Information on page 4-112*.

Adding a User-Defined Suspicious Object

Procedure

1. Go to **Threat Intelligence** > **Custom Intelligence** > **User-Defined Suspicious Objects**.

   The **User-Defined Suspicious Objects** screen appears.

2. Click **Add**.

   The **Add Object** dialog appears.

3. Select the object type:

   - **IP address**: type an IP address or a hyphenated range.

     Note

     IPv4 and IPv6 addresses and subnet mask bits are supported.

   - **URL**: type a URL.

     Note

     HTTP and HTTPS URLs are supported.

   - **File SHA-1**: type the SHA-1 hash value of a file.
   - **File SHA-256**: type the SHA-256 hash value of a file.
   - **Domain**: type a domain name.

     Note

     One wildcard (*) connected with a "." in the domain prefix is supported.

4. (Optional) Type a description for this object.
5. Click **Add**.

The object appears in the **User-Defined Suspicious Objects** list. Registered appliances receive the updated **User-Defined Suspicious Objects** list during the next synchronization.

Tip

Objects can also be added from product intelligence.

For details, see *Copying C&C Callback Addresses to User-Defined Suspicious Objects on page 5-9*.

Editing a User-Defined Suspicious Object

Procedure

1. Go to **Threat Intelligence** > **Custom Intelligence** > **User-Defined Suspicious Objects**.

   The **User-Defined Suspicious Objects** screen appears.

2. Click the object you want to edit.

   The **Edit Object** dialog appears.

3. Modify the settings.

   Note

   The object type cannot be modified.

4. Click **Save**.

Importing User-Defined Suspicious Objects

Deep Discovery Director (Consolidated Mode) supports importing objects from a CSV file.

Procedure

1. Go to **Threat Intelligence** > **Custom Intelligence** > **User-Defined Suspicious Objects**.

   The **User-Defined Suspicious Objects** screen appears.

2. Click **Import**.

   The **Import Objects From CSV** dialog appears.

3. Click **Select** to locate a CSV file to import.

   Tip

   If you are importing a CSV for the first time, click **Download sample CSV** and save the file. Populate the CSV file with properly-formatted objects (see the instructions in the CSV file), save the file, and then click **Select** to locate the CSV file.

4. Select the delimiter that is used in the CSV file.

5. Click **Import**.

   The objects appear in the **User-Defined Suspicious Objects** list. Registered appliances receive the new object information during the next synchronization.

Exporting User-Defined Suspicious Objects

The **User-Defined Suspicious Objects** list can be exported in CSV format for offline viewing.

Procedure

1. Go to **Threat Intelligence** > **Custom Intelligence** > **User-Defined Suspicious Objects**.

2. (Optional) Apply filters and search keywords as required.

   For details, see *Viewing User-Defined Suspicious Objects on page 5-19*.

3. Click **Export** to export the currently filtered list of user-defined suspicious objects.

   The **Export** dialog appears.

4. Confirm the filters and select a delimiter to use.

   - **Comma**
   - **Semicolon**
   - **Space**
   - **Tab**

5. Click **Export** to export and download the currently filtered list of user-defined suspicious objects to a CSV file with the chosen delimiter.

Deleting User-Defined Suspicious Objects

Delete unused user-defined suspicious objects to reduce the number of objects. When the maximum number of objects has been reached, adding or importing objects overwrites the oldest objects.

Procedure

1. Go to **Threat Intelligence** > **Custom Intelligence** > **User-Defined Suspicious Objects**.

   The **User-Defined Suspicious Objects** screen appears.

2. Select one or more objects to delete and then click **Delete**.

   The object is deleted from the **User-Defined Suspicious Objects** list. Registered appliances receive the updated **User-Defined Suspicious Objects** list during the next synchronization.

Configuring Expiration Settings

By default, user-defined suspicious objects never expire. Existing and newly added user-defined suspicious objects can be configured to automatically expire.

Procedure

1. Go to **Threat Intelligence** > **Custom Intelligence** > **User-Defined Suspicious Objects**.
2. Click the gear icon above the detections columns.

   The **Expiration Settings** dialog appears.
3. Select **Set existing and newly added user-defined suspicious objects to expire in:**, and then select a days value from the drop-down list.
4. Click **Save**.

   The expiration settings immediately apply to existing objects, and are applied to newly added objects as they are added.

Note

- Objects that have not been updated in the specified number of days will be deleted immediately. Deleted objects cannot be restored.
- Disabling expiration settings sets all existing objects to never expire.

Exceptions

Objects that you consider harmless can be added to the **Exceptions** list. Exceptions are considered safe and will not be added to the **Synchronized Suspicious Objects** list if detected by Virtual Analyzer in the future.

Note

Objects may appear in both the **Exceptions** and **Synchronized Suspicious Objects** lists while newly registered Deep Discovery appliances are still syncing threat intelligence.

Viewing Exceptions

Procedure

1. Go to **Threat Intelligence** > **Custom Intelligence** > **Exceptions**.

   The **Exceptions** screen appears.

2. Click the drop-down for detection type and then select one of the following detection types:

   - **All** (default)
   - **IP addresses**
   - **URLs**
   - **File SHA-1**
   - **Domains**

3. To run a search, type an IP address, domain, URL, SHA-1 hash value, or description keyword in the search text box, and then press ENTER or click the magnifying glass icon.

4. (Optional) Click on the column titles to sort the list of exceptions.

Adding an Exception

Procedure

1. Go to **Threat Intelligence** > **Custom Intelligence** > **Exceptions**.

   The **Exceptions** screen appears.

2. Click **Add**.

   The **Add Exception** dialog appears.

3. Select the object type:

   - **IP address**: type an IP address or a hyphenated range.

     Note

     IPv4 and IPv6 addresses and subnet mask bits are supported.

   - **URL**: type a URL.

     Note

     HTTP and HTTPS URLs are supported.

   - **File SHA-1**: type the SHA-1 hash value of a file.
   - **Domain**: type a domain name.

     Note

     One wildcard (*) connected with a "." in the domain prefix is supported.

4. (Optional) Type a description for this object.
5. Click **Add**.

   The object appears in the **Exceptions** list. Registered appliances receive the updated **Exceptions** list during the next synchronization.

Tip

Exceptions can also be added from product intelligence. For details, see the following topics:

- *Moving Synchronized Suspicious Objects to Exceptions on page 5-4*
- *Copying C&C Callback Addresses to Exceptions on page 5-10*

Importing Exceptions

Procedure

1. Go to **Threat Intelligence** > **Custom Intelligence** > **Exceptions**.

   The **Exceptions** screen appears.

2. Click **Import**.

   The **Import Objects From CSV** dialog appears.

3. Click **Select** to locate a CSV file to import.

   Tip

   If you are importing a CSV for the first time, click **Download sample CSV** and save the file. Populate the CSV file properly formatted objects (see the instructions in the CSV file), save the file, and then click **Select** to locate the CSV file.

4. Click **Import**.

   The objects appear in the **Exceptions** list. Registered appliances receive the new object information during the next synchronization.

Deleting Exceptions

Delete unused exceptions to reduce the number of objects. When the maximum number of objects has been reached, adding or importing objects overwrites the oldest objects.

Procedure

1. Go to **Threat Intelligence** > **Custom Intelligence** > **Exceptions**.

   The **Exceptions** screen appears.

2. Select one or more objects to delete and then click **Delete**.

   The object is deleted from the **Exceptions** list. Registered appliances receive the updated **Exceptions** list during the next synchronization.

Feed Management

Deep Discovery Director (Consolidated Mode) allows you to subscribe to and monitor intelligence feeds for threat information that can be used to complement your product and custom intelligence.

The following table shows information about intelligence feeds.

TABLE 5-4. Intelligence Feeds

COLUMN	DESCRIPTION
Feed Name	Name of the intelligence feed.
TAXII Version	TAXII version of the intelligence feed.
API Root	API root of the intelligence feed.
Collection	Collection that is selected from the intelligence feed.
Polling Interval	Frequency at which the intelligence feed is polled for information.
Last Polled	Date and time the intelligence feed was last polled for information.
Status	Click the toggle to enable or disable polling the intelligence feed for information.

Adding an Intelligence Feed

Procedure

1. Go to **Threat Intelligence** > **Feed Management**.

   The **Feed Management** screen appears.

2. Click **Add**.

   The **Add Intelligence Feed** screen appears.

3. Enable the intelligence feed.

4. Type a name for this intelligence feed.

5. Select the server version for this intelligence feed.

   Note

   The server version cannot be modified once the intelligence feed has been added.

6. Type the discovery URL for this intelligence feed.

7. (Optional) Select **Use server certificate** if the server uses it, and then click **Select** to locate the server certificate file.

8. (Optional) Select **Specify authentication credentials** if the server requires it, and then type the user name and password used for authentication.

9. (Optional) Select **Server requires client authentication** if the server requires it, and then click **Select** to locate the client certificate file.

10. (Optional) Type the client certificate passphrase.

11. Click **Discover** to find and then select an available collection.

12. Select the frequency at which the intelligence feed is polled for information.

13. Select how far in the past you want to begin polling information from.
14. Click **Add**.

    The intelligence feed appears in the **Feed Management** list. Polled information that contains IP addresses, domains, URLs, SHA-1 hash values, and SHA-256 hash values will be added to the **User-Defined Suspicious Objects** list. Registered appliances receive the updated **User-Defined Suspicious Objects** list during the next synchronization.

Note

- When using TAXII 1.x, only `Indicators` whose `Confidence` is not `Medium`, `Low`, `None`, or `Unknown` will be added to the **User-Defined Suspicious Objects** list.
- When using TAXII 2.0, only `"indicator"` type objects that are not labeled as `"anomalous-activity"`, `"anonymization"`, `"benign"`, or `"compromised"`, and that are not revoked will be added to the **User-Defined Suspicious Objects** list.
- When using TAXII 2.0, there are certain specifications to ensure server compatibility. For more information visit the following site:

  http://docs.oasis-open.org/cti/taxii/v2.0/cs01/taxii-v2.0-cs01.html

Editing an Intelligence Feed

Procedure

1. Go to **Threat Intelligence** > **Feed Management**.

   The **Feed Management** screen appears.
2. Click the feed name of the intelligence feed you want to edit.

   The **Edit Intelligence Feed** screen appears.
3. Modify the settings.

Note

The server version cannot be modified once the intelligence feed has been added.

4. Click **Save**.

Deleting Intelligence Feeds

Procedure

1. Go to **Threat Intelligence** > **Feed Management**.

   The **Feed Management** screen appears.

2. Select one or more intelligence feeds to delete and then click **Delete**.

   The intelligence feeds are deleted from the **Feed Management** list. STIX files that were obtained from the intelligence feeds and that were added to the **STIX** list will be deleted. Deleting the STIX files does not affect already imported objects.

Sharing Settings

Deep Discovery Director (Consolidated Mode) provides various methods to share threat intelligence data with other products or services:

TAXII 1.x

Deep Discovery Director (Consolidated Mode) can share threat intelligence data with other products or services through TAXII 1.x.

Configuring TAXII 1.x Settings

Procedure

1. Go to **Threat Intelligence** > **Sharing Settings** > **TAXII 1.x**.

   The **TAXII 1.x** screen appears.

2. Select **Enable TAXII 1.x server to allow exchange of threat intelligence with integrated products/services**.

3. Type the user name and password used for authentication.

4. Select the risk level of the objects to be included in the threat intelligence data file.

5. Click **Save**.

6. (Optional) Click **Generate Now**.

7. Deep Discovery Director (Consolidated Mode) automatically generates threat information every 10 minutes. Configure an integrated product/service to subscribe to and monitor the Deep Discovery Director (Consolidated Mode) discovery URL for threat information. For more information, see the documentation for the integrated product/service.

TAXII 2.0

Deep Discovery Director (Consolidated Mode) can share threat intelligence data with other products or services through TAXII 2.0.

Configuring TAXII 2.0 Settings

Procedure

1. Go to **Threat Intelligence** > **Sharing Settings** > **TAXII 2.0**.

   The **TAXII 2.0** screen appears.

2. Select **Enable TAXII 2.0 server to allow exchange of threat intelligence with integrated products/services**.
3. Type the user name and password used for authentication.
4. Select the risk level of the objects to be included in the threat intelligence data file.
5. Click **Save**.
6. (Optional) Click **Generate Now**.
7. Deep Discovery Director (Consolidated Mode) automatically generates threat information every 10 minutes. Configure an integrated product/service to subscribe to and monitor the Deep Discovery Director (Consolidated Mode) discovery URL for threat information. For more information, see the documentation for the integrated product/service.

OpenDXL

Deep Discovery Director (Consolidated Mode) can distribute threat intelligence data to OpenDXL clients, services, and brokers.

Configuring OpenDXL Settings

Procedure

1. Go to **Threat Intelligence** > **Sharing Settings** > **OpenDXL**.

   The **OpenDXL** screen appears.
2. Select **Distribute objects to OpenDXL client/service/broker**.
3. Type the server address.
4. Type the port.
5. Click **Select** to locate the server certificate, client certificate, and key files used for authentication.

6. (Optional) Click **Test Connection**.
7. Select which objects to include in the threat intelligence data.
8. Select the risk level of the objects to be included in the threat intelligence data.
9. Select the frequency at which objects should be distributed.
10. Click **Save**.
11. (Optional) Click **Distribute Now** to distribute suspicious objects and C&C callback addresses to this OpenDXL client/service/broker.

Web Service

Deep Discovery Director (Consolidated Mode) can share threat intelligence data with other products or services (for example, a Blue Coat ProxySG device) through HTTP or HTTPS web service.

Configuring Web Service Settings

Procedure

1. Go to **Threat Intelligence** > **Sharing Settings** > **Web Service**.

   The **Web Service** screen appears.
2. Select **Enable web service to allow integrated products/services to obtain information from Deep Discovery Director**.
3. (Optional) By default, Deep Discovery Director (Consolidated Mode) shares threat intelligence data only through HTTPS web service. To additionally enable threat intelligence data through HTTP, select **Share information using HTTP (in addition to HTTPS)** and specify the HTTP server port number.
4. Select which objects to include in the threat intelligence data file.

5. Select the risk level of the objects to be included in the threat intelligence data file.

   The objects appear in the generated file under the following categories.

   TABLE 5-5. Object Categories in Generated File

OBJECT	CATEGORY IN GENERATED FILE
Synchronized Suspicious Objects	DDD_so_list
User-Defined Suspicious Objects	DDD_so_list
C&C Callback Addresses	DDD_cnc_callback_addresses_list
Malicious URL detected by Web Reputation Service from integrated product	DDD_wrs_list

6. Select the frequency at which objects should be shared.
7. Click **Save**.
8. (Optional) Click **Generate Now**.

   Note

   After the file generation is successful, you can click the URL to download the threat intelligence data file to view the content.

9. Configure an integrated product/service (for example, Blue Coat ProxySG device) to obtain threat intelligence data from Deep Discovery Director (Consolidated Mode). 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 Director (Consolidated Mode) can distribute threat intelligence data to auxiliary products and services.

Deep Discovery Director (Consolidated Mode) integrates with the following solutions:

TABLE 5-6. Supported Solutions

NAME	VERSIONS
Trend Micro TippingPoint Security Management System (SMS)	SMS 4.6.0 or later
Check Point Open Platform for Security (OPSEC)	Check Point R80.10 or later
IBM Security Network Protection (XGS)	XGS 5.2 or later
Palo Alto Panorama	PAN-OS 7.0.1 or later
Palo Alto Firewalls	PAN-OS 4.1.0 or later

Trend Micro TippingPoint Security Management System (SMS)

Deep Discovery Director (Consolidated Mode) can send synchronized suspicious objects, user-defined suspicious objects and C&C callback addresses to Trend Micro TippingPoint Security Management System (SMS).

Note

The following actions will remove suspicious objects from Trend Micro TippingPoint Security Management System (SMS):

- Moving synchronized suspicious objects to Exceptions
- Expiring synchronized suspicious objects
- Deleting user-defined suspicious objects

Deep Discovery Director (Consolidated Mode) sends each C&C callback address and suspicious object with the following optional information:

- Trend Micro Severity: Severity of each suspicious object or C&C callback attempt
- Trend Micro Publisher: Trend Micro Deep Discovery Director (Consolidated Mode)

- Trend Micro Source: Deep Discovery Director (Consolidated Mode) host name
- Trend Micro Detection Category: Suspicious object or C&C callback attempt
- Reputation Entries TTL: The time to live (TTL) of the C&C callback address or suspicious object.

Note

Only supported by SMS 5.1 or higher.

Configuring Trend Micro TippingPoint Security Management System (SMS)

Procedure

1. On the Deep Discovery Director (Consolidated Mode) management console, go to **Threat Intelligence** > **Sharing Settings** > **Auxiliary Products/Services**.

   The **Auxiliary Products/Services** screen appears.
2. Select **Distribute objects to auxiliary products/services**.
3. Select **Trend Micro TippingPoint Security Management System (SMS)**.
4. Type the server address.

   Note

   The server address must be the IPv4 address or FQDN of the auxiliary product/service.
5. Type the user name and password used for authentication.
6. (Optional) Click **Test Connection**.
7. To send object information from Deep Discovery Director (Consolidated Mode) to this auxiliary product/service, configure the following criteria:

- Object type:
  - C&C Callback Address
    - IPv4 address
    - Domain
    - URL

    Note

    Only supported by SMS 5.0 or higher.

  - Suspicious Object
    - IPv4 address
    - Domain
    - URL

    Note

    Only supported by SMS 5.0 or higher.

- Risk level:
  - High only
  - High and medium
  - High, medium, and low

8. Select the frequency at which object information should be distributed.
9. Click **Save**.

   The following tag categories are displayed in the TippingPoint SMS Reputation Database.

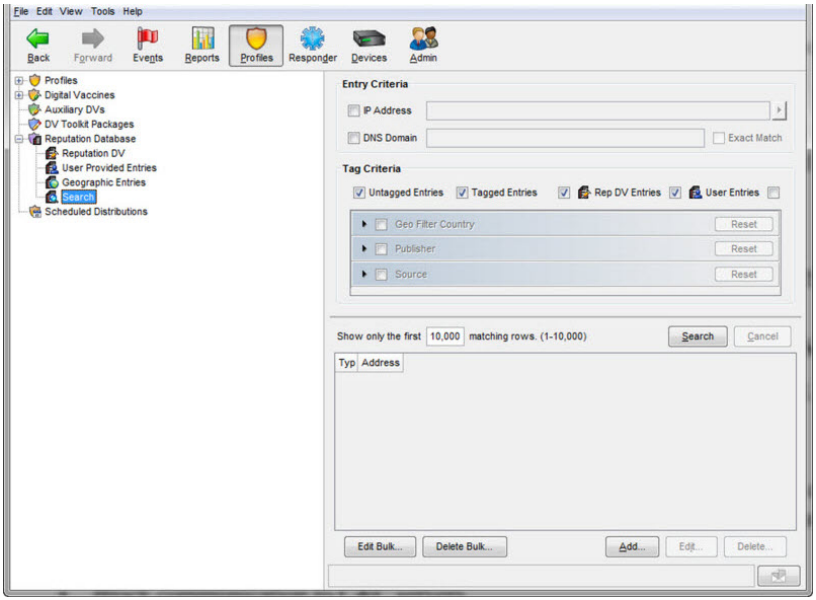
TAG CATEGORY	VALUE
Trend Micro Source	The host name of Deep Discovery Director (Consolidated Mode)
Trend Micro Severity	Possible values: • High • Medium • Low
Trend Micro Publisher	The product name of Deep Discovery Director (Consolidated Mode)
Trend Micro Detection Category	The detection type of the threat.
Reputation Entries TTL	The time to live (TTL) as a timestamp in YYYY-MM-DD hh:mm:ss TZ format. **Note** Only supported by SMS 5.1 or higher.

10. (Optional) To view distributed C&C callback addresses and suspicious objects in TippingPoint SMS, do the following:

    a. Verify that the following tag categories exist in the **Tag Categories** list of the TippingPoint SMS Client.

       - Trend Micro Severity
       - Trend Micro Source
       - Trend Micro Publisher
       - Trend Micro Detection Category

    b. On the **Profile** tab, go to **Reputation Database** > **Search**.



c. On the **Entry Criteria** screen, type search parameters and then click **Search**.

Suspicious objects and C&C callback addresses distributed by Deep Discovery Director (Consolidated Mode) 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 Director (Consolidated Mode) integrates with Check Point OPSEC via the Suspicious Activities Monitoring (SAM) API.

The SAM API implements communications between the SAM client (Deep Discovery Director (Consolidated Mode)) and the Check Point firewall, which acts as a SAM Server. Deep Discovery Director (Consolidated Mode) uses the SAM API to request that the Check Point firewall take specified actions for certain connections.

For example, Deep Discovery Director (Consolidated Mode) 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 Director (Consolidated Mode) management console, go to **Threat Intelligence** > **Sharing Settings** > **Auxiliary Products/Services**.

   The **Auxiliary Products/Services** screen appears.

2. Select **Distribute objects to auxiliary products/services**.

3. Select **Check Point Open Platform for Security (OPSEC)**.

4. Click **Legal Statement**.

   The **Legal Statement** dialog appears.

5. Read and accept the **Legal Statement**.

   Important

   To enable integration with this auxiliary product/service, you must accept the **Legal Statement**.

6. Select a connection type.

   Note

   Ensure that your network configuration allows Deep Discovery Director (Consolidated Mode) to connect to the Check Point appliance.

   Deep Discovery Director (Consolidated Mode) 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 Director (Consolidated Mode) also pulls the certificate from the Check Point appliance through port 18210.

7. Type the server address.

   Note

   The server address must be the IPv4 address or resolvable host name of the auxiliary product/service.

8. 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 5-50*.

9. 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 5-52*.

   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.

10. (Optional) Click **Test Connection**.

11. On your Check Point firewall appliance, preconfigure a security gateway. For details see *Preconfiguring a Security Gateway on page 5-50*.

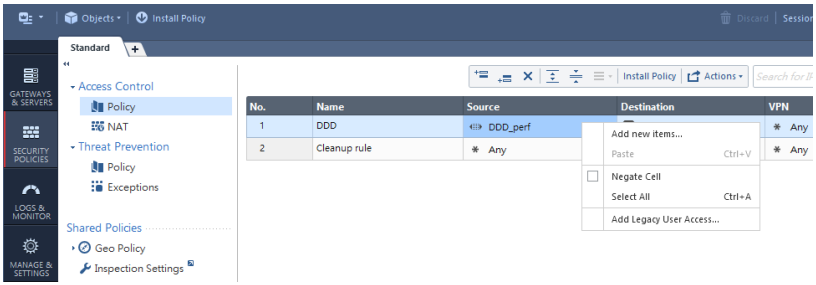
12. On the Check Point SmartConsole, do the following to configure your Check Point appliance for deploying suspicious objects and C&C callback addresses from Deep Discovery Director (Consolidated Mode):

    a. On the left pane, click **Security Policies**.

    b. On the **Standard** tab, under **Access Control**, click **Policy**.

    c. To add a rule, click the **Add rule above**  icon.

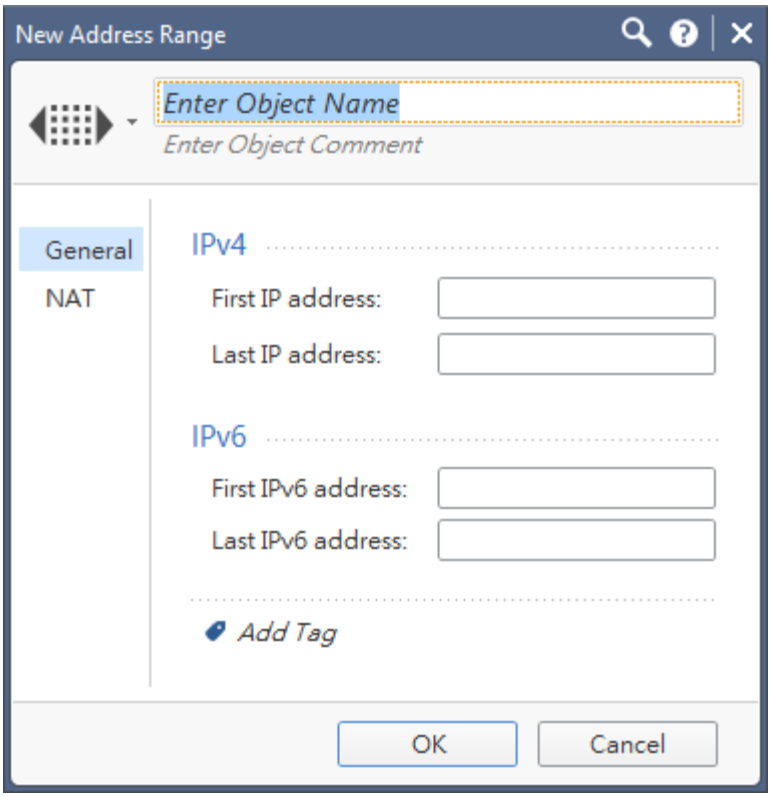
d. Right-click the source and select **Add new items...**.



e. Click the **New**

icon, and select **Address Ranges** > **Address Range...**.

The **New Address Range** window appears.



f. Type `DDD` as name.

g. In **First IP address**, type the Deep Discovery Director (Consolidated Mode) IP address.

h. In **Last IP address**, type the Deep Discovery Director (Consolidated Mode) IP address.

i. Click **OK**.

An item named **DDD** should be created and automatically selected as the source.

j. Right-click the destination and select your CheckPoint appliance.

k. Right-click the action and select **Accept**.

l. Click **Install Policy**.

The Check Point SmartConsole will prompt you to publish your changes before installing the policy.

m. Click **Publish & Install**.

The **Install Policy** dialog appears.

n. Click **Install**.

The Check Point appliance is enabled to receive suspicious objects and C&C callback addresses from Deep Discovery Director (Consolidated Mode).

13. On the Deep Discovery Director (Consolidated Mode) management console, configure the following criteria to send suspicious object and C&C callback address information from Deep Discovery Director (Consolidated Mode) to this inline product/service:

- Object type:
  - C&C Callback Address
    - IPv4 address
  - 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. Select the frequency at which object information should be distributed.
16. Click **Save**.

    The **Distribute Now** option appears.
17. (Optional) Click **Distribute Now** to distribute suspicious objects and C&C callback addresses to Check Point immediately.
18. To view suspicious objects and C&C callback addresses distributed by Deep Discovery Director (Consolidated Mode) on the Check Point SmartConsole, do the following:

    a. On the left pane, click **Logs & Monitor**.

    b. Create a new tab by clicking the  icon.

    c. On the new tab, click **Tunnel & User Monitoring**.

       The **SmartView Monitor** screen appears.

    d. On the **SmartView Monitor** screen, click **Launch Menu** icon, and then select **Tools** > **Suspicious Activity Rules...**.

       The **Enforced Suspicious Activity Rules** dialog appears.

    e. At **Show On**, select your Check Point appliance.

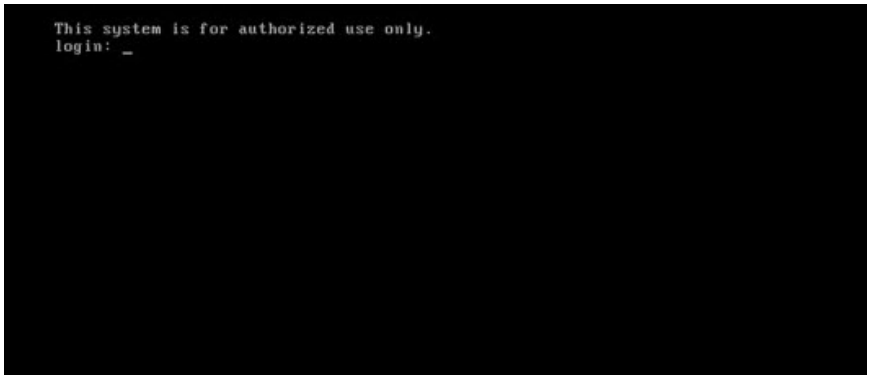
    f. Click **Refresh**.

Suspicious objects and C&C callback addresses distributed by Deep Discovery Director (Consolidated Mode) are displayed.

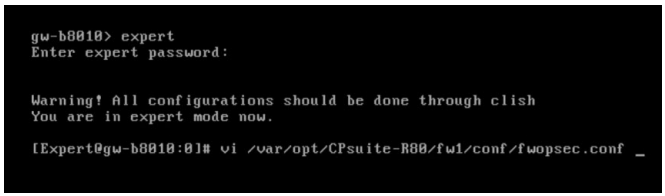
Preconfiguring a Security Gateway

Procedure

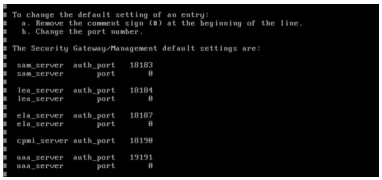
1. Log on to your Check Point appliance.



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 Director (Consolidated Mode), verify that the **Check Point Open Platform for Security (OPSEC) Port** setting at **Threat Intelligence** > **Sharing Settings** > **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 Director (Consolidated Mode) at **Threat Intelligence** > **Sharing Settings** > **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 Director (Consolidated Mode) at **Threat Intelligence** > **Sharing Settings** > **Auxiliary Products/Services**.

6. If changes were made to the `fwopsec.conf` file, save the `fwopsec.conf` file and restart your Check Point appliance.

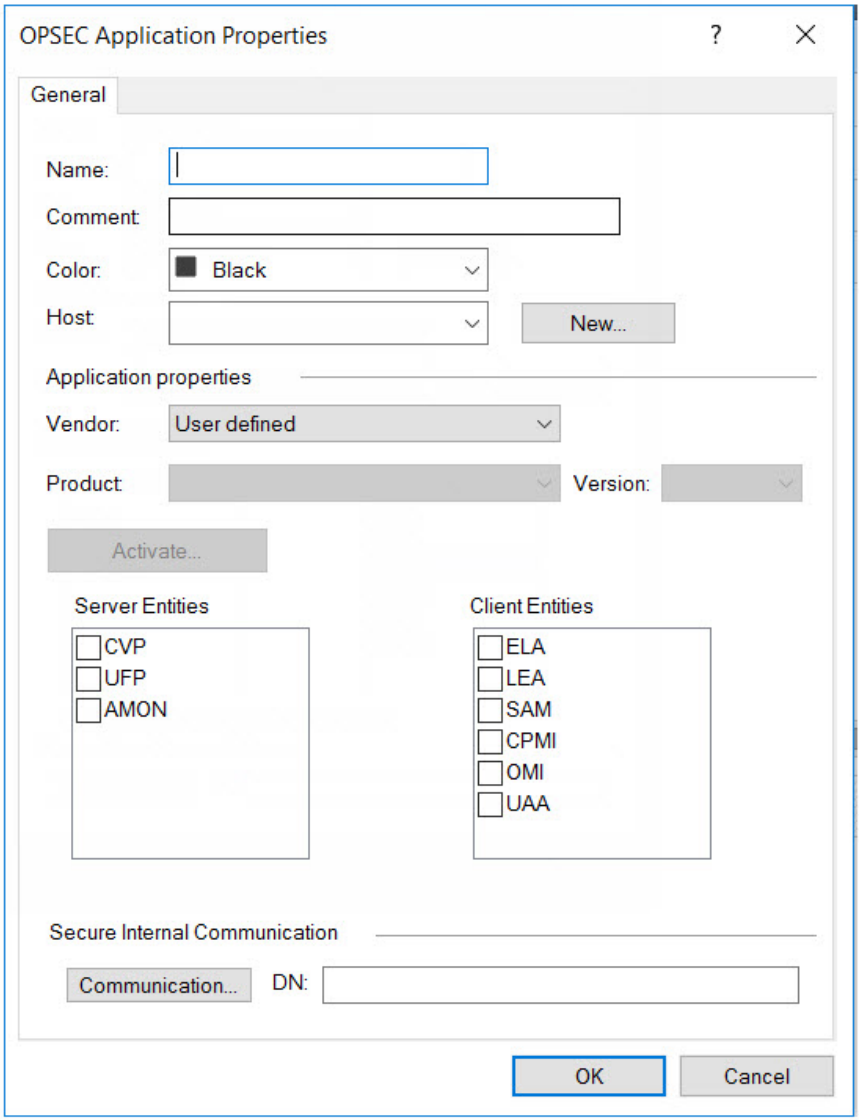
Configuring a Secured Connection

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.



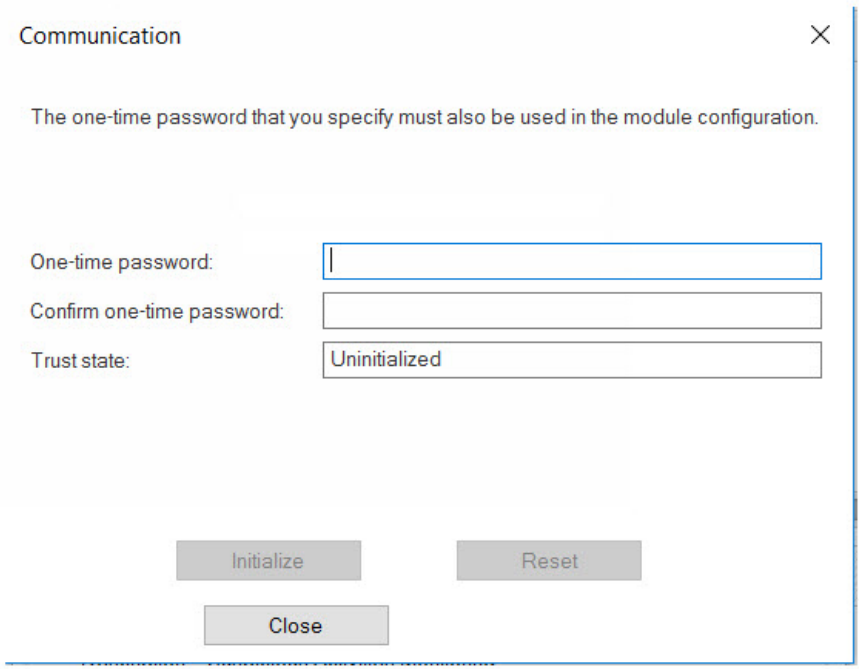
3. Type a **Name**.

Note

- Use this name as the **OPSEC application name** in Deep Discovery Director (Consolidated Mode).
- 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 Director (Consolidated Mode).

   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 (XGS)

IBM Security Network Protection (XGS) provides a web services API that enables third-party applications such as Deep Discovery Director (Consolidated Mode) 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 Director (Consolidated Mode) 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

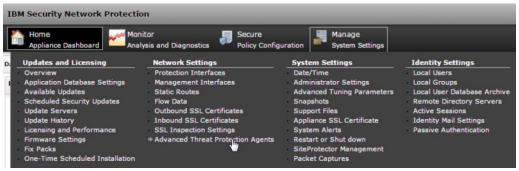
The ATP translation policy allows several categories of messages to take different actions on IBM XGS, including blocking and alerting.

Configuring IBM Security Network Protection (XGS)

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**.

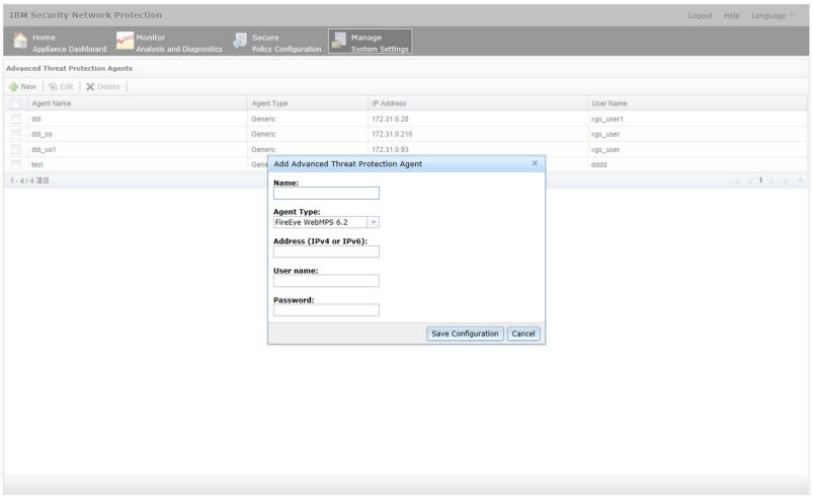
   c. Provide the following information:

      - Name: Type a name
      - Agent Type: Select **Generic**
      - Address: Deep Discovery Director (Consolidated Mode) management port IP address in IPv4 or IPv6 format

- User name: Existing authentication credential
- Password: Existing authentication credential

TABLE 5-7. Valid Character Sets

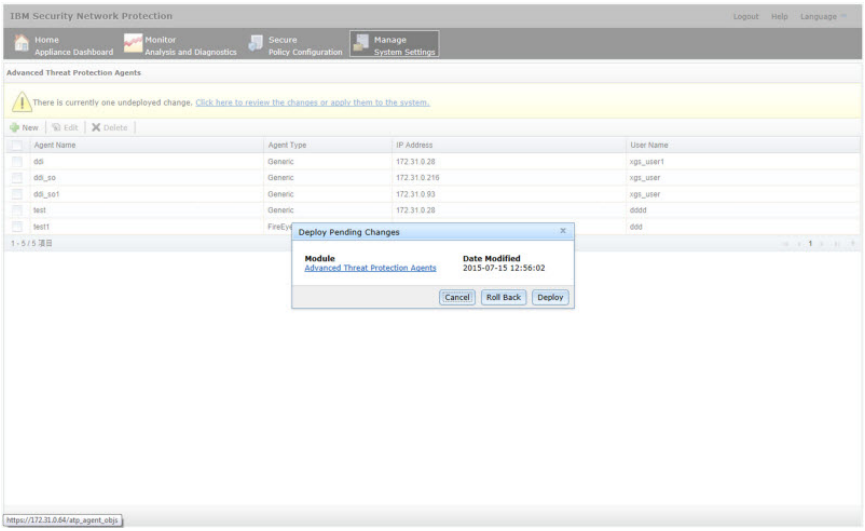
	USER NAME	PASSWORD
Minimum length	1 character	1 character
Maximum length	15 characters	15 characters



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 Director (Consolidated Mode) management console, go to **Threat Intelligence** > **Sharing Settings** > **Auxiliary Products/Services**.

   The **Auxiliary Products/Services** screen appears.

5. Select **Distribute objects to auxiliary products/services**.

6. Select **IBM Security Network Protection (XGS)**.

7. Click **Legal Statement**.

   The **Legal Statement** dialog appears.

8. Read and accept the **Legal Statement**.

Important

To enable integration with this auxiliary product/service, you must accept the **Legal Statement**.

9. Type the server address.

Note

The server address must be the IPv4 address or FQDN of the auxiliary product/service.

10. Type the user name and password used for authentication.
11. (Optional) Click **Test Connection**.
12. To send object information from Deep Discovery Director (Consolidated Mode) to this auxiliary product/service, configure the following criteria:
    - Object type:
      - C&C Callback Address
        - IPv4 address
        - URL
      - Suspicious Object
        - IPv4 address
        - URL
    - Risk level:
      - High only
      - High and medium
      - High, medium, and low
13. Select the frequency at which object information should be distributed.
14. Click **Save**.
15. (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 Director (Consolidated Mode) 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 Director (Consolidated Mode), 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 Director (Consolidated Mode) 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.

Deep Discovery Director (Consolidated Mode) generates IPv4, domain, and URL suspicious objects that can be downloaded to the URL category of Palo Alto Firewall or Palo Alto Panorama™ as match criteria to 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 or Firewalls

Procedure

1. On the Deep Discovery Director (Consolidated Mode) management console, go to **Threat Intelligence** > **Sharing Settings** > **Auxiliary Products/Services**.

   The **Auxiliary Products/Services** screen appears.
2. Select **Distribute objects to auxiliary products/services**.
3. Select **Palo Alto Panorama or Firewalls**.
4. Click **Legal Statement**.

   The **Legal Statement** dialog appears.
5. Read and accept the **Legal Statement**.

   Important

   To enable integration with this auxiliary product/service, you must accept the **Legal Statement**.
6. (Optional) By default, Deep Discovery Director (Consolidated Mode) shares threat intelligence data through HTTPS. You can also share using

HTTP. Under Server Settings, select **Share information using HTTP** and specify the port number.

7. Under **Criteria**, select the risk level of the objects to be included in the threat intelligence data file.
8. Select the frequency at which object information should be distributed.
9. Click **Save**.
10. (Optional) Click **Generate Now**.

Note

After the file generation is successful, you can click the URL to download the threat intelligence data file to view the content.

11. Configure Palo Alto Firewall or Palo Alto Panorama™ to obtain threat intelligence data from Deep Discovery Director (Consolidated Mode). For more information, see the documentation for the integrated product/service.

Chapter 6

Appliances

Learn how to manage appliances, perform plan related tasks, maintain the repository, manage file passwords, configure network asset settings, configure email encryption, view appliance logs, and configure end-user quarantine in the following topics:

Directory

The Directory displays information about Deep Discovery appliances that are registered to Deep Discovery Director (Consolidated Mode).

- Left pane: Appliance tree with groups (represented by folders) and appliances (identified by display names, initially identical to their host names)

  Note

  An exclamation mark icon attached to the appliance icon indicates that the connection with this appliance has been lost.

- Right pane: Information about plans, appliances, installed or hosted update files, etc.

On fresh installations, the Directory is empty and only displays the following default groups:

- **Managed**: Appliances placed in this group can receive plan information, updates, and Virtual Analyzer images from Deep Discovery Director. Appliances can also replicate their configuration to and from other compatible appliances.
- **Unmanaged**: Appliances placed in this group cannot receive plan information, updates, Virtual Analyzer images, or replicate their configuration.

Appliances can register to Deep Discovery Director (Consolidated Mode) on their respective management consoles. Newly registered appliances first appear in the Unmanaged group but can be moved to the Managed group at any time.

Directory Tasks

You can use the Directory mainly to view information about groups and appliances, and plans that are associated with these objects. Selecting an object in the left pane displays information in the right pane.

The following table describes the object types and the available information for each object.

TABLE 6-1. Directory Object Types

OBJECT	DISPLAYED INFORMATION

Appliances	• **Plan**: Plans that were or will be deployed to the appliance
	• **Appliance**: Identifiers such as IP address, virtual IP address, host name and display name, threat intelligence sync times, file password sync time, and other information
	
	Note
	For Deep Discovery Analyzer clusters, Deep Discovery Director (Consolidated Mode) also displays the following:
	  • **Active primary appliance**: Information on the active primary appliance (high availability cluster and load balancing cluster)
	  • **Passive primary appliance**: Information on the passive primary appliance (high availability cluster)
	  • **Secondary appliances**: Information on the secondary appliance (load balancing cluster)
	For Deep Discovery Director - Network Analytics servers, Deep Discovery Director (Consolidated Mode) also displays the license status and connected data sources.
	• **Updates**: Build number and installation time of all installed updates, and information about where and when the appliance's configuration settings were replicated from
	• **Virtual Analyzer**: Information about the Virtual Analyzer configuration of the appliance, such as type, internal Virtual Analyzer maximum images and instances, and deployed images and instances
	
	Note
	For Deep Discovery Analyzer active primary appliances, click on **All Nodes** to display the total number of instances in use for all nodes in the cluster.

Object	Displayed Information
Groups	Overview of appliances and plans associated with that group, including statuses and connection information.

Other Directory Tasks

You can also perform the following actions:

Table 6-2. Other Directory Tasks

Action	Description
Add groups	Add groups to better organize appliances, such as by location or business unit. To add a group: 1. Click the menu icon beside the group name and then select **Add**. 2. In the text box, type a name with a maximum of 256 characters.
Edit group or appliance names	To edit a group or appliance name: 1. Click the menu icon beside the group or appliance name and then select **Edit**. 2. In the text box, type a name with a maximum of 256 characters.
Sync Threat Intelligence	Tells the appliance to sync threat intelligence from Deep Discovery Director (Consolidated Mode). To sync threat intelligence, click the menu icon beside the appliance name and then select **Sync Threat Intelligence**. **Note** Appliances automatically sync threat intelligence from Deep Discovery Director (Consolidated Mode). Syncing threat intelligence requires some time to complete. Avoid using this action if possible.

Action	Description
Sync File Passwords	Tells the appliance to sync file passwords from Deep Discovery Director (Consolidated Mode). To sync file passwords, click the menu icon beside the appliance name and then select **Sync File Passwords**. **Note** Registered appliances can be configured to automatically sync file passwords from Deep Discovery Director (Consolidated Mode).
Sync Network Asset Settings	Tells the appliance to sync network asset settings from Deep Discovery Director (Consolidated Mode). To sync network asset settings, click the menu icon beside the appliance name and then select **Sync Network Asset Settings**. **Note** Registered appliances can be configured to automatically sync network asset settings from Deep Discovery Director (Consolidated Mode).
Move groups or appliances	To move a group or an appliance to a different group: 1. Click the menu icon beside the group or appliance name and then select **Move**. 2. In the window, select the new folder and then click **Move**. This function is disabled whenever: • Deployment of one or more associated plans is pending or in progress. • The appliance tree is filtered by a specific Deep Discovery appliance. To enable the function, change the view to **All**.

Action	Description
Delete groups	Delete empty or unused groups to simplify the Directory. To delete a group, click the menu icon beside the group name and then select **Delete**. **WARNING!** Deleting a group cancels the plans associated with that group and moves appliances to the **Unmanaged** group. Only groups without unfinished plans can be deleted. This function is disabled whenever: • Deployment of one or more associated plans is pending or in progress. • The appliance tree is filtered by a specific Deep Discovery appliance. To enable the function, change the view to **All**.

Action	Description
Delete appliances	To delete an appliance, click the menu icon beside the display name and then select **Delete**. This function is disabled whenever the appliance tree is filtered by a specific Deep Discovery appliance. To enable the function, change the view to **All**. **WARNING!** • Deleting an appliance unregisters it from Deep Discovery Director (Consolidated Mode), stops all connections, and cancels all associated plans. • Deleting a Deep Discovery Inspector appliance causes that Deep Discovery Inspector appliance to automatically unregister from Deep Discovery Director - Network Analytics. Correlated events that were derived from data provided by that Deep Discovery Inspector appliance become unavailable. Re-registering that Deep Discovery Inspector appliance to Deep Discovery Director does not automatically re-register it to Deep Discovery Director - Network Analytics. To restore full functionality, go to the management console of the Deep Discovery Inspector appliance and re-register it to its originally registered Deep Discovery Director - Network Analytics server.
Switch views	To switch between custom views, click on the name beside **Views** and then select the view to switch to.

Action	Description
Customize columns	Customize columns and save new custom views to better organize all the information. To create a custom view: 1. Click on the name beside **Views** and then select **Customize columns**. 2. Type a unique custom view name. 3. Select any combination of columns to include in the custom view. 4. Click **Apply**. **Tip** The column order can be rearranged using drag-and-drop.
Edit custom views	To edit a custom view: 1. Click on the name beside **Views** and then select the **pencil** icon beside the view. 2. (Optional) Edit the custom view name. 3. Edit the combination of columns. 4. Click **Apply**.
Delete custom views	To delete a custom view, click on the name beside **Views** and then select the **trash can** icon beside the view.

Plans

Plans define the scope and schedule of deployments to target appliances.

Each plan is created for a specific set of target appliances and is deployed only once during a user-defined period. The plan to be deployed must match the product and language of the target appliances.

When a plan is deployed, Deep Discovery Director (Consolidated Mode) sends instructions to the target appliances on when to download required

files, and on when to execute the plan. If the plan is not deployed immediately, appliances download files and execute the plan according to a schedule with the following factors:

- Deployment start
- Download period
- Execution start

Important

All times are based on appliance local time

The Plans screen displays a list of all created plans with the following information:

TABLE 6-3. Plans

ITEM	DESCRIPTION
Name	Specified during plan creation
Type	Type of plan deployed to targets. Deep Discovery Director (Consolidated Mode) currently supports the following plan types: • **Hotfix / Critical patch / Firmware** • **Virtual Analyzer images** • **Configuration replication**

Item	Description
Status	A plan can have any of the following statuses: • **In progress**: Deployment started at the specified time and at least one appliance has executed the plan. • **Pending**: Deployment has not started or no appliances have received plan information from Deep Discovery Director (Consolidated Mode). • **Completed**: Deployment started at the specified time and all appliances successfully executed the plan. • **Unsuccessful**: Deployment did not start at the specified time or at least one appliance was unable to execute the plan.
Schedule	When a plan is scheduled to deploy and execute. Can display one of the following: • **Custom**: Plan deployment, required file downloads, and plan execution happen according to a schedule. All times are based on appliance local time. • **Immediate**: Plan is deployed immediately, and appliances execute the plan immediately after downloading required files. All times are based on server local time.
Deployment Start	Date and time deployment starts or started
Description	Specified during plan creation
Creator	User account that created the plan

Tip

The list view can be filtered by clicking the **Filters** button and using the drop-down lists and search box that appear.

Plan Tasks

Clicking a plan name opens the details screen for that specific plan.

TABLE 6-4. Plan Tasks

TASK	DESCRIPTION
Plan information	Plan deployment status and schedule, file details, and other related information
Appliance information	Host name, appliance status, deployment start and completion, and appliance path For details, see *Appliance Statuses on page 6-12*.

Appliance Statuses

Deep Discovery Director (Consolidated Mode) displays any of the following appliance statuses.

TABLE 6-5. Appliance Statuses

STATUS	DESCRIPTION
Pending	The appliance has not received the plan information from Deep Discovery Director (Consolidated Mode).
In progress	Any of the following situations may apply. • The appliance has acknowledged receipt of the plan information and has started downloading files. • The appliance has acknowledged receipt of the plan information and has started executing the plan. • The appliance is downloading the files required to execute the plan. • The appliance has downloaded the files and is executing the plan.
Suspended	The appliance has temporarily stopped downloading files and will resume on the specified download period.
Completed	The appliance executed the plan successfully.

Status	Description
Unsuccessful	Any of the following situations may apply. • The appliance was unable to execute the plan. • The appliance is performing tasks that do not match the plan information.
Unreachable	Any of the following situations may apply. • The appliance has unregistered from Deep Discovery Director (Consolidated Mode). • The appliance has been deleted from Deep Discovery Director (Consolidated Mode).
Cancelled	Any of the following situations may apply: • The plan was manually cancelled before the appliance received the plan information from Deep Discovery Director (Consolidated Mode). • The plan was manually cancelled while the appliance was downloading files or executing the plan. • The plan was manually cancelled while the appliance temporarily stopped downloading files.

Other Plan Tasks

You can also perform the following tasks:

TABLE 6-6. Other Tasks

TASK	DESCRIPTION
Add	Add one of the following types of plans to Deep Discovery Director (Consolidated Mode). • **Hotfix / Critical Patch / Firmware** For details, see *Adding a Hotfix / Critical Patch / Firmware Deployment Plan on page 6-15*. • **Virtual Analyzer images** For details, see *Adding a Virtual Analyzer Images Deployment Plan on page 6-17*. • **Configuration replication** For details, see *Adding a Configuration Replication Plan on page 6-20*. **Important** Deep Discovery Director (Consolidated Mode) does not allow the creation of new plans when the license status is **Not Activated** or **Expired**. Existing plans will deploy and execute as usual.
Edit	Click a plan name with the status **Pending** and then click **Edit**. **Note** Only plans that have not been deployed can be edited.
Cancel plan	Click a plan name with any of the following statuses and then click **Cancel Plan**: • **Pending** • **In progress** • **Suspended**
Copy	Select a plan in the list and click **Copy**.

Task	Description
Create plan	Click a plan with the status **Unsuccessful** and then click **Create Plan**. Deep Discovery Director (Consolidated Mode) will create a new plan based on the settings of the unsuccessfully deployed plan.
Delete	Select a plan in the list with the status **Pending** and click **Delete**.

Adding a Hotfix / Critical Patch / Firmware Deployment Plan

Use this type of plan to deploy product updates and upgrades to compatible appliances.

Procedure

1. Go to **Appliances** > **Plans** and click on **Add**.

   The **Add Plan** screen appears.

2. Type a plan name with a maximum of 256 characters.
3. Select **Hotfix / Critical patch / Firmware** as type.
4. (Optional) Type a description.
5. Select a hotfix, critical patch, or firmware file from the list.

   Note

   Deep Discovery Director (Consolidated Mode) displays the list of files that are available in the repository. Verify that the file matches the product and language of the target appliances.

6. Select target appliances. Deep Discovery Director (Consolidated Mode) only displays compatible appliances.

   Note

   Installing updates automatically restarts the target appliances.

7. Specify the schedule.

   - **Custom**: Deploys the plan, downloads the files, and executes the plan as specified.

     - **Deployment start**: Date at which this plan will be deployed.

       Note

       Plans are always deployed at 12:00 am (00:00) of the selected date.

     - **Download period**: Period during which appliances are allowed to download the files required to execute the plan.

       Note

       - If the download period is set from 8:00 pm to 4:00 am, appliances will start downloading files around 12:00 am immediately after the plan is deployed, not at 8:00 pm the following day.
       - Setting the download period from 8:00 pm to 11:59 pm (or increase the margin) prevents the appliances from downloading files around 12:00 am immediately after the plan is deployed.

     - **Execution start**: Date and time at which this plan will be executed.

       Tip

       Select **By schedule** to prevent the plan from executing at an unexpected time.

   - **Immediate**: Starts immediately after the plan is saved.

8. Click **Save**.

Adding a Virtual Analyzer Images Deployment Plan

Use this type of plan to deploy Virtual Analyzer images to compatible appliances.

The following table lists requirements that must be fulfilled by compatible appliances:

TABLE 6-7. Requirements for Compatible Appliances

REQUIREMENT	DESCRIPTION
License	• **Status**: Activated • **Type**: Full
Virtual Analyzer	• **Status**: Enabled **Note** Virtual Analyzer images can be deployed to Deep Discovery Inspector appliances whose Virtual Analyzer status is disabled. Deep Discovery Inspector automatically enables Virtual Analyzer after the images have been deployed. • **Type**: Internal
Deep Discovery Director (Consolidated Mode)	• Integration with Deep Discovery Director (Consolidated Mode) 1.1 or later • Must be registered to Deep Discovery Director (Consolidated Mode) • Must be in a Managed group

Procedure

1. Go to **Appliances** > **Plans** and click on **Add**.

   The **Add Plan** screen appears.

2. Type a plan name with a maximum of 256 characters.

3. Select **Virtual Analyzer images** as type.

4. (Optional) Type a description.
5. Select a product from the list.
6. Select a maximum images value from the list.
7. Select an OS type combination from the list.
8. Select a maximum instances value from the list.
9. Click **Select**.

   The **Virtual Analyzer Images** dialog appears.

> **Note**
>
> Deep Discovery Director (Consolidated Mode) displays the list of Virtual Analyzer images that are available in the repository.

10. Select the final configuration of Virtual Analyzer images to deploy and click **Save**.

> **Important**
>
> - The selected configuration replaces any configuration currently deployed on target appliances.
> - To keep currently deployed images on target appliances, select them as part of the final configuration. The target appliances will automatically determine if the selected images are identical and need to be deployed.

11. (Optional) Modify the instances allocated to any image.
12. Select target appliances. Deep Discovery Director (Consolidated Mode) only displays compatible appliances.

Note

Deep Discovery Analyzer secondary appliances are not displayed because Virtual Analyzer images and settings are automatically synced from the primary appliance. To deploy Virtual Analyzer images to Deep Discovery Analyzer secondary appliances, select the corresponding primary appliance.

13. Specify the schedule.

- **Custom**: Deploys the plan, downloads the files, and executes the plan as specified.
  - **Deployment start**: Date at which this plan will be deployed.

    Note

    Plans are always deployed at 12:00 am (00:00) of the selected date.

  - **Download period**: Period during which appliances are allowed to download the files required to execute the plan.

    Note

    - If the download period is set from 8:00 pm to 4:00 am, appliances will start downloading files around 12:00 am immediately after the plan is deployed, not at 8:00 pm the following day.
    - Setting the download period from 8:00 pm to 11:59 pm (or increase the margin) prevents the appliances from downloading files around 12:00 am immediately after the plan is deployed.

  - **Execution start**: Date and time at which this plan will be executed.

    Tip

    Select **By schedule** to prevent the plan from executing at an unexpected time.

- **Immediate**: Starts immediately after the plan is saved.

14. Click **Save**.

Adding a Configuration Replication Plan

Use this type of plan to replicate the configuration settings of one appliance to compatible appliances.

Each Deep Discovery product supports the replication of a different combination of configuration settings. For details, see *Settings Replicated by Deep Discovery Director on page B-1*.

Procedure

1. Go to **Appliances** > **Plans** and click on **Add**.

   The **Add Plan** screen appears.

2. Type a plan name with a maximum of 256 characters.
3. Select **Configuration replication** as type.
4. (Optional) Type a description.
5. Select the replication source from the list.

   Tip

   Select a product from the **View** drop-down list to only display the selected product's appliances.

6. Select target appliances. Deep Discovery Director (Consolidated Mode) only displays compatible appliances.
7. Specify the schedule.

   - **Custom**: Deploys the plan, downloads the files, and executes the plan as specified.

- **Deployment start**: Date at which this plan will be deployed.

  Note

  Plans are always deployed at 12:00 am (00:00) of the selected date.

- **Download period**: Period during which appliances are allowed to download the files required to execute the plan.

  Note

  - If the download period is set from 8:00 pm to 4:00 am, appliances will start downloading files around 12:00 am immediately after the plan is deployed, not at 8:00 pm the following day.
  - Setting the download period from 8:00 pm to 11:59 pm (or increase the margin) prevents the appliances from downloading files around 12:00 am immediately after the plan is deployed.

- **Execution start**: Date and time at which this plan will be executed.

  Tip

  Select **By schedule** to prevent the plan from executing at an unexpected time.

- **Immediate**: Starts immediately after the plan is saved.

8. Click **Save**.

Repository

The Repository screen displays all update, upgrade, and Virtual Analyzer image files hosted by the server. Upload and delete files from here.

Hotfixes / Critical Patches / Firmware

Use the **Hotfixes / Critical Patches / Firmware** screen, in **Appliances** > **Repository** > **Hotfixes / Critical Patches / Firmware**, to view already uploaded update files, delete unused update files, and upload new update files for deployment.

Use filters to search by update or upgrade type, product, language, and file name or version.

To delete a file, select the file from the list and then click **Delete**.

Uploading a Hotfix / Critical Patch / Firmware File

Deep Discovery Director (Consolidated Mode) supports simultaneous uploading of up to five files through single-file upload sessions.

Important

Closing the browser or tab that contains the management console cancels all uploads in progress.

Procedure

1. Go to **Appliances** > **Repository** > **Hotfixes / Critical Patches / Firmware**.
2. Click **Upload**.
3. Click **Select** and then select a valid TAR file.
4. (Optional) Type or paste the 64-character SHA-256 hash value of the selected file for verification.
5. (Optional) Type a description.
6. Click **Upload**.

Virtual Analyzer Images

Use the **Virtual Analyzer Images** screen, in **Appliances** > **Repository** > **Virtual Analyzer Images**, to view already uploaded image files, delete unused image files, and upload new image files for deployment.

To delete a file, select the file from the list and then click **Delete**.

Important

Only Virtual Analyzer images compressed in TAR format by the **Virtual Analyzer Image Preparation Tool** can be uploaded to and deployed from Deep Discovery Director (Consolidated Mode).

For details, see https://docs.trendmicro.com/en-us/enterprise/virtual-analyzer-image-preparation.aspx.

Uploading Virtual Analyzer Images

Deep Discovery Director (Consolidated Mode) supports consecutive uploading of up to three Virtual Analyzer image files through SFTP or network folder. Deep Discovery Director (Consolidated Mode) opens a connection to the SFTP or network server in the background for the upload session, allowing you to navigate away from the screen and perform other tasks while waiting for the upload to complete.

Procedure

1. Go to **Appliances** > **Repository** > **Virtual Analyzer Images**.
2. Click **Upload**.
3. Select a source from the list.
   - **SFTP**
   - **Network Folder**
4. Type the server details.

- **SFTP**: Type the IP address or FQDN of the server, the port number, the user name, and the password.
- **Network Folder**: Type the user name and password.

Note

Deep Discovery Director (Consolidated Mode) saves the server information and logon credentials automatically.

5. Type the details of at least one Virtual Analyzer image file.
   a. Type file paths.
   b. Type unique image names.
   c. (Optional) Type descriptions.
6. Click **Upload**.

Upload Center

Information about files that are uploading and that have been uploaded can be displayed using the Upload Center panel. Toggle the panel by clicking on the up-arrow-drawer icon in the top right corner of the screen. The panel is divided into the following two tabs:

- *Uploading Files on page 6-24*
- *Upload History on page 6-25*

Uploading Files

Information about files that are being uploaded to Deep Discovery Director (Consolidated Mode) is displayed in this tab.

To cancel a file upload, click on the **x** beside the upload.

File uploads are done in the following stages:

TABLE 6-8. File Upload Stages

STAGE	DESCRIPTION
1: Calculating	The first parts of the file upload are being verified to ensure that the file upload is valid.
2: Uploading to the repository	The file is being uploaded to the repository. All SFTP server and network folder file uploads can be cancelled by any user.
3: Processing	The file upload to the repository has completed and integrity is being verified. File uploads cannot be cancelled in this stage.

File uploads display the following information:

TABLE 6-9. Information about File Uploads

INFORMATION	DESCRIPTION
File name	The file name.
(X KB / MB / GB)	The file size in KB / MB / GB.
Time left	The estimated time until the file upload is complete based on the file size and upload speed.
(X KB/s / MB/s / GB/s)	The upload speed in KB/s / MB/s / GB/s.

Upload History

Information about files that have been uploaded to Deep Discovery Director (Consolidated Mode) is displayed in this tab.

To clear the upload history, click **Clear All**.

Uploaded files display the following information:

TABLE 6-10. Information about Uploaded Files

INFORMATION	DESCRIPTION
Status	One of the following statuses: • **Successful**: The file upload was successful. • **Unsuccessful**: The file upload was unsuccessful. • **Cancelled**: The file upload was cancelled.
File name	The file name.

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.

Click the **Sync to Registered Appliances** toggle to enable or disable syncing of the **File Passwords** settings to all registered Deep Discovery Analyzer and Deep Discovery Email Inspector appliances.

Note

- The **User-Defined Passwords** list is synced to registered Deep Discovery Analyzer and Deep Discovery Email Inspector appliances.
- The **Heuristically Discovered Passwords** settings are only synced to Deep Discovery Email Inspector appliances.

User-Defined Passwords

The **User-Defined Passwords** screen displays a list of user-defined passwords that Virtual Analyzer on registered Deep Discovery Analyzer and Deep Discovery Email Inspector appliances uses to extract files or open password protected documents. For better performance, list commonly used passwords first.

Note

File passwords are stored as unencrypted text.

Adding Passwords

Procedure

1. Go to **Appliances** > **File Passwords** > **User-Defined Passwords**.
2. Click **Add**.

   The **Add Password** dialog appears.
3. Type a password with only ASCII characters.

   Note

   Passwords are case-sensitive and must not contain spaces.
4. (Optional) Repeat steps 2 to 3 to add more passwords.

   Note

   A maximum of 100 passwords can be added to the **User-Defined Passwords** list.
5. (Optional) Drag and drop the password to move it up or down the list.
6. (Optional) Delete a password by clicking the cross (X) button on the right side of the row.
7. Click **Save**.

Editing Passwords

Procedure

1. Go to **Appliances** > **File Passwords** > **User-Defined Passwords**.
2. Click the password you want to edit.

   The password changes into a text box.
3. Edit the password.
4. (Optional) Repeat steps 2 to 3 to edit more passwords.
5. (Optional) Drag and drop the password to move it up or down the list.
6. (Optional) Delete a password by clicking the cross (X) button on the right side of the row.
7. Click **Save**.

Importing Passwords

Procedure

1. Go to **Appliances** > **File Passwords** > **User-Defined Passwords**.
2. Click **Import**.

   The **Import Passwords** dialog appears.
3. Click **Select** to locate a TXT file to import.

   Note

   If you are importing a TXT file for the first time, click **Download sample file** and save the file. Populate the TXT file with properly formatted items, save the file, and then click **Select** to locate the TXT file.
4. Click **Next**.

Deep Discovery Director (Consolidated Mode) checks the entries in the file to identify any invalid or duplicate passwords.

5. Click **Import**.

   The passwords are added to the **User-Defined Passwords** list.

6. Click **Save**.

Exporting Passwords

Procedure

1. Go to **Appliances** > **File Passwords** > **User-Defined Passwords**.
2. Click **Export**.

   The file download begins.

Deleting Passwords

Procedure

1. Go to **Appliances** > **File Passwords** > **User-Defined Passwords**.
2. Click the cross (X) button on the right side of a row.

   Note

   Repeat this step to delete additional passwords.

3. Click **Save**.

Heuristically Discovered Passwords

Deep Discovery Email Inspector appliances can also heuristically discover passwords in email messages to extract files.

Deep Discovery Director (Consolidated Mode) can sync heuristically discovered passwords and timeout settings with registered Deep Discovery Email Inspector appliances.

Use the **Heuristically Discovered Passwords** screen to configure syncing and timeout settings.

Syncing Heuristically Discovered Passwords

Procedure

1. Go to **Appliances** > **File Passwords** > **Heuristically Discovered Passwords**.
2. Select **Sync heuristically discovered passwords**.
3. Modify the number of minutes before Password Analyzer and heuristically discovered passwords time out.
4. Click **Save**.

Network Assets

Network asset configuration defines and establishes the profile of the network that Deep Discovery Inspector products monitor for the Network Content Correlation Engine, and helps you make the most of Deep Discovery Director - Network Analytics.

Click the **Sync to Registered Products** toggle to enable or disable syncing of the **Network Assets** settings to all supported, registered Deep Discovery Inspector and Deep Discovery Director - Network Analytics products.

Note

- The **Domain Exceptions**, **Priority Watch List**, **Network Groups**, and **Registered Services** lists are synced to Deep Discovery Director - Network Analytics products.
- The **Registered Domains**, **Network Groups**, and **Registered Services** lists are synced to Deep Discovery Inspector products.
- Syncing overwrites products' existing settings.

Domain Exceptions

Add domains that you consider safe to the **Domain Exceptions** list. Listed domains and any interactions with them will not be included in the **Correlated Events** screen. You can later remove a domain from the list to include it and related interactions in past and future events.

The following table outlines the actions available for the **Domain Exceptions** screen.

Action	Description
Add	Add an item to the list. For more information, see *Adding a Domain Exception on page 6-32*.
Import	Import and overwrite the existing list. For more information, see *Importing a Domain Exceptions List on page 6-32*.
Export All	Export the current list.
Delete	Delete one or more selected items.

Adding a Domain Exception

Procedure

1. Go to **Appliances** > **Network Assets** > **Domain Exceptions**.

   The **Domain Exceptions** screen appears.

2. Click **Add**.

   The **Add Domain Exception** dialog appears.

3. Type the **Domain** name.

   Note

   One wildcard (*) connected with a "." in the domain prefix is supported.

4. Click **Add**.

   The item appears in the **Domain Exceptions** list.

Importing a Domain Exceptions List

Importing a list overwrites the existing list. Trend Micro recommends exporting the existing list first before proceeding.

Procedure

1. Go to **Appliances** > **Network Assets** > **Domain Exceptions**.

   The **Domain Exceptions** screen appears.

2. Click **Import**.

   The **Import Domain Exceptions From CSV** dialog appears.

3. Click **Select** to locate a CSV file to import.

Tip

If you are importing a CSV for the first time, click **Download sample CSV** and save the file. Populate the CSV file with properly formatted items (see the instructions in the CSV file), save the file, and then click **Select** to locate the CSV file.

4. Click **Import**.

   The items appear in the **Domain Exceptions** list.

Priority Watch List

Add servers from your environment that you consider high-priority for event tracking and incident reporting.

The following table outlines the actions available for the **Priority Watch List** screen.

Action	Description
Add	Add an item to the list. For more information, see *Adding a Priority Watch List Item on page 6-33*.
Import	Import and overwrite the existing list. For more information, see *Importing a Priority Watch List on page 6-34*.
Export All	Export the current list.
Delete	Delete one or more selected items.

Adding a Priority Watch List Item

Procedure

1. Go to **Appliances** > **Network Assets** > **Priority Watch List**.

The **Priority Watch List** screen appears.

2. Click **Add**.

   The **Add Priority Watch List Item** dialog appears.

3. Type the **IP address**.

   Note

   Single IPv4 and IPv6 addresses and address ranges supported, subnet mask optional.

4. Click **Add**.

   The item appears in the **Priority Watch List** list.

Importing a Priority Watch List

Importing a list overwrites the existing list. Trend Micro recommends exporting the existing list first before proceeding.

Procedure

1. Go to **Appliances** > **Network Assets** > **Priority Watch List**.

   The **Priority Watch List** screen appears.

2. Click **Import**.

   The **Import Priority Watch List From CSV** dialog appears.

3. Click **Select** to locate a CSV file to import.

   Tip

   If you are importing a CSV for the first time, click **Download sample CSV** and save the file. Populate the CSV file with properly formatted items (see the instructions in the CSV file), save the file, and then click **Select** to locate the CSV file.

4. Click **Import**.

   The items appear in the **Priority Watch List**.

Registered Domains

Add domains used by companies for internal purposes or those considered trustworthy. Identifying trusted domains ensures detection of unauthorized domains.

The following table outlines the actions available for the **Registered Domains** screen.

Action	Description
Add	Add one or more items to the list. For more information, see *Adding Registered Domains on page 6-35*.
Import	Import and overwrite the existing list. For more information, see *Importing a Registered Domains List on page 6-36*.
Export All	Export the current list.
Delete	Delete one or more selected items.

Adding Registered Domains

Procedure

1. Go to **Appliances** > **Network Assets** > **Registered Domains**.

   The **Registered Domains** screen appears.

2. Click **Add**.

   The **Add Registered Domains** dialog appears.

3. Type the **Domain** name.

   Note

   Add multiple domains by pressing ENTER after typing a domain, no wildcard support.

4. (Optional) Type a description.
5. Click **Add**.

   The items appear in the **Registered Domains** list.

Importing a Registered Domains List

Importing a list overwrites the existing list. Trend Micro recommends exporting the existing list first before proceeding.

Procedure

1. Go to **Appliances** > **Network Assets** > **Registered Domains**.

   The **Registered Domains** screen appears.

2. Click **Import**.

   The **Import Registered Domains From CSV, XML** dialog appears.

3. Click **Select** to locate a CSV or XML file to import.

   Tip

   - If you are importing a CSV for the first time, click **Download sample CSV** and save the file. Populate the CSV file with properly formatted items (see the instructions in the CSV file), save the file, and then click **Select** to locate the CSV file.
   - You can import items from an XML file exported from Deep Discovery Inspector 5.5 and later.

4. Select a delimiter to use.
5. Click **Import**.

   The items appear in the **Registered Domains** list.

Registered Services

Add dedicated servers for specific services that your organization uses internally or considers trustworthy. Identifying trusted services in the network helps ensure detection of unauthorized applications and services.

The following table outlines the actions available for the **Registered Services** screen.

Action	Description
Add	Add an item to the list. For more information, see *Adding Registered Services on page 6-37*.
Import	Import and overwrite the existing list. For more information, see *Importing a Registered Services List on page 6-38*.
Export All	Export the current list.
Delete	Delete one or more selected items.

Adding Registered Services

Procedure

1. Go to **Appliances** > **Network Assets** > **Registered Services**.

   The **Registered Services** screen appears.
2. Click **Add**.

   The **Add Registered Services** dialog appears.

3. Select one or more items from **Type**.
4. Type the **IP address**.

Note

- Single IPv4 and IPv6 addresses and address ranges supported, subnet mask optional.
- The IP address or address range cannot belong to Class D or Class E.
- The IP address or address range cannot be a loopback address.
- Add multiple IP addresses or address ranges by pressing ENTER after typing an IP addresses or address ranges, no wildcard support.

5. (Optional) Type a description.
6. Click **Add**.

   The item appears in the **Registered Service** list.

Importing a Registered Services List

Importing a list overwrites the existing list. Trend Micro recommends exporting the existing list first before proceeding.

Procedure

1. Go to **Appliances** > **Network Assets** > **Registered Service**.

   The **Registered Service** screen appears.
2. Click **Import**.

   The **Import Registered Services List From CSV, XML** dialog appears.
3. Click **Select** to locate a CSV or XML file to import.

Tip

- If you are importing a CSV for the first time, click **Download sample CSV** and save the file. Populate the CSV file with properly formatted items (see the instructions in the CSV file), save the file, and then click **Select** to locate the CSV file.
- You can import items from an XML file exported from Deep Discovery Inspector 5.5 and later.

Note

Descriptions that have more than 256 characters will be truncated.

4. Select a delimiter to use.
5. Click **Import**.

   The items appear in the **Registered Services** list.

Network Groups

Add IP addresses or ranges to establish groups of monitored networks to allow Deep Discovery products to determine whether attacks originate from within or outside the network.

The following table outlines the actions available for the **Network Groups** screen.

ACTION	DESCRIPTION
Add	Add one or more items to the list. For more information, see *Adding a Network Group on page 6-40*.

Action	Description
Add sub-group	To add a sub-group to an existing group, click the menu icon beside a group name and then select **Add sub-group**. For more information, see *Adding a Sub-Group on page 6-41*. **Note** You can add up to three layers of sub-groups.
Import	Import and overwrite the existing list. For more information, see *Importing a Network Groups List on page 6-43*.
Export All	Export the current list.
Delete	To delete a group, click the menu icon beside a group name and then select **Delete**.

Adding a Network Group

Procedure

1. Go to **Appliances** > **Network Assets** > **Network Groups**.

   The **Network Groups** screen appears.

2. Click **Add**.

   The **Add New Group** dialog appears.

3. Type a group name.

   Note

   Provide specific groups with descriptive names for easy identification of the network to which the IP address belongs. For example: "Finance network", "IT network", or "Administration".

4. Type an IP address or range.

Note

- You can add up to 1,000 IP addresses or address ranges per group.
- The IP address or range cannot belong to Class D or Class E.
- The IP address or range cannot be a loopback address.

a. Use a dash to specify an IP address range.

   The **Network Groups** window supports IPv4 and IPv6:

   - IPv4 example: `192.168.1.0-192.168.1.255`
   - IPv6 example: `2620:1005::123-2620:1005::460`

b. Use a slash to specify the subnet mask/prefix for IP addresses.

   - IPv4 subnet mask example: `192.168.1.0/24`
   - IPv6 subnet prefix example: `fd00:1:1111:200::1000/116`

5. Select whether to mark the IP address or address range as **Trusted** or **Untrusted**.
6. Click **Add** located next to the **Monitored IP addresses** field.

   The IP address or address range is added to the table below.
7. (Optional) Repeat steps 4 to 6 to add additional IP addresses or address ranges to this group.
8. Click **Add**.

   The item appears in the **Network Groups** list.

Adding a Sub-Group

You can add up to three layers of sub-groups.

Procedure

1. Go to **Appliances** > **Network Assets** > **Network Groups**.

   The **Network Groups** screen appears.

2. Click the menu icon beside a group name and then select **Add sub-group**.

   The **Add New Sub-Group** dialog appears and displays the parent group's IP address ranges.

3. Type a group name.

   Note

   Provide specific groups with descriptive names for easy identification of the network to which the IP address belongs. For example: "Finance network", "IT network", or "Administration".

4. Type an IP address or range.

   Note

   - Added IP addresses must be inside the parent group's IP address ranges.
   - You can add up to 1,000 IP addresses or address ranges per group.
   - The IP address or range cannot belong to Class D or Class E.
   - The IP address or range cannot be a loopback address.

   a. Use a dash to specify an IP address range.

      The **Network Groups** window supports IPv4 and IPv6:

      - IPv4 example: `192.168.1.0-192.168.1.255`
      - IPv6 example: `2620:1005::123-2620:1005::460`

   b. Use a slash to specify the subnet mask/prefix for IP addresses.

- IPv4 subnet mask example: `192.168.1.0/24`
- IPv6 subnet prefix example: `fd00:1:1111:200::1000/116`

5. Select whether to mark the IP address or address range as **Trusted** or **Untrusted**.
6. Click **Add** located next to the **Monitored IP addresses** field.

   The IP address or address range is added to the table below.
7. (Optional) Repeat steps 4 to 6 to add additional IP addresses or address ranges to this group.
8. Click **Add**.

   The item appears in the **Network Groups** list.

Importing a Network Groups List

Importing a list overwrites the existing list. Trend Micro recommends exporting the existing list first before proceeding.

Procedure

1. Go to **Appliances** > **Network Assets** > **Network Groups**.

   The **Network Groups** screen appears.
2. Click **Import**.

   The **Import Network Groups From JSON, XML** dialog appears.
3. Click **Select** to locate a JSON or XML file to import.

Tip

- If you are importing a JSON for the first time, click **Download sample JSON** and save the file. Populate the JSON file with properly formatted items (see the instructions in the JSON file), save the file, and then click **Select** to locate the JSON file.
- You can import items from an XML file exported from Deep Discovery Inspector 5.5 and later.

4. Click **Import**.

   The items appear in the **Network Groups** list.

Analyze

Analyze detections and select from detected domains and services to add to the **Registered Domains** and **Registered Services** lists.

Add Registered Domains and Services From Detections

Procedure

1. Go to **Appliances** > **Network Assets** > **Analyze**.

   The **Analyze** screen appears.

2. Click **Analyze Detections**.

   The **Add Registered Domains and Services From Detections** dialog appears.

3. Review your network configuration and select the domains and services to add to the **Registered Domains** and **Registered Services** lists.

4. (Optional) Type descriptions for the selected domains and services.

5. Click **Add**.

The items are added to the **Registered Domains** and **Registered Services** lists.

Email Encryption

With Email Encryption, Deep Discovery Email Inspector appliances encrypt messages using Trend Micro Indentity-Based Encryption (IBE). For example, when the domain **aa.com** is registered with Trend Micro for encryption and decryption and **user1@aa.com** sends a message with private information to **user2@bb.com**, Deep Discovery Email Inspector encrypts the message sent to **user2@bb.com**.

Tip

Before using Email Encryption, Trend Micro recommends you configure Deep Discovery Email Inspector appliances to synchronize the system time with an NTP server to ensure standard time and date data.

Click the **Sync to Registered Appliances** toggle to enable or disable syncing of the **Email Encryption** settings to all registered Deep Discovery Email Inspector appliances.

Domain List

For email encryption to work, you must register one or more domains to the Trend Micro Email Encryption Server.

Note

- 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.

The **Domain List** screen displays the following information:

TABLE 6-11. Domain List Columns

COLUMN	INFORMATION
Domain	The domain name.
Added	The date and time the domain was added.
Last Updated	The date and time the registration status of the domain was last updated.
Registration Status	The registration status of the domain can be any of the following: • **Pending: Awaiting domain verification and key file importing** • **Completed**
Domains:	The number of domains in use/maximum number of allowed domains.

Registering Domains

Procedure

1. Go to **Appliances** > **Email Encryption** > **Domain List**.
2. Click **Add**.

   The **Add Domains** dialog appears.
3. Specify the email address to receive key files from Trend Micro.

   Note

   - Trend Micro sends a key file for each domain you add. The key file must be imported to Deep Discovery Director (Consolidated Mode) to complete the domain registration process.
   - After the first domain is registered to the Trend Micro Email Encryption Server successfully, you can change the email address in the **Identification** screen.
4. Select a domain, type to search, or type a domain and press ENTER.

Note

- Up to 10 domains can be added 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. Click **Add**.

   The specified domains are added to the **Domain List** screen.

6. Reply to the confirmation email message to confirm domain ownership.

   Trend Micro sends the confirmation email message to the following email addresses:

   - `webmaster@yourdomain`
   - `postmaster@yourdomain`
   - The email address returned from a WHOIS lookup for the domain

7. When domain ownership is confirmed, Trend Micro sends the key file to the email address specified in step 3.

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.

8. Click **Import Key File**.

   The **Import Key File** dialog appears.

9. Click **Select file** to locate the key file to import.

10. Click **Import**.

11. 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 in the **Identification** screen.

Deleting Domains

Procedure

1. Go to **Appliances** > **Email Encryption** > **Domain List**.
2. Select one or more domains to delete and then click **Delete**.

Note

To add a deleted domain back to the domain list, you must perform the domain registration steps again.

Identification

Use the **Identification** screen to configure the default identity for email message signing, to view the appliance gateway ID, and to configure the email address for receiving key files.

In the **Default Identity** section, the sender address is used to sign messages with domains that are not part of the **Domain List**.

In the **Appliance Information** section, the specified email address is used for receiving the key files of verified domains. You can change it after the first domain is registered to the Trend Micro Email Encryption Server successfully.

Configuring Identification Settings

Procedure

1. Go to **Appliances** > **Email Encryption** > **Identification**.
2. In the **Default Identity** section, specify the sender address.

   Note

   You can only use the email address of a successfully registered domain.

3. In the **Appliance Information** section, specify the email address for receiving the key files of verified domains.

   Note

   You can only change it after the first domain is registered to the Trend Micro Email Encryption Server successfully.

4. Click **Save**.

Logs

The **Logs** screen displays various logs from Deep Discovery appliances that are registered to Deep Discovery Director (Consolidated Mode).

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.

Email message tracking logs indicate if an email message was received or sent by Deep Discovery Email Inspector. Email message tracking logs also

provide evidence about Deep Discovery Email Inspector investigating an email message.

Display Options and Search Filters

To customize the display, apply the following display options and search filters:

TABLE 6-12. Display Options and Search Filters: Email Message Tracking

FILTER OPTION	DESCRIPTION	
Risk Level	Filter options include the following risk level settings:	
	High	Displays high-risk email messages
	Medium	Displays medium-risk email messages
	Low	Displays low-risk email messages
	No risk	Displays no-risk email messages
	Unrated	Displays email messages that were unable to be scanned
	Unavailable	Displays spam/graymail messages and email messages with content violation
	All	Displays all email messages
Period	**Last 24 hours**	
	Last 7 days	
	last 14 days	
	Last 30 days	
	Last 60 days	
	Custom range	
Monitored domain	Select domains from which email messages should be displayed.	

Filter Option	Description
Basic search	Type a case-insensitive keyword in the basic search field to search a partial sender, email header (from), recipient or email header (to) match.
Advanced Search	Search by user-defined criteria sets. Each set includes one or more of the following: • Attributes • Operators • Associated values

Viewing Email Message Tracking Logs

Procedure

1. Go to **Appliances** > **Logs** > **Email Message Tracking**.

   The **Email Message Tracking** screen appears.

2. Select the risk level by using the drop-down control.

3. Select a time period.

4. Select domains from which email messages should be displayed.

5. To run a basic search, type a keyword in the search text box, and then press ENTER or click the magnifying glass icon.

   By default, Deep Discovery Director (Consolidated Mode) searches **Email Messages** by **Recipients**, **Email Header (To)**, **Sender**, **Email Header (From)**.

6. To create and apply an advanced search filter, click **Advanced**.

   For details, see *Email Message Tracking Advanced Search Filters on page 6-54*.

7. Click the arrow icon in the left-most column to view detailed information about the email message.

Field	Description
Message ID	The unique ID for the email message.
Source IP	The MTA IP address nearest to the email message sender.
Sender IP	The IP address of the email message sender.

Field	Description

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** (reason): The email message was deleted based on content filtering or threat protection rules, DLP policy violations, 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.
	• **Sent for analysis**: The email message was sent to Virtual Analyzer for analysis.
	• **Stripped (content filtering/DLP incident/threat)**: Attachments were stripped from the email message and it was passed for delivery.

Do any of the following:

- Quarantined message:
  - **View in Detection Details**
  - **View in Quarantine**
- Non-quarantined message, with high/medium/low risk level:

  View in Detection Details

8. (Optional) Click the **Export** icon, select a delimiter to use, and then click **OK** to export and download the currently filtered list of email message tracking logs to a CSV file with the chosen delimiter.

Email Message Tracking Advanced Search Filters

Use the advanced search filter to create and apply customized searches.

For details, see *Adding an Email Message Tracking Advanced Search Filter on page 6-55*.

To view specific data, select from the following optional attributes and operators, and type an associated value.

TABLE 6-13. Search Criteria: Email Message Tracking

ATTRIBUTE	OPERATOR	ACTION
Sender	**Equals/Contains/Does not contain**	Type a value
Recipient	**Equals/Contains/Does not contain**	Type a value
Email Header (From)	**Has from/No from**	
	Equals/Contains/Does not contain	Type a value
Email Header (To)	**Equals/Contains/Does not contain**	Type a value
Message ID	**Contains/Does not contain**	Type a value

Attribute	Operator	Action
Subject	**Contains**/**Does not contain**/**Equals**	Type a value
Direction	**Equals**	Select a direction
Source IP	**Contains**/**Does not contain**/**Equals**	Type a value
	In range/**Not in range**	Type a range
Sender IP	**Contains**/**Does not contain**/**Equals**	Type a value
	In range/**Not in range**	Type a range
Latest Status	**In**/**Not in**	Select one or more statuses

Adding an Email Message Tracking Advanced Search Filter

Procedure

1. To create an **Email Message Tracking** advanced search filter, go to **Appliances** > **Logs** > **Email Message Tracking**, and then click **Advanced**.
2. Select an attribute and an associated operator.
3. Do one of the following to provide an action:
   - Type a value in the text box.
   - Select a value from the drop-down list.

   Tip

   Type a keyword to search a partial match.

   Note

   You can add multiple criteria entries by pressing ENTER after typing a value.
4. (Optional) Click **AND** or **OR** to include other criteria sets in the search filter.

5. Click **Apply**.

   The **Email Message Tracking** screen updates and displays data filtered by the search criteria. All search criteria sets are displayed in a summary.

6. (Optional) Click the right-arrow icon beside the **Risk level** drop-down list to close the advanced search feature.

MTA

View connection details about Postfix and SMTP activity on your network.

Querying MTA Logs

Procedure

1. Go to **Appliances** > **Logs** > **MTA**.

   The **MTA** screen appears.

2. Select a time period.

3. Select which appliances to query for MTA logs.

4. Type a description keyword in the search text box and then click **Query**.

   Deep Discovery Director (Consolidated Mode) queries the selected appliances for matching MTA logs. This action may take several minutes.

   Note

   By default, results are sorted by **Data Source**, then by **Timestamp**.

5. (Optional) Click the **Export** icon, select a delimiter to use, and then click **OK** to export and download the currently filtered list of MTA logs to a CSV file with the chosen delimiter.

Message Queue

Query and manage the email queue of registered Deep Discovery Email Inspector appliances.

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. For details, see *Querying Message Queue Logs on page 6-58*.

Queried messages can be selected to perform actions. For details, see *Managing the Message Queue on page 6-60*.

The following table describes the information on the **Message Queue** screen.

Field	Description
Received	The time the message was received
Type	The message queue type
Message ID	The unique ID for the email message
Sender	The sender email address

Field	Description
Recipients	The email addresses of the message recipients
Subject	The message subject
Size (Bytes)	The message size in bytes
Archive/MTA Server	The address of the archive server or MTA server to which Deep Discovery Email Inspector sends the message
Message Type	The message type
Last Delivery Status	The status of the last delivery action performed
Data Source	The Deep Discovery Email Inspector appliance that stores the message

Querying Message Queue Logs

Procedure

1. Go to **Appliances** > **Logs** > **Message Queue**.

   The **Message Queue** screen appears.

2. Run a basic or advanced query:

   - Basic query:

     a. Select which message queue type to query for.

     b. Select which message type to query for.

     c. Select which appliances to query for message queue logs.

     d. Type a recipient keyword in the search text box and then click **Query**.

- Advanced query:

  a. Click on **Advanced**.

  b. Select which message queue type to query for.

  c. Select which message type to query for.

  d. Select which appliances to query for message queue logs.

  e. Select an attribute.

     - **Sender**: The sender email address.
     - **Recipient**: The recipient email address.
     - **Message ID**: The unique ID for the email message.
     - **Subject**: The message subject.
     - **Archive/MTA Server**: The archive or MTA server the email message was sent to.

  f. Type a value in the text box.

  g. (Optional) Click **AND** to include other criteria sets in the query.

  h. Click **Query**.

Deep Discovery Director (Consolidated Mode) queries the selected appliances for matching message queue logs. This action may take several minutes.

Note

- By default, results are sorted by **Received**.
- Each queried Deep Discovery Email Inspector appliance only returns the latest 10000 message queue logs.

Managing the Message Queue

Procedure

1. Go to **Appliances** > **Logs** > **Message Queue**.

   The **Message Queue** screen appears.

2. Query messages.

3. Select one or more messages and then click one of the following:

   - **Deliver**: Deliver the selected messages directly to the intended recipients without reprocessing the messages.

     Note

     This action can only be performed on **deferred** messages.

   - **Reroute**: Reroute the selected messages to an archive/MTA server.

     Note

     This action can only be performed on **incoming** and **deferred** messages.

   - **Delete**: Delete the selected messages. Deleted messages cannot be recovered.

   - The selected action is immediately submitted as task to the Deep Discovery Email Inspector appliances that store the selected messages.

   - A dialog displays to show the task status. The dialog closes automatically if all tasks are submitted successfully.

End-User Quarantine

Deep Discovery Director (Consolidated Mode) 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 and release for delivery.

You can configure Deep Discovery Director (Consolidated Mode) 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.

EUQ Settings

Use this screen to configure End-User Quarantine settings.

Configuring EUQ Settings

Procedure

1. Go to **Appliances** > **End-User Quarantine** > **EUQ Settings**.

   The **EUQ Settings** screen appears.

2. Select **Enable End-User Quarantine**.

3. Select an authentication method.

   - **Use LDAP for EUQ authentication**: Select this option to authenticate users based on their LDAP server account credentials. When you select this option, you can specify the following settings:

     - **EUQ console access for all groups**: Select this option to enable EUQ console access for all LDAP groups on configured LDAP servers.

     - **EUQ console access for specified groups**: Select this option to enable EUQ console access for specified LDAP groups.

       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.

Note

This method is only available if LDAP server settings have been configured.

For details, see *LDAP on page 9-10*.

- **Use identity provider for EUQ authentication**: Select this option to authenticate users based on the configured identity providers. When you select this option, you can specify the following settings:
  - **All users authenticated by any configured identity provider**: Select this option to enable EUQ console access for all users authenticated by any configured identity provider.
  - **SAML group users with specified claim values**: Select this option to enable EUQ console access for SAML group users with specified claim values.

    Type a case-sensitive claim value and press ENTER.

Note

This method is only available if **SAML Authentication** settings have been configured.

For details, see *SAML Authentication on page 9-12*.

- **Use SMTP server for EUQ authentication**: Select this option to authenticate users based on their email account credentials. Click **Add** to open the **Add SMTP Server** dialog and specify the SMTP server settings.

4. Select **Enable EUQ console access** to allow users to access to the EUQ console.
5. (Optional) Select **Enable distribution list EUQ management** to allow users to manage the spam quarantine of distribution lists that they belong to.
6. (Optional) Select **Deliver released messages directly without reprocessing** to allow users to release quarantined messages directly to recipients without scanning.

Note

Disabling this option causes Deep Discovery Email Inspector to continue processing released messages. Depending on the scanning results, the messages may be quarantined again.

7. (Optional) Using the **Maximum approved senders per user** drop-down list, select the maximum number of approved sender email addresses that users can add on the EUQ console.

8. Click **Save**.

   Deep Discovery Director (Consolidated Mode) configures the End-User Quarantine feature and sets up the web-based EUQ console. You can click the URL or copy the URL to send to users to access the EUQ console.

   For details, see *End-User Quarantine Console on page 6-66*.

EUQ Digest

An EUQ digest is a notification that Deep Discovery Director (Consolidated Mode) sends to inform users about email messages that were detected as spam and temporarily quarantined.

Note

- If LDAP is used for authentication, Deep Discovery Director (Consolidated Mode) does not send EUQ digests to the user groups (or distribution lists).
- If identity providers are used for authentication, Deep Discovery Director (Consolidated Mode) can be configured to send EUQ digests to **All users** or to **Members of specified LDAP groups**. 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.
- If one or more SMTP servers are used for authentication and a detected message is sent to a distribution list, Deep Discovery Director (Consolidated Mode) sends EUQ digests to the distribution list.

An EUQ digest provides the following information:

- New spam message count: Number of new email messages that have been identified as spam since the last notification was sent
- Combined size of new spam messages: Combined size of the new email messages since the last notification was sent
- Messages: Summary of the new email messages that have been identified as spam
  - Received: The time the email message was received
  - Sender: The sender email address
  - Email Subject: The email subject
  - Actions: Links that users can click to apply actions to the quarantined message

Note

Inline action links display only if you enable this feature on the **EUQ Digest** screen.

Configuring EUQ Digest Settings

Procedure

1. Go to **Appliances** > **End-User Quarantine** > **EUQ Digest**.

   The **EUQ Digest** screen appears.

2. Select **Enable EUQ digest notifications**.

3. Using the **Notification frequency** drop-down list, select the number of hours Deep Discovery Director (Consolidated Mode) waits before sending an EUQ digest notification.

4. Select **Enabled** to allow users to apply actions from the EUQ digest notification.

5. (Optional) Modify the digest notification template. Compatible tokens are displayed on the right side and can be inserted at the text cursor's position by clicking the token.

6. Click **Save**.

Inline Actions

You can configure Deep Discovery Director (Consolidated Mode) 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 any associated attachments.
- Release: Delivers the message to the intended recipients.
- Release and Approve Sender: Delivers the message to the intended recipients and adds the sender email address to the Approved Senders list.

Important

Deliver released messages directly without reprocessing must be selected on the **EUQ Settings** screen to deliver released messages directly to the intended recipients without reprocessing the messages. Otherwise, Deep Discovery Email Inspector continues processing released messages.

For details, see *Configuring EUQ Settings on page 6-61*.

Note

Trend Micro does not recommend forwarding digest notifications.

End-User Quarantine Console

When you enable the end-user quarantine, Deep Discovery Director (Consolidated Mode) provides an EUQ console that allows users to perform the following tasks:

- Manage the spam quarantine of their personal accounts
- Add senders to the Approved Senders list
- Manage the spam quarantine of LDAP distribution lists that they belong to

Note

EUQ console access must be enabled on the **EUQ Settings** screen.

For details, see *EUQ Settings on page 6-61*.

Accessing the End-User Quarantine Console

Access the EUQ console to manage quarantined spam messages and add email addresses to the **Approved Senders** list.

Procedure

1. In a web browser, type the Deep Discovery Director (Consolidated Mode) server address with the port number `4459`.

   `https://<server IP address>:4459`

2. Type your logon credentials.

   The following table describes the logon user name format depending on the authentication method used.

Authentication Method	Logon Name Format
LDAP	User Principal Name For example, `user@domain.com`
SMTP	A valid email address

3. Click **Log On**.

   The **Quarantined Messages** screen appears.

Quarantined Messages

The **Quarantined Messages** screen on the EUQ console displays a list of email messages that have been identified as spam and temporarily quarantined by Deep Discovery Email Inspector. View details about an email message before deciding whether to release the email message, to release the email message and add the sender email address to the **Approved Senders** list, or to delete the email message.

The **Quarantined Messages** screen on the EUQ console displays the following information:

Table 6-14. Quarantined Messages Columns

Column	Information
Details	Click the icon to view details about the email message, such as size, message ID, attachment file name, and message view (up to the first 2K of the message).
Sender	The sender email address.
Recipient	The recipient email address.
Email Subject	The email subject.
Detected	The time the email message was detected.

Viewing and Managing Quarantined Messages

View the list of email messages that have been identified as spam and temporarily quarantined by Deep Discovery Email Inspector.

Procedure

1. Access the EUQ console.

   The **Quarantined Messages** screen appears.

   Note

   By default, email messages are sorted by **Detected**.

2. (Optional) Select a time period.
3. Select one or more email messages and then click one of the following:
   - **Release**: Deliver the selected email messages to the intended recipients.
   - **Release and Approve Sender**: Release the selected messages and adds the sender email addresses to your **Approved Senders** list.
   - **Delete**: Delete the selected messages. Deleted messages cannot be recovered.

   Note

   Deliver released messages directly without reprocessing must be selected on the **EUQ Settings** screen to deliver released messages directly to the intended recipients without reprocessing the messages. Otherwise, Deep Discovery Email Inspector continues processing released messages.

   The selected action is immediately submitted as task to the Deep Discovery Email Inspector appliances that store the selected messages.

Approved Senders

The **Approved Senders** screen displays a list of trusted senders that bypass sender filtering and sender authentication settings in Deep Discovery Email Inspector.

Note

Deep Discovery Email Inspector still checks incoming SMTP traffic from approved senders using Trend Micro Email Reputation Services (ERS) without blocking the traffic.

Adding Approved Senders

Add email addresses from senders that you consider safe to reduce false-positives for spam detections.

Procedure

1. Access the EUQ console, and then click on the **Approved Senders** tab.

   The **Approved Senders** screen appears.

2. Type an email address in the text box and then click **Add**.

3. Click **Save**.

Distribution List Quarantine

The **Distribution List Quarantine** screen displays a list of quarantined email messages that Deep Discovery Email Inspector considers spam/graymail for the email distribution lists that you belong to.

Querying Distribution List Quarantine Messages

Procedure

1. Access the EUQ console, and then click on the **Distribution List Quarantine** tab.

   The **Distribution List Quarantine** screen appears.

2. Select a time period.

3. Type a full email group address in the search text box and then click **Query**.

   Deep Discovery Director (Consolidated Mode) queries Deep Discovery Email Inspector appliances for matching quarantined email messages. This action may take several minutes.

   Note

   By default, results are sorted by **Detected**.

Managing the Distribution List Quarantine

Procedure

1. Access the EUQ console, and then click on the **Distribution List Quarantine** tab.

   The **Distribution List Quarantine** screen appears.

2. Query messages.

3. Select one or more email messages and then click one of the following:

   - **Release**: Deliver the selected email messages to the intended recipients.
   - **Delete**: Delete the selected messages. Deleted messages cannot be recovered.

Note

Deliver released messages directly without reprocessing must be selected on the **EUQ Settings** screen to deliver released messages directly to the intended recipients without reprocessing the messages. Otherwise, Deep Discovery Email Inspector continues processing released messages.

The selected action is immediately submitted as task to the Deep Discovery Email Inspector appliances that store the selected messages.

Chapter 7

Alerts

Learn about alert notifications and how to configure them in the following topics.

About Alerts

Deep Discovery Director (Consolidated Mode) monitors a variety of events and can be configured to generate alerts to inform users of those events.

Token Variables

The following table describes the token variables that can be used to customize the subject line of alert notifications.

Note

Not all tokens are available for all alerts.

TABLE 7-1. Subject Line Tokens

TOKEN	DESCRIPTION
%AlertLevel%	The level of the alert notification.
%AlertName%	The name of the alert notification.
%AlertType%	The type of the alert notification.
%HostName%	The Deep Discovery Director (Consolidated Mode) host name.
%ProductShortName%	The Deep Discovery Director (Consolidated Mode) short name.

The following table describes the token variables used in the message body of alert notifications.

Note

The message body of alert notifications cannot be modified.

TABLE 7-2. Message Body Tokens

TOKEN	DESCRIPTION
%LoopStart% %LoopEnd%	Any text between these two tokens is repeated until all system errors have been listed.
%IssueDescription%	The description of the system error.
%Recommendation%	The recommendation on how to resolve the system error.
%DateTime%	The date and time the alert was triggered.
%ConsoleURL%	The Deep Discovery Director (Consolidated Mode) management console URL.
%DataBaseUsage%	The total database partition usage.
%FreeDataBaseSpace%	The free database partition space.
%YaraRulesPage%	The URL to the YARA Rules screen on the Deep Discovery Director (Consolidated Mode) management console.
%STIXPage%	The URL to the STIX screen on the Deep Discovery Director (Consolidated Mode) management console.
%LicenseLoopStart% %LicenseLoopEnd%	Any text between these two tokens is repeated until all license items have been listed.
%LicenseDescription%	The description of the license.
%LicenseType%	The license type.
%LicenseStatus%	The license status.
%ExpirationDate%	The license expiration date.
%DaysBeforeExpiration%	The number of days before the license expires.

Token	Description
%LicensePageURL%	The URL to the License screen on the Deep Discovery Director (Consolidated Mode) management console.
%ServiceLoopStart% %ServiceLoopEnd%	Any text between these two tokens is repeated until all stopped services have been listed.
%ServiceID%	The ID of the stopped service.
%TriggerTime%	The date and time the service stopped.
%HighRiskLevelDetections%	The number of correlated events that have been found.
%AlertConsole%	The URL to the rule page on the Deep Discovery Director (Consolidated Mode) management console.
%LastDetectedTime%	The date and time of the last detection.
%CorrelatedEventsPage%	The URL to the Correlated Events screen on the Deep Discovery Director (Consolidated Mode) management console.
%AttachmentHint%	A hint about the attached file.
%TotalDetections%	The total number of detections.
%HighRiskLevelDetections%	The number of email messages that were assigned a high risk level.
%MediumRiskLevelDetections%	The number of email messages that were assigned a medium risk level.
%LowRiskLevelDetections%	The number of email messages that were assigned a low risk level.
%UnavailableRiskLevelDetections%	The number of email messages that were assigned an unavailable risk level.
%EmailMessagePage%	The URL to the Email Messages screen on the Deep Discovery Director (Consolidated Mode) management console.

Token	Description
%HighSeverityDetections%	The number of network detections that were assigned a high severity level.
%MediumSeverityDetections%	The number of network detections that were assigned a medium severity level.
%LowSeverityDetections%	The number of network detections that were assigned a low severity level.
%InformationalSeverityDetections%	The number of network detections that were assigned an informational severity level.
%NetworkDetectionPage%	The URL to the Network Detections screen on the Deep Discovery Director (Consolidated Mode) management console.
%SuccessLoopStart% %SuccessLoopEnd%	Any text between these two tokens is repeated until all completed plans have been listed.
%CompletedPlanName%	The name of the completed plan.
%Detail_page_URL%	The URL to the Details screen of the plan on the Deep Discovery Director (Consolidated Mode) management console.
%CompletedPlanType%	The type of the completed plan.
%CompletedDateTime%	The date and time the plan was completed.
%FailedLoopStart% FailedLoopEnd	Any text between these two tokens is repeated until all unsuccessful plans have been listed.
%UnsuccessfulPlanName%	The name of the unsuccessful plan.
%UnsuccessfulPlanType%	The type of the unsuccessful plan.

Token	Description
%ApplianceUnsuccessfulNumber%	The number of appliances that unsuccessfully executed the plan.
%ApplianceUnreachableNumber%	The number of appliances that were unreachable.
%ApplianceCanceledNumber%	The number of appliances where the plan was canceled.
%LogPartitionUsage%	The total log partition usage.
%FreeLogPartitionSpace%	The free log partition space.
%LogPartitionSpaceThreshold%	The low free disk space threshold value.
%StoragePage%	The URL to the Storage screen on the Deep Discovery Director (Consolidated Mode) management console.
%RepositoryUsage%	The total repository usage.
%FreeRepositorySpace%	The free repository space.
%PageURL%	The URL to the Repository screen on the Deep Discovery Director (Consolidated Mode) management console.
%FileUploadLoopStart% %FileUploadLoopEnd%	Any text between these two tokens is repeated until all file upload results have been listed.
%FileName%	The name of the uploaded file.
%FileType%	The type of the uploaded file.
%UploadResult%	The result of the upload.
%UploadDateTime%	The date and time the file was uploaded.

Token	Description
%RepositoryURL%	The URL to the Repository screen on the Deep Discovery Director (Consolidated Mode) management console.
%PlanPageURL%	The URL to the Plans screen on the Deep Discovery Director (Consolidated Mode) management console.

Triggered Alerts

The **Triggered Alerts** screen displays the following information:

Table 7-3. Triggered Alerts Columns

Column	Information
Triggered	The date and time when the alert was triggered.
Alert Level	An alert can be classified as any of the following levels. • **Critical**: The event requires immediate attention • **Important**: The event requires observation • **Informational**: The event requires limited observation
Type	The type of rule that can trigger an alert can be any of the following: • **System**: A built-in, system related rule. • **Email Security**: An email security related rule. • **Network Security**: A network security related rule. • **Custom**: A user-specified custom rule. • **Network Analytics**: A network analytics related rule.
Rule	The rule that triggered the alert.
Criteria	The summarized criteria of the rule. For custom rules, displays the advanced search filter.

Column	Information
Events	The triggered alert occurrences. Click the number to drill down to the **Network Detections** or **Email Messages** screen. **Note** The number of records displayed on the **Network Detections** or **Email Messages** screen may differ from the number of events displayed on the **Triggered Alerts** screen because the related detection logs have been purged, or because appliances with related detections have been: • Moved to the **Unmanaged** group • Deleted from Deep Discovery Director (Consolidated Mode) • Unregistered from Deep Discovery Director (Consolidated Mode)
Details	Click the icon to view the full alert details, including the list of recipients, subject, and message of the alert.

Tip

The list view can be filtered by clicking the **Filters** button and using the drop-down lists and search box that appear.

Built-in Rules

The **Built-in Rules** screen displays the following information:

TABLE 7-4. Built-in Rules Columns

COLUMN	INFORMATION
Alert Level	An alert can be classified as any of the following levels. • **Critical**: The event requires immediate attention • **Important**: The event requires observation • **Informational**: The event requires limited observation
Type	The type of rule that can trigger an alert can be any of the following: • **System**: A built-in, system related rule. • **Email Security**: An email security related rule. • **Network Security**: A network security related rule. • **Network Analytics**: A network analytics related rule.
Rule	The rule that triggers the alert. To edit a rule, click on any link in the **Rule** column.
Criteria	The summarized criteria of the rule.
Alert Frequency	The frequency at which the alert is generated when the rule criteria are met or exceeded.
Last Triggered	The date and time when the alert was last triggered.
Status	Click the toggle to enable or disable the rule.

Editing a Built-in Rule

Edit rules to modify the frequency at which alerts are generated, the criteria, and the alert recipients.

Note

- By default, built-in rules are enabled and configured to send alerts to all contacts with valid email addresses.
- Only the criteria of **Email Security** rules can be modified.

Procedure

1. Go to **Alerts** > **Built-in Rules**.

   The **Built-in Rules** screen appears.

2. Click the name of the rule you want to edit in the **Rule** column.

   The **Edit Rule** screen appears.

3. Toggle the status of this rule.

4. Configure how often alerts are generated:

   - **Check frequency**: Select the frequency at which the rule criteria are checked
   - **Alert frequency**: Select the frequency at which the alert is generated when the rule criteria are met or exceeded

   Note

   - Shorter frequencies mean that the alert will be generated more often. Select longer frequencies to reduce the noise the alert generates.
   - System rules are configured to continuously check the rule criteria. Only the **Alert frequency** can be modified.
   - Security and custom rules are configured to immediately generate alerts if rule criteria are met or exceeded. Only the **Check frequency** can be modified.

5. For **Email Security** alerts, configure the following:

   - **Recipient watchlist**: Type an email address and press ENTER to add the specified email address to the recipient watchlist.
   - **Threshold**: Specify the detection threshold.
   - **Risk level**: Select the risk level and then click **Apply**.

6. (Optional) Select or disable **Send to all accounts**.

Note

This setting can be used in combination with the additional recipients field.

7. (Optional) Select a contact, type to search, or type an email address and press ENTER.

   The contact or account is added to the recipients.

8. (Optional) Modify the subject line. Compatible tokens are displayed on the right side and can be inserted at the text cursor's position by clicking the token.

   For more information, see *Token Variables on page 7-2*.

9. Click **Save**.

Tip

Click **Restore Defaults** to restore this rule to its default values.

Custom Rules

The **Custom Rules** screen displays the following information:

TABLE 7-5. Custom Rules Columns

COLUMN	INFORMATION
Alert Level	An alert can be classified as any of the following levels. • **Critical**: The event requires immediate attention • **Important**: The event requires observation • **Informational**: The event requires limited observation

Column	Information
Type	The type of rule that can trigger an alert can be any of the following: • **Email Security**: An email security related rule. • **Network Security**: A network security related rule.
Rule	The rule that triggers the alert. To edit a rule, click on any link in the **Rule** column.
Criteria	The advanced search filter used as criteria for this rule.
Check Frequency	The frequency at which the rule criteria are checked.
Last Triggered	The date and time when the alert was last triggered.
Status	Click the toggle to enable or disable the rule.

Adding a Custom Rule

Add custom rules based on saved search filters to be alerted of specific threats.

Note

A maximum of 500 custom rules can be added.

Procedure

1. Go to **Alerts** > **Custom Rules**, and then click **Add Rule**.

   The **Add Rule** screen appears.

2. Toggle the status of this rule.
3. Type a name for this rule.
4. Select the alert level to assign to this rule.
5. Click **Select Filter**, select a **Network Detections** or **Email Messages** saved search to use as criteria for this rule, and then click **Apply**.

Important

Subsequent changes made to the selected filter will not be applied after the rule is created.

6. Do one of the following:
   - For **Network Detections** saved searches, select the appliances to include as data source of this rule.
   - For **Email Messages** saved searches, select domains from which email messages should be included in this rule.
7. Select the frequency at which the rule criteria are checked.

Note

- Shorter frequencies mean that the alert will be generated more often. Select longer frequencies to reduce the noise the alert generates.
- Custom rules are configured to immediately generate alerts if rule criteria are met or exceeded. Only the **Check frequency** can be modified.

8. Specify the threshold.
9. (Optional) Type a description for this rule.
10. (Optional) Select or disable **Send to all accounts**.

Note

This setting can be used in combination with the additional recipients field.

11. (Optional) Select a contact, type to search, or type an email address and press ENTER.

    The contact or account is added to the recipients.
12. (Optional) Modify the subject line. Compatible tokens are displayed on the right side and can be inserted at the text cursor's position by clicking the token.

For more information, see *Token Variables on page 7-2*.

13. Click **Save**.

Other Custom Rules Tasks

You can also perform the following tasks:

TABLE 7-6. Other Tasks

TASK	DESCRIPTION
Edit a rule	Click on a rule name to open the **Edit Rule** screen and edit the rule. **Note** The advanced search filter used as criteria cannot be modified.
Delete rules	Select one or more rules to delete and then click **Delete**.
Toggle rule status	Click on the toggle in the **Status** column to enable or disable the rule.

Chapter 8

Reports

Learn how to generate and access Deep Discovery Director (Consolidated Mode) scheduled and on-demand reports in the following topics:

About Reports

Deep Discovery Director (Consolidated Mode) provides reports to help you better understand complex threat scenarios, prioritize responses, and plan containment and mitigation.

All reports generated by are based on an operational report template.

Generate reports on demand or set a daily, weekly, or monthly schedule.

Generated Reports

The **Generated Reports** screen displays the following information:

TABLE 8-1. Generated Reports Columns

COLUMN	INFORMATION
Name	The name of the report.
Type	The type of the report can be any of the following: • **Email Security**: A report generated from Deep Discovery Email Inspector appliance data. • **Network Security**: A report generated from Deep Discovery Inspector appliance data.
Frequency	The frequency at which the report is generated can be any of the following: • **Daily** • **Weekly** • **Monthly** • **On demand**
Generated	The time the report was generated.
Download	Click the icon to download the report.

Viewing Generated Reports

Procedure

1. Go to **Reports** > **Generated Reports**.
2. Select a report type.
3. Select a frequency.
4. Select a time period.
5. To run a search, type a report name keyword in the search text box, and then press ENTER or click the magnifying glass icon.
6. (Optional) Click on the column titles to sort the list.
7. Click on the icon in the **Download** column to download and save the report in PDF format.

Deleting Generated Reports

Procedure

1. Go to **Reports** > **Generated Reports**.
2. Select one or more reports to delete and then click **Delete**.

Schedules

The **Schedules** screen displays the following information:

TABLE 8-2. Schedules Columns

	INFORMATION
Name	The name of the report.
Type	The type of the report can be any of the following: • **Email Security**: A report generated from Deep Discovery Email Inspector appliance data. • **Network Security**: A report generated from Deep Discovery Inspector appliance data.
Frequency	The frequency at which the report is generated can be any of the following: • **Daily** • **Weekly** • **Monthly**
Description	The description of the report.
Last Updated	The time the report schedule was last updated.
Last Generated	The time the report was last generated.

Viewing Schedules

Procedure

1. Go to **Reports** > **Schedules**.
2. Click the **Filter** button.

   Filter drop-down lists and a search box appear.
3. Select a report type.
4. Select a frequency.
5. To run a search, type a report name keyword in the search text box, and then press ENTER or click the magnifying glass icon.

6. (Optional) Click on the column titles to sort the list.

Adding a Schedule

Procedure

1. Go to **Reports** > **Schedules**.
2. Click **Add Schedule**.

   The **Add Schedule** screen appears.
3. Select the report type.
4. Type a name for this report.
5. Do one of the following:
   - For **Network Security** reports, select the appliances to include as data source.
   - For **Email Security** reports, select the domains from which email messages should be included.
6. (Optional) Type a description for this report.
7. (Optional) Type notes that will be displayed on the cover of this report.
8. Select the frequency at which this report is generated:
   - **Daily**: Select or type the time this report is generated at.
   - **Weekly**: Select the weekday and the time this report is generated at.
   - **Monthly**: Do one of the following:
     - Select **Full month report, generate on the first day of a month at**, and then select or type the time this report is generated at. The reporting period is the previous full month (day 1 to day 31).

- Select **30-day report, start month on day**, and then select the day and the time this report is generated at. The reporting period is the last 30 days from the specified day (for example, from day 15 to day 15).

  Note

  The report will start on the last day of the current month if the specified day (29, 30, or 31) does not exist.

9. Select the report content:
   - For **Network Security** reports:
     a. Select the hosts to include in this report:
        - To include all hosts, select **All monitored hosts**.
        - To only include certain hosts, select **Filtered hosts**, click **Select Filter**, select a **Affected Hosts** saved search to use as criteria, and then click **Apply**.
     b. Select the number of top hosts to include in this report.
   - For **Email Security** reports:
     a. Select whether to include detailed information in this report.
     b. Select whether to include only inbound or outbound messages, or to include both inbound and outbound messages in this report.
10. (Optional) Select or disable **Send to all accounts**.

    Note

    This setting can be used in combination with the additional recipients field.

11. (Optional) Select an account, type to search, or type an email address and press ENTER.

    The account or email address is added to the recipients.

12. (Optional) Modify the subject line. Compatible tokens are displayed on the right side and can be inserted at the text cursor's position by clicking the token.
13. Click **Save**.

Editing a Schedule

Procedure

1. Go to **Reports** > **Schedules**.
2. Click the name of the report you want to edit.

   The **Edit Schedule** screen appears.
3. Modify the settings.
4. Click **Save**.

Deleting Schedules

Procedure

1. Go to **Reports** > **Schedules**.
2. Select one or more schedules to delete and then click **Delete**.

On demand

Generate one-time reports anytime you need them. On-demand report are generated as soon as possible and are available for viewing immediately after they are generated.

Generating On-demand Reports

Procedure

1. Go to **Reports** > **On demand**.
2. Select the report type.
3. Type a name for this report.
4. Do one of the following:
   - For **Network Security** reports, select the appliances to include as data source.
   - For **Email Security** reports, select the domains from which email messages should be included.
5. (Optional) Type notes that will be displayed on the cover of this report.
6. Select the reporting period.
7. Select the report content:
   - For **Network Security** reports:
     a. Select the hosts to include in this report:
        - To include all hosts, select **All monitored hosts**.
        - To only include certain hosts, select **Filtered hosts**, click **Select Filter**, select a **Affected Hosts** saved search to use as criteria, and then click **Apply**.

     b. Select the number of top hosts to include in this report.
   - For **Email Security** reports:
     a. Select whether to include detailed information in this report.
     b. Select whether to include only inbound or outbound messages, or to include both inbound and outbound messages in this report.

8. (Optional) Select or disable **Send to all accounts**.

Note

This setting can be used in combination with the additional recipients field.

9. (Optional) Select an account, type to search, or type an email address and press ENTER.

   The account or email address is added to the recipients.

10. (Optional) Modify the subject line. Compatible tokens are displayed on the right side and can be inserted at the text cursor's position by clicking the token.

11. Click **Generate**.

    The new on-demand report appears in the **Generated Reports** screen.

Customization

Use the **Customization** screen to configure report cover options.

Customizing Reports

Procedure

1. Go to **Reports** > **Customization**.
2. Type a company name.
3. To display a company logo, select **Display company logo**, click **Select File** to locate an image file.

Note

The image file must be in JPEG or PNG format and the file size cannot exceed 200 KB.

4. (Optional) Clear the **Display Trend Micro logo** check box if you do not want to display the Trend Micro logo on the report's cover page.
5. Click **Save**.

Chapter 9

Administration

Learn how to administer Deep Discovery Director (Consolidated Mode) in the following topics.

Updates

Use the **Updates** screen, in **Administration** > **Updates**, to update components and install hotfixes, patches, and firmware upgrades to Deep Discovery Director (Consolidated Mode).

Components

Deep Discovery Director (Consolidated Mode) uses components to display related information about detections. Because Trend Micro frequently creates new component versions, perform regular updates to address the latest threats.

Deep Discovery Director (Consolidated Mode) automatically checks the availability of new components upon opening the **Components** screen.

Updating Components

Manually update components at any time.

Procedure

1. Go to **Administration** > **Updates** > **Components**.

   The **Component** screen appears.

2. Click **Update All**.

Configuring Component Update Settings

Configure Deep Discovery Director (Consolidated Mode) to automatically update components

Procedure

1. Go to **Administration** > **Updates** > **Components**.

   The **Components** screen appears.

2. Click **Settings**.

   The **Component Update Settings** screen appears.

3. Select a source to download updates from:

   - **Trend Micro ActiveUpdate server**: The Trend Micro ActiveUpdate server is the default source for the latest components.
   - **Other update source**: Select this option to specify a different update source. The update source URL must begin with "http://" or "https://".

4. Select **Automatically check for updates**.

5. Select whether to update every few hours or daily at a specific time.

   Tip

   Trend Micro recommends setting the update frequency to every two hours.

6. Click **Save**.

Hotfixes / Patches

Use the **Hotfixes / Patches** screen, in **Administration** > **Updates** > **Hotfixes / Patches**, to install Deep Discovery Director (Consolidated Mode) hotfixes and patches. After an official product release, Trend Micro releases system updates to address issues, enhance product performance, or add new features.

TABLE 9-1. Hotfixes / Patches

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.
Patch	A patch is a group of hot fixes and security patches that solve multiple program issues. Trend Micro makes patches available on a regular basis. Non-Windows patches commonly include a setup script.

Your vendor or support provider may contact you when these items become available. Check the Trend Micro website for information on new hotfix and patch releases:

https://downloadcenter.trendmicro.com/

Installing a Hotfix / Patch

Procedure

1. Obtain the product update file from Trend Micro.
   - If the file is an official patch, download it from the download center.

     http://downloadcenter.trendmicro.com/
   - If the file is a hotfix, send a request to Trend Micro support.
2. Go to **Administration** > **Updates** > **Hotfixes / Patches**.

   The **Hotfixes / Patches** screen appears.
3. Click **Select** and select the product update file.
4. Click **Upload**.

5. Click **Install**.

Important

- Some updates cannot be rolled back once installed.
- Do not close or refresh the browser, navigate to another page, perform tasks on the management console, or power off the appliance until updating is complete.

Deep Discovery Director (Consolidated Mode) installs the update and will automatically restart if it is required to complete the update.

6. Log on to the management console.
7. Go back to the **Administration** > **Updates** screen.
8. Verify that the hotfix / patch displays in the **History** section as the latest update.

Rolling Back a Hotfix / Patch

Deep Discovery Director (Consolidated Mode) has a rollback function to undo an update and revert the product to its pre-update state. Use this function if you encounter problems with the product after a particular hotfix or patch is applied.

Note

Rolling back a hotfix or patch will automatically restart Deep Discovery Director (Consolidated Mode) if it is required to complete the rollback. Verify that all tasks on the management console have been completed before rollback.

Procedure

1. Go to **Administration** > **Updates** > **Hotfixes / Patches**.
2. In the **History** section, click **Roll Back**.

Deep Discovery Director (Consolidated Mode) will automatically restart if it is required to complete the rollback.

3. Log on to the management console.
4. Go back to the **Administration** > **Updates** > **Hotfixes / Patches** screen.
5. Verify that the hotfix or patch rollback is displayed as the most recent entry in the **History** section.

Firmware

Use the **Firmware** screen, in **Administration** > **Updates** > **Firmware**, to install a Deep Discovery Director (Consolidated Mode) upgrade. Trend Micro prepares a readme file for each upgrade. Read the accompanying readme file before installing an upgrade for feature information and for special installation instructions.

Installing a Firmware Upgrade

Procedure

1. Go to **Administration** > **Updates** > **Firmware**.

   The **Firmware** screen appears.
2. Click **Select** and select the firmware upgrade file.
3. Click **Upload**.
4. Click **Install**.

Important

- Deep Discovery Director (Consolidated Mode) does not allow the installation of firmware upgrades when the license status is **Not Activated** or **Expired**.
- Firmware upgrades cannot be rolled back once installed.
- Do not close or refresh the browser, navigate to another page, perform tasks on the management console, or power off the server until upgrading is complete.

Deep Discovery Director (Consolidated Mode) will automatically restart after the upgrade is complete.

5. Log on to the management console.
6. Go back to the **Administration** > **Updates** > **Firmware** screen.
7. Verify that the firmware version is correct.

Integrated Products/Services

Deep Discovery Director (Consolidated Mode) integrates with other products and services.

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.

Important

- Deep Discovery Director (Consolidated Mode) integrates with Apex Central for the express purpose of retrieving endpoint analysis reports to provide Deep Discovery Director - Network Analytics with even more data for more thorough advanced threat analysis.
- The management of Deep Discovery appliances and the sharing of threat intelligence will continue to be handled by Deep Discovery Director (Consolidated Mode).

The **Apex Central** screen displays the following information.

Field	Information
Server type	Deep Discovery Director (Consolidated Mode) can integrate with the on-premises version or the software as a service version of Apex Central. **Note** If proxy settings are enabled, Deep Discovery Director (Consolidated Mode) connects to **Apex Central as a Service** using the proxy server.
Status	Displays either **Connected to Apex Central**, **Not connected to Apex Central**, or **N/A**.
Last connected	Displays the date and time Deep Discovery Director (Consolidated Mode) last connected to Apex Central.
Endpoint Sensor license	Displays either **Activated** or **Not activated**.
Apex Central server address	The Apex Central server address.
Port	The Apex Central port.
Application ID	The **Application ID** generated on the Apex Central console for Deep Discovery Director (Consolidated Mode).

Field	Information
API key	The **API key** generated on the Apex Central console for Deep Discovery Director (Consolidated Mode).

Configuring Apex Central Settings

Procedure

1. Go to **Administration** > **Integrated Products/Services** > **Apex Central**.

   The **Apex Central** screen appears.

2. Select **Retrieve endpoint analysis reports from Apex Central**.

   Important

   - On the Apex Central console, go to **Administration** > **Settings** > **Automation API Access Settings** to add Deep Discovery Director (Consolidated Mode) as application.
   - Endpoint Sensor must be configured in Apex Central to enable this feature.

3. Select the **Server type**.
4. Type the IP address or FQDN of the Apex Central server.
5. Type the port of the Apex Central server.
6. Type the **Application ID** generated on the Apex Central console for Deep Discovery Director (Consolidated Mode).
7. Type the **API key** generated on the Apex Central console for Deep Discovery Director (Consolidated Mode).
8. (Optional) Click **Test Connection**.
9. Click **Save**.

LDAP

Deep Discovery Director (Consolidated Mode) integrates with LDAP servers for user-group definition and administrator privileges.

Deep Discovery Director (Consolidated Mode) 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
- 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 Director (Consolidated Mode) supports up to ten directory servers. For more information, see *Configuring an LDAP Server on page 9-11*.
Edit an LDAP server	Click a server name to edit the settings. For more information, see *Configuring an LDAP Server on page 9-11*.
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 to enable or disable the server.
5. Select a server type.
6. Specify the name of the server.
7. Configure the server settings (server address, access protocol, and port number).

   Note

   Trend Micro recommends using the following default ports:

   - For Microsoft Active Directory, or OpenLDAP:
     - **SSL**: 636
     - **STARTTLS**: 389
   - For Microsoft AD Global Catalog:
     - **SSL**: 3269
     - **STARTTLS**: 3268

8. Configure administrative settings for the LDAP server.

   The following table provides the configuration recommendations for each supported LDAP server type.

LDAP Server Type	User Name (example)	Base Distinguished Name (example)
Active Directory	user1@domain.com (UPN)	dc=domain, dc=com
Active Directory Global Catalog	user1@domain.com (UPN)	dc=domain, dc=com dc=domain1,dc=com (if multiple unique domains exist)
OpenLDAP	cn=manager, dc=test1, dc=com	dc=test1, dc=com

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.

9. If the LDAP server uses filter settings other than the default, specify the **User filter** and **Group filter**.

10. (Optional) Click **Test Connection** to verify that a connection to the LDAP server can be established using the specified information.

11. Click **Save**.

SAML Authentication

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 Director

(Consolidated Mode), users signing in to your organization's portal can seamlessly sign in to Deep Discovery Director (Consolidated Mode) without an existing Deep Discovery Director (Consolidated Mode) 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 Director (Consolidated Mode)) uses the user identity information from the identity provider for user authentication and authorization.

Deep Discovery Director (Consolidated Mode) 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 Director (Consolidated Mode) to your organization environment for single-sign-on, complete the following:

1. Access the Deep Discovery Director (Consolidated Mode) management console to obtain the service provider metadata file.

   You can also update the certificate in Deep Discovery Director (Consolidated Mode).

2. In your identity provider:

   a. Configure the required settings for single sign-on.

   b. Obtain the metadata file.

   For more information, see the documentation that comes with your identity provider.

3. In Deep Discovery Director (Consolidated Mode):

   a. Import the metadata file for your identity provider.

   b. Create SAML user groups.

Service Provider Metadata and Certificate

Obtain the service provider metadata from Deep Discovery Director (Consolidated Mode) 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 Director (Consolidated Mode) metadata file. You can import the metadata file on an Active Directory Federal Services (ADFS).

  Note

  If you change the Deep Discovery Director (Consolidated Mode) FQDN after importing the metadata file on your identity provider, you will need to download the metadata file again and reimport the file on your identity provider.

- **Download Certificate**: Downloads the Deep Discovery Director (Consolidated Mode) certificate file.
- **Update**: Uploads a new certificate on Deep Discovery Director (Consolidated Mode). The certificate must meet the following specifications:
  - The certificate must be in X.509 PEM format.

- The certificate must not be protected by a password or pass phrase.
- Certificates from a private CA or a CA chain must include **Authority Information Access** and **CRL Distribution Points**.

Configuring Identity Provider Settings

Note

- Before you add an identity provider, obtain the metadata file from your identity provider.
- You can add up to two identity providers in Deep Discovery Director (Consolidated Mode), one each for AD FS and Okta.

Procedure

1. Go to **Administration** > **Integrated Products/Services** > **SAML Authentication**.
2. In the Identity Provider section, do one of the following:
   - In the drop-down box above the table, select **Custom Identity Provider** to add or view your Identity Providers, or select **Internal Identity Provider** to view to view the internal Identity Provider used for Vision One.

     Note

     The drop-down box only appears when Deep Discovery Director (Consolidated Mode) is integrated with Vision One.

   - Click **Add** to add a new entry.
   - Click an identity provider service 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.

Note

Deep Discovery Director (Consolidated Mode) displays the service name in the drop-down list on the Log On screen.

5. Type a description.
6. Click **Select** and choose the metadata file obtained from your identity provider.

   After importing the 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 Director (Consolidated Mode).

This section describes how to configure Okta as a SAML (2.0) identity provider for Deep Discovery Director (Consolidated Mode) 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 Director (Consolidated Mode) management console.
- You are logged on to the management console as a Deep Discovery Director (Consolidated Mode) 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 Director (Consolidated Mode) in **App name**, for example, "Deep Discovery Director (Consolidated Mode)", and click **Next**.

6. On the **Configure SAML** screen, specify the following:

   a. Type the **Single sign on URL** for Deep Discovery Director (Consolidated Mode).

   Note

   To obtain the Deep Discovery Director (Consolidated Mode) single sign on URL, go to **Administration** > **Integrated Products/Services** > **SAML Integration** in the Deep Discovery Director (Consolidated Mode) management console, and copy the **Single Sign On URL** in the **Service Provider** section.

   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. Type `EmailAddress` in **Name ID format**.

   e. In the **Group Attribute Statements (Optional)** section, specify the following:

      - **Name**: `DDD_GROUP`
      - **Filter**: **Matches** `^(.*)*$`

   f. 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 Director (Consolidated Mode) application appears.

8. Click **Identity Provider Metadata** to download the metadata file from Okta.

Note

Import this metadata file to Deep Discovery Director (Consolidated Mode).

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 Director (Consolidated Mode) 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 Director (Consolidated Mode) and add the user to the Deep Discovery Director (Consolidated Mode) 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 Director (Consolidated Mode) 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 Director (Consolidated Mode).

Note

Deep Discovery Director (Consolidated Mode) 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 Director (Consolidated Mode) administrator.
- You have obtained the metadata file from Deep Discovery Director (Consolidated Mode).
- You have enabled Windows Integrated Authentication on the federation server.

  For details, see *Enabling Windows Integrated Authentication on AD FS on page 9-22*.
- You have configured web browser settings on each endpoint to trust Deep Discovery Director (Consolidated Mode) and the federation server.

  For details, see *Configuring Endpoints for Single Sign-on through AD FS on page 9-24*.

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 Director (Consolidated Mode); then, click **Next**.
   c. On the **Specify Display Name** tab, specify a display name for Deep Discovery Director (Consolidated Mode), for example, "Deep Discovery Director (Consolidated Mode)", and click **Next**.
   d. On the **Choose Access Control Policy** tab, select **Permit everyone** and 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 the settings on each tab of the **Add Transform Claim Rule Wizard** screen.
   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**.

6. Click **Add Rule...**.

   The **Add Transform Claim Rule Wizard** screen appears.

7. Complete the settings on each tab of the **Add Transform Claim Rule Wizard** screen.

   a. 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.

   b. For **Claim rule name**, type the name of the AD group.

   c. For **User's group**, click **Browse** and then select the AD group.

   d. For **Outgoing claim type**, type `DDD_GROUP`.

   e. For **Outgoing claim value**, type the name of the AD group.

   f. Click **Apply** and then click **OK**.

8. Collect the single sign-on URL and export the Identity Provider metadata for AD FS.

   a. On the AD FS management console, go to **AD FS** > **Service** > **Endpoints**.

   b. In the right pane, under **Endpoints** > **Metadata**, in the **Federation Metadata** row, copy the URL path.

   c. Add the host name of the AD FS computer to the URL path that you copied.

      For example, `https://hostname/FederationMetadata/2007-06/FederationMetadata.xml`

d. To retrieve the Identity Provider metadata, use a web browser to navigate to the complete URL that you obtained in the previous step.

e. Save the Identity Provider metadata file as an XML file.

Note

Import this metadata file to Deep Discovery Director (Consolidated Mode).

Enabling Windows Integrated Authentication on AD FS

Windows Integrated Authentication (WIA) allows users to single sign-on to Deep Discovery Director (Consolidated Mode) using the domain credentials they used to sign on to an endpoint.

Procedure

1. Log on to a Windows Server installed with AD FS 4.0 or AD FS 5.0.
2. Go to **Start** > **All Programs** > **Administrative Tools** to open the AD FS management console.
3. Select **AD FS** > **Service** > **Authentication Methods** in the left navigation, and under the **Actions** area on the right, click **Edit Primary Authentication Methods...**.
4. On the **Primary** tab, under **Intranet**, ensure that **Windows Authentication** is enabled.
5. Click **OK**.
6. Log on to your **Domain Controller**.
7. Go to **Start** > **All Programs** > **Administration Tools** > **Group Policy Management**.
8. Select **User Configuration** > **Policies** > **Administrative Templates** > **Windows Components** > **Internet Explorer** > **Internet Control Panel** > **Security Page**.

9. Double-click **Site to Zone Assignment List** to configure the settings.
10. Select **Enabled**.
11. Under **Options**, click **Show**.
12. Add the Deep Discovery Director (Consolidated Mode) management console URL as **Value name** with a **Value** of `1`.
13. Click **OK.**

    The Deep Discovery Director (Consolidated Mode) management console URL is added to the **Intranet zone**.
14. Select **User Configuration** > **Policies** > **Administrative Templates** > **Windows Components** > **Internet Explorer** > **Internet Control Panel** > **Security Page** > **Intranet Zone**.
15. Double-click **Logon options** to configure the settings.
16. Select **Enabled**.
17. Under **Options**, click **Automatic logon with current username and password**.
18. Click **OK**.

    This enables web browsers to automatically log on to the Deep Discovery Director (Consolidated Mode) management console with their current user name and password.
19. Deploy the updated group policy to your endpoints.

Note

If group policy deployment is blocked by the Windows Firewall, add an inbound rule to allow the deployment, and execute `gpudate /force` in an administrator command prompt on your endpoints to force endpoints to accept the new firewall policy.

Users who signed on to their endpoint using their domain credentials should now be able to single-sign on to Deep Discovery Director (Consolidated Mode).

Configuring Endpoints for Single Sign-on through AD FS

Before endpoints can access Deep Discovery Director (Consolidated Mode) using single sign-on through Active Directory Federation Services (AD FS), configure the web browser settings on each endpoint to trust both Deep Discovery Director (Consolidated Mode) 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 Director (Consolidated Mode) to the Websites list.
8. Click **Close**.
9. Click **OK**.

10. Click **OK**.

Syslog

Use the **Syslog** screen to configure Deep Discovery Director (Consolidated Mode) to send suspicious objects lists and Deep Discovery appliance logs to up to three syslog servers.

Adding a Syslog Server Profile

Procedure

1. Go to **Adminstration** > **Integrated Products/Services** > **Syslog**, and then click **Add**.

   The **Add Syslog Server Profile** dialog appears.

2. Select the status of this server profile.
3. Type a unique profile name for the syslog server.
4. Type the IP address or FQDN of the syslog server.
5. (Optional) Modify the port number.

   Note

   Trend Micro recommends using the following default syslog ports:

   - **SSL/TLS**: 6514
   - **TCP**: 601
   - **UDP**: 514

6. Select the protocol to be used when transporting log content to the syslog server.
7. Select the scope of the data to send to the syslog server.

8. Click **Save**.

Other Syslog Tasks

You can also perform the following tasks:

TASK	DESCRIPTION
Edit a syslog server profile	Click on a server profile name to open the **Edit Syslog Server Profile** dialog and do the following: • Toggle the status • Modify the profile name • Modify the server address • Modify the port number • Change the protocol **Note** Modifying the server address or changing the protocol resends all suspicious objects lists.
Delete syslog server profiles	Select one or more syslog server profiles to delete and then click **Delete**. **Note** Queued detection and appliance logs will be discarded and not sent to deleted syslog servers.
Toggle syslog server profile status	Click on the toggle in the **Status** column to enable or disable the syslog server profile. **Note** Disabling a server profile causes queued detection and appliance logs to be discarded.

Trend Micro Vision One

Trend Micro Vision One™ applies the most effective AI and expert analytics to the activity data collected from native sensors in the environment to produce fewer, higher-fidelity alerts. Global threat intelligence from the Trend Micro Smart Protection Network™ combined with expert detection rules continually updated from our threat experts maximize the power of AI and analytical models in unparalleled ways.

Trend Micro Vision One collects and correlates data across email, endpoint, servers, cloud workloads, and networks, enabling visibility and analysis that is difficult or impossible to achieve otherwise.

With more context, events that seem benign on their own suddenly become meaningful indicators of compromise, and you can quickly contain the impact, minimizing the severity and scope.

Important

- Deep Discovery appliances must be registered to Deep Discovery Director (Consolidated Mode) to send their activity data to **Trend Micro Vision One**.
- The Deep Discovery Director - Network Analytics as a Service license must be activated before the **Trend Micro Vision One** screen becomes available.

Status

Use the **Status** screen, in **Administration** > **Trend Micro Vision One** > **Status**, to check Deep Discovery Director (Consolidated Mode)'s **Trend Micro Vision One** integration status.

The **Status** screen includes the following information and options.

Field	Details
Status	Displays either **Registered | Connected**, **Registered | Not connected**, or **Not registered**. **Note** If proxy settings are enabled, Deep Discovery Director (Consolidated Mode) connects to **Trend Micro Vision One** using the proxy server.
Last connected	Date and time Deep Discovery Director (Consolidated Mode) last connected to **Trend Micro Vision One**.
Network Analytics as a Service	Displays **Registered to Trend Micro Vision One** when Deep Discovery Director - Network Analytics as a Service is registered to **Trend Micro Vision One**.

Connected Sources

Use the **Connected Sources** screen, in **Administration** > **Trend Micro Vision One** > **Connected Sources**, to view which Deep Discovery Inspector appliances send their activity data to **Trend Micro Vision One**, and to configure whether Deep Discovery Inspector appliances use their proxy settings to connect to **Trend Micro Vision One**.

The **Connected Sources** screen displays the following information.

Table 9-2. Connected Source Columns

Column	Information
Display Name	The display name of the Deep Discovery Inspector appliance.
Status	Displays either **Registered** or **Not registered**.
Data Last Sent	Date and time the Deep Discovery Inspector appliance last sent data to **Trend Micro Vision One**.
Host Name	The host name of the Deep Discovery Inspector appliance.
IP Address	The IP address of the Deep Discovery Inspector appliance.

Column	Information
Version	The version of the Deep Discovery Inspector appliance.

Network Analytics

Deep Discovery Director - Network Analytics provides advanced threat analysis for data correlations made between detections selected in Deep Discovery Director (Consolidated Mode) and other related events as they occur over time.

Deep Discovery Director - Network Analytics is a transparent solution that integrates with Deep Discovery Director (Consolidated Mode) and Deep Discovery Inspector to provide advanced protection against cyber threats and attacks that could threaten your network.

Use the **Network Analytics** screen, in **Administration** > **Network Analytics**, to view the status of Deep Discovery Director - Network Analytics and configure data sources.

To configure additional settings that will help you make the most of Deep Discovery Director - Network Analytics, go to **Appliances** > **Network Assets**.

For more information, see *Network Assets on page 6-30*.

Note

Deep Discovery Director (Consolidated Mode) can only integrate with either the on-premises version or the Software as a Service (SaaS) version of Deep Discovery Director - Network Analytics. Depending on the version Deep Discovery Director (Consolidated Mode) integrates with, the available management console screens differ slightly.

On-Premises Specific Screens

The following configuration screens display on the management console when Deep Discovery Director (Consolidated Mode) is integrated with a Deep

Discovery Director (Internal Network Analytics Version) server operating in Deep Discovery Director (Standalone Network Analytics Mode).

Server Information

Use the **Server Information** screen, in **Administration** > **Network Analytics** > **Server Information**, to view the status and basic information of all registered Deep Discovery Director - Network Analytics servers.

Data Sources

Use the **Data Sources** screen, in **Administration** > **Network Analytics** > **Data Sources**, to display and configure from which Deep Discovery Inspector appliances Deep Discovery Director (Consolidated Mode) draws data for advanced threat analysis.

The **Data Sources** screen displays the following information:

TABLE 9-3. Data Sources Columns

COLUMN	INFORMATION
Display Name	The display name of the Deep Discovery Inspector appliance.
Host Name	The host name of the Deep Discovery Inspector appliance.
IP Address	The IP address of the Deep Discovery Inspector appliance.
Connected Network Analytics	The display name of the connected Deep Discovery Director - Network Analytics server.
Connection Status	The connection status of the Deep Discovery Director - Network Analytics server.
Version	The version of the Deep Discovery Inspector appliance.

Column	Information
Appliance Proxy Settings	Displays either **Enabled** or **Disabled**, depending on whether the Deep Discovery Inspector appliance's proxy settings are used.
Bandwidth	The bandwidth the Deep Discovery Inspector appliance consumes.
Last Synchronized	Date and time data was last synced from the Deep Discovery Inspector appliance.
Test Connection	Date and time the Deep Discovery Inspector appliance established connection to Deep Discovery Director - Network Analytics as a Service. Click **Test Connection** to have the Deep Discovery Inspector appliance try to connect to Deep Discovery Director - Network Analytics as a Service.

Configuring Data Sources

Procedure

1. Go to **Administration** > **Network Analytics** > **Data Sources**.

   The **Data Sources** screen appears.

2. Select one or more appliances and then click **Configure**.

3. Select one of the following.

   - **Individually**: Configure the settings of each Deep Discovery Inspector appliance individually.
   - **Collectively**: Configure the settings of all selected Deep Discovery Inspector appliances collectively.

   The **Configure Data Sources** dialog appears.

4. Configure the data sources.

- **Individually**:

  a. Select the **Network Analytics** server to connect each Deep Discovery Inspector appliance to.

  b. Select whether to use each Deep Discovery Inspector appliance's proxy settings.

- **Collectively**:

  a. Select whether to keep all current connections or specify a **Network Analytics** server to connect all Deep Discovery Inspector appliances to.

  b. Select whether to keep, enable or disable all Deep Discovery Inspector appliances' proxy settings.

5. Click **Save**.

   All settings are immediately applied to all appliances. You cannot perform additional configuration until the previous settings have been applied.

Software as a Service Specific Screens

The following configuration screens display on the management console when Deep Discovery Director (Consolidated Mode) is integrated with Deep Discovery Director - Network Analytics as a Service.

Status

Use the **Status** screen, in **Administration** > **Network Analytics** > **Status**, to view and test Deep Discovery Director (Consolidated Mode)'s registration and connection status to Deep Discovery Director - Network Analytics as a Service, and to view when suspicious objects and exceptions have been synced to Deep Discovery Director - Network Analytics as a Service.

The **Status** screen includes the following information and options.

Field	Details
Status	Displays either **Registered | Connected**, **Registered | Not connected**, or **Not registered**. Displays a **Retry** hyperlink if Deep Discovery Director (Consolidated Mode) was unable to connect to Deep Discovery Director - Network Analytics as a Service automatically. **Note** If proxy settings are enabled, Deep Discovery Director (Consolidated Mode) connects to Deep Discovery Director - Network Analytics as a Service using the proxy server.
Last connected	Date and time Deep Discovery Director (Consolidated Mode) last connected to Deep Discovery Director - Network Analytics as a Service.
Bandwidth	The available bandwidth to use. Available bandwidth is determined by your Deep Discovery Director - Network Analytics as a Service license.
Data retention	The number of days correlation data will be retained. This number is determined by your Deep Discovery Director - Network Analytics as a Service license.
Test Connection	Click **Test Connection** to try to connect to Deep Discovery Director - Network Analytics as a Service.
Synchronized suspicious objects	Date and time synchronized suspicious objects were last synced to Deep Discovery Director - Network Analytics as a Service.
User-defined suspicious objects	Date and time user-defined suspicious objects were last synced to Deep Discovery Director - Network Analytics as a Service.
Exceptions	Date and time exceptions were last synced to Deep Discovery Director - Network Analytics as a Service.

Connected Sources

Use the **Connected Sources** screen, in **Administration** > **Network Analytics** > **Connected Sources**, to display and configure from which Deep Discovery Inspector appliances Deep Discovery Director - Network Analytics as a Service draws data for advanced threat analysis.

The **Connected Sources** screen displays the following information:

TABLE 9-4. Connected Sources Columns

COLUMN	INFORMATION
Status	Click the toggle to enable or disable the Deep Discovery Inspector appliance as data source.
Display Name	The display name of the Deep Discovery Inspector appliance.
Host Name	The host name of the Deep Discovery Inspector appliance.
IP Address	The IP address of the Deep Discovery Inspector appliance.
Version	The version of the Deep Discovery Inspector appliance.
Appliance Proxy Settings	Displays either **Enabled** or **Disabled**, depending on whether the Deep Discovery Inspector appliance's proxy settings are used.
Bandwidth	The bandwidth the Deep Discovery Inspector appliance consumes.
Last Synchronized	Date and time data was last synced from the Deep Discovery Inspector appliance.
Test Connection	Date and time the Deep Discovery Inspector appliance established connection to Deep Discovery Director - Network Analytics as a Service. Click **Test Connection** to have the Deep Discovery Inspector appliance try to connect to Deep Discovery Director - Network Analytics as a Service.

Configuring Connected Sources

Procedure

1. Go to **Administration** > **Network Analytics** > **Connected Sources**.

   The **Connected Sources** screen appears.

2. Select one or more appliances and then click **Configure**.

   The **Configure Connected Sources** dialog appears.

3. Click the toggle in the **Status** column to enable or disable the Deep Discovery Inspector appliance as data source.

   Important

   - While there is no limit on the number of Deep Discovery Inspector appliances you can enable, their total combined **Bandwidth** cannot exceed the available **Bandwidth capacity**.
   - Available bandwidth is determined by your Deep Discovery Director - Network Analytics as a Service license.

4. Select whether to use the Deep Discovery Inspector appliance's proxy settings.

5. Click **Save**.

System Settings

The System Settings screen, in **Administration** > **System Settings**, includes the following.

Network

Use this screen to configure the host name or fully qualified domain name, IP address, and other network settings of the Deep Discovery Director (Consolidated Mode) appliance.

Modify the IP address immediately after completing all deployment tasks.

Note

You can also use the preconfiguration console to modify the network settings.

For details, see *Configuring Network Settings on page 2-6*.

Important

- Deep Discovery Director (Consolidated Mode) uses the specified IP address to connect to the Internet. The IP address also determines the URL used to access the management console.
- Changing the IP address causes the following:
  - Registered Deep Discovery appliances must reregister using the updated IP address.
  - Products and services using Deep Discovery Director (Consolidated Mode) threat intelligence sharing URLs must be configured to use the updated URLs.
  - Products and services that integrate with Deep Discovery must configure their settings to use the updated IP address.
  - Products and services using web API to access Deep Discovery Director (Consolidated Mode) must be configured to use the updated IP address.

Using Host Name as the Identity

Deep Discovery Director (Consolidated Mode) supports using the host name instead of the IP address as the identity of the server.

When this feature is selected, appliances connect to Deep Discovery Director (Consolidated Mode) using the host name to download files required to execute plans.

Important

- The host name must be resolvable within your network.
- Changing the host name affects the following:
  - Registered Deep Discovery appliances must reregister using the updated host name.
  - Products and services using Deep Discovery Director (Consolidated Mode) threat intelligence sharing URLs must be configured to use the updated URLs.
  - Products and services that integrate with Deep Discovery must configure their settings to use the updated host name.
  - Products and services using web API to access Deep Discovery Director (Consolidated Mode) must be configured to use the updated host name.

Procedure

1. Select **Use host name instead of IP address as the identity of this server**.
2. Configure the IP address and other network settings.
3. Click **Save**.

Configuring Port Binding

Deep Discovery Director (Consolidated Mode) supports the binding of services to a second network port.

When this feature is selected, Deep Discovery Director (Consolidated Mode) directs all connections to the threat intelligence feeds, the license update server, and Active Update servers through eth1.

Note

This feature cannot be configured from the preconfiguration console.

Procedure

1. Select **eth0 (management) and eth1** to bind your services to.

   Important

   This feature requires at least two network interface cards to be installed and configured. The feature will be hidden from the **Network** screen otherwise.

   A new **eth1** section to configure network settings for the second network port displays under the existing **eth0 (management)** section.

2. Configure the IP address and other network settings of the second network port.

3. Click **Save**.

Using IPv4 and IPv6 Dual Stack

Deep Discovery Director (Consolidated Mode) supports IPv4 and IPv6 dual-stack configuration to function in network environments that communicate using the IPv6 protocol.

Procedure

1. Select **IPv4 and IPv6 (dual stack)** as **Type**.

   A new section to configure IPv6 settings displays between the existing IPv4 and DNS settings.

2. Configure the IPv6 settings.

3. Click **Save**.

Proxy

Deep Discovery Director (Consolidated Mode) can be configured to use a proxy server to connect to the Internet. The proxy server will also be used to connect to the following features/services:

- **Trend Micro Vision One**
- **Deep Discovery Director - Network Analytics as a Service**
- **Apex Central as a Service**
- **Threat Connect**
- **Trend Micro Email Encryption Server**
- Threat intelligence feeds
- License update server
- Active Update servers

Note

When port binding is configured, only eth1 will use the proxy settings.

Procedure

1. Go to **Administration** > **System Settings** > **Proxy**.

   The **Proxy** screen appears.

2. Select **Use a proxy server to connect to the Internet**.
3. Type the IPv4 address or FQDN of the proxy server.
4. Type the port number. The default port number is **80**.

5. (Optional) If your proxy server requires authentication, select **Specify authentication credentials**, and then type the user name and password used for authentication.
6. (Optional) Click **Test Connection** to verify the connection to the proxy server.
7. Click **Save**.

SMTP

Use the **SMTP** screen, in **Administration** > **System Settings** > **SMTP**, to enable using a SMTP server to send alert notifications through email.

Procedure

1. Go to **Administration** > **System Settings** > **SMTP**.

   The **SMTP** screen appears.
2. Select **Use a SMTP server**.
3. Type the IPv4 address or FQDN of the SMTP server.
4. Select the security protocol to use for connections to the SMTP server.
5. (Optional) Modify the port number.
6. Type a sender email address.
7. (Optional) If the SMTP server requires authentication, select **SMTP server requires authentication**, and then type the user name and password used for authentication.

   WARNING!

   Verify that the user name and password are valid. Connections made using an incorrect user name and password may cause some SMTP servers to reject all network request originating from Deep Discovery Director (Consolidated Mode).

8. (Optional) Verify that Deep Discovery Director (Consolidated Mode) can communicate with the specified SMTP server and send emails.

   a. Click **Send Test Message**.

      The **Send Test Message** dialog appears.

   b. Type at least one valid email address, and then click **Send**.

      If Deep Discovery Director (Consolidated Mode) can communicate with the specified SMTP server, an email with the predefined subject and message will be sent to the specified email addresses.

   c. Check your email account for receipt of the email.

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.

Use the **Administration** > **System Settings** > **SNMP** screen to perform the following tasks:

- Configure Deep Discovery Director (Consolidated Mode) to send trap messages.

  For details, see *Configuring Trap Messages on page 9-42*.

- Configure Deep Discovery Director (Consolidated Mode) to listen for manager requests.

  For details, see *Configuring Manager Requests on page 9-44*.

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) Authentication protocol: `HMAC-SHA` • (Optional) Privacy protocol: `CBC-AES-128`
Community name	Specify a community name.

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.

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.

Configuring Manager Requests

SNMP managers can use SNMP protocol commands to request Deep Discovery Director (Consolidated Mode) 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) Authentication protocol: `HMAC-SHA` • (Optional) Privacy protocol: `CBC-AES-128`
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 5 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.

Bandwidth

Use the **Bandwidth** screen, in **Administration** > **System Settings** > **Bandwidth**, to enable bandwidth usage throttling settings. Bandwidth usage throttling helps manage the impact downloading and uploading of files may have on your network and internet connection.

For details, see *Configuring Bandwidth Usage Throttling on page 9-46*.

Configuring Bandwidth Usage Throttling

Procedure

1. Go to **Administration** > **System Settings** > **Bandwidth**.

   The **Bandwidth** screen appears.

2. Select **Enable bandwidth usage throttling**.

3. Type a speed limit value to limit the speed per connection for downloading files from Deep Discovery Director (Consolidated Mode) to the appliance. Each appliance establishes one connection.

4. Type a maximum value to limit the number of connections to.

5. Click **Save**.

Time

Configure date and time settings immediately after installation.

Procedure

1. Go to **Administration** > **System Settings** > **Time**.

   The **Time** screen appears.

2. Select one of the following methods and configure the applicable settings.

   - Select **Connect to an NTP server** and type the FQDN or IP address of the NTP server.
   - Select **Set manually** and configure the time.

3. Select the applicable time zone.

   Note

   Daylight Saving Time (DST) is used when applicable.

4. Select the preferred date and time format.
5. Click **Save**.

Certificate

Digital certificates are electronic documents that are used to create secure connections between clients and servers or websites. A valid and trusted certificate ensures clients that they are connecting to a trusted server or website, and helps protect against man-in-the-middle attacks.

Certificates become trusted by going through a validation process of a Certificate Authority (CA). Certificate Authorities themselves are usually third-party companies that are trusted by both the client and server or website.

On first installation, Deep Discovery Director (Consolidated Mode) creates a self-signed SSL certificate that will be used to securely communicate with other Deep Discovery appliances and Local Repository. In doing so, Deep Discovery Director (Consolidated Mode) also acts as its own CA.

Users who wish to adopt their own organizations' CA can import a certificate signed by that CA to Deep Discovery Director (Consolidated Mode).

Important

Accessing the management console of a Deep Discovery Director (Consolidated Mode) server with an untrusted or expired certificate displays a security warning in the web browser.

An untrusted or expired certificate does not affect the communication between Deep Discovery Director (Consolidated Mode) servers and Deep Discovery appliances. Deep Discovery Director (Consolidated Mode) servers with untrusted or expired certificates can still deploy plans to Deep Discovery appliances, and appliances can still download the files required to execute the plans from those servers.

Importing a Certificate

Deep Discovery Director (Consolidated Mode) uses a certificate to create secure connections to clients. Import a new certificate to change the fingerprint, or to adopt another Certificate Authority.

WARNING!

- Verify that your web browser accepts the new certificate before importing it. Importing a certificate that is not accepted by your web browser will leave you unable to access the management console.
- Importing a certificate restarts the service. Existing connections to repositories and Deep Discovery appliances will be interrupted, and clients will have to trust the new fingerprint to restore the connection.

Procedure

1. Go to **Administration** > **System Settings** > **Certificate**.

   The **Certificate** screen appears.

2. Click **Import and Replace Certificate**, select the certificate, and then click **Open**.

The certificate is imported immediately.

Generating a Certificate Signing Request

You can generate a certificate signing request (CSR) in Deep Discovery Director (Consolidated Mode) to apply for a new certificate from a certificate authority (CA).

Note

Deep Discovery Director (Consolidated Mode) supports certificates in X.509 PEM format.

Procedure

1. Go to **Administration** > **System Settings** > **Certificate**.
2. Click **Generate Certificate Signing Request**.
3. Configure the certificate signing request settings.

Field	Description
Common Name (CN)	Type the domain name or server host name.
Subject alternative names	Type one or more domain names to associate with the generated certificate.
Organization (O)	Type your company name.
Organizational Unit (OU)	Type the name of your department within your company.
Country (C)	Type the two-letter code for the country where your company is located.
State/Region (ST)	Type the state or region whee your company is located.
City/Locality (L)	Type the city where your company is located.

Field	Description
Email address	Type your email address.
Key type and size	Select the certificate key type and size.

4. Click **Generate and Download**.

   After the certificate signing request is generated, the system automatically download the CSR file.

Session Timeout

Select the time period after which users are logged out due to inactivity. The default value is **15 minutes**.

Account Management

Deep Discovery Director (Consolidated Mode) uses role-based administration to grant and control access to the management console. Use this feature to assign specific management console privileges to the accounts and present them with only the tools and permissions necessary to perform specific tasks.

Each account is assigned a specific role. A role defines the level of access to the management console.

Accounts

Use the **Accounts** screen, in **Administration** > **Account Management** > **Accounts**, to create and manage user accounts. Users can use these accounts, instead of the default administrator account, to access the management console.

Deep Discovery Director (Consolidated Mode) supports the creation of user accounts by using the following methods:

- *Adding a Local User Account on page 9-51*
- *Adding an LDAP User Account or Group on page 9-53*

Note

This method is only available if LDAP server settings have been configured.

For details, see *LDAP on page 9-10*.

- *Adding a SAML Group on page 9-54*

Note

This method is only available if SAML Authentication settings have been configured.

For details, see *SAML Authentication on page 9-12*.

Adding a Local User Account

Procedure

1. Go to **Administration** > **Account Management** > **Accounts**, and then click **Add**.

   The **Add Account** screen appears.

2. Toggle the **Status** of this account.
3. Select **Local user** as the **Type** of this account.
4. Type a valid user name.
5. Type a valid password.

Important

- Users must change the password after logging on to the management console for the first time.
- Products that use local user account credentials to integrate cannot do so until the administrator-assigned password has been changed.

6. Type the password again to confirm it.

Tip

Click the **Show password** icon to unmask the password and skip this step.

7. (Optional) Type a valid email address that can be used to receive alerts sent by Deep Discovery Director (Consolidated Mode).
8. Select a **Role** for this account. The role determines the level of access this account has.

   For details, see *Roles on page 9-57*.
9. Select **Allow this account system access via web API** to allow users to use this account's credentials and permission key to access the system using the web API.
   a. Select the number of days before the permission key expires.
   b. Select **Allow this account to log on to the management console** to allow this account's credentials to log on to the management console. Disabling this option causes the account to only be able to access the system via web API.
10. (Optional) Type a description for this account.
11. Click **Save**.

    If **Allow this account system access via web API** is selected, a dialog with the permission key is displayed.

Adding an LDAP User Account or Group

If your company uses LDAP servers, such as Microsoft Active Directory, to manage user accounts and groups, you can enable those user accounts and groups access to Deep Discovery Director (Consolidated Mode).

Note

- LDAP server settings have to be configured before an LDAP user account or group can be added.

  For details, see *LDAP on page 9-10*.

- Deep Discovery Director (Consolidated Mode) syncs LDAP user accounts and groups every 24 hours. User accounts or groups that are removed from the LDAP server will be removed from Deep Discovery Director (Consolidated Mode) after syncing with the LDAP server.

- If an LDAP user is a member of one or more groups, the user's level of access in Deep Discovery Director (Consolidated Mode) is determined by the highest level of access granted to the user's Deep Discovery Director (Consolidated Mode) account or any group the user is a member of.

Procedure

1. Go to **Administration** > **Account Management** > **Accounts**, and then click **Add**.

   The **Add Account** screen appears.

2. Toggle the **Status** of this account.

3. Select **LDAP user or group** as the **Type** for this account.

4. 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 Principal Name (UPN) is not specified on the LDAP server
- The user account is disabled on the LDAP server

5. Select the LDAP user account or group to add.

Note

The LDAP email address of the user account or group will be used on Deep Discovery Director (Consolidated Mode).

6. Select a **Role** for this account. The role determines the level of access this account has.

   For details, see *Roles on page 9-57*.

7. (Optional) Type a description for this account.

8. Click **Save**.

Adding a SAML Group

Procedure

1. Go to **Administration** > **Account Management** > **Accounts**, and then click **Add**.

   The **Add Account** screen appears.

2. Toggle the **Status** of this account.

3. Select **SAML group** as the **Type** of this account.

4. Type the **Claim value**.

Note

The claim value is the outgoing claim value in ADFS Claim Issuance Policy Rules or the group name in Okta.

5. Select a **Role** for this account. The role determines the level of access this account has.

   For details, see *Roles on page 9-57*.

6. (Optional) Type a description for this account.

7. Click **Save**.

Other Accounts Tasks

You can also perform the following tasks:

TABLE 9-5. Other Tasks

TASK	DESCRIPTION
Edit account	Click on a user name to open the **Edit Account** screen and do the following: • Toggle the account status • Change the password • Change the email address • Change the role • Enable/Disable web API access • Modify the description **Note** • The passwords and email addresses of LDAP accounts cannot be changed from the management console. • Users who are currently logged on to the management console and whose accounts are disabled will be logged off automatically. • Users who are currently logged on to the management console and whose roles are changed will be logged off automatically.
Delete account	Select one or more user accounts to delete and then click **Delete**. **Note** • There must be at least one local user account using the built-in administrator role. • You cannot delete the logged-on account. • Users who are currently logged on to the management console will be logged off automatically.
View web API access status	For accounts that have web API access activated, click the **Generate New Permission Key** icon to generate a new permission key.

Task	Description
View account lock status	Deep Discovery Director (Consolidated Mode) includes a security feature that locks an account in case the user typed an incorrect password three times in a row. This feature cannot be disabled. Accounts locked this way, even administrator accounts, unlock automatically after ten minutes. **Note** LDAP accounts are never locked.
Toggle account status	Click on the toggle in the **Status** column to enable or disable the user account. **Note** • At least one local user account using the built-in administrator role must be enabled. • Users who are currently logged on to the management console and whose accounts are disabled will be logged off automatically.

Roles

Use the **Roles** screen, in **Administration** > **Account Management** > **Roles**, to create and manage user roles. Assign each user a role that will restrict their activities to all but those necessary for the completion of their duties.

Deep Discovery Director (Consolidated Mode) comes with a set of built-in user roles that you cannot delete:

Role	Description
Administrator	Built-in Administrator role with full access to all management console features

Role	Description
Investigator	Built-in Investigator role with read-only access to all management console features, but download access to investigation package and pcap data
Operator	Built-in Operator role with read-only access to all management console features

Deep Discovery Director (Consolidated Mode) also supports custom user roles. Create new roles to limit access to the management console, and to restrict users from seeing and managing specific appliances.

Adding a Role

Procedure

1. Go to **Administration** > **Account Management** > **Roles**, and then click **Add**.

   The **Add Role** screen appears.

2. Type a role name.

3. Select a **Permission** for this role.

4. Select the appliances this role can see and manage.

5. Select the domains from which email message detections should be displayed.

   Note

   To specify domains, you have to add them first. For details, see *Managing Domains on page 9-59*.

6. Select an account, or type to search and press ENTER, and then click **Add** to add the selected account to this role.

Note

Added accounts will be removed from all other roles.

7. (Optional) Type a description for this role.
8. Click **Save**.

Managing Domains

In addition to finely controlling which appliances a role can see and manage, the integration with Deep Discovery Email Inspector calls for control over which email messages a role can see. To address this requirement, Deep Discovery Director (Consolidated Mode) provides users with the control to separate email messages by using domains.

Procedure

1. Go to **Administration** > **Account Management** > **Roles**.

   The **Roles** screen appears.
2. Do one of the following:
   - Click **Add** to open the **Add Role** screen.
   - Click on a role name to open the **Edit Role** screen.
3. In the **Domain access** section, click on **Domain management**.

   The **Domain Management** dialog appears.
4. Type a domain in the left text box and click **Add** to add the domain to the list.

   Note

   One wildcard (*) connected with a "." in the domain prefix is supported.
5. Select one or more domains from the list and click **Delete** to delete the selected domains.

6. (Optional) To search for a domain, type a keyword in the right search text box, and then press ENTER or click the magnifying glass icon.
7. Click **Close**.

Other Roles Tasks

You can also perform the following tasks:

TABLE 9-6. Other Tasks

TASK	DESCRIPTION
Edit role	Click on a role name to open the **Edit Role** screen and do the following: • Modify the role name • Change the permission • Modify the appliances this role can see and manage • Add accounts to this role • Modify the description **Note** • You cannot modify the role name, permission, appliance access rights, and description of built-in roles. • Users who are currently logged on to the management console and whose appliance access rights are modified will be logged off automatically. • Users who are currently logged on to the management console and whose roles are changed will be logged off automatically.

Task	Description
Delete role	Select one or more user roles to delete and then click **Delete**. **Note** • You cannot delete built-in roles. • You cannot delete roles that are in use by at least one account.

System Logs

Use the **System Logs** screen, under **Administration** > **System Logs**, to view, query and export system logs.

Deep Discovery Director (Consolidated Mode) maintains system logs that provide summaries about user access, setting changes, and other configuration modifications that occurred using the management console.

Deep Discovery Director (Consolidated Mode) stores system logs in the appliance hard drive.

Query system logs to gather information from the database. The queried system logs can be exported in CSV format for offline viewing.

For details, see *Querying System Logs on page 9-63*.

The following table lists all system-log-related information:

Table 9-7. System Log Information

Column	Description
Logged	Event date and time

Column	Description
Event ID	Event identifier Each specific action has its own event ID. Examples: • `20001` Description: `User logged on` • `20002` Description: `User logged off`
Type	One of the following types displays: • `Account Logon/Logoff` • `Apex Central Integration` • `External Web Service` • `Message Operation` • `System` • `Update`
Level	One of the following levels displays: • `Informational` • `Warning` • `Error`
Result	One of the following results displays: • `Successful` • `Unsuccessful`

Column	Description
Source	Activity by source Information about the following sources may display: • user name Example: `johnadmin` • system Example: `SYSTEM`
IP Address	Event IP address
Description	Event details

Querying System Logs

The task of finding a specific system log entry can be difficult when there may be hundreds or thousands to go through. Use the filters and search box to lower the number of entries shown.

Procedure

1. Go to **Administration** > **System Logs**.

   The **System Logs** screen appears.

2. Click the **Filters** button.

   Filter drop-down lists and a search box appear.

3. Perform any of the following actions.
   - Select a log type.
   - Select a log level.
   - Select a log result.
   - Select a period or specify a custom period using the calendar and clock.

- Type a event ID, source, or description keyword in the search box and press ENTER to only display system logs whose event ID, source, or description contain the keyword.

The screen is updated immediately.

4. (Optional) Click **Export** to export the currently filtered system logs.

   The **Export** dialog displays.

5. Confirm the system log filters and select a delimiter to use.

6. Click **OK** to export and download the currently filtered system logs to a CSV file with the chosen delimiter.

Note

The exported system logs are ordered by **Log ID**, a consecutive number that coincides with the **Logged** date and time.

System Maintenance

The **System Maintenance** screen, in **Administration** > **System Maintenance**, includes the following tabs.

System Status

The **System Status** screen displays the utilization of key hardware components.

Storage

Use the **Storage** screen, in **Administration** > **System Maintenance** > **Storage**, to configure how long Deep Discovery Director (Consolidated Mode) saves database entries, system logs, and detection logs, and to configure disk usage.

Under **Database Storage**, configure the following:

- **Delete database entries older than *X* days**: Type the number of days to save database entries. Entries older than the specified value are automatically deleted.

  Tip

  A **database entry** in this context refers to a Deep Discovery Director (Consolidated Mode) plan.

- **Delete system logs older than *X* days**: Type the number of days to save system logs. Logs older than the specified value are automatically deleted.
- **Delete detection logs older than *X* days**: Type the number of days to save detection logs. Logs older than the specified value are automatically deleted.

  Tip

  - **Detection logs** in this context refers to Deep Discovery Inspector and Deep Discovery Email Inspector related detection details.

- **Delete generated reports older than *x* days**: Type the number of days to save generated reports. Reports older than the specified value are automatically deleted.

Note

In addition to the settings above, Deep Discovery Director (Consolidated Mode) automatically purges system logs until there is 200 MB free database disk space. This threshold cannot be modified.

The **Disk Usage** section displays information about the usage and total size of partitions. Any available space can be added to the any of the partitions. New disks can be added to further increase partition size.

Configuring Disk Space

Add extra available disk space to Deep Discovery Director (Consolidated Mode) partitions to increase the number of logs or repository files that can be stored.

Procedure

1. Go to **Administration** > **System Maintenance** > **Storage**, and click **Configure space**.

   The **Disk Space Configuration** dialog appears.

2. (Optional) To add more disks to Deep Discovery Director (Consolidated Mode), do the following:

   a. Click **Add disks**.

      The disk selection dialog displays.

   b. Select at least one disk to add to the Deep Discovery Director (Consolidated Mode) disk space configuration.

      Important

      Only unformatted disks that are larger than 1024 MB in size are displayed.

   c. Click **Add**.

      WARNING!

      Disks cannot be removed after they are added.

      The selected disks are formatted and available disk space is added to the **Disk Space Configuration** dialog.

3. To add available space to a partition, do one of the following:

   - Select **Add all available space to this partition**

- Type values into the **Add** fields.

Note

- The **Available space** and **Total** values are automatically updated.
- It is not required to distribute all available space among the partitions.

4. Click **Apply**.

   Available space is added to the partitions as specified.

Back Up

Use the **Back Up** screen, in **Administration** > **System Maintenance** > **Back Up**, to export a backup file of most of the configuration settings and the database, and to configure automatic backups of those.

- *Exporting a Configuration Settings and Database Backup on page 9-69*
- *Configuring Automatic Backups on page 9-70*

The following table shows the screens and elements with backed up configuration settings.

TABLE 9-8. Backed Up Configuration Settings

SCREEN		ELEMENT
Threat Intelligence > **Product Intelligence**	**Synchronized Suspicious Objects**	Objects
	C&C Callback Addresses	Objects

Screen		Element
Threat Intelligence > **Custom Intelligence**	**YARA Rules**	YARA rules
	STIX	STIX
	User-Defined Suspicious Objects	Objects
	Exceptions	Objects
Threat Intelligence > **Feed Management**		All settings
Threat Intelligence > **Sharing Settings**	**TAXII 1.x**	All settings
	TAXII 2.0	All settings
	OpenDXL	All settings
	Web Service	All settings
	Auxiliary Products/Services	All settings
Appliances > **Directory**		Appliance tree with group structure
		Registered appliances and appliance details
Appliances > **Plans**		All plans
Alerts	**Triggered Alerts**	All triggered alert records
	Built-in Rules	All rule settings
	Custom Rules	All rule settings
Reports	**Schedules**	All schedules
	Customization	All settings
Administration > **Integrated Products/Services**	**LDAP**	LDAP server settings
	Syslog	All syslog server profiles

Screen		Element
Administration > **Network Analytics**	**Connected Sources**	All settings
Administration > **System Settings**	**Proxy**	Proxy settings
	Bandwidth	Bandwidth usage throttling settings
	Time	Time settings
	Certificate	Certificate
	Session Timeout	Session timeout value
Administration > **Account Management**	**Accounts**	All user accounts
	Roles	All roles
Administration > **System Logs**		All system logs
Administration > **System Maintenance**	**Storage**	Storage values
	Back Up	Automatic backup settings
Administration > **License**		Activation Codes
Help		API key

Exporting a Configuration Settings and Database Backup

Deep Discovery Director (Consolidated Mode) can export a backup file of most configuration settings and the database. Use the backup file to restore Deep Discovery Director (Consolidated Mode) to a previous point in time. Use the backup file on another server, when the active server is unresponsive and cannot be restored, to restore operation and minimize downtime.

Procedure

1. Go to **Administration** > **System Maintenance** > **Back Up**.

   The **Back Up** screen appears.

2. Under **Configuration Settings and Database Backup**, click **Export**.

   The active server exports a backup file with the configuration settings and database.

3. Download and save the backup file.

Configuring Automatic Backups

Deep Discovery Director (Consolidated Mode) can be configured to create and upload automatic backups of its configuration settings and database to a SFTP server of your choice. Deep Discovery Director (Consolidated Mode) creates up to five backup files, after which the oldest one is deleted in order to keep the number of backup files at five.

Procedure

1. Go to **Administration** > **System Maintenance** > **Back Up**.

   The **Back Up** screen appears.

2. Under **Automatic Backups**, select **Automatically back up to SFTP server**.
3. Type the IP address or FQDN of the SFTP server.
4. Type the port number. The default port number is 22.
5. Type the folder path to use on the SFTP server.
6. Type the user name and password used to log on to the SFTP server.
7. Specify a backup frequency using the drop-down lists and the clock tool.
8. Click **Save**.

Restore

Use the **Restore** screen, in **Administration** > **System Maintenance** > **Restore**, to restore configuration settings and database from a backup file. If the

active Deep Discovery Director (Consolidated Mode) server is unresponsive or cannot be restored, a configuration settings and database backup can also be used on another server to restore operation and minimize downtime.

- *Restoring a Configuration Settings and Database Backup on page 9-71*
- *Replacing the Active Server with Another Server on page 9-72*

Note

For more information on exporting a configuration settings and database backup, see *Exporting a Configuration Settings and Database Backup on page 9-69*.

Restoring a Configuration Settings and Database Backup

A configuration settings and database backup can be used to restore Deep Discovery Director (Consolidated Mode) to a previous point in time.

If the active Deep Discovery Director (Consolidated Mode) is unresponsive or cannot be restored, a configuration settings and database backup can also be used on another server to restore operation and minimize downtime.

For details, see *Replacing the Active Server with Another Server on page 9-72*.

Procedure

1. Go to **Administration** > **System Maintenance** > **Restore**.

   The **Restore** screen appears.

2. Click **Select File...** and select the backup file.

3. Click **Upload**.

   The backup file is uploaded, and Deep Discovery Director (Consolidated Mode) displays information about the backup file.

4. Click **Restore**.

   Deep Discovery Director (Consolidated Mode) displays a confirmation message.

5. Click **OK**.

   Deep Discovery Director (Consolidated Mode) restores configuration settings and database from the backup file, and then restarts the server.

6. (Optional) Restore the repository by re-uploading all previously uploaded update, upgrade, and Virtual Analyzer image files to the repository.

   Important

   Update, upgrade, and Virtual Analyzer image files are not included in the backup file and are not restored automatically. Appliances cannot download and execute plans if the files are not re-uploaded to the repository.

7. (Optional) Configure the network addresses.

   The server is now ready to resume operation.

Replacing the Active Server with Another Server

If the Deep Discovery Director (Consolidated Mode) server is unresponsive or cannot be restored, it can be replaced by another server.

Host machine hardware, host machine software, and Deep Discovery Director (Consolidated Mode) version and build of the replacement server must be the same as the active server.

Procedure

1. Back up the configuration settings and database of the active server.

   a. On the management console of the active server, go to **Administration** > **System Maintenance** > **Back Up**.

   b. Under **Configuration Settings and Database Backup**, click **Export**.

      The active server exports a backup file with the configuration settings and database.

c. Download and save the backup file.

2. Install Deep Discovery Director (Consolidated Mode) on the replacement server.

3. Configure temporary network addresses for the replacement server.

Important

Verify that the temporary network addresses are different from the network addresses of the active server to avoid IP addressing conflicts.

4. Log on to the management console of the replacement server.

5. Restore the configuration settings and database on the replacement server.

   a. On the management console of the replacement server, go to **Administration** > **System Maintenance** > **Restore**.

   b. Click **Select File...** and select the backup file.

   c. Click **Upload**.

      The backup file is uploaded, and Deep Discovery Director (Consolidated Mode) displays information about the backup file.

   d. Click **Restore**.

      Deep Discovery Director (Consolidated Mode) displays a confirmation message.

   e. Click **OK**.

      Deep Discovery Director (Consolidated Mode) restores configuration settings and database from the backup file, and then restarts the server.

6. Restore the repository by re-uploading all previously uploaded update, upgrade, and Virtual Analyzer image files to the repository.

Important

Update, upgrade, and Virtual Analyzer image files are not included in the backup file and are not restored automatically. Appliances cannot download and execute plans if the files are not re-uploaded to the repository.

7. Power off the active server.

   a. On the management console of the active server, go to **Administration** > **System Maintenance** > **Power Off / Restart**.

   b. Click **Power Off**.

      The active server stops all services and gracefully shuts down.

      WARNING!

      The replacement server will be configured to use the network addresses of the active server. Leaving the active server powered on will cause IP addressing conflicts.

8. Configure the replacement server to use the network addresses of the active server.

   The replacement server is now ready to resume operation as the new active server.

Power Off / Restart

Use the **Power Off / Restart** screen, in **Administration** > **System Maintenance** > **Power Off / Restart**, to power off or restart the server.

- **Power Off**: All active tasks are stopped, and then the server gracefully shuts down.
- **Restart**: All active tasks are stopped, and then the server is restarted.

Integrated products may queue data while the server is unavailable.

License

Use the **License** screen, in **Administration** > **License**, to view, activate, and renew the Deep Discovery Director (Consolidated Mode) and Deep Discovery Director - Network Analytics as a Service licenses.

The **License** screen includes the following information and options.

TABLE 9-9. License Details

FIELD	DETAILS
Status	Displays either **Activated**, **Not Activated**, or **Expired**. **Important** • Deep Discovery Director (Consolidated Mode) does not allow the creation of new plans when the license status is **Not Activated** or **Expired**. Existing plans will deploy and execute as usual. • Deep Discovery Director (Consolidated Mode) does not allow component updates when the license status is **Not Activated** or **Expired**. • Deep Discovery Director - Network Analytics as a Service does not allow correlated events to be viewed when the license status is **Not Activated** or **Expired**. • Correlated events and data will be irrecoverably deleted from Deep Discovery Director - Network Analytics as a Service shortly after the license has expired. Click **View details** to view detailed license information from the Trend Micro website. If the status changes (for example, after you renewed the license) but the correct status is not indicated on the screen, click **Refresh**. **Note** • If proxy settings are enabled, Deep Discovery Director (Consolidated Mode) connects to the license update server using the proxy server. • The Deep Discovery Director (Consolidated Mode) license status must be **Activated** before the status of the Deep Discovery Director - Network Analytics as a Service license can be refreshed.
Type	• **Full**: Provides access to all product features • **Trial**: Provides access to all product features

Field	Details
Expiration date	View the expiration date of the license. Renew the license before it expires. Click **View renewal instructions** to view instructions from the Trend Micro website.
Activation Code	View the Activation Code in this section. If your license has expired, obtain a new Activation Code from Trend Micro. To renew the license, click **New Activation Code**, and type the new Activation Code. The **License** screen reappears displaying the updated expiration date. **Tip** Deep Discovery Director (Consolidated Mode) can be activated with the Activation Code of any Deep Discovery product. **Note** The Deep Discovery Director (Consolidated Mode) license status must be **Activated** before the Deep Discovery Director - Network Analytics as a Service license can be renewed.

Chapter 10

Troubleshooting

Learn about common troubleshooting options available in Deep Discovery Director (Consolidated Mode).

Troubleshooting

To open the **Troubleshooting** screens, go to `https://<appliance IP address>/troubleshooting`.

Logs

Deep Discovery Director (Consolidated Mode) generates and stores debug logs for various internal services. Export the debug logs for offline viewing and troubleshooting.

1. (Optional) Modify the levels at which the various services should generate debug logs in and click **Apply**.
2. Click **Export Debug Log Files** to display the **Export Debug Log Files** dialog.
3. Select the debug log files to export and then click **Export**.

   The system begins gathering the log files and creating an archive file for download.

(Optional) Click **Restore Defaults** to restore all settings to their default values.

Delete Crash Dumps

Deep Discovery Director (Consolidated Mode) generates and stores dump files when processes crash.

Click **Delete** to manually delete process crash dump files to free up disk space.

Threat Intelligence

Modify threat intelligence sharing settings such as time before the integration process times out, the batch size for processing (Check Point only), and whether to remove query strings from URLs (Palo Alto only), and then click **Save**.

Chapter 11

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 https://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 https://www.trendmicro.com/vinfo/us/threat-encyclopedia/#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	https://www.trendmicro.com
Email address	support@trendmicro.com

- Worldwide support offices:

  https://www.trendmicro.com/us/about-us/contact/index.html

- Trend Micro product documentation:

https://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://www.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):

https://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:

https://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:

https://docs.trendmicro.com/en-us/survey.aspx

Appendices

Appendices

Appendix A

Service Addresses and Ports

This appendix discusses service addresses and ports used by Deep Discovery Director (Consolidated Mode). Configure your proxy and firewall settings to allow Deep Discovery Director (Consolidated Mode) to connect to the services to ensure optimal operation.

Service Addresses and Ports

Deep Discovery Director (Consolidated Mode) 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.

Note

All services connect using HTTPS with TLS 1.2 or above. If your environment has man-in-the-middle devices, verify that the devices support TLS 1.2 or above.

TABLE A-1. Service Addresses and Ports

SERVICE	DESCRIPTION	ADDRESS AND PORT	NOTES
ActiveUpdate Server	Provides updates for product components, including pattern files. Trend Micro regularly releases component updates through the Trend Micro ActiveUpdate server.	`ddd53-p.activeupdate.trendmicro.com/activeupdate:443`	Related to product version
Customer Licensing Portal	Manages your customer information, subscriptions, and product or service license.	`licenseupdate.trendmicro.com:80`	

Service	Description	Address and Port	Notes

Deep Discovery Director - Network Analytics as a Service	A hosted service that provides advanced threat analysis on historical network data based network detections, and other related events as they occur over time.	`api.nacloud.trendmicro.com:443`
		`api.eu.nacloud.trendmicro.com:443`
		`api.jp.nacloud.trendmicro.com:443`
		`api.sg.nacloud.trendmicro.com:443`
		`api.us.nacloud.trendmicro.com:443`
			Related to product region

Documentation Server	Hosts all Trend Micro product documentation. If Deep Discovery Director (Consolidated Mode) is unable to connect to the server, a local copy of the product documentation will be displayed instead.	`docs.trendmicro.com:80` `docs.trendmicro.com:443`	

Email Encryption	Encrypts and decrypts email messages with registered domains using Identity-based Encryption (IBE) for secure private information delivery.	`root.ibe-ta.com:80`
		`public.ibe-ta.com:80`
		`ppconfig.ibe-ta.com:80`	

Proxy Connection Test	Deep Discovery Director (Consolidated Mode) establishes a connection to this remote file to verify the validity of proxy settings.	`http://www.msftncsi.com/ncsi.txt`	

Service	Description	Address and Port	Notes
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.	`ddd53-threatconnect.trendmicro.com:443`	Related to product version

Trend Micro Vision One	Extends detection and response beyond the endpoint to offer broader visibility and expert security analytics, leading to more detections and an earlier, faster response. With Trend Micro Vision One, you can respond more effectively to threats, minimizing the severity and scope of a breach.	`*.xdr.trendmicro.com:443`
		
		`*.xdr.trendmicro.co.jp:443`
			Related to product version and region

Ports Used by Deep Discovery Director (Consolidated Mode)

The following section shows the ports that are used with Deep Discovery Director (Consolidated Mode) and why they are used.

TABLE A-2. Ports used by Deep Discovery Director (Consolidated Mode)

PORT	PROTOCOL	FUNCTION	PURPOSE
22	TCP	Listening and outbound	Deep Discovery Director (Consolidated Mode) uses this port to: • Connect to the preconfiguration console • Download Virtual Analyzer images from an SFTP server • Back up configuration settings and data to an SFTP server
25	TCP	Outbound	Deep Discovery Director (Consolidated Mode) uses this port to send alert notifications through SMTP.
53	TCP/UDP	Outbound	Deep Discovery Director (Consolidated Mode) uses this port for DNS resolution.
80	TCP	Outbound	Deep Discovery Director (Consolidated Mode) connects to other computers and integrated Trend Micro products and hosted services through this port. In particular,Deep Discovery Director (Consolidated Mode) uses this port to: • Connect to the Customer Licensing Portal • Connect to a proxy server • Connect to the Email Encryption service
123	UDP	Outbound	Deep Discovery Director (Consolidated Mode) uses this port to connect to the NTP server to synchronize time.
139	TCP	Outbound	Deep Discovery Director (Consolidated Mode) uses this port to download Virtual Analyzer images from a network folder.

Port	Protocol	Function	Purpose
161	UDP	Listening	Deep Discovery Director (Consolidated Mode) uses this port for SNMP agent listening and protocol translation.
162	UDP	Listening and Outbound	Deep Discovery Director (Consolidated Mode) uses this port: • For SNMP agent listening and protocol translation • To send SNMP trap notifications

Port	Protocol	Function	Purpose
443	TCP	Listening and outbound	Deep Discovery Director (Consolidated Mode) uses this port to: • Access the management console with a computer through HTTPS • Listen to TAXII 1.x and 2.0 client requests • Listen to integrating product or service requests for threat intelligence data • Listen to auxiliary product or service requests for threat intelligence data • Communicate with auxiliary products or services for threat intelligence sharing • Communicate with Deep Discovery appliances • Communicate with Deep Discovery Director - Network Analytics as a Service • Communicate with the ActiveUpdate server • Communicate with Trend Micro Apex Central • Communicate with Trend Micro Vision One
445	TCP/UDP	Outbound	Deep Discovery Director (Consolidated Mode) uses this port to download Virtual Analyzer images from a network folder.
601	TCP	Outbound	Deep Discovery Director (Consolidated Mode) uses this port to send logs to a syslog server.

Port	Protocol	Function	Purpose
636	TCP	Outbound	Deep Discovery Director (Consolidated Mode) uses this port to retrieve user information from LDAP servers.
4459	TCP	Listening	Deep Discovery Director (Consolidated Mode) uses this port to access the End-User Quarantine console with a computer over HTTPS.
6514	TCP	Listening and Outbound	Deep Discovery Director (Consolidated Mode) uses this port to send logs to a syslog server over TCP with SSL encryption.
8080	TCP	Listening	Deep Discovery Director (Consolidated Mode) uses this port to share threat intelligence with other products.
8883	TCP	Outbound	Deep Discovery Director (Consolidated Mode) uses this port to distribute threat intelligence data to OpenDXL clients, services, and brokers.
18183	TCP	Outbound	Deep Discovery Director (Consolidated Mode) uses this port to distribute threat intelligence data to Check Point Open Platform for Security.

Appendix B

Settings Replicated by Deep Discovery Director

This appendix lists the configuration settings replicated by Deep Discovery Director (Consolidated Mode) for each Deep Discovery appliance and version.

Deep Discovery Analyzer 6.8 Replicated Configuration Settings

The following table shows the screens and elements with replicated configuration settings.

TABLE B-1. Deep Discovery Analyzer 6.8 Replicated Configuration Settings

SCREEN		ELEMENT
Dashboard		Widgets settings only
Virtual Analyzer	**Submissions**	Filter settings
	Suspicious Objects > **User-defined Suspicious Objects**	**User-defined Suspicious Objects**
	Exceptions	**Exceptions** list
Virtual Analyzer > **Sandbox Management**	**File Passwords**	Passwords list
	Submission Settings	File type filter settings
	Smart Feedback	**Smart Feedback** settings
	Sandbox for macOS	**Sandbox for macOS** setting
	YARA Rules	All YARA rules
Alerts / Reports > **Alerts**	**Rules**	All alert notification rule settings
Alerts / Reports > **Reports**	**Schedules**	All report schedules
	Customization	Report customization settings
Administration > **Updates** > **Component Update Settings**		Component update settings

Screen		Element
Administration > **Integrated Products/Services**	**Smart Protection**	**Smart Protection** settings
	ICAP	ICAP settings
	Microsoft Active Directory	Microsoft Active Directory settings
	Log Settings	Log settings
Administration > **System Settings**	**Network**	TLS setting
	Proxy	Proxy settings
	SMTP	SMTP settings
	Time	Time settings
	SNMP	SNMP settings
	Password Policy	Password policy setting
	Session Timeout	Session timeout values
Administration > **Accounts / Contacts**	**Accounts**	All user accounts
	Contacts	All contacts
Administration > **System Maintenance** > **Back Up**		Automatic backup settings

Deep Discovery Analyzer 6.9 Replicated Configuration Settings

The following table shows the screens and elements with replicated configuration settings.

Table B-2. Deep Discovery Analyzer 6.9 Replicated Configuration Settings

Screen	Element
Dashboard	Widgets settings only

Screen		Element
Virtual Analyzer	**Submissions**	Filter settings
	Suspicious Objects > **User-defined Suspicious Objects**	**User-defined Suspicious Objects**
	Exceptions	**Exceptions** list
Virtual Analyzer > **Sandbox Management**	**File Passwords**	Passwords list
	Submission Settings	File type filter settings
	Smart Feedback	**Smart Feedback** settings
	Sandbox for macOS	**Sandbox for macOS** setting
	YARA Rules	All YARA rules
Alerts / Reports > **Alerts**	**Rules**	All alert notification rule settings
Alerts / Reports > **Reports**	**Schedules**	All report schedules
	Customization	Report customization settings
Administration > **Updates** > **Component Update Settings**		Component update settings
Administration > **Integrated Products/Services**	**Smart Protection**	**Smart Protection** settings
	ICAP	ICAP settings
	Microsoft Active Directory	Microsoft Active Directory settings
	Log Settings	Log settings

Screen		Element
Administration > **System Settings**	**Network**	TLS setting
	Proxy	Proxy settings
	SMTP	SMTP settings
	Time	Time settings
	SNMP	SNMP settings
	Password Policy	Password policy setting
	Session Timeout	Session timeout values
Administration > **Accounts / Contacts**	**Accounts**	All user accounts
	SAML	All SAML groups
	Contacts	All contacts
Administration > **System Maintenance** > **Back Up**		Automatic backup settings

Deep Discovery Analyzer 7.0 Replicated Configuration Settings

The following table shows the screens and elements with replicated configuration settings.

Table B-3. Deep Discovery Analyzer 7.0 Replicated Configuration Settings

Screen		Element
Dashboard		Widgets settings only
Virtual Analyzer	**Submissions**	Filter settings
	Suspicious Objects > **User-defined Suspicious Objects**	**User-defined Suspicious Objects**
	Exceptions	**Exceptions** list

Screen		Element
Virtual Analyzer > **Sandbox Management**	**File Passwords**	Passwords list
	Submission Settings	File type filter settings
	Scan Settings	All settings
	Interactive Mode	All settings
	Smart Feedback	**Smart Feedback** settings
	Sandbox for macOS	**Sandbox for macOS** setting
	YARA Rules	All YARA rules
Alerts / Reports > **Alerts**	**Rules**	All alert notification rule settings
Alerts / Reports > **Reports**	**Schedules**	All report schedules
	Customization	Report customization settings
Administration > **Updates** > **Component Update Settings**		Component update settings
Administration > **Integrated Products/Services**	**Smart Protection**	**Smart Protection** settings
	ICAP	ICAP settings
	Microsoft Active Directory	Microsoft Active Directory settings
	Log Settings	Log settings
Administration > **System Settings**	**Network**	TLS setting
	Proxy	Proxy settings
	SMTP	SMTP settings
	Time	Time settings
	SNMP	SNMP settings
	Password Policy	Password policy setting
	Session Timeout	Session timeout values

Screen		Element
Administration > **Accounts / Contacts**	**Accounts**	All user accounts
	SAML	All SAML groups
	Contacts	All contacts
Administration > **System Maintenance** > **Back Up**		Automatic backup settings

Deep Discovery Email Inspector 3.6 Replicated Configuration Settings

The following table shows the screens and elements with replicated configuration settings.

Table B-4. Deep Discovery Email Inspector 3.6 Replicated Configuration Settings

Screen		Element
Dashboard		All widgets and settings
Policies > **Policy Management**	**Policy List**	All policies
	Content Filtering Rules	All content filtering rules
	DLP Rules	All DLP rules
	Antispam Rules	All antispam rules
	Threat Protection Rules	All threat protection rules

Screen		Element
Policies > **Policy Objects**	**Notifications**	Notification subject and message
	Message Tags	**Attachment** replacement file
		End Stamp message
	Redirect Pages	**Blocking and Warning Pages** settings
	Archive Servers	Archive servers list
	Data Identifiers	All data identifiers
	DLP Templates	All DLP templates
Policies > **Exceptions**	**Messages**	Specified senders, recipients, and X-headers
	Objects	Local object exceptions only
	URL Keywords	Excepted URL keywords list
	Graymail Exceptions	Graymail exceptions list
	Email Encryption Exceptions	All email encryption exception settings
Alerts / Reports > **Alerts** > **Rules**		All alert notification rule settings
Alerts / Reports > **Reports** > **Schedules**		All report schedules
Administration > **Component Updates**	**Schedule**	Schedule setting
	Source	Source setting

Screen		Element
Administration > **System Settings**	**Operation Mode**	Operation mode settings
	Proxy	Proxy settings
	SMTP	SMTP settings
	Time	**Date and time format** and **NTP server** settings only
	SNMP	SNMP settings
	Session Timeout	Session timeout setting
Administration > **Mail Settings**	**Connections**	Connections settings
	Message Delivery	All message delivery profiles
	Limits and Exceptions	Limits and exceptions settings
	SMTP Greeting	SMTP greeting message
	Edge MTA Relay Servers	All edge MTA relay server settings
	Internal Domains	All internal domain settings
Administration > **Integrated Products/Services**	**Syslog**	All syslog server settings
	Microsoft Active Directory	Microsoft Active Directory server settings
	SFTP	SFTP settings

Screen		Element
Administration > **Scanning / Analysis**	**Settings**	**Submission Filters** and **Timeout Setting** settings
	File Passwords	Passwords list
	Smart Protection	**Smart Protection** settings
	Smart Feedback	**Smart Feedback** settings
	YARA Rules	All YARA rule files
	Time-of-Click Protection	All settings
	Business Email Compromise Protection	All settings
	URL Scanning	**URL Scanning** setting
Administration > **Sender Filtering/Authentication**	**Approved Senders**	Approved senders list
	Blocked Senders	Blocked senders list
	DHA Protection	All settings
	Email Reputation	Email reputation setting
	Bounce Attack Protection	All settings
	SMTP Traffic Throttling	All settings
	SPF	All settings
	DKIM Authentication	All settings
	DKIM Signatures	DKIM signatures list
	DMARC	All settings
Administration > **End-User Quarantine**	**User Quarantine Access**	All settings
	EUQ Digest	All settings
Administration > **System Maintenance** > **Storage Maintenance**		Storage maintenance values

Screen		Element
Administration > **Accounts / Contacts**	**Accounts**	All user accounts
	Contacts	Contacts list

Deep Discovery Email Inspector 5.0 Replicated Configuration Settings

The following table shows the screens and elements with replicated configuration settings.

Table B-5. Deep Discovery Email Inspector 5.0 Replicated Configuration Settings

Screen		Element
Dashboard		All widgets and settings
Policies > **Policy Management**	**Policy List**	All policies
	Content Filtering Rules	All content filtering rules
	DLP Rules	All DLP rules
	Antispam Rules	All antispam rules
	Threat Protection Rules	All threat protection rules

Screen		Element
Policies > **Policy Objects**	**Notifications**	Notification subject and message
	Replacement File	Replacement file **File name**
		Replacement file **Text** message
	Redirect Pages	**Blocking and Warning Pages** settings
	Archive Servers	Archive servers list
	Data Identifiers	All data identifiers
	DLP Templates	All DLP templates
Policies > **Exceptions**	**Messages**	Specified senders, recipients, and X-headers
	Objects	Local object exceptions only
	URL Keywords	Excepted URL keywords list
	Graymail Exceptions	Graymail exceptions list
	Email Encryption Exceptions	All email encryption exception settings
Alerts / Reports > **Alerts** > **Rules**		All alert notification rule settings
Alerts / Reports > **Reports** > **Schedules**		All report schedules
Administration > **Component Updates**	**Schedule**	Schedule setting
	Source	Source setting

Screen		Element
Administration > **System Settings**	**Operation Mode**	Operation mode settings
	Proxy	Proxy settings
	SMTP	SMTP settings
	Time	**Date and time format** and **NTP server** settings only
	SNMP	SNMP settings
	Session Timeout	Session timeout setting
Administration > **Mail Settings**	**Connections**	Connections settings
	Message Delivery	All message delivery profiles
	Limits and Exceptions	Limits and exceptions settings
	SMTP Greeting	SMTP greeting message
	Edge MTA Relay Servers	All edge MTA relay server settings
	Internal Domains	All internal domain settings
Administration > **Integrated Products/Services**	**Syslog**	All syslog server settings
	LDAP	LDAP settings
	SFTP	SFTP settings

Screen		Element
Administration > **Scanning / Analysis**	**Settings**	**Submission Filters**, **URL Submission Filtering**, and **Timeout Setting** settings
	File Passwords	Passwords list
	Smart Protection	**Smart Protection** settings
	Smart Feedback	**Smart Feedback** settings
	YARA Rules	All YARA rule files
	Time-of-Click Protection	All settings
	Business Email Compromise Protection	All settings
	URL Scanning	**URL Scanning** setting
Administration > **Sender Filtering/Authentication**	**Approved Senders**	Approved senders list
	Blocked Senders	Blocked senders list
	DHA Protection	All settings
	Email Reputation	Email reputation setting
	Bounce Attack Protection	All settings
	SMTP Traffic Throttling	All settings
	SPF	All settings
	DKIM Authentication	All settings
	DKIM Signatures	DKIM signatures list
	DMARC	All settings
Administration > **End-User Quarantine**	**User Quarantine Access**	All settings
	EUQ Digest	All settings
Administration > **System Maintenance** > **Storage Maintenance**		Storage maintenance values

Screen		Element
Administration > **Accounts / Contacts**	**Accounts**	All user accounts
	Contacts	Contacts list

Deep Discovery Email Inspector 5.1 Replicated Configuration Settings

The following table shows the screens and elements with replicated configuration settings.

Table B-6. Deep Discovery Email Inspector 5.1 Replicated Configuration Settings

Screen		Element
Dashboard		All widgets and settings
Policies > **Policy Management**	**Policy List**	All policies
	Content Filtering Rules	All content filtering rules
	DLP Rules	All DLP rules
	Antispam Rules	All antispam rules
	Threat Protection Rules	All threat protection rules

Screen		Element
Policies > **Policy Objects**	**Notifications**	Notification subject and message
	Replacement File	Replacement file **File name**
		Replacement file **Text** message
	Redirect Pages	**Blocking and Warning Pages** settings
	Archive Servers	Archive servers list
	Data Identifiers	All data identifiers
	DLP Templates	All DLP templates
Policies > **Exceptions**	**Messages**	Specified senders, recipients, and X-headers
	Objects	Local object exceptions only
	URL Keywords	Excepted URL keywords list
	Graymail Exceptions	Graymail exceptions list
	Email Encryption Exceptions	All email encryption exception settings
Alerts / Reports > **Alerts** > **Rules**		All alert notification rule settings
Alerts / Reports > **Reports** > **Schedules**		All report schedules
Administration > **Component Updates**	**Schedule**	Schedule setting
	Source	Source setting

Screen		Element
Administration > **System Settings**	**Operation Mode**	Operation mode settings
	Proxy	Proxy settings
	SMTP	SMTP settings
	Time	**Date and time format** and **NTP server** settings only
	SNMP	SNMP settings
	Session Timeout	Session timeout setting
Administration > **Mail Settings**	**Connections**	Connections settings
	Message Delivery	All message delivery profiles
	Limits and Exceptions	Limits and exceptions settings
	SMTP Greeting	SMTP greeting message
	Edge MTA Relay Servers	All edge MTA relay server settings
	Internal Domains	All internal domain settings
Administration > **Integrated Products/Services**	**Syslog**	All syslog server settings
	LDAP	LDAP settings
	SFTP	SFTP settings

Screen		Element
Administration > **Scanning / Analysis**	**Settings**	**Submission Filters**, **URL Submission Filtering**, and **Timeout Setting** settings
	File Passwords	Passwords list
	Smart Protection	**Smart Protection** settings
	Smart Feedback	**Smart Feedback** settings
	YARA Rules	All YARA rule files
	Time-of-Click Protection	All settings
	Business Email Compromise Protection	All settings
	URL Scanning	**URL Scanning** setting
Administration > **Sender Filtering/Authentication**	**Approved Senders**	Approved senders list
	Blocked Senders	Blocked senders list
	DHA Protection	All settings
	Email Reputation	Email reputation setting
	Bounce Attack Protection	All settings
	SMTP Traffic Throttling	All settings
	SPF	All settings
	DKIM Authentication	All settings
	DKIM Signatures	DKIM signatures list
	DMARC	All settings
Administration > **End-User Quarantine**	**User Quarantine Access**	All settings
	EUQ Digest	All settings
Administration > **System Maintenance** > **Storage Maintenance**		Storage maintenance values

Screen		Element
Administration > **Accounts / Contacts**	**Accounts**	All user accounts
	Contacts	Contacts list

Deep Discovery Inspector 5.6 Replicated Configuration Settings

The following table shows the screens and elements with replicated configuration settings.

Table B-7. Deep Discovery Inspector 5.6 Replicated Configuration Settings

Screen		Element
Detections	**Affected Hosts**	Only **Saved Searches**
	Affected Hosts - Host Details	
	All Detections	
Reports	**Schedules**	All settings
	Customization	
Administration > **Updates** > **Component Updates**	**Scheduled**	All settings
	Source	All settings

Screen		Element
Administration > **Notifications**	**Notification Settings** > **Threat Detections**	All settings
	Notification Settings > **High Risk Hosts Detections**	
	Notification Settings > **Suspicious Hosts Detections**	
	Notification Settings > **High Network Traffic**	
	Notification Settings > **Unanalyzed Sample Detections**	
	Notification Settings > **Virtual Analyzer Detections**	
	Notification Settings > **Deny List**	
	Notification Settings > **Retro Scan Detections**	
	Delivery Options > **Email Settings**	
Administration > **Monitoring / Scanning**	**Hosts / Ports**	All settings
	Threat Detections	
	Web Reputation	
	Application Filters	
	Deny List / Allow List	
	Detection Rules	
	Exceptions	
	Packet Capture	

Screen		Element
Administration > **Virtual Analyzer**	**Setup**	Only the internal Virtual Analyzer proxy settings and the sandbox for macOS setting.
	File Submissions	All settings
	Internal Virtual Analyzer > **Sandbox Management** > **Passwords**	
Administration > **Network Groups and Assets**	**Network Groups**	All settings
	Registered Domains	
	Registered Services	
Administration > **Integrated Products/Services**	**Threat Intelligence Sharing**	All settings
	Microsoft Active Directory	
	Syslog	
Administration > **System Settings**	**Network**	Only **Secure Protocol** setting
	Proxy	All settings
	SNMP	
	Time	
	Session Timeout	
Administration > **Accounts**		All settings
Administration > **System Maintenance** > **Storage Maintenance**		Only **File Size Settings**

Deep Discovery Inspector 5.7 Replicated Configuration Settings

The following table shows the screens and elements with replicated configuration settings.

TABLE B-8. Deep Discovery Inspector 5.7 Replicated Configuration Settings

SCREEN		ELEMENT
Detections	**Affected Hosts**	Only **Saved Searches**
	Affected Hosts - Host Details	
	All Detections	
Reports	**Schedules**	All settings
	Customization	
Administration > **Updates** > **Component Updates**	**Scheduled**	All settings
	Source	All settings

Screen		Element
Administration > **Notifications**	**Notification Settings** > **Threat Detections**	All settings
	Notification Settings > **High Risk Hosts Detections**	
	Notification Settings > **Suspicious Hosts Detections**	
	Notification Settings > **High Network Traffic**	
	Notification Settings > **Unanalyzed Sample Detections**	
	Notification Settings > **Virtual Analyzer Detections**	
	Notification Settings > **Deny List**	
	Notification Settings > **Retro Scan Detections**	
	Delivery Options > **Email Settings**	
Administration > **Monitoring / Scanning**	**Hosts / Ports**	All settings
	Threat Detections	
	Web Reputation	
	Application Filters	
	Deny List / Allow List	
	Detection Rules	
	Detection Exceptions	
	Packet Capture	

Screen		Element
Administration > **Virtual Analyzer**	**Setup**	Only the internal Virtual Analyzer proxy settings and the sandbox for macOS setting.
	File Submissions	All settings
	Internal Virtual Analyzer > **Sandbox Management** > **Passwords**	
Administration > **Network Groups and Assets**	**Network Groups**	All settings
	Registered Domains	
	Registered Services	
Administration > **Integrated Products/Services**	**Threat Intelligence Sharing**	All settings
	Microsoft Active Directory	
	Syslog	
Administration > **System Settings**	**Network**	Only **Secure Protocol** setting
	Proxy	All settings
	SMTP	
	SNMP	
	Time	
	Session Timeout	
Administration > **Accounts**		All settings
Administration > **System Maintenance** > **Storage Maintenance**		Only **File Size Settings**

Deep Discovery Inspector 5.8 Replicated Configuration Settings

The following table shows the screens and elements with replicated configuration settings.

TABLE B-9. Deep Discovery Inspector 5.8 Replicated Configuration Settings

SCREEN		ELEMENT
Detections	**Affected Hosts**	Only **Saved Searches**
	Affected Hosts - Host Details	
	All Detections	
Reports	**Schedules**	All settings
	Customization	
Administration > **Updates** > **Component Updates**	**Scheduled**	All settings
	Source	All settings

Screen		Element
Administration > **Notifications**	**Notification Settings** > **Threat Detections**	All settings
	Notification Settings > **High Risk Hosts Detections**	
	Notification Settings > **Suspicious Hosts Detections**	
	Notification Settings > **High Network Traffic**	
	Notification Settings > **Unanalyzed Sample Detections**	
	Notification Settings > **Virtual Analyzer Detections**	
	Notification Settings > **Deny List**	
	Notification Settings > **Retro Scan Detections**	
	Delivery Options > **Email Settings**	
Administration > **Monitoring / Scanning**	**Hosts / Ports**	All settings
	Threat Detections	
	Web Reputation	
	Application Filters	
	Deny List / Allow List	
	Detection Rules	
	Detection Exceptions	
	Packet Capture	

Screen		Element
Administration > **Virtual Analyzer**	**Setup**	Only the internal Virtual Analyzer proxy settings and the sandbox for macOS setting.
	File Submissions	All settings
	Internal Virtual Analyzer > **Sandbox Management** > **Passwords**	
Administration > **Network Groups and Assets**	**Network Groups**	All settings
	Registered Domains	
	Registered Services	
Administration > **Integrated Products/Services**	**Threat Intelligence Sharing**	All settings
	Microsoft Active Directory	
	Syslog	
Administration > **System Settings**	**Network**	Only **Secure Protocol** setting
	Proxy	All settings
	SMTP	
	SNMP	
	Time	
	Session Timeout	
Administration > **Accounts**		All settings
Administration > **System Maintenance** > **Storage Maintenance**		Only **File Size Settings**

Deep Discovery Web Inspector 2.5 Replicated Configuration Settings

The following table shows the screens and elements with replicated configuration settings.

TABLE B-10. Deep Discovery Web Inspector 2.5 Replicated Configuration Settings

SCREEN		ELEMENT
Dashboard		All settings
Policy	**Policy**	All policy rules and policy global settings
	Decryption Rules	All HTTPS decryption rules (formerly known as HTTPS Inspection rules)
	Digital Certificates	All certificates in the trusted, untrusted, and invalid certificate stores and certificate exceptions
	HTTPS Tunnels	All domain tunnels
	Intelligent Decryption	All custom patterns and exceptions
Policy > **User Defined Settings**	**Network Objects**	All network objects
	Domain Objects	All domain objects
	Approved/Blocked Lists	Approved list and blocked list
	Notifications	All notification settings
Alerts / Reports	**Alerts** > **Rules**	All alert rules
	Reports > **Schedules**	All report schedules

Screen		Element
Administration	**Component Updates** > **Schedules**	All schedule settings
	System Settings > **X-Header Handling**	All settings
Administration > **Active Directory Services**	**Active Directory**	All settings
	Authentication Policy	All settings
	Global Authentication Settings	All settings **Note** The Kerberos keytable information is not backed up.

Deep Discovery Web Inspector 2.6 Replicated Configuration Settings

The following table shows the screens and elements with replicated configuration settings.

Table B-11. Deep Discovery Web Inspector 2.6 Replicated Configuration Settings

Screen	Element
Dashboard	All settings

Screen		Element
Policy	**Policy**	All policy rules and policy global settings
	Decryption Rules	All HTTPS decryption rules (formerly known as HTTPS Inspection rules)
	Digital Certificates	All certificates in the trusted, untrusted, and invalid certificate stores and certificate exceptions
	HTTPS Tunnels	All domain tunnels
	Intelligent Decryption	All custom patterns and exceptions
Policy > **User Defined Settings**	**Network Objects**	All network objects
	Domain Objects	All domain objects
	Approved/Blocked Lists	Approved list and blocked list
	Notifications	All notification settings
Alerts / Reports	**Alerts** > **Rules**	All alert rules
	Reports > **Schedules**	All report schedules
Administration	**Component Updates** > **Schedules**	All schedule settings
	System Settings > **X-Header Handling**	All settings

Screen		Element
Administration > **Active Directory Services**	**Active Directory**	All settings
	Authentication Policy	All settings
	Global Authentication Settings	All settings  **Note** The Kerberos keytable information is not backed up.

Deep Discovery Director (Standalone Network Analytics Mode) 5.2 Replicated Configuration Settings

The following table shows the screens and elements with replicated configuration settings.

Table B-12. Deep Discovery Director (Standalone Network Analytics Mode) 5.2 Replicated Configuration Settings

Screen		Element
Administration > **Integrated Products/Services** > **Microsoft Active Directory**		All settings
Administration > **System Settings**	**Proxy**	All settings
	SMTP	All settings
	SNMP	All settings
	Time	All settings except manually set date and time
	Session Timeout	All settings

Screen	Element
Administration > **Account Management**	All settings

Deep Discovery Director (Standalone Network Analytics Mode) 5.3 Replicated Configuration Settings

The following table shows the screens and elements with replicated configuration settings.

Table B-13. Deep Discovery Director (Standalone Network Analytics Mode) 5.3 Replicated Configuration Settings

Screen		Element
Administration > **Integrated Products/Services** > **Microsoft Active Directory**		All settings
Administration > **System Settings**	**Proxy**	All settings
	SMTP	All settings
	SNMP	All settings
	Time	All settings except manually set date and time
	Session Timeout	All settings
Administration > **Account Management**		All settings

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