TREND MICRO™

6.8 TREND MICRO™ Deep Discovery™ Analyzer

Administrator's Guide

Breakthrough Protection Against APTs and Targeted Attacks

Endpoint Security

Network Security

Protected Cloud

Document Part No.: APEM68830/191002

Release Date: December 2019

Protected by U.S. Patent No.: Patents pending.

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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The following link outlines the types of data that Deep Discovery Analyzer collects and provides detailed instructions on how to disable the specific features that feedback the information.

https://success.trendmicro.com/data-collection-disclosure

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Preface

This guide contains information about product settings and service levels.

Documentation

The documentation set for Deep Discovery Analyzer includes the following:

TABLE 1. Product Documentation

DOCUMENT	DESCRIPTION
Administrator's Guide	PDF documentation provided with the product or downloadable from the Trend Micro website. The Administrator's Guide contains detailed instructions on how to configure and manage Deep Discovery Analyzer, and explanations on Deep Discovery Analyzer concepts and features.
Installation and Deployment Guide	PDF documentation provided with the product or downloadable from the Trend Micro website. The Installation and Deployment Guide contains information about requirements and procedures for planning deployment, installing Deep Discovery Analyzer, and using the Preconfiguration Console to set initial configurations and perform system tasks.
Syslog Content Mapping Guide	PDF documentation provided with the product or downloadable from the Trend Micro website. The Syslog Content Mapping Guide provides information about log management standards and syntaxes for implementing syslog events in Deep Discovery Analyzer.
Quick Start Card	The Quick Start Card provides user-friendly instructions on connecting Deep Discovery Analyzer to your network and on performing the initial configuration.
Readme	The Readme contains late-breaking product information that is not found in the online or printed documentation. Topics include a description of new features, known issues, and product release history.

Document	Description
Online Help	Web-based documentation that is accessible from the Deep Discovery Analyzer management console. The Online Help contains explanations of Deep Discovery Analyzer components and features, as well as procedures needed to configure Deep Discovery Analyzer.
Support Portal	The Support Portal is an online database of problem-solving and troubleshooting information. It provides the latest information about known product issues. To access the Support Portal, go to the following website: http://esupport.trendmicro.com

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

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

Audience

The Deep Discovery Analyzer 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

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

Document Conventions

The documentation uses the following conventions:

TABLE 2. Document Conventions

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

Terminology

TERMINOLOGY	DESCRIPTION
ActiveUpdate Server	Provides updates for product components, including pattern files. Trend Micro regularly releases component updates through the Trend Micro ActiveUpdate server.

Terminology	Description
Active primary appliance	Clustered appliance with which all management tasks are performed. Retains all configuration settings and allocates submissions to secondary appliances for performance improvement.
Administrator	The person managing Deep Discovery Analyzer
Clustering	Multiple standalone Deep Discovery Analyzer appliances can be deployed and configured to form a cluster that provides fault tolerance, improved performance, or a combination thereof.
Custom port	A hardware port that connects Deep Discovery Analyzer to an isolated network dedicated to sandbox analysis
Dashboard	UI screen on which widgets are displayed
High availability cluster	In a high availability cluster, one appliance acts as the active primary appliance, and one acts as the passive primary appliance. The passive primary appliance automatically takes over as the new active primary appliance if the active primary appliance encounters an error and is unable to recover.
Load-balancing cluster	In a load-balancing cluster, one appliance acts as the active primary appliance, and any additional appliances act as secondary appliances. The secondary appliances process submissions allocated by the active primary appliance for performance improvement.
Management console	A web-based user interface for managing a product.
Management port	A hardware port that connects to the management network.
Passive primary appliance	Clustered appliance that is on standby until active primary appliance encounters an error and is unable to recover. Provides high availability.
Role-based administration	Role-based administration streamlines how administrators configure user accounts and control access to the management console.

Terminology	Description
Sandbox image	A ready-to-use software package (operating system with applications) that require no configuration or installation. Virtual Analyzer supports only image files in the Open Virtual Appliance (OVA) format.
Sandbox instance	A single virtual machine based on a sandbox image.
Secondary appliance	Clustered appliance that processes submissions allocated by the active primary appliance for performance improvement.
Standalone appliance	Appliance that is not part of any cluster. Clustered appliances can revert to being standalone appliances by detaching the appliance from its cluster.
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.
Virtual Analyzer	An isolated virtual environment used to manage and analyze samples. Virtual Analyzer observes sample behavior and characteristics, and then assigns a risk level to the sample.
Widget	A customizable screen to view targeted, selected data sets.
YARA	YARA rules are malware detection patterns that are fully customizable to identify targeted attacks and security threats specific to your environment.

About Trend Micro

As a global leader in cloud security, Trend Micro develops Internet content security and threat management solutions that make the world safe for businesses and consumers to exchange digital information. With over 20 years of experience, Trend Micro provides top-ranked client, server, and cloud-based solutions that stop threats faster and protect data in physical, virtual, and cloud environments.

As new threats and vulnerabilities emerge, Trend Micro remains committed to helping customers secure data, ensure compliance, reduce costs, and safeguard business integrity. For more information, visit:

http://www.trendmicro.com

Chapter 1

Introduction

This chapter introduces Deep Discovery Analyzer 6.8 and the new features in this release.

About Deep Discovery Analyzer

Deep Discovery Analyzer is a custom sandbox analysis server that enhances the targeted attack protection of Trend Micro and third-party security products. Deep Discovery Analyzer supports out-of-the-box integration with Trend Micro email and web security products, and can also be used to augment or centralize the sandbox analysis of other products. The custom sandboxing environments that can be created within Deep Discovery Analyzer precisely match target desktop software configurations — resulting in more accurate detections and fewer false positives.

Deep Discovery Analyzer also provides a Web Services API to allow integration with any third-party product, and a manual submission feature for threat research.

What's New

TABLE 1-1. What's New in Deep Discovery Analyzer 6.8

FEATURE/ENHANCEMENT	DETAILS
MITRE ATT&CK™ Framework Tactics and Techniques information	Deep Discovery Analyzer detection details and reports include MITRE ATT&CK™ Framework Tactics and Techniques information.

Feature/Enhancement	Details
Enhanced Virtual Analyzer	The internal Virtual Analyzer has been enhanced. This release adds the following features: • New Windows file types (`.mht` and `.com`) for sandbox analysis • Image support for Windows 10 RS4/RS5, Windows 10 LTSC • Windows editions with support for UEFI • Microsoft Office 2019 application support in Virtual Analyzer images • URL extraction from RTF files for analysis by Web Reputation Services This release also provides enhanced Virtual Analyzer management to allow you to: • Rename image groups • View actual Virtual Analyzer instance count on the Virtual Analyzer Status widget and the Sandbox Management screen
Enhanced detection capabilities	Deep Discovery Analyzer provides increased protection by improving its detection capabilities. This release includes the following features: • File password import and export • Support up to 100 file password entries
File SHA-256 support for user-defined suspicious objects	Deep Discovery Analyzer supports file SHA-256 user-defined suspicious object for the following: • Configuration through the management console or STIX file import • Synchronization from Deep Discovery Director • Sample analysis in ICAP pre-scan and Virtual Analyzer • Detection result display on the Submissions screen

Feature/Enhancement	Details
Enhanced ICAP integration	The Predictive Machine Learning engine has been enhanced to support macro and Executable and Linkable Format (ELF) file types for ICAP integration.
System proxy for component updates	Deep Discovery Analyzer provides the option to bypass the system proxy setting to connect to other update sources for component updates.
Enhanced Deep Discovery Director integration	Deep Discovery Director integration has been enhanced to enable the following: • Server port configuration for Deep Discovery Director communication • Up to 80K entries for user-defined suspicious object synchronization • Support Deep Discovery Director 5.1 integration for user-defined suspicious object expiration and central management of file passwords and file SHA-256 user-defined suspicious objects
Enhanced YARA rule feature	The enhanced YARA rule feature includes the following: • Dropped file information in detection result display on the Submissions screens • Support 3.10.0 of the official specifications
New integrated Trend Micro product	Deep Discovery Analyzer supports integration with Deep Discovery Web Inspector 2.5.
Enhanced management console	The management console has been enhanced to include the following: • Save custom column settings on Submissions screens for each user account • Automatic screen data reload upon switching Submissions screens
Inline migration from Deep Discovery Analyzer 6.1 and 6.5	Deep Discovery Analyzer can automatically migrate the settings of a Deep Discovery Analyzer 6.1 Patch 1 and 6.5 Patch 1 installation to 6.8.

Features and Benefits

Deep Discovery Analyzer includes the following features:

Enable Sandboxing as a Centralized Service

Deep Discovery Analyzer ensures optimized performance with a scalable solution able to keep pace with email, network, endpoint, and any additional source of samples.

Custom Sandboxing

Deep Discovery Analyzer performs sandbox simulation and analysis in environments that match the desktop software configurations attackers

expect in your environment and ensures optimal detection with low false-positive rates.

Broad File Analysis Range

Deep Discovery Analyzer examines a wide range of Windows executable, Microsoft Office, PDF, web content, and compressed file types using multiple detection engines and sandboxing.

YARA Rules

Deep Discovery Analyzer uses YARA rules to identify malware. YARA rules are malware detection patterns that are fully customizable to identify targeted attacks and security threats specific to your environment.

Document Exploit Detection

Using specialized detection and sandboxing, Deep Discovery Analyzer discovers malware and exploits that are often delivered in common office documents and other file formats.

Automatic URL Analysis

Deep Discovery Analyzer performs page scanning and sandbox analysis of URLs that are automatically submitted by integrating products.

Detailed Reporting

Deep Discovery Analyzer delivers full analysis results including detailed sample activities and C&C communications via central dashboards and reports.

Alert Notifications

Alert notifications provide immediate intelligence about the state of Deep Discovery Analyzer.

Clustered Deployment

Multiple standalone Deep Discovery Analyzer appliances can be deployed and configured to form a cluster that provides fault tolerance, improved performance, or a combination thereof.

Trend Micro Product Integration

Deep Discovery Analyzer enables out-of-the-box integration to expand the sandboxing capacity of Trend Micro email and web security products.

Web Services API and Manual Submission

Deep Discovery Analyzer allows any security product or authorized threat researcher to submit samples.

Custom Defense Integration

Deep Discovery Analyzer shares new IOC detection intelligence automatically with other Trend Micro solutions and third-party security products.

ICAP Integration

Deep Discovery Analyzer supports integration with Internet Content Adaptation Protocol (ICAP) clients. After integration, Deep Discovery Analyzer can perform the following functions:

- Work as an ICAP server that analyzes samples submitted by ICAP clients

- Serve User Configuration Pages to the end user when the specified network behavior (URL access / file upload / file download) is blocked
- Control which ICAP clients can submit samples by configuring the ICAP Client list
- Bypass file scanning based on selected MIME content-types
- Bypass file scanning based on true file types
- Bypass URL scanning in RESPMOD mode
- Scan samples using different scanning modules
- Filter sample submissions based on the file types that Virtual Analyzer can process.

Chapter 2

Getting Started

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

The Preconfiguration Console

The preconfiguration console is a Bash-based (Unix shell) interface used to configure network settings, view high availability details, ping remote hosts, and change the preconfiguration console password.

For details, see the *Deep Discovery Analyzer Installation and Deployment Guide.*

The Management Console

Deep Discovery Analyzer provides a built-in management console for configuring and managing the product.

Open the management console from any computer on the management network with the following resources:

- Microsoft Internet Explorer™ 9, 10, or 11
- Microsoft Edge™
- Google Chrome™
- Mozilla Firefox™

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

`https://<Appliance IP Address>/pages/login.php`

This opens the logon screen, which shows the following options:

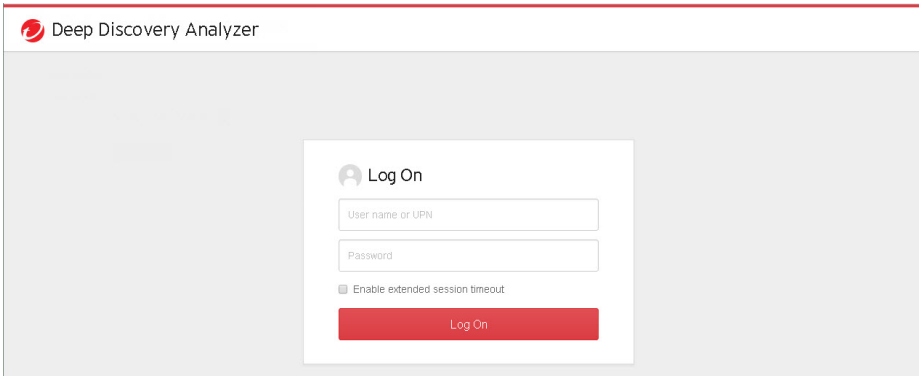


TABLE 2-1. Management Console Logon Options

OPTION	DETAILS
User name	Type the logon credentials (user name and password) for the management console. Use the default administrator logon credentials when logging on for the first time: • User name: `admin` • Password: `Admin1234!` Trend Micro recommends changing the password after logging on to the management console for the first time. Configure user accounts to allow other users to access the management console without using the administrator account. For details, see *Accounts Tab on page 6-63*.
Password	
Enable extended session timeout	Select this option to apply the extended session timeout for your logon session. The default session timeout is 10 minutes. To change the session timeout settings, navigate to **Administration** > **System Settings** and click the **Session Timeout** tab.

Option	Details
Log On	Click **Log On** to log on to the management console.

Management Console Navigation

The management console consists of the following elements:

Table 2-2. Management Console Elements

Section	Details
Banner	The management console banner contains: • Product logo and name: Click to go to the dashboard. For details, see *Dashboard Overview on page 3-2*. • Name of the user currently logged on to the management console. • **Log Off** link: Click to end the current console session and return to the logon screen. • System time: Displays the current system time and time zone.
Main Menu Bar	The main menu bar contains several menu items that allow you to configure product settings. For some menu items, such as **Dashboard**, clicking the item opens the corresponding screen. For other menu items, submenu items appear when you click or mouseover the menu item. Clicking a submenu item opens the corresponding screen.
Scroll Up and Arrow Buttons	Use the **Scroll up** option when a screen's content exceeds the available screen space. Next to the **Scroll up** button is an arrow button that expands or collapses the bar at the bottom of the screen.
Context-sensitive Help	Use **Help** to find more information about the screen that is currently displayed.

Getting Started Tasks

Procedure

1. Activate the product license using a valid Activation Code. For details, see *License on page 6-83*.
2. Specify the Deep Discovery Analyzer host name and IP address. For details, see *Network Tab on page 6-33*.
3. Configure proxy settings if Deep Discovery Analyzer connects to the management network or Internet through a proxy server. For details, see *Proxy Tab on page 6-35*.
4. Configure date and time settings to ensure that Deep Discovery Analyzer features operate as intended. For details, see *Time Tab on page 6-38*.
5. Configure SMTP settings to enable sending of notifications through email. For details, see *SMTP Tab on page 6-37*.
6. Import sandbox instances to Virtual Analyzer. For details, see *Importing an Image on page 4-47*.
7. Configure Virtual Analyzer network settings to enable sandbox instances to connect to external destinations. For details, see *Enabling External Connections on page 4-66*.
8. (Optional) Deploy and configure additional Deep Discovery Analyzer appliances for use in a high availability or load-balancing cluster. For details, see *Cluster Tab on page 6-47*.
9. Configure supported Trend Micro products for integration with Deep Discovery Analyzer. For details, see *Integration with Trend Micro Products on page 2-6*.
10. Adjust Virtual Analyzer resource allocation between all sources by assigning weight and timeout values to all sources that submit objects to Deep Discovery Analyzer for analysis. For details, see *Submitters on page 4-70*.

Integration with Trend Micro Products

Deep Discovery Analyzer integrates with the following Trend Micro products.

Sandbox Analysis

Products that can send samples to Deep Discovery Analyzer for sandbox analysis:

Note

All samples display on the Deep Discovery Analyzer management console, on the **Submissions** screen (**Virtual Analyzer** > **Submissions**). Deep Discovery Analyzer administrators and investigators can also manually send samples from this screen.

- Apex One 2019
- Deep Discovery Email Inspector 2.5 or later
- Deep Discovery Inspector 3.7 or later
- Deep Discovery Web Inspector 2.5
- ScanMail for Microsoft Exchange 11.0 or later
- ScanMail for IBM Domino 5.6 SP1 Patch 1 HF4666 or later
- InterScan Messaging Security Virtual Appliance (IMSVA) 8.2 SP2 or later
- InterScan Messaging Security Suite (IMSS) for Windows 7.5 or later
- InterScan Web Security Virtual Appliance (IWSVA) 6.0 or later
- InterScan Web Security Suite (IWSS) 6.5
- InterScan Messaging Security Suite (IMSS) for Linux 9.1
- Deep Security 10.0 or later

- Deep Edge 2.5 SP2 or later
- OfficeScan XG or later
- Trend Micro Endpoint Sensor 1.6 or later
- Trend Micro TippingPoint Security Management System 5.0 or later

On the management console of the integrating product, go to the appropriate screen (see the product documentation for details on which screen to access) and specify the following information:

- API key. This is available on the Deep Discovery Analyzer management console, in **Help** > **About**.
- Deep Discovery Analyzer IP address. If unsure of the IP address, check the URL used to access the Deep Discovery Analyzer management console. The IP address is part of the URL.
- Deep Discovery Analyzer IPv4 or IPv6 virtual address. When using Deep Discovery Analyzer in a high availability configuration, the virtual IP address is used to provide integrating products with a fixed IP address for configuration. This is available on the Deep Discovery Analyzer management console, in **Administration** > **System Settings** > **High Availability**.
- Deep Discovery Analyzer SSL port 443. This is not configurable.

Important

If the Deep Discovery Analyzer API key changes after registering with the integrated product, remove Deep Discovery Analyzer from the integrated product and add it again.

Note

Some integrating products require additional configuration to integrate with Deep Discovery Analyzer properly. See the product documentation for details.

(Optional) On the Deep Discovery Analyzer management console, review and modify the weight values of integrated products to adjust Virtual Analyzer resource allocation. For details, see *Submitters on page 4-70*.

Suspicious Objects List

Products that retrieve the suspicious objects list from Deep Discovery Analyzer:

- Apex Central 2019 (with the latest hotfix installed)
- Deep Discovery Email Inspector 2.5 or later
- Deep Discovery Inspector 3.7 or later
- Deep Discovery Web Inspector 2.5
- Standalone Smart Protection Server with the latest patch 2.6 or later
- OfficeScan Integrated Smart Protection Server 10.6 SP2 Patch 1 to OfficeScan Integrated Smart Protection Server 11 SP1
- InterScan Web Security Virtual Appliance (IWSVA) 6.0 or later
- InterScan Web Security Suite (IWSS) 6.5
- Control Manager 7.0 Patch 1 (with the latest hotfix installed)

On the management console of the integrating product, go to the appropriate screen (see the product documentation for information on which screen to access) and specify the following information:

- API key. This is available on the Deep Discovery Analyzer management console, in **Help** > **About**.
- Deep Discovery Analyzer IPv4 or IPv6 address. If unsure of the IP address, check the URL used to access the Deep Discovery Analyzer management console. The IP address is part of the URL.

- Deep Discovery Analyzer IPv4 or IPv6 virtual address. When using Deep Discovery Analyzer in a high availability configuration, the virtual IP address is used to provide integrated products with a fixed IP address for configuration. This is available on the Deep Discovery Analyzer management console, in **Administration** > **System Settings** > **High Availability**.
- Deep Discovery Analyzer SSL port 443. This is not configurable.
- Deep Discovery Analyzer user logon credentials. For details, see *Accounts Tab on page 6-63*.

Important

If the Deep Discovery Analyzer API key changes after registering with the integrated product, remove Deep Discovery Analyzer from the integrated product and add it again.

Note

Some integrating products require additional configuration to integrate with Deep Discovery Analyzer properly. See the product documentation for details.

Exceptions

Products that send exceptions to Deep Discovery Analyzer:

- Apex Central 2019 (with the latest hotfix installed)
- Control Manager 7.0 Patch 1 (with the latest hotfix installed)

On the management console of the integrating product, go to the appropriate screen (see the product documentation for information on which screen to access) and specify the following information:

- Deep Discovery Analyzer IPv4 or IPv6 address. If unsure of the IP address, check the URL used to access the Deep Discovery Analyzer management console. The IP address is part of the URL.

- Deep Discovery Analyzer IPv4 or IPv6 virtual address. When using Deep Discovery Analyzer in a high availability configuration, the virtual IP address is used to provide integrated products with a fixed IP address for configuration. This is available on the Deep Discovery Analyzer management console, in **Administration** > **System Settings** > **High Availability**.
- Deep Discovery Analyzer SSL port 443. This is not configurable.
- Deep Discovery Analyzer user logon credentials. For details, see *Accounts Tab on page 6-63*.

Important

If the Deep Discovery Analyzer API key changes after registering with the integrated product, then Deep Discovery Analyzer will need to be deleted from the integrated product and added again.

Note

Some integrating products require additional configuration to integrate with Deep Discovery Analyzer properly. See the product documentation for details.

Chapter 3

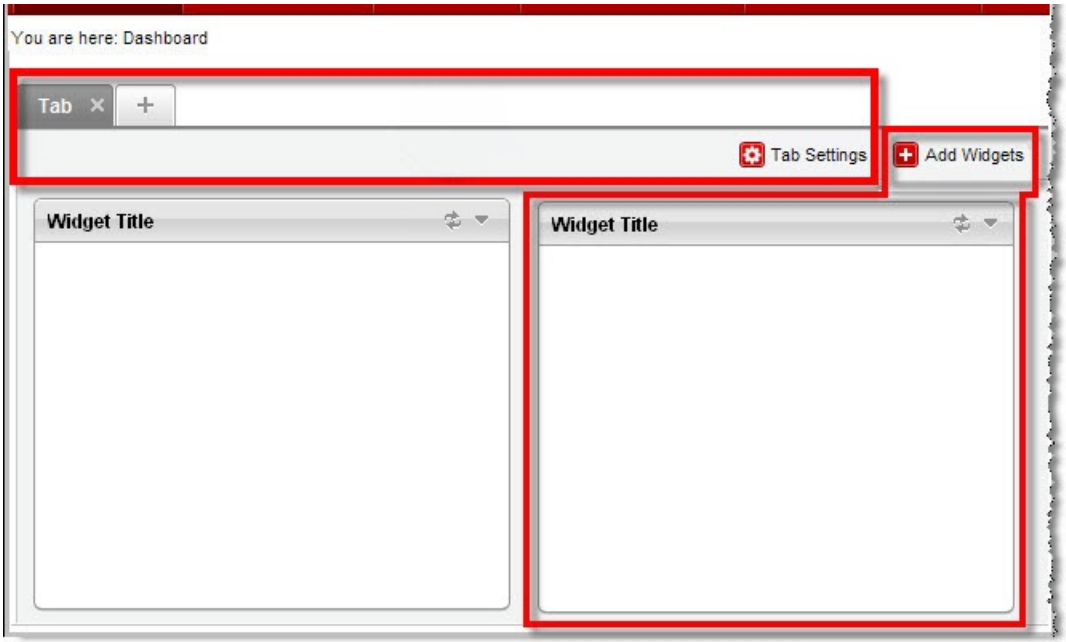
Dashboard

This chapter describes the Deep Discovery Analyzer dashboard.

Dashboard Overview

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

The dashboard consists of the following user interface elements:



Element	Description
Tabs	Tabs provide a container for widgets. For details, see *Tabs on page 3-3*.
Widgets	Widgets represent the core dashboard components. For details, see *Widgets on page 3-5*.

Note

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

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

Tabs

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

Tab Tasks

The following table lists all the tab-related tasks:

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

New Tab Window

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

This window includes the following options:

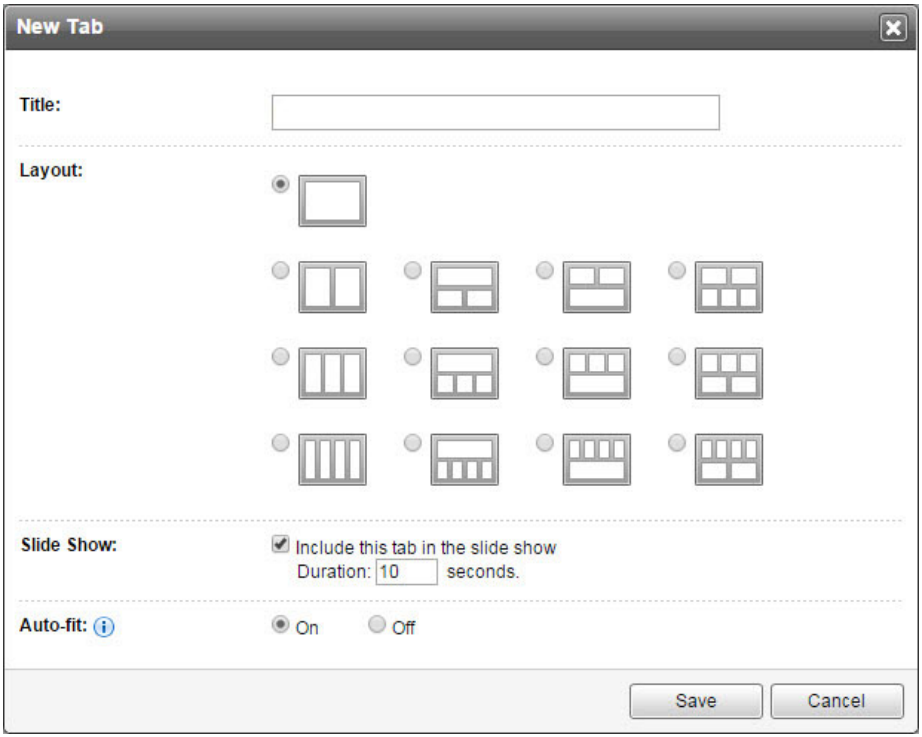


TABLE 3-1. New Tab Tasks

TASK	STEPS
Title	Type the name of the tab.
Layout	Choose from the available layouts.

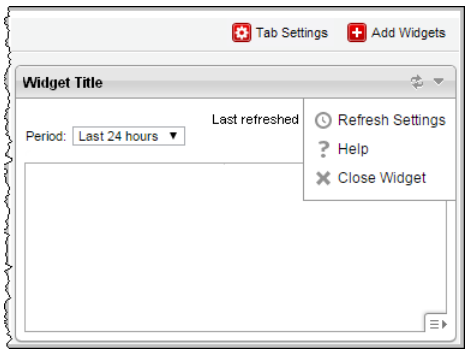
Task	Steps
Slide Show	Select to include the tab in the Dashboard slide show.
Duration	Type the number of seconds to display the tab during the Dashboard slide show.
Auto-fit	Choose **On** or **Off**. This feature works when there is only one widget in a column. Choose **On** to adjust the height of the single widget to match the highest column.

Widgets

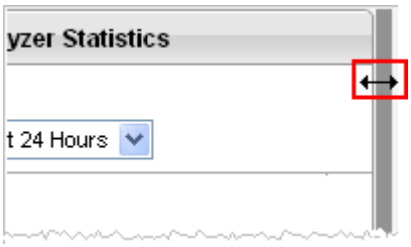
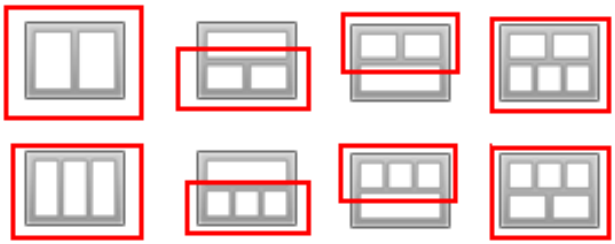
Widgets are the core components of the dashboard. Widgets contain charts and graphs that allow you to monitor the system status and track threats.

Widget Tasks

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



TASK	STEPS
Add a widget	Open a tab and then click **Add Widgets** at the top right corner of the tab. The Add Widgets screen displays. For details, see *Adding Widgets to the Dashboard on page 3-7*.
Refresh widget data	Click the refresh icon () to refresh widget data. Click the refresh settings icon () to set the frequency that the widget refreshes or to automatically refresh widget data.
Delete a widget	Click the delete icon () to close the widget. This action removes the widget from the tab that contains it, but not from any other tabs that contain it or from the widget list in the **Add Widgets** screen.
Change period	If available, click the **Period** drop-down menu to select the time period.
Change the node	If available, click the **Node** drop-down box on top of the widget to change the node.
Move a widget within the same tab	Use drag-and-drop to move the widget to a different location within the tab.

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

Adding Widgets to the Dashboard

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

Do any of the following:

Procedure

- To reduce the widgets that appear, click a category from the left side.

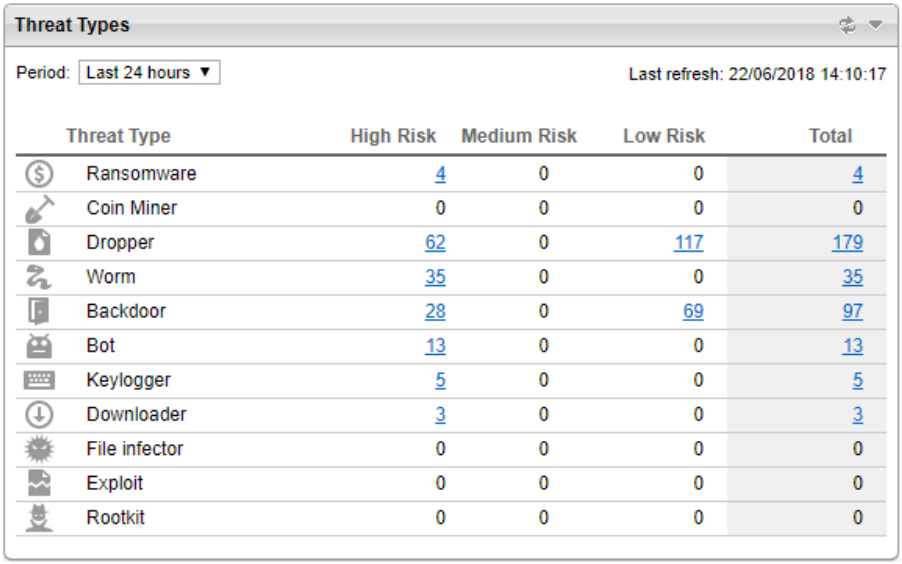
- To search for a widget, specify the widget name in the search text box at the top.
- To change the widget count per page, select a number from the **Records** drop-down menu.
- To switch between the Detailed and Summary views, click the display icons () at the top right.
- To select the widget to add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

Summary Tab

View the **Summary** tab widgets to understand threats detected by Deep Discovery Analyzer based on type and amount, the volume of suspicious objects discovered during analysis, submissions over time, and the Virtual Analyzer summary.

Threat Types

This widget shows the type, amount, and risk level of threats detected in all submissions during the specified time period.



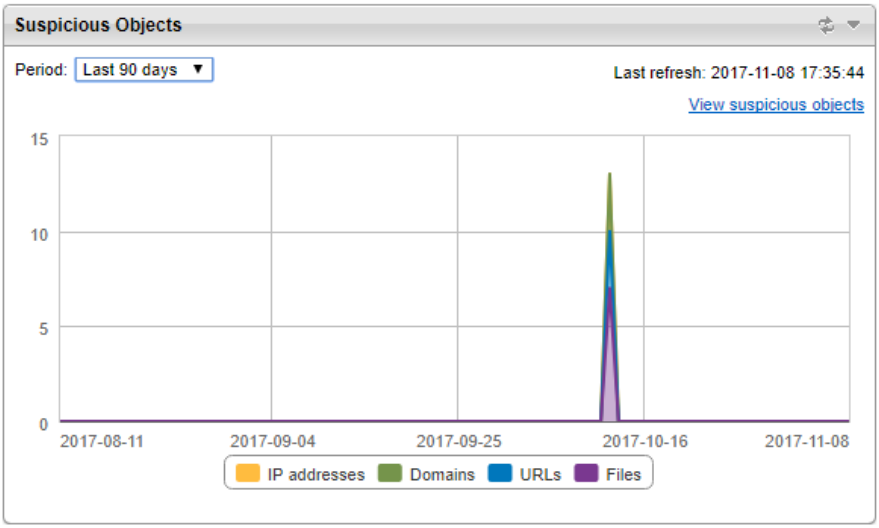
Threat Type	High Risk	Medium Risk	Low Risk	Total
Ransomware	4	0	0	4
Coin Miner	0	0	0	0
Dropper	62	0	117	179
Worm	35	0	0	35
Backdoor	28	0	69	97
Bot	13	0	0	13
Keylogger	5	0	0	5
Downloader	3	0	0	3
File infector	0	0	0	0
Exploit	0	0	0	0
Rootkit	0	0	0	0

The default period is **Last 24 hours**. Change the period according to your preference.

Click a number under **High Risk**, **Medium Risk**, **Low Risk**, or **Total** to go to the **Submissions** screen and view detailed information.

Suspicious Objects

This widget plots the number of objects (IP addresses, domains, URLs, and files) added to the Suspicious Objects list during the specified time period.



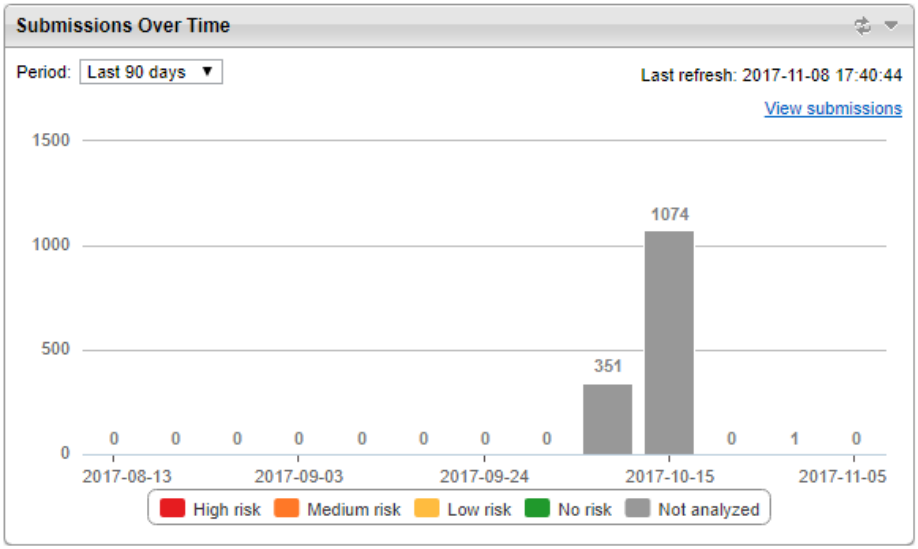
The default period is **Last 24 hours**. Change the period according to your preference.

Click **View suspicious objects** to go to the **Suspicious Objects** screen and view detailed information.

For details, see *Suspicious Objects on page 4-34*.

Submissions Over Time

This widget plots the number of samples submitted to Virtual Analyzer over a period of time.



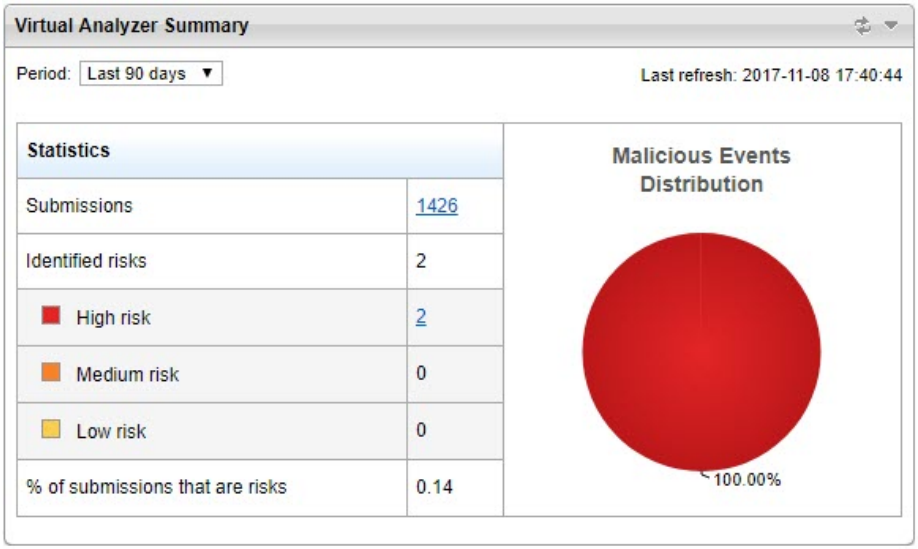
The default period is **Last 24 hours**. Change the period according to your preference.

Click **View submissions** to go to the **Submissions** screen and view detailed information.

For details, see *Submissions on page 4-3*.

Virtual Analyzer Summary

This widget shows the total number of samples submitted to Virtual Analyzer and the number of these samples with risk.



The default period is **Last 24 hours**. Change the period according to your preference.

Click the total number of submissions or the number of submissions with **High risk**, **Medium risk**, or **Low risk** to go to the **Submissions** screen and view detailed information.

For details, see *Submissions on page 4-3*.

System Status Tab

View the widgets in the **System Status** tab to understand the overall performance of Deep Discovery Analyzer based on Virtual Analyzer status, queued samples, and the hardware status.

Virtual Analyzer Status

This widget displays the status of Virtual Analyzer on one or all nodes, and the number of instances for each image.

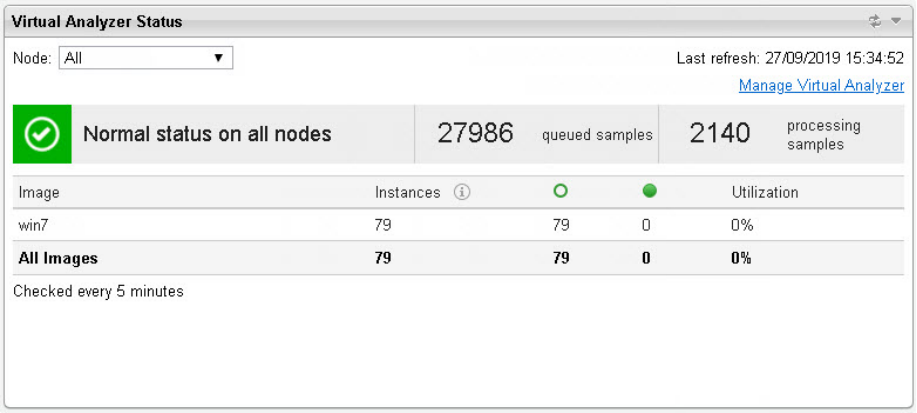
Depending on the node type, the widget content includes one of the following:

- Single node or all nodes in a cluster: The number of queued and processing samples
- Primary or secondary node in a cluster: The number of URLs in pre-Virtual Analyzer processing queue and the number of samples the Virtual Analyzer is processing

Note

- The **Node** drop-down list is not available when you deploy Deep Discovery Analyzer as a standalone appliance.
- If Deep Discovery Analyzer is the primary appliance in a cluster or ICAP integration is enabled, the number of Virtual Analyzer (VA) instances displayed might not be equal to the number of Virtual Analyzer instances configured.

  To view the number of Virtual Analyzer instances configured, see *Images Tab on page 4-46*.



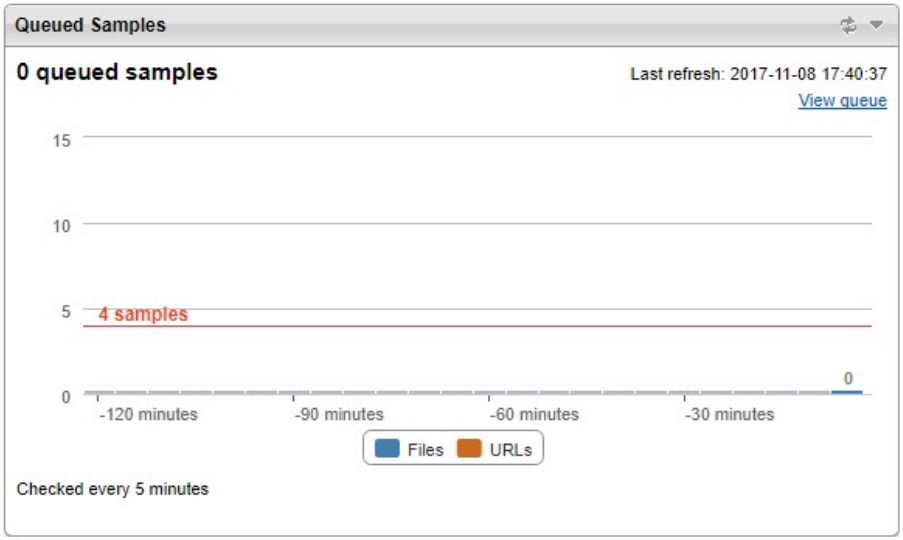
Click **Manage Virtual Analyzer** to go to the **Sandbox Management** screen. For details, see *Sandbox Management on page 4-44*.

Normal status on all nodes indicates all nodes are operating without errors.

If the status shows an error on one or more nodes, go to **Administration** > **System Settings** and click the **Cluster** tab to view detailed information about the error.

Queued Samples

This widget displays the number of queued samples in Virtual Analyzer. The red line indicates the estimated number of samples Virtual Analyzer can analyze within 5 minutes.

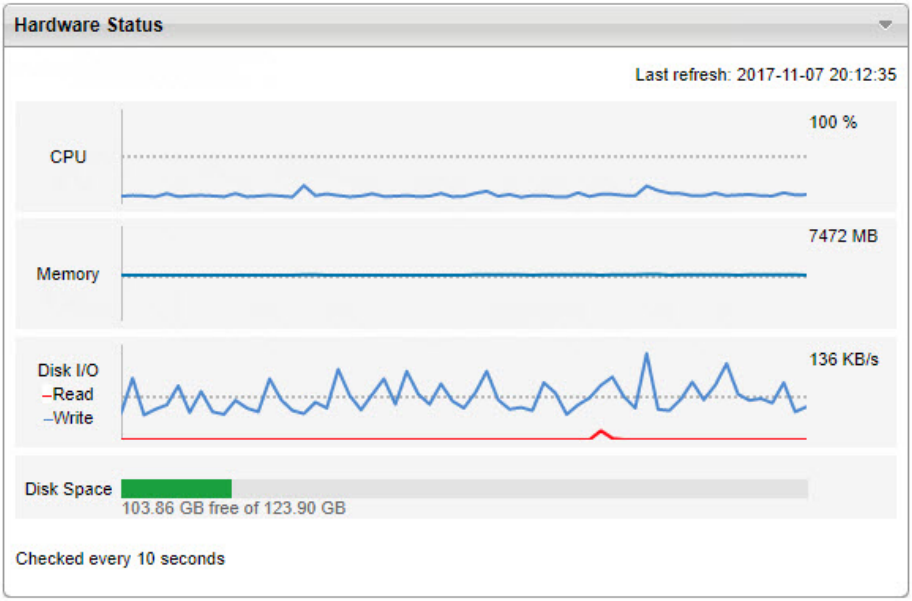


Click **View queue** to go to the **Queued** tab in the **Submissions** screen and view detailed information.

For details, see *Submissions on page 4-3*.

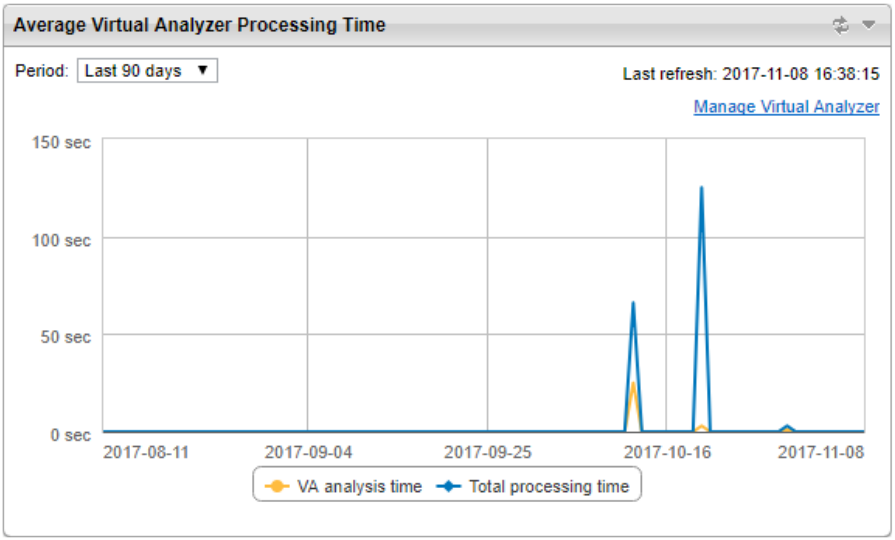
Hardware Status

This widget displays the real-time utilization of key hardware components.



Average Virtual Analyzer Processing Time

This widget shows the average processing time used by Virtual Analyzer for the specified period.



This widget compares the following data:

- **VA analysis time**: average time spent by samples inside Virtual Analyzer, from start to completion of the Virtual Analyzer analysis process
- **Total processing time**: average total time spent by samples inside Deep Discovery Analyzer, from the time Deep Discovery Analyzer receives the sample to the time Deep Discovery Analyzer generates the final analysis result

The default period is **Last 4 hours**. Change the period according to your preference.

Click **Manage Virtual Analyzer** to go to the **Images Tab** screen.

For details, see *Images Tab on page 4-46*.

Chapter 4

Virtual Analyzer

This chapter describes the Virtual Analyzer.

Virtual Analyzer

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

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

- Anti-security and self-preservation
- Autostart or other system configuration
- Deception and social engineering
- File drop, download, sharing, or replication
- Hijack, redirection, or data theft
- Malformed, defective, or with known malware traits
- Process, service, or memory object change
- Rootkit, cloaking
- Suspicious network or messaging activity

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

It works in conjunction with Threat Connect, the Trend Micro service that correlates suspicious objects detected in your environment and threat data from the Smart Protection Network.

Submissions

The **Submissions** screen, in **Virtual Analyzer** > **Submissions**, includes a list of samples processed by Virtual Analyzer. Samples are files and URLs submitted automatically by integrated products or manually by Deep Discovery Analyzer administrators or investigators.

The **Submissions** screen organizes samples into the following tabs:

- **Completed**: Samples that Virtual Analyzer has analyzed
- **Processing**: Samples that Virtual Analyzer is currently analyzing
- **Queued**: Samples that are pending analysis
- **Unsuccessful**: Samples that have gone through the analysis process but do not have analysis results due to errors

> **Note**
>
> Samples listed on the **Unsuccessful** tab are not included in the sample count displayed on a widget.

- **ICAP Pre-scan**: High-risk samples received from integrated ICAP clients.

Each tab displays a table summarizing basic information about the submitted samples. To customize which columns appear in the table, click the gear icon ( ), select the columns to be displayed in the table, and click **Apply**.

The following table outlines all available columns. Column display varies depending on the tab you select.

TABLE 4-1. Submission columns

COLUMN	INFORMATION
Object Information	

COLUMN	INFORMATION
Submitted	Date and time when the sample was submitted This column is available on the **Completed**, **Processing**, **Queued** and **Unsuccessful** tabs only.
File Name	This field displays one of the following information: • File name of the sample • File name of the child object with the highest risk level • File name of any child object if no risk is detected **Note** "NONAMEFL" if file size is 0 or too small for analysis
Sample Package	Archived copy of the file sample **Note** Downloads are only available for file submissions. Click to download the file sample as an archived file. The archive password is `virus`. This column is available on the **Unsuccessful** tab only.
Submitter	• Name of the Trend Micro product that submitted the sample • "Manual Submission" if manually submitted • "ICAP Client" if sample originated from an ICAP client This column is available on the **Completed**, **Processing**, **Queued** and **Unsuccessful** tabs only.
Submitter Name	• Host name of the product that submitted the sample • No data (indicated by a dash) if manually submitted • IP address of the ICAP clients
SHA-1	SHA-1 value of the sample

Column	Information
SHA-256	SHA-256 value of the sample This column is available on the **Completed** and **ICAP Pre-scan**tabs only.
Object Type	File or a URL This column is available on the **Completed**, **Processing**, **Queued** and **Unsuccessful** tabs only.
Detected	Date and time when the sample was detected This column is available on the **ICAP Pre-scan** tab only.
ICAP Mode	Mode reported by the ICAP client when the sample was detected Possible values are: • REQMOD: ICAP Request modification method • RESPMOD: ICAP Response modification method This column is available on the **ICAP Pre-scan** tab only.
Analysis Information	

COLUMN	INFORMATION
Risk Level	Virtual Analyzer performs static analysis and behavior simulation to identify a sample's characteristics. During analysis, Virtual Analyzer rates the characteristics in context and then assigns a risk level to the sample based on the accumulated ratings. • **Red icon** (): High risk. The object exhibited highly suspicious characteristics that are commonly associated with malware. Examples: ◦ Malware signatures; known exploit code ◦ Disabling of security software agents ◦ Connection to malicious network destinations ◦ Self-replication; infection of other files ◦ Dropping or downloading of executable files by documents • **Yellow icon** (): Low risk. The object exhibited mildly suspicious characteristics that are most likely benign. • **Green icon** (): No risk. The object did not exhibit suspicious characteristics. • **Gray icon** (): Not analyzed For possible reasons why Virtual Analyzer did not analyze a file, see *Possible Reasons for Analysis Failure on page 4-31*. **Note** If several instances processed a sample, the icon for the most severe risk level displays. For example, if the risk level on one instance is yellow and then red on another, the red icon displays. Mouseover the icon for details about the risk level. This column is available on the **Completed** tab only.
Completed	Date and time that sample analysis was completed This column is available on the **Completed** tab only.

Column	Information
File Type	• File type of the object • File type of the archive / File type of the highest risk child object • File type of the archive / File type of any child object if no risk **Note** "Empty" or "UNKNOWN" if file size is 0 or too small to identify file type for analysis This column is available on the **Completed** and **ICAP Pre-scan** tabs only.
Threat	Name of threat as detected by Trend Micro pattern files and other components This column is available on the **Completed** and **ICAP Pre-scan** tabs only. **Note** For the ICAP Pre-scan tab, if the threat name is not available (e.g. the Web Inspection Service doesn't provide a threat name for a URL), "Undefined threat" is displayed.
Threat Types	Type of threat as detected by Trend Micro pattern files and other components This column is available on the **Completed** tab only.
Elapsed Time	The amount of time that has passed since processing started This column is available on the **Processing** tab only.
Processed By	IP address of the node that is processing the object, if Deep Discovery Analyzer is configured in a load-balancing cluster This column is available on the **Completed** and **Processing** tabs only.
Priority	Priority assigned to the sample This column is available on the **Queued** tab only.

COLUMN	INFORMATION
Time in Queue	The amount of time that has passed since Virtual Analyzer added the sample to the queue This column is available on the **Queued** tab only.
Error	Reason for analysis failure This column is available on the **Unsuccessful** tab only.
Child Files	The number of child files detected in the sample You can click the number to view detailed child file detection information. For more information, see *Viewing Child File Detection Information on page 4-27*. This column is available on the **ICAP Pre-scan** tab only.
Identified By	The name of the detection module that processed the object This column is available on the **ICAP Pre-scan** tab only.
YARA Rule File	Name of the YARA rule file that contains the matched YARA rule If a child file is detected, you can click the link to view detailed YARA detection information. This column is available on the **Completed** tab only. **Note** • If a match is found for a child file but not the parent file, this field displays the name of any YARA rule file that contains the matched YARA rule. • If a match is found for a parent file or a file without any child file, this field displays the name of the YARA rule file that contains the matched YARA rule.
Event Information	

Column	Information
Event Logged	• For samples submitted by other Trend Micro products, the date and time the product dispatched the sample • For manually submitted samples and for samples submitted by ICAP clients, the date and time Deep Discovery Analyzer received the sample
Source / Sender	Where the sample originated • IP address for network traffic or email address for email • No data (indicated by a dash) if manually submitted
Destination / Recipient	Where the sample is sent • IP address for network traffic or email address for email • No data (indicated by a dash) if manually submitted
Protocol	• Protocol used for sending the sample, such as SMTP for email or HTTP for network traffic • No data (indicated by a dash) if manually submitted This column is available on the **Completed**, **Processing**, **Queued** and **Unsuccessful** tabs only.
URL	URL of the sample **Note** Deep Discovery Analyzer may have normalized the URL when submitted using the management console.
Email Subject	Email subject of the sample This column is available on the **Completed**, **Processing**, **Queued** and **Unsuccessful** tabs only.
Message ID	Message ID of the sample This column is available on the **Completed**, **Processing**, **Queued** and **Unsuccessful** tabs only.

Column	Information
Source IP	IP address where the sample originated, , based on the X-Client-IP ICAP header sent by the ICAP client This column is available on the **ICAP Pre-scan** tab only.
Destination IP	IP address where the sample was sent, based on the X-Server-IP ICAP header sent by the ICAP client This column is available on the **ICAP Pre-scan** tab only.
Source User	User currently logged on when the sample was found, based on the X-Authenticated-User ICAP header sent by the ICAP client This column is available on the **ICAP Pre-scan** tab only.
Threat Connect	Displays a link to Threat Connect This column is available on the **ICAP Pre-scan** tab only.

ICAP Submissions

Deep Discovery Analyzer supports integration with Internet Content Adaptation Protocol (ICAP) clients.

ICAP Pre-scans

When ICAP clients send samples to Deep Discovery Analyzer for analysis, Deep Discovery Analyzer performs a pre-scan which compares samples received with known existing threats using the following resources:

- Advanced Threat Scan Engine (ATSE) for file scans
- YARA rules
- Suspicious objects and user-defined suspicious objects lists
- Predictive Machine Learning engine
- Web Reputation Services (WRS) for URL scans

- Deep Discovery Analyzer cache

Depending on the result of the pre-scan, Deep Discovery Analyzer performs the following actions.

RESULT	ACTION
If the sample is a known good file / URL	• Deep Discovery Analyzer sends the original request as a response back to the ICAP client.
If the sample does not match any existing record	• Deep Discovery Analyzer sends the original request as a response back to the ICAP client. • Deep Discovery Analyzer treats the sample as a submission and sends it to the Submission queue. The sample is not shown on the **ICAP Pre-scan** tab. • Deep Discovery Analyzer adds the sample to the Deep Discovery Analyzer database to benefit later submissions. **Note** If Virtual Analyzer does not support the file type of a submitted sample, Deep Discovery Analyzer does not send the sample to the Submission queue or add to the Deep Discovery Analyzer database.
If the sample matches a known malicious threat	• Deep Discovery Analyzer reponds with a `403 Forbidden` message to the ICAP client. • Deep Discovery Analyzer logs the sample and displays sample details on the **ICAP Pre-scan** tab.

Note

To view the **ICAP Pre-scan** tab on the **Submissions** screen, enable the setting in **Administration** > **Integrated Products/Services** > **ICAP**. This tab is hidden by default.

For details, see *ICAP Tab on page 6-24*.

ICAP Header Responses

For each sample submitted by ICAP clients, Deep Discovery Analyzer returns the following ICAP headers.

ICAP Headers	Values	Examples
Server	Deep Discovery Analyzer version and build number	Server: Deep Discovery Analyzer 6.0 Build 1202
ISTag	Version of the Advanced Threat Scan Engine for Deep Discovery (Linux, 64-bit) component This is used to validate that previous Deep Discovery Analyzer responses can still be considered fresh by an ICAP client that may still be caching them.	ISTag: "10.300.1021"
Encapsulated	The offset of each encapsulated section's start relative to the start of the encapsulating message's body	Encapsulated: req-hdr=0, req-body=147
Date	The date time value provided by the Deep Discovery Analyzer clock, specified as an RFC 1123 compliant date/time string	Date: Thu, 04 Jan 2018 02:33:04 GMT

The following table describes the additional headers that Deep Discovery Analyzer returns.

Note

If enabled, Deep Discovery Analyzer always returns the X-Response-Desc header, and only returns the X-Virus-ID and X-Infection-Found headers when a known threat is detected during the pre-scanning of samples received from ICAP clients.

ICAP Headers	Values	Examples
X-Virus-ID	One line of US-ASCII text with the name of the virus or risk encountered	X-Virus-ID: TSPY_ONLINEG.MCS

ICAP Headers	Values	Examples
X-Infection-Found	Numeric code for the type of infection, the resolution, and the risk description	X-Infection-Found: Type=0; Resolution=2; Threat=TSPY_ONLINEG.MCS;
X-Response-Desc	Reason Deep Discovery Analyzer considers a URL or file sample as malicous or safe	X-Response-Desc: URL: No risk rating from WRS; FILE: Detected by ATSE

Note

To enable these headers and configure other ICAP settings, go to **Administration** > **Integrated Products/Services** > **ICAP**.

For details, see *Configuring ICAP Settings on page 6-25*.

For more details about ICAP headers, refer to the following site:

http://www.icap-forum.org/

Submissions Tasks

The following table lists all the **Submissions** tasks:

Table 4-2. Submissions Tasks

Task	Steps
Submit Objects	Click **Submit** when you are done and then check the status on the **Processing** or **Queued** tab. When the sample has been analyzed, it appears in the **Completed** tab. For details, see *Submitting Objects on page 4-17*. To manually submit multiple files at once, use the Manual Submission Tool. See *Manually Submitting Objects on page 4-21*.

TASK	STEPS
Reanalyze	Select one or more samples and click **Reanalyze** to: • Remove the existing analysis result • Resubmit the sample to the queue • Reanalyze the sample again, ignoring any cached data This option is available on the **Completed** and **Unsuccessful** tabs only.
Export All	Export all displayed submissions to a CSV file. This option is available on the **Completed**, **Unsuccessful** and **ICAP Pre-scan** tabs only.
Detailed Information Screen	On the **Completed** tab, click anywhere on a row to view detailed information about the submitted sample. A new section below the row shows the details. For details, see *Detailed Information Screen on page 4-25*.
Prioritize Objects	On the **Queued** tab, select an object and click **Prioritize** to move the object to the top of the queue.

Task	Steps
Data Filters	If there are too many entries in the table, use data filters to limit the entries. Each tab uses a different set of data filters. Available data filters on the **Completed** tab only: • **Risk level**: Filters by the **Risk Level** column. • **Event logged**: Filters by the **Event Logged** column. All time periods indicate the time used by Deep Discovery Analyzer. If no time period is selected, the default configuration of **Last 24 hours** is used. Available data filters on the **Unsuccessful** tab only: • **Error**: Filters by the **Error** column. • **Submitted**: Filters by the **Submitted** column. All time periods indicate the time used by Deep Discovery Analyzer. If no time period is selected, the default configuration of **Last 24 hours** is used. Available data filter on the **ICAP Pre-scan** tab only: • **Detected**: Filters by the **Detected** column. All time periods indicate the time used by Deep Discovery Analyzer. If no time period is selected, the default configuration of **Last 24 hours** is used. The following options are available on all tabs: • All tabs contain a search box. Type some characters in the search text box, and then press ENTER. Deep Discovery Analyzer searches only the file names and URLs in the current tab for matches. Performing a search on the **Completed** tab also searches for child file names as well. • The **Advanced** link can limit the entries according to information specified in one or more columns. For details, see *Applying Advanced Filters on page 4-16*.

Task	Steps
Customize columns	To customize which columns appear in the table, click the gear icon ( ), select the columns to be displayed in the table, and click **Apply**. Deep Discovery Analyzer saves the column settings for your user account and displays the selected table columns the next time you access the **Submissions** screen.
Records and Pagination Controls	The panel at the bottom of the screen shows the total number of samples. If all samples cannot display at the same time, use the pagination controls to view the samples that are hidden from view.

Applying Advanced Filters

Procedure

1. Click **Advanced**.

   The filter bar appears.

2. In the **Filter** drop-down box, select an attribute.

3. Depending on the attribute selected, specify any additional details required by the attribute.

4. To add another attribute, click +.

   To remove an attribute, click ×. You cannot delete the last filter.

5. Click **Apply** to immediately apply the filter to the current table.

   Once applied, the following options are available:

   - **Edit**: Modify the current filter
   - **Clear**: Removes the applied filter
   - **Save**: Saves any changes made to the filter, or saves the filter under a new name

Note

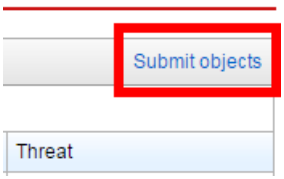
- Filters are saved in the tab where they were created. However, Deep Discovery Analyzer does not allow duplicate filter names, even if they were saved in a different tab.
- Click ▼ on the search text box to view all filters saved for the current tab. Selecting a saved filter immediately applies that filter to the current table.
- Click ✖ to delete a saved filter.

6. Click **Cancel** to discard the current filter.

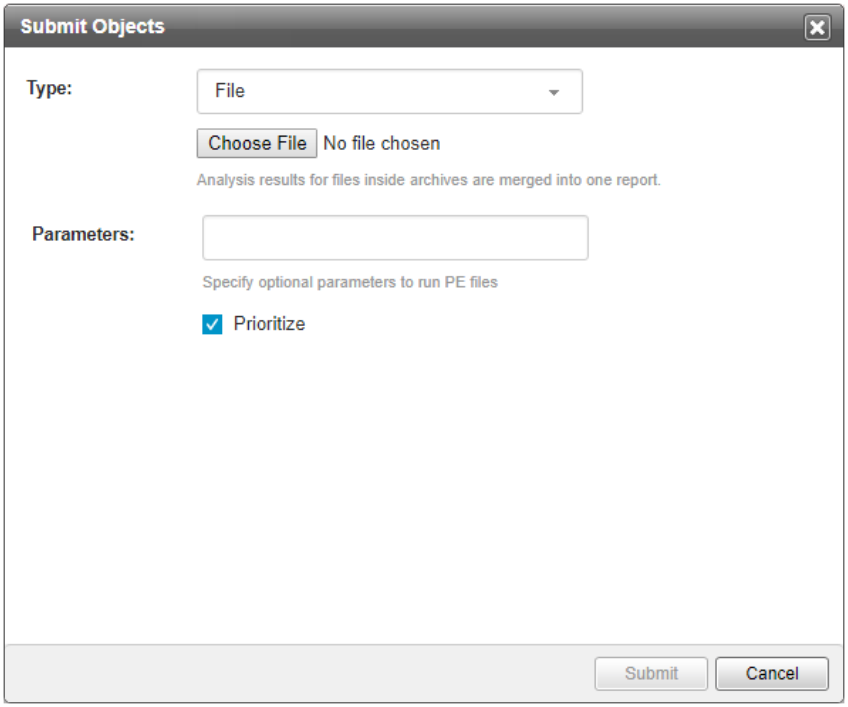
Submitting Objects

Procedure

1. Go to **Virtual Analyzer** > **Submissions**.
2. Click **Submit Objects**.



The **Submit objects** window appears.



3. To submit a single file, select **File**.
   a. Browse and select a sample to upload.
   b. (Optional) For Portable Executable samples, specify command line parameters if required.
   c. (Optional) Select **Prioritize** to put submitted objects at the top of the queue.
   d. Click **Submit**.

Note

For archives, Virtual Analyzer merges analysis results for files inside archives into one report.

4. To submit a single URL, select **URL**.

   a. Specify a single URL.

   b. (Optional) Select **Send to URL pre-filter** to send submitted URLs to the URL pre-filter. URLs found safe by the URL pre-filter are not sent to Virtual Analyzer for scanning and analysis.

   c. (Optional) Select **Prioritize** to put submitted objects at the top of the queue.

   d. Click **Submit**.

   Note

   Before submission, Deep Discovery Analyzer normalizes all occurrences of the following:

   - Punycode for URL domains
   - URL encoding for URL paths and query strings

5. To submit multiple URLs, select **URL list**.

   a. Browse and select a URL list file.

   Note

   A URL list is a CSV or TXT file containing a maximum of 1,000 URLs. For CSV files, specify URLs in the first column. The URL list file must specify each URL in own line, and use UTF-8 encoding.

   Before submission, Deep Discovery Analyzer normalizes all occurrences of the following:

   - Punycode for URL domains
   - URL encoding for URL paths and query strings

   Analysis of 1,000 URLs may take several hours.

b. (Optional) Select **Send to URL pre-filter** to send submitted URLs to the URL pre-filter. URLs found safe by the URL pre-filter are not sent to Virtual Analyzer for scanning and analysis.

c. (Optional) Select **Prioritize** to put submitted objects at the top of the queue.

d. Click **Submit**.

6. To upload applications which require certain files to be located in specific paths, select **Bundle file**.

   a. Browse and select an archive file.

   Note

   For archives, Virtual Analyzer merges analysis results for files inside archives into one report.

   b. Specify which file inside the archive to run.

   c. (Optional) For Portable Executable samples, specify command line parameters if required.

   d. (Optional) Select **Prioritize** to put submitted objects at the top of the queue.

   e. Specify where the files should be extracted.

      - To extract all files in the archive to a single folder, specify the complete path in the **Extraction Path** text box.
      - To extract specific files in the archive to another path, specify the **File name** and the complete **Path** for each file in the section below.
        - Click + to specify a new file.
        - Click × to remove an entry.

   f. Specify the character encoding used in file names.

g. Click **Submit**.

Note

To manually submit multiple files at once, use the Manual Submission Tool. For details, see *Manually Submitting Objects on page 4-21*.

Manually Submitting Objects

Use the Manual Submission Tool to remotely submit samples from locations on users' computers to Deep Discovery Analyzer. This feature allows users to submit multiple samples at once, which are added to the **Submissions** queue.

In addition to Microsoft Windows operating systems, the Manual Submission Tool supports the following Linux distributions:

- CentOS/RedHat 5.x (32-bit and 64-bit)
- CentOS/RedHat 6.x (32-bit and 64-bit)
- CentOS/RedHat 7.x (32-bit and 64-bit)
- Ubuntu 12.04 (32-bit)

Important

`glibc.i686` and `zlib.i686` must be installed on 64-bit Linux distributions.

Manually Submitting Objects in Windows

Procedure

1. If it is not already installed, install the Manual Submission Tool. For details, see *Manual Submission Tool on page 6-81*.
2. Go to the Manual Submission Tool package folder, open the `work` folder, and then place all of the sample files or an URL list file into the `indir` folder.

3. Run `cmd.exe`, and change the directory (`cd`) to the tool package folder.

4. Depending on the type of object you want to upload, do one of the following:

Tip

Execute `dtascli.exe` for help.

- **File**: Execute `dtascli.exe -u` to upload all of the files in the `work/indir` folder to Virtual Analyzer.

  After executing `dtascli.exe -u`, `cmd.exe` shows the following, along with all of the files that were uploaded from the `work/indir` folder.

- **URL list**: Execute `dtascli.exe -u --url` to upload the file `url.txt` in the `work/indir` folder to Virtual Analyzer.

  After executing `dtascli.exe -u --url`, `cmd.exe` shows the following, along with all of the files that were uploaded from the `work/indir` folder.

Note

The URL list must use the name `URL.txt`.

Before submission, Deep Discovery Analyzer normalizes all occurrences of the following:

- Punycode for URL domains
- URL encoding for URL paths and query strings

5. After uploading the files to Virtual Analyzer, confirm that they are being analyzed in the management console. Click **Virtual Analyzer** > **Submissions** to locate the files.

   Shortly after submitting the files, before they have been analyzed, they appear in the **Processing** or **Queued** tab. When the samples have been analyzed, they appear in the **Completed** tab. If the samples encountered errors during analysis, they appear in the **Unsuccessful** tab.

Manually Submitting Objects in Linux

Procedure

1. If it is not already installed, install the Manual Submission Tool. For details, see *Manual Submission Tool on page 6-81*.
2. Go to the Manual Submission Tool package folder, open the `work` folder, and then place all of the sample files or an URL list file into the `indir` folder.
3. Open the terminal, and change the directory (`cd`) to the tool package folder.
4. Execute `chmod +x dtascli`.
5. Depending on the type of object you want to upload, do one of the following:

Tip

Execute `./dtascli` for help.

- **File**: Execute `./dtascli -u` to upload all of the files in the `work/indir` folder to Virtual Analyzer.

  After executing `./dtascli -u`, `terminal` shows all of the files that were uploaded from the `work/indir` folder.

- **URL list**: Execute `./dtascli -u --url` to upload the file `url.txt` in the `work/indir` folder to Virtual Analyzer.

  After executing `./dtascli -u --url`, `terminal` shows all of the files that were uploaded from the `work/indir` folder.

  Note

  The URL list must use the name `URL.txt`.

  Before submission, Deep Discovery Analyzer normalizes all occurrences of the following:

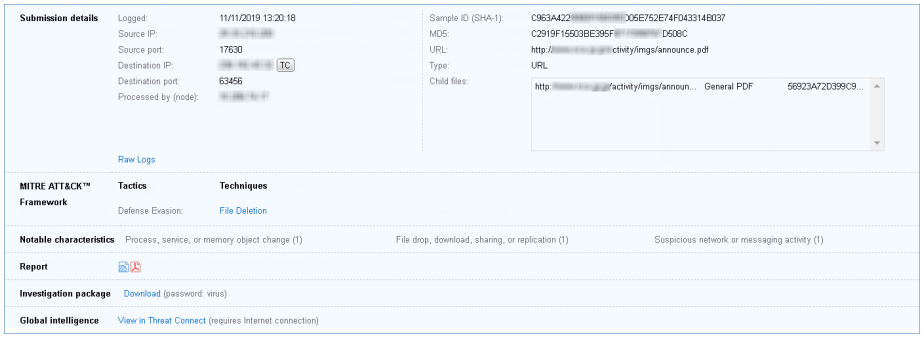
  - Punycode for URL domains
  - URL encoding for URL paths and query strings

6. After uploading the files to Virtual Analyzer, confirm that they are being analyzed in the management console. Click **Virtual Analyzer** > **Submissions** to locate the files.

   Shortly after submitting the files, before they have been analyzed, they appear in the **Processing** or **Queued** tab. When the samples have been analyzed, they appear in the **Completed** tab. If the samples encountered errors during analysis, they appear in the **Unsuccessful** tab.

Detailed Information Screen

On the **Completed** tab, click anywhere on a row to view detailed information about the submitted sample. A new section below the row shows the details.



The following fields are displayed on this screen:

Field Name	Information	
	File/Email Message Sample	URL Sample
Submission details	Basic data fields (such as Logged, File name, and Type) extracted from the raw logs	Basic data fields (such as Logged, URL, Source IP and port, and Destination IP and port) extracted from the raw logs **Note** Deep Discovery Analyzer may have normalized the URL.
	• Sample ID (SHA-1) • Child files, if available, contained in or generated from the submitted sample • The IP address of the node that processed the sample • The **Raw Logs** link shows all the data fields in the raw logs	

Field Name	Information	
	File/Email Message Sample	URL Sample

Notable characteristics	• The categories of notable characteristics that the sample exhibits, which can be any or all of the following:
	  • Anti-security, self-preservation
	  • Autostart or other system reconfiguration
	  • Deception, social engineering
	  • File drop, download, sharing, or replication
	  • Hijack, redirection, or data theft
	  • Malformed, defective, or with known malware traits
	  • Process, service, or memory object change
	  • Rootkit, cloaking
	  • Suspicious network or messaging activity
	• A number link that, when opened, shows the actual notable characteristics	

Other submission logs	A table that shows the following information about other log submissions: • Logged • Protocol • Direction • Source IP • Source Host Name • Destination IP • Destination Host Name	
MITRE ATT&CK ™ Framework	A list of MITRE ATT&CK ™ tactics and techniques detected. Click a link to view more information on the MITRE website.	

Field Name	Information	
	File/Email Message Sample	URL Sample
Report	The PDF icon ( ) links to a downloadable PDF report and the HTML icon ( ) links to an interactive HTML report. **Note** An unclickable link means there were errors during simulation. Mouseover the link to view details about the error.	
Investigation package	**Download** links to a password-protected investigation package that you can download to perform additional investigations. For details, see *Investigation Package on page 4-28*.	
Global intelligence	**View in Threat Connect** is a link that opens Trend Micro Threat Connect The page contains detailed information about the sample.	

Viewing Child File Detection Information

You can view the detailed detection information of child files in a submitted sample.

Procedure

1. Go to **Virtual Analyzer** > **Submissions**.
2. Click the **ICAP-Prescan** tab.
3. Click the number in the **Child Files** column.

   The **Child File Detections** screen appears.

   The following table describes the information on the screen.

Field	Description
File Name	Name of the child file

Field	Description
File Type	Filw type of the child file
Threat	Name of threat as detected by Trend Micro pattern files and other components
SHA-1	SHA-1 value of the child file
SHA-256	SHA-256 value of the child file
YARA Rule Name	Name of the YARA rule that was matched
YARA Rule File	Name of the YARA rule file that contains the matched YARA rule

Investigation Package

The investigation package helps administrators and investigators inspect and interpret threat data generated from samples analyzed by Virtual Analyzer. It includes files in OpenIOC format that describe Indicators of Compromise (IOC) identified on the affected host or network.

The table below describes some of the files within the investigation package that will aid in an investigation.

Table 4-3. Investigation Package Contents

Path within the Investigation Package	Description
`\%SHA1%`	Each folder at the root level, with an SHA-1 hash value as its name, is associated with one object. More than one folder of this type will only exist if the first object is an archive file or an email message.
`\%SHA1%\%imageID%`	Associated with a sandbox image that analyzed the object.
`\%SHA1%\%imageID%\drop\droplist`	Contains a list of the files that were generated or modified during analysis.

Path within the Investigation Package	Description
\%SHA1%\%imageID%\memory\image.bin	Contains the raw memory dump after the process was launched into memory.
\%SHA1%\%imageID%\pcap\%SHA1%.pcap	Contains captured network data that can be used to extract payloads. The file does not exist If no network data was generated.
\%SHA1%\%imageID%\report\report.xml	Contains the final analysis report for a single object for a specific image.
\%SHA1%\%imageID%\report\blacklist.xml	Contains a list of all suspicious objects detected during analysis. This file is empty if no suspicious objects were detected during analysis.
\%SHA1%\%imageID%\report\SHA1.ioc	Contains technical characteristics that identify attacker's tactics, techniques and procedures or other evidence of compromise.
\%SHA1%\%imageID%\screenshot\%SHA1%-%N%.png	A screenshot of a UI event that occurred during analysis. The file does not exist if no UI events occurred during analysis.
\common	Contains files that are common amongst all of the samples.
\common\drop\%%	Generated or modified during analysis.
\common\sample\%SHA1%	The submitted sample.
\common\sample\extracted\%SHA1%	Extracted from the sample during analysis.
\%SHA1%.report.xml	The final analysis report for all objects.
\%SHA1%\%imageID%\extrainfo	Contains files related to the sandbox image that analyzed the object.
\%SHA1%\%imageID%\extrainfo\extra_info.xml	Contains additional details about the sandbox image that analyzed the object.
\%SHA1%\%imageID%\strings	Contains files related to the sandbox image that analyzed the object.

Path within the Investigation Package	Description
\%SHA1%\%imageID%\strings\ %SHA1%.string	Contains string dump retrieved from the object during the analysis in the sandbox image.
\%SHA1%.ioc	The IOC file.
\%SHA1%_ioc.stix	The STIX IOC file.
\%SHA1%_so.stix	The STIX SO file.
\%SHA1%_so_stix2.json	The STIX2 SO file.
\%SHA1%_ioc_stix2.json	The STIX2 IOC file.

Investigation Package Data Retention

Deep Discovery Analyzer can retain the investigation package data for up to 100 days, but the time can be reduced due to storage limitations.

Note

To ensure the availability of the investigation package data, Trend Micro recommends backing up the data to an external server. For details, see *Data Backup on page 6-73*.

The following examples illustrate how storage limitations can affect the amount of time that the investigation package data is retained in Deep Discovery Analyzer.

Based on testing done by Trend Micro, the average size of the investigation package data is 8 MB. If Deep Discovery Analyzer analyzes 8000 samples per day, then the resulting investigation package data is 64000 MB.

- After about 31 days, the 2 TB disk from Deep Discovery Analyzer 1000 is filled and the investigation package data is purged.
- After about 62 days, the 4 TB disk from Deep Discovery Analyzer 1100 is filled and the investigation package data is purged.

- After about 62 days, the 4 TB disk from Deep Discovery Analyzer 1200 is filled and the investigation package data is purged.

If Deep Discovery Analyzer is in cluster mode, the disk space occupied per day is multiplied by the number of appliances in the cluster.

- Using the numbers from the example above, the investigation package data for a cluster with five Deep Discovery Analyzer 1000 appliances is purged after about 6 days.
- Using the numbers from the example above, the investigation package data for a cluster with five Deep Discovery Analyzer 1100 appliances is purged after about 12 days.
- Using the numbers from the example above, the investigation package data for a cluster with five Deep Discovery Analyzer 1200 appliances is purged after about 12 days.

Possible Reasons for Analysis Failure

If the Risk Level column shows a gray icon ( ), Virtual Analyzer has not analyzed the sample. The following table lists possible reasons for analysis failure and identifies actions you can take.

TABLE 4-4. Possible Reasons for Analysis Failure

REASON	ACTION
Virtual Analyzer does not support the file format, or the file is empty.	Check the supported file type list in the **Virtual Analyzer** > **Sandbox Management** > **Submission Settings** tab.
The available sandbox images do not support the file format.	Check the sandbox image information in the **Virtual Analyzer** > **Sandbox Management** > **Images** tab.
The URL exceeds the limit of 2083 characters.	Verify that the URL does not exceed 2,083 characters.

Reason	Action
Virtual Analyzer does not support the encryption or compression format.	Check the password list in the **Virtual Analyzer** > **Sandbox Management** > **File Passwords** tab.
Virtual Analyzer does not support the file format.	Unsupported file type in current sandbox image. Check the sandbox image information in the **Virtual Analyzer** > **Sandbox Management** > **Images** tab.
Virtual Analyzer is unable to access the Internet.	Verify the connection of the management network to the Internet.
An unexpected error has occurred on the Sandbox for macOS.	Please contact your support provider.
The Sandbox for macOS did not return an analysis result before the timeout period expired.	Resubmit the object for analysis. If the issue persists, contact your support provider.
Unable to establish a connection to the Sandbox for macOS.	Verify the connection of the management network to the Internet.
The URL is invalid.	Verify that the specified URL is in a valid format.
Extracted file sizes exceeds total limitation	Verify that the total file size of the extracted samples do not exceed the specified limitation.
Archive extracted for analysis. Child file scanning is unsuccessful.	See the scan results for the extracted files.
Virtual Analyzer is unable to analyze the object. The available disk space is insufficient.	Verify that the disk space is sufficient to perform the analysis.

Reason	Action
Virtual Analyzer is unable to analyze the object within the timeout period.	Resubmit the object for analysis. If the issue persists, contact your support provider.
Virtual Analyzer is unable to analyze the object. Dependencies that the object requires cannot be found.	Missing required files to execute the application. Use the **Bundle files** option to upload the required files to analyze the object.
Virtual Analyzer is unable to analyze the object. The object crashes while being analyzed.	Resubmit the object for analysis. If the issue persists, contact your support provider.
Virtual Analyzer is unable to analyze the object. The object must be run with the correct command line arguments.	Resubmit the object with the required command line parameters.
Virtual Analyzer is unable to analyze the object. The Office license has expired.	Re-import an image with a valid license for Microsoft Office.
An unexpected error has occurred. Please resubmit the sample for analysis. If the issue persists, contact your support provider.	Resubmit the object for analysis. If the issue persists, contact your support provider.
The license for the Sandbox for macOS has expired.	Please contact your support provider.

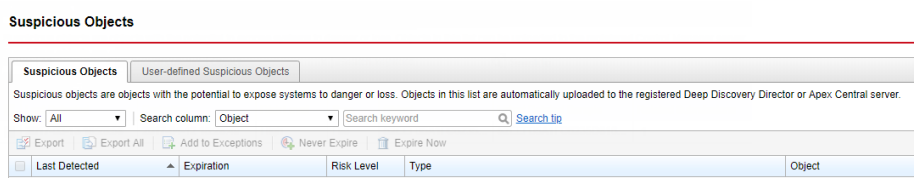
Suspicious Objects

Suspicious objects are objects with the potential to expose systems to danger or loss. Deep Discovery Analyzer detects and analyzes suspicious IP addresses, host names, files, and URLs.

Note

If you register Deep Discovery Analyzer to both Deep Discovery Director and Apex Central, Deep Discovery Analyzer uploads objects on the Suspicious Objects list only to Deep Discovery Director.

You can check the synchronization status on the Deep Discovery Director management console. For more information, see the **Deep Discovery Director Administrator's Guide**.



The following columns show information about objects added to the Suspicious Objects list:

TABLE 4-5. Suspicious Objects Columns

COLUMN NAME	INFORMATION
Last Detected	Date and time Virtual Analyzer last found the object in a submitted sample
Expiration	Date and time Virtual Analyzer will remove the object from the **Suspicious Objects** tab

Column Name	Information
Risk Level	If the suspicious object is: • **IP address** or **domain**: The risk level that typically shows is either **High** or **Medium** (see risk level descriptions below). This means that high- and medium-risk IP addresses/domains are treated as suspicious objects. • **URL**: The risk level that shows is **High** or **Medium** • **File SHA-1**: The risk level that shows is always **High** Risk level descriptions: • **High**: Known malicious or involved in high-risk connections • **Medium**: IP address/domain/URL is unknown to reputation service
Type	**IP address**, **Domain**, **URL**, or **File SHA-1**
Object	The IP address, domain, URL, or SHA-1 hash value of the file
Latest Related Sample	SHA-1 hash value of the sample where the object was last found.
Related Submissions	The total number of samples where the object was found. Clicking the number opens the **Submissions** screen with the SHA-1 hash value as the search criteria.

Suspicious Objects Tasks

The following table lists all the **Suspicious Objects** tab tasks:

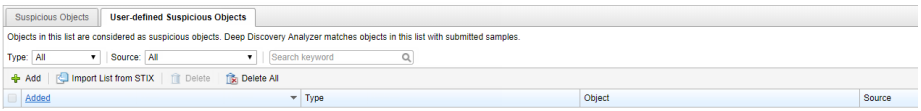
Table 4-6. Suspicious Objects Tasks

Task	Steps
Export/Export All	Select one or several objects and then click **Export** to save the objects to a CSV file. Click **Export All** to save all the objects to a CSV file.

Task	Steps
Add to Exceptions	Select one or several objects that you consider harmless and then click **Add to Exceptions**. The objects move to the **Exceptions** tab.
Never Expire	Select one or several objects that you always want flagged as suspicious and then click **Never Expire**.
Expire Now	Select one or several objects that you want to remove from the **Suspicious Objects** and then click **Expire Now**. When the same object is detected in the future, it will be added back to the **Suspicious Objects**.
Data Filters	If there are too many entries in the table, limit the entries by performing these tasks: • Select an object type in the **Show** drop-down box. • Select a column name in the **Search column** drop-down box and then type some characters in the **Search keyword** text box next to it. As you type, the entries that match the characters you typed are displayed. Deep Discovery Analyzer searches only the selected column in the table for matches.
Records and Pagination Controls	The panel at the bottom of the screen shows the total number of objects. If all objects cannot be displayed at the same time, use the pagination controls to view the objects that are hidden from view.

User-defined Suspicious Objects List

On the **User-defined Suspicious Objects** tab, you can manually add suspicious objects to Deep Discovery Analyzer using the Structured Threat Information eXpression (STIX) format.



The following columns show information about objects on the **User-defined Suspicious Objects** tab.

TABLE 4-7. User-defined Suspicious Objects columns

COLUMN NAME	INFORMATION
Added	Date and time when the suspicious object was added
Type	IP address, Domain, URL, file SHA-1, or file SHA-256
Object	The IP address, domain, URL, or SHA-1 or SHA-256 hash value of the file Click **Edit** to modify the displayed value.
Source	The source (Deep Discovery Director or local) that added the suspicious object

Deep Discovery Analyzer can import STIX files formatted using the 1.2, 1.1.1 and 1.0.1 version specifications. The 1.0.1 specification can only be used for Virtual Analyzer output.

The STIX file can include multiple objects. However, Deep Discovery Analyzer only imports the following supported STIX indicators:

- Indicator - File Hash Watchlist (SHA-1 and SHA-256)
- Indicator - URL Watchlist
- Indicator - Domain Watchlist
- Indicator - IP Watchlist

STIX indicators can use the following Properties attributes:

- `@condition` must be `Equals`
- `@apply_condition` must be `ANY`

Managing the User-defined Suspicious Objects List

Procedure

1. Go to **Virtual Analyzer** > **Suspicious Objects**, and click the **User-defined Suspicious Objects** tab.

2. To specify a single object:

   a. Click **Add**.

      The **Add Object** window appears.

   b. Select an object type:

      - **IP address**: Type the IP address or a hyphenated range

        Note

        Deep Discovery Analyzer supports both IPv4 and IPv6 formats.

      - **Domain**: Type a domain name

        Note

        Wildcards are only allowed in a prefix, and must be connected with a ". " symbol. Use only one wildcard per domain. For example, *.com will match abc.com or test.com.

      - **URL**: Type the URL

        Note

        Deep Discovery Analyzer supports both HTTP and HTTPS.

        Wildcards are only allowed in a prefix. Wildcards used in the domain part of an URL must be connected with a ". " symbol. Use only one wildcard per URL. For example, http://*.com will match abc.com or test.com.

        A wildcard can match any part of the URL's URI part. For example, http://abc.com/*abc will match http://abcd.com/test.abc.

      - **File**: Type the SHA-1 or SHA-256 hash value of the file

   c. Click **Add**.

Note

The **User-defined Suspicious Objects** list supports a maximum of 25,000 objects.

3. To add multiple objects using a STIX file:

   a. Click **Import List from STIX**.

   b. Specify a valid STIX file.

   c. Click **Import**.

Note

Deep Discovery Analyzer can import STIX files formatted using the 1.2, 1.1.1 and 1.0.1 version specifications. The 1.0.1 specification can only be used for Virtual Analyzer output.

The STIX file can include multiple objects. However, Deep Discovery Analyzer only imports the following supported STIX indicators:

- Indicator - File Hash Watchlist (SHA-1 and SHA-256)
- Indicator - URL Watchlist
- Indicator - Domain Watchlist
- Indicator - IP Watchlist

STIX indicators can use the following Properties attributes:

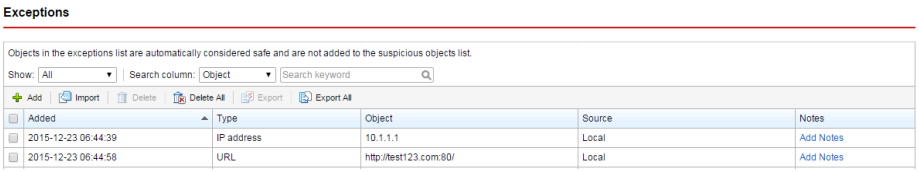
- `@condition` must be `Equals`
- `@apply_condition` must be `ANY`

4. To remove objects in the list:

   - Select one or more objects, and click **Delete** to remove the selected objects.
   - Click **Delete All** to remove all objects in the list.

Exceptions

Objects in the exceptions list are automatically considered safe and are not added to the suspicious objects list. Manually add trustworthy objects or go to the **Virtual Analyzer** > **Suspicious Objects** screen and select suspicious objects that you consider harmless.



The following columns show information about objects in the exception list.

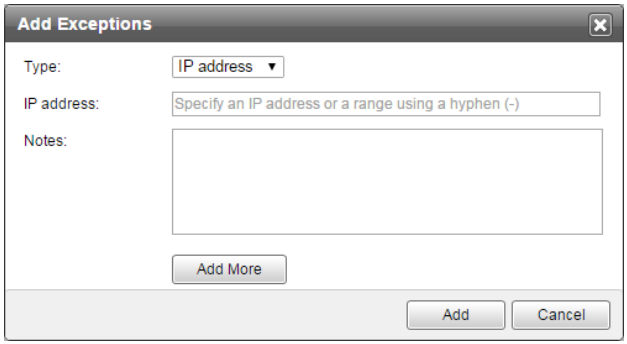
TABLE 4-8. Exceptions Columns

COLUMN NAME	INFORMATION
Added	Date and time Virtual Analyzer added the object to the **Exceptions** tab
Type	The object type (**IP address**, **Domain**, **URL**, or **File SHA-1**).
Object	The IP address, domain, URL, or SHA-1 hash value of the file
Source	The source (Apex Central, Deep Discovery Director, or local) that added the exception
Notes	Notes for the object. Click the link to edit the notes.

Exceptions Tasks

The following table lists all the **Exceptions** tab tasks:

TABLE 4-9. Exceptions Tasks

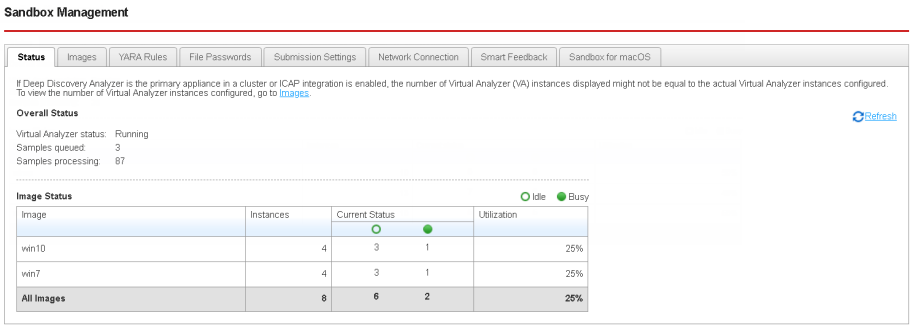
TASK	STEPS
Add	1. Click **Add** to add an object. The **Add Exceptions** window appears.  2. Specify the **IP address**, **Domain**, **URL**, or **File SHA-1** exception criteria. • For IP addresses, select **IP address** for the type and then type the IP address or a hyphenated range. • For domains, select **Domain** for the type and then type the domain. **Note** Wildcards are only allowed in a prefix. When a wildcard is used in a prefix, it must be connected with ". ". Only one wildcard may be used in a domain. For example, *.com will match abc.com or test.com. • For URLs, select **URL** for the type and then type the URL.

Task	Steps
	Note • Wildcards are only allowed in a prefix. When a wildcard is used in the domain part of an URL, it must be connected with ". ". Only one wildcard may be used in a URL. For example, http://*.com will match abc.com or test.com. • When an unassigned wildcard is used in the URI part of an URL, it can match all parts. For example, http://abc.com/*abc will match http://abcd.com/test.abc. • Deep Discovery Analyzer accepts both HTTP and HTTPS URLS. • For files, select **File SHA-1** for the type and type the SHA-1 hash value. • **Notes**: Type some notes for the object. • **Add More**: Click this button to add more objects. Select an object type, type the object in next field, type some notes, and then click **Add to List**. 3. (Optional) Type some notes for the object. 4. Click **Add More** to add more objects. a. Specify the **IP address**, **Domain**, **URL**, or **File SHA-1** exception criteria. b. Click **Add to List**. 5. Click **Add** when you have defined all the objects that you wish to add. **Note** Deep Discovery Analyzer supports the addition of up to 25,000 exceptions.
Import	Click **Import** to add objects from a properly-formatted CSV file. In the new window that opens:

Task	Steps
	• If you are importing exceptions for the first time, click **Download sample CSV**, save and populate the CSV file with objects (see the instructions in the CSV file), browse and then select the CSV file. • If you have imported exceptions previously, save another copy of the CSV file, populate it with new objects, browse and then select the CSV file. **Important** • Importing overwrites the current exception list. However, objects retrieved from integrated products are not modified. To keep a copy of the current exception list, export the list before starting the import process. • A CSV file can import a maximum of 25,000 exceptions.
Delete/Delete All	Select one or several objects to remove and then click **Delete**. Click **Delete All** to delete all the objects.
Export/Export All	Select one or several objects and then click **Export** to save the objects to a CSV file. Click **Export All** to save all the objects to a CSV file.
Data Filters	If there are too many entries in the table, limit the entries by performing these tasks: • Select an object type in the **Show** drop-down box. • Select a column name in the **Search column** drop-down box and then type some characters in the **Search keyword** text box next to it. As you type, the entries that match the characters you typed are displayed. Deep Discovery Analyzer searches only the selected column in the table for matches.
Records and Pagination Controls	The panel at the bottom of the screen shows the total number of objects. If all the objects cannot be displayed at the same time, use the pagination controls to view the objects that are hidden from view.

Sandbox Management

The **Sandbox Management** screen includes the following:



Note

If Virtual Analyzer does not contain images, clicking **Sandbox Management** displays the **Images** tab.

Status Tab

The **Status** tab displays the following information:

- Overall status of Virtual Analyzer, including the number of samples queued and currently processing

  Virtual Analyzer displays the following:

TABLE 4-10. Virtual Analyzer Statuses

STATUS	DESCRIPTION
Not initialized	Virtual Analyzer has not been initialized.
No images	No images have been imported into Virtual Analyzer.
Disabled	Virtual Analyzer is temporarily unavailable.
Modifying instances…	Virtual Analyzer is increasing or decreasing the number of instances for one or more images.
Importing images…	Virtual Analyzer is importing one or more images.
Removing images…	Virtual Analyzer is removing one or more images.
Configuring...	Virtual Analyzer is configuring sandbox settings.
Starting...	Virtual Analyzer is starting all sandbox instances.
Running	Virtual Analyzer is analyzing or ready to analyze samples.
Stopping...	Virtual Analyzer is stopping all sandbox instances.
Unrecoverable error	Virtual Analyzer is unable to recover from an error. Contact your support provider for troubleshooting assistance.
Deploying images from Deep Discovery Director...	Virtual Analyzer is deploying images from Deep Discovery Director.

- Status of imported images

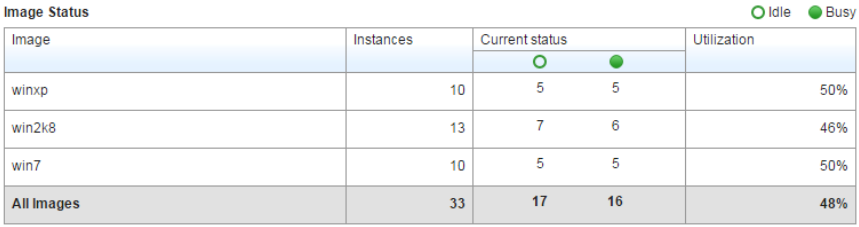


Image Status

Idle Busy

Image	Instances	Current status		Utilization
		Idle	Busy	
winxp	10	5	5	50%
win2k8	13	7	6	46%
win7	10	5	5	50%
All Images	**33**	**17**	**16**	**48%**

TABLE 4-11. Image Information

STATUS	DESCRIPTION
Image	Permanent image name
Instances	Number of deployed sandbox instances
Current Status	Distribution of idle and busy sandbox instances
Utilization	Overall utilization (expressed as a percentage) based on the number of sandbox instances currently processing samples

Images Tab

Virtual Analyzer does not contain any images by default. To analyze samples, you must prepare and import at least one image in the Open Virtual Appliance (OVA) format.

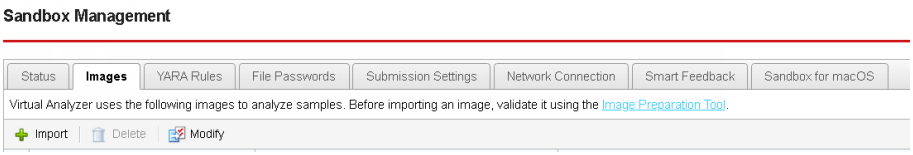
You can use existing VirtualBox or VMware images, or create new images using VirtualBox. For details, see Chapters 2 and 3 of the *Virtual Analyzer Image Preparation User's Guide* at http://docs.trendmicro.com/en-us/enterprise/virtual-analyzer-image-preparation.aspx.

Before importing, validate and configure images using the Virtual Analyzer Image Preparation Tool. For details, see Chapter 4 of the *Virtual Analyzer Image Preparation User's Guide*.

You can import up to three images. The hardware specifications of your product determine the number of instances that you can deploy per image.

You can view the following information on the **Images** tab:

- The number of configured instances for an image
- The number of instances in use



Importing an Image

You can import up to three images. The hardware specifications of your product determine the number of instances that you can deploy per image.

On Deep Discovery Analyzer 1000 appliances, Virtual Analyzer supports OVA files up to 20GB in size.

On Deep Discovery Analyzer 1100 and 1200 appliances, Virtual Analyzer supports OVA files up to 30GB in size.

Important

Virtual Analyzer stops analysis and keeps all samples in the queue whenever an image is added or deleted, or when instances are modified.

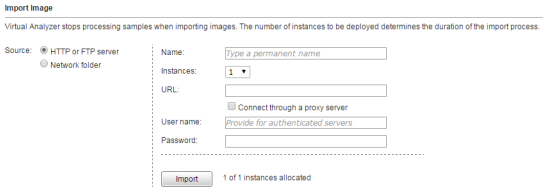
Procedure

1. Go to **Virtual Analyzer** > **Sandbox Management** and click the **Images** tab.

   The **Images** screen appears.

2. Click **Import**.

The **Import Image** screen appears.



3. Select an image source and configure the applicable settings.

   a. Type a permanent image name with a maximum of 50 characters.

   b. Choose the number of instances to allocate for the image.

   Note

   Trend Micro recommends distributing the number of instances evenly across all deployed images. Submitted objects must pass through all images before analysis results are generated.

   c. Type the URL or network share path of the OVA file.

   d. (Optional) Select **Connect through a proxy sever**.

   e. (Optional) Type the logon credentials if authentication is required.

4. Click **Import**.

   Virtual Analyzer validates the OVA files before starting the import process.

   Note

   - If you selected **HTTP or FTP server**, Deep Discovery Analyzer downloads the images first before importing into Virtual Analyzer. The process can only be canceled before the download completes.
   - Deep Discovery Analyzer supports connection to a source HTTP server that complies with HTTP/1.0 or later.

Modifying Sandbox Instances

You can import up to three images. The hardware specifications of your product determine the number of instances that you can deploy per image.

Important

Virtual Analyzer stops all analysis and keeps all samples in the queue whenever an image is added or deleted, or when instances are modified. All instances are also automatically redistributed whenever you add images.

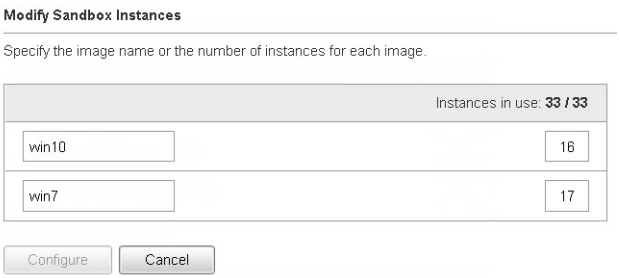
Procedure

1. Go to **Virtual Analyzer** > **Sandbox Management** and click the **Images** tab.

   The **Images** screen appears.

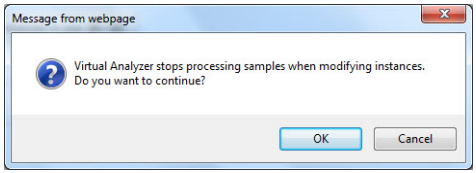
2. Click **Modify**.

   The **Modify Sandbox Instances** screen appears.



3. (Optional) Modify the name of an image.
4. Modify the instances allocated to any image.
5. Click **Configure**.

Virtual Analyzer displays a confirmation message.



6. Click **OK**.

   Virtual Analyzer configures the sandbox instances. Please wait for the process to finish before navigating away from the screen.

Note

If configuration is unsuccessful, Virtual Analyzer reverts to the previous settings and displays an error message.

YARA Rules Tab

Virtual Analyzer uses YARA rules to identify malware. YARA rules are malware detection patterns that are fully customizable to identify targeted attacks and security threats specific to your environment. Deep Discovery Analyzer supports a maximum of 5,000 YARA rules regardless of the number of YARA rule files.

The following columns show information about YARA rule files.

TABLE 4-12. YARA Rules columns

COLUMN NAME	INFORMATION
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
Added	Date and time the YARA rule file was added

The following table lists all the YARA Rules tab tasks:

TABLE 4-13. YARA Rules Tasks

TASK	STEPS
Add	Browse and select a YARA rule file and the file types to analyze. For details, see *Managing YARA Rule Files on page 4-53*.
Delete	Select one or several YARA rule files to remove and then click **Delete**.
Export	Select one YARA rule file, and click **Export** to download a copy of the YARA rule file.
Edit	Click the **File name** of the YARA rule file to be edited. For details, see *Managing YARA Rule Files on page 4-53*.
Records and Pagination Controls	The panel at the bottom of the screen shows the total number of YARA rule files. If all samples cannot display at the same time, use the pagination controls to view the samples that are hidden from view.

Creating a YARA Rule File

Deep Discovery Analyzer 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 4-14. 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.
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 Analyzer.
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.

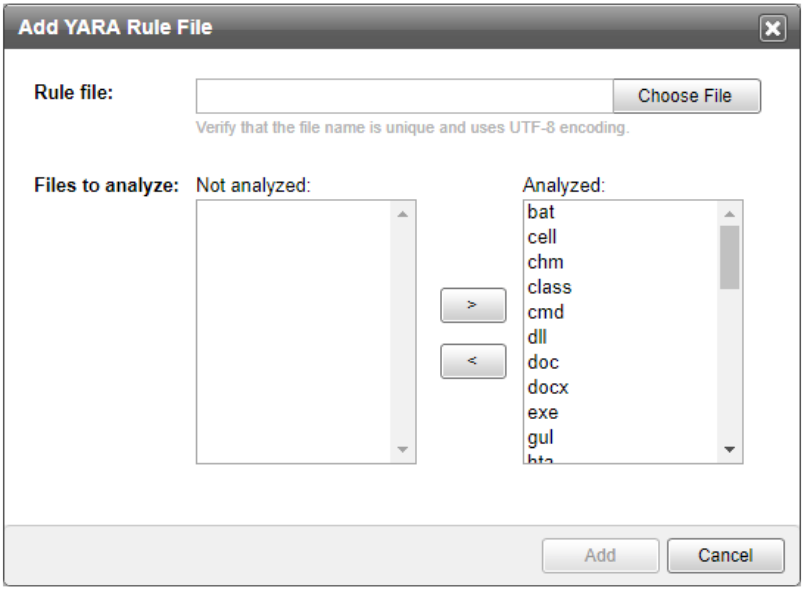
PART	USAGE
condition:	Indicates that the "condition" section begins. Conditions determine how your strings are used to detect malware.
$a or $b or $c	Conditions are Boolean expressions that define the logic of the rule. They tell the condition under which a submitted object satisfies the rule or not. 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.

Managing YARA Rule Files

Procedure

1. Go to **Virtual Analyzer** > **Sandbox Management**, and then go to the **YARA Rule** tab.
2. To add a new YARA rule:
   a. Click **Add**.

The **Add YARA Rule File** window appears.



b. Specify the following:

- **Rule file**: Browse and select a YARA rule file to add.
- **Files to analyze**: Specify the file types that Virtual Analyzer associates with this YARA rule file.

c. Click **Add**.

Virtual Analyzer validates the YARA rule file before adding it. For details about creating valid YARA rule files, see *Creating a YARA Rule File on page 4-51*.

3. To edit an existing YARA rule:

a. Click the **File name** of the YARA rule file to be edited.

The **Edit YARA Rule File** window appears.

b. Specify the following:

- **Rule file**: Browse and select another YARA rule file to replace the existing one.
- **Files to analyze**: Specify the file types that Virtual Analyzer associates with this YARA rule file.

c. Click **Save**.

4. To download a copy of the YARA rule file, select one YARA rule file, and click **Export**.
5. To delete a YARA rule file, select one or more YARA rules, and click **Delete**.

File Passwords Tab

Always handle suspicious files with caution. Trend Micro recommends adding such files to a password-protected archive file or password-protecting document files from being opened before transporting the files across the network. Deep Discovery Analyzer can also heuristically discover passwords in email messages to extract files.

Deep Discovery Analyzer uses user-specified passwords to extract files or open password-protected documents. For better performance, list commonly used passwords first.

Deep Discovery Analyzer supports the following password-protected archive file types:

- `7z`
- `zip`
- `rar`
- `arj`

Deep Discovery Analyzer supports the following password-protected document file types:

- doc
- docx
- pdf
- ppt
- pptx
- xls
- xlsx

If Virtual Analyzer is unable to extract files using any of the listed passwords, Deep Discovery Analyzer displays the error Unsupported file type and removes the archive file from the queue.

Note

- File passwords are stored as unencrypted text.
- After you register Deep Discovery Analyzer to Deep Discovery Director, you can only export file passwords on the **File Passwords** screen. Deep Discovery Analyzer automatically synchronizes file password settings from Deep Discovery Director and overwrites existing file password settings that you have configured.

The following table describes the tasks that you can perform on the **File Passwords** screen.

Task	Description
Add a password	Click **Add Password** to add a password to the list. For more information, see *Adding File Passwords on page 4-57*.
Import passwords	Click **Import Passwords** to import passwords from a selected file.
Export all passwords	Click **Export All** to export all file passwords and save the file on your computer.

Adding File Passwords

Deep Discovery Analyzer supports a maximum of 100 passwords.

Procedure

1. Go to **Virtual Analyzer** > **Sandbox Management** and click the **File Passwords** tab.
2. Click **Add Password**.
3. Type a password with only ASCII characters.

   Note

   Passwords are case-sensitive and must not contain spaces.

4. Optional: Click **Add Password** and type another password.
5. Optional: Drag and drop the password to move it up or down the list.
6. Optional: Delete a password by clicking the x icon beside the corresponding text box.
7. Click **Save**.

Importing File Passwords

You can add up to 100 passwords in Deep Discovery Analyzer.

Note

Importing passwords from a file replaces the existing passwords in Deep Discovery Analyzer. Before you import passwords, it is recommended you use the export feature to back up the existing passwords.

Procedure

1. Go to **Sandbox Management** > **File Passwords**.

   The **File Passwords** screen appears.

2. Click **Import Passwords**.

   The **Import Passwords** window appears.

3. Browse and select the file to import.

   Note

   Click **Download sample file** to view a sample of a properly formatted file.

   Deep Discovery Analyzer checks the entries in the selected file to identify any invalid or duplicate passwords.

4. Click **Import**.

Submission Settings Tab

Use the **Submission Settings** tab, in **Virtual Analyzer** > **Sandbox Management**, to view or specify the file types that Virtual Analyzer processes.

Trend Micro identifies files by true file type and not by extension. Sample file extensions are provided for reference.

TABLE 4-15. Virtual Analyzer File Types

DISPLAYED FILE TYPE	FULL FILE TYPE	EXAMPLE FILE EXTENSIONS
bat	Microsoft™ Windows™ batch file	`.bat`
cmd	Microsoft™ Windows™ command script file	`.cmd`
cell	Hancom™ Hancell spreadsheet	`.cell`

Displayed File Type	Full File Type	Example File Extensions
chm	Compiled HTML (CHM) help file	.chm
csv	Comma-separated values (CSV) file	.csv
class	Java™ Class file	.class .cla
com	Microsoft™ Windows™ executable file	.com
dll	AMD™ 64-bit DLL file Microsoft™ Windows™ 16-bit DLL file Microsoft™ Windows™ 32-bit DLL file	.dll .ocx .drv
doc	Microsoft™ Word™ 1.0 document Microsoft™ Word™ 2.0 document	.doc .dot
docx	Microsoft™ Office Word™ (2007 or later) document Microsoft™ Office Word™ (2007 or later) macro-enabled document	.docx .dotx .docm .dotm

Displayed File Type	Full File Type	Example File Extensions

exe	AMD™ 64-bit EXE file
	ARJ compressed EXE file
	ASPACK 1.x compressed 32-bit EXE file
	ASPACK 2.x compressed 32-bit EXE file
	DIET DOS EXE file
	GNU UPX compressed EXE file
	IBM™ OS/2 EXE file
	LZEXE DOS EXE file
	LZH compressed EXE file
	LZH compressed EXE file for ZipMail
	MEW 0.5 compressed 32-bit EXE file
	MEW 1.0 compressed 32-bit EXE file
	MEW 1.1 compressed 32-bit EXE file
	Microsoft™ Windows™ 16-bit EXE file
	Microsoft™ Windows™ 32-bit EXE file
	MIPS EXE file
	MSIL Portable executable file
	PEPACK compressed executable
	PKWARE™ PKLITE™ compressed DOS EXE file
	PETITE compressed 32-bit executable file
	PKZIP compressed EXE file
	WWPACK compressed executable file
		`.cpl`
		`.exe`
		`.sys`
		`.crt`
		`.scr`

gul	JungUm™ Global document	`.gul`
hta	HTML Application file	`.hta`

Displayed File Type	Full File Type	Example File Extensions
html	Hypertext Markup Language (HTML) file	.htm .html
hwp	Hancom™ Hangul Word Processor (HWP) document	.hwp
hwpx	Hancom™ Hangul Word Processor (2014 or later) (HWPX) document	.hwpx
iqy	Microsoft Excel Web Query File	.iqy
jar	Java™ Applet Java™ Application **Note** Virtual Analyzer does not support the java library.	.jar
js	JavaScript™ file	.js
jse	JavaScript™ encoded script file	.jse
jtd	JustSystems™ Ichitaro™ document	.jtd
lnk	Microsoft™ Windows™ Shell Binary Link shortcut Microsoft™ Windows™ 95/NT shortcut	.lnk
mht mhtml	Web page archive file	.mht .mhtml
mov	Apple QuickTime media	.mov
pdf	Adobe™ Portable Document Format (PDF)	.pdf
ppt	Microsoft™ Powerpoint™ presentation	.ppt .pps

Displayed File Type	Full File Type	Example File Extensions
pptx	Microsoft™ Office PowerPoint™ (2007 or later) presentation Microsoft™ Office PowerPoint™ (2007 or later) macro-enabled presentation	.pptx .ppsx
ps1	Microsoft™ Windows™ PowerShell script file	.ps1
pub	Microsoft™ Office Publisher™ (2016) file	.pub
rtf	Microsoft™ Rich Text Format (RTF) document	.rtf
slk	Microsoft™ symbolic link format	.slk
svg	Scalable Vector Graphics file	.svg
swf	Adobe™ Shockwave™ Flash file	.swf
vbe	Visual Basic™ encoded script file	.vbe
vbs	Visual Basic™ script file	.vbs
wsf	Microsoft™ Windows™ Script File	.wsf
xls	Microsoft™ Excel™ spreadsheet	.xls .xla .xlt .xlm
xlsx	Microsoft™ Office Excel™ (2007 or later) spreadsheet Microsoft™ Office Excel™ (2007 or later) macro-enabled spreadsheet	.xlsx .xlsb .xltx .xlsm .xlam .xltm

Displayed File Type	Full File Type	Example File Extensions
xml	Microsoft™ Office 2003 XML file Microsoft™ Word™ 2003 XML document Microsoft™ Excel™ 2003 XML spreadsheet Microsoft™ PowerPoint™ 2003 XML presentation	`.xml`
xht xhtml	Extensible Hypertext Markup Language	`.xht` `.xhtml`
url	Internet shortcut file	`.url`

Note

- For the following script types, Virtual Analyzer does not perform analysis if the file extension and file type do not match:
  - bat
  - cmd
  - csv
  - hta
  - htm
  - html
  - iqy
  - js
  - jse
  - mht
  - mhtml
  - ps1
  - slk
  - svg
  - url
  - vbe
  - vbs
  - wsf
  - xht
  - xhtml
  - xls
- Updates to the Virtual Analyzer Configuration Pattern may also include added support for new file types. After the update, Virtual Analyzer places new file types in the **Analyzed** list .

Submission Settings Tab Tasks

Procedure

1. To move file types to the **Analyzed** list:
   a. Select one or more file types in the **Not analyzed** list.
   b. Click **>>**.
   c. Click **Save**.
2. To move file types to the **Not analyzed** list:
   a. Select one or more file types in the **Analyzed** list.
   b. Click **<<**.
   c. Click **Save**.
3. To restore the default settings, click **Restore Default**.

Network Connection Tab

Use the **Network Connection** tab to specify how sandbox instances connect to external destinations.

External connections are disabled by default. Trend Micro recommends enabling external connections using an environment isolated from the management network. The environment can be a test network with Internet connection but without proxy settings, proxy authentication, and connection restrictions.

When external connections are enabled, any malicious activity involving the Internet and remote hosts actually occurs during sample processing.

Enabling External Connections

Sample analysis is paused and settings are disabled whenever Virtual Analyzer is being configured.

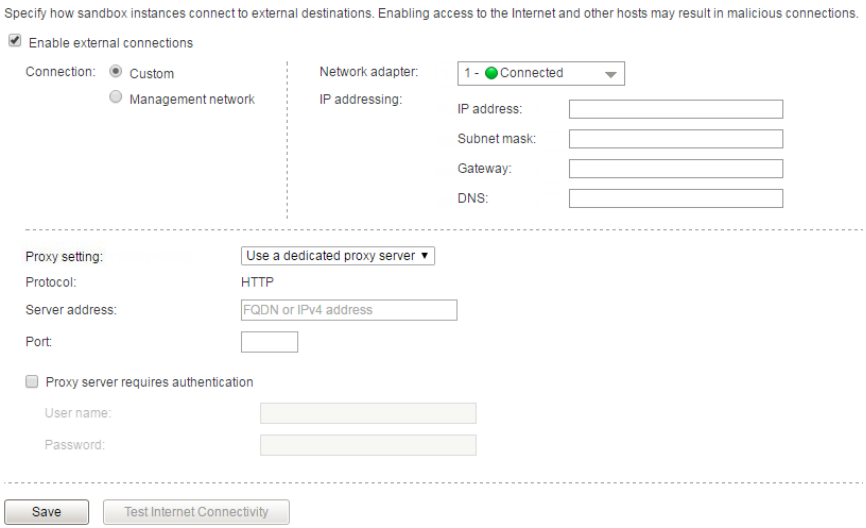
Procedure

1. Go to **Virtual Analyzer** > **Sandbox Management** and click the **Network Connection** tab.

   The **Network Connection** screen appears.

2. Select **Enable external connections**.

   The settings panel appears.



3. Select the type of connection to be used by sandbox instances.

   - Custom: Any user-defined network

Important

Trend Micro recommends using an environment isolated from the management network.

- Management network: Default organization Intranet

WARNING!

Enabling connections to the management network may result in malware propagation and other malicious activity in the network.

4. If you selected **Custom**, specify the following:
   - Network adapter: Select an adapter with a linked state.
   - IP address: Type an IPv4 address.
   - Subnet mask
   - Gateway
   - DNS
5. If the sandbox requires a proxy server for network connection, select **Use a dedicated proxy server**, and specify the following.
   - Server address
   - Port
   - User name: This option is only available if **Proxy server requires authentication** is enabled.
   - Password: This option is only available if **Proxy server requires authentication** is enabled.
6. Click **Save**.

Testing Internet Connectivity

Verify Internet connectivity after enabling the external connection and configuring the settings.

Procedure

1. Go to **Virtual Analyzer** > **Sandbox Management** and click the **Network Connection** tab.
2. Click **Test Internet Connectivity**.

Note

Test Internet Connectivity will be disabled if external connections are not enabled or the settings are not saved.

Smart Feedback Tab

Deep Discovery Analyzer integrates the new Trend Micro Feedback Engine. This engine sends threat information to the Trend Micro Smart Protection Network, which allows Trend Micro to identify and protect against new threats. Participation in Smart Feedback authorizes Trend Micro to collect certain information from your network, which is kept in strict confidence.

Information collected by Smart Feedback:

- Product ID and version
- URLs suspected to be fraudulent or possible sources of threats
- Metadata of detected files (file type, file size, SHA-1 hash value, and SHA-1 hash value of parent file)
- Detection logs (from Advanced Threat Scan Engine, Predictive Machine Learning engine, and Virtual Analyzer)
- Sample of the following detected file types: bat, class, cmd, dll, exe, htm, html, jar, js, lnk, macho, mov, ps1, svg, swf, url, vbe, vbs, wsf

- Macros in Microsoft Office files

Enabling Smart Feedback

Procedure

1. Go to **Virtual Analyzer** > **Sandbox Management** and click the **Smart Feedback** tab.
2. Configure Smart Feedback settings.
   a. Select **Enable Smart Feedback (recommended)** to send anonymous threat information to Trend Micro from your network.
   b. Select **Submit suspicious files to Trend Micro** to send high-risk files to Trend Micro for further investigation.

Sandbox for macOS Tab

Enable **Sandbox for macOS** to allow Deep Discovery Analyzer to send possible Mac OS threats to the Trend Micro **Sandbox for macOS** service for analysis.

Enabling Sandbox for macOS

Before enabling the **Trend Micro Sandbox for macOS**, verify that Deep Discovery Analyzer has an Internet connection.

Note

In a cluster environment, the **Trend Micro Sandbox for macOS** setting does not propagate from the primary appliance. Enable the **Trend Micro Sandbox for macOS** setting on the management console of each secondary appliance.

Important

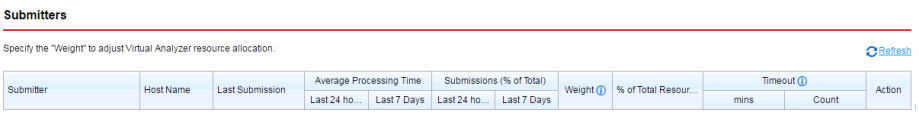
The **Trend Micro Sandbox for macOS** setting is automatically disabled if the Deep Discovery Analyzer license expires.

Procedure

1. Go to **Virtual Analyzer** > **Sandbox Management** and click the **Sandbox for macOS** tab.
2. Select **Send possible threats for macOS to Sandbox as a Service for analysis**.
3. Click **Save**.

Submitters

Use the **Submitters** screen, in **Virtual Analyzer** > **Submitters**, to adjust Virtual Analyzer resource allocation between all sources that submit objects to Deep Discovery Analyzer for analysis. Virtual Analyzer utilizes more resources to process submissions by submitters with higher weight settings.



The following columns show information about submitters, average processing time, total submissions, and total resources allocated to submitters. Columns for the adjustment of weight and removal of submitters are provided as well.

TABLE 4-16. Submitters Columns

COLUMN NAME	INFORMATION / ACTION
Submitter	Name of the Trend Micro product that submits the objects
Host Name	Host name of the Trend Micro product that submits the objects
Last Submission	Date and time Virtual Analyzer last received a submission
Average Processing Time	Average time it takes Virtual Analyzer to process a submitted object
Submissions (% of Total)	Number of objects submitted by the Trend Micro product
Weight	Weight setting of the Trend Micro product Specify a value between 1 and 100 to recalculate resource allocation.
% of Total Resources	Percentage of total Virtual Analyzer resources allocated to the Trend Micro product.
Timeout	Timeout period allotted for the Trend Micro product Specify a timeout period from 0 to 10000 minutes. A value of 0 means timeout is disabled. The number of samples affected by the timeout period for the past 24 hours is summarized in the **Count** column.
Action	Deletes the Trend Micro product from Deep Discovery Analyzer Deleted products cannot submit new objects for scanning and analysis or query analysis results, but queued objects will be processed and analysis results will be stored. **Note** To reintegrate the product, see *Integration with Trend Micro Products and Services on page 2-6*.

Chapter 5

Alerts and Reports

This chapter describes the features of **Alerts** and **Reports**.

Alerts

The **Alerts** screen includes the following:

- Triggered Alerts Tab
- Rules Tab

Triggered Alerts Tab

The **Triggered Alerts** tab, in **Alerts / Reports** > **Alerts**, shows all alert notifications generated by Deep Discovery Analyzer. Alert notifications provide immediate intelligence about the state of Deep Discovery Analyzer.

The following columns show information about alert notifications created by Deep Discovery Analyzer:

TABLE 5-1. Triggered Alerts Columns

COLUMN NAME	INFORMATION
Triggered	Date and Time Deep Discovery Analyzer triggered the alert notification.
Level	Level of the triggered alert notification. • **Critical**: The event requires immediate attention • **Important**: The event requires observation • **Informational**: The event requires limited observation
Rule	Rule that triggered the alert notification.
Affected Appliance	Host name, IPv4 and IPv6 addresses of the appliance affected by the alert notification content, if applicable.
Details	Click the icon to view the full alert notification details, including the list of notification recipients, subject, and message of the alert notification.

Rules Tab

The **Rules** tab, in **Alerts / Reports** > **Alerts**, shows all alert notification rules used by Deep Discovery Analyzer.

The following columns show information about the alert notification rules used by Deep Discovery Analyzer:

TABLE 5-2. Rules Columns

COLUMN NAME	INFORMATION
Alert Level	Level of the alert notification rule. • **Critical**: The event requires immediate attention • **Important**: The event requires observation • **Informational**: The event requires limited observation
Rule	Rule that triggers the alert notification.
Criteria	Description of the alert rule.
Alert Frequency	Frequency at which the alert notification is sent if threshold is reached or exceeded.
Status	Click the toggle to enable or disable the rule.

The threshold to trigger each alert is configurable. For details, see *Modifying Rules on page 5-6*

Critical Alerts

The following table explains the critical alerts triggered by events requiring immediate attention. Deep Discovery Analyzer considers malfunctioning sandboxes and appliances as critical problems.

TABLE 5-3. Critical Alerts

NAME	CRITERIA (DEFAULT)	ALERT FREQUENCY (DEFAULT)
Virtual Analyzer Stopped	Virtual Analyzer encountered an error and was unable to recover. Analysis has stopped.	Immediate
Passive Primary Appliance Activated	The active primary appliance encountered an error and was unable to recover. The passive primary appliance took over the active role.	Immediate
License Expiration	License is about to expire or has expired.	Immediate

Important Alerts

The following table explains the important alerts triggered by events that require observation. Deep Discovery Analyzer considers suspicious object detections, hardware capacity changes, certain sandbox queue activity, component update, account and clustering issues as important problems.

TABLE 5-4. Important Alerts

NAME	CRITERIA (DEFAULT)	ALERT FREQUENCY (DEFAULT)
Account Locked	An account was locked because of multiple unsuccessful logon attempts.	Immediate
Long Virtual Analyzer Queue	The number of Virtual Analyzer submissions has exceeded the threshold of 100.	Once every 30 minutes
Component Update Unsuccessful	A component update was unsuccessful.	Once every 30 minutes
High CPU Usage	The average CPU usage in the last 5 minutes has exceeded the threshold of 90%.	Once every 30 minutes

Name	Criteria (Default)	Alert Frequency (Default)
High Memory Usage	The average memory usage in the last 5 minutes has exceeded the threshold of 90%.	Once every 30 minutes
High Disk Usage	Disk usage has exceeded the threshold of 85%.	Once every 30 minutes
Secondary Appliance Unresponsive	A secondary appliance in the cluster encountered an error and was unable to recover.	Immediate
High Availability Suspended	The passive primary appliance encountered an error and was unable to recover. High availability was suspended.	Once every 30 minutes
New High-Risk Objects Identified	The number of new high-risk objects identified during the last 30 minutes has reached the threshold of 10.	Immediate
Connection Issue	Unable to establish connection to a required resource.	Once every 30 minutes
Long Virtual Analyzer Processing Time	The Virtual Analyzer processing time has exceeded the threshold of 30 minutes.	Once every 30 minutes

Note

Consider decreasing the number of sandbox instances if the system frequently experiences high CPU or memory usage for long periods of time.

For details, see *Modifying Sandbox Instances on page 4-49*.

Informational Alerts

The following table explains the alerts triggered by events that require limited observation. Deep Discovery Analyzer considers restoration of high availability, and inaccessibility of syslog and backup servers as informational events.

TABLE 5-5. Informational Alerts

NAME	CRITERIA (DEFAULT)	ALERT FREQUENCY (DEFAULT)
Syslog Server Inaccessible	The syslog server was inaccessible. Logs were not sent to the server.	Once every 30 minutes
Backup Server Inaccessible	The backup server was inaccessible. Logs and objects were not backed up.	Once every 30 minutes
High Availability Restored	The passive primary appliance recovered from an error and high availability was restored.	Immediate

Modifying Rules

Before you begin

Configure the SMTP server to send notifications. For details, see *SMTP Tab on page 6-37*.

All triggered alert rules can notify recipients with a custom email message. Some rules have additional parameters, including object count, submission count, or time period. Trend Micro recommends adding at least one notification recipient for all critical and important alerts.

Procedure

1. Go to **Alerts / Reports** > **Alerts** > **Rules**

   The **Rules** screen appears.

2. Click the name of an alert rule under the **Rule** column.

   The alert rule configuration screen appears.

3. Modify the rule settings.

Note

For details, see *Alert Notification Parameters on page 5-7*.

4. Click **Save**.

Alert Notification Parameters

All triggered alert rules can notify recipients with a custom email message. Some rules have additional parameters, including object count, submission count, or time period.

Critical Alert Parameters

Note

For explanations about available message tokens in each alert, see *Alert Notification Message Tokens on page 5-22*.

TABLE 5-6. Virtual Analyzer Stopped

PARAMETER	DESCRIPTION
Status	Select to enable or disable this alert.
Alert level	Shows the level of this alert. Cannot be modified.
Alert frequency	Shows the frequency at which this alert is sent when rule criteria are met. Cannot be modified.
Subject	Specify the subject of the triggered alert notification.

PARAMETER	DESCRIPTION
Message	Specify the body of the triggered alert notification. Use the following tokens to customize your message: • %ProductName% • %ProductShortName% • %ApplianceName% • %ApplianceIP% • %DateTime% • %ConsoleURL%

TABLE 5-7. Passive Primary Appliance Activated

PARAMETER	DESCRIPTION
Status	Select to enable or disable this alert.
Alert level	Shows the level of this alert. Cannot be modified.
Alert frequency	Shows the frequency at which this alert is sent when rule criteria are met. Cannot be modified.
Subject	Specify the subject of the triggered alert notification.
Message	Specify the body of the triggered alert notification. Use the following tokens to customize your message: • %ProductName% • %ProductShortName% • %ActiveApplianceName% • %ActiveApplianceIP% • %PassiveApplianceName% • %PasssiveApplianceIP% • %DateTime% • %ConsoleURL%

TABLE 5-8. License Expiration

PARAMETER	DESCRIPTION
Status	Select to enable or disable this alert.
Alert level	Shows the level of this alert. Cannot be modified.
Subject	Specify the subject of the triggered alert notification.
Message	Specify the body of the triggered alert notification. Use the following tokens to customize your message: • %ProductName% • %ProductShortName% • %LicenseStatus% • %ExpirationDate% • %DaysBeforeExpiration% • %DateTime% • %ConsoleURL%
Recipients	Specify the recipients who will receive the triggered alert email message.

Important Alert Parameters

Note

For explanations about available message tokens in each alert, see *Alert Notification Message Tokens on page 5-22*.

TABLE 5-9. Account Locked

PARAMETER	DESCRIPTION
Status	Select to enable or disable this alert.
Alert level	Shows the level of this alert. Cannot be modified.

PARAMETER	DESCRIPTION
Alert frequency	Shows the frequency at which this alert is sent when rule criteria are met. Cannot be modified.
Subject	Specify the subject of the triggered alert notification.
Message	Specify the body of the triggered alert notification. Use the following tokens to customize your message: • %ProductName% • %ProductShortName% • %LockedAccount% • %ApplianceName% • %ApplianceIP% • %DateTime% • %ConsoleURL%

TABLE 5-10. Long Virtual Analyzer Queue

PARAMETER	DESCRIPTION
Status	Select to enable or disable this alert.
Alert level	Shows the level of this alert. Cannot be modified.
Submissions	Specify the submissions threshold that will trigger the alert. **Tip** Refer to the red line of the **Queued Samples** widget to see the estimated number of samples Virtual Analyzer can analyze within 5 minutes. For details, see *Queued Samples on page 3-15*.
Alert frequency	Select the frequency at which this alert is sent when rule criteria are met.
Subject	Specify the subject of the triggered alert notification.

PARAMETER	DESCRIPTION
Message	Specify the body of the triggered alert notification. Use the following tokens to customize your message: • %ProductName% • %ProductShortName% • %SandboxQueueThreshold% • %SandboxQueue% • %ApplianceName% • %ApplianceIP% • %DateTime% • %ConsoleURL%

TABLE 5-11. Component Update Unsuccessful

PARAMETER	DESCRIPTION
Status	Select to enable or disable this alert.
Alert level	Shows the level of this alert. Cannot be modified.
Alert frequency	Select the frequency at which this alert is sent when rule criteria are met.
Subject	Specify the subject of the triggered alert notification.

PARAMETER	DESCRIPTION
Message	Specify the body of the triggered alert notification. Use the following tokens to customize your message: • %ProductName% • %ProductShortName% • %ComponentList% • %UpdateError% • %ApplianceName% • %ApplianceIP% • %DateTime% • %ConsoleURL%

TABLE 5-12. High CPU Usage

PARAMETER	DESCRIPTION
Status	Select to enable or disable this alert.
Alert level	Shows the level of this alert. Cannot be modified.
Average CPU usage	Specify the average CPU usage threshold that will trigger the alert.
Alert frequency	Select the frequency at which this alert is sent when rule criteria are met.
Check interval	Specify the amount of time to wait between each check.
Check duration	Specify the duration of each check.
Subject	Specify the subject of the triggered alert notification.

Parameter	Description
Message	Specify the body of the triggered alert notification. Use the following tokens to customize your message: • %ProductName% • %ProductShortName% • %CPUThreshold% • %CPUUsage% • %CheckingInterval% • %CheckingDuration% • %ApplianceName% • %ApplianceIP% • %DateTime% • %ConsoleURL%

Table 5-13. High Memory Usage

Parameter	Description
Status	Select to enable or disable this alert.
Alert level	Shows the level of this alert. Cannot be modified.
Average memory usage	Specify the average memory usage threshold that will trigger the alert.
Alert frequency	Select the frequency at which this alert is sent when rule criteria are met.
Check interval	Specify the amount of time to wait between each check.
Check duration	Specify the duration of each check.
Subject	Specify the subject of the triggered alert notification.

Parameter	Description
Message	Specify the body of the triggered alert notification. Use the following tokens to customize your message: • %ProductName% • %ProductShortName% • %MemThreshold% • %MemUsage% • %CheckingInterval% • %CheckingDuration% • %ApplianceName% • %ApplianceIP% • %DateTime% • %ConsoleURL%

Table 5-14. High Disk Usage

Parameter	Description
Status	Select to enable or disable this alert.
Alert level	Shows the level of this alert. Cannot be modified.
Disk usage	Specify the disk usage threshold that will trigger the alert.
Alert frequency	Select the frequency at which this alert is sent when rule criteria are met.
Check interval	Specify the amount of time to wait between each check.
Subject	Specify the subject of the triggered alert notification.

Parameter	Description
Message	Specify the body of the triggered alert notification. Use the following tokens to customize your message: • %ProductName% • %ProductShortName% • %DiskThreshold% • %DiskUsage% • %FreeDiskSpace% • %CheckingInterval% • %ApplianceName% • %ApplianceIP% • %DateTime% • %ConsoleURL%

Table 5-15. Secondary Appliance Unresponsive

Parameter	Description
Status	Select to enable or disable this alert.
Alert level	Shows the level of this alert. Cannot be modified.
Alert frequency	Shows the frequency at which this alert is sent when rule criteria are met. Cannot be modified.
Subject	Specify the subject of the triggered alert notification.

PARAMETER	DESCRIPTION
Message	Specify the body of the triggered alert notification. Use the following tokens to customize your message: • %ProductName% • %ProductShortName% • %ApplianceError% • %ApplianceName% • %ApplianceIP% • %DateTime% • %ConsoleURL%

TABLE 5-16. High Availability Suspended

PARAMETER	DESCRIPTION
Status	Select to enable or disable this alert.
Alert level	Shows the level of this alert. Cannot be modified.
Alert frequency	Select the frequency at which this alert is sent when rule criteria are met.
Subject	Specify the subject of the triggered alert notification.

Parameter	Description
Message	Specify the body of the triggered alert notification. Use the following tokens to customize your message: • %ProductName% • %ProductShortName% • %ActiveApplianceName% • %ActiveApplianceIP% • %PassiveApplianceName% • %PasssiveApplianceIP% • %DateTime% • %ConsoleURL%

Table 5-17. New High-Risk Objects Identified

Parameter	Description
Status	Select to enable or disable this alert.
Alert level	Shows the level of this alert. Cannot be modified.
Objects	Specify the objects threshold that will trigger the alert. **Note** Specifying a low threshold may result in frequent generation of alerts, but each alert covers a unique set of detections.
Alert frequency	Shows the frequency at which this alert is sent when rule criteria are met. Cannot be modified.
Time period	Specify the time period threshold that will trigger the alert. **Note** Specifying a low threshold may result in frequent generation of alerts, but each alert covers a unique set of detections.

Parameter	Description
Subject	Specify the subject of the triggered alert notification.
Message	Specify the body of the triggered alert notification. Use the following tokens to customize your message: • %ProductName% • %ProductShortName% • %HighRiskThreshold% • %TimeRange% • %ApplianceName% • %ApplianceIP% • %DateTime% • %ConsoleURL%

Table 5-18. Connection Issue

Parameter	Description
Status	Select to enable or disable this alert.
Alert level	Shows the level of this alert. Cannot be modified.
Alert frequency	Shows the frequency at which this alert is sent when rule criteria are met. Cannot be modified.
Monitored services	Select services to be monitored by this alert.
Subject	Specify the subject of the triggered alert notification.

Parameter	Description
Message	Specify the body of the triggered alert notification. Use the following tokens to customize your message: • %ProductName% • %ProductShortName% • %ServiceList% • %ApplianceName% • %ApplianceIP% • %DateTime% • %ConsoleURL%

Table 5-19. Long Virtual Analyzer Processing Time

Parameter	Description
Status	Select to enable or disable this alert.
Alert level	Shows the level of this alert. Cannot be modified.
Alert frequency	Select the frequency at which this alert is sent when rule criteria are met.
Process time	Specify the process time threshold that will trigger the alert.
Subject	Specify the subject of the triggered alert notification.

Parameter	Description
Message	Specify the body of the triggered alert notification. Use the following tokens to customize your message: • %ProductName% • %ProductShortName% • %SandboxProcessTimeThreshold% • %SampleList% • %TotalSampleNumber% • %ApplianceName% • %ApplianceIP% • %DateTime% • %ConsoleURL%

Informational Alert Parameters

Note

For explanations about available message tokens in each alert, see *Alert Notification Message Tokens on page 5-22*.

Table 5-20. Syslog Server Inaccessible

Parameter	Description
Status	Select to enable or disable this alert.
Alert level	Shows the level of this alert. Cannot be modified.
Alert frequency	Select the frequency at which this alert is sent when rule criteria are met.
Subject	Specify the subject of the triggered alert notification.

Parameter	Description
Message	Specify the body of the triggered alert notification. Use the following tokens to customize your message: • %ProductName% • %ProductShortName% • %SyslogServer% • %ApplianceName% • %ApplianceIP% • %DateTime% • %ConsoleURL%

Table 5-21. Backup Server Inaccessible

Parameter	Description
Status	Select to enable or disable this alert.
Alert level	Shows the level of this alert. Cannot be modified.
Alert frequency	Select the frequency at which this alert is sent when rule criteria are met.
Subject	Specify the subject of the triggered alert notification.
Message	Specify the body of the triggered alert notification. Use the following tokens to customize your message: • %ProductName% • %ProductShortName% • %BackupServer% • %ApplianceName% • %ApplianceIP% • %DateTime% • %ConsoleURL%

TABLE 5-22. High Availability Restored

PARAMETER	DESCRIPTION
Status	Select to enable or disable this alert.
Alert level	Shows the level of this alert. Cannot be modified.
Alert frequency	Shows the frequency at which this alert is sent when rule criteria are met. Cannot be modified.
Subject	Specify the subject of the triggered alert notification.
Message	Specify the body of the triggered alert notification. Use the following tokens to customize your message: • %ProductName% • %ProductShortName% • %ActiveApplianceName% • %ActiveApplianceIP% • %PassiveApplianceName% • %PasssiveApplianceIP% • %DateTime% • %ConsoleURL%

Alert Notification Message Tokens

The following table explains the tokens available for alert notifications. Use the table to understand which alert rules accept the message token and the information that the token provides in an alert notification.

Note

Not every alert notification can accept every message token. Review the alert's parameter specifications before using a message token. For details, see *Alert Notification Parameters on page 5-7*.

TABLE 5-23. Message Tokens

TOKEN	DESCRIPTION	WHERE ALLOWED
%ActiveApplianceIP%	The IP address of the Deep Discovery Analyzer active primary appliance Example: • 123.123.123.123 | 2001:0:3238:DFE1:63::FEFB	High Availability Restored High Availability Suspended Passive Primary Appliance Activated
%ActiveApplianceName%	The host name of the Deep Discovery Analyzer active primary appliance Examples: • DDAN • DDAN-ABC123	High Availability Restored High Availability Suspended Passive Primary Appliance Activated
%ApplianceError%	The error encountered by the appliance Examples: • Not connected • Invalid API key • Incompatible software version	Secondary Appliance Unresponsive
%ApplianceIP%	The IP address of the Deep Discovery Analyzer appliance Example: • 123.123.123.123 | 2001:0:3238:DFE1:63::FEFB	All • High Availability Restored • High Availability Suspended • Passive Primary Appliance Activated

Token	Description	Where Allowed
%ApplianceName%	The host name of the Deep Discovery Analyzer appliance Examples: • DDAN • DDAN-ABC123	All • High Availability Restored • High Availability Suspended • Passive Primary Appliance Activated
%BackupServer%	The host name or IP address of the backup server Examples: • my.example.com • 123.123.123.123 • 2001:0:3238:DFE1:63::FEFB	Backup Server Inaccessible
%ComponentList%	The list of components Examples: • Advanced Threat Scan Engine • Deep Discovery Malware Pattern • IntelliTrap Exception Pattern • IntelliTrap Pattern	Component Update Unsuccessful
%ConsoleURL%	The Deep Discovery Analyzer management console URL Example: • https://192.168.85.69/ | https://[2001:0:3238:DFE1:63::FEFB]/	All

Token	Description	Where Allowed
%CPUThreshold%	The average CPU usage as a percentage allowed in the last 5 minutes before Deep Discovery Analyzer sends an alert notification Example: • 80%	High CPU Usage
%CPUUsage%	The total CPU usage as a percentage in the last 5 minutes Example: • 80%	High CPU Usage
%DateTime%	The date and time the alert was initiated Example: • 2014-03-21 03:34:09	All
%DaysBeforeExpiration%	The number of days before the product license expires Example: • 4	License Expiration
%DiskThreshold%	The disk usage as a percentage allowed before Deep Discovery Analyzer sends an alert notification Example: • 85%	High Disk Usage
%DiskUsage%	The total disk usage as a percentage Example: • 85%	High Disk Usage

Token	Description	Where Allowed
%ExpirationDate%	The date that the product license expires Example: • 2014-03-21 03:34:09	License Expiration
%FreeDiskSpace%	The amount of free disk space in GB Example: • 50GB	High Disk Usage
%HighRiskThreshold%	The maximum number of new high-risk objects identified during the specified time period before Deep Discovery Analyzer sends an alert notification Example: • 10	New High-Risk Objects Identified
%LicenseStatus%	The current status of the product license Example: • Activated	License Expiration
%LockedAccount%	The account that was locked Example: • guest	Account Locked
%MemThreshold%	The average memory usage as a percentage allowed in the last 5 minutes before Deep Discovery Analyzer sends an alert notification Example: • 90%	High Memory Usage

Token	Description	Where Allowed
%MemUsage%	The total memory usage as a percentage in the last 5 minutes Example: • 90%	High Memory Usage
%PasssiveApplianceIP%	The IPv4 address of the Deep Discovery Analyzer passive primary appliance Example: • 123.123.123.123	High Availability Restored High Availability Suspended Passive Primary Appliance Activated
%PassiveApplianceName%	The host name of the Deep Discovery Analyzer passive primary appliance Examples: • DDAN • DDAN-ABC123	High Availability Restored High Availability Suspended Passive Primary Appliance Activated
%ProductName%	The product name Example: • Deep Discovery Analyzer	All
%ProductShortName%	The abbreviated product name Example: • DDAn	All
%SandboxQueue%	The submission count in the sandbox queue waiting to be analyzed by Virtual Analyzer Example: • 100	Long Virtual Analyzer Queue

Token	Description	Where Allowed
%SandboxQueueThreshold%	The maximum number of submissions in the sandbox queue before Deep Discovery Analyzer sends an alert notification Example: • 30	Long Virtual Analyzer Queue
%SyslogServer%	The host name or IP address of the syslog server Examples: • my.example.com • 123.123.123.123 • 2001:0:3238:DFE1:63::FEFB	Syslog Server Inaccessible
%TimeRange%	The time period observed for new high-risk objects before Deep Discovery Analyzer sends an alert notification Examples: • 5 minutes • 30 minutes • 1 hour • 12 hours • 24 hours	New High-Risk Objects Identified

Token	Description	Where Allowed
%UpdateError%	The list of update errors Examples: • Unable to download: Advanced Threat Scan Engine • Unable to update: Deep Discovery Malware Pattern • Unable to update: IntelliTrap Exception Pattern. The appliance is configuring Virtual Analyzer instances or shutting down.	Component Update Unsuccessful
%ServiceList%	The services affected by the issue Example: • Internal Virtual Analyzer network (eth1, No proxy)	Connection Issue
%SandboxProcessTimeThreshold%	The maximum amount of time spent processing a sample before Deep Discovery Analyzer sends an alert notification	Long Virtual Analyzer Processing Time alert
%SampleList%	The samples affected by the issue	Long Virtual Analyzer Processing Time alert
%TotalSampleNumber%	The total number of samples affected by the issue	Long Virtual Analyzer Processing Time alert
%CheckingDuration%	The amount of time it takes to perform each check	High CPU Usage High Memory Usage
%CheckingInterval%	The amount of time between each check	High CPU Usage High Memory Usage High Disk Usage
%DiagnosisTip%	Recommendations on how to resolve the issue	Connection Issue

Reports

All reports generated by Deep Discovery Analyzer are based on an operational report template.

Generated Reports Tab

The **Generated Reports** tab, in **Alerts / Reports** > **Reports** , shows all reports generated by Deep Discovery Analyzer.

In addition to being displayed as links on the management console, generated reports are also available as attachments to an email. Before generating a report, you are given the option to send it to one or several email recipients.

Report Tasks

The **Generated Reports** screen includes the following options:

TABLE 5-24. Generated Reports Tasks

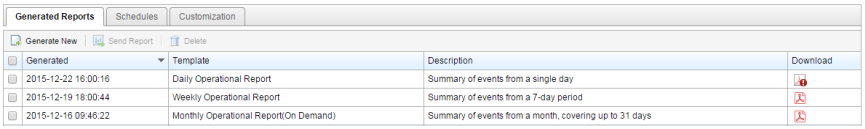
TASK	STEPS
Generate Reports	See *Generating Reports on page 5-31*.
Download Report	To download a report, go to the last column in the table and click the icon. Generated reports are available as PDF files.
Send Report	Select a report and then click **Send Report**. You can send only one report at a time.
Delete	Select one or more reports and then click **Delete**.
Sort Column Data	Click a column title to sort the data below it.
Records and Pagination Controls	The panel at the bottom of the screen shows the total number of reports. If all reports cannot display at the same time, use the pagination controls to view the reports that are hidden from view.

Generating Reports

Procedure

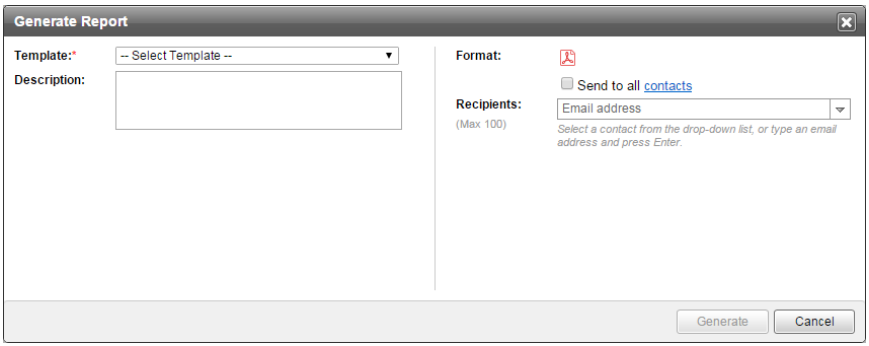
1. Go to **Alerts / Reports** > **Reports** > **Generated Reports**.

   The **Generated Reports** screen appears.



2. Click **Generate New**.

   The **Generate Report** window appears.



3. Configure report settings.

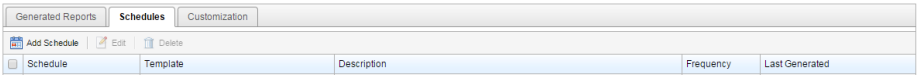
Option	Description
Template	Select an operational report template.
Description	Type a description that does not exceed 500 characters.
Range	Specify the covered date(s) based on the selected report template.

Option	Description
	• **Daily operational report**: Select any day prior to the current day. The report coverage is from 00:00:00 to 23:59:59 of each day. • **Weekly operational report**: Select the day of the week on which the report coverage ends. For example, if you choose Wednesday, the report coverage is from Wednesday of a particular week at 23:59:59 until Thursday of the preceding week at 00:00:00. • **Monthly operational report**: Select the day of the month on which the report coverage ends. For example, if you choose the 10th day of a month, the report coverage is from the 10th day of a particular month at 23:59:59 until the 11th day of the preceding month at 00:00:00.
Format	The file format of the report is PDF only.
Send to all contacts	Select the checkbox to send the generated report to all contacts.
Recipients	Select a contact from the drop-down list, or type an email address and press ENTER. You can type a maximum of 100 email addresses, typing them one at a time. **Note** You must press ENTER after each email address. Do not type multiple email addresses separated by commas. Before specifying recipients, configure the SMTP settings in **Administration** > **System Settings** > **SMTP** . **Note** Deep Discovery Analyzer generates reports approximately five minutes after **Send** is clicked.

4. Click **Generate**.

Schedules Tab

The **Schedules** tab, in **Alerts / Reports** > **Reports** , shows all the report schedules created from report templates. Each schedule contains settings for reports, including the template that will be used and the actual schedule.



Note

This screen does not contain any generated reports. To view the reports, navigate to **Alerts / Reports** > **Reports** > **Schedules**.

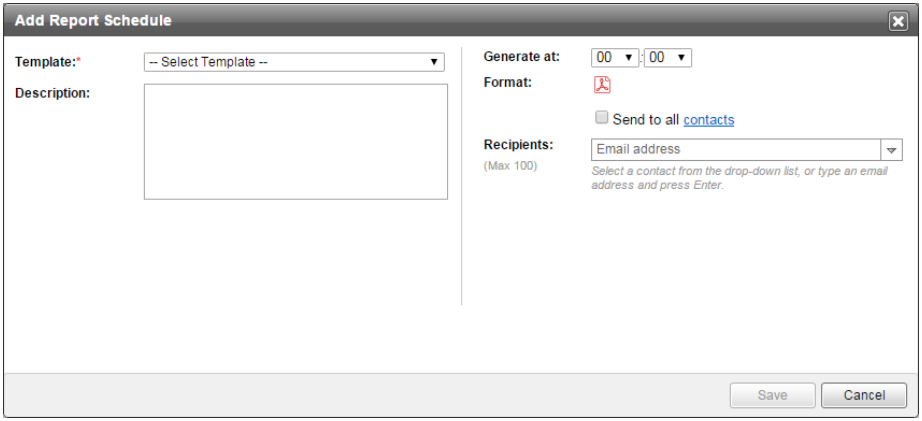
This tab includes the following options:

TABLE 5-25. Schedules Tasks

TASK	STEPS
Add Schedule	Click **Add Schedule** to add a new report schedule. This opens the **Add Report Schedule** window, where you specify settings for the report schedule. For details, see *Add Report Schedule Window on page 5-34*.
Edit	Select a report schedule and then click **Edit** to edit its settings. This opens the **Edit Report Schedule** window, which contains the same settings in the **Add Report Schedule** window. For details, see *Add Report Schedule Window on page 5-34*. Only one report schedule is edited at a time.
Delete	Select one or several report schedules to delete and then click **Delete**.
Sort Column Data	Click a column title to sort the data below it.
Records and Pagination Controls	The panel at the bottom of the screen shows the total number of report schedules. If all report schedules cannot be displayed at the same time, use the pagination controls to view the schedules that are hidden from view.

Add Report Schedule Window

The **Add Report Schedule** window appears when you add a report schedule. A report schedule contains settings that Deep Discovery Analyzer will use when generating scheduled reports.



This window includes the following options:

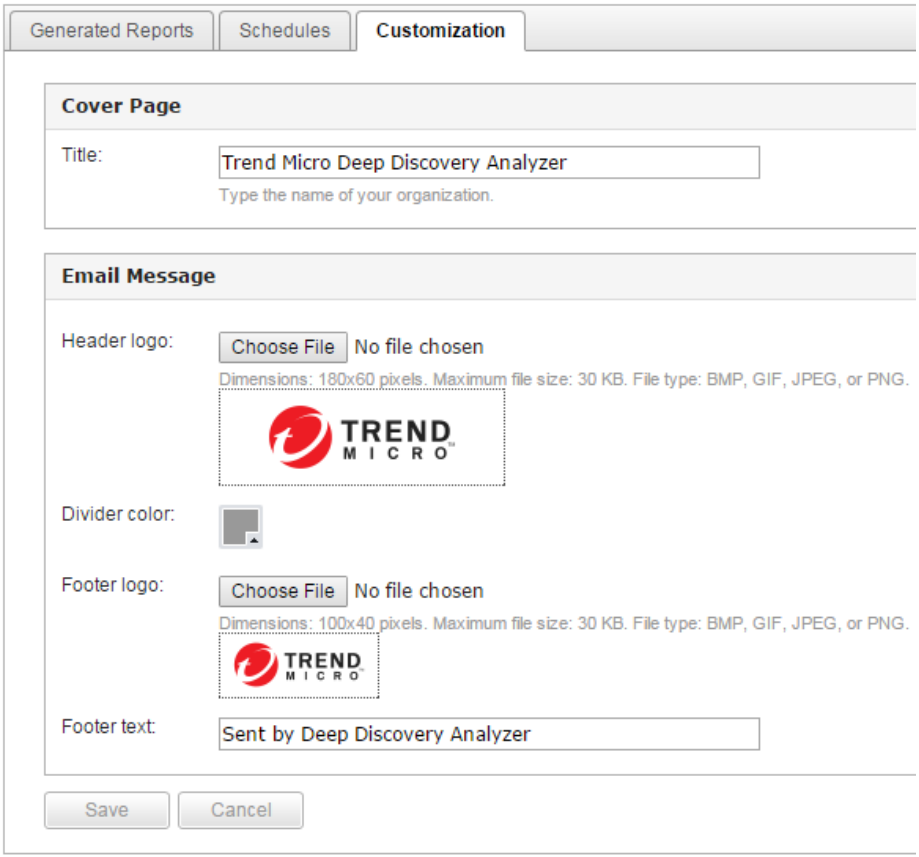
TABLE 5-26. Add Report Schedule Window Tasks

FIELD	STEPS
Template	Choose a template.
Description	Type a description.

Field	Steps
Generate at	Configure the schedule according to the template you chose. If the template is for a daily report, configure the time the report generates. The report coverage is from 00:00:00 to 23:59:59 of each day and the report starts to generate at the time you specified. If the template is for a weekly report, select the start day of the week and configure the time the report generates. For example, if you choose Wednesday, the report coverage is from Wednesday of a particular week at 00:00:00 until Tuesday of the following week at 23:59:59. The report starts to generate on Wednesday of the following week at the time you specified. If the template is for a monthly report, select the start day of the month and configure the time the report generates. For example, if you choose the 10th day of a month, the report coverage is from the 10th day of a particular month at 00:00:00 until the 9th day of the following month at 23:59:59. The report starts to generate on the 10th day of the following month at the time you specified. **Note** If the report is set to generate on the 29th, 30th, or 31st day of a month and a month does not have this day, Deep Discovery Analyzer starts to generate the report on the first day of the next month at the time you specified.
Format	The file format of the report is PDF only.
Send to all contacts	Select the checkbox to send the generated report to all contacts.
Recipients	Select a contact from the drop-down list, or type a valid email address to which to send reports and then press ENTER. You can type up to 100 email addresses, typing them one at a time. It is not possible to type multiple email addresses separated by commas. Before specifying recipients, verify that you have specified SMTP settings in the **SMTP** tab located at **Administration** > **System Settings**.

Customization Tab

The **Customization** tab, in **Alerts / Reports** > **Reports**, allows you to customize items in the Deep Discovery Analyzer reports.



This screen includes the following options:

TABLE 5-27. Cover Page

OPTION	TASK	DISPLAY AREA
Title	Type a title that does not exceed 40 characters.	Report cover

TABLE 5-28. Email Message

OPTION	TASKS	DISPLAY AREA
Header logo	Browse to the location of the logo. The following are the image requirements. • Dimensions: 180 x 60 pixels • Maximum file size: 30 KB • File type: BMP, GIF, JPG, or PNG	Notification
Divider color	To change the default color, click in the box and use the color pick specify a new value. 	Notification
Footer logo	Browse to the location of the logo. The following are the image requirements. • Dimensions: 100 x 40 pixels • Maximum file size: 30 KB • File type: BMP, GIF, JPG, or PNG	Notification
Footer text	Type a footer that does not exceed 60 characters.	Notification

Chapter 6

Administration

The features of **Administration** are discussed in this chapter.

Updates

Use the **Updates** screen, in **Administration** > **Updates**, to configure component and product update settings.

An Activation Code is required to use and update components. For details, see *License on page 6-83*.

Components Tab

The **Components** tab shows the security components currently in use.

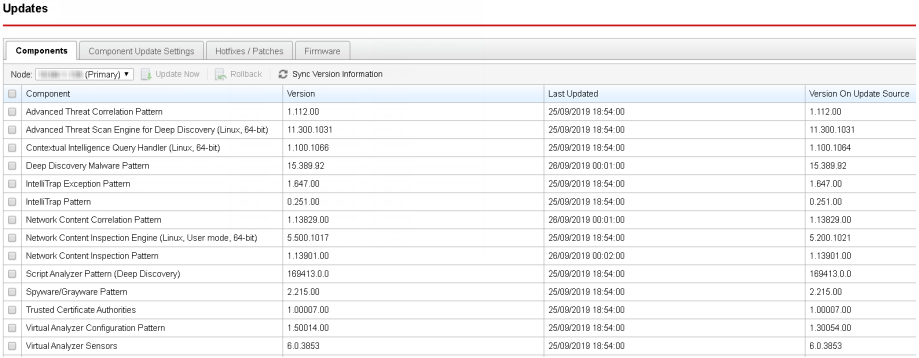


TABLE 6-1. Components

COMPONENT	DESCRIPTION
Advanced Threat Correlation Pattern	The Advanced Threat Correlation Pattern contains a list of file features that are not relevant to any known threats.
Advanced Threat Scan Engine for Deep Discovery (Linux, 64-bit)	The Advanced Threat Scan Engine protects against viruses, malware, and exploits to vulnerabilities in software such as Java and Flash. Integrated with the Trend Micro Virus Scan Engine, the Advanced Threat Scan Engine employs signature-based, behavior-based, and aggressive heuristic detection.

Component	Description
Contextual Intelligence Query Handler (Linux, 64-bit)	The Contextual Intelligence Query Handler processes the behaviors identified by the Contextual Intelligence Engine and sends the report to the Predictive Machine Learning engine.
Deep Discovery Malware Pattern	The Deep Discovery Malware Pattern contains information that helps Deep Discovery Analyzer identify the latest malware and mixed threat attacks. Trend Micro creates and releases new versions of the pattern several times a week, and any time after the discovery of a particularly damaging virus/malware.
IntelliTrap Exception Pattern	The IntelliTrap Exception Pattern contains detection routines for safe compressed executable (packed) files to reduce the amount of false positives during IntelliTrap scanning.
IntelliTrap Pattern	The IntelliTrap Pattern contains the detection routines for compressed executable (packed) file types that are known to commonly obfuscate malware and other potential threats.
Network Content Correlation Pattern	The Network Content Correlation Pattern implements detection rules defined by Trend Micro.
Network Content Inspection Engine (Linux, User mode, 64-bit)	The Network Content Inspection Engine is used to perform network scanning.
Network Content Inspection Pattern	The Network Content Inspection Pattern is used by the Network Content Inspection Engine to perform network scanning.
Script Analyzer Pattern (Deep Discovery)	The Script Analyzer Pattern is used during analysis of web page scripts to identify malicious code.
Spyware/Grayware Pattern	The Spyware/Grayware Pattern identifies unique patterns of bits and bytes that signal the presence of certain types of potentially undesirable files and programs, such as adware and spyware, or other grayware.
Trusted Certificate Authorities	Trusted Certificate Authorities provides the trusted certificate authorities to verify PE signatures.

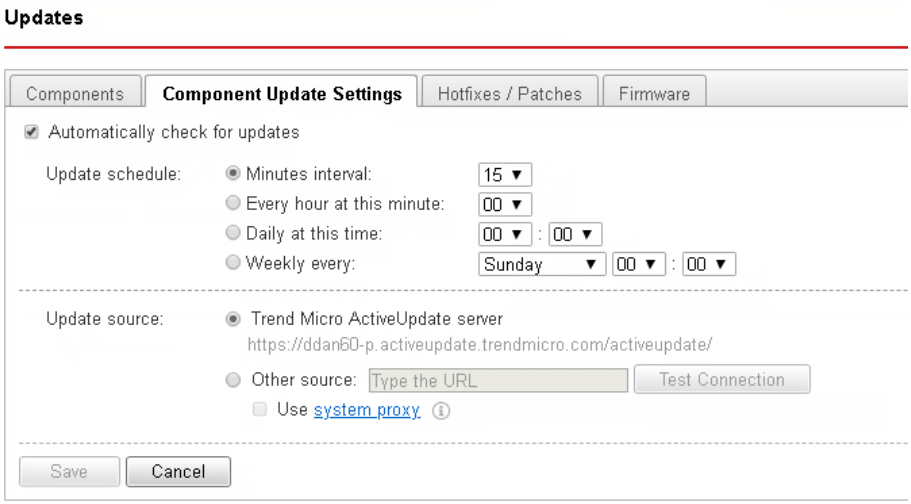
Component	Description
Virtual Analyzer Configuration Pattern	The Virtual Analyzer Configuration Pattern contains configuration information for Virtual Analyzer, such as supported threat types and supported file types.
Virtual Analyzer Sensors	The Virtual Analyzer Sensors are a collection of utilities used to execute and detect malware and to record behavior in Virtual Analyzer.

This screen includes the following options:

Option	Task
Update Now	Select one or more components, and click **Update Now** to manually update the selected components.
Rollback	Select one or more components, and click **Rollback** to revert the selected components to a previous version.
Sync Version Information	Click to retrieve the component version from the update source, and review if any of the components need updates. Update any component where the version displayed on the **Version on Update Source** column is greater than the current version. Additionally, Deep Discovery Analyzer displays the version numbers of components with available updates in a red font.

Component Update Settings Tab

The **Component Update Settings** tab allows you to configure automatic updates and the update source.



Setting	Description
Automatic updates	Select **Automatically check for updates** to set Deep Discovery Analyzer to check for updates every 15 minutes. You may also specify the update to run at a specific time.

SETTING	DESCRIPTION
Update source	Select one of the following options and configure the require settings: • Select **Trend Micro ActiveUpdate server** to download components directly from the Trend Micro. Verify that Deep Discovery Analyzer has Internet connection. • Select **Other source** to specify a different update source location. The update source URL must begin with "http://" or "https//:". You can select **Use system proxy** to use the system proxy settings you configure on the **Administration > System Settings > Proxy** screen to connect to the update source. For more information, see *Proxy Tab on page 6-35*. If you need assistance setting up an update source, contact your support provider. **Note** When the IPv6 address is part of a URL, enclose the address in square brackets ([]). Verify that proxy settings are correct if Deep Discovery Analyzer requires a proxy server to connect to its update source. For details, see *Proxy Tab on page 6-35*.

Hotfixes / Patches Tab

Use the **Hotfixes / Patches** screen to apply hotfixes and patches to Deep Discovery Analyzer. After an official product release, Trend Micro releases

system updates to address issues, enhance product performance, or add new features.

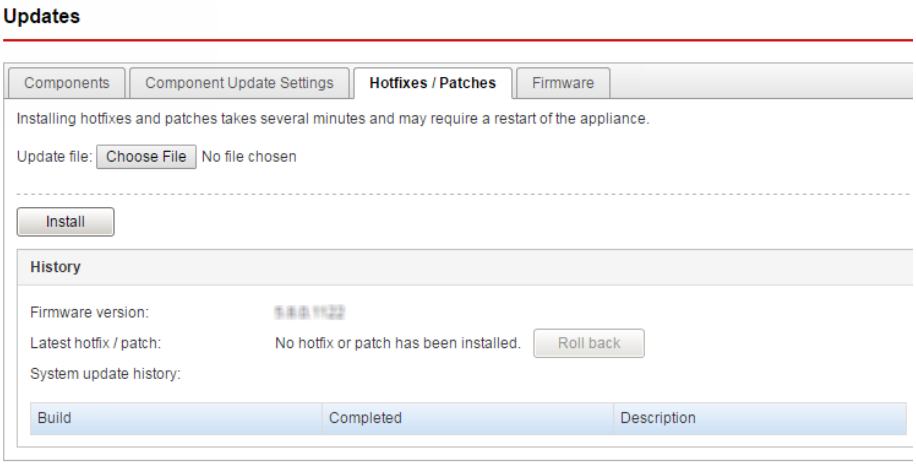


TABLE 6-2. Hotfixes / Patches

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.
Security patch	A security patch focuses on security issues suitable for deployment to all customers. Non-Windows patches commonly include a setup script.
Patch	A patch is a group of hotfixes and security patches that solve multiple program issues. Trend Micro makes patches available on a regular basis. 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:

http://downloadcenter.trendmicro.com/

Installing a Hotfix / Patch

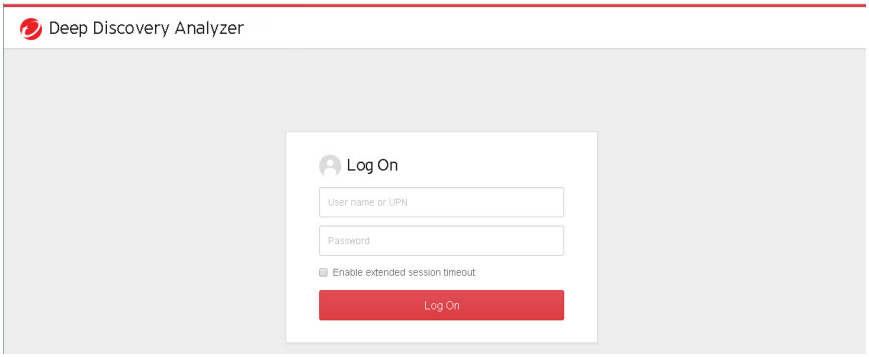
Please perform these tasks when using Deep Discovery Analyzer in a high availability cluster configuration.

1. Detach the passive primary appliance.
2. On the active primary appliance, perform the tasks as described in the main task section below.
3. On the passive primary appliance, perform the tasks as described in the main task section below.
4. Add the passive primary appliance to the cluster again.

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. On the logon page of the management console, select **Extended** and then log on using a valid user name and password.



3. Go to **Administration** > **Updates** > **Hotfixes / Patches**.
4. Click **Choose File** or **Browse**, and select the product update file.
5. Click **Install**.

Important

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 Analyzer will automatically restart after the update is complete.

6. Log on to the management console.
7. Go back to the **Administration** > **Updates** > **Hotfixes / Patches** screen.
8. Verify that the hotfix / patch displays in the **History** section as the latest update.

Rolling Back a Hotfix / Patch

Please perform these tasks when using Deep Discovery Analyzer in a high availability cluster configuration.

1. Detach the passive primary appliance.
2. On the active primary appliance, perform the tasks as described in the main task section below.
3. On the passive primary appliance, perform the tasks as described in the main task section below.
4. Add the passive primary appliance to the cluster again.

Deep Discovery Analyzer 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 / patch is applied.

Note

The rollback process automatically restarts Deep Discovery Analyzer, so make sure 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 Analyzer will automatically restart after the rollback is complete.
3. Log on to the management console.
4. Go back to the **Administration** > **Updates** > **Hotfixes / Patches** screen.
5. Verify that the hotfix / patch no longer displays in the **History** section.

Firmware Tab

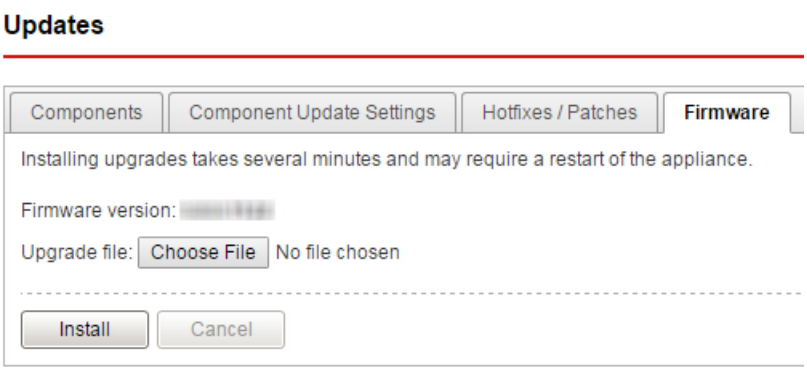
Use the **Firmware** tab to apply an upgrade to Deep Discovery Analyzer. Trend Micro prepares a readme file for each upgrade. Read the

accompanying readme file before applying an upgrade for feature information and for special installation instructions.

Please perform these tasks when using Deep Discovery Analyzer in a high availability cluster configuration.

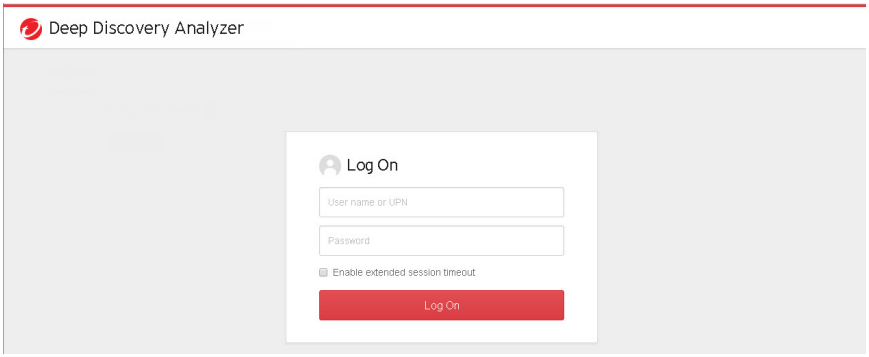
1. Detach the passive primary appliance.
2. On the active primary appliance, perform the tasks as described in the main task section below.
3. On the passive primary appliance, perform the tasks as described in the main task section below.
4. Add the passive primary appliance to the cluster again.

Perform the following steps to install the upgrade.



Procedure

1. On the logon page of the management console, select **Enable extended session timeout** and then log on using a valid user name and password.



2. Go to **Administration** > **Updates** and click the **Firmware** tab.
3. Click **Choose File** or **Browse**, and select the firmware upgrade file.
4. Click **Apply**.

Important

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 Analyzer will automatically restart after the upgrade is complete.

5. Clear the browser cache before you access the management console.

Integrated Products/Services

The Integrated Products/Services screen, in **Administration** > **Integrated Products/Services**, includes the following tabs:

- *Deep Discovery Director Tab on page 6-13*
- *Smart Protection Tab on page 6-19*

- *ICAP Tab on page 6-24*
- *Microsoft Active Directory Tab on page 6-29*
- *Syslog Tab on page 6-30*

Deep Discovery Director Tab

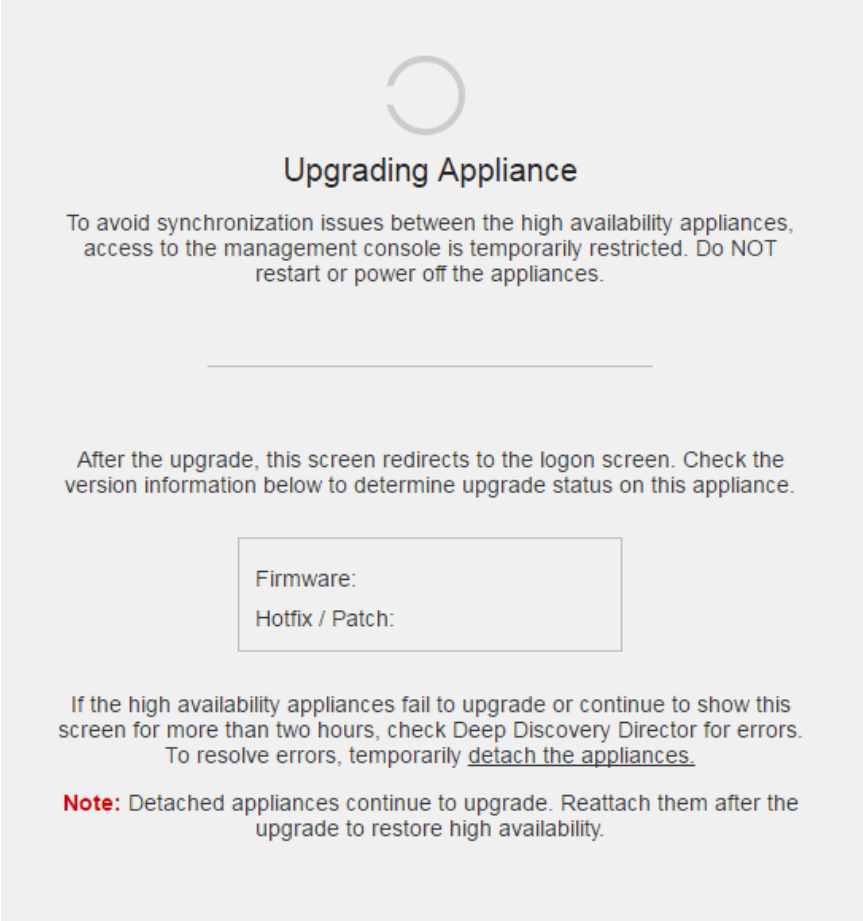
Trend Micro Deep Discovery Director is an on-premises management solution that provides Indicators of Compromise (IOC) information and enables centralized deployment of product updates, product upgrades, configuration replication and Virtual Analyzer images to Deep Discovery Analyzer.

Deep Discovery Analyzer supports integration with Deep Discovery Director version 5.0 or above.

Deploying updates or upgrades to Deep Discovery Analyzer appliances that are configured in a high availability cluster will temporarily:

- Detach the high availability appliances and suspend high availability

- Restrict access to the management console and display a static information screen



After the update or upgrade completes, the detached appliances will automatically reattach and restore high availability.

Important

- Before deploying updates or upgrades, ensure that the appliances are not executing any task.
- Avoid detaching appliances while an upgrade is in progress.
- If the appliances fail to upgrade or continue to show the **Upgrading Appliance** screen for more than two hours, check Deep Discovery Director for errors. To resolve errors, temporarily detach the appliances. Detached appliances continue to upgrade. After the upgrade, manually attach the appliances again to restore high availability.

Use the Deep Discovery Director management console to deploy or replicate a Virtual Analyzer image or configuration to a primary appliance. This is not required for secondary appliances since they are set to automatically sync Virtual Analyzer images or configuration from the primary appliance.

Deep Discovery Analyzer supports integration with Deep Discovery Director to enable synchronization and central management of the following threat intelligence:

- Upload of suspicious objects generated by the internal Virtual Analyzer to Deep Discovery Director
- Download of user-defined suspicious objects from Deep Discovery Director
- Download of exceptions from Deep Discovery Director
- Download of YARA rule files from Deep Discovery Director

Note

After you register Deep Discovery Analyzer to Deep Discovery Director, Deep Discovery Analyzer automatically synchronizes YARA rule settings from Deep Discovery Director and overwrites existing YARA rule settings that you have configured.

- Download of file passwords from Deep Discovery Director 5.1 and above

Note

After you register Deep Discovery Analyzer to Deep Discovery Director, Deep Discovery Analyzer automatically synchronizes file passwords from Deep Discovery Director and overwrites existing file passwords that you have configured. You can only change the file passwords on the Deep Discovery Director management console.

Note

If you register Deep Discovery Analyzer to both Deep Discovery Director and Apex Central, Deep Discovery Analyzer synchronizes exception lists only from Deep Discovery Director, and uploads Virtual Analyzer Suspicious Objects only to Deep Discovery Director. You can check the synchronization status on the Deep Discovery Director management console. For more information, see the **Deep Discovery Director Administrator's Guide**.

The Deep Discovery Director screen displays the following information:

TABLE 6-3. Deep Discovery Director Fields

FIELD	INFORMATION
Status	The following appliance statuses can be displayed: • Not registered: The appliance is not registered to Deep Discovery Director. • Registered | Connected: The appliance is registered and connected to Deep Discovery Director. • Registered | Unable to connect: The appliance is registered to Deep Discovery Director, but unable to connect. Verify that the Deep Discovery Director network settings are valid. • Registered | Untrusted fingerprint: The appliance is registered to Deep Discovery Director, but the connection was interrupted. To restore the connection, trust the new fingerprint.
Last connected	The last time this appliance connected to Deep Discovery Director.
Host name	The host name of this appliance.
Server address	The Deep Discovery Director server address.

Field	Information
Port	The Deep Discovery Director port.
API key	The Deep Discovery Director API key.
Fingerprint (SHA-256)	The Deep Discovery Director fingerprint.
Use the system proxy settings	Select to use the system proxy settings to connect to Deep Discovery Director.

Registering to Deep Discovery Director

The following procedure is for registering to Deep Discovery Director. If you have already registered and want to change the connection settings, you must first unregister.

Procedure

1. Go to **Administration** > **Integrated Products/Services** > **Deep Discovery Director**
2. Under **Connection Settings**, type the **Server address** for Deep Discovery Director.
3. Under **Connection Settings**, type the **Port** number for Deep Discovery Director. The default port number is 443.
4. Under **Connection Settings**, type the **API key** for Deep Discovery Director.

   Note

   You can find this information on the **Help** screen on the management console of Deep Discovery Director.

5. (Optional) If you have configured proxy settings for Deep Discovery Analyzer and want to use these settings for Deep Discovery Director connections, select **Use system proxy**.

Note

This setting can be changed after registering to Deep Discovery Director.

To update this setting without unregistering from Deep Discovery Director, click **Update Settings**.

6. Click **Register**.

   The **Status** changes to **Registered | Connected**.

Note

- If the Deep Discovery Director fingerprint changes, the connection is interrupted and the **Trust** button appears. To restore the connection, verify that the Deep Discovery Director fingerprint is valid and then click **Trust**.
- After the registration process is complete, the **Test Connection** button appears. You can click **Test Connection** to test the connection to Deep Discovery Director.
- If you are using Deep Discovery Analyzer in a load-balancing cluster, registering the primary appliance will automatically register all secondary appliances.

Unregistering from Deep Discovery Director

Follow this procedure to unregister from Deep Discovery Director or before registering to another Deep Discovery Director.

Procedure

1. Go to **Administration** > **Integrated Products/Services** > **Deep Discovery Director**
2. Click **Unregister**.

   The **Status** changes to **Not registered**.

Smart Protection Tab

Trend Micro Smart Protection technology is a next-generation, in-the-cloud protection solution providing File and Web Reputation Services. By integrating Web Reputation Services, Deep Discovery Analyzer can obtain reputation data for websites that users attempt to access. Deep Discovery Analyzer logs URLs that Smart Protection technology verifies to be fraudulent or known sources of threats and then uploads the logs for report generation.

Deep Discovery Analyzer connects to a Smart Protection source to obtain web reputation data.

Reputation services are delivered through the Trend Micro Smart Protection Network and Smart Protection Server. The following table provides a comparison.

TABLE 6-4. Smart Protection Sources

BASIS OF COMPARISON	TREND MICRO SMART PROTECTION NETWORK	SMART PROTECTION SERVER
Purpose	A globally scaled, Internet-based infrastructure that provides File and Web Reputation Services to Trend Micro products that integrate smart protection technology	Localizes the File and Web Reputation Services to the corporate network to optimize efficiency. The Smart Protection Server also provides the following: • Certified Safe Software Service • Community File Reputation • Web Inspection Service • Web Reputation Service • Predictive Machine Learning engine • Community Domain/IP Reputation Service **Note** The Dynamic URL Scanning service is only available on the Smart Protection Network.
Administration	Hosted and maintained by Trend Micro	Installed and managed by Trend Micro product administrators
Connection protocol	HTTPS	HTTPS

Basis of Comparison	Trend Micro Smart Protection Network	Smart Protection Server
Usage	Use if you do not plan to install Smart Protection Server To configure Smart Protection Network as source, see *Configuring Smart Protection Settings on page 6-22*.	Use as primary source and the Smart Protection Network as an alternative source For guidelines on setting up Smart Protection Server and configuring it as source, see *Setting Up Smart Protection Server on page 6-21*.

About Smart Protection Server

Consideration	Description
Deployment	If you have previously installed a Smart Protection Server for use with another Trend Micro product, you can use the same server for Deep Discovery Analyzer. While several Trend Micro products can send queries simultaneously, the Smart Protection Server may become overloaded as the volume of queries increases. Make sure that the Smart Protection Server can handle queries coming from different products. Contact your support provider for sizing guidelines and recommendations.
IP Address	Smart Protection Server and the VMware ESX/ESXi server (which hosts the Smart Protection Server) require unique IP addresses. Check the IP addresses of the VMware ESX/ESXi server and Deep Discovery Analyzer to make sure that these IP addresses are not assigned to the Smart Protection Server.
Installation	For installation instructions and requirements, refer to the *Installation and Upgrade Guide* for Trend Micro Smart Protection Server at http://docs.trendmicro.com/en-us/enterprise/smart-protection-server.aspx.

Setting Up Smart Protection Server

Procedure

1. Install Smart Protection Server on a VMware ESX/ESXi server.

2. Configure Smart Protection Server settings from the Deep Discovery Analyzer management console.

   For details, see *Configuring Smart Protection Settings on page 6-22*.

Note

- Smart Protection Server may not have reputation data for all URLs because it cannot replicate the entire Smart Protection Network database. When updated infrequently, Smart Protection Server may also return outdated reputation data.
- Enabling this option improves the accuracy and relevance of the reputation data.
- Disabling this option reduces the time and bandwidth to obtain the data.

Configuring Smart Protection Settings

Procedure

1. Go to **Administration** > **Integrated Products/Services** > **Smart Protection**.
2. Select **Enabled**.
3. Select a Smart Protection source:
   - Trend Micro Smart Protection Network™

     Trend Micro Smart Protection Network is a globally-scaled, cloud-based infrastructure providing reputation services to Trend Micro products that integrate Smart Protection technology. Deep Discovery Analyzer connects to the Smart Protection Network using HTTPS. Select this option if you do not plan to set up a Smart Protection Server.
   - Smart Protection Server

     Smart Protection Server does the following:

- Provides Web Reputation Services as offered by Smart Protection Network
- Relays these services to the global Trend Micro Smart Protection Network for network efficiency
- Acts as a reverse proxy for Deep Discovery Analyzer to connect to global services

As a Trend Micro product administrator, you must set up and maintain this server. Select this option if you have already set up a server.

4. If you select **Smart Protection Server**, configure the following settings:

   a. Specify the Smart Protection Server IP address or fully qualified domain name and port number.

      Obtain the IP address by going to **Smart Protection** > **Reputation Services** > **Web Reputation** on the Smart Protection Server console.

      The IP address forms part of the URL listed on the screen.

   b. (Optional) Select **Connect using a proxy server** if proxy settings for Deep Discovery Analyzer have been configured for use with Smart Protection Server connections.

      Note

      If proxy settings are disabled, Smart Protection Server will connect to Deep Discovery Analyzer directly.

   c. (Optional) If your organization uses a CA certificate, select **Use certificate** and click **Choose File** or **Browse** to locate the certificate file.

   d. (Optional) If your organization uses a Certificate Revocation List, select **Use CRL** and click **Choose File** or **Browse** to locate the Certificate Revocation List file.

Important

Deep Discovery Analyzer supports connection to global services only if Smart Protection Server version 3.3 is used.

Note

When **Smart Protection Server** is selected as Smart Protection source, the following services and the ability to test their connectivity are enabled:

- Certified Safe Software Service (CSSS)
- Community File Reputation
- Web Inspection Service
- Predictive Machine Learning engine
- Community Domain/IP Reputation Service

5. Click **Save**.

ICAP Tab

Deep Discovery Analyzer supports integration with Internet Content Adaptation Protocol (ICAP) clients. After integration, Deep Discovery Analyzer can perform the following functions:

- Work as an ICAP server that analyzes samples submitted by ICAP clients
- Serve User Configuration Pages to the end user when the specified network behavior (URL access / file upload / file download) is blocked
- Control which ICAP clients can submit samples by configuring the ICAP Client list
- Bypass file scanning based on selected MIME content-types
- Bypass file scanning based on true file types
- Bypass URL scanning in RESPMOD mode

- Scan samples using different scanning modules
- Filter sample submissions based on the file types that Virtual Analyzer can process.

Deep Discovery Analyzer supports the following ICAP specifications:

Protocol	ICAP Mode	ICAP URL
ICAP	REQMOD	`icap://<DDAN_IP>:1344/request`
	RESPMOD	`icap:// <DDAN_IP>:1344/response`
ICAPS	REQMOD	`icaps://<DDAN_IP>:11344/request`
	RESPMOD	`icaps://<DDAN_IP>:11344/response`

Configuring ICAP Settings

Note

When ICAP integration is enabled, Deep Discovery Analyzer automatically reduces Virtual Analyzer throughput to conserve system resources.

Procedure

1. Go to **Administration** > **Integrated Products/Services** > **ICAP**.
2. Select **Enable ICAP**.
3. Type the **ICAP port number**.

   The default value is 1344.
4. To connect the ICAP client over a secure connection, select **Enable ICAP over SSL** and specify the following details:
   - **ICAPS port number**: Default value is 11344
   - **Certificate**: Certificates must use base64-encoding

- **Private key**: Private keys must use base64-encoding

  Important

  Only encrypted private keys are supported.

- **Passphrase**
- **Confirm Passphrase**

5. (Optional) In the **Header Settings** section, specify how Deep Discovery Analyzer handles ICAP headers.

   a. Under **ICAP headers from Deep Discovery Analyzer**, select the ICAP headers Deep Discovery Analyzer sends to ICAP clients.

      For details, see *ICAP Header Responses on page 4-12*.

   b. Under **ICAP headers from ICAP clients**, select the ICAP headers to save when Deep Discovery Analyzer receives the headers from ICAP clients.

6. (Optional) Under **Scanning Settings**, select the options for URL scanning in RESPMOD mode and set how Deep Discovery Analyzer scans samples from ICAP clients:

   - Bypass URL scanning in RESPMOD mode
   - Scan samples using YARA rules
   - Scan samples using the suspicious objects list
   - Scan samples using the user-defined suspicious objects list
   - Scan samples using the Predictive Machine Learning engine

7. (Optional) Under **Content Settings**, do the following:

   a. Select **Enable MIME content-type exclusion** to exclude files from scanning based on the MIME content-types that you selected or specified.

   b. To have Deep Discovery Analyzer check the true file type of submitted samples, select **Enable MIME content-type validation**.

Note

- The **Enable MIME content-type validation** setting only applies when you select **Enable MIME content-type exclusion**.
- When you select this option, Deep Discovery Analyzer will still perform an ICAP pre-scan on samples with one of the following:
  - HTTP compression
  - Some MIME content-types in ICAP Preview mode
  - Custom MIME content-types
  - Some pre-defined MIME content-types

  Samples with unsupported file types are not submitted to Virtual Analyzer for scanning after ICAP pre-scan.

8. (Optional) Under **User Notification Pages**, select **Use a user notification page whenever the ICAP client blocks network traffic for the following events** and specify a file that contains the page contents.

Note

This setting allows Deep Discovery Analyzer to display a custom page whenever an ICAP client blocks network traffic for specific events. The ICAP client may override this setting. If the setting is enabled and the custom page are not displayed, verify that there are no conflicts with the ICAP client configuration.

Deep Discovery Analyzer supports custom pages for the following events:

- URL access
- File upload
- File download

Note

Use any text editor to create the pages, and save as plain text. HTML tags may be used to apply formatting. Ensure that files are smaller than 5 MB.

9. (Optional) Under **ICAP Client List**, do the following:

   a. Specify the number of **Max connections** allowed.

      The default value is `1000`.

   b. Select **Accept scan request from the following ICAP clients only** to limit submissions to specific clients only.

      - To add a new IP address or IP address range, click **Add**.
      - To remove an existing entry, select an entry and click **Delete**.

      Note

      By default, all ICAP clients can submit samples to Deep Discovery Analyzer.

10. Click **Save**.

11. Verify that ICAP integration is working correctly in Deep Discovery Analyzer.

    For high-risk samples:

    - Deep Discovery Analyzer returns an “HTTP 403 Forbidden” message to the ICAP client.
    - If the **User Notification Page** setting is enabled, Deep Discovery Analyzer includes the uploaded page as part of the message.
    - If X-Virus-ID and X-Infection-Found ICAP headers are enabled, Deep Discovery Analyzer includes these headers within the message.

    For no-risk samples:

    - Deep Discovery Analyzer returns the original message it receives from the ICAP client.
    - If the ICAP client supports ICAP “204 No Content”, it returns an ICAP “204 No Content” response without the original message.

Microsoft Active Directory Tab

Deep Discovery Analyzer supports integration with a Microsoft Active Directory server. After integration, Microsoft Active Directory accounts can be added as Deep Discovery Analyzer users.

Configuring Microsoft Active Directory

Note

Deep Discovery Analyzer supports integration with the Microsoft Active Directory 2012 and 2016 versions only.

Procedure

1. Go to **Administration** > **Integrated Products/Services** > **Microsoft Active Directory**.
2. Select **Use Microsoft Active Directory server**.
3. Specify a server type.
4. For the primary Microsoft Active Directory server, specify the following details:
   - Server address
   - Access protocol
   - Port
5. (Optional) Select **Enable secondary server**.

   The secondary server acts as a backup when the primary Microsoft Active Directory server is inaccessible.
6. For the primary Microsoft Active Directory server, specify the following details:
   - Base distinguished name

- User name
- Password

7. (Optional) If the primary server requires a certificate, select **Use CA certificate**, and then specify the required certificate.
8. (Optional) Click **Test Connection** to test the connection to the primary Microsoft Active Directory server.
9. Click **Save**.

Syslog Tab

Deep Discovery Analyzer maintains system logs that provide summaries of the following:

- Virtual Analyzer analysis logs
- Integrated product detection logs
- System events
- Alert events

Use the **Syslog** tab, in **Administration** > **Integrated Products/Services** > **Syslog**, to configure Deep Discovery Analyzer to send logs to multiple syslog servers.

Configuring Syslog Settings

Deep Discovery Analyzer can forward logs to multiple syslog servers after saving the logs to its database.

Note

- Deep Discovery Analyzer can be configured to forward logs to a maximum of 3 syslog servers.
- Only logs saved after enabling this setting are forwarded. Previous logs are excluded.

Procedure

1. Go to **Administration** > **Integrated Products/Services** > **Syslog**.

   The **Syslog Settings** screen appears.

2. Perform one of the following:

   - To add a new syslog server, click **Add**.
   - To update the details of an existing syslog server, click the name of the syslog server to be updated.

3. On the screen that appears, specify the **Status** for the profile.

4. Type the **Profile name** and **Server address** of the syslog server.

5. Type the port number.

   Note

   Trend Micro recommends using the following default syslog ports:

   - **UDP**: 514
   - **TCP**: 601
   - **SSL**: 443

6. Select the protocol to transport log content to the syslog server.

   - UDP
   - TCP
   - SSL

7. Select the format in which event logs are sent to the syslog server.

   - **CEF**: Common Event Format (CEF) is an open log management standard developed by HP ArcSight. CEF comprises a standard prefix and a variable extension that is formatted as key-value pairs.

- **LEEF**: Log Event Extended Format (LEEF) is a customized event format for IBM Security QRadar. LEEF comprises an LEEF header, event attributes, and an optional syslog header.
- **Trend Micro Event Format (TMEF)**: Trend Micro Event Format (TMEF) is a customized event format developed by Trend Micro and is used by Trend Micro products for reporting event information.

8. Select the scope of logs to send to the syslog server:
   - Virtual Analyzer analysis logs
   - Integrated product detection logs
   - System event logs
   - Alert event logs
9. (Optional) Select the logs to exclude from sending to the syslog server.
10. Click **Save**.

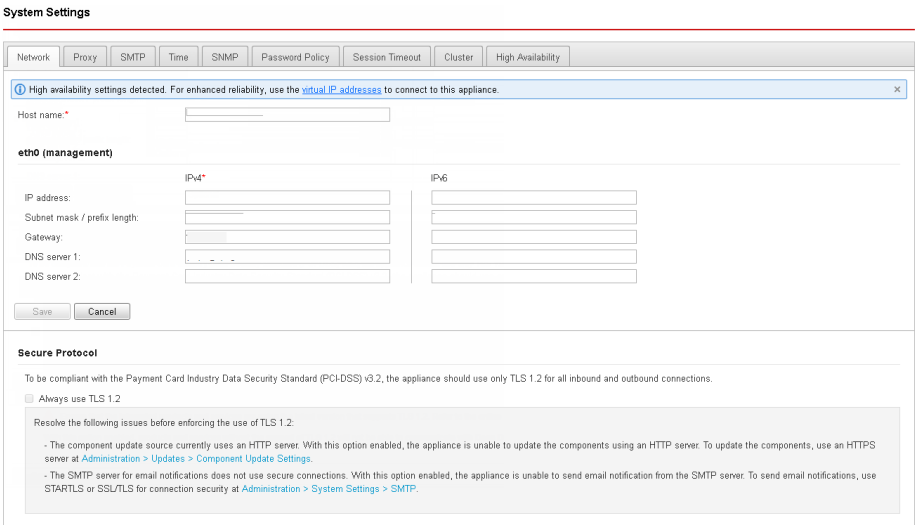
System Settings

The **System Settings** screen, in **Administration** > **System Settings**, includes the following tabs:

- *Cluster Tab on page 6-47*
- *High Availability Tab on page 6-62*

Network Tab

Use this screen to configure the host name, the IPv4 and IPv6 addresses of the Deep Discovery Analyzer appliance, and other network settings (including TLS 1.2 enforcement).



An IPv4 address is required and the default is `192.168.252.2`. Modify the IPv4 address immediately after completing all deployment tasks.

Note

You can also use the **Preconfiguration Console** to modify the network settings.

For details, see the *Deep Discovery Analyzer Installation and Deployment Guide*.

Deep Discovery Analyzer uses the specified IP addresses to connect to the Internet when accessing Trend Micro hosted services, including the Smart

Protection Network, the ActiveUpdate server, and Threat Connect. The IP addresses also determine the URLs used to access the management console.

You can select **Enable TLS 1.2** to enhance data security for inbound and outbound connections on Deep Discovery Analyzer.

Note

- To be compliant with the Payment Card Industry Data Security Standard (PCI-DSS) v3.2, the appliance should use only TLS 1.2 for all inbound and outbound connections.
- Before you can configure this option, verify that the Deep Discovery Analyzer appliance is not in a high availability cluster. Detach passive primary appliances from the cluster at **Administration** > **System Settings** > **Cluster**.
- Ensure that the integrated products and services are using the latest version that supports TLS 1.2. For details, see *TLS 1.2 Support for Integrated Products/Services on page C-1*.
- Verify that the following products/services are configured to use TLS 1.2.
  - The ActiveUpdate server source at **Administration** > **Updates** > **Component Update Settings** must use HTTPS.
  - The ICAP settings at **Administration** > **Integrated Products/Services** > **ICAP** must use ICAP over SSL.
  - The syslog servers at **Administration** > **Integrated Products/Services** > **Syslog** must use SSL.
  - The SMTP server at **Administration** > **System Settings** > **SMTP** must use SSL/TLS or STARTTLS.

The following table lists configuration limitations.

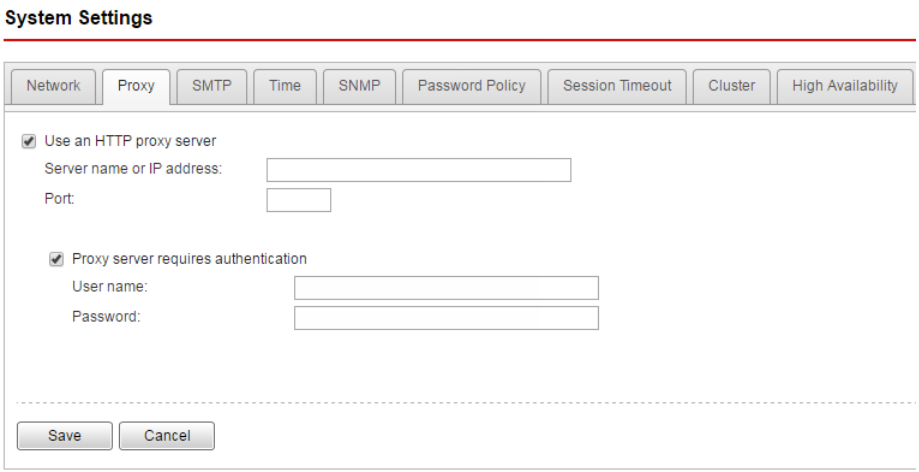
TABLE 6-5. Configuration Limitations

FIELD	LIMITATION
Host name	Cannot be modified when using high availability

Field	Limitation
IPv4 address	• Must differ from IPv4 virtual address • Must be in the same network segment as IPv4 virtual address
IPv6 address	• Must differ from IPv6 virtual address • Must be in the same network segment as IPv6 virtual address • Cannot be deleted if IPv6 virtual address has been configured • Cannot be added or deleted when using high availability

Proxy Tab

Specify proxy settings if Deep Discovery Analyzer connects to the Internet or management network through a proxy server.



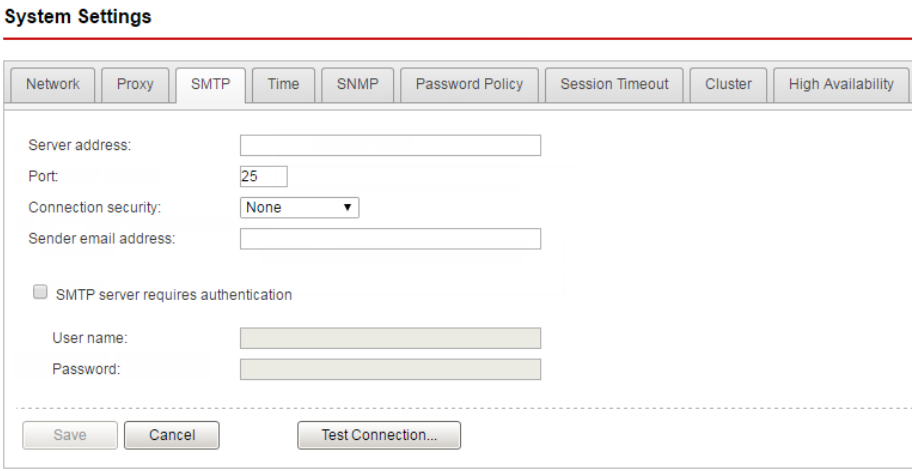
Configure the following settings.

TABLE 6-6. Proxy Tab Tasks

TASK	STEPS
Use an HTTP proxy server	Select this option to enable proxy settings.
Server name or IP address	Type the proxy server host name or IPv4 address, or IPv6 address. The management console does not support host names with double-byte encoded characters. If the host name includes such characters, type its IP address instead.
Port	Type the port number that Deep Discovery Analyzer uses to connect to the proxy server.
Proxy server requires authentication	Select this option if the connection to the proxy server requires authentication. Deep Discovery Analyzer supports the following authentication methods: • No authentication • Basic authentication • Digest authentication • NTLMv1 authentication
User name	Type the user name used for authentication. **Note** This option is only available if **Proxy server requires authentication** is enabled.
Password	Type the password used for authentication. **Note** This option is only available if **Proxy server requires authentication** is enabled.

SMTP Tab

Deep Discovery Analyzer uses SMTP settings when sending notifications through email.



Procedure

1. Go to **Administration** > **System Settings** and click the **SMTP** tab.
2. Specify the following details:

TABLE 6-7. SMTP Tab Tasks

FIELD	STEPS
Server address	Type the SMTP server host name, IPv4 address, or IPv6 address. The management console does not support host names with double-byte encoded characters. If the host name includes such characters, type its IP address instead.
Port	Type the port number used by the SMTP server.

Field	Steps
Connection security	Specify the type of security used for the connection. Available values are: None, STARTTLS, SSL/TLS.
Sender email address	Type the email address of the sender. The default value is `notifications@ddan.local`.
SMTP server requires authentication	If the server requires authentication, select **SMTP server requires authentication** and specify a user name and password. **WARNING!** Ensure that the user name and password to be specified is valid for the SMTP server. Connections made using an incorrect user name and password may cause some SMTP servers to reject all network request originating from the Deep Discovery Analyzer server.

3. (Optional) To test the connection to the external SMTP server, do the following:

   a. Click **Test Connection**.

   b. Type the recipient email address.

   c. Click **OK**.

   Note

   Deep Discovery Analyzer does not send a test email message to the recipient.

4. Click **Save**.

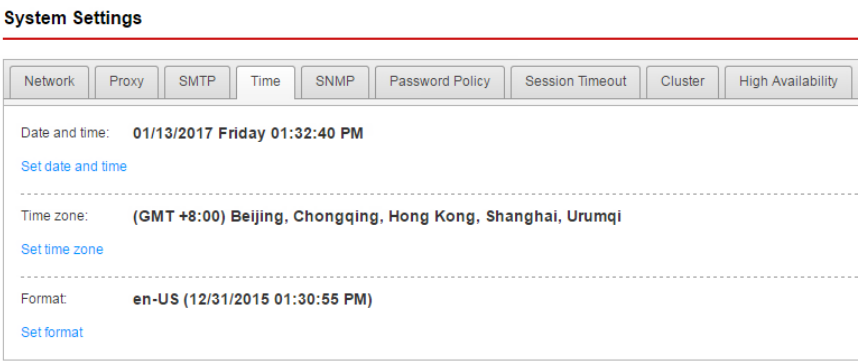
Time Tab

Configure date and time settings immediately after installation.

Procedure

1. Go to **Administration** > **System Settings** and click the **Time** tab.

   The **Time** screen appears.



2. Click **Set date and time**.

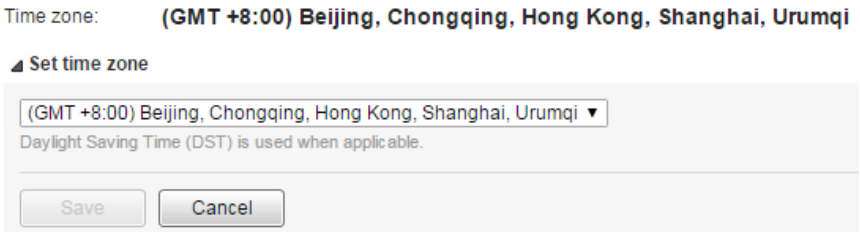
   The settings panel appears.

3. Select one of the following methods and configure the applicable settings.

   - Select **Connect to an NTP server** and type the host name, IPv4 address, or IPv6 address of the NTP server.
   - Select **Set manually** and configure the time.

4. Click **Save**.
5. Click **Set time zone**.

   The settings panel appears.



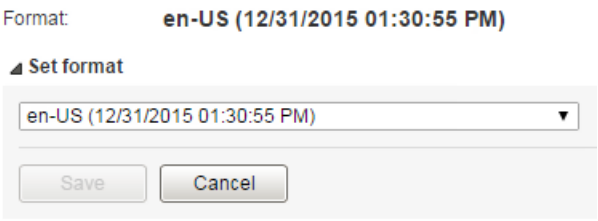
6. Select the applicable time zone.

Note

Daylight Saving Time (DST) is used when applicable.

7. Click **Save**.
8. Click **Set format**.

   The settings panel appears.



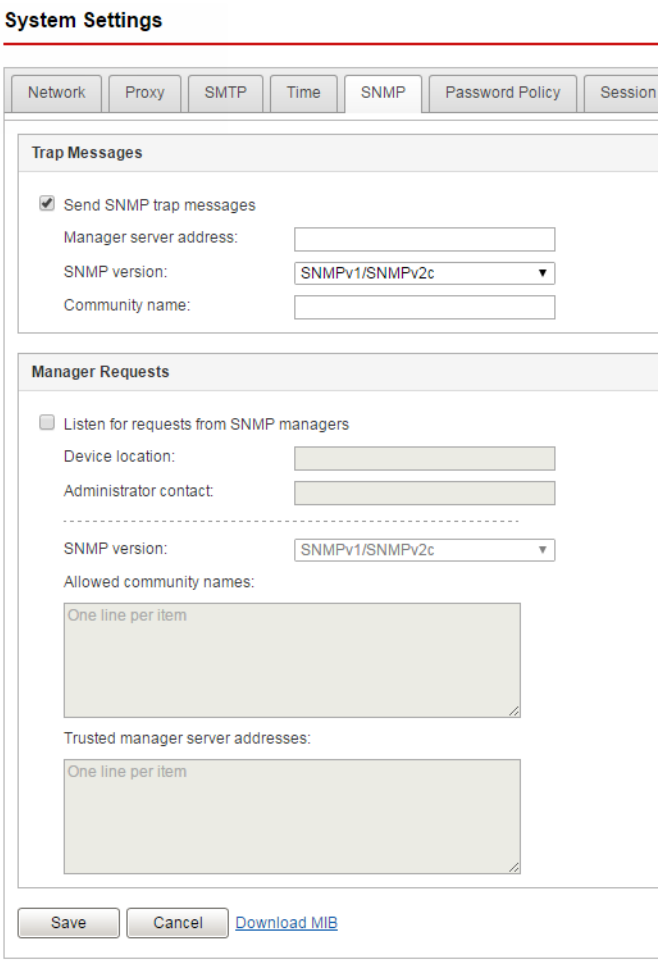
9. Select the preferred date and time format.
10. Click **Save**.

SNMP Tab

Simple Network Management Protocol (SNMP) is a protocol that supports monitoring of devices attached to a network for conditions that merit administrative attention.

A Simple Network Management Protocol (SNMP) trap is a method of sending notifications to network administrators who use management consoles that support this protocol.

On Deep Discovery Analyzer, use the **Administration** > **System Settings** > **SNMP** tab to perform the following tasks:



- Configure the appliance to send trap messages

  For details, see *Configuring Trap Messages on page 6-43*.

- Configure the appliance to listen for manager requests

  For details, see *Configuring Manager Requests on page 6-44*.

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) MD5 Authentication protocol: `HMAC-MD5` • (Optional) DES Privacy protocol: `CBC-DES`
Community name	Specify a community name.

Option	Description
Security model	Select the security model: • No authentication or privacy • Authenticated • Authenticated with privacy
User name	Specify the user name.
Password	Specify the password.
Privacy passphrase	Specify the privacy passphrase.

Note

Before configuring the appliance, set up the SNMP server first using the same SNMP version, community name, security model, user name, password, and privacy passphrase.

4. Click **Save**.
5. (Optional) Click **Download MIB** to download the Management Information Database (MIB) files.
   - Users can open the MIB files to view all network objects that can be monitored and managed using the SNMP protocol, or import them into management consoles that support this protocol.
   - For a list of Deep Discovery Analyzer supported SNMP object identifiers (OID), see *SNMP Object Identifiers on page B-1*.

Configuring Manager Requests

SNMP managers can use SNMP protocol commands to request Deep Discovery Analyzer system information.

Procedure

1. Go to **Administration** > **System Settings** > **SNMP**.
2. Under **Manager Requests**, select **Listen for requests from SNMP managers**.
3. Specify the manager request settings.

Option	Description
Device location	Specify the location of this appliance.
Administrator contact	Specify the administrator contact of this appliance.
SNMP version	Select the SNMP version: • SNMPv1/SNMPv2c • SNMPv3 If you use SNMPv3, configure the SNMP server as follows: • Context Name: `""` (default context) • Context Engine ID: `<Auto>` • (Optional) MD5 Authentication protocol: `HMAC-MD5` • (Optional) DES Privacy protocol: `CBC-DES`
Allowed community names	Specify a maximum of 5 community names.
Security model	Select the security model: • No authentication or privacy • Authenticated • Authenticated with privacy
User name	Specify the user name.
Password	Specify the password.
Privacy passphrase	Specify the privacy passphrase.

Option	Description
Trusted manager server addresses	Specify a maximum of 32 trusted manager server addresses.

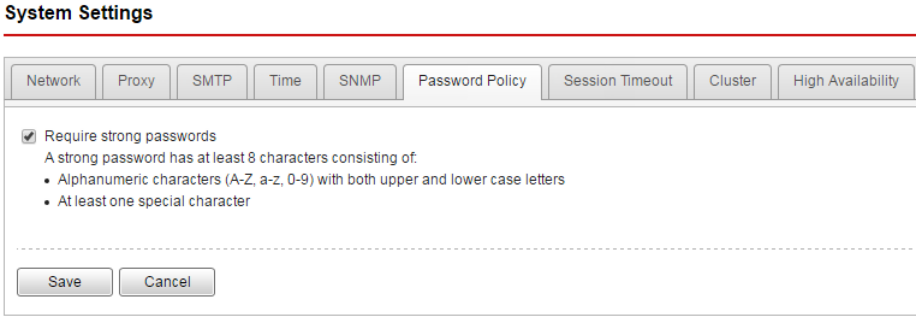
Note

Before configuring the appliance, set up the SNMP server first using the same SNMP version, community name, security model, user name, password, and privacy passphrase.

4. Click **Save**.
5. (Optional) Click **Download MIB** to download the Management Information Database (MIB) files.
   - Users can open the MIB files to view all network objects that can be monitored and managed using the SNMP protocol, or import them into management consoles that support this protocol.
   - For a list of Deep Discovery Analyzer supported SNMP object identifiers (OID), see *SNMP Object Identifiers on page B-1*.

Password Policy Tab

Trend Micro recommends requiring strong passwords. Strong passwords usually contain a combination of both uppercase and lowercase letters, numbers, and symbols, and are at least eight characters in length.

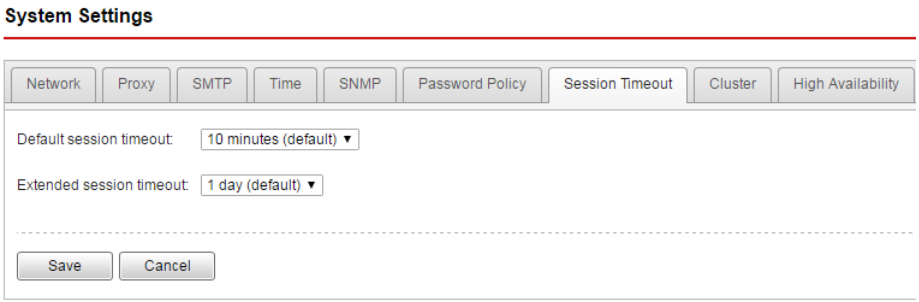


When strong passwords are required, a user submits a new password, and the password policy determines whether the password meets your company's established requirements.

Strict password policies sometimes increase costs to an organization when they force users to select passwords too difficult to remember. Users call the help desk when they forget their passwords, or record passwords and increase their vulnerability to threats. When establishing a password policy balance your need for strong security against the need to make the policy easy for users to follow.

Session Timeout Tab

At the logon screen of the management console, a user can choose default or extended session timeout.



The default session timeout is 10 minutes and the extended session timeout is one day. You can change these values according to your preference. New values take effect on the next logon.

Cluster Tab

Multiple standalone Deep Discovery Analyzer appliances can be deployed and configured to form a cluster that provides fault tolerance, improved performance, or a combination thereof.

Depending on your requirements and the number of Deep Discovery Analyzer appliances available, you may deploy the following cluster configurations:

TABLE 6-8. Cluster Configurations

CLUSTER CONFIGURATION	DESCRIPTION
High availability cluster	In a high availability cluster, one appliance acts as the active primary appliance, and one acts as the passive primary appliance. The passive primary appliance automatically takes over as the new active primary appliance if the active primary appliance encounters an error and is unable to recover.
Load-balancing cluster	In a load-balancing cluster, one appliance acts as the active primary appliance, and any additional appliances act as secondary appliances. The secondary appliances process submissions allocated by the active primary appliance for performance improvement.
High availability cluster with load balancing	In a high availability cluster with load balancing, one appliance acts as the active primary appliance, one acts as the passive primary appliance, and any additional appliances act as secondary appliances. The passive primary appliance takes over as the active primary appliance if the active primary appliance encounters an error and is unable to recover. The secondary appliances process submissions allocated by the active primary appliance for performance improvement.

For details, see the *Deep Discovery Analyzer Installation and Deployment Guide*.

The following table lists the available configuration modes and associated appliance behavior.

TABLE 6-9. Cluster Configuration Modes

CONFIGURATION MODE	DESCRIPTION
Primary (Active)	• Management console is fully accessible • Retains all configuration settings

Configuration Mode	Description
Primary (Passive)	• Management console is unavailable • Automatically configured based on the settings of the active primary appliance • On standby • Takes over as the active primary appliance if the active primary appliance encounters an error and is unable to recover • Does not process submissions

Configuration Mode	Description

Secondary	• Automatically configured based on the settings of the active primary appliance
	• Identifies the active primary appliance using its IP address or virtual IP address
	• Processes submissions allocated by the active primary appliance for performance improvement
	• Management console only shows screens with configurable settings:
	  ◦ **Virtual Analyzer** > **Sandbox Management** > **Network Connection**
	  ◦ **Virtual Analyzer** > **Sandbox Management** > **Sandbox for macOS**
	  ◦ **Administration** > **Updates** > **Hotfixes / Patches**
	  ◦ **Administration** > **Updates** > **Firmware**
	  ◦ **Administration** > **System Settings** > **Network**
	  ◦ **Administration** > **System Settings** > **Cluster**
	  ◦ **Administration** > **Accounts / Contacts** > **Accounts**
	  ◦ **Administration** > **Accounts / Contacts** > **Contacts**
	  ◦ **Administration** > **System Logs**
	  ◦ **Administration** > **System Maintenance** > **Network Services Diagnostics**
	  ◦ **Administration** > **System Maintenance** > **Power Off / Restart**
	  ◦ **Administration** > **System Maintenance** > **Debug**
	  ◦ **Administration** > **License**

Note

In environments that use a load-balancing cluster or a High Availability cluster with load balancing, Deep Discovery Analyzer automatically slows down Virtual Analyzer throughput on the active primary appliance to prevent exhaustion of system resources

Nodes List

The **Nodes** list is displayed on the active primary appliance.

The Nodes list contains the following information:

TABLE 6-10. Nodes List Columns

COLUMN	DESCRIPTION
Status	Connection status of the appliance. Mouseover a status icon to view details.
Mode	Cluster mode of the appliance.
Management IP Address	Management IP address of the appliance.
Host Name	Host name of the appliance.
Last Connected	Date and time that the appliance last connected to the active primary appliance. **Note** No data (indicated by a dash) if the appliance is a passive primary appliance.
Details	Additional details about the operational status of the appliance. • For standalone appliance: • **Standalone appliance**: The appliance is a standalone appliance. • For passive primary appliance:

Column	Description
	• **Fully synced**: The passive primary appliance is fully synced to the active primary appliance. • **Syncing n%**: The passive primary appliance is syncing settings from the active primary appliance. • **Sync error**: The passive primary appliance is unable to connect to the active primary appliance. Verify that the appliances are directly connected using eth3, and that eth3 is not used for sandbox analysis. **Tip** This field also displays the connection latency and throughput information. • For secondary appliances: • **Inconsistent component version**: One or more components have different versions on the active primary appliance and secondary appliance. Use the same component versions on all appliances. • **Not connected**: The active primary appliance did not receive a heartbeat from the secondary appliance within the last 10 seconds. Verify that the secondary appliance is powered on and able to connect to the active primary appliance through the network. • **Invalid API key**: The secondary appliance is configured with an invalid API key. Verify the **Active primary API key** on the secondary appliance. • **Incompatible software version**: The firmware, hotfix, and patch versions on the active primary appliance and secondary appliance are different. Use the same firmware, hotfix, and patch version on all appliances. • **Unexpected error**: An unexpected error has occurred. If the issue persists, contact your support provider.
Action	Actions that can be executed depending on the appliance mode and status. • For active primary appliance:

Column	Description

	• **Swap**: Swap the roles of the primary appliances. Sets the current passive primary appliance to primary mode (active) and the current active primary appliance to primary mode (passive). Appears when the passive primary appliance has synced all settings from the active primary appliance. For details, see *Swapping the Active Primary Appliance and the Passive Primary Appliance on page 6-55*
	• For passive primary appliance:
	  • **Detach**: Detach the passive primary appliance. Disables high availability and allows the passive primary appliance to be used as a standalone appliance. Appears when the passive primary appliance has synced all settings from the active primary appliance. For details, see *Detaching the Passive Primary Appliance from the Cluster on page 6-56*
	  • **Remove**: Remove inaccessible passive primary appliance. Disables high availability. Appears when the active primary appliance is unable to reach the passive primary appliance through eth3. For details, see *Removing the Passive Primary Appliance from the Cluster on page 6-56*
	• For secondary appliances:
	  • **Remove**: Remove inaccessible secondary appliance. Affects object processing capacity. Secondary appliances attempt to connect to the active primary appliance every 10 seconds. Appears when the active primary appliance does not receive a heartbeat from the secondary appliance within one minute. For details, see *Removing a Secondary Appliance from the Cluster on page 6-59*

Click **Refresh** to refresh the information in the **Nodes** list.

Adding a Passive Primary Appliance to the Cluster

The following table lists requirements that need to be fulfilled by both active primary appliance and passive primary appliance before the passive primary appliance can be added to the cluster.

TABLE 6-11. High Availability Clustering Requirements

REQUIREMENT	DESCRIPTION
Hardware model	Must be same hardware model (1000, 1100 or 1200)
Physical connection	Must be directly connected to each other using eth3
Firmware, hotfix, and patch version	Must be the same
Host name	Must be different
IP addresses	Must be symmetrical: • If only IPv4 address is configured on active primary appliance, passive primary appliance cannot configure both IPv4 address and IPv6 address. • If IPv4 address and IPv6 address are configured on active primary appliance, passive primary appliance cannot only configure IPv4 address.
Network segment	Must be in the same network segment
Virtual IP address	Must be configured on the active primary appliance

In a high availability cluster, one appliance acts as the active primary appliance, and one acts as the passive primary appliance. The passive primary appliance automatically takes over as the new active primary appliance if the active primary appliance encounters an error and is unable to recover.

Note

- If your network has Trend Micro Apex Central, only register the active primary appliance to Apex Central.
- When using high availability, use the virtual IP address to register.

Procedure

1. Perform the installation and deployment tasks as described in the *Deep Discovery Analyzer Installation and Deployment Guide*.

2. Configure the passive primary appliance.

   a. On the management console of the passive primary appliance, go to **Administration** > **System Settings** and click the **Cluster** tab.

   b. Select **Primary mode (passive)**.

   c. Type the IPv4 address or IPv6 address of the active primary appliance in **Active primary IP address**.

   d. Click **Test Connection**.

   e. Click **Save**.

      You will be redirected to the appliance standby screen.

- The passive primary appliance stops processing objects if it was previously doing so.
- The passive primary appliance will sync all settings from the active primary appliance. The total time to complete syncing depends on the appliance model.

  Important

  While the appliance is syncing, it cannot:

  - Take over as active primary appliance
  - Switch to another mode

- The management console of the passive primary appliance cannot be accessed. Manage the appliance and monitor the sync status from the management console of the active primary appliance.

Swapping the Active Primary Appliance and the Passive Primary Appliance

Swapping the primary appliances sets the current passive primary appliance to primary mode (active) and the current active primary appliance to primary mode (passive).

Procedure

1. On the management console of the active primary appliance, go to **Administration** > **System Settings** and click the **Cluster** tab.
2. Click **Swap** to swap the primary appliances.

Detaching the Passive Primary Appliance from the Cluster

Detaching the passive primary appliance disables high availability and allows the appliance to be used as a standalone appliance. After a passive primary appliance is detached, it no longer appears in the nodes list.

Detach the passive primary appliance to update or upgrade the product.

Important

Detaching the passive primary appliance does not reset the appliance settings. Trend Micro recommends reinstalling the appliance if you want to use it as a standalone appliance.

Procedure

1. On the management console of the active primary appliance, go to **Administration** > **System Settings** and click the **Cluster** tab.
2. Click **Detach** to detach the passive primary appliance from the cluster.

Removing the Passive Primary Appliance from the Cluster

Removing a disconnected or abnormal passive primary appliance from the cluster reduces the clutter in the nodes list.

Procedure

1. On the management console of the active primary appliance, go to **Administration** > **System Settings** and click the **Cluster** tab.

2. Wait for **Remove** to appear next to the passive primary appliance in the nodes list.
3. Click **Remove** to remove the passive primary appliance from the cluster.

Note

The passive primary appliance automatically rejoins the cluster if it reconnects to the active primary appliance.

Adding a Secondary Appliance to the Cluster

Verify that the secondary appliance has the same firmware, hotfix, and patch version as the active primary appliance.

To view the appliance firmware, hotfix, and patch version, see *About Screen on page 6-86*.

Update or upgrade the appliance firmware, hotfix, and patch version as necessary. For details, see *Updates on page 6-2*.

Note

- If your network has Trend Micro Apex Central, only register the active primary appliance to Apex Central.
- When using high availability, use the virtual IP address to register.

Procedure

1. Perform the installation and deployment tasks as described in the *Deep Discovery Analyzer Installation and Deployment Guide*.
2. Configure the secondary appliance.
   a. On the management console of the secondary appliance, go to **Administration** > **System Settings** and click the **Cluster** tab.
   b. Select **Secondary mode**.

c. Type the IPv4 address or IPv6 address of the active primary appliance in **Active primary IP address**.

> **Note**
>
> If you are using high availability, type the IPv4 virtual address or IPv6 virtual address.

d. Type the **Active primary API key**.

e. Click **Test Connection**.

> **Tip**
>
> Secondary appliances can test their connection to the active primary appliance at any time. Click **Test Connection** to get detailed information about any connectivity problems.

f. Click **Save**.

3. (Optional) Configure additional settings on the secondary appliance.

   a. Configure the sandbox network connection setting.

   For details, see *Enabling External Connections on page 4-66*.

   > **Note**
   >
   > Trend Micro recommends using the external network connection setting of the active primary appliance.

   b. Configure the **Sandbox for macOS** setting.

   For details, see *Sandbox for macOS Tab on page 4-69*.

   c. Configure the appliance network settings.

   For details, see *Network Tab on page 6-33*.

   d. Add accounts.

   For details, see *Accounts Tab on page 6-63*.

Note

Secondary appliances automatically deploy sandbox instances based on the sandbox allocation ratio of the active primary appliance. The following table lists a configuration example:

TABLE 6-12. Example Configuration Using Two Images

APPLIANCE TYPE	DEEP DISCOVERY ANALYZER HARDWARE MODEL	MAXIMUM NUMBER OF INSTANCES (TOTAL)	NUMBER OF WINDOWS 7 INSTANCES	NUMBER OF WINDOWS 8.1 INSTANCES
Primary appliance	1200 or 1100	60	40	20
Secondary appliance	1000	33	22	11

Removing a Secondary Appliance from the Cluster

Removing a disconnected secondary appliance from the cluster reduces the clutter in the nodes list and widgets of the active primary appliance.

Procedure

1. On the management console of the active primary appliance, go to **Administration** > **System Settings** and click the **Cluster** tab.
2. Wait for **Remove** to appear next to the secondary appliance in the nodes list.

Note

Secondary appliances attempt to connect to the active primary appliance every 10 seconds. If the active primary appliance does not receive a heartbeat within one minute, **Remove** appears next to the secondary appliance in the **Nodes** list.

Secondary appliances automatically rejoin the cluster if they reconnect to the active primary appliance.

3. Click **Remove** to remove the secondary appliance from the cluster.

   The secondary appliance is removed from the nodes list and widgets of the active primary appliance.

Replacing the Active Primary Appliance with a Secondary Appliance

If the active primary appliance is unresponsive or cannot be restored, and no passive primary appliance is deployed, it can be replaced by a secondary appliance from the same cluster.

Tip

Trend Micro recommends deployment of a passive primary appliance for high availability. For details, see *Adding a Passive Primary Appliance to the Cluster on page 6-53*.

Important

Submissions do not have a result if they were being analyzed on the active primary appliance when it becomes unresponsive.

Procedure

1. Power off the active primary appliance.
2. Select a secondary appliance from the same cluster and configure it as the new active primary appliance.
   a. On the management console of the secondary appliance, go to **Administration** > **System Settings** and click the **Cluster** tab.
   b. Select **Primary mode (active)**.
   c. Click **Save**.
3. Configure the IP address of the new active primary appliance.

   For details, see *Network Tab on page 6-33*.

Note

Trend Micro recommends using the same IP address as the original active primary appliance. This allows secondary appliances and integrated products to connect without reconfiguration.

4. Verify the settings on the new active primary appliance.

Note

Settings take up to one day to propagate to secondary appliances.

Moving High Availability Cluster Appliances

Important

If you need to move high availability cluster appliances to another location, the passive node must always be powered off first and powered on last.

Procedure

1. Power off the passive primary appliance.
2. Power off the active primary appliance on the **Administration** > **System Maintenance** > **Power Off/Restart** tab.
3. Move both appliances to the new location.
4. Connect each appliance to the management network using eth0.
5. Connect both appliances directly to each other using eth3.
6. Power on the active primary appliance.
7. Power on the passive primary appliance.

Changing the IP Segment of High Availability Clusters

The management console supports changing the virtual IP address and management IP address only if they are in the same network segment.

However, if you need to move the IP address to another network segment, nodes must be detached, re-configured and then set up again.

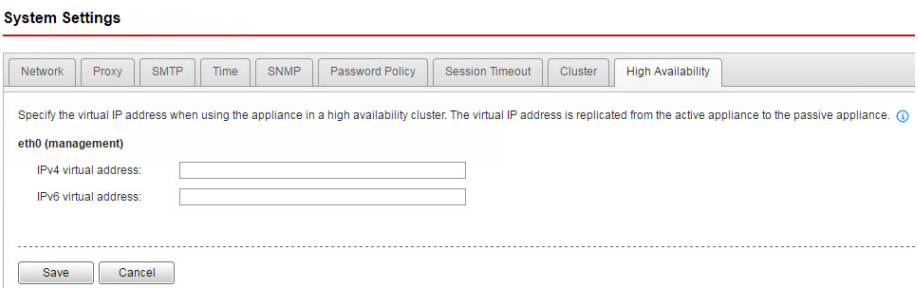
Procedure

1. Detach the passive primary appliance.
2. On active primary appliance UI, delete the virtual IP address, and then configure the management IP address and virtual IP address to match the IP address in the new network segment.
3. On passive primary appliance UI, configure the management IP address to match the IP address in the new network segment
4. Add the passive primary appliance to the cluster again.

High Availability Tab

Specify the IPv4 and IPv6 virtual addresses when using the appliance in a high availability configuration. The IPv4 and IPv6 virtual addresses are used to provide integrated products with fixed IP addresses for configuration, and also determine the URLs to access the management console.

Trend Micro recommends using the original IP address of the appliance as virtual IP address so that integrated products can continue submitting objects to Deep Discovery Analyzer without any modifications to their settings.



The following table lists configuration limitations.

TABLE 6-13. Configuration Limitations when Using High Availability

FIELD	LIMITATION
IPv4 virtual address	• Cannot be used by another host • Must differ from IPv4 address • Must be in the same network segment as IPv4 address
IPv6 virtual address	• Cannot be used by another host • Must differ from IPv6 address • Must be in the same network segment as IPv6 address • Cannot be link-local • Can only be configured when IPv6 address has been configured

Accounts / Contacts

The **Accounts / Contacts** screen, in **Administration** > **Accounts / Contacts**, includes the following tabs:

- *Accounts Tab on page 6-63*
- *Contacts Tab on page 6-67*

Accounts Tab

Use the **Accounts** tab to create and manage user accounts.

Procedure

1. Go to **Administration** > **Accounts / Contacts**.
2. Use the following options to manage user accounts:

- To add a new user account, click **Add** .

  The **Add Account** window opens. For details, see *Add / Edit Account on page 6-65*.

- To delete an account, select one or more user accounts and click **Delete**.

  Important

  - You cannot delete the default Deep Discovery Analyzer administrator account.
  - You cannot delete the logged-on account.

- To manually unlock an account, select a user account and click **Unlock**.

  Deep Discovery Analyzer includes a security feature that locks an account in case the user typed an incorrect password five times in a row. This feature cannot be disabled. Locked accounts automatically unlock after ten minutes. The administrator can manually unlock accounts that have been locked.

  Only one user account can be unlocked at a time.

3. To make changes to an existing account, click the user name of the account.

   The **Edit Account** window opens. For details, see *Add / Edit Account on page 6-65*.

4. If there are many entries in the table, use the following options to manage the user accounts list:

   - Select an account type from the **Type** drop down to show only the accounts for a specific type.
   - Click the **Name** column to sort names alphabetically.
   - Type a few characters in the **Search** text box to narrow down the entries. As you type, the entries that match the characters you typed

are displayed. Deep Discovery Analyzer searches all cells in the current page for matches.

- The panel at the bottom of the screen shows the total number of user accounts. If all user accounts cannot be displayed at the same time, use the pagination controls to view the accounts that are hidden from view.

Add / Edit Account

The **Add Account** and **Edit Account** screens share similar options.

Procedure

1. Go to **Administration** > **Accounts / Contacts**, and then go to the **Account** tab.
   - Click **Add** to open the **Add Account** screen.
   - Click the user name of an existing user account to open the **Edit Account** screen.
2. To add a local account, select **Local user** as the account **Type**, and provide the following details.
   - **Name**: Name of the account owner.
   - **User name**: User name supports a maximum of 40 characters.
   - **Password**: Type a password that contains at least 8 characters and includes uppercase letters, lowercase letters, numbers, and special characters.

Note

- To increase password complexity requirements, configure the global password policy in **Administration** > **System Settings** > **Password Policy** tab. The password policy is displayed in the window and must be satisfied before you can add a user account.
- When a user exceeds the number of retries allowed while entering incorrect passwords, Deep Discovery Analyzer sets the user account to inactive (locked). You can unlock the account in the **Accounts** screen.

- **Confirm password**: Type the password again.
- (Optional) **Description**: Description supports a maximum of 40 characters.

3. To add an Active Directory user, select **Active Directory user** as the account **Type**, and provide the following details.
   - **User name or group**: Specify the User Principal Name (UPN) or user group name.

     Note

     To quickly locate a specific user name or group, type a few characters in the text box and click **Search**.

   - (Optional) **Description**: Description supports a maximum of 40 characters.
4. Select the role and associated permissions of the user account.
   - **Administrator**: Users have full access to submitted objects, analysis results, and product settings
   - **Investigator**: Users have read-only access to submitted objects, analysis results, and product settings, but can submit objects and download the investigation package, including submitted objects
   - **Operator**: Users have read-only access to submitted objects, analysis results, and product settings

5. (Optional) Select **Add to contacts** to add the user account to the **Contacts** list, and provide the following details:

Note

Contacts receive email alert notifications by default.

- **Email address**
- (Optional) **Phone number**

6. Click **Save**.

Contacts Tab

Use the **Contacts** tab, in **Administration** > **Accounts / Contacts**, to maintain a list of contacts who are interested in the data that your logs collect.

This screen includes the following options.

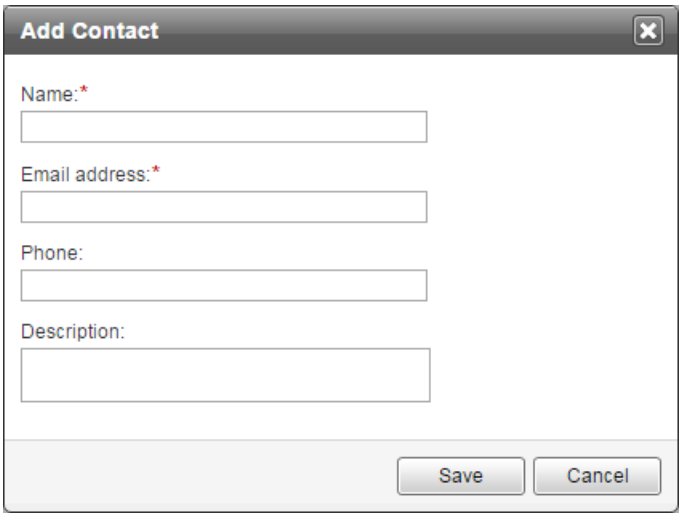
TABLE 6-14. Contacts Tasks

TASK	STEPS
Add Contact	Click **Add Contact** to add a new account. This opens the **Add Contact** window, where you specify contact details. For details, see *Add Contact Window on page 6-68*.
Edit	Select a contact and then click **Edit** to edit contact details. This opens the **Edit Contact** window, which contains the same settings as the **Add Contact** window. For details, see *Add Contact Window on page 6-68*. Only one contact can be edited at a time.
Delete	Select one or more contacts to delete and then click **Delete**.
Sort Column Data	Click a column title to sort the data below it.

Task	Steps
Search	If there are many entries in the table, type some characters in the Search text box to narrow down the entries. As you type, the entries that match the characters you typed are displayed. Deep Discovery Analyzer searches all cells in the table for matches.
Records and Pagination Controls	The panel at the bottom of the screen shows the total number of contacts. If all contacts cannot be displayed at the same time, use the pagination controls to view the contacts that are hidden from view.

Add Contact Window

The **Add Contact** window appears when you click **Add Contact** on the **Contacts** tab.



This window includes the following options.

TABLE 6-15. Add Contact Window

FIELD	DETAILS
Name	Type the contact name.
Email address	Type the contact's email address.
Phone	(Optional) Type the contact's phone number.
Description	(Optional) Type a description that does not exceed 40 characters.

System Logs

Deep Discovery Analyzer maintains system logs that provide summaries about user access, component updates, setting changes, and other configuration modifications that occurred using the management console.

Deep Discovery Analyzer stores system logs in the appliance hard drive.

Querying System Logs

Procedure

1. Go to **Administration** > **System Logs**.
2. Select a type.
   - **All**
   - **System Setting**
   - **Account Logon/Logoff**
   - **System Update**
3. Select a period or specify a custom range using the calendar and sliders.
4. (Optional) Type a keyword in the **User name** field and click the Loupe icon to only display system logs whose user names contain the keyword.

5. Click **Export All** to export the system log to a `.csv` file.

System Maintenance

The **System Maintenance** screen, in **Administration** > **System Maintenance**, includes the following tabs:

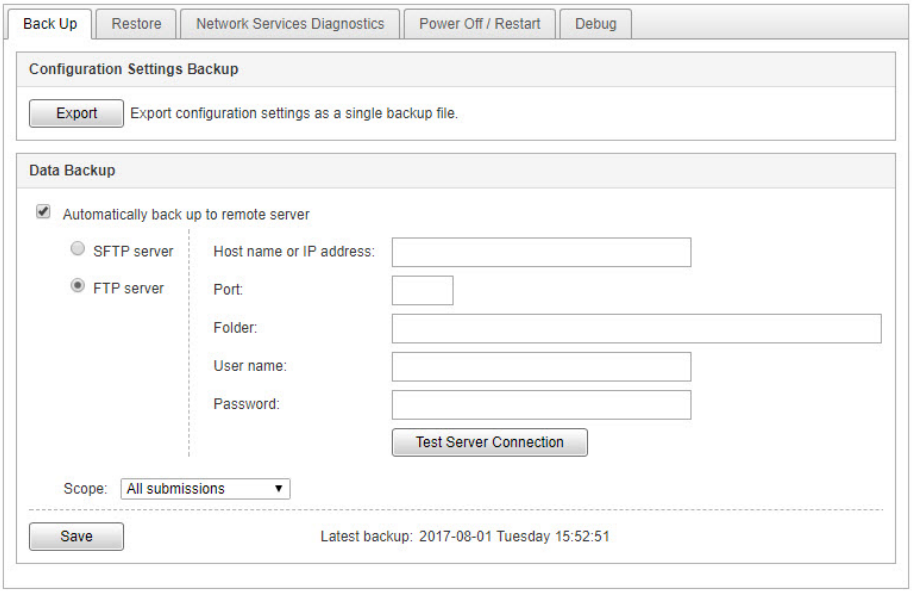
- *Back Up Tab on page 6-70*
- *Restore Tab on page 6-74*
- *Network Services Diagnostics Tab on page 6-76*
- *Power Off / Restart Tab on page 6-77*
- *Debug Tab on page 6-78*

Back Up Tab

The **Back Up** tab contains settings for the following:

- *Configuration Settings Backup on page 6-71*

- *Data Backup on page 6-73*



Configuration Settings Backup

Deep Discovery Analyzer can export a backup file of most configuration settings.

To download the configuration settings backup file, click **Export**.

The following table shows the screens and tabs with backed up configuration settings.

TABLE 6-16. Backed Up Configuration Settings

SCREEN	TAB
Dashboard	Widget settings only
Virtual Analyzer > **Submissions**	Custom column and advanced filter settings

Screen	Tab
Virtual Analyzer > **Suspicious Objects**	**User-defined Suspicious Objects**
Virtual Analyzer > **Exceptions**	Not applicable
Virtual Analyzer > **Sandbox Management**	**File Passwords**
	Submission Settings (file type filter settings)
	Smart Feedback
	Sandbox for macOS
	YARA Rules
Alerts / Reports > **Alerts**	**Rules**
Alerts / Reports > **Report**	**Schedules**
	Customization
Administration > **Updates**	**Component Update Settings**
Administration > **Integrated Products/ Services**	**Smart Protection**
	ICAP
	Microsoft Active Directory
	Log Settings
Administration > **System Settings**	**Network** (secure protocol settings)
	Proxy
	SMTP
	Time (time zone and format)
	SNMP
	Password Policy
	Session Timeout

Screen	Tab
Administration > **Accounts / Contacts**	**Accounts**
	Contacts
Administration > **System Maintenance**	Data back up

Data Backup

Deep Discovery Analyzer automatically exports submission records, analysis results, and objects to a remote server.

Investigation package data is periodically purged based on available storage space. To ensure availability of the data, Trend Micro recommends backing up the data to an external server. For details, see *Investigation Package Data Retention on page 4-30*.

Procedure

1. On the **Administration** > **System Maintenance** screen, click the **Back Up** tab.
2. Select **Automatically back up to remote server**.
3. Select the server type.
   - **SFTP server**
   - **FTP server**
4. Type the following information.
   a. **Host name or IP address**: The host name, IPv4 address, or IPv6 address of the backup server.
   b. **Port**: The port number of the backup server.
   c. (Optional) **Folder**: The backup folder path. The default value is the root folder.

d. **User name**: The user name used for authentication.

e. **Password**: The password used for authentication.

5. Click **Test Server Connection** to verify the connection to the backup server.

6. Select the scope of the data to back up.

   - **All submissions**
   - **High/Medium/Low risk**
   - **High risk only**

7. Click **Save**.

Restore Tab

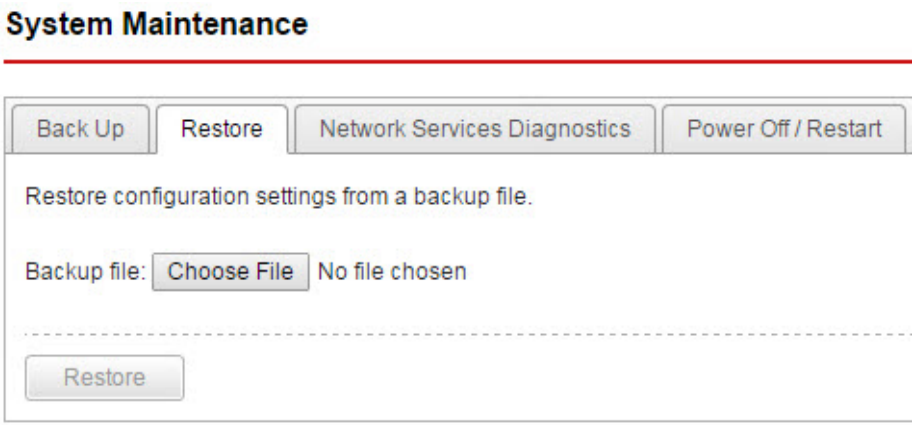
The **Restore** tab restores configuration settings from a backup file.

Note

For information on creating a backup file of the configuration settings, see *Back Up Tab on page 6-70*.

Important

If the Deep Discovery Analyzer license is not activated, the **Sandbox for macOS** setting is not restored.

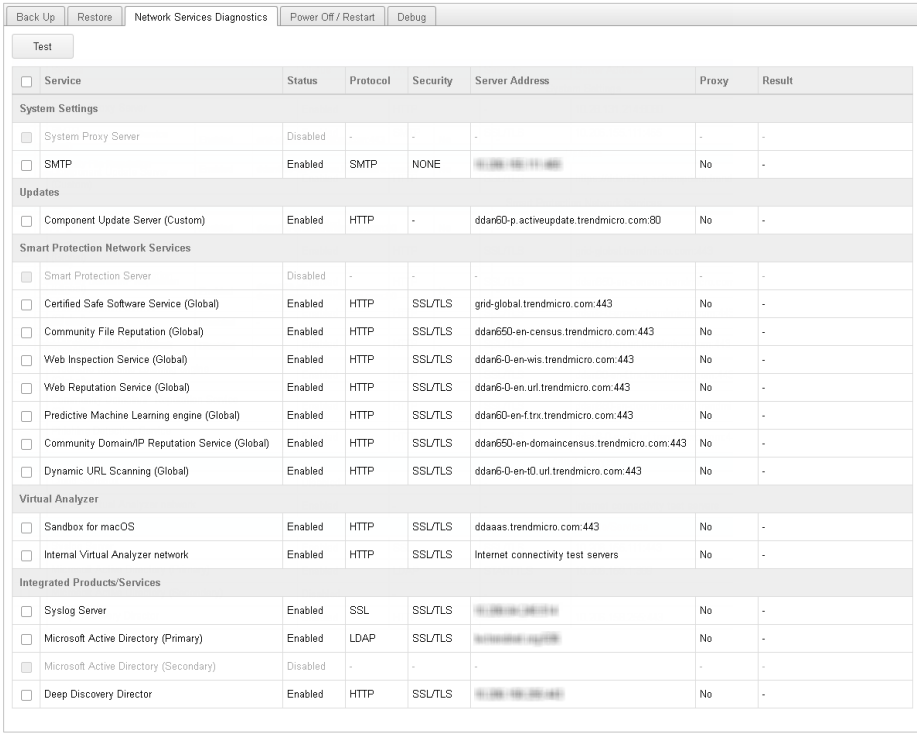


Procedure

1. Click **Choose File** or **Browse**.
2. Select the backup file.
3. Click **Restore**.

Network Services Diagnostics Tab

You can use the **Network Services Diagnostics** screen to test the network connections for the internal Virtual Analyzer and other network services.



Service	Status	Protocol	Security	Server Address	Proxy	Result
System Settings						
System Proxy Server	Disabled	-	-	-	-	-
SMTP	Enabled	SMTP	NONE	[redacted]	No	-
Updates						
Component Update Server (Custom)	Enabled	HTTP	-	ddan60-p.activeupdate.trendmicro.com:80	No	-
Smart Protection Network Services						
Smart Protection Server	Disabled	-	-	-	-	-
Certified Safe Software Service (Global)	Enabled	HTTP	SSL/TLS	grid-global.trendmicro.com:443	No	-
Community File Reputation (Global)	Enabled	HTTP	SSL/TLS	ddan650-en-census.trendmicro.com:443	No	-
Web Inspection Service (Global)	Enabled	HTTP	SSL/TLS	ddan6-0-en-wis.trendmicro.com:443	No	-
Web Reputation Service (Global)	Enabled	HTTP	SSL/TLS	ddan6-0-en.url.trendmicro.com:443	No	-
Predictive Machine Learning engine (Global)	Enabled	HTTP	SSL/TLS	ddan60-en-f.trx.trendmicro.com:443	No	-
Community Domain/IP Reputation Service (Global)	Enabled	HTTP	SSL/TLS	ddan650-en-domaincensus.trendmicro.com:443	No	-
Dynamic URL Scanning (Global)	Enabled	HTTP	SSL/TLS	ddan6-0-en-t0.url.trendmicro.com:443	No	-
Virtual Analyzer						
Sandbox for macOS	Enabled	HTTP	SSL/TLS	ddaaas.trendmicro.com:443	No	-
Internal Virtual Analyzer network	Enabled	HTTP	SSL/TLS	Internet connectivity test servers	No	-
Integrated Products/Services						
Syslog Server	Enabled	SSL	SSL/TLS	[redacted]	No	-
Microsoft Active Directory (Primary)	Enabled	LDAP	SSL/TLS	[redacted]	No	-
Microsoft Active Directory (Secondary)	Disabled	-	-	-	-	-
Deep Discovery Director	Enabled	HTTP	SSL/TLS	[redacted]	No	-

Procedure

1. Select one or more enabled services and click **Test**.

   Wait for the connection test to complete. The time required depends on the network environment and the number of services selected. View the connection test result in the **Result** column.

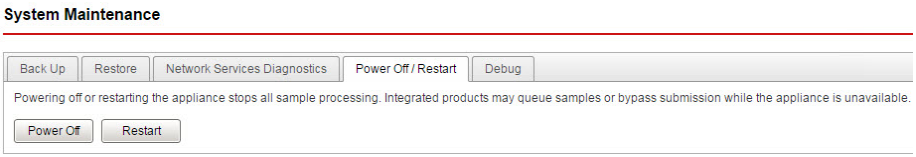
Power Off / Restart Tab

You can power off or restart the Deep Discovery Analyzer appliance on the management console.

- **Power Off**: All active tasks are stopped, and then the appliance gracefully shuts down.
- **Restart**: All active tasks are stopped, and then the appliance is restarted.

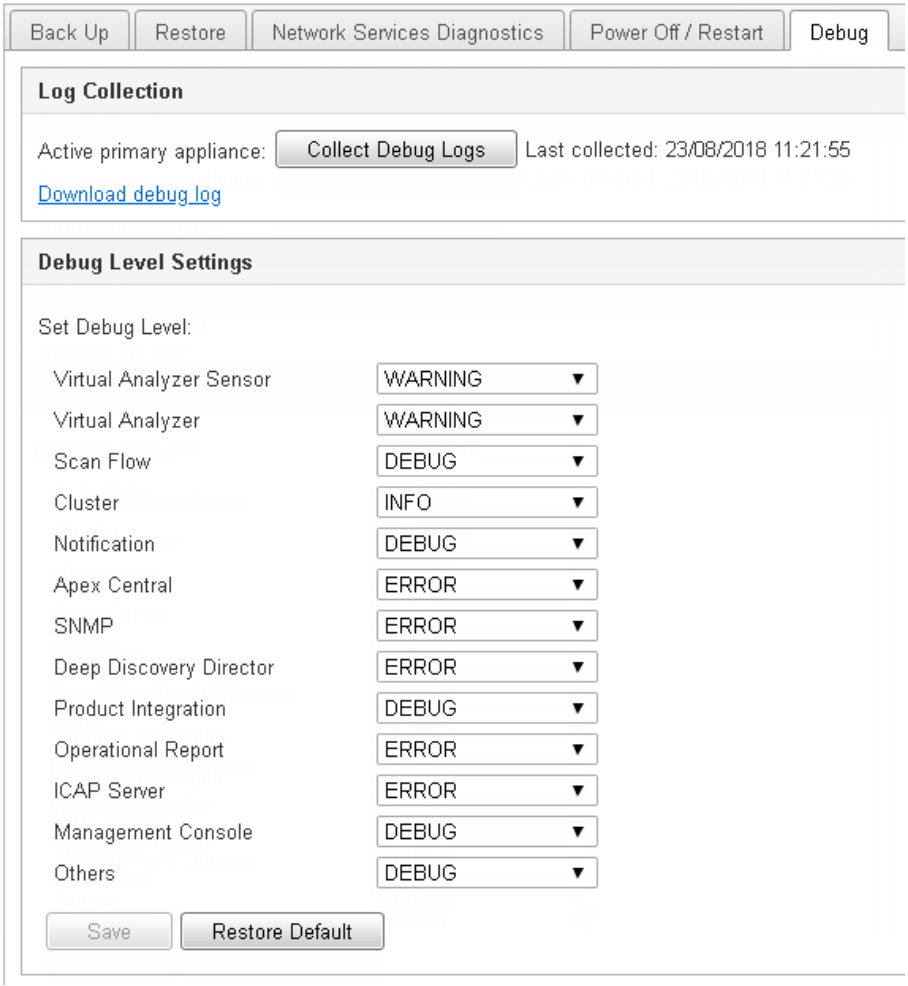
Powering off or restarting the appliance affects the following:

- Virtual Analyzer object analysis: Integrated products may queue objects or skip submission while the appliance is unavailable.
- Active configuration tasks initiated by all users: Trend Micro recommends verifying that all active tasks are completed before proceeding.



Debug Tab

You can use the **Debug** tab to generate and configure debug logs for troubleshooting.



Procedure

1. Specify how events will be shown in the debug logs.

   a. Under the **Debug Level Settings** section, review the default debug levels assigned to the following events:

      - Virtual Analyzer Sensor
      - Virtual Analyzer
      - Scan Flow
      - Cluster
      - Notification
      - Apex Central
      - SNMP
      - Deep Discovery Director
      - Product Integration
      - Operational Report
      - ICAP Server
      - Management Console
      - Others

   b. To customize the debug level for the following events, click the current level assigned and select another value.

   c. Click **Save**.

   d. To return all debug level settings to their default values, click **Restore Default**.

2. Collect debug logs.

   a. In the **Log Collection** section, determine the appliance where the log collection task should run.

For active primary appliances, Deep Discovery Analyzer always shows the active primary appliance as the first entry.

For passive primary appliances, Deep Discovery Analyzer shows the host name of the passive primary appliance for easier identification.

b. Click **Collect Debug Logs** for the selected appliance.

c. Wait for the task to complete.

d. Click **Download Debug log** to save the debug logs.

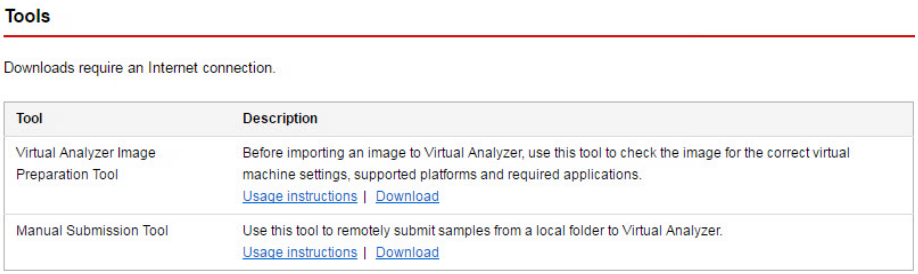
Note

For debug logs of the passive primary appliance, go to the management console of the active primary appliance.

For debug logs of a secondary appliance, go to the management console of the secondary appliance.

Tools

Use the **Tools** screen, in **Administration** > **Tools**, to view and download special tools for Deep Discovery Analyzer.



Each tool displayed on this screen has the following two options:

- **Usage Instructions**: This links to a relevant page in the online help with instructions about how to use the tool.
- **Download**: This links to the relevant page in the download center that has the tool.

Virtual Analyzer Image Preparation Tool

Use the Virtual Analyzer Image Preparation Tool before importing an image to Virtual Analyzer. The Virtual Analyzer Image Preparation Tool checks that an image has the correct virtual machine settings, supported platforms and required applications.

For details about the Virtual Analyzer Image Preparation Tool, see the *Virtual Analyzer Image Preparation Tool User's Guide* at http://docs.trendmicro.com/en-us/enterprise/virtual-analyzer-image-preparation.aspx.

Manual Submission Tool

Use the Manual Submission Tool to remotely submit samples from locations on users' computers to Deep Discovery Analyzer. This feature allows users to submit multiple samples at once, which are added to the **Submissions** queue.

Follow the steps below to download, configure and use the Manual Submission Tool.

Procedure

1. Record the following information to use with the Manual Submission Tool.
   a. API key: This is available on the Deep Discovery Analyzer management console, in **Help** > **About**.
   b. Deep Discovery Analyzer IP address: If unsure of the IP address, check the URL used to access the Deep Discovery Analyzer management console. The IP address is part of the URL.

2. In **Administration** > **Tools**, click the **Download** link for the Manual Submission Tool.

   The Trend Micro **Software Download Center** window appears.

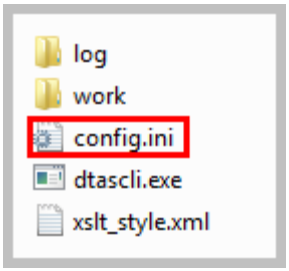
3. Click the download icon next to the latest version.

   A window providing different download options appears.

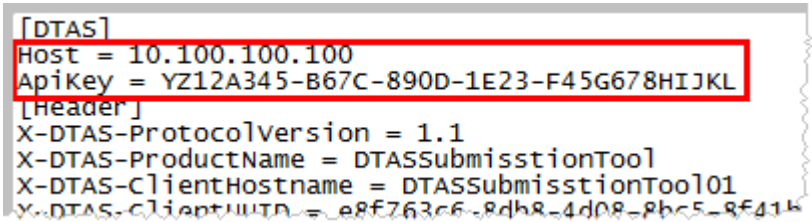
4. Click **Use HTTP Download**.

5. Extract the tool package.

6. In the folder where the tool was extracted, open `config.ini`.



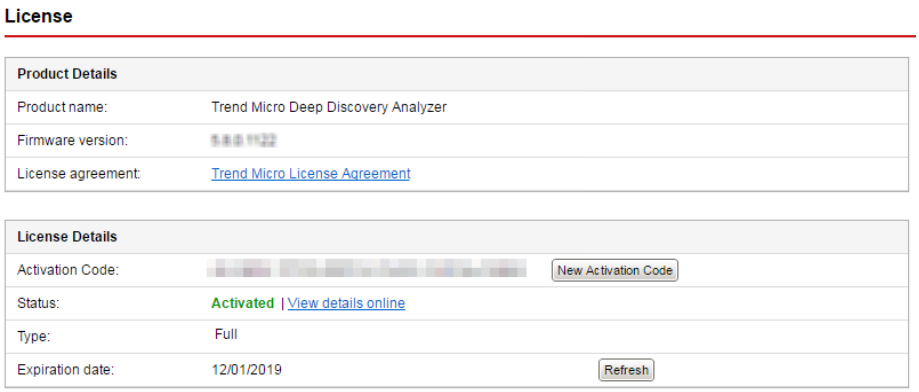
7. Next to `Host`, type the Deep Discovery Analyzer IP address. Next to `ApiKey`, type the Deep Discovery Analyzer API Key. Save `config.ini`.



8. Submit the samples. For details, see *Manually Submitting Objects on page 4-21*.

License

Use the **License** screen, in **Administration** > **License**, to view, activate, and renew the Deep Discovery Analyzer license.



The Deep Discovery Analyzer license includes product updates (including ActiveUpdate) and basic technical support ("Maintenance") for one (1) year from the date of purchase. The license allows you to upload threat samples for analysis, and to access Trend Micro Threat Connect from Virtual Analyzer. In addition, the license allows you to send samples to the Trend Micro cloud sandboxes for analysis.

After the first year, Maintenance must be renewed on an annual basis at the current Trend Micro rate.

A Maintenance Agreement is a contract between your organization and Trend Micro. It establishes your right to receive technical support and product updates in return for the payment of applicable fees. When you purchase a Trend Micro product, the License Agreement you receive with the product describes the terms of the Maintenance Agreement for that product.

The Maintenance Agreement has an expiration date. Your License Agreement does not. If the Maintenance Agreement expires, you will no

longer be entitled to receive technical support from Trend Micro or access Trend Micro Threat Connect.

Typically, 90 days before the Maintenance Agreement expires, you will start to receive email notifications, alerting you of the pending discontinuation. You can update your Maintenance Agreement by purchasing renewal maintenance from your Reseller, Trend Micro sales, or on the Trend Micro Customer Licensing Portal at:

https://clp.trendmicro.com/fullregistration

The **License** screen includes the following information and options.

TABLE 6-17. Product Details

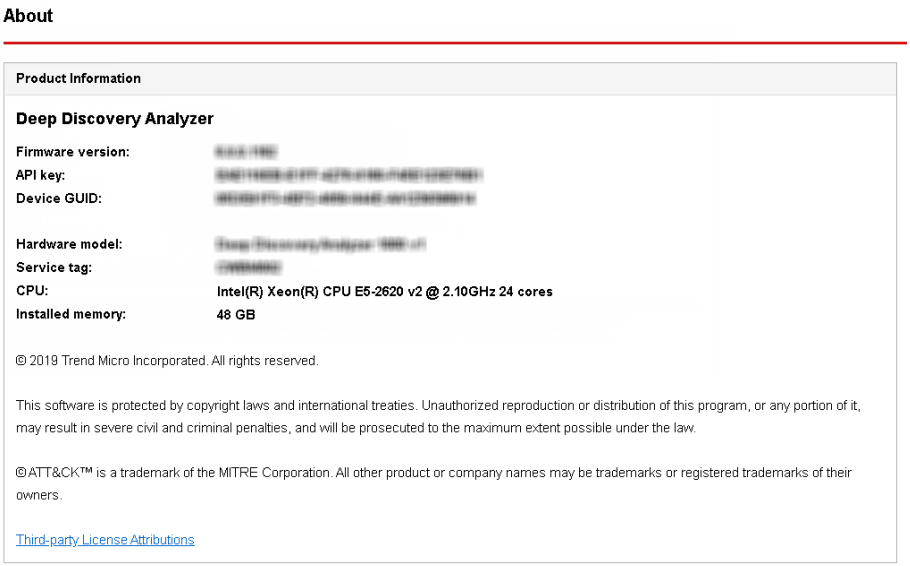
FIELD	DETAILS
Product name	Displays the name of the product.
Firmware version	Displays the full build number of the product.
License agreement	Displays a link to the **Trend Micro License Agreement**. Click the link to view or print the license agreement.

TABLE 6-18. License Details

FIELD	DETAILS
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 number of days left before the product expires.
Status	Displays either **Activated**, **Not Activated**, **Grace Period**, **Expired**, or **Evaluation Expired**. Click **View details online** 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 in the screen, click **Refresh**.
Type	• Full: Provides access to all product features • Evaluation: Provides access to all product features
Expiration date	View the expiration date of the license. Renew the license before it expires.

About Screen

Use the **About** screen in **Help** > **About** to view the firmware version, API key, and other product details.



Note

The API key is used by Trend Micro products to register and send samples to Deep Discovery Analyzer. For a list of products and supported versions, see *Integration with Trend Micro Products on page 2-6*.

Chapter 7

Technical Support

Learn about the following topics:

Troubleshooting Resources

Before contacting technical support, consider visiting the following Trend Micro online resources.

Using the Support Portal

The Trend Micro Support Portal is a 24x7 online resource that contains the most up-to-date information about both common and unusual problems.

Procedure

1. Go to http://esupport.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:

   http://esupport.trendmicro.com/srf/SRFMain.aspx

   A Trend Micro support engineer investigates the case and responds in 24 hours or less.

Threat Encyclopedia

Most malware today consists of blended threats, which combine two or more technologies, to bypass computer security protocols. Trend Micro combats this complex malware with products that create a custom defense strategy.

The Threat Encyclopedia provides a comprehensive list of names and symptoms for various blended threats, including known malware, spam, malicious URLs, and known vulnerabilities.

Go to http://about-threats.trendmicro.com/us/threatencyclopedia#malware to learn more about:

- Malware and malicious mobile code currently active or "in the wild"
- Correlated threat information pages to form a complete web attack story
- Internet threat advisories about targeted attacks and security threats
- Web attack and online trend information
- Weekly malware reports

Contacting Trend Micro

In the United States, Trend Micro representatives are available by phone or email:

Address	Trend Micro, Incorporated 225 E. John Carpenter Freeway, Suite 1500 Irving, Texas 75062 U.S.A.
Phone	Phone: +1 (817) 569-8900 Toll-free: (888) 762-8736
Website	http://www.trendmicro.com
Email address	support@trendmicro.com

- Worldwide support offices:

  http://www.trendmicro.com/us/about-us/contact/index.html

- Trend Micro product documentation:

http://docs.trendmicro.com

Speeding Up the Support Call

To improve problem resolution, have the following information available:

- Steps to reproduce the problem
- Appliance or network information
- Computer brand, model, and any additional connected hardware or devices
- Amount of memory and free hard disk space
- Operating system and service pack version
- Version of the installed agent
- Serial number or Activation Code
- Detailed description of install environment
- Exact text of any error message received

Sending Suspicious Content to Trend Micro

Several options are available for sending suspicious content to Trend Micro for further analysis.

Email Reputation Services

Query the reputation of a specific IP address and nominate a message transfer agent for inclusion in the global approved list:

https://ers.trendmicro.com/

Refer to the following Knowledge Base entry to send message samples to Trend Micro:

http://esupport.trendmicro.com/solution/en-US/1112106.aspx

File Reputation Services

Gather system information and submit suspicious file content to Trend Micro:

http://esupport.trendmicro.com/solution/en-us/1059565.aspx

Record the case number for tracking purposes.

Web Reputation Services

Query the safety rating and content type of a URL suspected of being a phishing site, or other so-called "disease vector" (the intentional source of Internet threats such as spyware and malware):

http://global.sitesafety.trendmicro.com/

If the assigned rating is incorrect, send a re-classification request to Trend Micro.

Other Resources

In addition to solutions and support, there are many other helpful resources available online to stay up to date, learn about innovations, and be aware of the latest security trends.

Download Center

From time to time, Trend Micro may release a patch for a reported known issue or an upgrade that applies to a specific product or service. To find out whether any patches are available, go to:

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

If a patch has not been applied (patches are dated), open the Readme file to determine whether it is relevant to your environment. The Readme file also contains installation instructions.

Documentation Feedback

Trend Micro always seeks to improve its documentation. If you have questions, comments, or suggestions about this or any Trend Micro document, please go to the following site:

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

Appendices

Appendices

Appendix A

Service Addresses and Ports

Deep Discovery Analyzer accesses several Trend Micro services to obtain information about emerging threats and to manage your existing Trend Micro products. The following table describes each service and provides the required address and port information accessible to the product version in your region.

TABLE A-1. Service Addresses and Ports

SERVICE	DESCRIPTION	ADDRESS AND PORT
ActiveUpdate Server	Provides updates for product components, including pattern files. Trend Micro regularly releases component updates through the Trend Micro ActiveUpdate server.	`ddan60-p.activeupdate.trendmicro.com/activeupdate:443`
Certified Safe Software Service (CSSS)	Verifies the safety of files. Certified Safe Software Service reduces false positives, and saves computing time and resources.	`grid-global.trendmicro.com/ws/level-0/files:443`
Sandbox as a Service (for macOS)	A hosted service that analyzes possible threats for macOS.	`ddaaas.trendmicro.com:443`

Service	Description	Address and Port
Community Domain/IP Reputation Service	Determines the prevalence of detected domains and IP addresses. Prevalence is a statistical concept referring to the number of times a domain or IP address was detected by Trend Micro sensors at a given time.	ddan680-en-domaincensus.trendmicro.com:443
Community File Reputation	Determines the prevalence of detected files. Prevalence is a statistical concept referring to the number of times a file was detected by Trend Micro sensors at a given time.	ddan680-en-census.trendmicro.com:443
Customer Licensing Portal	Manages your customer information, subscriptions, and product or service license.	licenseupdate.trendmicro.com/ollu/license_update.aspx:443
Dynamic URL Scanning	Performs real-time analysis of URLs to detect zero-day attacks.	ddan6-0-en-t0.url.trendmicro.com:443 ddan6-0-en-t0-backup.url.trendmicro.com:443
Predictive Machine Learning engine	Through use of malware modeling, Predictive Machine Learning compares samples to the malware models, assigns a probability score, and determines the probable malware type that a file contains.	ddan60-en-f.trx.trendmicro.com:443
Smart Feedback	Shares anonymous threat information with the Smart Protection Network, allowing Trend Micro to rapidly identify and address new threats. Trend Micro Smart Feedback may include product information such as the product name, ID, and version, as well as detection information including file types, SHA-1 hash values, URLs, IP addresses, and domains.	ddan600-en.fbs25.trendmicro.com:443

Service	Description	Address and Port
Threat Connect	Correlates suspicious objects detected in your environment and threat data from the Trend Micro Smart Protection Network. The resulting intelligence reports enable you to investigate potential threats and take actions pertinent to your attack profile.	`ddan60-threatconnect.trendmicro.com:443`
Web Inspection Service	Web Inspection Service is an auxiliary service of Web Reputation Services, providing granular levels of threat results and comprehensive threat names to users. The threat name and severity can be used as filtering criteria for proactive actions and further intensive scanning.	`ddan6-0-en-wis.trendmicro.com/wis/v1/reason:443`

Web Reputation Services	Tracks the credibility of web domains. Web Reputation Services assigns reputation scores based on factors such as a website's age, historical location changes, and indications of suspicious activities discovered through malware behavior analysis.	`ddan6-0-en.url.trendmicro.com:443`
		
		`ddan6-0-en-backup.url.trendmicro.com:443`

Appendix B

SNMP Object Identifiers

Topics include:

SNMP Query Objects

TABLE B-1. system

ITEM	DESCRIPTION
OID	.1.3.6.1.2.1.1
Object name	system
Description	System

TABLE B-2. sysDescr

ITEM	DESCRIPTION
OID	.1.3.6.1.2.1.1.1
Object name	sysDescr
Description	A textual description of the entity. This value should include the full name and version identification of the system's hardware type, software operating-system, and networking software. It is mandatory that this only contain printable ASCII characters.

TABLE B-3. sysObjectID

ITEM	DESCRIPTION
OID	.1.3.6.1.2.1.1.2
Object name	sysObjectID
Description	The vendor's authoritative identification of the network management subsystem contained in the entity. This value is allocated within the SMI enterprises subtree (1.3.6.1.4.1) and provides an easy and unambiguous means for determining `what kind of box' is being managed. For example, if vendor `Flintstones, Inc.' was assigned the subtree 1.3.6.1.4.1.424242, it could assign the identifier 1.3.6.1.4.1.424242.1.1 to its `Fred Router'.

TABLE B-4. sysUpTime

ITEM	DESCRIPTION
OID	.1.3.6.1.2.1.1.3
Object name	sysUpTime
Description	The time (in hundredths of a second) since the network management portion of the system was last re-initialized.

TABLE B-5. sysContact

ITEM	DESCRIPTION
OID	.1.3.6.1.2.1.1.4
Object name	sysContact
Description	The textual identification of the contact person for this managed node, together with information on how to contact this person. If no contact information is known, the value is the zero-length string.

TABLE B-6. sysName

ITEM	DESCRIPTION
OID	.1.3.6.1.2.1.1.5
Object name	sysName
Description	An administratively-assigned name for this managed node. By convention, this is the node's fully-qualified domain name. If the name is unknown, the value is the zero-length string.

TABLE B-7. sysLocation

ITEM	DESCRIPTION
OID	.1.3.6.1.2.1.1.6
Object name	sysLocation
Description	The physical location of this node (e.g., 'telephone closet, 3rd floor'). If the location is unknown, the value is the zero-length string.

TABLE B-8. sysServices

ITEM	DESCRIPTION
OID	.1.3.6.1.2.1.1.7
Object name	sysServices
Description	A value which indicates the set of services that this entity may potentially offer. The value is a sum. This sum initially takes the value zero. Then, for each layer, L, in the range 1 through 7, that this node performs transactions for, 2 raised to (L - 1) is added to the sum. For example, a node which performs only routing functions would have a value of 4 (2^(3-1)). In contrast, a node which is a host offering application services would have a value of 72 (2^(4-1) + 2^(7-1)). Note that in the context of the Internet suite of protocols, values should be calculated accordingly: layer functionality 1 physical (e.g., repeaters) 2 datalink/subnetwork (e.g., bridges) 3 internet (e.g., supports the IP) 4 end-to-end (e.g., supports the TCP) 7 applications (e.g., supports the SMTP) For systems including OSI protocols, layers 5 and 6 may also be counted.

TABLE B-9. sysORLastChange

ITEM	DESCRIPTION
OID	.1.3.6.1.2.1.1.8
Object name	sysORLastChange
Description	The value of sysUpTime at the time of the most recent change in state or value of any instance of sysORID.

TABLE B-10. interfaces

ITEM	DESCRIPTION
OID	.1.3.6.1.2.1.2
Object name	interfaces
Description	Interfaces

TABLE B-11. ifNumber

ITEM	DESCRIPTION
OID	.1.3.6.1.2.1.2.1
Object name	ifNumber
Description	The number of network interfaces (regardless of their current state) present on this system.

TABLE B-12. ifTable

ITEM	DESCRIPTION
OID	.1.3.6.1.2.1.2.2
Object name	ifTable
Description	A list of interface entries. The number of entries is given by the value of ifNumber.

TABLE B-13. memIndex

ITEM	DESCRIPTION
OID	.1.3.6.1.4.1.2021.4.1
Object name	memIndex
Description	Bogus Index. This should always return the integer 0.

TABLE B-14. memErrorName

ITEM	DESCRIPTION
OID	.1.3.6.1.4.1.2021.4.2
Object name	memErrorName
Description	Bogus Name. This should always return the string 'swap'.

TABLE B-15. memTotalSwap

ITEM	DESCRIPTION
OID	.1.3.6.1.4.1.2021.4.3
Object name	memTotalSwap
Description	The total amount of swap space configured for this host.

TABLE B-16. memAvailSwap

ITEM	DESCRIPTION
OID	.1.3.6.1.4.1.2021.4.4
Object name	memAvailSwap
Description	The amount of swap space currently unused or available.

TABLE B-17. memTotalReal

ITEM	DESCRIPTION
OID	.1.3.6.1.4.1.2021.4.5
Object name	memTotalReal
Description	The total amount of real/physical memory installed on this host.

TABLE B-18. memAvailReal

ITEM	DESCRIPTION
OID	.1.3.6.1.4.1.2021.4.6

Item	Description
Object name	memAvailReal
Description	The amount of real/physical memory currently unused or available.

Table B-19. memTotalFree

Item	Description
OID	.1.3.6.1.4.1.2021.4.11
Object name	memTotalFree
Description	The total amount of memory free or available for use on this host. This value typically covers both real memory and swap space or virtual memory.

Table B-20. memMinimumSwap

Item	Description
OID	.1.3.6.1.4.1.2021.4.12
Object name	memMinimumSwap
Description	The minimum amount of swap space expected to be kept free or available during normal operation of this host. If this value (as reported by 'memAvailSwap(4)') falls below the specified level, then 'memSwapError(100)' will be set to 1 and an error message made available via 'memSwapErrorMsg(101)'.

Table B-21. memShared

Item	Description
OID	.1.3.6.1.4.1.2021.4.13
Object name	memShared
Description	The total amount of real or virtual memory currently allocated for use as shared memory. This object will not be implemented on hosts where the underlying operating system does not explicitly identify memory as specifically reserved for this purpose.

TABLE B-22. memBuffer

ITEM	DESCRIPTION
OID	.1.3.6.1.4.1.2021.4.14
Object name	memBuffer
Description	The total amount of real or virtual memory currently allocated for use as memory buffers. This object will not be implemented on hosts where the underlying operating system does not explicitly identify memory as specifically reserved for this purpose.

TABLE B-23. memCached

ITEM	DESCRIPTION
OID	.1.3.6.1.4.1.2021.4.15
Object name	memCached
Description	The total amount of real or virtual memory currently allocated for use as cached memory. This object will not be implemented on hosts where the underlying operating system does not explicitly identify memory as reserved for this purpose.

TABLE B-24. memSwapError

ITEM	DESCRIPTION
OID	.1.3.6.1.4.1.2021.4.100
Object name	memSwapError
Description	Indicates whether the amount of available swap space (as reported by 'memAvailSwap(4)') is less than the minimum (specified by 'memMinimumSwap(12)').

TABLE B-25. memSwapErrorMsg

ITEM	DESCRIPTION
OID	.1.3.6.1.4.1.2021.4.101
Object name	memSwapErrorMsg

Item	Description
Description	Describes whether the amount of available swap space (as reported by 'memAvailSwap(4)') is less than the minimum (specified by 'memMinimumSwap(12)').

Table B-26. dskIndex

Item	Description
OID	.1.3.6.1.4.1.2021.9.1.1
Object name	dskIndex
Description	Integer reference number (row number) for the disk mib.

Table B-27. dskPath

Item	Description
OID	.1.3.6.1.4.1.2021.9.1.2
Object name	dskPath
Description	Path where the disk is mounted.

Table B-28. dskDevice

Item	Description
OID	.1.3.6.1.4.1.2021.9.1.3
Object name	dskDevice
Description	Path of the device for the partition.

Table B-29. dskMinimum

Item	Description
OID	.1.3.6.1.4.1.2021.9.1.4
Object name	dskMinimum

Item	Description
Description	Minimum space required on the disk (in kBytes) before the errors are triggered. Either this or dskMinPercent is configured via the agent's snmpd.conf file.

Table B-30. dskMinPercent

Item	Description
OID	.1.3.6.1.4.1.2021.9.1.5
Object name	dskMinPercent
Description	Percentage of minimum space required on the disk before the errors are triggered. Either this or dskMinimum is configured via the agent's snmpd.conf file.

Table B-31. dskTotal

Item	Description
OID	.1.3.6.1.4.1.2021.9.1.6
Object name	dskTotal
Description	Total size of the disk/partition (kBytes).

Table B-32. dskAvail

Item	Description
OID	.1.3.6.1.4.1.2021.9.1.7
Object name	dskAvail
Description	Available disk space.

Table B-33. dskUsed

Item	Description
OID	.1.3.6.1.4.1.2021.9.1.8
Object name	dskUsed

Item	Description
Description	Disk space used.

Table B-34. dskPercent

Item	Description
OID	.1.3.6.1.4.1.2021.9.1.9
Object name	dskPercent
Description	Percentage of space used on disk.

Table B-35. dskPercentNode

Item	Description
OID	.1.3.6.1.4.1.2021.9.1.10
Object name	dskPercentNode
Description	Percentage of inodes used on disk.

Table B-36. dskErrorFlag

Item	Description
OID	.1.3.6.1.4.1.2021.9.1.100
Object name	dskErrorFlag
Description	Error flag indicating that the disk or partition is under the minimum required space configured for it.

Table B-37. dskErrorMsg

Item	Description
OID	.1.3.6.1.4.1.2021.9.1.101
Object name	dskErrorMsg
Description	A text description providing a warning and the space left on the disk.

TABLE B-38. laTable

ITEM	DESCRIPTION
OID	.1.3.6.1.4.1.2021.10
Object name	laTable
Description	Load average information

TABLE B-39. ssSwapIn

ITEM	DESCRIPTION
OID	.1.3.6.1.4.1.2021.11.1
Object name	ssIndex
Description	Bogus Index. This should always return the integer 0.

TABLE B-40. ssSwapIn

ITEM	DESCRIPTION
OID	.1.3.6.1.4.1.2021.11.2
Object name	ssErrorName
Description	Bogus Name. This should always return the string 'systemStats'.

TABLE B-41. ssSwapIn

ITEM	DESCRIPTION
OID	.1.3.6.1.4.1.2021.11.3
Object name	ssSwapIn
Description	The average amount of memory swapped in from disk, calculated over the last minute.

TABLE B-42. ssSwapOut

ITEM	DESCRIPTION
OID	.1.3.6.1.4.1.2021.11.4

Item	Description
Object name	ssSwapOut
Description	The average amount of memory swapped out to disk, calculated over the last minute.

Table B-43. ssIOSent

Item	Description
OID	.1.3.6.1.4.1.2021.11.5
Object name	ssIOSent
Description	The average amount of data written to disk or other block devices, calculated over the last minute. This object has been deprecated in favour of 'ssIORawSent(57)', which can be used to calculate the same metric, but over any desired time period.

Table B-44. ssIOReceive

Item	Description
OID	.1.3.6.1.4.1.2021.11.6
Object name	ssIOReceive
Description	The average amount of data read from disk or other block devices, calculated over the last minute. This object has been deprecated in favour of 'ssIORawReceived(58)', which can be used to calculate the same metric, but over any desired time period.

Table B-45. ssSysInterrupts

Item	Description
OID	.1.3.6.1.4.1.2021.11.7
Object name	ssSysInterrupts
Description	The average rate of interrupts processed (including the clock) calculated over the last minute. This object has been deprecated in favour of 'ssRawInterrupts(59)', which can be used to calculate the same metric, but over any desired time period.

TABLE B-46. ssSysContext

ITEM	DESCRIPTION
OID	.1.3.6.1.4.1.2021.11.8
Object name	ssSysContext
Description	The average rate of context switches, calculated over the last minute. This object has been deprecated in favour of 'ssRawContext(60)', which can be used to calculate the same metric, but over any desired time period.

TABLE B-47. ssCpuUser

ITEM	DESCRIPTION
OID	.1.3.6.1.4.1.2021.11.9
Object name	ssCpuUser
Description	The percentage of CPU time spent processing user-level code, calculated over the last minute. This object has been deprecated in favour of 'ssCpuRawUser(50)', which can be used to calculate the same metric, but over any desired time period.

TABLE B-48. ssCpuSystem

ITEM	DESCRIPTION
OID	.1.3.6.1.4.1.2021.11.10
Object name	ssCpuSystem
Description	The percentage of CPU time spent processing system-level code, calculated over the last minute. This object has been deprecated in favour of 'ssCpuRawSystem(52)', which can be used to calculate the same metric, but over any desired time period.

TABLE B-49. ssCpuIdle

ITEM	DESCRIPTION
OID	.1.3.6.1.4.1.2021.11.11

Item	Description
Object name	ssCpuIdle
Description	The percentage of processor time spent idle, calculated over the last minute. This object has been deprecated in favour of 'ssCpuRawIdle(53)', which can be used to calculate the same metric, but over any desired time period.

Table B-50. ssCpuRawUser

Item	Description
OID	.1.3.6.1.4.1.2021.11.50
Object name	ssCpuRawUser
Description	The number of 'ticks' (typically 1/100s) spent processing user-level code. On a multi-processor system, the 'ssCpuRaw*' counters are cumulative over all CPUs, so their sum will typically be N*100 (for N processors).

Table B-51. ssCpuRawNice

Item	Description
OID	.1.3.6.1.4.1.2021.11.51
Object name	ssCpuRawNice
Description	The number of 'ticks' (typically 1/100s) spent processing reduced-priority code. This object will not be implemented on hosts where the underlying operating system does not measure this particular CPU metric. On a multi-processor system, the 'ssCpuRaw*' counters are cumulative over all CPUs, so their sum will typically be N*100 (for N processors).

Table B-52. ssCpuRawSystem

Item	Description
OID	.1.3.6.1.4.1.2021.11.52
Object name	ssCpuRawSystem

Item	Description
Description	The number of 'ticks' (typically 1/100s) spent processing system-level code. On a multi-processor system, the 'ssCpuRaw*' counters are cumulative over all CPUs, so their sum will typically be N*100 (for N processors). This object may sometimes be implemented as the combination of the 'ssCpuRawWait(54)' and 'ssCpuRawKernel(55)' counters, so care must be taken when summing the overall raw counters.

Table B-53. ssCpuRawIdle

Item	Description
OID	.1.3.6.1.4.1.2021.11.53
Object name	ssCpuRawIdle
Description	The number of 'ticks' (typically 1/100s) spent idle. On a multi-processor system, the 'ssCpuRaw*' counters are cumulative over all CPUs, so their sum will typically be N*100 (for N processors).

Table B-54. ssCpuRawWait

Item	Description
OID	.1.3.6.1.4.1.2021.11.54
Object name	ssCpuRawWait
Description	The number of 'ticks' (typically 1/100s) spent waiting for IO. This object will not be implemented on hosts where the underlying operating system does not measure this particular CPU metric. This time may also be included within the 'ssCpuRawSystem(52)' counter. On a multi-processor system, the 'ssCpuRaw*' counters are cumulative over all CPUs, so their sum will typically be N*100 (for N processors).

Table B-55. ssCpuRawKernel

Item	Description
OID	.1.3.6.1.4.1.2021.11.55
Object name	ssCpuRawKernel

Item	Description
Description	The number of 'ticks' (typically 1/100s) spent processing kernel-level code. This object will not be implemented on hosts where the underlying operating system does not measure this particular CPU metric. This time may also be included within the 'ssCpuRawSystem(52)' counter. On a multi-processor system, the 'ssCpuRaw*' counters are cumulative over all CPUs, so their sum will typically be N*100 (for N processors).

Table B-56. ssCpuRawInterrupt

Item	Description
OID	.1.3.6.1.4.1.2021.11.56
Object name	ssCpuRawInterrupt
Description	The number of 'ticks' (typically 1/100s) spent processing hardware interrupts. This object will not be implemented on hosts where the underlying operating system does not measure this particular CPU metric. On a multi-processor system, the 'ssCpuRaw*' counters are cumulative over all CPUs, so their sum will typically be N*100 (for N processors).

Table B-57. ssIORawSent

Item	Description
OID	.1.3.6.1.4.1.2021.11.57
Object name	ssIORawSent
Description	Number of blocks sent to a block device.

Table B-58. ssIORawReceived

Item	Description
OID	.1.3.6.1.4.1.2021.11.58
Object name	ssIORawReceived
Description	Number of blocks received from a block device.

TABLE B-59. ssRawInterrupts

ITEM	DESCRIPTION
OID	.1.3.6.1.4.1.2021.11.59
Object name	ssRawInterrupts
Description	Number of interrupts processed.

TABLE B-60. ssRawContexts

ITEM	DESCRIPTION
OID	.1.3.6.1.4.1.2021.11.60
Object name	ssRawContexts
Description	Number of context switches.

TABLE B-61. ssCpuRawSoftIRQ

ITEM	DESCRIPTION
OID	.1.3.6.1.4.1.2021.11.61
Object name	ssCpuRawSoftIRQ
Description	The number of 'ticks' (typically 1/100s) spent processing software interrupts. This object will not be implemented on hosts where the underlying operating system does not measure this particular CPU metric. On a multi-processor system, the 'ssCpuRaw*' counters are cumulative over all CPUs, so their sum will typically be N*100 (for N processors).

TABLE B-62. ssRawSwapIn

ITEM	DESCRIPTION
OID	.1.3.6.1.4.1.2021.11.62
Object name	ssRawSwapIn
Description	Number of blocks swapped in.

TABLE B-63. ssRawSwapOut

ITEM	DESCRIPTION
OID	.1.3.6.1.4.1.2021.11.63
Object name	ssRawSwapOut
Description	Number of blocks swapped out.

TABLE B-64. ssCpuRawSteal

ITEM	DESCRIPTION
OID	.1.3.6.1.4.1.2021.11.64
Object name	ssCpuRawSteal
Description	The number of 'ticks' (typically 1/100s) spent by the CPU to run a virtual CPU (guest). This object will not be implemented on hosts where the underlying operating system does not measure this particular CPU metric. On a multi-processor system, the 'ssCpuRaw*' counters are cumulative over all CPUs, so their sum will typically be N*100 (for N processors).

TABLE B-65. ssCpuRawGuest

ITEM	DESCRIPTION
OID	.1.3.6.1.4.1.2021.11.65
Object name	ssCpuRawGuest
Description	The number of 'ticks' (typically 1/100s) spent by the CPU to run a virtual CPU (guest). This object will not be implemented on hosts where the underlying operating system does not measure this particular CPU metric. On a multi-processor system, the 'ssCpuRaw*' counters are cumulative over all CPUs, so their sum will typically be N*100 (for N processors).

TABLE B-66. ssCpuRawGuestNice

ITEM	DESCRIPTION
OID	.1.3.6.1.4.1.2021.11.66
Object name	ssCpuRawGuestNice
Description	The number of 'ticks' (typically 1/100s) spent by the CPU to run a virtual CPU (guest). This object will not be implemented on hosts where the underlying operating system does not measure this particular CPU metric. On a multi-processor system, the 'ssCpuRaw*' counters are cumulative over all CPUs, so their sum will typically be N*100 (for N processors).

TABLE B-67. productVersion

ITEM	DESCRIPTION
OID	.1.3.6.1.4.1.6101.3005.1.1.1
Object name	productVersion
Description	Returns the Deep Discovery Analyzer version.

TABLE B-68. productBuild

ITEM	DESCRIPTION
OID	.1.3.6.1.4.1.6101.3005.1.1.2
Object name	productBuild
Description	Returns the Deep Discovery Analyzer build number.

TABLE B-69. productHotfix

ITEM	DESCRIPTION
OID	.1.3.6.1.4.1.6101.3005.1.1.3
Object name	productHotfix
Description	Returns the Deep Discovery Analyzer hotfix number.

TABLE B-70. componentTable

ITEM	DESCRIPTION
OID	.1.3.6.1.4.1.6101.3005.1.2
Object name	componentTable
Description	A table containing a set of component information.

TABLE B-71. componentIndex

ITEM	DESCRIPTION
OID	.1.3.6.1.4.1.6101.3005.1.2.1.1
Object name	componentIndex
Description	Returns the component index.

TABLE B-72. componentID

ITEM	DESCRIPTION
OID	.1.3.6.1.4.1.6101.3005.1.2.1.2
Object name	componentID
Description	Returns the component ID.

TABLE B-73. componentName

ITEM	DESCRIPTION
OID	.1.3.6.1.4.1.6101.3005.1.2.1.3
Object name	componentName
Description	Returns the component name.

TABLE B-74. componentVersion

ITEM	DESCRIPTION
OID	.1.3.6.1.4.1.6101.3005.1.2.1.4

Item	Description
Object name	componentVersion
Description	Returns the component version.

Table B-75. throughputTable

Item	Description
OID	.1.3.6.1.4.1.6101.3005.1.3
Object name	throughputTable
Description	A table containing a set of throughput information.

Table B-76. ifIndex

Item	Description
OID	.1.3.6.1.4.1.6101.3005.1.3.1.1
Object name	ifIndex
Description	Returns the interface index.

Table B-77. ifDescr

Item	Description
OID	.1.3.6.1.4.1.6101.3005.1.3.1.2
Object name	ifDescr
Description	Returns the interface description.

Table B-78. ifReceiveThroughput

Item	Description
OID	.1.3.6.1.4.1.6101.3005.1.3.1.3
Object name	ifReceiveThroughput
Description	Returns the interface receiving throughput.

TABLE B-79. ifTransmitThroughput

ITEM	DESCRIPTION
OID	.1.3.6.1.4.1.6101.3005.1.3.1.4
Object name	ifTransmitThroughput
Description	Returns the interface transmitting throughput.

SNMP Traps

TABLE B-80. coldStart

ITEM	DESCRIPTION
OID	.1.3.6.1.6.3.1.1.5.1.0
Object name	coldStart
Description	A coldStart trap signifies that the SNMP entity, supporting a notification originator application, is reinitializing itself and that its configuration may have been altered.

TABLE B-81. linkDown

ITEM	DESCRIPTION
OID	.1.3.6.1.6.3.1.1.5.3.0
Object name	linkDown
Description	A linkDown trap signifies that the SNMP entity, acting in an agent role, has detected that the ifOperStatus object for one of its communication links is about to enter the down state from some other state (but not from the notPresent state). This other state is indicated by the included value of ifOperStatus.

TABLE B-82. linkUp

ITEM	DESCRIPTION
OID	.1.3.6.1.6.3.1.1.5.4.0

Item	Description
Object name	linkUp
Description	A linkUp trap signifies that the SNMP entity, acting in an agent role, has detected that the ifOperStatus object for one of its communication links left the down state and transitioned into some other state (but not into the notPresent state). This other state is indicated by the included value of ifOperStatus.

Table B-83. nsNotifyShutdown

Item	Description
OID	.1.3.6.1.4.1.8072.4.0.2
Object name	nsNotifyShutdown
Description	An indication that the agent is in the process of being shut down.

Table B-84. accountLockedNotification

Item	Description
OID	.1.3.6.1.4.1.6101.3005.2.1.0.1
Object name	accountLockedNotification
Description	A notification for when an account was locked because of multiple unsuccessful logon attempts.

Table B-85. vaStoppedNotification

Item	Description
OID	.1.3.6.1.4.1.6101.3005.2.1.0.2
Object name	vaStoppedNotification
Description	A notification for when Virtual Analyzer is unable to recover from an error.

TABLE B-86. vaLongQueueNotification

ITEM	DESCRIPTION
OID	.1.3.6.1.4.1.6101.3005.2.1.0.3
Object name	vaLongQueueNotification
Description	A notification for when the number of Virtual Analyzer submissions has exceeded the threshold.

TABLE B-87. compUpdateErrorNotification

ITEM	DESCRIPTION
OID	.1.3.6.1.4.1.6101.3005.2.1.0.4
Object name	compUpdateErrorNotification
Description	A notification for when a component update was unsuccessful.

TABLE B-88. highCpuNotification

ITEM	DESCRIPTION
OID	.1.3.6.1.4.1.6101.3005.2.1.0.5
Object name	highCpuNotification
Description	A notification for when the average CPU usage in the last 5 minutes has exceeded the threshold.

TABLE B-89. highMemNotification

ITEM	DESCRIPTION
OID	.1.3.6.1.4.1.6101.3005.2.1.0.6
Object name	highMemNotification
Description	A notification for when the average memory usage in the last 5 minutes has exceeded the threshold.

TABLE B-90. highDiskNotification

ITEM	DESCRIPTION
OID	.1.3.6.1.4.1.6101.3005.2.1.0.7
Object name	highDiskNotification
Description	A notification for when disk usage has exceeded the threshold.

TABLE B-91. secondaryDownNotification

ITEM	DESCRIPTION
OID	.1.3.6.1.4.1.6101.3005.2.1.0.8
Object name	secondaryDownNotification
Description	A notification for when a secondary appliance is unable to recover from an error.

TABLE B-92. haPassiveActivatedNotification

ITEM	DESCRIPTION
OID	.1.3.6.1.4.1.6101.3005.2.1.0.9
Object name	haPassiveActivatedNotification
Description	A notification for when the active primary appliance is unable to recover from an error, and the passive primary appliance has taken over the active role.

TABLE B-93. haSuspendedNotification

ITEM	DESCRIPTION
OID	.1.3.6.1.4.1.6101.3005.2.1.0.10
Object name	haSuspendedNotification
Description	A notification for when the passive primary appliance is unable to recover from an error, and high availability is suspended.

TABLE B-94. syslogErrorNotification

ITEM	DESCRIPTION
OID	.1.3.6.1.4.1.6101.3005.2.1.0.11
Object name	syslogErrorNotification
Description	A notification for when the syslog server is inaccessible.

TABLE B-95. backupErrorNotification

ITEM	DESCRIPTION
OID	.1.3.6.1.4.1.6101.3005.2.1.0.12
Object name	backupErrorNotification
Description	A notification for when the backup server is inaccessible.

TABLE B-96. haRestoredNotification

ITEM	DESCRIPTION
OID	.1.3.6.1.4.1.6101.3005.2.1.0.13
Object name	haRestoredNotification
Description	A notification for when the passive primary appliance has recovered and high availability has been restored.

TABLE B-97. vaHighRiskNotification

ITEM	DESCRIPTION
OID	.1.3.6.1.4.1.6101.3005.2.1.0.14
Object name	vaHighRiskNotification
Description	A notification for when the number of new high-risk objects identified during the last TimeRange has reached the threshold.

TABLE B-98. vaConnectionFailureNotification

ITEM	DESCRIPTION
OID	.1.3.6.1.4.1.6101.3005.2.1.0.15
Object name	vaConnectionFailureNotification
Description	A notification for when the appliance is unable to establish connection to a required resource.

TABLE B-99. vaLongProcessTimeNotification

ITEM	DESCRIPTION
OID	.1.3.6.1.4.1.6101.3005.2.1.0.16
Object name	vaLongProcessTimeNotification
Description	A notification for when the process time of Virtual Analyzer submissions has exceeded the threshold.

TABLE B-100. licenseExpireNotification

ITEM	DESCRIPTION
OID	.1.3.6.1.4.1.6101.3005.2.1.0.17
Object name	licenseExpireNotification
Description	A notification for when the license is about to expire or has expired.

Registration Objects

OID	DESCRIPTION
.1.3.6.1.4.1.2021	UC Davis
.1.3.6.1.4.1.6101	Trend Micro, Inc.
.1.3.6.1.6.3.1.1.5.1	SNMPv2-MIB MIB
.1.3.6.1.4.1.8072	NET-SNMP-AGENT-MIB

Appendix C

TLS 1.2 Support for Integrated Products/ Services

The following integrated products/services use TLS 1.2 when the secure protocol option is enabled. For details, see *Network Tab on page 6-33*.

- Active Directory
- ICAP server
- Internal Virtual Analyzer services
- Management console access
- SMTP
- Syslog over SSL
- Trend Micro ActiveUpdate
- Trend Micro Certified Safe Software Service
- Trend Micro Community Domain/IP Reputation Service
- Trend Micro Community File Reputation service
- Trend Micro Customer Licensing Portal
- Trend Micro Deep Discovery Director

- Trend Micro Predictive Machine Learning engine
- Trend Micro Dynamic URL Scanning
- Trend Micro Smart Feedback
- Trend Micro Smart Protection Server version 3.3 or later
- Trend Micro Web Inspection Service
- Trend Micro Web Reputation Service
- Web Service

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