Fujitsu ETERNUS
Storage Systems Monitoring Pack 16.3
User's Guide

FUJITSU

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Preface

This manual describes Fujitsu ETERNUS Storage Systems Monitoring Pack that monitors ETERNUS DX storage systems with the use of Microsoft® System Center Operations Manager.
This manual is designed for system administrators with a knowledge of the Microsoft® System Center Operations Manager.

First Edition
January 2016

Organization

This manual consists of the following six chapters and three appendices.

● Chapter 1   Overview

This chapter provides an overview of the Fujitsu ETERNUS Storage Systems Monitoring Pack.

● Chapter 2   Operating Environment

This chapter describes the conditions required to use the Fujitsu ETERNUS Storage Systems Monitoring Pack.

● Chapter 3   Installation

This chapter describes the procedures for installing and configuring the Fujitsu ETERNUS Storage Systems Monitoring Pack.

● Chapter 4   Operation Procedure

This chapter describes how to operate the Fujitsu ETERNUS Storage Systems Monitoring Pack.

● Chapter 5   Uninstallation

This chapter describes the procedures for uninstalling the Fujitsu ETERNUS Storage Systems Monitoring Pack.

● Chapter 6   Required Information for Failure Investigation

This chapter describes the information to be obtained if trouble occurs with the Fujitsu ETERNUS Storage Systems Monitoring Pack.

● Appendix A Messages

This appendix describes the messages displayed by the Fujitsu ETERNUS Storage Systems Monitoring Pack.

● Appendix B Property Information

This appendix contains the property information for the Fujitsu ETERNUS Storage Systems Monitoring Pack.

● Appendix C Customization

This appendix describes how to change the object detection time and monitoring interval for monitored objects included in the Fujitsu ETERNUS Storage Systems Monitoring Pack.

Related Manuals

Related manuals for this manual are listed below.

- ETERNUS DX related manuals
- FUJITSU Storage ETERNUS SF Express / ETERNUS SF Storage Cruiser / ETERNUS SF AdvancedCopy Manager Installation and Setup Guide
- FUJITSU Storage ETERNUS SF Storage Cruiser Operation Guide
- FUJITSU Storage ETERNUS SF Express / ETERNUS SF Storage Cruiser / ETERNUS SF AdvancedCopy Manager Web Console Guide
- FUJITSU Storage ETERNUS SF Storage Cruiser Event Guide

Naming Conventions

Naming conventions for this manual are listed below.

- "Windows Server 2008 R2" refers to Microsoft® Windows Server® 2008 R2 Standard, Microsoft® Windows Server® 2008 R2 Enterprise, and Microsoft® Windows Server® 2008 R2 Datacenter.
- "Windows Server 2012" refers to Microsoft® Windows Server® 2012 Standard and Microsoft® Windows Server® 2012 Datacenter.
- "Windows Server 2012 R2" refers to Microsoft® Windows Server® 2012 R2 Standard and Microsoft® Windows Server® 2012 R2 Datacenter.
- "SCOM" refers to Microsoft® System Center Operations Manager.
- "SCVMM" refers to Microsoft® System Center Virtual Machine Manager.
- "ETERNUS DX" refers to the disk storage systems and All Flash Arrays that are supported by the Fujitsu ETERNUS Storage Systems Monitoring Pack.
- "GUI" refers to the ETERNUS Web GUI.
- "ETERNUS SF Storage Cruiser" or "Storage Cruiser" refers to the FUJITSU Storage ETERNUS SF Storage Cruiser.
- "ETERNUS SF Installation Guide" refers to "FUJITSU Storage ETERNUS SF Express / ETERNUS SF Storage Cruiser / ETERNUS SF AdvancedCopy Manager Installation and Setup Guide".
- "ETERNUS SF Operation Guide" refers to "FUJITSU Storage ETERNUS SF Storage Cruiser Operation Guide".
- "ETERNUS SF Web Console Guide" refers to "FUJITSU Storage ETERNUS SF Express / ETERNUS SF Storage Cruiser / ETERNUS SF AdvancedCopy Manager Web Console Guide".
- "ETERNUS SF Storage Cruiser Event Guide" refers to "FUJITSU Storage ETERNUS SF Storage Cruiser Event Guide".
- Trademark symbols such as ™ and ® are omitted in this manual.

Reference Information

- ETERNUS DX support information for the Fujitsu ETERNUS Storage Systems Monitoring Pack
  http://www.fujitsu.com/global/support/products/computing/storage/download/monitoring-pack.html
- ETERNUS DX product information
  http://www.fujitsu.com/global/support/products/computing/storage/disk/
  http://www.fujitsu.com/global/support/products/computing/storage/all-flash-array/

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Release Information

Fujitsu ETERNUS Storage Systems Monitoring Pack Updates

The following table shows the modifications for each Fujitsu ETERNUS Storage Systems Monitoring Pack version:

Version	Modifications
15.1 (April 2013)	First edition
16.0 (December 2013)	Added support for the FUJITSU Storage ETERNUS SF Storage Cruiser 16.
16.3 (January 2016)	Added support for the configuration display and performance display.

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Chapter 1
Overview

This chapter provides an overview of Fujitsu ETERNUS Storage Systems Monitoring Pack and ETERNUS DX API Service.

1.1 Fujitsu ETERNUS Storage Systems Monitoring Pack

Fujitsu ETERNUS Storage Systems Monitoring Pack is a management pack that allows monitoring of ETERNUS DX with SCOM.
By setting the operation management server for ETERNUS SF Storage Cruiser (*1) as the server to be monitored by SCOM, the following types of monitoring are possible:

- Display configuration information, display performance information, and monitor events for the ETERNUS DX managed by the Windows version of ETERNUS SF Storage Cruiser manager.
- Alive monitoring of Windows version ETERNUS SF Storage Cruiser manager services

  *1:   ETERNUS SF Storage Cruiser is commercial software available from Fujitsu.

▷ **Caution**

Fujitsu ETERNUS Storage Systems Monitoring Pack 16.3 can be used if the version of ETERNUS SF Storage Cruiser is 16.3.
If the version of ETERNUS SF Storage Cruiser is 16.0, 16.1, or 16.2, use Fujitsu ETERNUS Storage Systems Monitoring Pack 16.0.
Further, when using Fujitsu ETERNUS Storage Systems Monitoring Pack for PRO with ETERNUS SF Storage Cruiser 16.3, use Fujitsu ETERNUS Storage Systems Monitoring Pack for PRO 16.0 (for Fujitsu ETERNUS Storage Systems Monitoring Pack 16.3).
If ETERNUS SF Storage Cruiser is 15.3 or earlier, use Fujitsu ETERNUS Storage Systems Monitoring Pack 15.1.

1.2   System Configuration

Fujitsu ETERNUS Storage Systems Monitoring Pack obtains and monitors information from the ETERNUS DX by using functions of ETERNUS SF Storage Cruiser.
An example configuration for using Fujitsu ETERNUS Storage Systems Monitoring Pack to monitor ETERNUS DX is shown in the following figure.

Figure 1.1   System Configuration Example
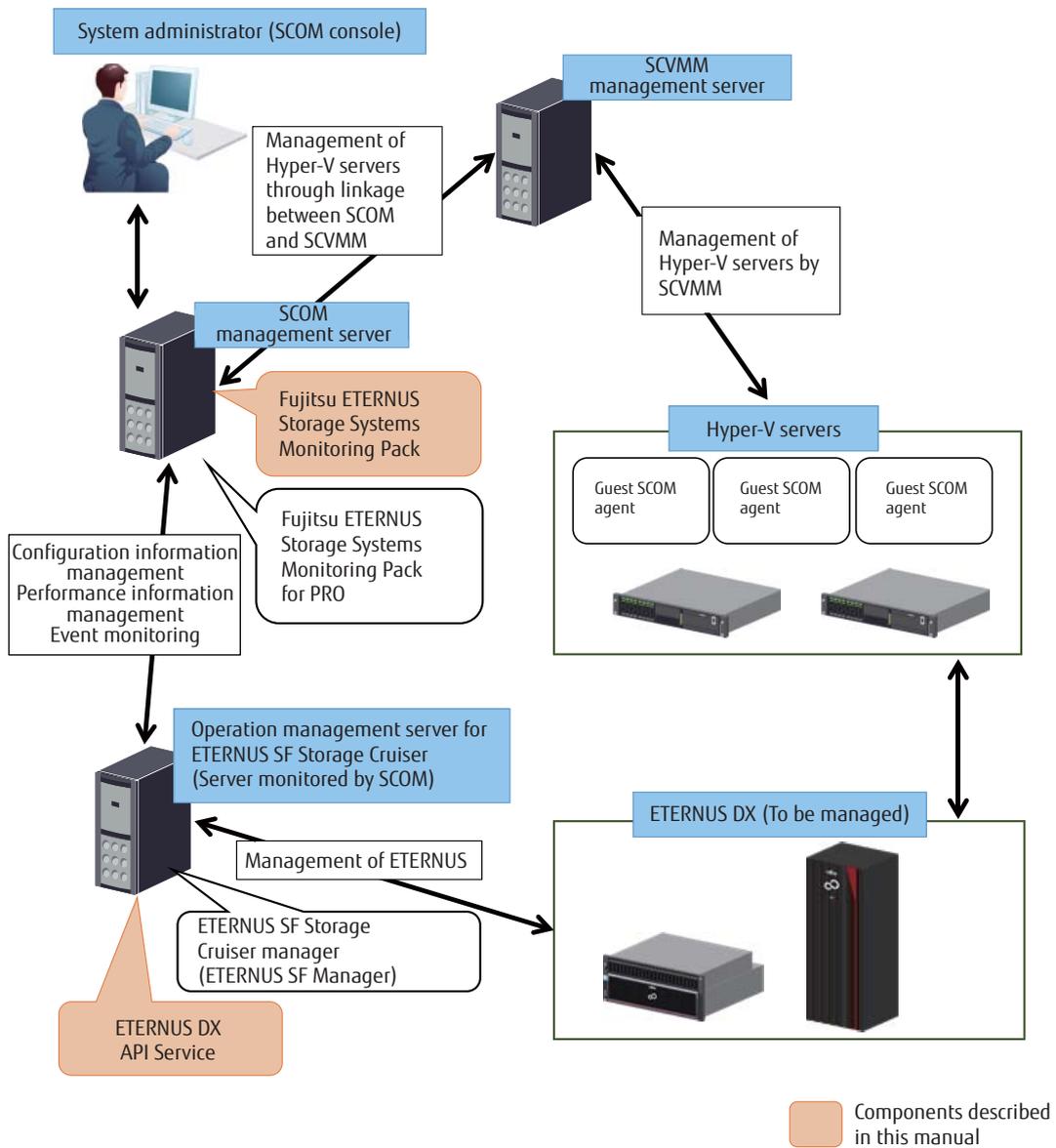
Chapter 2
Operating Environment

This chapter describes the conditions required to use Fujitsu ETERNUS Storage Systems Monitoring Pack.

2.1   Hardware Conditions

The following hardware is required to use Fujitsu ETERNUS Storage Systems Monitoring Pack.

● Conditions for SCOM management server

Install Fujitsu ETERNUS Storage Systems Monitoring Pack on SCOM management server.
For details about the hardware conditions for SCOM management server, refer to the SCOM documentation.

● Conditions for servers monitored by SCOM

Set the operation management server for ETERNUS SF Storage Cruiser as the server to be monitored by the SCOM agent.
ETERNUS DX API Service must be installed on the operation management server for ETERNUS SF Storage Cruiser. ETERNUS DX API Service is software that provides system information for the ETERNUS DX when a request is received from the management pack.
The hardware conditions required to use ETERNUS DX API Service are shown in the following table.

Table 2.1   Hardware Conditions for the ETERNUS DX API Service

Operation server	Requirements
Operation management server	Memory: 2GB or more
	Available disk space: 100MB or more

- For details about the required conditions for the server in which the SCOM agent is to be installed, refer to the SCOM documentation.
- For details about the hardware conditions required for the ETERNUS SF Storage Cruiser operation management server, refer to the "ETERNUS SF Installation and Setup Guide".

● Conditions for Storage Devices

For details about ETERNUS DX and firmware versions that are supported by Fujitsu ETERNUS Storage Systems Monitoring Pack, refer to the following website.
http://www.fujitsu.com/global/support/products/computing/storage/download/monitoring-pack.html

2.2　Software Conditions

The software conditions required to use Fujitsu ETERNUS Storage Systems Monitoring Pack are shown below.

● Conditions for SCOM management server

Install Fujitsu ETERNUS Storage Systems Monitoring Pack on SCOM management server.
For details about the software conditions for SCOM management server, refer to the SCOM documentation.

● Conditions for servers monitored by SCOM

Set the operation management server for ETERNUS SF Storage Cruiser as the server to be monitored by the SCOM agent.
ETERNUS DX API Service must be installed in the operation management server for ETERNUS SF Storage Cruiser.
Microsoft .NET Framework 4.5 is required to install ETERNUS DX API Service. For details about other software conditions required to run ETERNUS DX API Service, refer to the following website.

http://www.fujitsu.com/global/support/products/computing/storage/download/monitoring-pack.html

- For details about the conditions required for the SCOM agent, refer to the SCOM documentation.
- For details about the software conditions required for the ETERNUS SF Storage Cruiser operation management server, refer to the "ETERNUS SF Installation and Setup Guide".

Chapter 3
Installation

This chapter describes the procedures for installing ETERNUS DX API Service and Fujitsu ETERNUS Storage Systems Monitoring Pack.

3.1   Installing ETERNUS DX API Service

Install ETERNUS DX API Service on the operation management server on which ETERNUS SF Storage Cruiser was installed.
The procedure for installing ETERNUS DX API Service is shown below.

Procedure

1   Run the ETERNUS DX API Service installer.
The [Welcome to the InstallShield Wizard for ETERNUS DX API Service] screen appears.

2   On the [Welcome to the InstallShield Wizard for ETERNUS DX API Service] screen, click the [Next] button.

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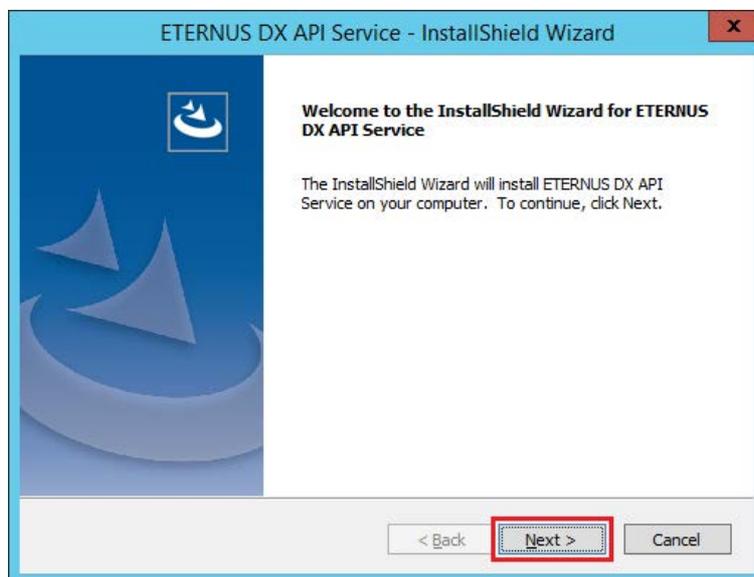
3   The [License Agreement] screen appears. Read the details of the agreement. To continue, click the [Yes] button.
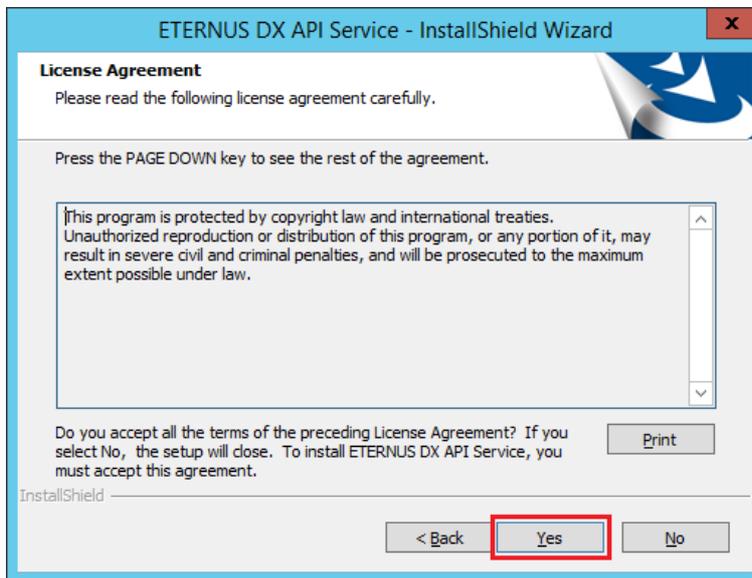
4   On the [Setup Type] screen, select the setup type and then click the [Next] button.
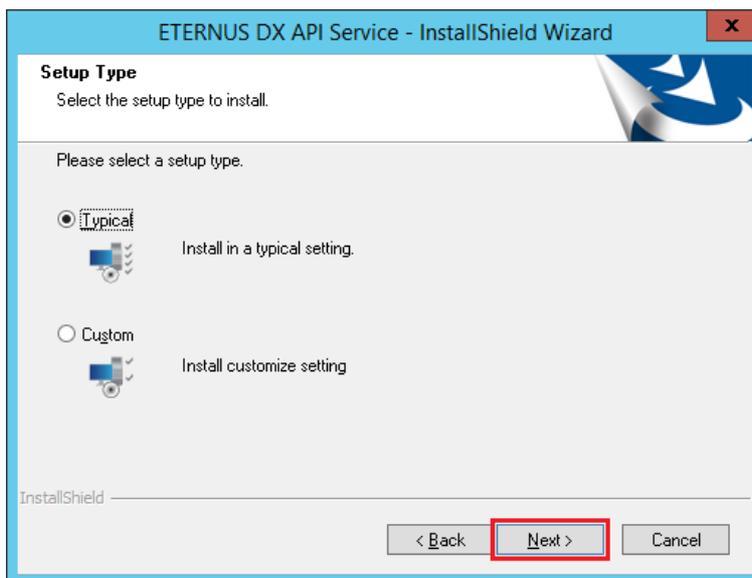
5   If [Typical] on the [Setup Type] screen is selected, proceed to Step 7.
If [Custom] is selected, the [Choose the Destination Location] screen appears. To change the installation folder, click the [Browse] button.
Select the installation folder, and then click the [Next] button.
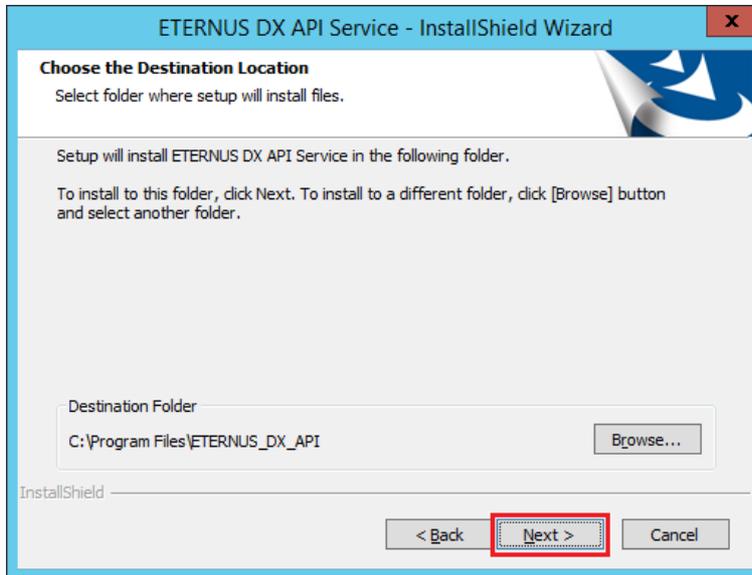
6   On the [Registration of port number] screen, the port number that is used for each service can be changed. Set the port numbers, and then click the [Next] button.
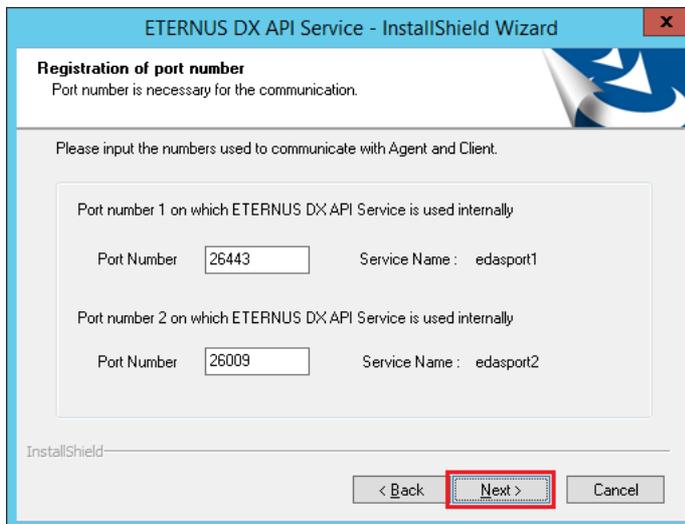
7 On the [Start Copying Files] screen, check the setup details.
To make changes, click the [Back] button. Otherwise, click the [Install] button to start the installation.
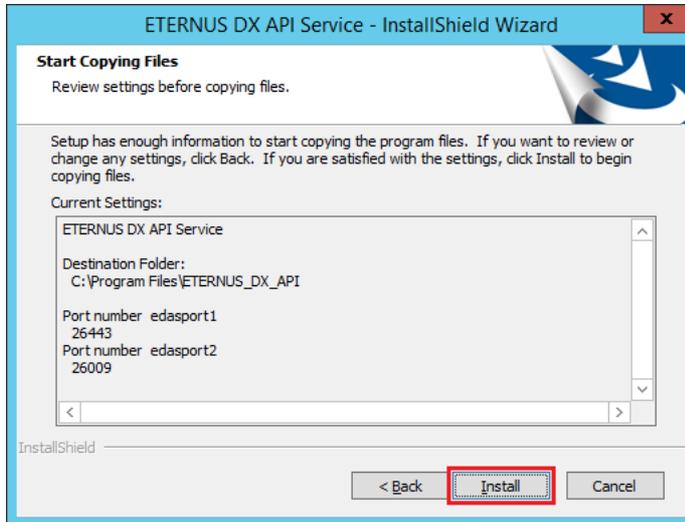
When installation is complete, the [InstallShield Wizard Complete] screen is displayed.

8 Click the [Finish] button to exit installation.
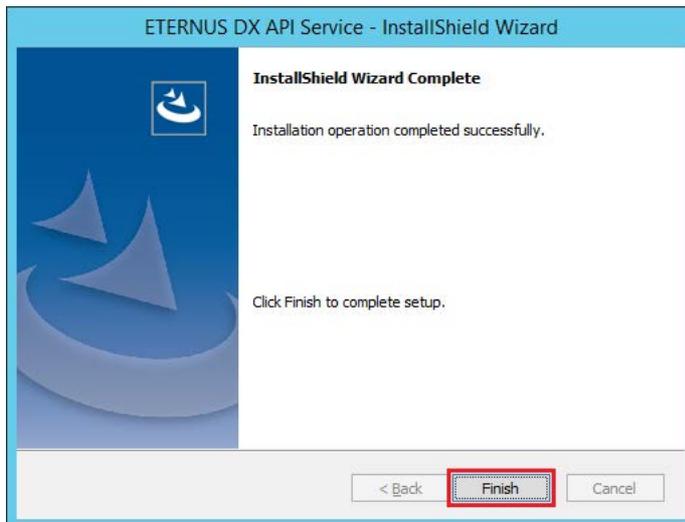
End of procedure

3.2 Setting Up Fujitsu ETERNUS Storage Systems Monitoring Pack

Set up Fujitsu ETERNUS Storage Systems Monitoring Pack on SCOM.

3.2.1 Pre-Setup

Save the Fujitsu ETERNUS Storage Systems Monitoring Pack file (Fujitsu.Storage.Systems.ETERNUS.mp) in a directory where it can be referred to from the operation console.
In this manual, the following directory is used as an example.

```
C:\temp\Fujitsu.Storage.Systems.ETERNUS.mp
```

Delete any installations of previous versions of Fujitsu ETERNUS Storage Systems Monitoring Pack.

3.2.2 Installation Procedure

The procedure for installing Fujitsu ETERNUS Storage Systems Monitoring Pack is described below.

Procedure

1 Start the operation console.

   1-1 Start the SCOM Operations Console and display the [Administration] pane.

   1-2 Select [Management Packs] in the navigation window.

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1-3 Run [Import Management Packs...] under [Actions]. The [Import Management Packs] dialog box appears.
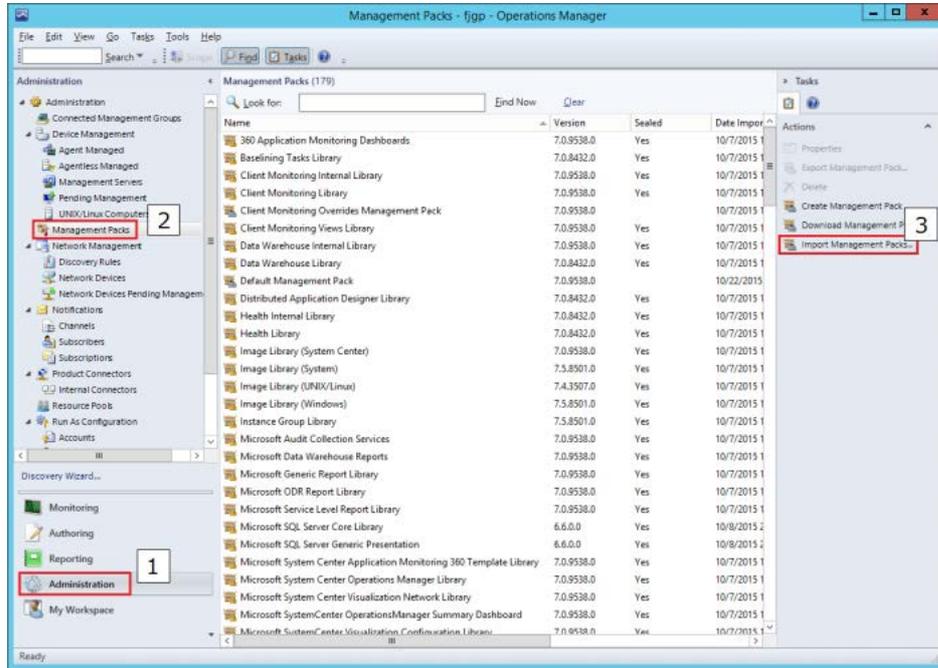
2 Select a management pack.
In the [Import Management Packs] dialog box, click the [Add] menu and then select [Add from disk ...].
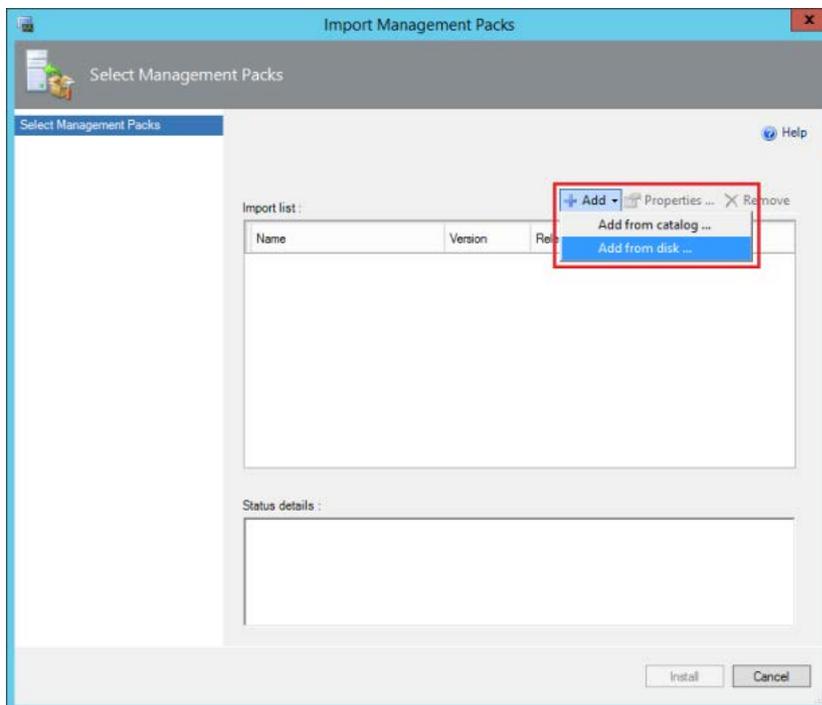
If the following dialog box appears, click the [No] button.
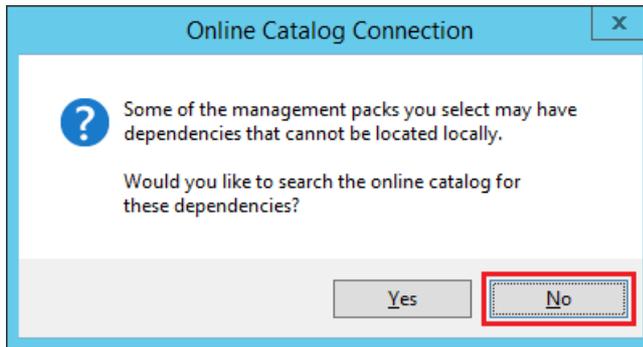
The [Select Management Packs to import] dialog box appears.

2-1   Select the Fujitsu ETERNUS Storage Systems Monitoring Pack file
         (Fujitsu.Storage.Systems.ETERNUS.mp).

2-2   Click the [Open] button.
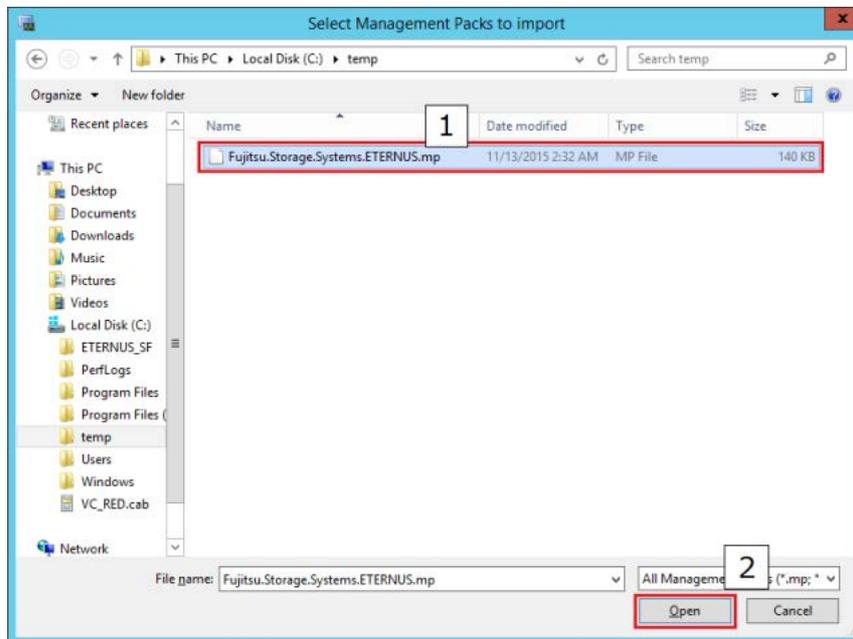
3 Import the Fujitsu ETERNUS Storage Systems Monitoring Pack.
When the following dialog box is displayed, click the [Install] button.
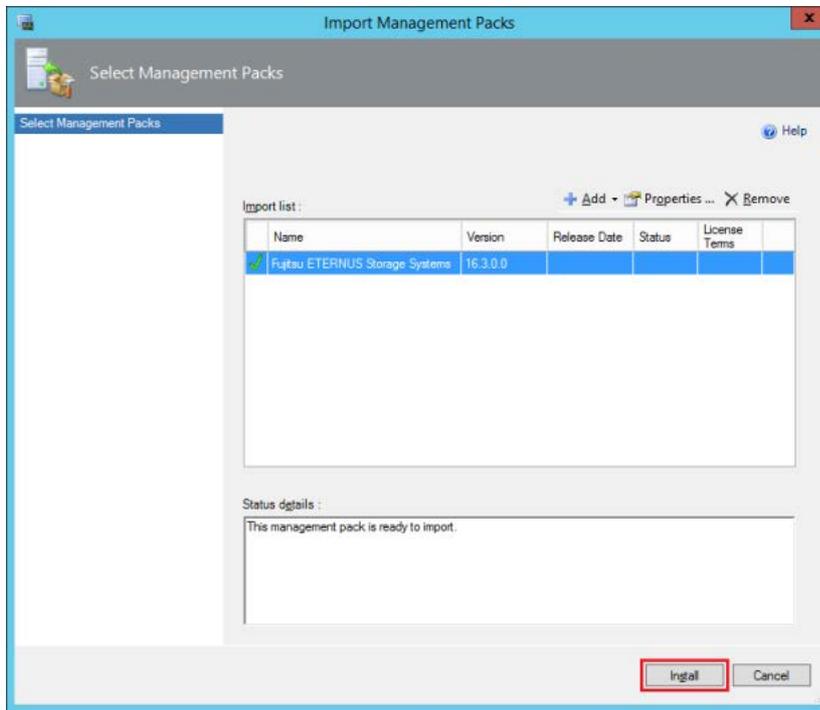
Importing of the selected management pack starts. Wait a few moments for the importing process to complete.
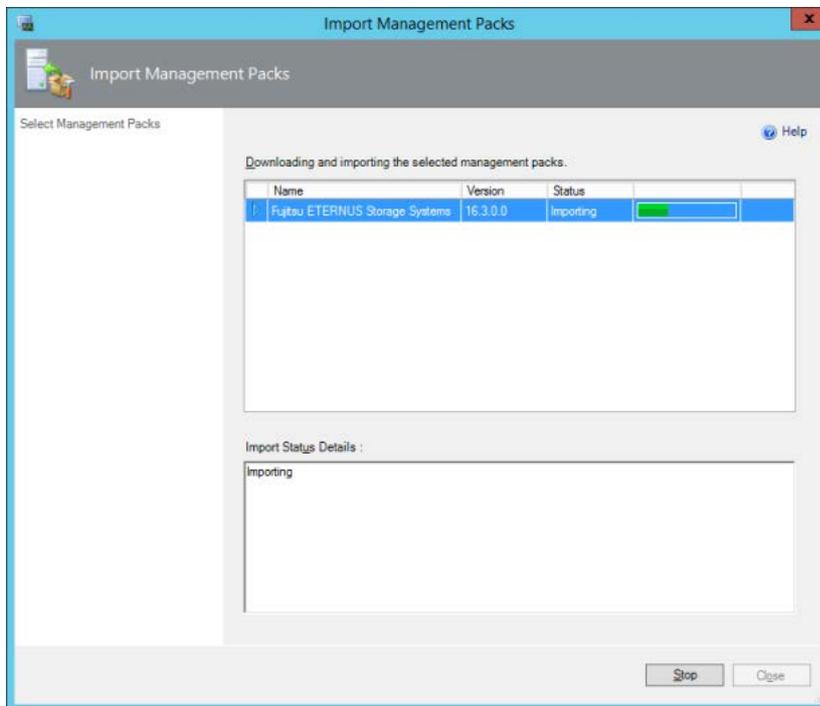
When the importing process is complete, the following dialog box is displayed.

4 Confirm the state of the import.
Confirm that the status is [Imported], and then click the [Close] button.
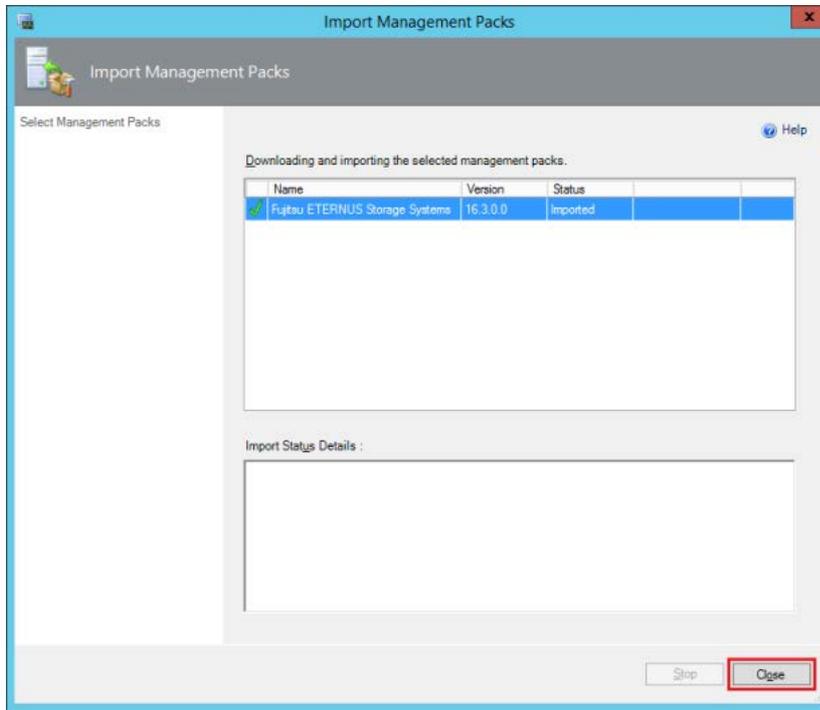
5 Confirm that the selected management pack has been imported.

Confirm that "Fujitsu ETERNUS Storage Systems" appears in the list of management packs in the [Administration] pane.
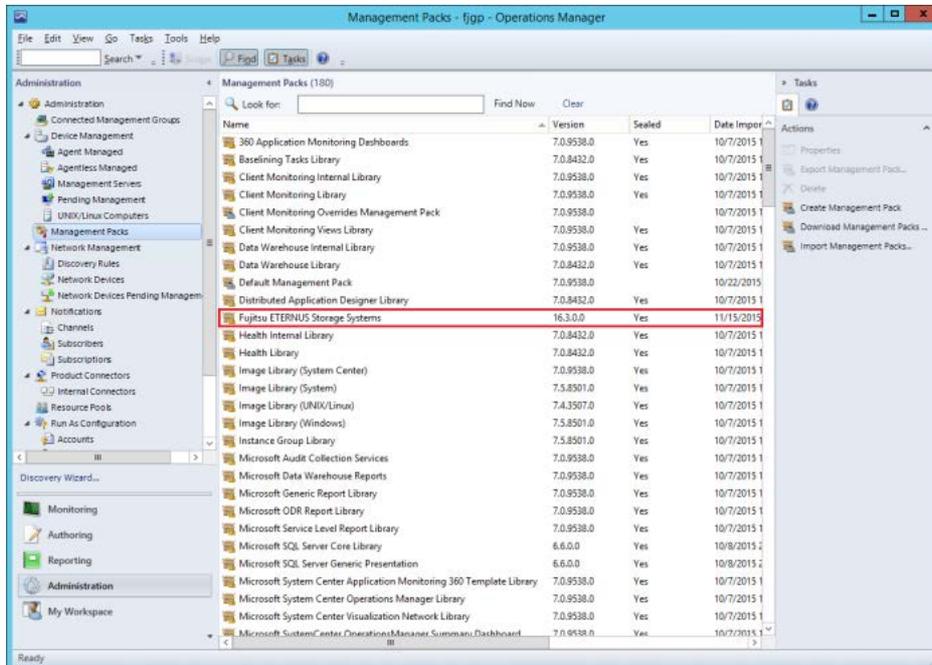
End of procedure

▷ **Caution**

- When importing is complete, the management pack file (Fujitsu.Storage.Systems.ETERNUS.mp) is no longer required. It is safe to delete this file.
- After closing the [Import Management Packs] dialog box, wait a few moments for "Fujitsu ETERNUS Storage Systems" to appear in the list in the [Administration] pane. Select [View] - [Refresh] in the menu, and confirm that it has appeared.

3.3   Setting Up in ETERNUS SF Manager

The following settings in ETERNUS SF Manager are required to use Fujitsu ETERNUS Storage Systems Monitoring Pack.

Procedure

1   Create and configure a Properties file.
Create a Properties file in ETERNUS SF Manager as shown below. Turn ON the settings in the Properties file.

Table 3.1   Settings for the Properties File in ETERNUS SF Manager

Item	Explanation
Directory path	\<Configuration directory\>\ESC\Manager\etc\opt\FJSVssmgr\current\properties
File name	deviceevent_mspack.properties (*1)
Settings	[Item Name] com.fujitsu.storagesoft.opt.deviceevent.mspack [Value] ON when monitoring. Otherwise, OFF. Default value: OFF Example: com.fujitsu.storagesoft.opt.deviceevent.mspack=ON

*1:   This is a text file with the format "item name=value" on each line.

2   Apply the Properties file.
On the GUI operation screen in ETERNUS SF Manager, select [System], [System Settings], and then [Refresh Config File]. The configuration file is applied to ETERNUS SF Manager.

End of procedure

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Chapter 4
Operation Procedure

This chapter describes how to operate Fujitsu ETERNUS Storage Systems Monitoring Pack.

4.1   Detection of the Server to Be Monitored

If the operation management server for ETERNUS SF Storage Cruiser is set as the server to be monitored by SCOM, Fujitsu ETERNUS Storage Systems Monitoring Pack obtains information and monitors events for the ETERNUS DX that is registered in ETERNUS SF Storage Cruiser.
If the server to be monitored has already been detected by SCOM, it will be monitored automatically when Fujitsu ETERNUS Storage Systems Monitoring Pack is imported.
If the server has not yet been detected, SCOM agent must be used to detect it as a new server to be monitored.

For details about the detection procedure, refer to the SCOM documentation.

▷ **Caution**

Detection of the server to be monitored might take a few moments.

4.2 Screen Configuration

The screen configuration after Fujitsu ETERNUS Storage Systems Monitoring Pack has been imported is described below.

4.2.1 Monitoring Pane

ETERNUS DX information is displayed in the [Monitoring] pane.
Information that can be added to the [Monitoring] pane by importing the management pack is described below.
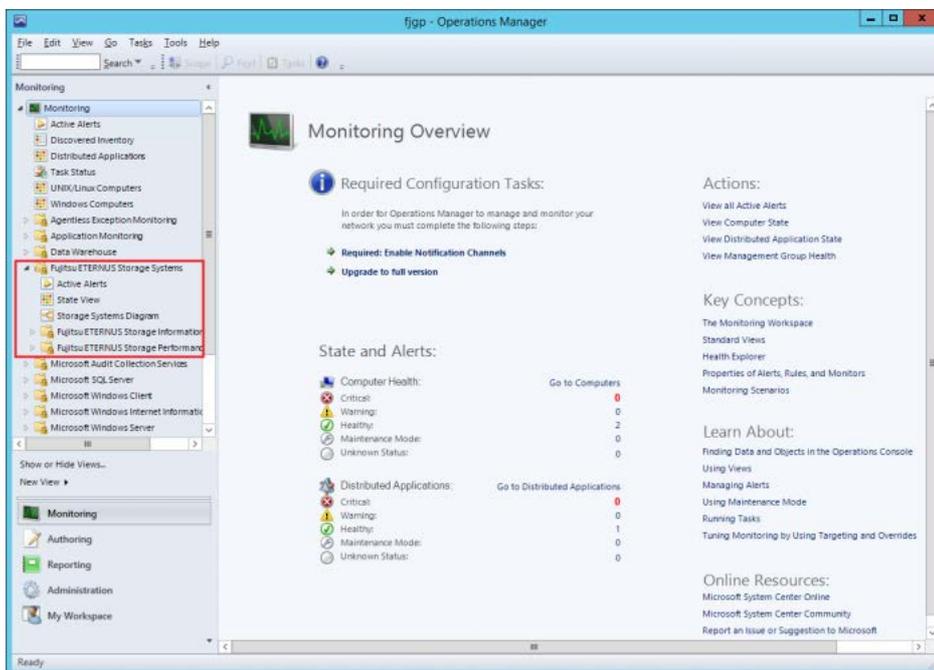
The following folder is added to the tree in the navigation window:
  • Fujitsu ETERNUS Storage Systems

The following items are added to the folder:
  • Active Alerts
    Active alerts are displayed. For details, refer to "4.2.2 Active Alerts" (page 28).

  • Storage Systems Diagram
    Diagrams are displayed. For details, refer to "4.2.3 Storage Systems Diagram" (page 30).

  • State View
    The status is displayed. For details, refer to "4.2.4 State View" (page 33).

  • Fujitsu ETERNUS Storage Information
    ETERNUS DX configuration information is displayed. For details, refer to "4.2.5 Fujitsu ETERNUS Storage Information" (page 34).

- Fujitsu ETERNUS Storage Performance
ETERNUS DX performance information is displayed. For details, refer to "4.2.6 Fujitsu ETERNUS Storage Performance" (page 35).
In order to display the performance information, ETERNUS DX performance monitoring must be started in ETERNUS SF Storage Cruiser. For details about how to configure these settings, refer to the "ETERNUS SF Web Console Manual".

4.2.2   Active Alerts

When [Fujitsu ETERNUS Storage Systems] - [Active Alerts] is selected in the navigation window of the [Monitoring] pane, a detected alert is displayed.
For details about alerts that are detected by the management pack, refer to "Appendix A Messages" (page 42).
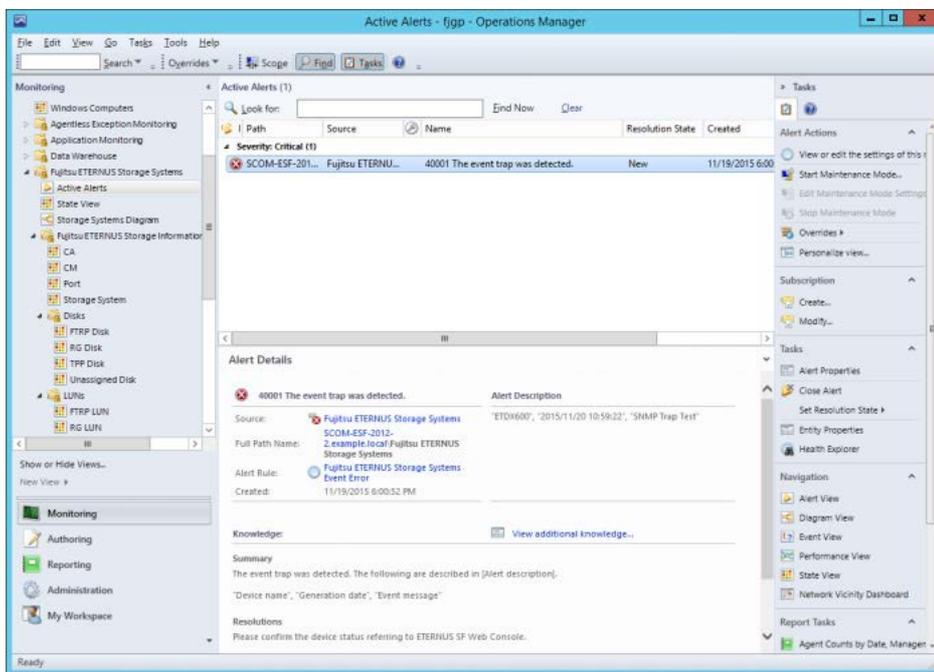
When an alert is detected, check the details in [Alert Description] and [Knowledge], and then take the appropriate action.
After taking the appropriate action, select [Tasks] - [Close Alert] if necessary to close the alert.

In some cases, depending on the type of alert, the general status will not automatically change to [Healthy] when the alert is closed. In such cases, use the following procedure to manually set the status to [Healthy].

Procedure

1   After taking the appropriate action for detected alerts, close all alerts.

2   Select [Fujitsu ETERNUS Storage Systems] - [State View] in the navigation window in the [Monitoring] pane.

3   In the list of general information for the ETERNUS DX, select the line that shows an error state.

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4   Open [Tasks] - [Health Explorer].

5   In [Health Explorer for Fujitsu ETERNUS Storage Systems], select the item to set to
[Healthy].

6   Select [Reset Health] or [Recalculate Health] in the menu.

7   Close Health Explorer.
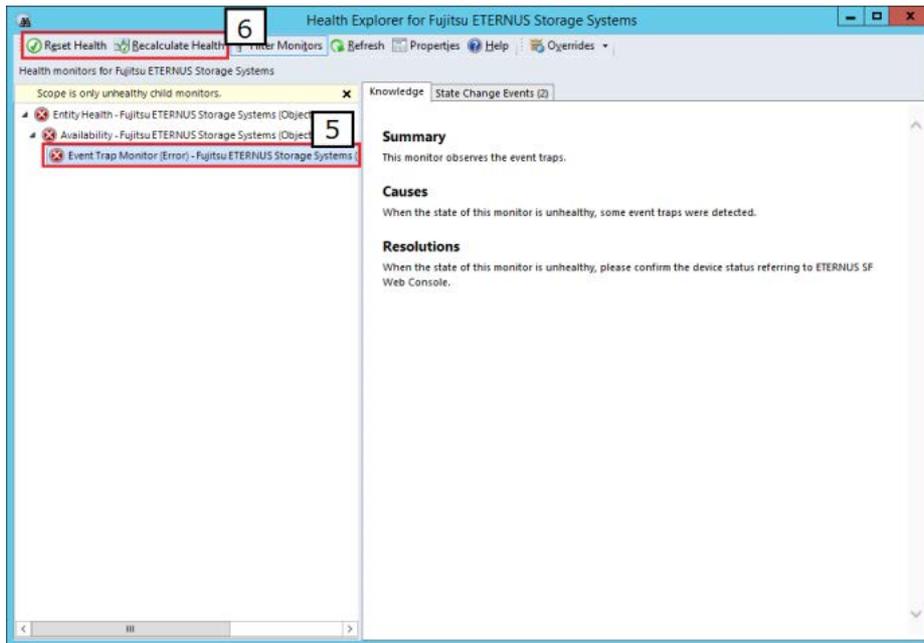
End of procedure

> **Caution**

In the management pack, only alerts with a resolution state of [New] are displayed by default. Other items
that are displayed, and their display order, are not defined in the management pack. Configure the settings
in [Personalize view] as necessary. For details about [Personalize view], refer to the SCOM documentation.

4.2.3   Storage Systems Diagram

If [Fujitsu ETERNUS Storage Systems] - [Storage Systems Diagram] is selected in the navigation window in the [Monitoring] pane, ETERNUS DX is displayed as an icon.

After importing the management pack, only the "Fujitsu ETERNUS Storage Systems Group" icon is displayed until a server to be monitored is detected.
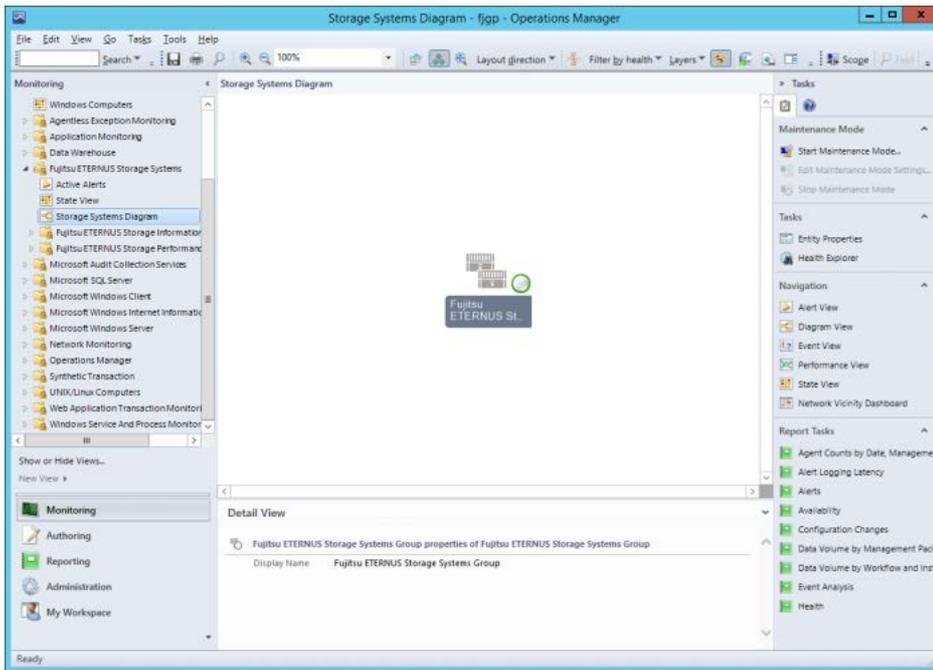
When a server to be monitored is detected, the "Fujitsu ETERNUS Storage Systems" icon, which shows general information for the ETERNUS DX disk storage system, is displayed below "Fujitsu ETERNUS Storage Systems Group". Further, the "Fujitsu ETERNUS Storage" icon, which shows ETERNUS DX, is displayed below "Fujitsu ETERNUS Storage Systems". In addition, the icons for the CM, CA, Disk, and Logical Volume that configure the applicable storage are displayed below the ETERNUS DX icon.

▷ **Caution**

If the state of the ETERNUS DX is "Unknown" in ETERNUS SF Storage Cruiser, only the "Fujitsu ETERNUS Storage" icon is displayed. The other icons for components (such as CMs, CAs, Disks, and Logical Volumes) that configure the relevant storage system are not displayed.
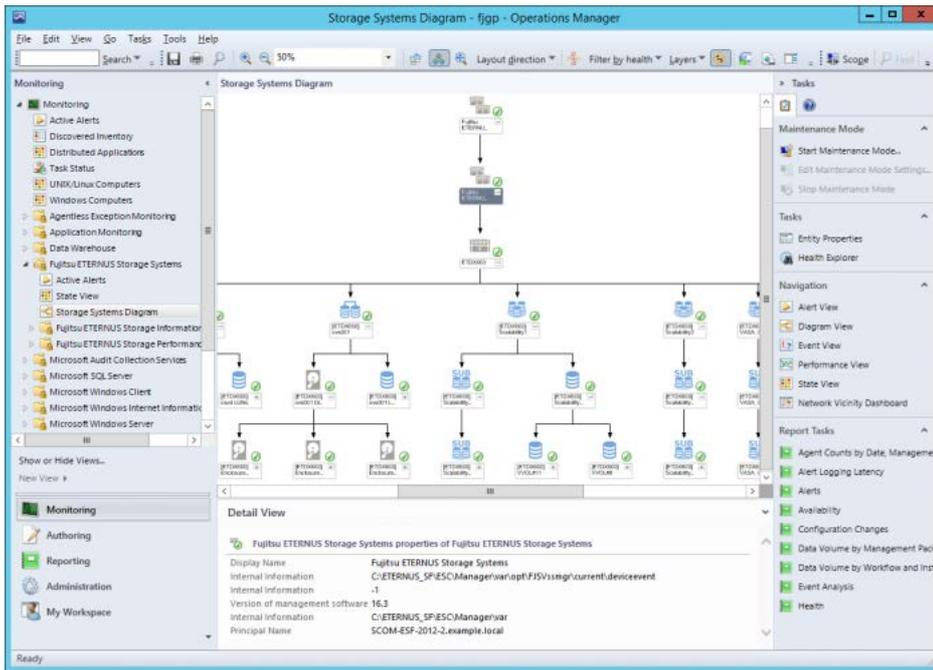
This icons that are displayed in the diagram are shown in the following table.

Table 4.1   Icons Displayed in the Diagram

Icon	Name
	Fujitsu ETERNUS Storage Systems Group/ Fujitsu ETERNUS Storage Systems
	Fujitsu ETERNUS Storage
	CMs/CM
	CA
	Port
	Unassigned Disk(s)/TPP Disk/FTRP Disk/RG Disk(s)
	Thin Provisioning Pool/Flexible Tier Pool
	Flexible Tier Sub Pool

Icon	Name
	RAID Group/FTRP RAID Group/TPP RAID Group
	FTRP LUN(s)/TPP LUN(s)/RG LUN(s)

For details about the status for each icon, refer to .

If an error occurs in the general information for the ETERNUS DX, that state is reflected in the "Fujitsu ETERNUS Storage Systems" icon and the "Fujitsu ETERNUS Storage Systems Group" icon.
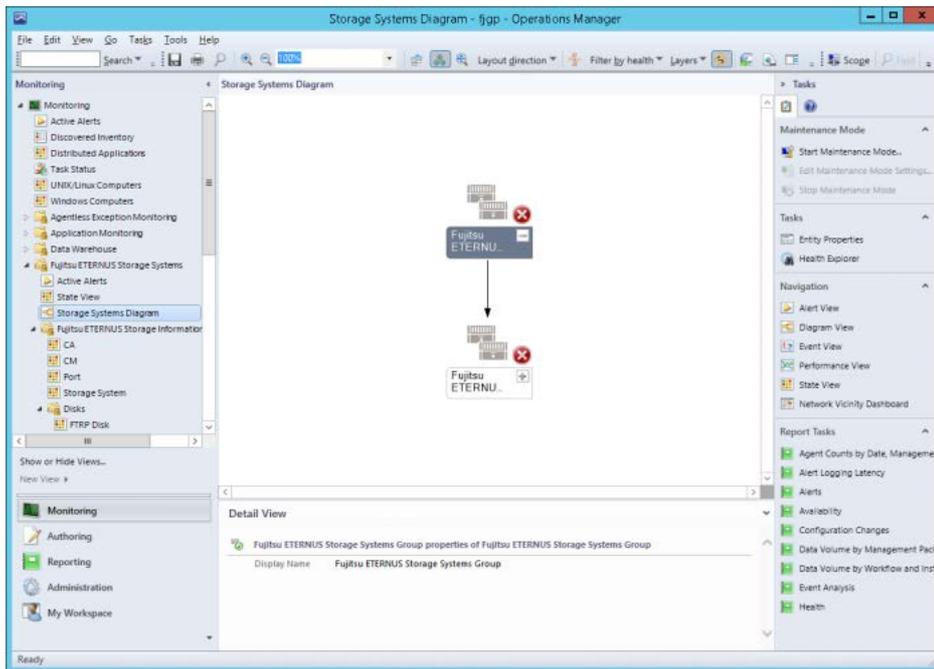
4.2.4   State View

If [Fujitsu ETERNUS Storage Systems] - [State View] is selected in the navigation window in the [Monitoring] pane, a list of general information for the ETERNUS DX is displayed.
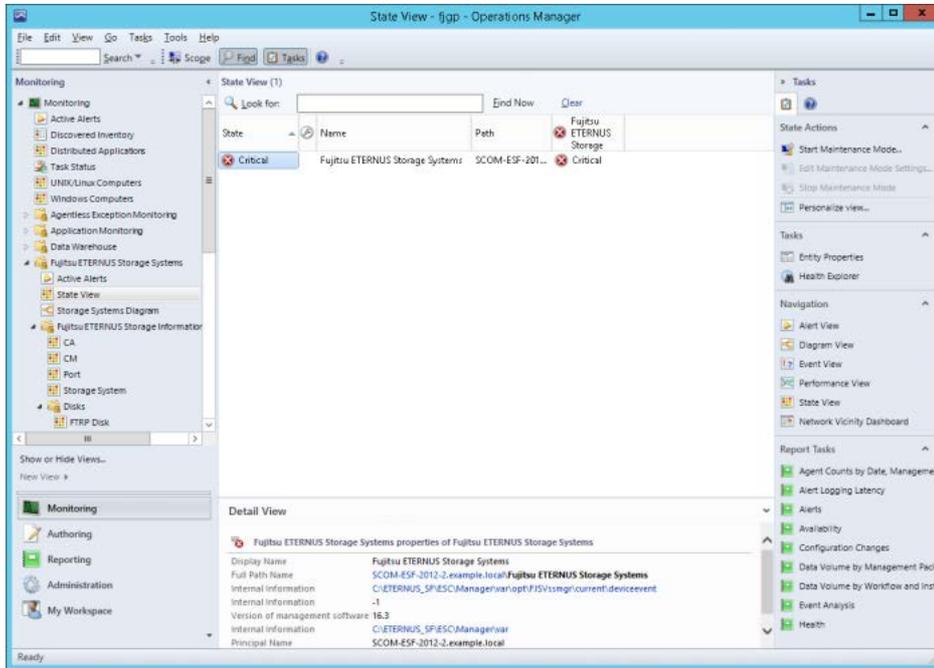
The following settings are configured as information specific to Fujitsu ETERNUS Storage Systems Monitoring Pack 16.3.

Table 4.2   Information Specific to Fujitsu ETERNUS Storage Systems Monitoring Pack 16.3

Item Name	Explanation	Remarks
State	General information that reflects the following state information: • Information about the operating state of services required on the server that is monitored • Information about event trap state for the ETERNUS DX • State information for configuration objects (CM, CA, Disk, Logical Volume, etc.) of the ETERNUS DX	If the state is not [Healthy], refer to "4.2.2 Active Alerts" (page 28) and take the required action.
Name	"Fujitsu ETERNUS Storage Systems"	–
Version of management software	Version information for ETERNUS SF Storage Cruiser manager	–

4.2.5   Fujitsu ETERNUS Storage Information

If a monitored object below [Fujitsu ETERNUS Storage Systems] - [Fujitsu ETERNUS Storage Information] is selected in the navigation window in the [Monitoring] pane, a list of configuration information for the monitored object that is selected is displayed.
For details about the items that are displayed, refer to "B.1 Configuration Information Properties" (page 47).
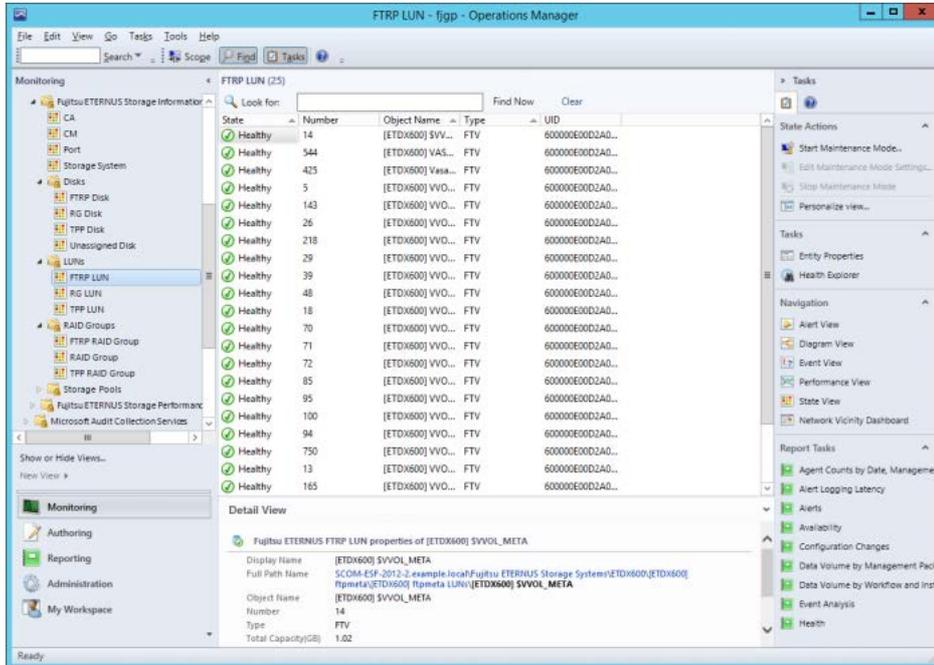
> ▷ **Caution**

If an ETERNUS DX with a large-scale configuration is used and many instances of monitored objects are selected, the view for configuration information might be blank. This occurs when the maximum number of display items for the SCOM Operations Console is exceeded, and cannot be avoided.

4.2.6   Fujitsu ETERNUS Storage Performance

If a monitored object below [Fujitsu ETERNUS Storage Systems] - [Fujitsu ETERNUS Storage Performance] is selected in the navigation window in the [Monitoring] pane, a graph of the performance information for the monitored object that is selected is displayed.
For details about the items that are displayed, refer to "B.2 Performance Information Properties" (page 50).
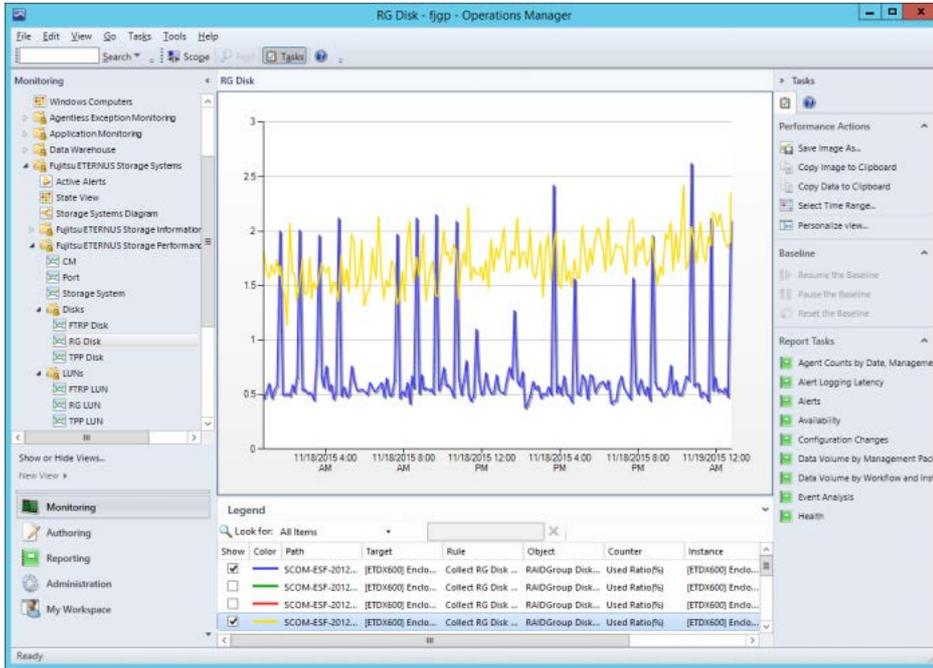
> **Caution**

- If the performance monitoring has never been started in ETERNUS SF Storage Cruiser, a graph with zero data is displayed. If the started performance monitoring is stopped, information that was obtained just before the stoppage is displayed.

- To display the performance information correctly, the clock for the SCOM Operations Console's server must be set correctly.

- If an attempt is made to display performance information when there are many instances of the monitored objects shown below, the SCOM Operations Console might stop running and further operation might not be possible.
    - RG LUN
    - TPP LUN
    - FTRP LUN
  If this occurs, use the following procedure to display performance information separately for each instance.
  The procedure for displaying TPP LUN is shown below as an example.

1   In the [Monitoring] pane, select [Fujitsu ETERNUS Storage Systems] - [Fujitsu ETERNUS Storage Information] - [LUNs] - [TPP LUN].

2 In the TPP LUN list, right-click the TPP LUN, and then select [Open] - [Performance View] from the context menu to display the performance information.
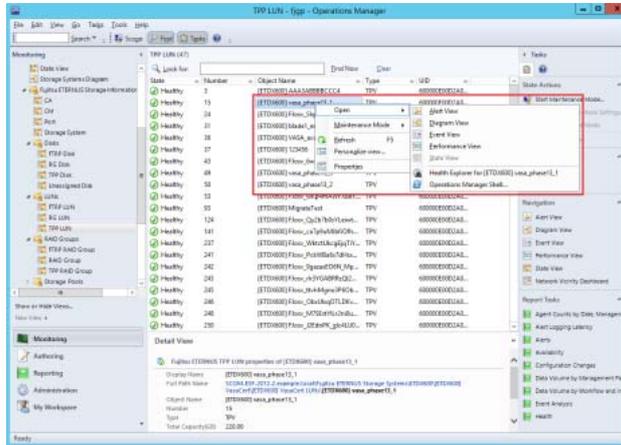
The performance information for the selected TPP LUN appears in the Performance View.
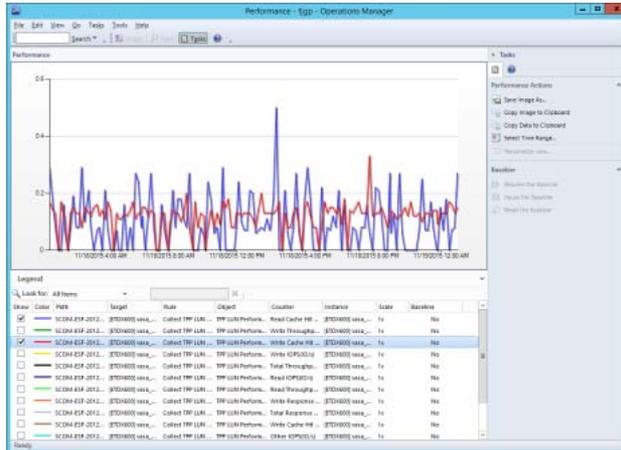
- If there are many instances of monitored objects, it might be necessary to change the SCOM monitoring interval. For details about how to change the monitoring interval, refer to "C.2 Changing the Monitoring Interval" (page 53).

Chapter 5

Uninstallation

This chapter describes the procedures for uninstalling ETERNUS DX API Service and Fujitsu ETERNUS Storage Systems Monitoring Pack.

5.1 Deleting Fujitsu ETERNUS Storage Systems Monitoring Pack

Delete the Fujitsu ETERNUS Storage Systems Monitoring Pack from SCOM.
The procedure for deleting Fujitsu ETERNUS Storage Systems Monitoring Pack is shown below.

Procedure

1 Start the operation console.

 1-1 Start the SCOM Operations Console and display the [Administration] pane.

 1-2 Select [Management Packs] in the navigation window.

 1-3 Select "Fujitsu ETERNUS Storage Systems" from the list of management packs.

 1-4 Select [Delete] under [Actions].

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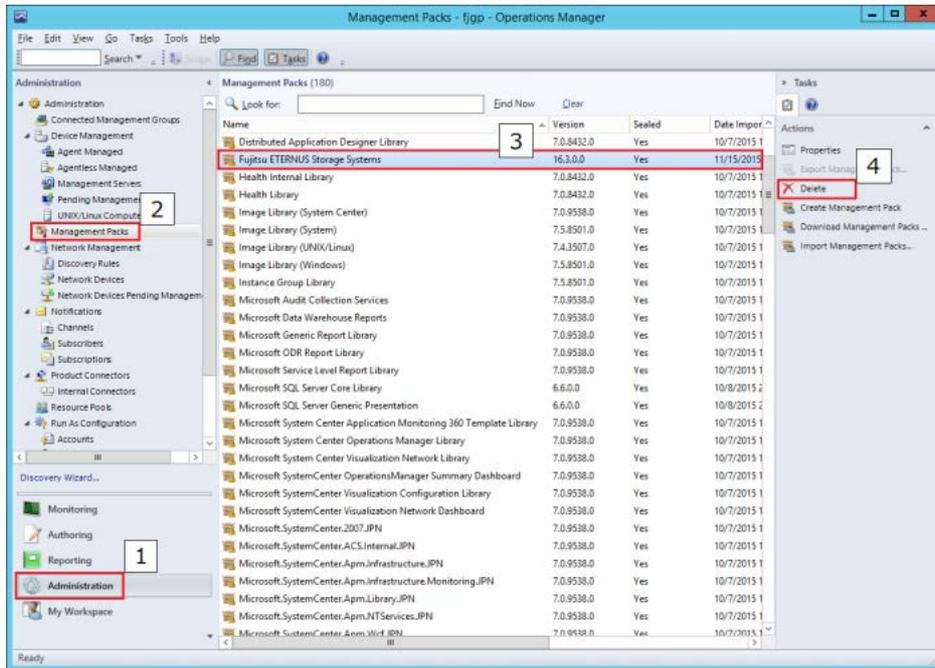
2 Delete a management pack.

The following dialog box appears.
Select the [Yes] button to delete the management pack. To cancel deletion, select [No].
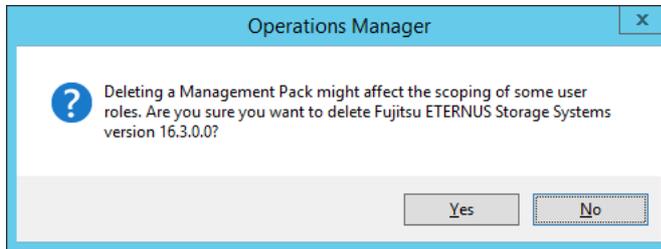
3 Confirm that the selected management pack has been deleted.

Confirm that "Fujitsu ETERNUS Storage Systems" was deleted from the list of management packs.
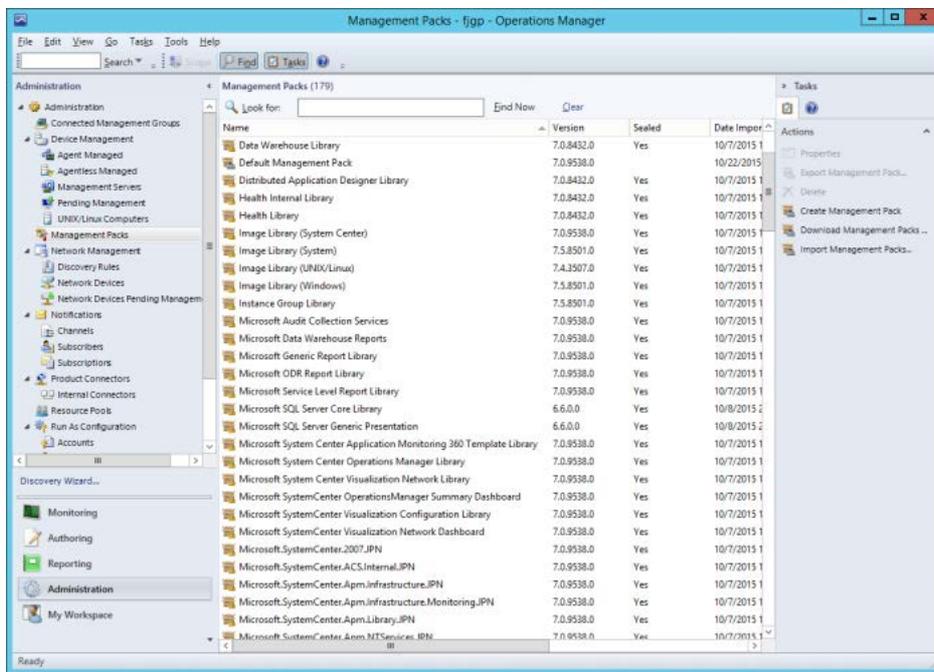
End of procedure

> **Caution**

After the deletion procedure is completed, it might take a few moments for "Fujitsu ETERNUS Storage Systems" to actually be deleted from the list in the [Administration] pane. Select [View] - [Refresh] in the menu, and confirm that it has been deleted.

5.2   Uninstalling ETERNUS DX API Service

Uninstall ETERNUS DX API Service from the operation management server on which ETERNUS SF Storage Cruiser is installed.
The procedure for uninstalling ETERNUS DX API Service is shown below.

Procedure

1   On the control panel, open the [Uninstall a program] screen, select [ETERNUS DX API Service], and then click the [Uninstall] button.
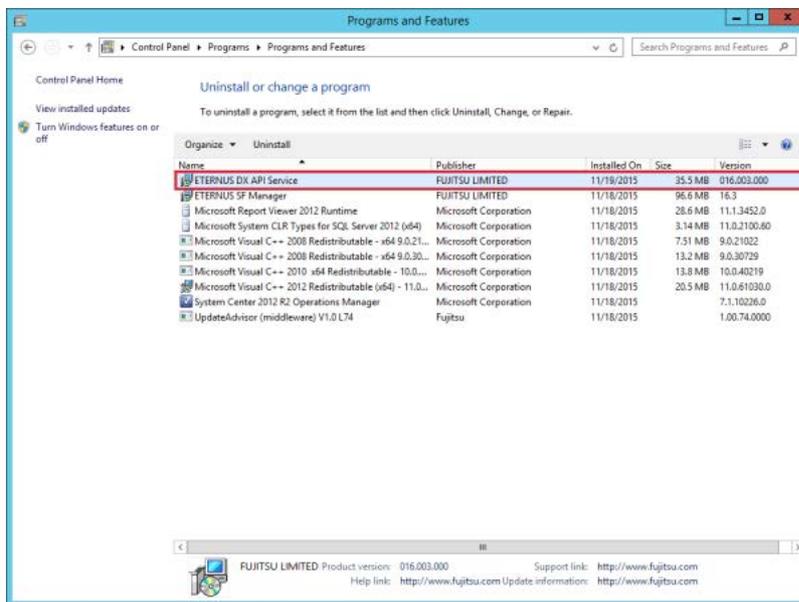
2   In the [Confirm Uninstall] dialog box, click the [OK] button.

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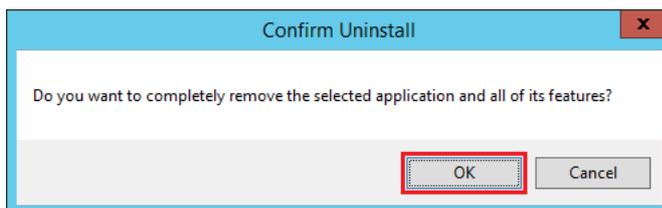
3 On the [InstallShield Wizard Complete] screen, click the [Finish] button to complete the
uninstallation procedure.
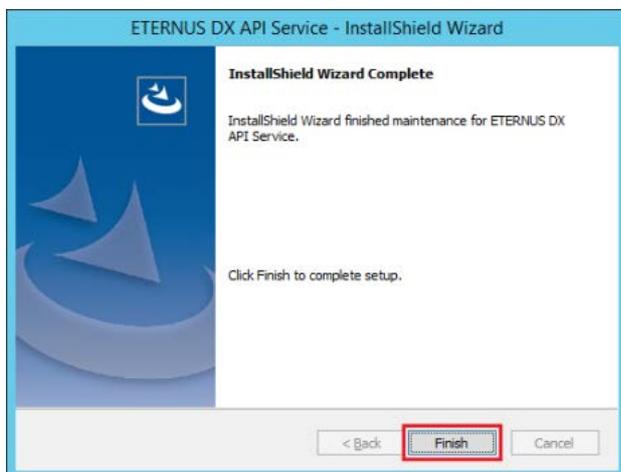
End of procedure

Chapter 6
Required Information for Failure Investigation

This chapter describes the information to be obtained if trouble occurs with the Fujitsu ETERNUS Storage Systems Monitoring Pack.
If an error occurs, prepare the following information and data required to perform an investigation before contacting a Fujitsu engineer for assistance.

- Symptom
- Time error occurred
- Reproducibility
- ETERNUS DX API Service maintenance information

  Prepare the following data.

  ```
  <Installation directory>\tomcat\logs\edms.log, edms.log.*
  <Installation directory>\var\<file under this directory>
  ```

- ETERNUS SF Storage Cruiser maintenance information
  Prepare the required information for investigation for the operation management server.

Note

For details about the required information for investigation for the operation management server, refer to "Troubleshooting" in the "ETERNUS SF Operation Guide".

Appendix A

Messages

This appendix describes the messages displayed by the Fujitsu ETERNUS Storage Systems Monitoring Pack.

Messages are displayed as the [Name] of an alert.

A.1 Configuration Information Message

```
{0} state is abnormal.
```

Meaning of this message

An error has occurred in the monitored object {0} in ETERNUS DX.
See Table A.1 for monitored object {0}.

[Alert Description] details

The state of {1} is {2}.
Or
The state of {1} is {2} and the used capacity of {1} reaches {3}.

{1} is the name of the object. Example: [ETDX600] CM#0
Device status {2} is one of the character strings shown in Table A.1 according to the monitored object {0} to which the object name {1} belongs.
{3} is either Normal, Warning, or Caution.

Table A.1   Messages and Alert Character Strings (Configuration Information)

Monitored object {0}	Device status {2}	SCOM health status
Storage	Warning	Warning
	Error	Critical
	Unknown	Critical
	Fatal	Critical
CM	Warning	Warning
	Degrade	Critical
	Firmware Version Mismatch	Critical
	Firmware Type Mismatch	Critical
	Hardware Type Mismatch	Critical
	Version Error and Normal	Critical
CA	Warning	Warning
	Error	Critical
Port	Warning	Warning
	Error	Critical
	Degrade	Critical
	Firmware Version Mismatch	Critical
	Firmware Type Mismatch	Critical
	Hardware Type Mismatch	Critical
	Version Error and Normal	Critical
RG LUN/ TPP LUN/ FTRP LUN	Exposed	Warning
	Partially Exposed	Warning
	Not Ready	Critical
	Broken	Critical
	Data Lost	Critical
RAID Group/ TPP RAID Group/ FTRP RAID Group	Exposed	Warning
	Exposed (Fast)	Warning
	Partially Exposed (Fast)	Warning
	Partially Exposed	Critical
	No Disk Path	Critical
	Broken	Critical
	Broken (Fast)	Critical
	SED Locked	Critical
TPP/FTRP	Exposed	Warning
	Blockade	Critical
	Broken	Critical
	Data Lost	Critical
	No Disk Path	Critical
	Caution (Pool Alarm)	Warning
	Warning (Pool Alarm)	Critical

Monitored object {0}	Device status {2}	SCOM health status
FTSP	Exposed	Warning
	Blockade	Critical
	Broken	Critical
	Data Lost	Critical
	No Disk Path	Critical
RG Disk/ TPP Disk/ FTRP Disk/ Unassigned Disk	Redundant Copy	Warning
	Broken	Critical
	Not Supported	Critical
	Failed Usable	Critical
	Not Exist	Critical

System process

Based on the device status, the status of the monitored object will be either "Warning" or "Critical".

Action taken by system administrator

Refer to the GUI to confirm the status of the monitored object.

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A.2   Service Status Message

```
11001 Necessary service is not running.
```

Meaning of this message

The service required to monitor ETERNUS DX is not running on the server to be monitored.

[Alert Description] details

This is the name of the service that is not running.

System process

The status of the server that is monitored is set to "Critical".

Action taken by system administrator

Check if the service shown in [Alert Description] is running on the server that is monitored. If the service is not running, start the service.

Additional information

This alert will close automatically when the issue is resolved. Further, the "Critical" status caused by this alert for the server that is monitored will be cleared automatically.

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A.3 Event Trap Message

```
40001 The event trap was detected.
```

Meaning of this message

An event trap has been detected.

[Alert Description] details

"%1", "%2", "%3"

> %1: Name of device where the event trap occurred
> %2: Date/time when ETERNUS SF Storage Cruiser manager detected the event trap
> %3: Event trap message obtained from the device

System process

The status of the server that is monitored is changed based on the type of trap.

Action taken by system administrator

View the ETERNUS SF Storage Cruiser client to check the status of the device where the event trap occurred.

Additional information

- If an event trap message includes commas, the commas are separating multiple messages and only a portion of the [Alert Description] might actually be displayed. To check the entire content of the message, refer to [Alert Context] - [Field 7] and more in the alert properties. The character strings for the areas separated by commas are shown there.
- Event trap information for failure level Warning and Error statuses generated by an ETERNUS DX that is registered in ETERNUS SF Storage Cruiser manager is targeted for detection. For details, refer to the "ETERNUS SF Storage Cruiser Event Guide".
- After this issue is resolved, close this alert manually. For details about how to close an alert, refer to "4.2.2 Active Alerts" (page 28).
- After the cause of an alert is resolved, refer to "4.2.2 Active Alerts" (page 28) for the procedure to return the status to "Healthy".
- If the number of event traps occurring at the same time exceeds 50, alerts are generated for only the latest 50 occurrences. Occurrences in excess of the latest 50 are ignored.

Appendix B

Property Information

This appendix contains the property information for the Fujitsu ETERNUS Storage Systems Monitoring Pack.

B.1 Configuration Information Properties

The configuration information properties are shown in the following table.

Table B.1   Configuration Information Properties

Type	Property Name	Explanation
Storage System	Storage Name	Device Name
	IP Address	IP Address
	Product ID	Model
	Serial Number	Serial Number
	ID (*1)	BOX-ID
	State	Device State (Healthy, Warning, Error)
	Firmware Version	Device Firmware Version
	Control URL (*1)	Device Web GUI URL
	Management State (*1)	Management Status
	Disks	Total Number of Disks
	Operation Disks	Number of Operation Disks
	Performance Information Update Counter (*1)	Final Update Counter for Performance Information
	CMS	CM Number
	LUNS	LUN Number
CM	Object Name	Device Name and CM Number Example: "ETDX200S3_1" CM#0
	State	CM State (Healthy, Warning, Error)
CA	Object Name	Device Name and CM Number Example: "ETDX200S3_1" CM#0 CA#0
	State	CA State (Healthy, Warning, Error)
	Type	CA Type
Port	Object Name	Device Name, CM Number, CA Number, Port Number Example: "ETDX200S3_1" CM#0 CA#0 Port#0
	State	Port State (Healthy, Warning, Error)
	Type	Port Type
	Mode	Port Mode

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Type	Property Name	Explanation
RAID Group/ TPP RAID Group/ FTRP RAID Group	Object Name	Device Name and RAID Group Name Example: "ETDX200S3_1" rg#0
	Number	RAID Group Number
	State	RAID Group State (Healthy, Warning, Error)
	Level	RAID Level
	Total Capacity (GB)	Total Capacity (GB)
	Total Free Capacity(GB)	Total Free Capacity (GB)
RG LUN/ TPP LUN/ FTRP LUN	Object Name	Device Name and Volume Name Example: "ETDX200S3_1" vol#0
	Number	Volume Number
	State	Volume State (Healthy, Warning, Error)
	Type	Volume type
	Extreme Cache (Read) (*1)	Extreme Cache (Read) (Enable/Disable)
	UID	Identifier (Device Name) for specifying a volume from an open-system server
	Total Capacity (GB) (*1)	Total Capacity (GB)
	Used Capacity (GB) (*1)	Used Capacity (GB) (For RG LUN, this field is blank.)
	Used Rate (%) (*1)	Used Rate (%) (For RG LUN, this field is blank.)
Thin Provisioning Pool/ Flexible Tier Pool	Object Name	Device Name and Storage Pool Name Example: "ETDX200S3_1" pool#0
	Number	Storage Pool Number
	State	Storage Pool State (Healthy, Warning, Error)
	Type (*1)	Storage Pool Type (Thin Provisioning Pool or Flexible Tier Pool)
	Total Capacity (GB)	Total Capacity (GB)
	Used Capacity (GB)	Used Capacity (GB)
	Used Rate (%)	Used Rate (%)
Flexible Tier Sub Pool	Object Name	Device Name, Storage Pool Name, Storage Sub Pool Name Example: "ETDX200S3_1" ftrp#0 sub_ftrp#0
	Pool Number	Storage Pool Number
	Sub Pool Number	Storage Sub Pool Number
	State	Storage Sub Pool State (Healthy, Warning, Error)
	Total Capacity (GB)	Total Capacity (GB)
	Used Capacity (GB)	Used Capacity (GB)
	Used Rate (%)	Used Rate (%)

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Type	Property Name	Explanation
RG Disk/ TPP Disk/ FTRP Disk/ Unassigned Disk	Object Name	Device Name, Enclosure Number, Slot Number Example: "ETDX200S3_1" Enclosure#00 slot#0
	Disk Size (GB)	Disk Size (GB)
	State	Disk State (Healthy, Warning, Error)
	Speed (rpm)	Disk Speed (rpm)
	Type	Disk Type

*1:   This field is hidden in the default settings for the State View. It is shown in the Detail View.

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B.2   Performance Information Properties

The performance information properties are shown in the following table.

Table B.2   Performance Information Properties

Type	Property Name	Explanation
Storage System	Read IOPS (IO/s)	Read IOPS (IO/s)
	Write IOPS (IO/s)	Write IOPS (IO/s)
	Total IOPS (IO/s)	Total IOPS (IO/s)
	Other IOPS (IO/s)	IOPS other than Read/Write (IO/s)
	Read Throughput (MB/s)	Read Throughput (MB/s)
	Write Throughput (MB/s)	Write Throughput (MB/s)
	Total Throughput (MB/s)	Total Throughput (MB/s)
	Read Cache Hit Response Time (ms)	Read Cache Hit Response Time (ms)
	Write Cache Hit Response Time (ms)	Write Cache Hit Response Time (ms)
	Read Response Time (ms)	Read Response Time (ms)
	Write Response Time (ms)	Write Response Time (ms)
	Total Response Time (ms)	Total Response Time (ms)
	Read Cache Hit Ratio (%)	Read Cache Hit Ratio (%)
	Write Cache Hit Ratio (%)	Write Cache Hit Ratio (%)
	Power Consumption (W)	Power Consumption (W)
	Temperature (℃)	Temperature (℃)
	CPU Used Ratio (%)	CPU Used Ratio (%)
CM	Read IOPS (IO/s)	Read IOPS (IO/s)
	Write IOPS (IO/s)	Write IOPS (IO/s)
	Total IOPS (IO/s)	Total IOPS (IO/s)
	Other IOPS (IO/s)	IOPS other than Read/Write (IO/s)
	Read Throughput (MB/s)	Read Throughput (MB/s)
	Write Throughput (MB/s)	Write Throughput (MB/s)
	Total Throughput (MB/s)	Total Throughput (MB/s)
	Read Cache Hit Response Time (ms)	Read Cache Hit Response Time (ms)
	Write Cache Hit Response Time (ms)	Write Cache Hit Response Time (ms)
	Read Response Time (ms)	Read Response Time (ms)
	Write Response Time (ms)	Write Response Time (ms)
	Total Response Time (ms)	Total Response Time (ms)
	Read Cache Hit Ratio (%)	Read Cache Hit Ratio (%)
	Write Cache Hit Ratio (%)	Write Cache Hit Ratio (%)
	CPU Used Ratio (%)	CPU Used Ratio (%)
	Copy Residual Quantity (MB)	Copy Residual Quantity (MB)

Type	Property Name	Explanation
Port	Read IOPS (IO/s)	Read IOPS (IO/s)
	Write IOPS (IO/s)	Write IOPS (IO/s)
	Total IOPS (IO/s)	Total IOPS (IO/s)
	Other IOPS (IO/s)	IOPS other than Read/Write (IO/s)
	Read Throughput (MB/s)	Read Throughput (MB/s)
	Write Throughput (MB/s)	Write Throughput (MB/s)
	Total Throughput (MB/s)	Total Throughput (MB/s)
	Read Cache Hit Response Time (ms)	Read Cache Hit Response Time (ms)
	Write Cache Hit Response Time (ms)	Write Cache Hit Response Time (ms)
	Read Response Time (ms)	Read Response Time (ms)
	Write Response Time (ms)	Write Response Time (ms)
	Total Response Time (ms)	Total Response Time (ms)
	Read Cache Hit Ratio (%)	Read Cache Hit Ratio (%)
	Write Cache Hit Ratio (%)	Write Cache Hit Ratio (%)
RG LUN/ TPP LUN/ FTRP LUN	Read IOPS (IO/s)	Read IOPS (IO/s)
	Write IOPS (IO/s)	Write IOPS (IO/s)
	Total IOPS (IO/s)	Total IOPS (IO/s)
	Other IOPS (IO/s)	IOPS other than Read/Write (IO/s)
	Read Throughput (MB/s)	Read Throughput (MB/s)
	Write Throughput (MB/s)	Write Throughput (MB/s)
	Total Throughput (MB/s)	Total Throughput (MB/s)
	Read Cache Hit Response Time (ms)	Read Cache Hit Response Time (ms)
	Write Cache Hit Response Time (ms)	Write Cache Hit Response Time (ms)
	Read Response Time (ms)	Read Response Time (ms)
	Write Response Time (ms)	Write Response Time (ms)
	Total Response Time (ms)	Total Response Time (ms)
	Read Cache Hit Ratio (%)	Read Cache Hit Ratio (%)
	Write Cache Hit Ratio (%)	Write Cache Hit Ratio (%)
RG Disk/TPP Disk/FTRP Disk	Used Ratio (%)	Used Ratio (%)

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Appendix C
Customization

This appendix describes how to change the object detection time and monitoring interval for monitored objects included in the Fujitsu ETERNUS Storage Systems Monitoring Pack.

C.1 Changing Detection Time

Use the following procedure to change the detection time for an object that is monitored.

Procedure

1 Start the SCOM Operations Console, and then select [Management Pack Objects] - [Object Discoveries] in the navigation window on the [Authoring] pane.
All detection rules defined by SCOM appear in the window on the right side.

2 Right-click the object detection to change, and then select [Overrides] - [Override the Object Discovery] - [For all objects of class: Fujitsu ETERNUS *nnn*] or [For a specific object of class: Fujitsu ETERNUS *nnn*] in the context menu. (*nnn* is the object to be changed, such as CM or CA.)

■ If [For all objects of class: Fujitsu ETERNUS *nnn*] is selected

Proceed to Step 3.

■ If [For a specific object of class: Fujitsu ETERNUS *nnn*] is selected

Only the specified object is overwritten. A list of detected objects is shown. Select an object, and then click the [OK] button. Proceed to Step 3 .

3 In the [Override Properties] dialog box, select the check box in the [Override] column for the parameters that is to be overwritten, and then enter a new detection time (in seconds) for [Override Value].

4 In addition, select check box in the [Enforced] column.

5 Overwriting requires the data to be saved to a management pack that can be written to. Microsoft recommends against using the "Standard Management Pack". Therefore, for [Select destination management pack] click [New] to create a new management pack.

6 Click the [OK] button. The changes are saved to the selected management pack.

End of procedure

C.2　Changing the Monitoring Interval

Use the following procedure to change the monitoring interval for an object that is monitored.

Procedure

1　Start the SCOM Operations Console, and then select [Management Pack Objects] - [Monitors] in the navigation window on the [Authoring] pane.
All monitor groups defined by SCOM appear in the window on the right side.

2　Right-click the monitor group to change, and then select [Overrides] - [Override the Object Discovery] - [For all objects of class: Fujitsu ETERNUS *nnn*] or [For a specific object of class: Fujitsu ETERNUS *nnn*] in the context menu. (*nnn* is the object to be changed, such as CM or CA.)

- If [For all objects of class: Fujitsu ETERNUS *nnn*] is selected

  Proceed to Step 3.

- If [For a specific object of class: Fujitsu ETERNUS *nnn*] is selected

  Only the specified object is overwritten. A list of detected objects is shown. Select an object, and then click the [OK] button. Proceed to Step 3 .

3　In the [Override Properties] dialog box, select the check box in the [Override] column for the parameters that is to be overwritten, and then enter a new monitor interval time (in seconds) for [Override Value].

4　In addition, select check box in the [Enforced] column.

5　Overwriting requires the data to be saved to a management pack that can be written to. Microsoft recommends against using the "Standard Management Pack". Therefore, for [Select destination management pack] click [New] to create a new management pack.

6　Click the [OK] button. The changes are saved to the selected management pack.

End of procedure

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C.3   Changing Rules

Use the following procedure to change the rules for an object that is monitored.

Procedure

1   Start the SCOM Operations Console, and then select [Management Pack Objects] - [Rules] in the navigation window on the [Authoring] pane.
All Rules defined by SCOM appear in the window on the right side.

2   Right-click the rule group to change, and then select [Override] - [Override the Rule] - [For all objects of class: Fujitsu ETERNUS *nnn*] or [For a specific object of class: Fujitsu ETERNUS *nnn*] in the context menu. (*nnn* is the object to be changed, such as CM or CA.)

  ■ If [For all objects of class: Fujitsu ETERNUS *nnn*] is selected

  Proceed to Step 3.

  ■ If [For a specific object of class: Fujitsu ETERNUS *nnn*] is selected

  Only the specified object is overwritten. A list of detected objects is shown. Select an object, and then click the [OK] button. Proceed to Step 3 .

3   In the [Override Properties] dialog box, select the check box in the [Override] column for the parameters that is to be overwritten, and then change the value in the [Override] column.

4   In addition, select check box in the [Enforced] column.

5   Overwriting requires the data to be saved to a management pack that can be written to. Microsoft recommends against using the "Standard Management Pack". Therefore, for [Select destination management pack] click [New] to create a new management pack.

6   Click the [OK] button. The changes are saved to the selected management pack.

End of procedure

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