

ETERNUS
Management Pack for VMware vRealize
Operations 1.1

User's Guide

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Preface

This manual describes how to use the ETERNUS Management Pack for VMware vRealize Operations as well as providing an overview.

This manual is intended for operations administrators who configure VMware virtual environments by using the ETERNUS DX Disk storage system and the ETERNUS DX200F All Flash Array (hereinafter referred to as "ETERNUS DX"), and those who want to use the ETERNUS Management Pack for VMware vRealize Operations. This manual assumes that the user has basic knowledge of the functions and terms used in the vRealize Operations Manager and ETERNUS DX storage systems.

Second Edition
August 2015

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About This Manual

Organization

This manual is composed of the following eight chapters and three appendices.

- Chapter 1 Introduction
This chapter provides an overview of the ETERNUS Management Pack for VMware vRealize Operations.
- Chapter 2 Operating Environment
This chapter explains the support range, necessary resources, and pre-configuration for the ETERNUS Management Pack for VMware vRealize Operations.
- Chapter 3 Installation
This chapter explains how to install the ETERNUS VMware Support Package and the ETERNUS Management Pack for VMware vRealize Operations.
- Chapter 4 Preparations
This chapter explains preparations for using the ETERNUS Management Pack for VMware vRealize Operations.
- Chapter 5 Configuration and Operations Procedures
This chapter explains how to configure and operate the ETERNUS Management Pack for VMware vRealize Operations.
- Chapter 6 Fujitsu Dashboards
This chapter explains the Fujitsu-specific dashboards for the ETERNUS DX.
- Chapter 7 Uninstallation
This chapter explains how to uninstall the ETERNUS Management Pack for VMware vRealize Operations.
- Chapter 8 How to Obtain Troubleshooting Information
This chapter describes how to obtain troubleshooting information if an error occurs in the ETERNUS Management Pack for VMware vRealize Operations.
- Appendix A Alerts
This appendix describes the alerts that are output from the ETERNUS Management Pack for VMware vRealize Operations.

- Appendix B Objects and Metrics

This appendix explains the Objects that are supported for the ETERNUS DX and the Metrics that can be monitored for each Object when using the ETERNUS Management Pack for VMware vRealize Operations service.

- Appendix C Solutions for Frequently Asked Questions

This appendix provides the solutions for frequently asked questions.

Related Manuals

Refer to the following related manuals for more information:

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

Naming Conventions

- Abbreviations used in this manual

In this manual, the product names are referred to as follows.

- "ETERNUS Management Pack" refers to the ETERNUS Management Pack for VMware vRealize Operations.
- "ETERNUS DX" refers to disk storage systems and all flash arrays that are supported by the ETERNUS Management Pack.
- "GUI" refers to ETERNUS Web GUI.
- "ETERNUS SF Storage Cruiser" or "Storage Cruiser" refers to FUJITSU Storage ETERNUS SF Storage Cruiser.
- "ESXi Server" refers to VMware® ESXi™ Server and vSphere® ESXi™ Server.
- "ETERNUS SF Installation Guide" refers to FUJITSU Storage ETERNUS SF Express/ETERNUS SF Storage Cruiser/ETERNUS SF AdvancedCopy Manager Installation Guide.
- "ETERNUS SF Operation Guide" refers to FUJITSU Storage ETERNUS SF Express/ETERNUS SF Storage Cruiser/ETERNUS SF AdvancedCopy Manager 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.
- Trademark symbols such as ™ and ® are omitted in this manual.

■ Reference

- ETERNUS DX support information for the ETERNUS Management Pack
<http://www.fujitsu.com/global/support/products/computing/storage/download/vrealize.html>
- ETERNUS DX product information
<http://www.fujitsu.com/global/products/computing/storage/disk/eternus-dx/>

Release Information

Incompatibility Information

The following table shows the incompatibility information of the ETERNUS Management Pack.

Version	Incompatibility information
1.0	No
1.1	<ul style="list-style-type: none">Changed the display format of the CM numbers for the FUJITSU Storage ETERNUS DX100 S3/ DX200 S3 and ETERNUS DX500 S3/DX600 S3 from [CM number] (one digit) to ["0" + CM number] (two digits)

Updates

The following table shows the modifications for each ETERNUS Management Pack version.

Version	Modifications
1.0 (April 2015)	First version
1.1 (August 2015)	<ul style="list-style-type: none">Added support for displaying VMware vSphere Virtual Volumes (VVOL) informationAdded support for the FUJITSU Storage ETERNUS DX8700 S3/DX8900 S3

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Chapter 1

Introduction

This chapter provides an overview of the ETERNUS Management Pack.

1.1 About the ETERNUS Management Pack

vRealize Operations is a management tool that is provided by VMware for operating a healthy virtual infrastructure.

Fujitsu provides software that is compatible with the management tool that can detect and manage real-time information related to predictive analysis and problems by collecting performance data of the storage system in large virtual environments and private cloud infrastructures.

For details about vRealize Operations, refer to the VMware website.

1.1.1 Functional Overview

This section provides a functional overview of the ETERNUS Management Pack.

■ ETERNUS DX information display

ETERNUS Management Pack regularly obtains information by modeling concepts such as Object (*1), Metric, and Relationship.

*1: For the ETERNUS DX, "Object" indicates a CM, physical disk, LUN, etc.

vRealize Operations processes and displays the obtained information on the screen.

■ Fujitsu-specific dashboards

By installing the ETERNUS Management Pack, three Fujitsu-specific dashboards are added to the vRealize Operations Manager screen.

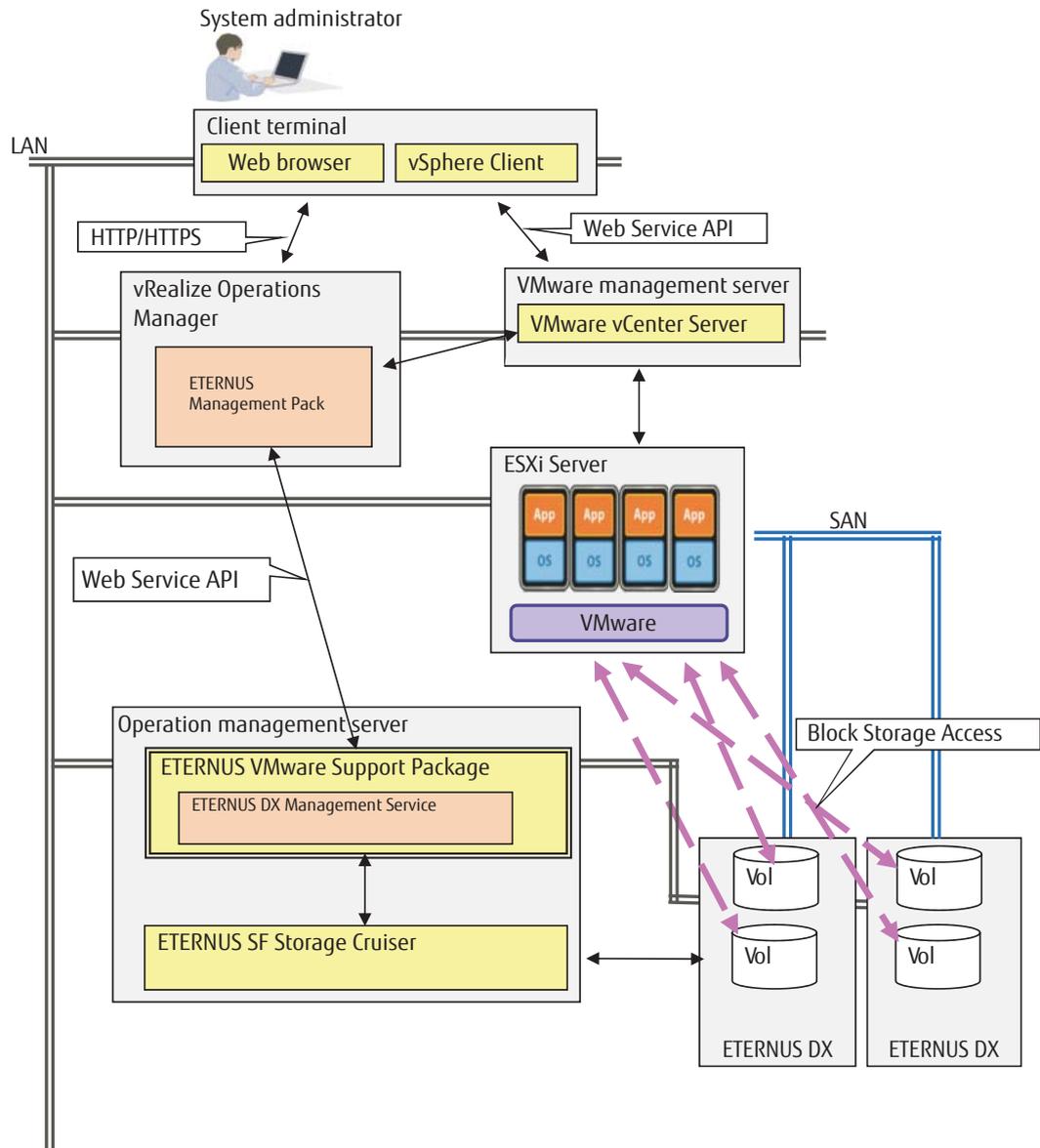
Storage administrators can display and monitor information (for the operation state, performance, and capacity Metrics) from the Fujitsu-specific dashboards.

In each dashboard, the relationship between Objects such as DATA STORE on the VMware side and Objects such as LUNs on the ETERNUS DX side can be understood visually, and Metrics (index values such as Read IOPS) can be displayed as a graph for each Object.

1.1.2 Schematic View

The schematic view of the ETERNUS Management Pack system is shown below.

Figure 1.1 Schematic view



Chapter 2

Operating Environment

This chapter explains the operating environment of the ETERNUS Management Pack. Make sure to check the operating environment before installing the ETERNUS Management Pack.

2.1 Support Range

For the ETERNUS DX models, firmware versions, and OSs that are supported by the ETERNUS Management Pack, refer to the following website.

<http://www.fujitsu.com/global/support/products/computing/storage/download/vrealize.html>

2.2 Required Disk Space

2.2.1 Disk Space Required for Installation

The disk space that is required for installation is shown below.

■ ETERNUS VMware Support Package

Contents	Capacity	Folder
Support Package	150MB	Support Package installation folder

■ ETERNUS Management Pack

Contents	Capacity	Folder
Adapter file	13MB	Any folder

2.2.2 Disk Space Required for Operations

The disk space that is required for operations is shown below.

■ ETERNUS VMware Support Package

Contents	Capacity	Folder
Support Package trace log	120MB	Support Package installation folder

■ ETERNUS Management Pack

For the required disk space during operations, refer to the vRealize Operations documents.

2.3 Required Software

The following software is required in advance:

- ETERNUS SF Storage Cruiser
- vRealize Operations Manager

For details about the software version requirements, refer to the following website.

<http://www.fujitsu.com/global/support/products/computing/storage/download/vrealize.html>

● Note

Exclusive software is based on the exclusive software of Storage Cruiser.
For details about the exclusive software of Storage Cruiser, refer to "ETERNUS SF Installation Guide".

Chapter 3

Installation

This chapter explains how to install the ETERNUS VMware Support Package and the ETERNUS Management Pack.

3.1 Installing the ETERNUS VMware Support Package

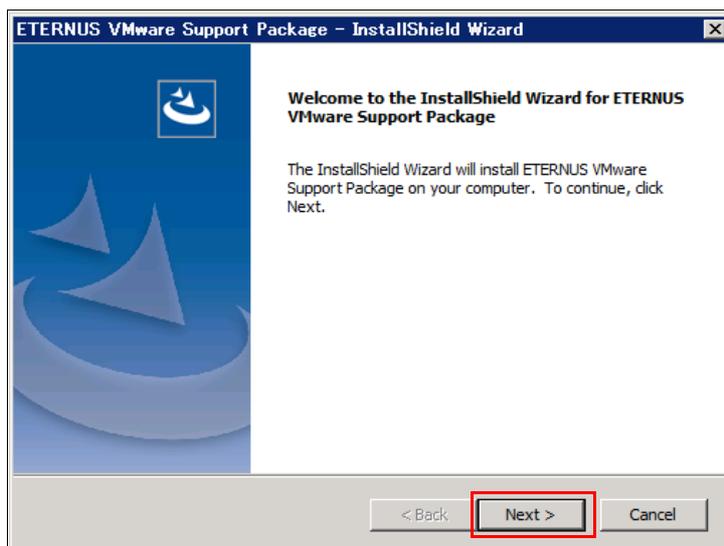
The ETERNUS Management Pack function (or the ETERNUS DX Management Service) is included in the ETERNUS VMware Support Package.

Install the ETERNUS VMware Support Package in the operation management server where ETERNUS SF Storage Cruiser was installed.

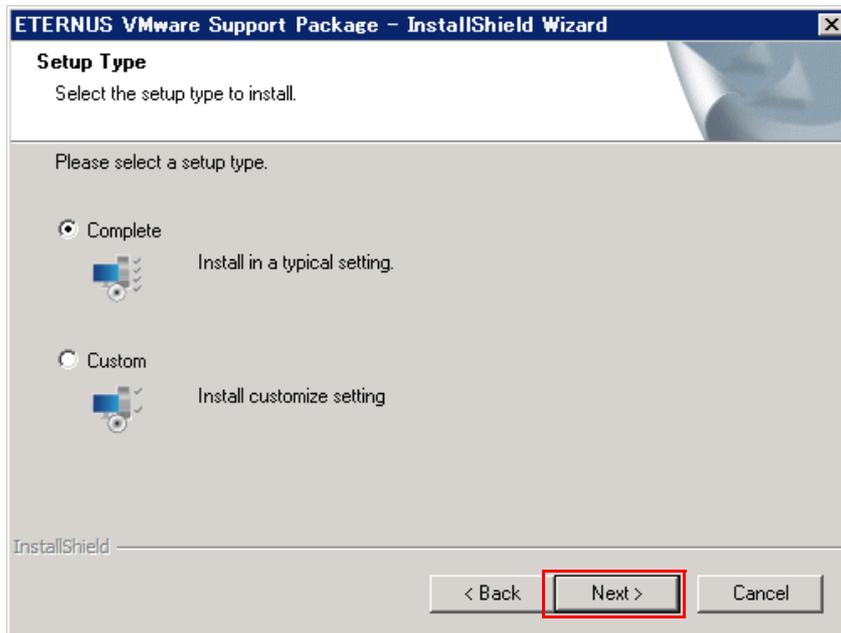
The following procedure shows how to install the ETERNUS VMware Support Package.

Procedure

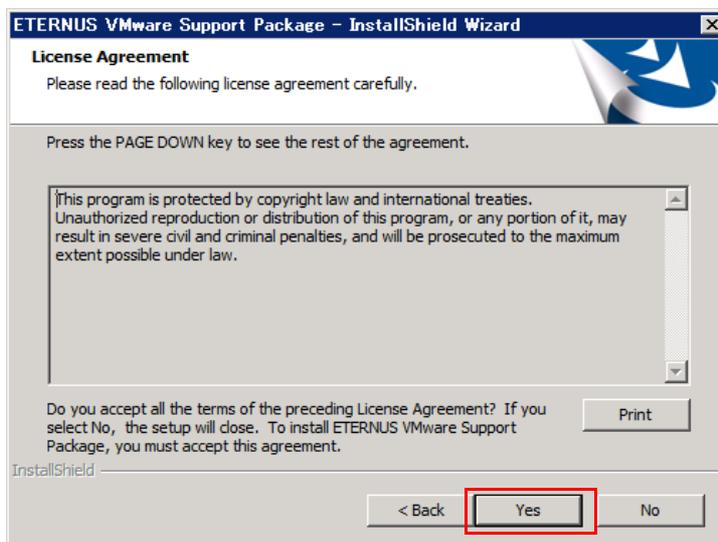
- 1 Execute the installer of the ETERNUS VMware Support Package.
The [Welcome to the InstallShield Wizard for ETERNUS VMware Support Package] screen appears.
- 2 In the [Welcome to the InstallShield Wizard for ETERNUS VMware Support Package] screen, click the [Next] button.



- 3 In the [Setup Type] screen, select a setup type and click the [Next] button.



- 4 In the [License Agreement] screen, accept the terms of the license agreement. Read the license agreement carefully, and click the [Yes] button if you agree the terms shown.



- 5 When using only the ETERNUS Management Pack function, clear the "Use VASA Provider" checkbox and click the [Next] button in the [Create ETERNUS VASA Provider Account] screen.

The screenshot shows the 'Create ETERNUS VASA Provider Account' screen. The title bar reads 'ETERNUS VMware Support Package - InstallShield Wizard'. Below the title, the text says 'Create ETERNUS VASA Provider Account'. A message states: 'If you want to use ETERNUS VASA Provider, Please input user name and password.' There are four input fields: 'Use VASA Provider' (checkbox, unchecked and highlighted with a red box), 'Provider User name', 'Provider Password', and 'Provider Confirm Password'. At the bottom, there are two buttons: '< Back' and 'Next >' (highlighted with a red box). The 'InstallShield' logo is visible in the bottom left corner.

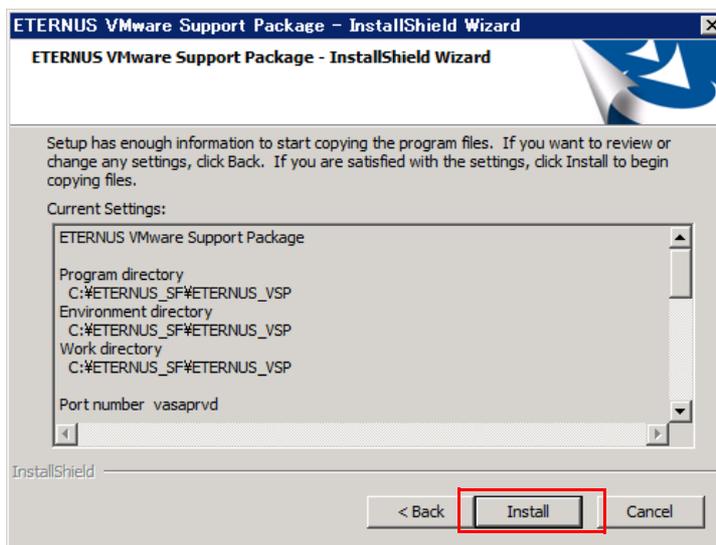
- 6 In the [Setup Server Certificate] screen, enter the key information to create the server certificate, and click the [Next] button.

The screenshot shows the 'Setup Server Certificate' screen. The title bar reads 'ETERNUS VMware Support Package - InstallShield Wizard'. Below the title, the text says 'Setup Server Certificate' and 'Enter The Information For Server Certificate.' There are six input fields: 'Common Name' (highlighted with a red box), 'Organization Unit', 'Organization Name', 'Locality Name', 'State Name', and 'Country Code'. A note below the 'Common Name' field says: '* Required Field. Enter FQDN (Host Name and Domain Name)'. At the bottom, there are two buttons: '< Back' and 'Next >' (highlighted with a red box).

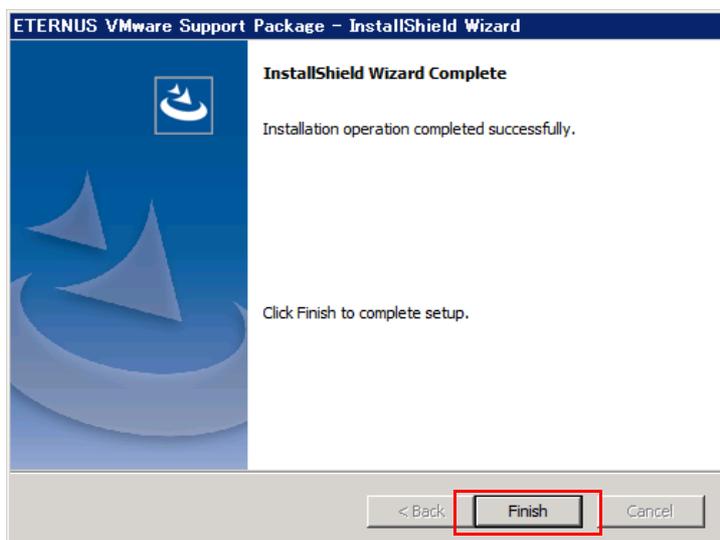
The parameters to enter are as follows.

- Common Name
Enter an FQDN (host name and domain name). This parameter must be set.
- Organization Unit
Enter an ID name such as a department or unit name.
- Organization Name
Enter an organization name.
- Locality Name
Enter the location information of the organization (city, town, or village).
- State Name
Enter the location information of the organization (state name).
- Country Code
Enter a two-letter ISO country code.

- 7** In the [Start Copying Files] screen, review the settings. When no changes are needed, click the [Install] button. To change any setting, click the [Back] button and change the settings.



- 8 When the installation finishes, the [InstallShield Wizard Complete] screen appears. Click the [Finish] button to complete the installation.



End of procedure

3.2 Installing the ETERNUS Management Pack

Install the ETERNUS Management Pack with vRealize Operations Manager.
The following procedure shows how to install the ETERNUS Management Pack.

Caution

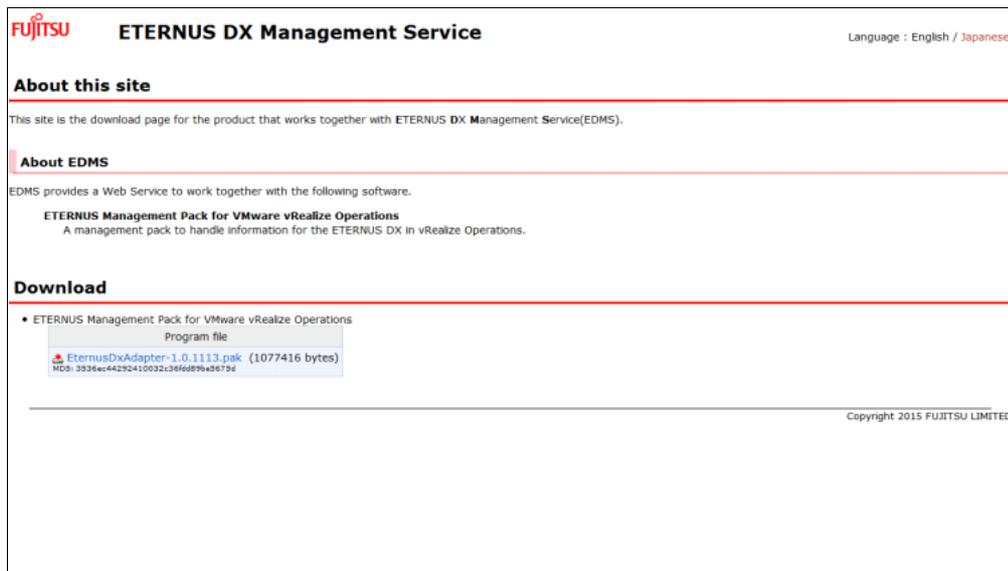
With the current vRealize Operations Manager, the ETERNUS Management Pack cannot be uninstalled.

Procedure

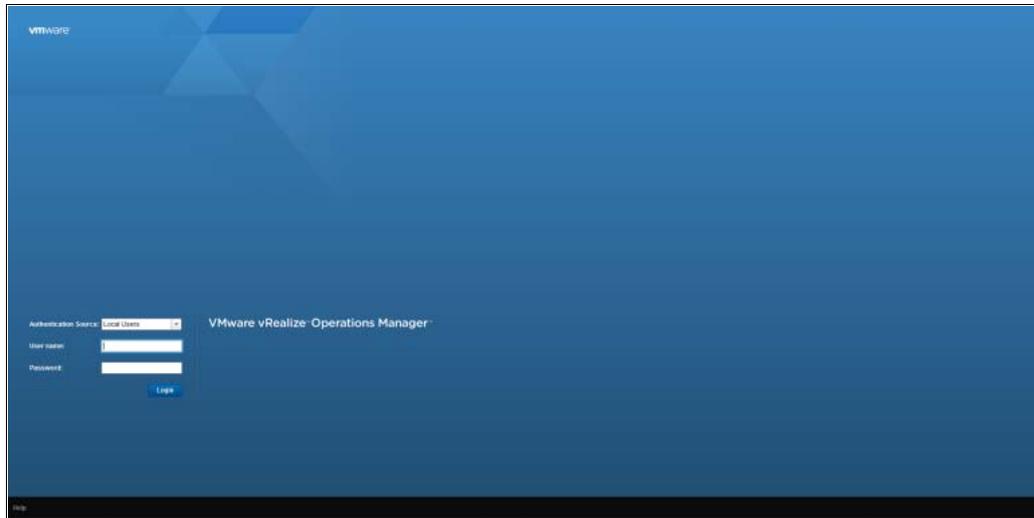
- 1 Download the ETERNUS Management Pack package.
Download the PAK file from the operation management server where the ETERNUS VMware Support Package was installed.

`https://<IP_address_or_host_name>:<port_number_(*)>/edms`

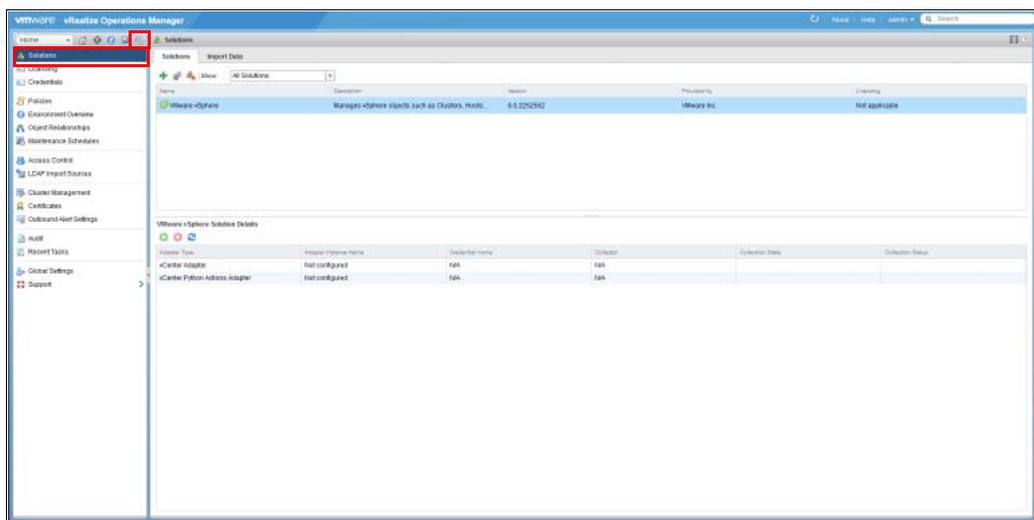
- *1: Port number (vasaprvd) for external communication of the ETERNUS VMware Support Package.
If the ETERNUS VMware support package installer does not change the vasaprvd port number, the port number will be "31443" (default).



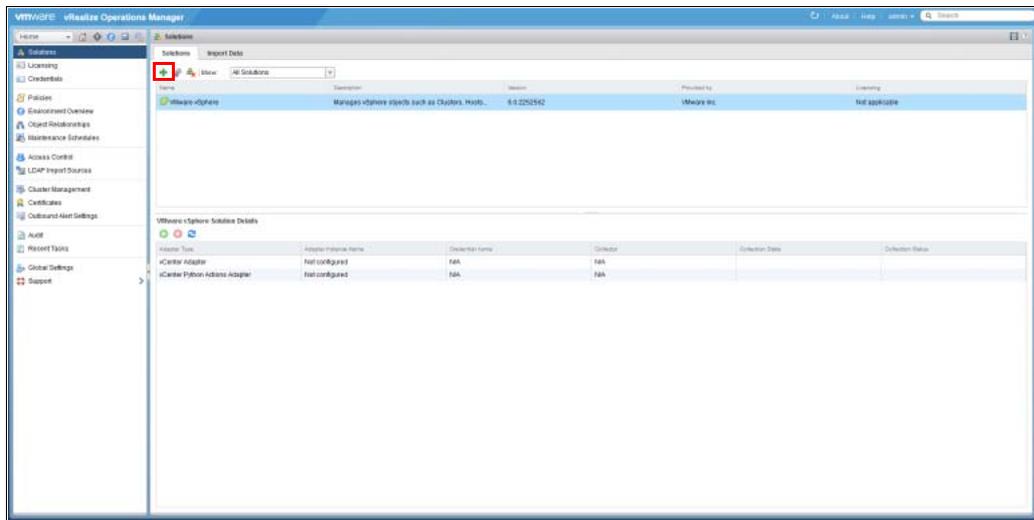
- 2 Log into the vRealize Operations Manager GUI.
https://<IP_address_or_host_name>/vcops-web-ent



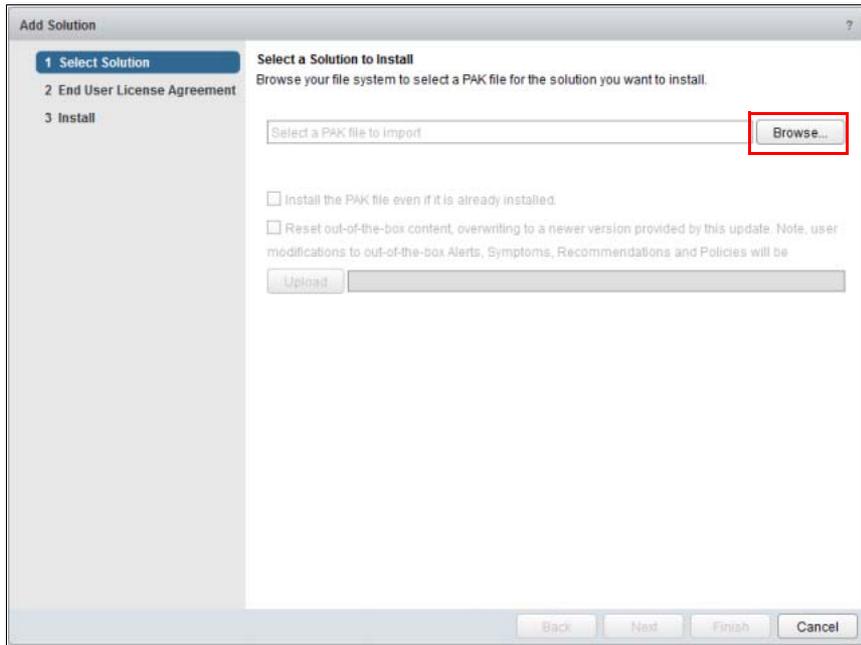
- 3 Click [Solutions] in the Administration menu.



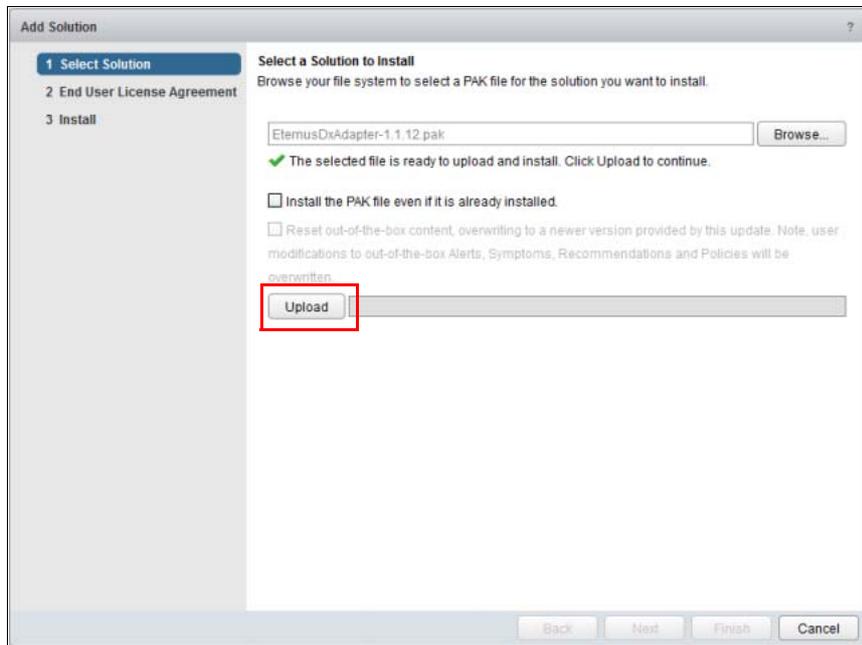
4 Click the [Add] icon.



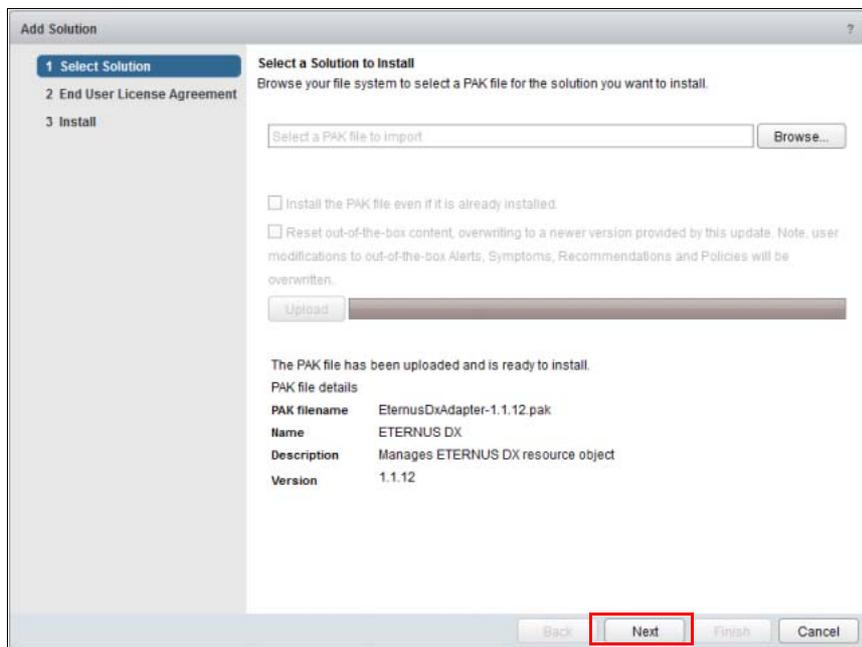
5 In the [Add Solution] wizard, click the [Browse] button and specify the ETERNUS Management Pack PAK file that was downloaded in [Step 1](#).



- 6 Click the [Upload] button and check if the displayed file details are correct.

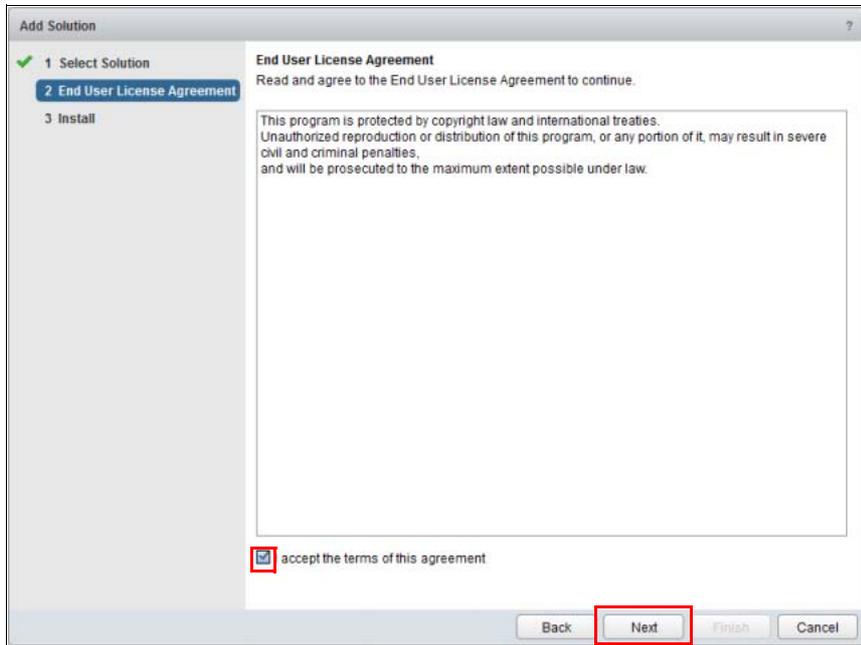


- 7 Click the [Next] button.



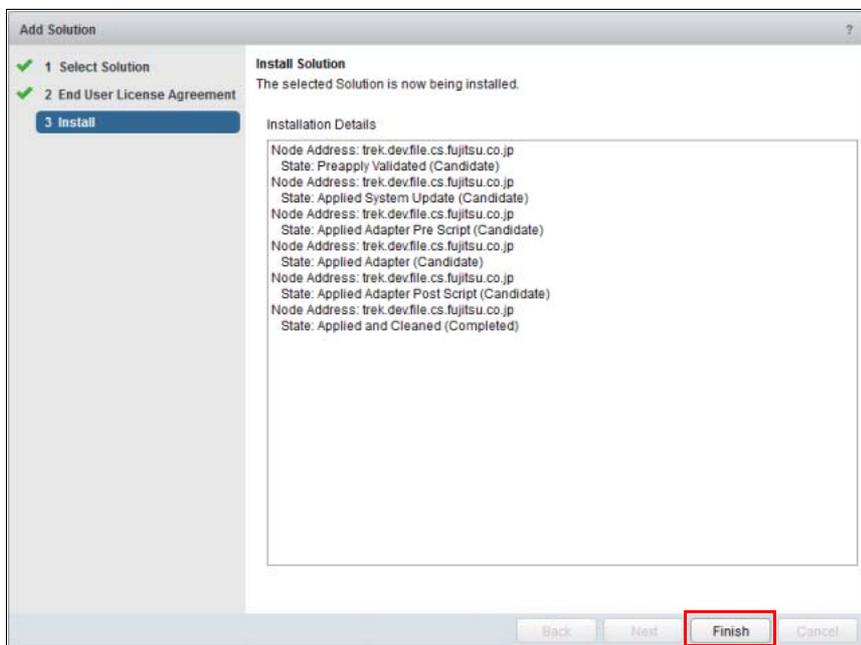
The PAK file is loaded.

- 8 Check the displayed license agreement and select the [I accept the terms of this agreement] checkbox if you agree the terms shown and then click the [Next] button.



The installation is started and the progress is displayed in the bottom pain. When the installation is complete, a [Finish] button is displayed.

- 9 Click the [Finish] button to finish the installation.



End of procedure

3.3 Upgrading the ETERNUS Management Pack

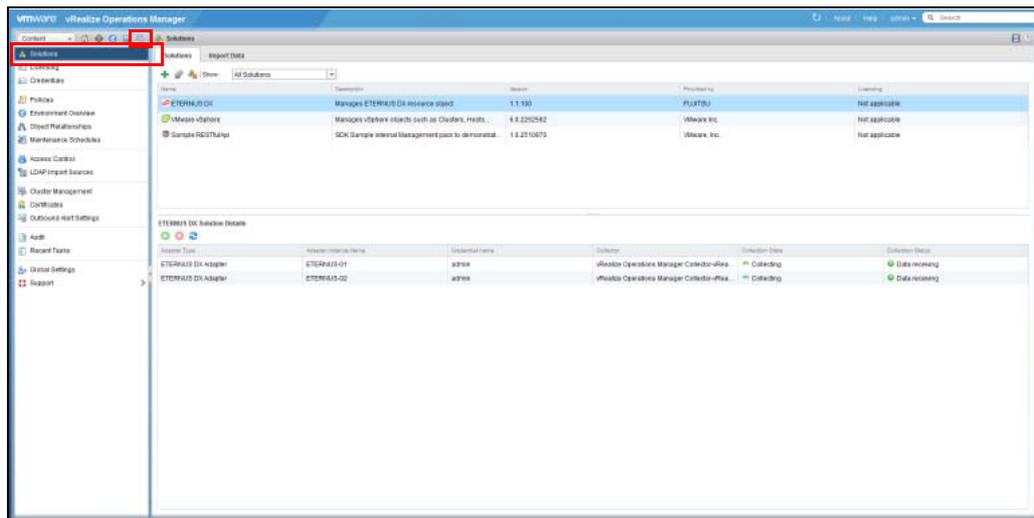
The following procedure shows how to upgrade the ETERNUS Management Pack.

Caution

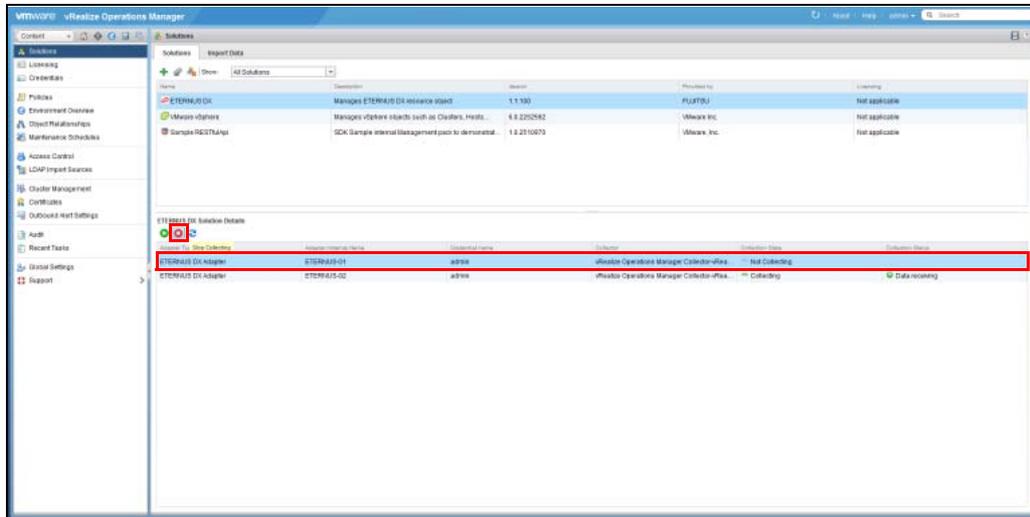
When upgrading the ETERNUS Management Pack, Fujitsu dashboards are overwritten. If the Fujitsu dashboards have been customized, make sure to save a copy (or perform a backup) prior to the upgrade. For the procedure on how to copy (or back up) the dashboards, refer to ["6.4 Customizing Fujitsu Dashboards" \(page 49\)](#).

Procedure

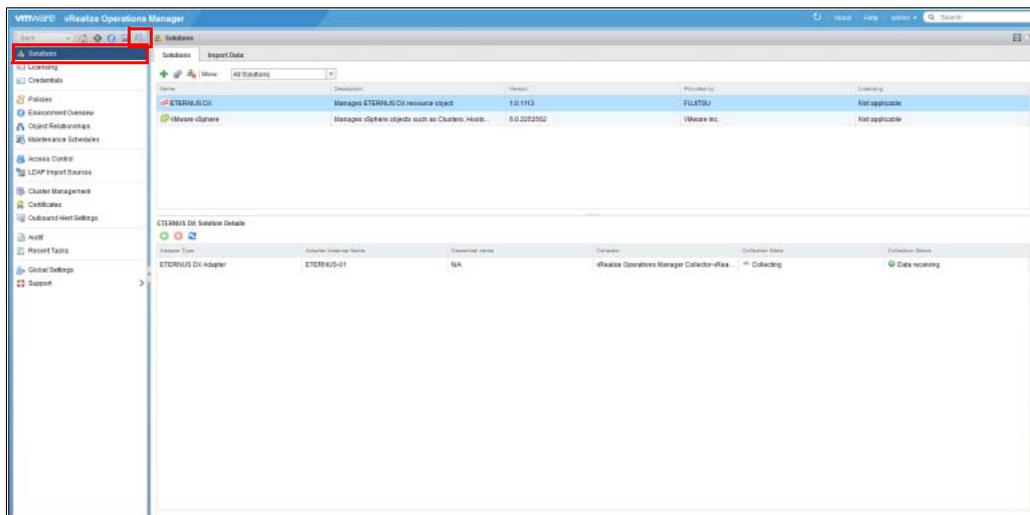
- 1 Log into the vRealize Operations Manager GUI with administrative privileges.
`https://<IP_address_or_host_name>/vcops-web-ent`
- 2 Click [Solutions] in the Administration menu.



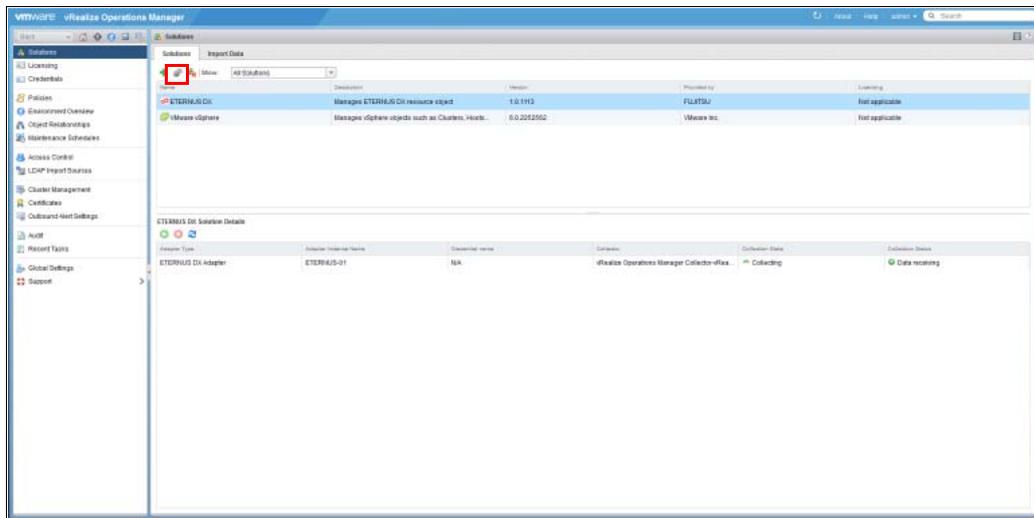
- From the list under "ETERNUS DX Solution Details" that appears at the bottom by clicking "ETERNUS DX", select the ETERNUS DX adapter instance that is currently running a collection and click the [Stop Collecting] icon.
Perform this step for all ETERNUS DX adapter instances.



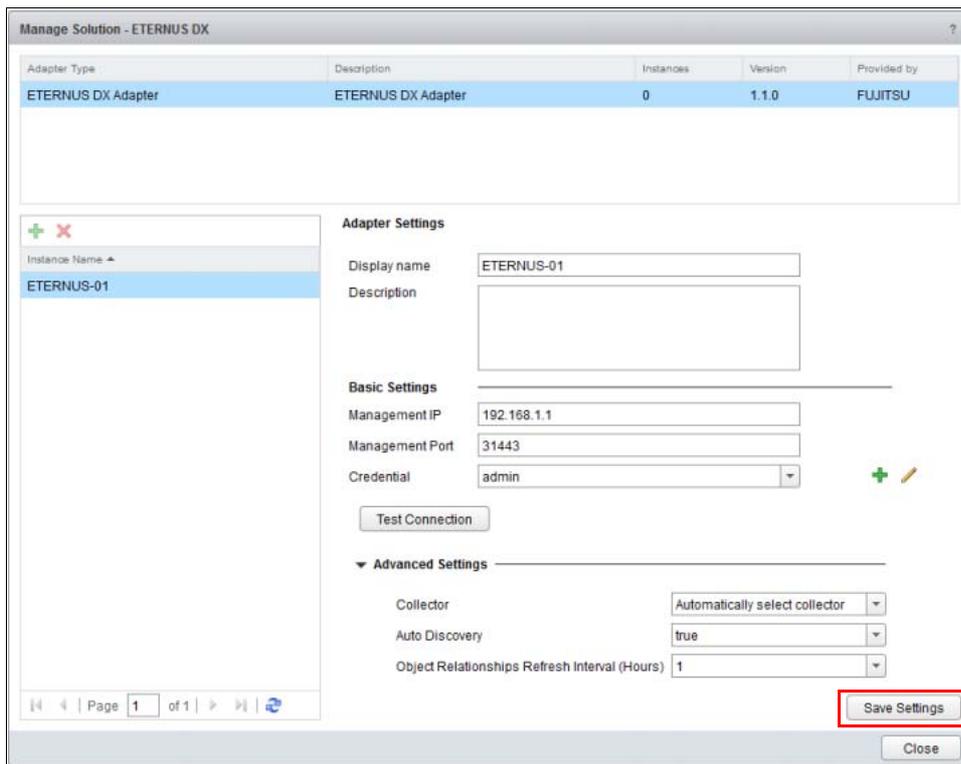
- Refer to ["3.1 Installing the ETERNUS VMware Support Package"](#) (page 16) and install the latest ETERNUS VMware Support Package.
- Refer to ["3.2 Installing the ETERNUS Management Pack"](#) (page 21), then download and install the PAK file.
- Log into the vRealize Operations Manager GUI with administrative privileges.
`https://<IP_address_or_host_name>/vcops-web-ent`
- Click [Solutions] in the Administration menu.



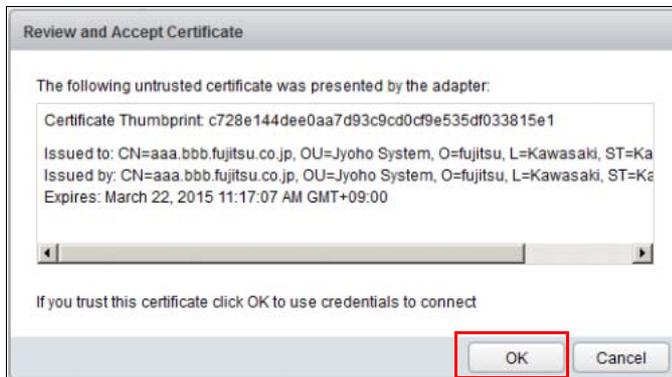
8 Click the [Configure] icon.



9 In the [Manage Solution] screen, enter the required information and click the [Save Settings] button.

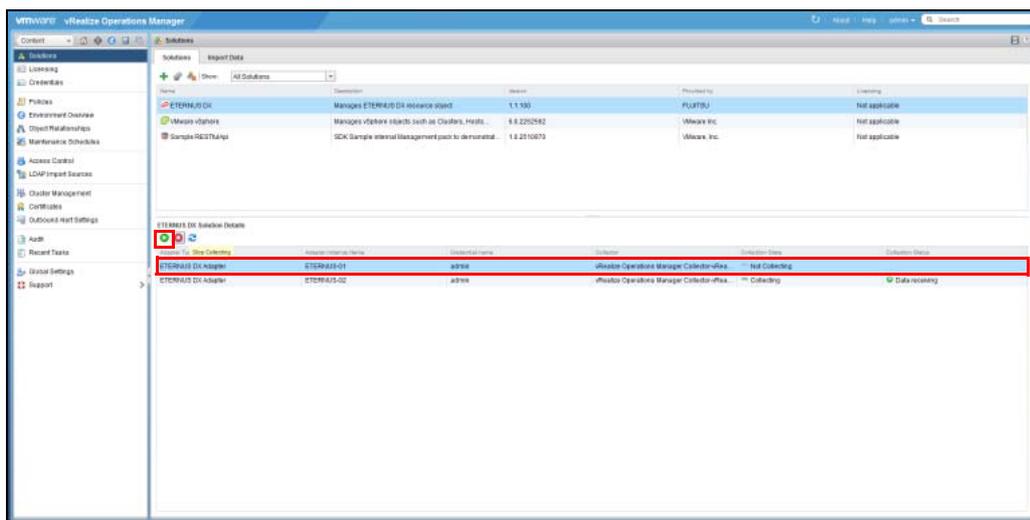


- 10 In the [Review and Accept Certificate] screen, check the contents and click the [OK] button.



The server certificate is saved, then communication with the ETERNUS VMware Support Package becomes available.

- 11 Click the [Close] button.
- 12 From the list under "ETERNUS DX Solution Details" that appears at the bottom by clicking "ETERNUS DX", select the ETERNUS DX adapter instance that was stopped in [Step 3](#) and click the [Start Collecting] icon.



- 13 Check the server certificate.
For the procedure to check the server certificate, refer to [Step 8](#) in "[5.1 Registering an Adapter Instance](#)" ([page 31](#)).

End of procedure

Chapter 4

Preparations

This chapter explains the preparations for the ETERNUS Management Pack.
Perform the preparations before using the ETERNUS Management Pack.

4.1 Configuring Storage Cruiser

Before using the ETERNUS Management Pack, register the ETERNUS DX and the VMware vCenter Server that are to be managed in Storage Cruiser.
After the registration, start the performance monitoring.

 **Caution**

If the performance monitoring is already started, stop and restart the monitoring.

 **Note**

For the methods for registering and setting the ETERNUS DX and the VMware vCenter Server in Storage Cruiser, refer to "ETERNUS SF Web Console Guide" and "ETERNUS SF Operation Guide".

Chapter 5

Configuration and Operations Procedures

This chapter explains how to configure and operate the ETERNUS Management Pack.

Caution

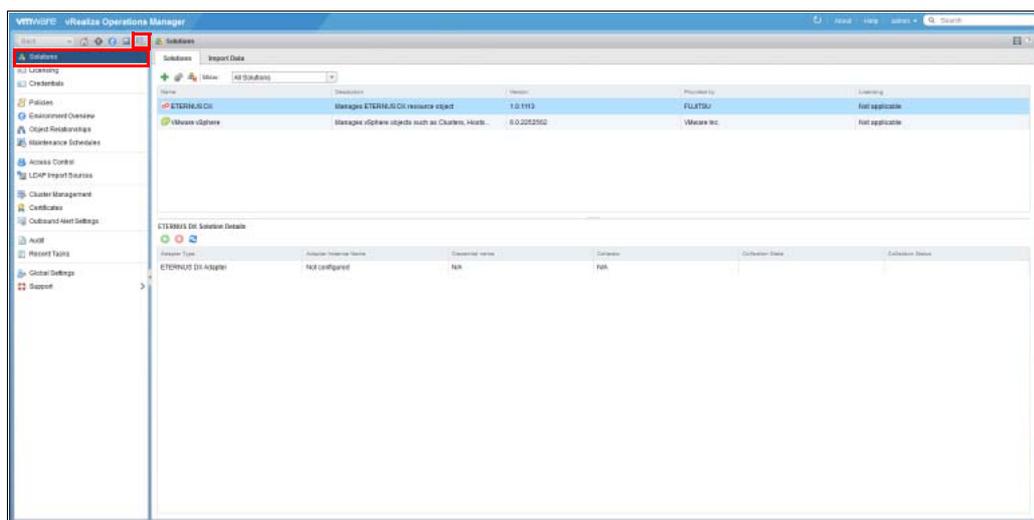
When reconfiguring vRealize Operations, the data that was sent previously by the ETERNUS Management Pack cannot be taken over.

5.1 Registering an Adapter Instance

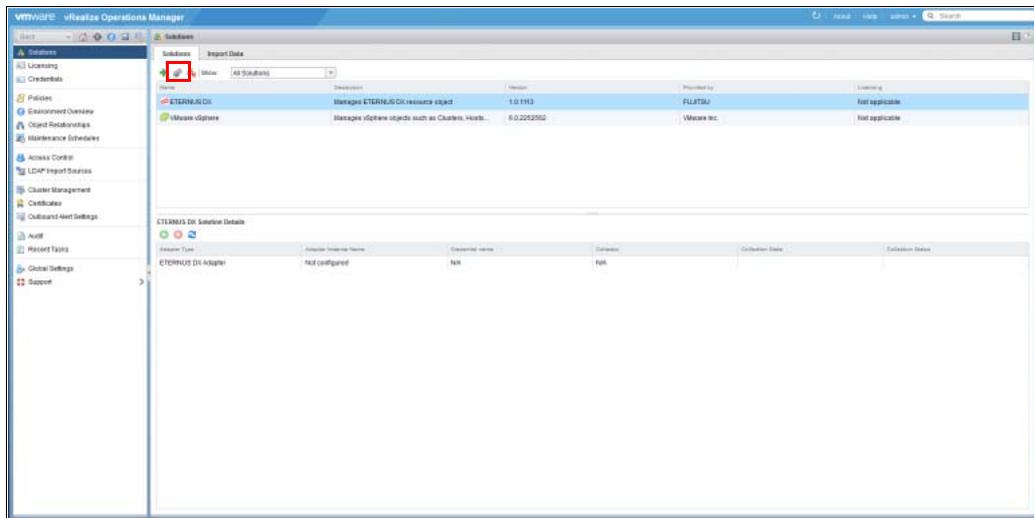
This section explains how to register an adapter instance.
An adapter instance must be registered for each ETERNUS VMware Support Package.

Procedure

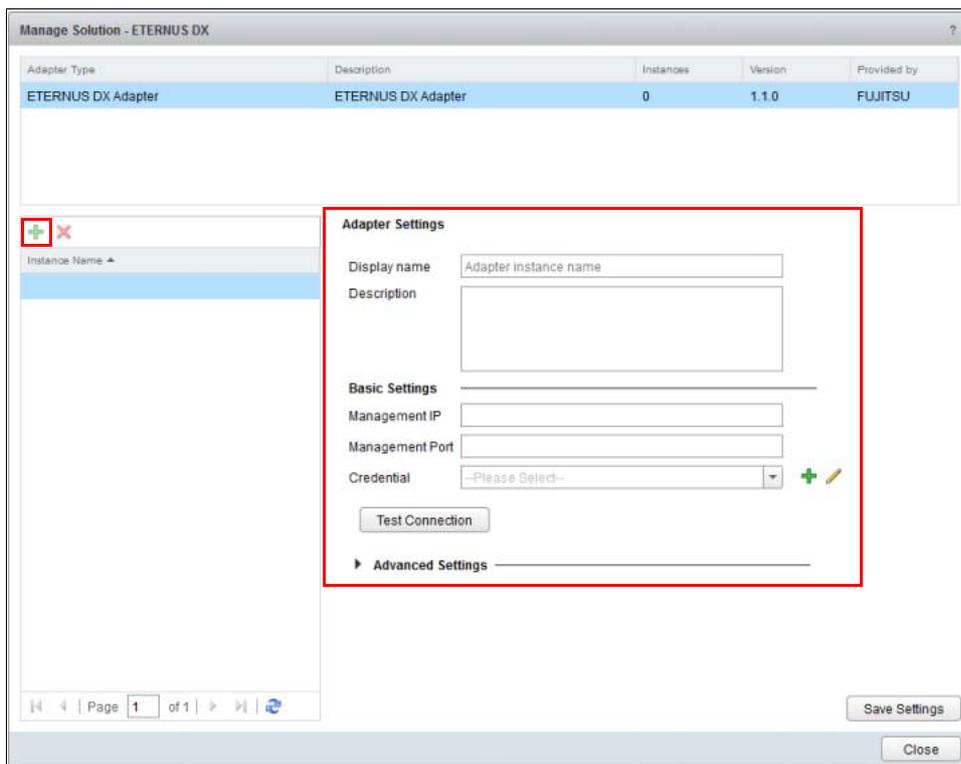
- 1 Log into the vRealize Operations Manager GUI with administrative privileges.
https://<IP_address_or_host_name>/vcops-web-ent
- 2 Click [Solutions] in the Administration menu.



3 Click the [Configure] icon.



4 In the [Manage Solution] screen, click the [Add] icon and enter each parameter for the adapter settings that are initially displayed.



The parameters to enter are as follows.

- Display name
Enter an arbitrary name.
- Description
Enter an arbitrary explanation.

- **Management IP**
Enter the IP address or the host name of the ETERNUS VMware Support Package (that can be associated with the FQDN that is included in the server certificate).
- **Management Port**
Enter the external communication port number (vasaprvd) for the ETERNUS VMware Support Package.
If the ETERNUS VMware support package installer does not change the vasaprvd port number, the port number will be "31443" (default).
- **Credential**
Select the credential information of the vRealize Operations Manager.
When the [Add New] icon is clicked, the [Manage Credential] dialog box appears. Enter the parameters as follows.

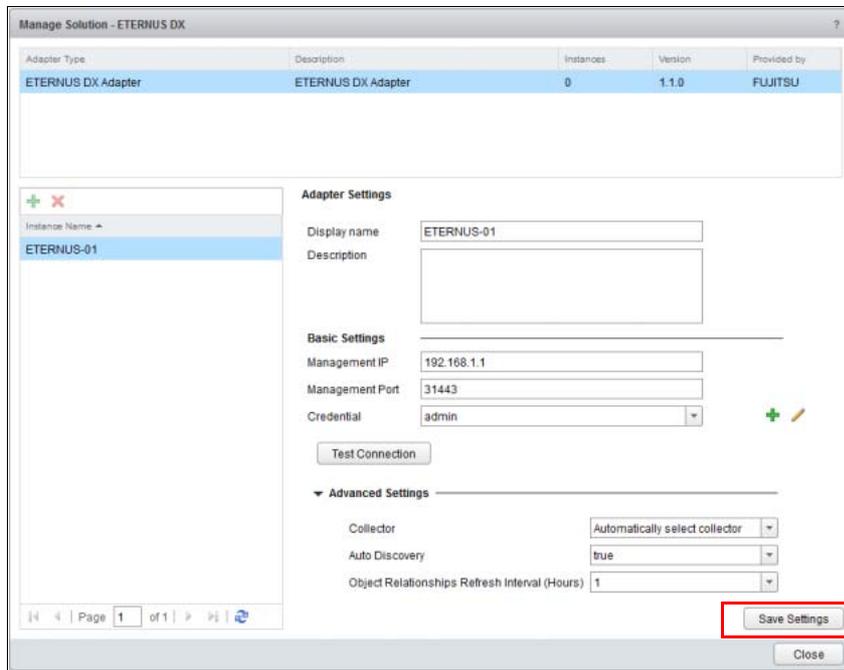


- **Credential name**
Enter an arbitrary name.
- **Manager Username**
Enter the user name of the vRealize Operations Manager. Normally, specify the user who logged into the vRealize Operations Manager GUI.
- **Manager Password**
Enter the password of the vRealize Operations Manager. Normally, enter the password that is used for the user name of the vRealize Operations Manager.
- **Advanced Settings (Collector)**
Select a collector. The default setting is "Automatically select collector".
- **Advanced Settings (Auto Discovery)**
Select whether to enable or disable Auto Discovery. The default setting is "true (enabled)".
- **Advanced Settings (Object Relationships Refresh Interval (Hours))**
Select the interval for updating the object relationships. The default setting is "1 (hour)".

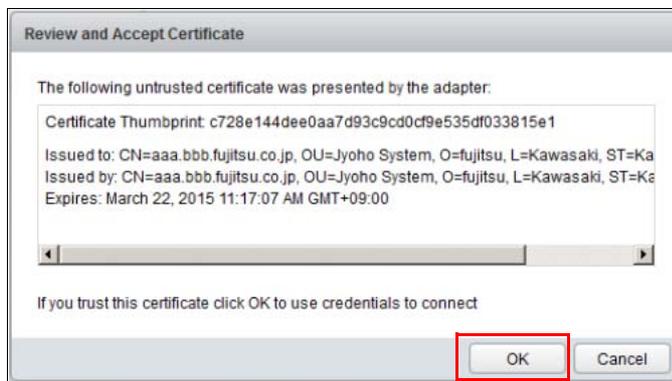
Note

Click the [Test Connection] button to perform a connection test if required.

5 Click the [Save Settings] button.



6 In the [Review and Accept Certificate] screen, check the contents and click the [OK] button.



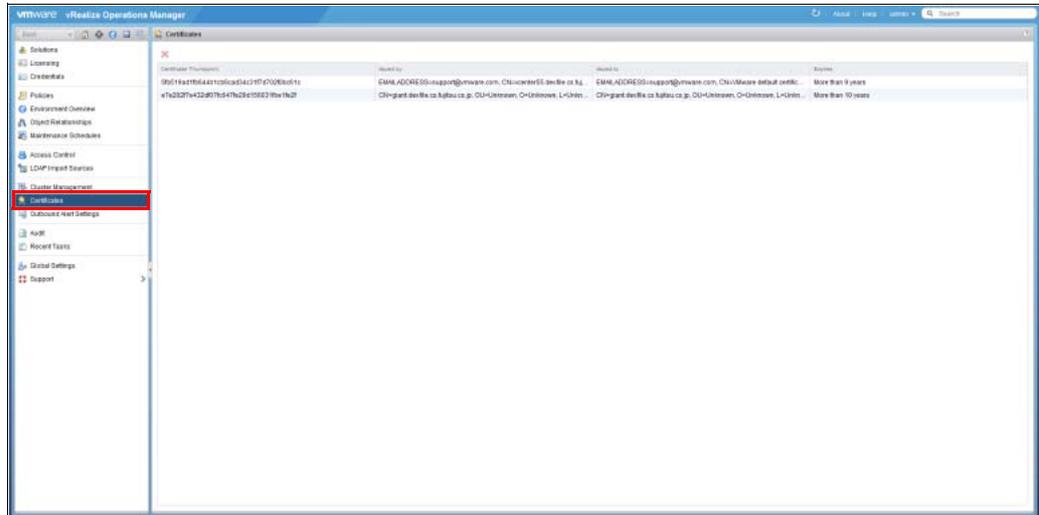
The server certificate is saved, then communication with the ETERNUS VMware Support Package becomes available.

7 Click the [Close] button.

8 Check the server certificate.

8-1 Log into the vRealize Operations Manager GUI with administrative privileges.
https://<IP_address_or_host_name>/vcops-web-ent

8-2 Click [Certificates] in the Administration menu and check the server certificate.



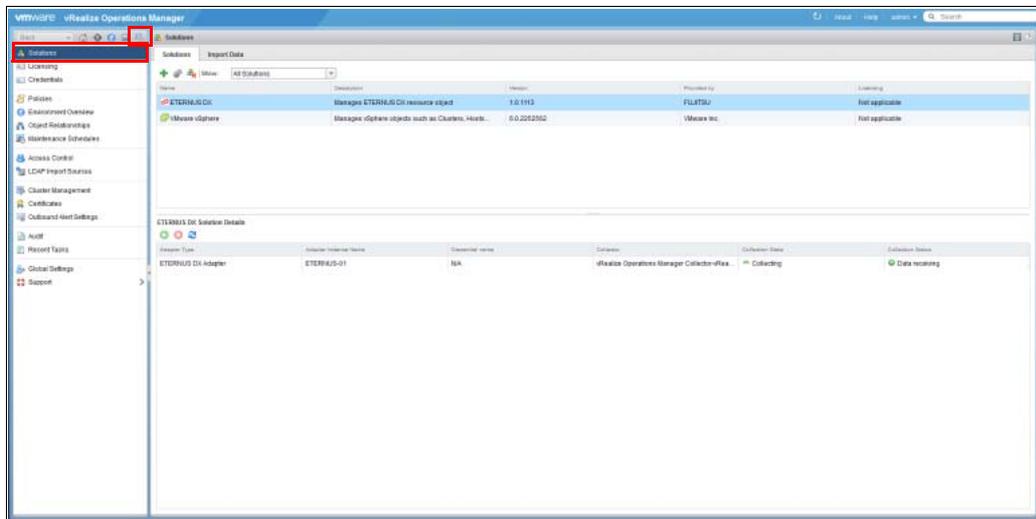
End of procedure

5.2 Changing the Management IP and the Management Port of the ETERNUS VMware Support Package

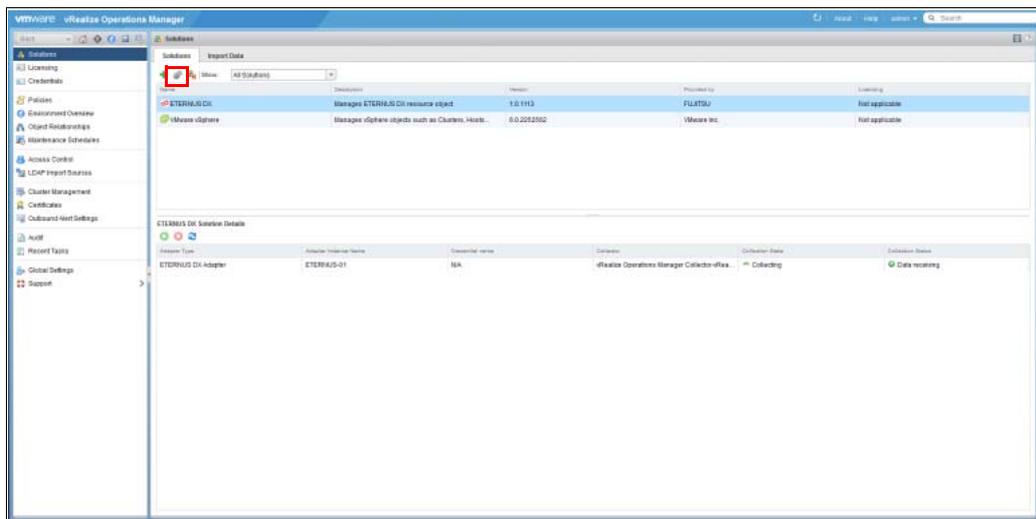
This section shows the procedure for changing the management IP and the management port.

Procedure

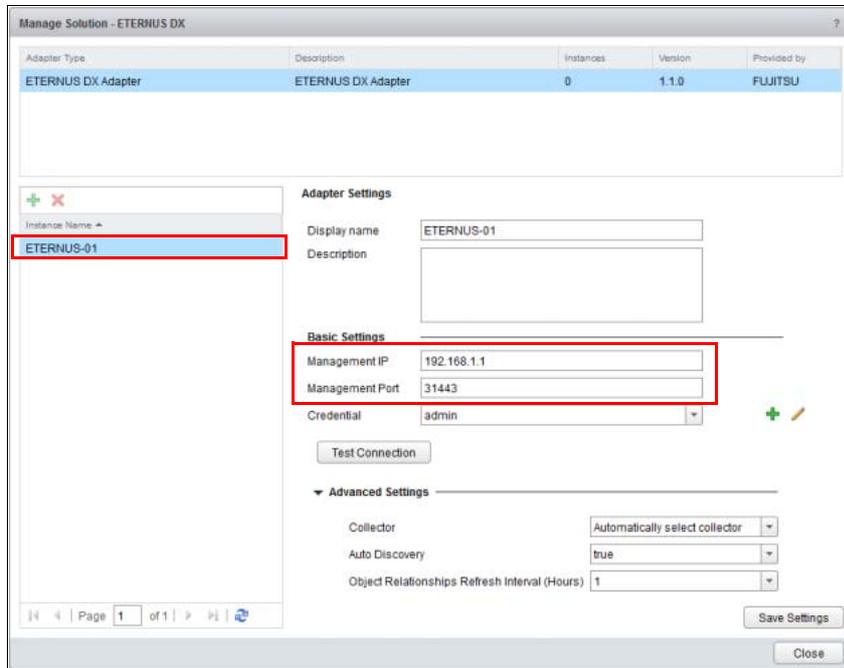
- 1 Log into the vRealize Operations Manager GUI with administrative privileges.
https://<IP_address_or_host_name>/vcops-web-ent
- 2 Click [Solutions] in the Administration menu.



- 3 Click the [Configure] icon.



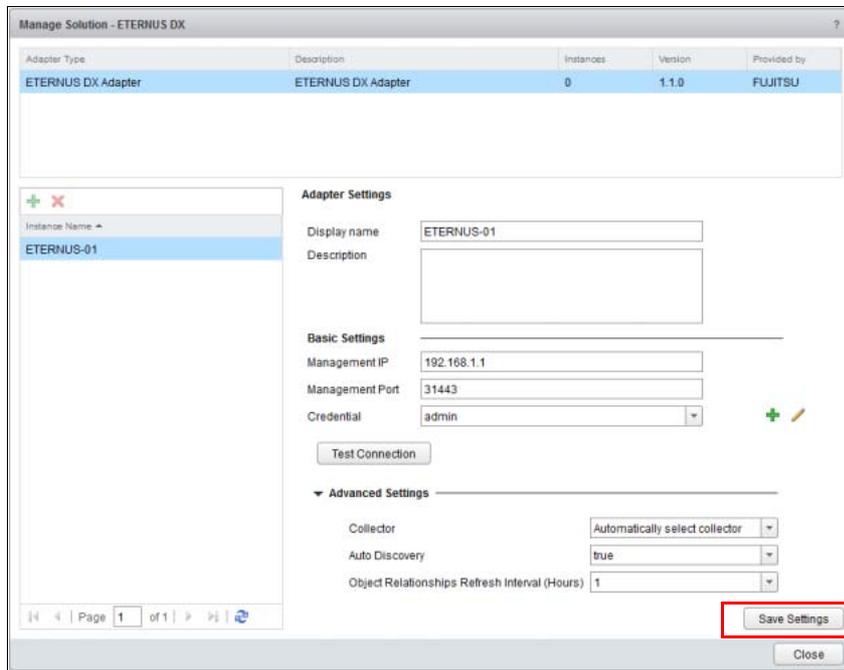
- 4 In the [Manage Solution] screen, select the target adapter instance from the adapter instance list and change "Management IP" and "Management Port" in "Adapter Settings".



Note

- Click the [Test Connection] button to perform a connection test if required.
- For details about "Management IP" and "Management Port", refer to [Step 4](#) in "[5.1 Registering an Adapter Instance](#)" ([page 31](#)).

- 5 Click the [Save Settings] button.



- 6 Click the [Close] button.

End of procedure

5.3 Recreating the Server Certificate of the ETERNUS VMware Support Package

This section explains how to recreate the server certificate.

Procedure

- 1 When using ETERNUS VASA Provider, remove ETERNUS VASA Provider that was registered with VMware vCenter Server.

Note

For details on how to remove ETERNUS VASA Provider, refer to vSphere documents provided by VMware.

- 2 Start the command prompt on the server where ETERNUS SF Manager was installed and change to the following folder.

```
<installation_folder>\Common\jre\bin
```

- 3 Execute the "keytool" command to delete the current server certificate.
Specify the parameters as shown below.

- delete
- alias
- keystore
- storepass

Example:

Alias name: vasa1

Location of the keystore: C:\ETERNUS_SF\ETERNUS_VSP\tomcat\conf\keystore

Password: changeit

```
keytool -delete -alias vasa1 -keystore C:\ETERNUS_SF\ETERNUS_VSP\tomcat\conf\key-  
store -storepass changeit
```

- 4 Execute the "keytool" command to register a new server certificate.
Specify the parameters as shown below.

- genkeypair
- keyalg
- keystore
- alias
- storepass
- keypass
- dname

Example:

Location of the keystore: C:\ETERNUS_SF\ETERNUS_VSP\tomcat\conf\keystore

Alias name: vasa2

Password 1 (*1): changeit

Password 2 (*2): changeit

Common name (FQDN): aaa.bbb.fujitsu.co.jp

Organization unit: Jyoho System

Organization name: fujitsu

Locality name: Kawasaki

State name: Kanagawa

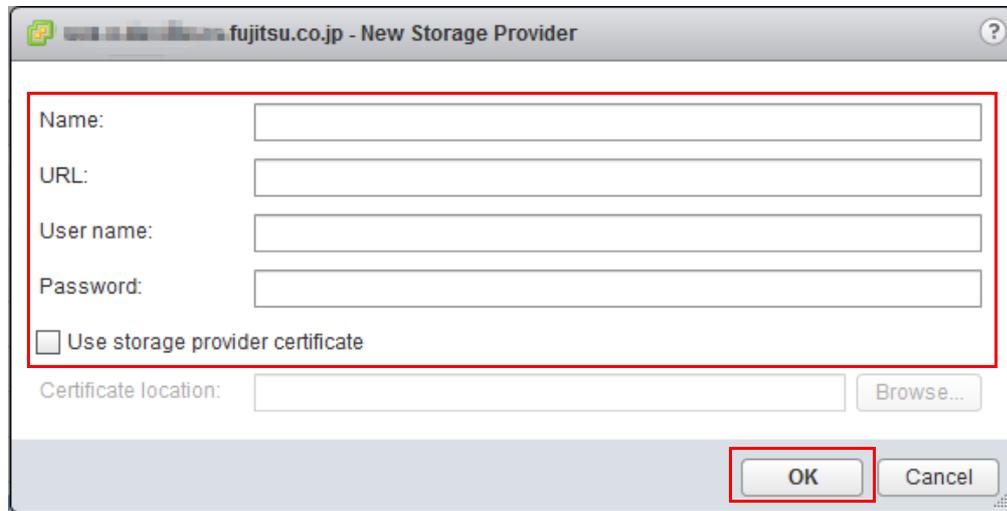
Country code: JP

*1: Password that is used to protect the private key

*2: Password that is used to protect the consistency of keystore

```
keytool -genkeypair -keyalg RSA -keystore C:\ETERNUS_SF\ETERNUS_VSP\tomcat\conf\key-  
store  
-alias vasa2 -storepass changeit -keypass changeit  
-dname CN="aaa.bbb.fujitsu.co.jp, OU=Jyoho System, O=fujitsu, L=Kawasaki,  
ST=Kanagawa, C=JP"
```

5 When using ETERNUS VASA Provider, configure ETERNUS VASA Provider with VMware vCenter Server.



The parameters to enter are as follows.

- Name
Enter a name that represents ETERNUS VASA Provider (Example: ETERNUS).
- URL
Enter the following URL.
`https://<VASA_Provider_FQDN>:31443/vasa/version.xml (*1)`
- User name
Enter the user name that was specified in the installer.
- Password
Enter the password that was specified in the installer.
- Use storage provider certificate
Configuration is unnecessary. Do not select the checkbox.

*1: For <VASA_Provider_FQDN> in the URL, specify the "Common name (FQDN)" that was registered in [Step 4](#).
Example: `https://aaa.bbb.fujitsu.co.jp:31443/vasa/version.xml`

In addition, if the port number for `vasaprvd` was changed in the installer, replace "31443" with the new number.

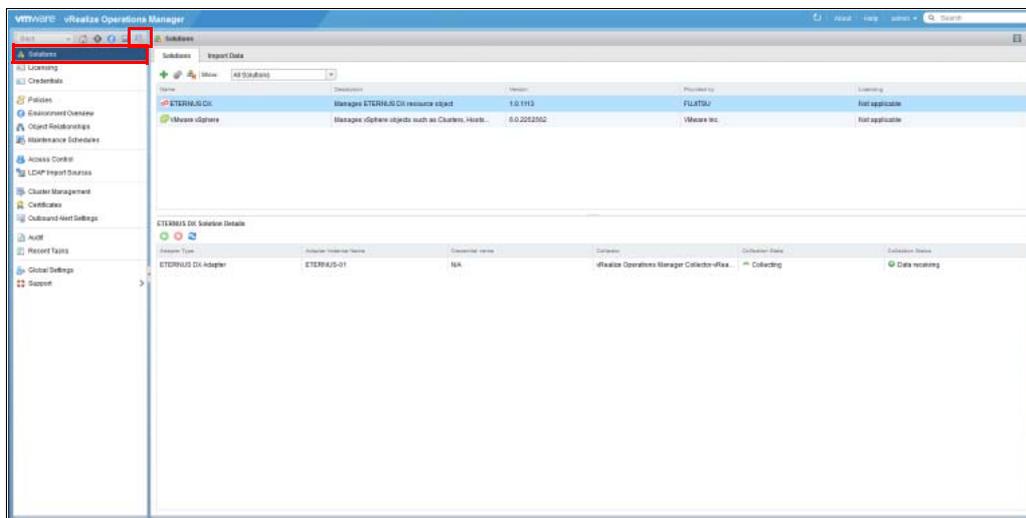
Note

For details on how to register ETERNUS VASA Provider, refer to vSphere documents provided by VMware.

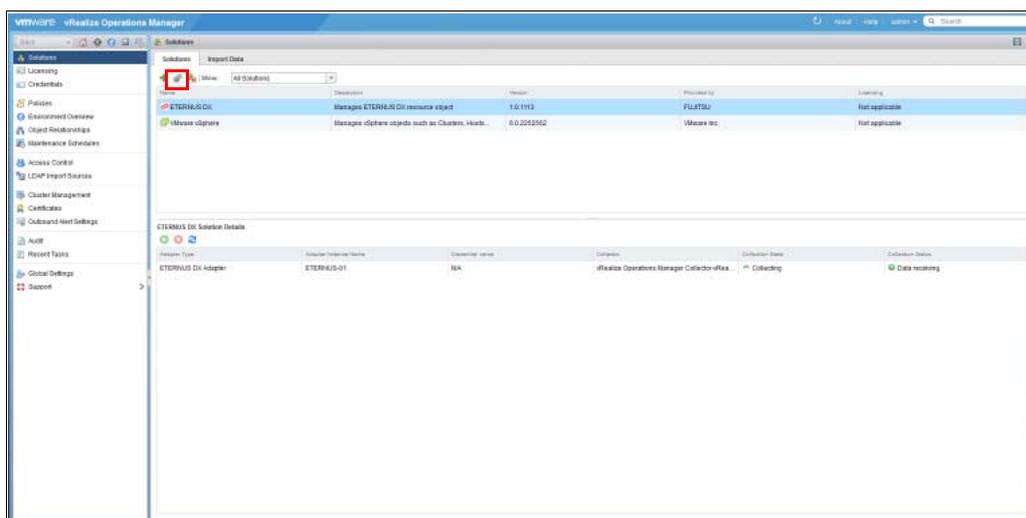
6 Log into the vRealize Operations Manager GUI with administrative privileges.

`https://<IP_address_or_host_name>/vcops-web-ent`

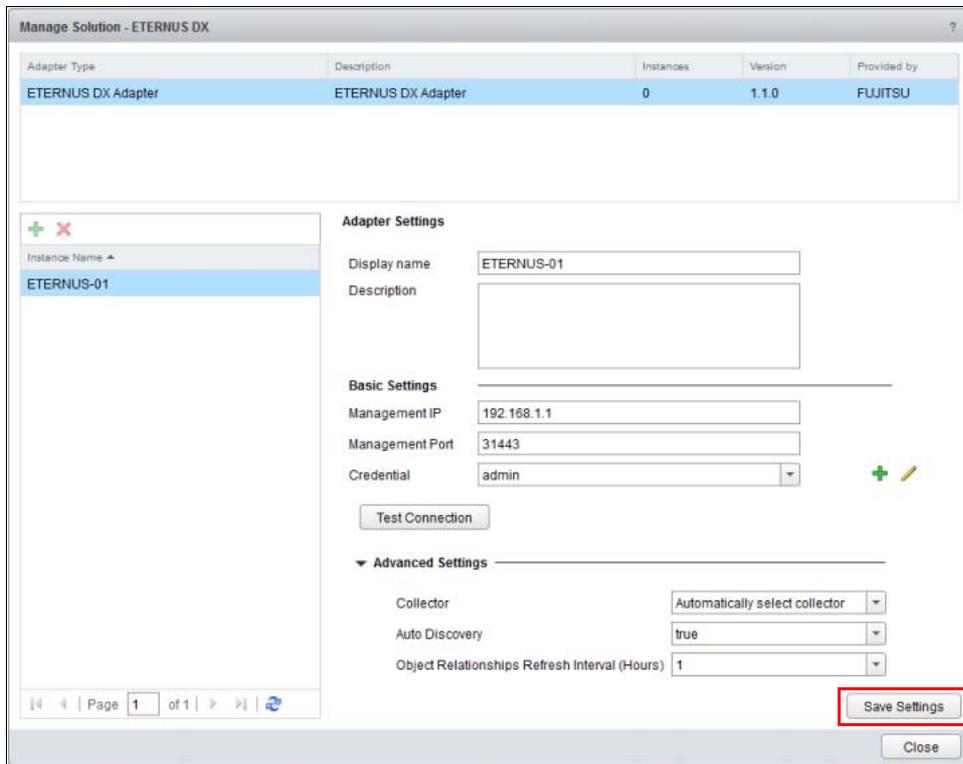
7 Click [Solutions] in the Administration menu.



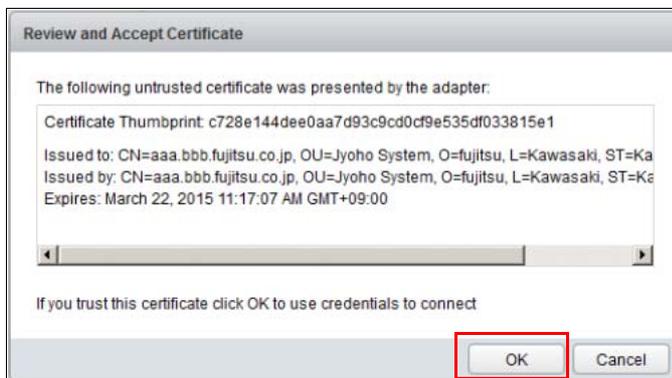
8 Click the [Configure] icon.



9 In the [Manage Solution] screen, click the [Save Settings] button.



10 In the [Review and Accept Certificate] screen, check the contents and click the [OK] button.



The server certificate is saved, then communication with the ETERNUS VMware Support Package becomes available.

11 Click the [Close] button.

12 Check the server certificate.

For the procedure to check the server certificate, refer to [Step 8](#) in "[5.1 Registering an Adapter Instance](#)" ([page 31](#)).

End of procedure

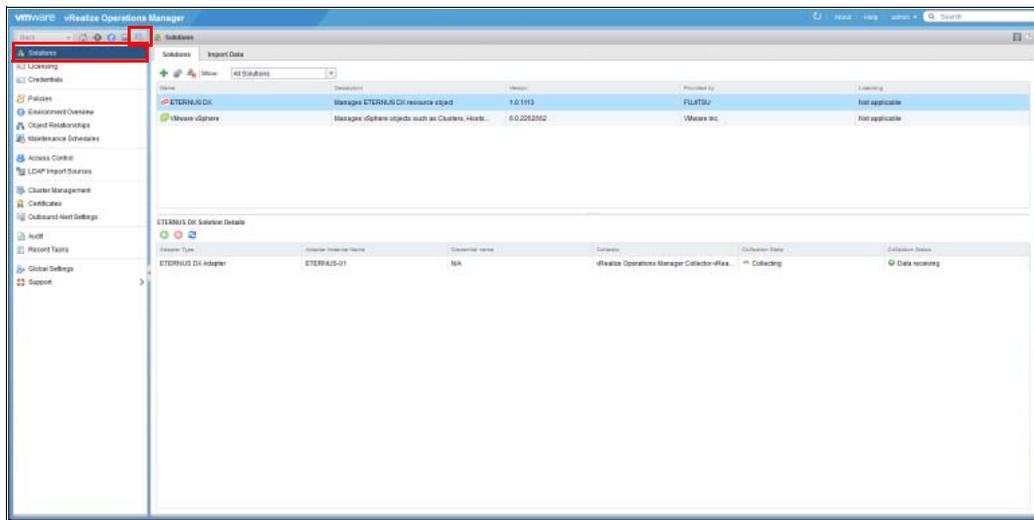
5.4 Deleting an Adapter Instance

This section explains how to delete an adapter instance.

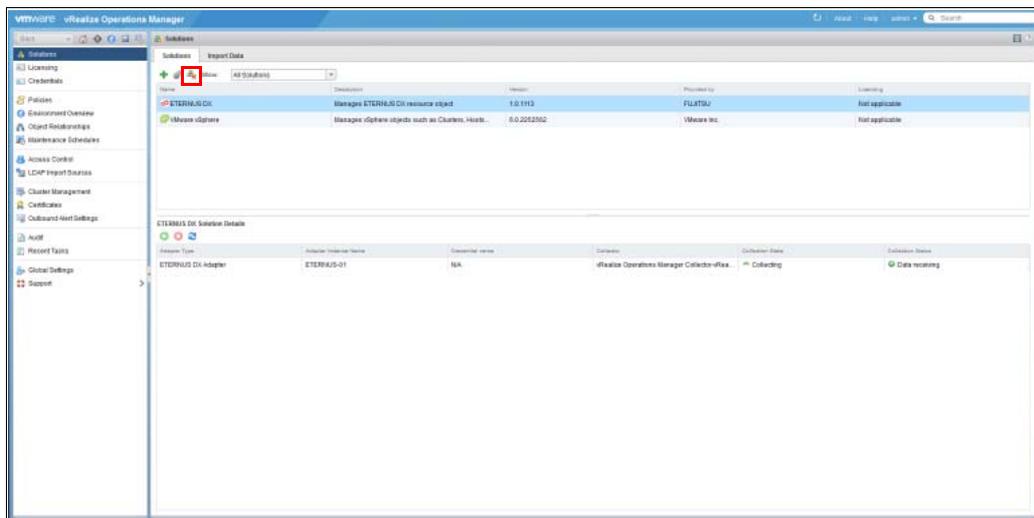
- When deleting all adapter instances and related Objects

Procedure

- 1 Log into the vRealize Operations Manager GUI with administrative privileges.
https://<IP_address_or_host_name>/vcops-web-ent
- 2 Click [Solutions] in the Administration menu.



- 3 Click the [Delete all adapter instances and related objects] icon.



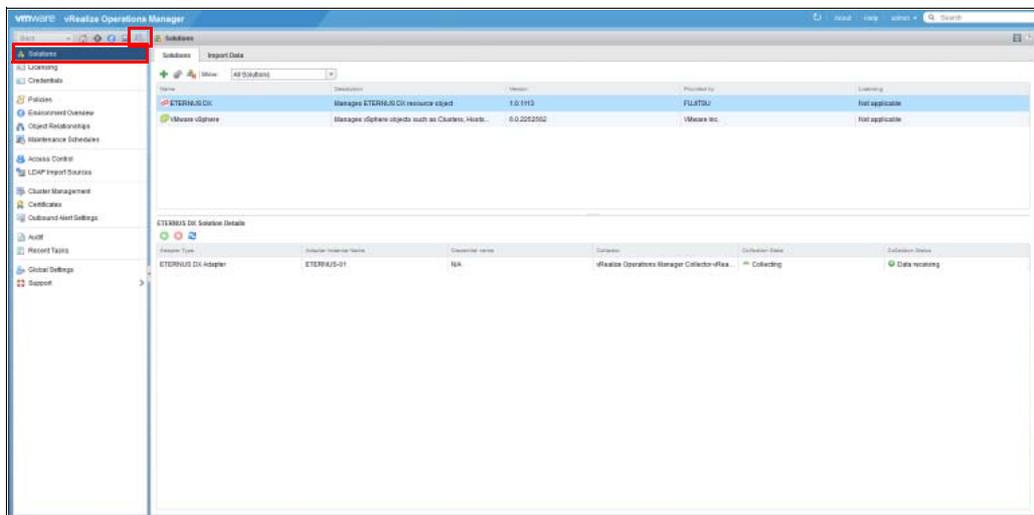
- 4 Check the displayed contents in the [Warning] dialog box, and click the [Yes] button if there are no problems.
All adapter instances and related Objects are deleted.

End of procedure

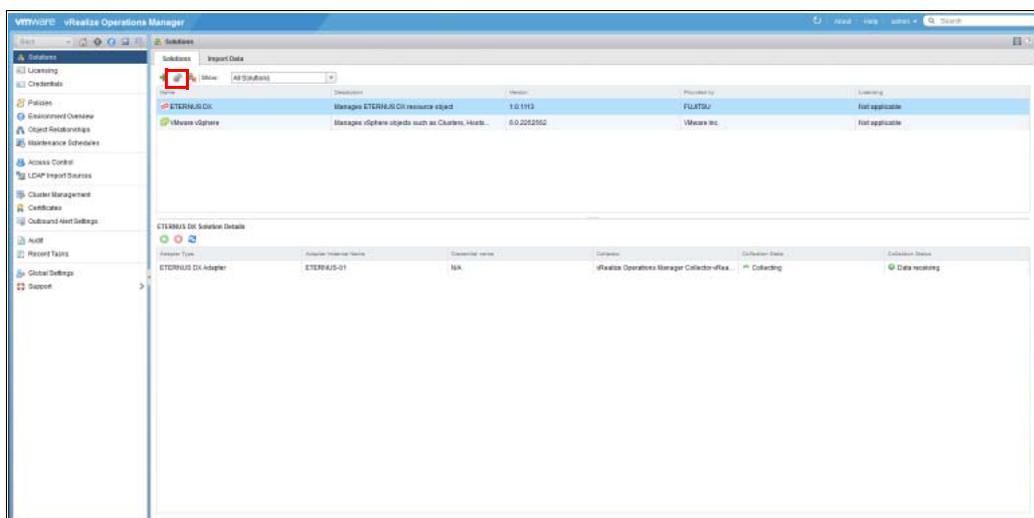
■ When deleting adapter instances individually

Procedure

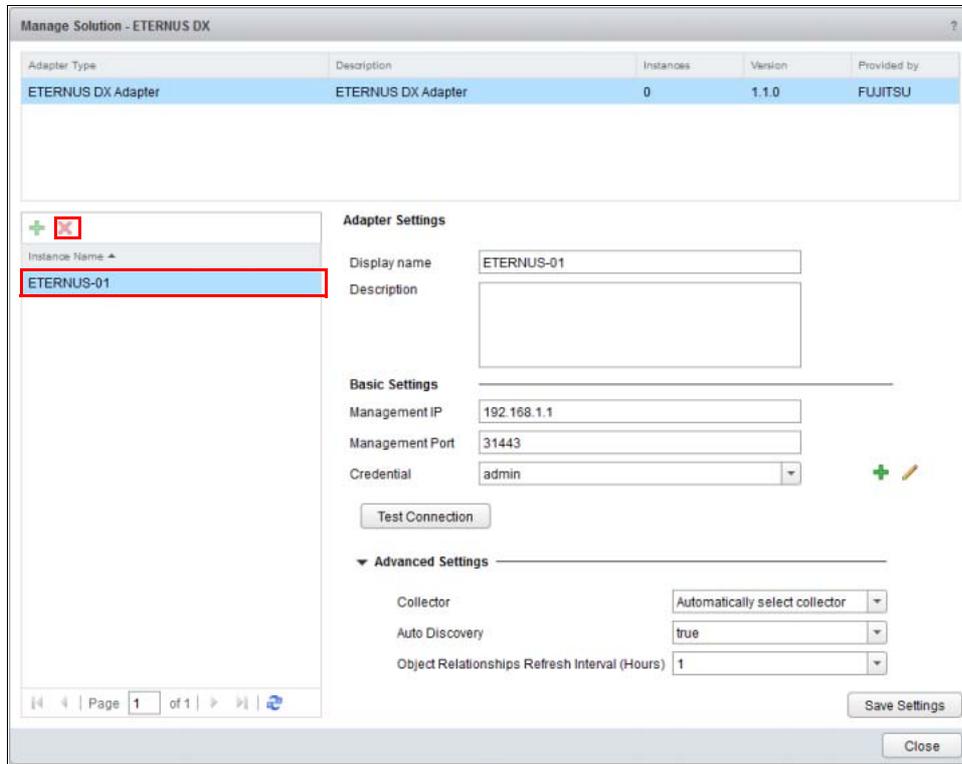
- 1 Log into the vRealize Operations Manager GUI with administrative privileges.
https://<IP_address_or_host_name>/vcops-web-ent
- 2 Click [Solutions] in the Administration menu.



- 3 Click the [Configure] icon.



- 4 In the [Manage Solution] screen, select the target adapter instance from the adapter instance list and click the [Delete] icon.



- 5 Check the displayed contents in the [Confirmation] dialog box, and click the [Yes] button if there are no problems.
The adapter instance is deleted.
- 6 Click the [Close] button.

End of procedure

Chapter 6

Fujitsu Dashboards

This chapter explains the Fujitsu-specific dashboards for the ETERNUS DX. The ETERNUS Management Pack provides custom dashboards where Fujitsu-specific Metrics can be viewed. The following three custom dashboards are provided.

- ETERNUS DX RELATIONSHIPS dashboard
- ETERNUS DX METRICS dashboard
- ETERNUS DX TOP-N dashboard

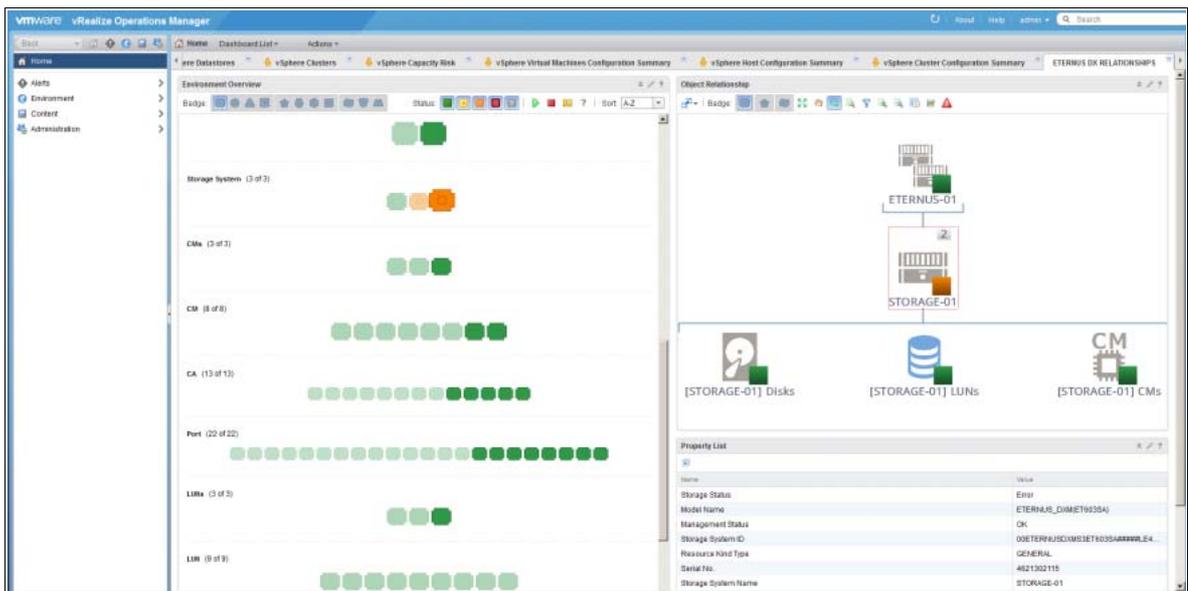
The widgets (components) of each dashboard are created using the components that are provided by the standard vRealize Operations Manager dashboard's custom function. For details about how to operate and customize each widget, refer to the help for each widget. Additional dashboards can be created by using the standard vRealize Operations Manager dashboard's custom function.

Caution

To customize the Fujitsu dashboards, follow the procedure described in ["6.4 Customizing Fujitsu Dashboards" \(page 49\)](#).

6.1 ETERNUS DX RELATIONSHIPS Dashboard

The dashboard for displaying the relationship among the ETERNUS DX Objects is shown below.

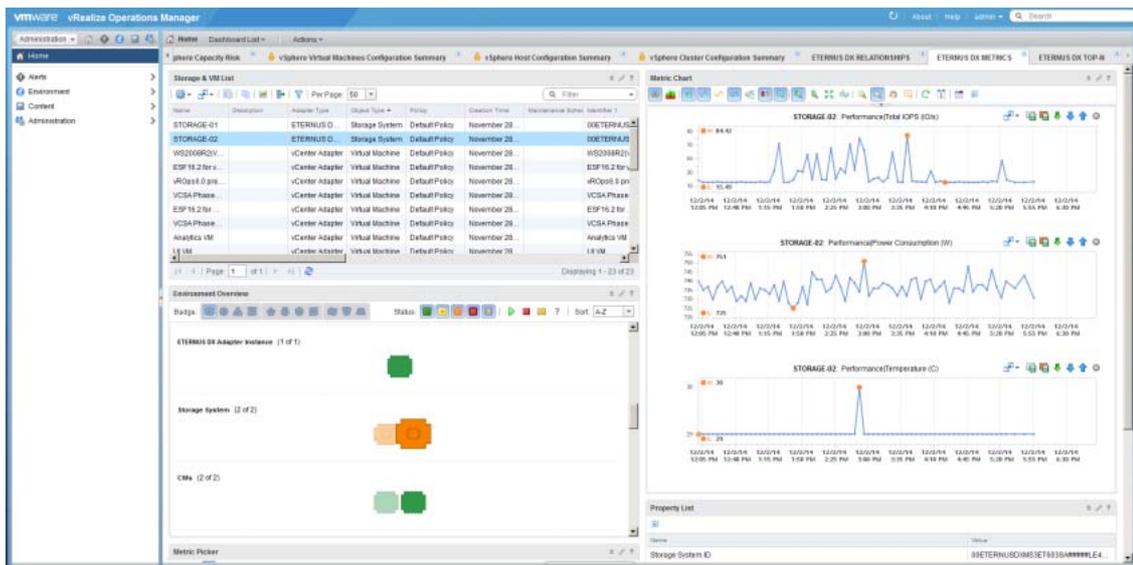


The ETERNUS DX RELATIONSHIPS dashboard consists of the following three widgets.

- Environment Overview
 When selecting an Object (LUN, RAID group, etc.), the selected Object is displayed in "Object Relationship". In addition, Objects that are related to the selected Object are displayed as active.
- Object Relationship
 The parent-child relationship of the selected Object is displayed in a tree format. When the Object is selected, the properties are displayed in "Property List". (*1)
 *1: Users can change the display to "Object Detail".
- Property List
 The properties are displayed (display only).

6.2 ETERNUS DX METRICS Dashboard

The dashboard for displaying the ETERNUS DX Metric information is shown below.

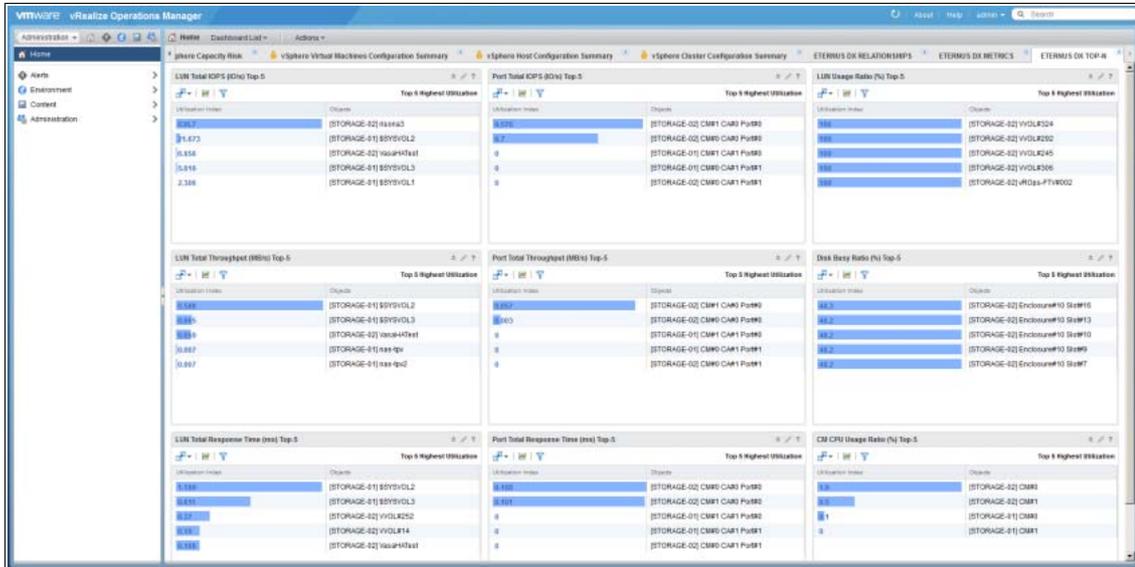


The ETERNUS DX METRICS dashboard consists of the following five widgets.

- Storage & VM List
 When selecting a storage or a VM, a tree is displayed in "Environment Overview".
- Environment Overview
 When selecting an Object (LUN, RAID group, etc.), the Metric is displayed in "Metric Picker".
- Metric Picker
 When selecting a Metric, the Metric is displayed as a graph in "Metric Chart" or "Property List".
- Metric Chart
 A graph is displayed (display only).
- Property List
 Properties are displayed (display only).

6.3 ETERNUS DX TOP-N Dashboard

The dashboard for displaying the top ranking ETERNUS DX Metric information is shown below.



The ETERNUS DX TOP-N dashboard consists of the following nine widgets.

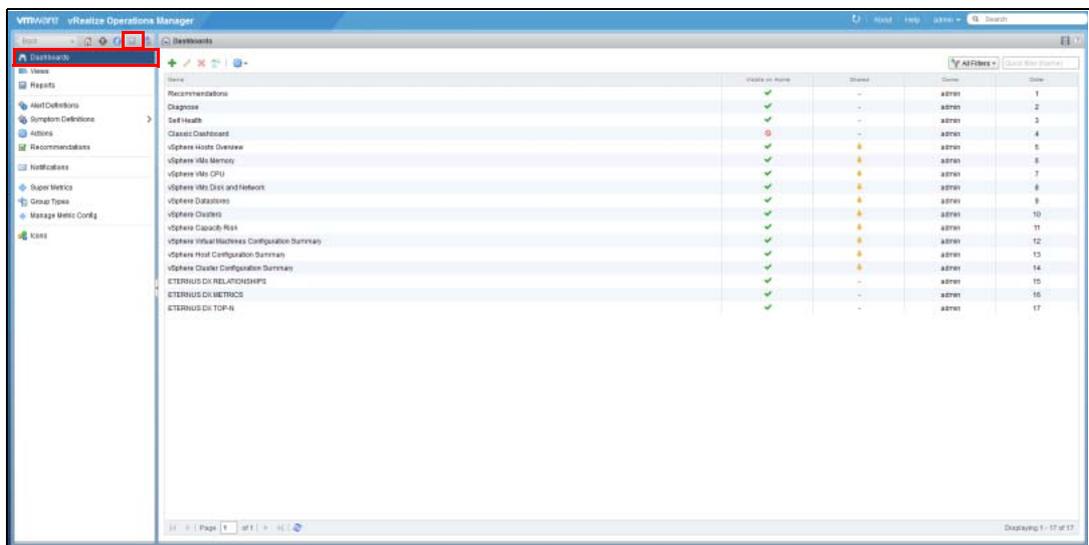
- **LUN Total IOPS (IO/s) TOP-5**
The top 5 LUN Total IOPSS (IO/s) are displayed.
- **LUN Total Throughput (MB/s) TOP-5**
The top 5 LUN Total Throughputs (MB/s) are displayed.
- **LUN Total Response Time (ms) TOP-5**
The top 5 LUN Total Response Times (ms) are displayed.
- **Port Total IOPS (IO/s) TOP-5**
The top 5 port Total IOPSS (IO/s) are displayed.
- **Port Total Throughput (MB/s) TOP-5**
The top 5 port Total Throughputs (MB/s) are displayed.
- **Port Total Response Time (ms) TOP-5**
The top 5 port Total Response Times (ms) are displayed.
- **LUN Usage Ratio (%) TOP-5**
The top 5 LUN Usage Ratios (%) are displayed.
- **Disk Busy Ratio (%) TOP-5**
The top 5 disk Busy Ratios (%) are displayed.
- **CM CPU Usage Ratio (%) TOP-5**
The top 5 CM CPU Usage Ratios (%) are displayed.

6.4 Customizing Fujitsu Dashboards

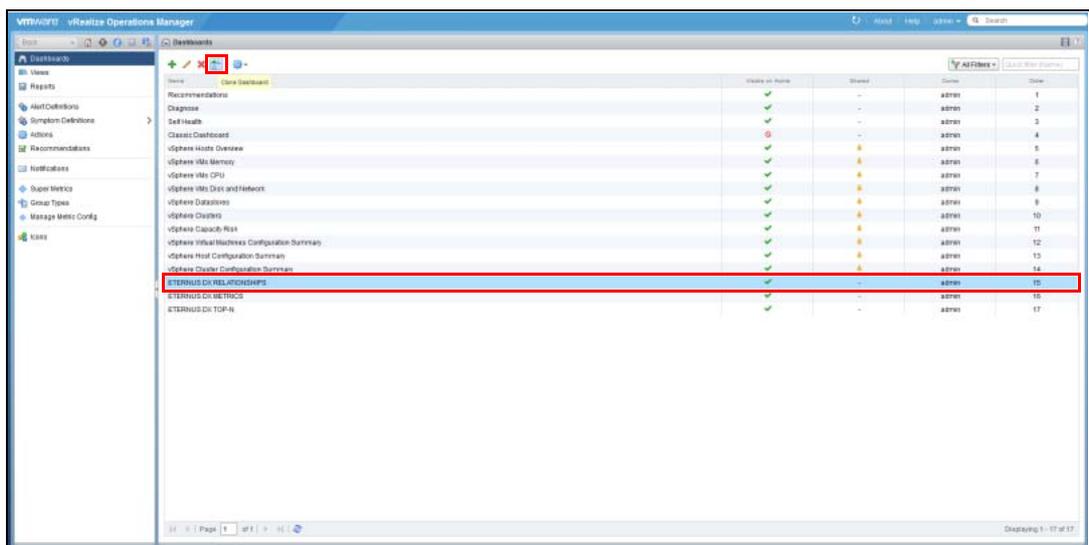
This section explains how to customize the Fujitsu dashboards.

Procedure

- 1 Log into the vRealize Operations Manager GUI with administrative privileges.
https://<IP_address_or_host_name>/vcops-web-ent
- 2 Click [Dashboards] in the Content menu.



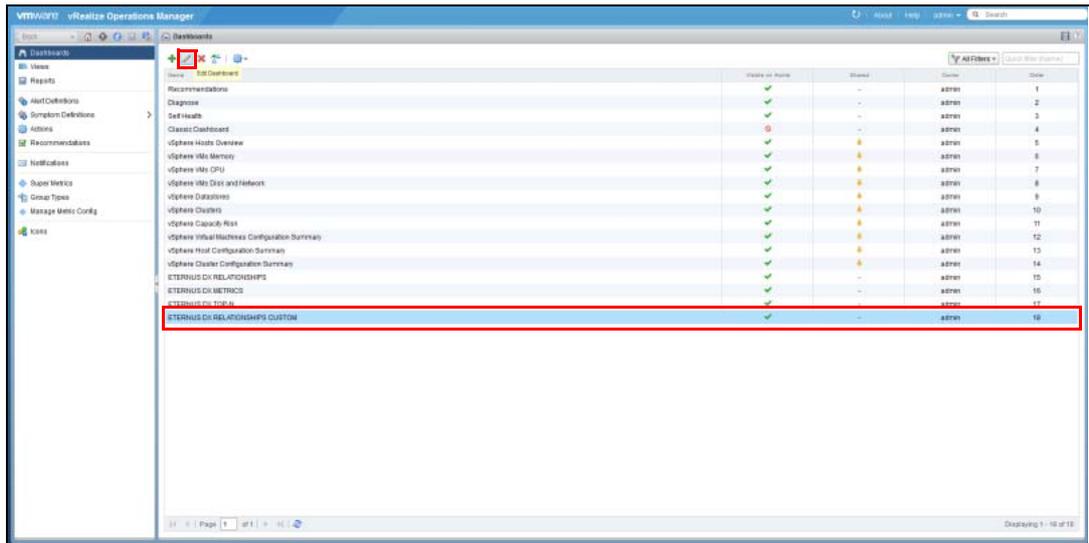
- 3 Select the Fujitsu dashboard to customize and click the [Clone Dashboard] icon.



- 4 In the [Clone Dashboard] screen, enter a new dashboard name, and click the [OK] button.



- 5 Select the newly added dashboard and click the [Edit Dashboard] icon.



- 6 Customize the dashboard.

End of procedure

Chapter 7

Uninstallation

This chapter explains how to uninstall the ETERNUS VMware Support Package.

7.1 Uninstalling the ETERNUS VMware Support Package

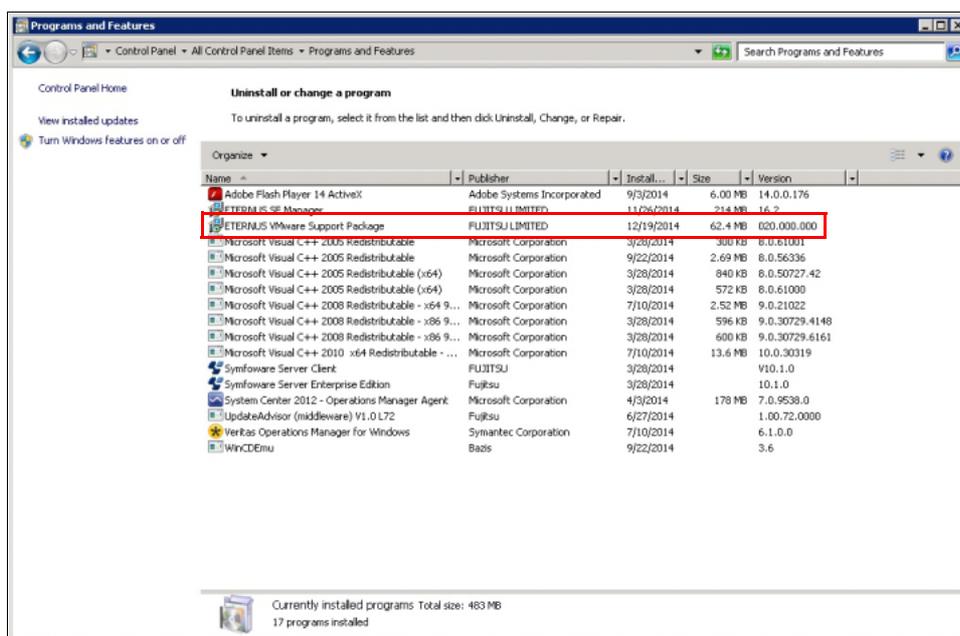
This section explains how to uninstall the ETERNUS VMware Support Package from the operation management server.

Caution

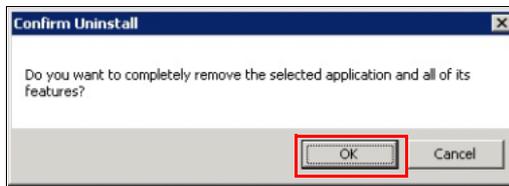
- ETERNUS VASA Provider is uninstalled together with the ETERNUS VMware Support Package. When using ETERNUS VASA Provider, do not uninstall the ETERNUS VMware Support Package.
- Delete adapter instances before uninstalling the ETERNUS VMware Support Package. For details, refer to ["5.4 Deleting an Adapter Instance" \(page 43\)](#).

Procedure

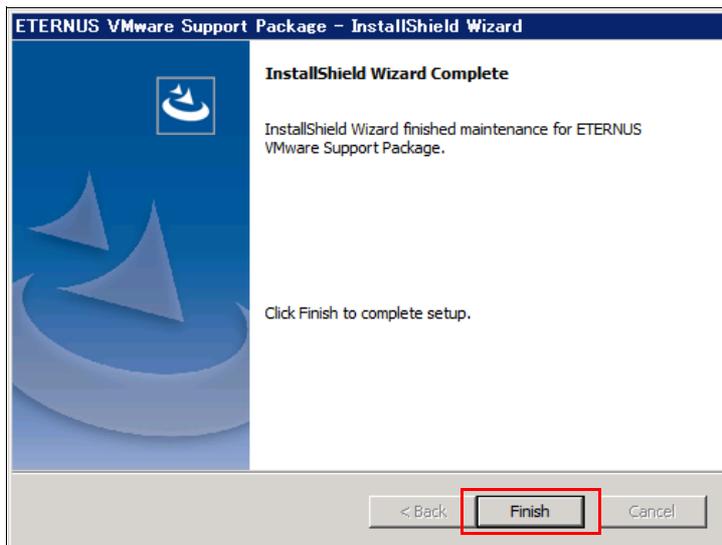
- 1 From the Control Panel, open the [Programs and Features] screen, select "ETERNUS VMware Support Package", and click the [Uninstall] button.



- 2 In the [Confirm Uninstall] screen, click the [OK] button.



- 3 In the [InstallShield Wizard Complete] screen, click the [Finish] button to complete the uninstallation.



End of procedure

Chapter 8

How to Obtain Troubleshooting Information

This chapter explains how to obtain troubleshooting information if an error occurs in the ETERNUS Management Pack.

If an error occurs, obtain the following information and data on-site for the investigation before contacting a Fujitsu engineer.

- Symptom
- Time of occurrence
- Reproducibility
- Maintenance information of the ETERNUS Management Pack
- Maintenance information of the ETERNUS VMware Support Package
- Maintenance information of Storage Cruiser

■ Maintenance information of the ETERNUS Management Pack

Perform the following procedure to obtain troubleshooting information by using the OS console (*1) of the vRealize Operations Manager.

*1: For information about the console, refer to the vRealize Operations manual.

Procedure

- 1 Change to the following vRealize adapter installation directory.

```
/usr/lib/vmware-vcops/user/plugins/inbound/EternusDxAdapter3/bin/
```

- 2 Specify the directory path to save the troubleshooting information and execute the "dxsnap" command.

```
dxsnap <directory_path_to_save>
```

- 3 When the command is completed normally, the troubleshooting information is saved to the specified directory.

End of procedure

■ Maintenance information of ETERNUS VMware Support Package

Perform the following procedure to obtain troubleshooting information for the ETERNUS VMware Support Package.

Procedure

- 1 Stop the ETERNUS Information Provider service.
- 2 Start the command prompt, and change to the following folder.

```
<installation_folder>\bin
```

- 3 Execute vpsnap.

```
vpsnap<folder_name_to_save_troubleshooting_information>
```

Entering the folder name to save troubleshooting information can be omitted. If the folder name is omitted, troubleshooting information will be saved to the work folder.

End of procedure

■ Maintenance information of Storage Cruiser

Obtain troubleshooting information for the operation management server.

Note

For details on troubleshooting information for the operation management server, refer to "Troubleshooting" in "ETERNUS SF Operation Guide".

Object	Metric	Criticality
Port	Port status	Immediate, Warning
	Storage system management status	Critical
LUNs	Storage system management status	Critical
LUN	LUN status	Immediate, Warning
	LUN alarm status	Warning
	Storage system management status	Critical
Storage Pool	Storage pool status	Immediate, Warning
	Storage pool alarm status	Immediate, Warning
	Storage system management status	Critical
Storage Sub Pool	Storage sub pool status	Immediate, Warning
	Storage system management status	Critical
RAID Group	RAID group status	Immediate, Warning
	Storage system management status	Critical
Disks	Storage system management status	Critical
Disk	Disk status	Immediate, Warning
	Storage system management status	Critical

Table A.2 Change alert list

Object	Metric	Criticality
Storage System	Properties of the storage system changed	Info
CM	Properties of the CM changed	Info
CA	Properties of the CA changed	Info
Port	Properties of the port changed	Info
LUN	Properties of the LUN changed	Info
Storage Pool	Properties of the storage pool changed	Info
Storage Sub Pool	Properties of the storage sub pool changed	Info
RAID Group	Properties of the RAID group changed	Info
Disk	Properties of the disk changed	Info

 **Caution**

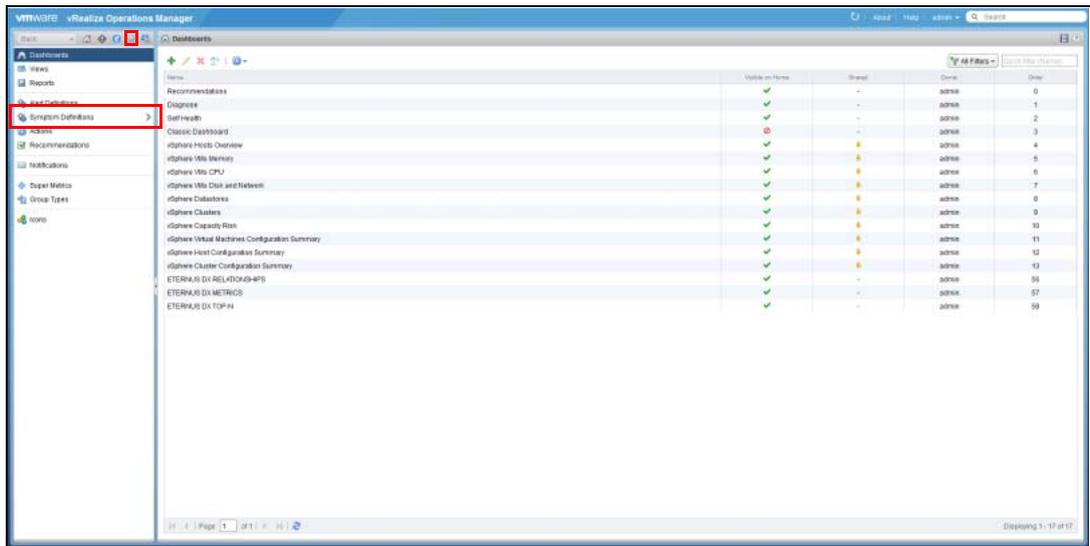
Alerts may be displayed several cycles later than when the phenomenon occurred.

■ Changing alert thresholds

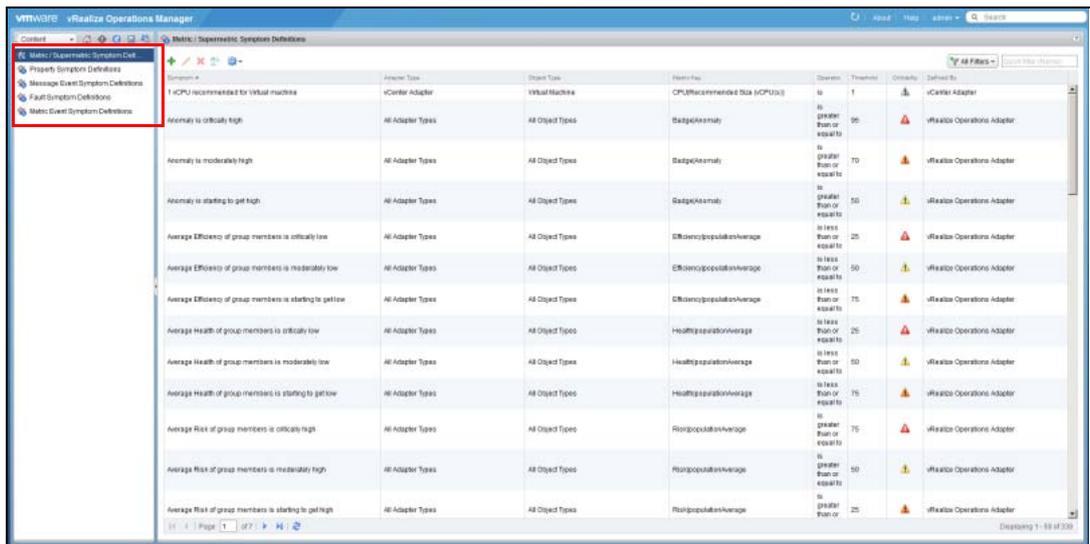
To change the alert thresholds that are defined by the ETERNUS Management Pack, perform the following procedure.

Procedure

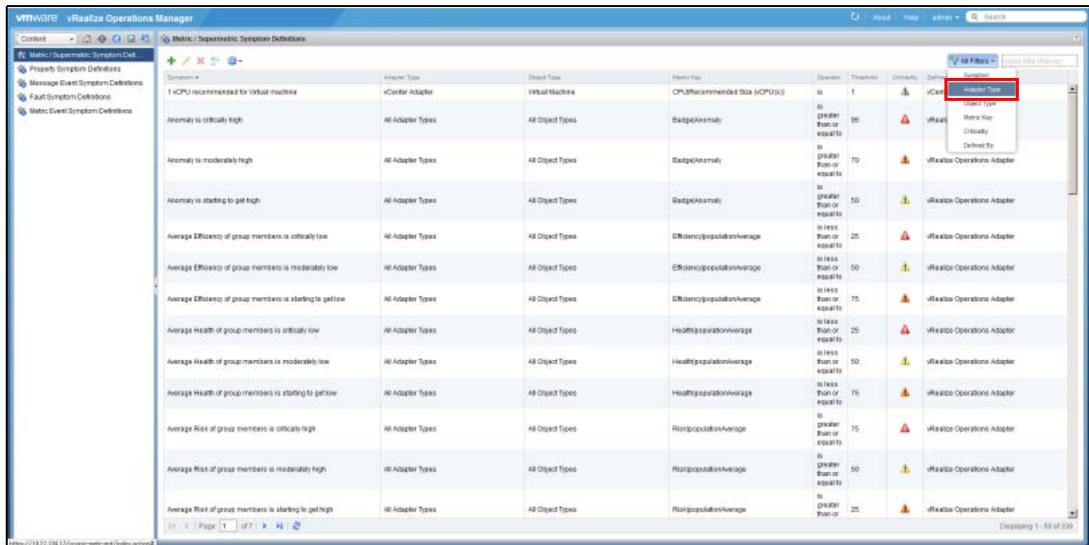
- 1 Log into the vRealize Operations Manager GUI with administrative privileges.
https://<IP_address_or_host_name>/vcops-web-ent
- 2 Click [Symptom Definitions] in the Content menu.



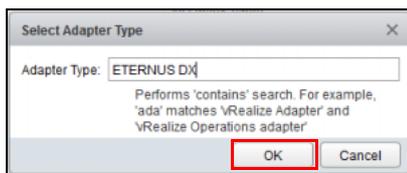
- 3 Click the target symptom definition.



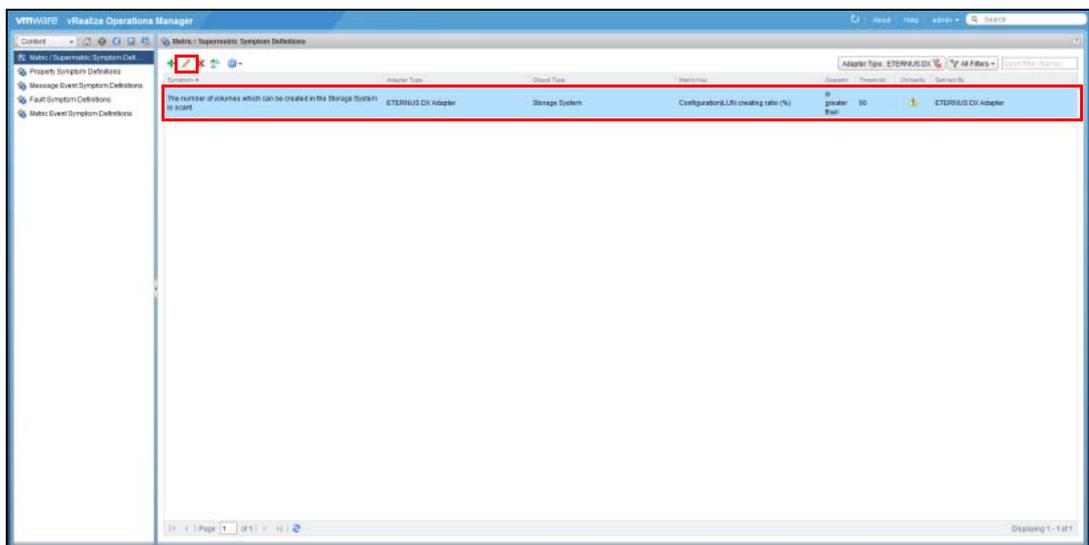
4 Select [Adapter Type] from the filters.



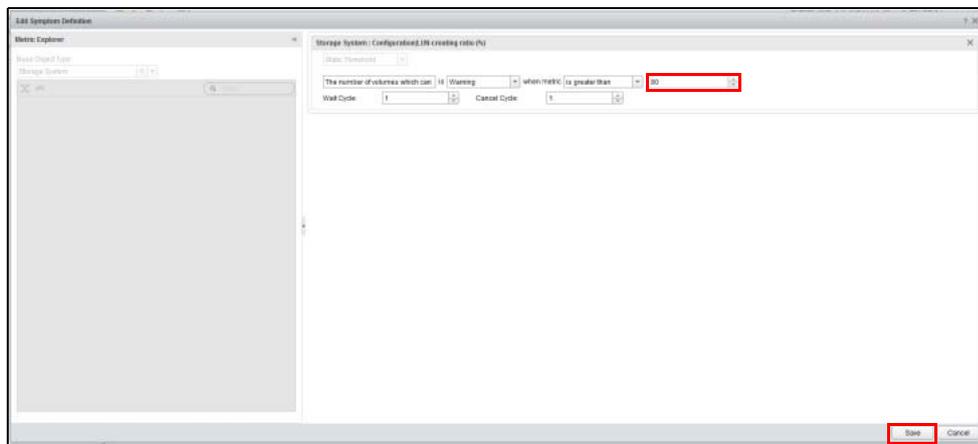
5 Enter "ETERNUS DX" in the dialog box and click the [OK] button.



6 Select the target symptom and click the [Edit] icon.



7 Edit the threshold field and click the [Save] button.



End of procedure

Appendix B

Objects and Metrics

This appendix describes the Objects that are supported for the ETERNUS DX and the Metrics that can be monitored for each Object when using the ETERNUS Management Pack service.

Caution

Object relationships are updated in the following cases:

- When an Object is newly added under the storage system
- When a virtual machine is newly added
- When a datastore is newly added
- When a LUN that configures the datastore is added
- When the settings for the ETERNUS DX Adapter Instance is saved
- At the specified interval (*1) after the setting of the ETERNUS DX Adapter Instance is saved

*1: The "Advanced Settings (Object Relationships Refresh Interval (Hours))" that was set in [Step 4](#) of "[5.1 Registering an Adapter Instance](#)" ([page 31](#))

Figure B.1 Object relationships

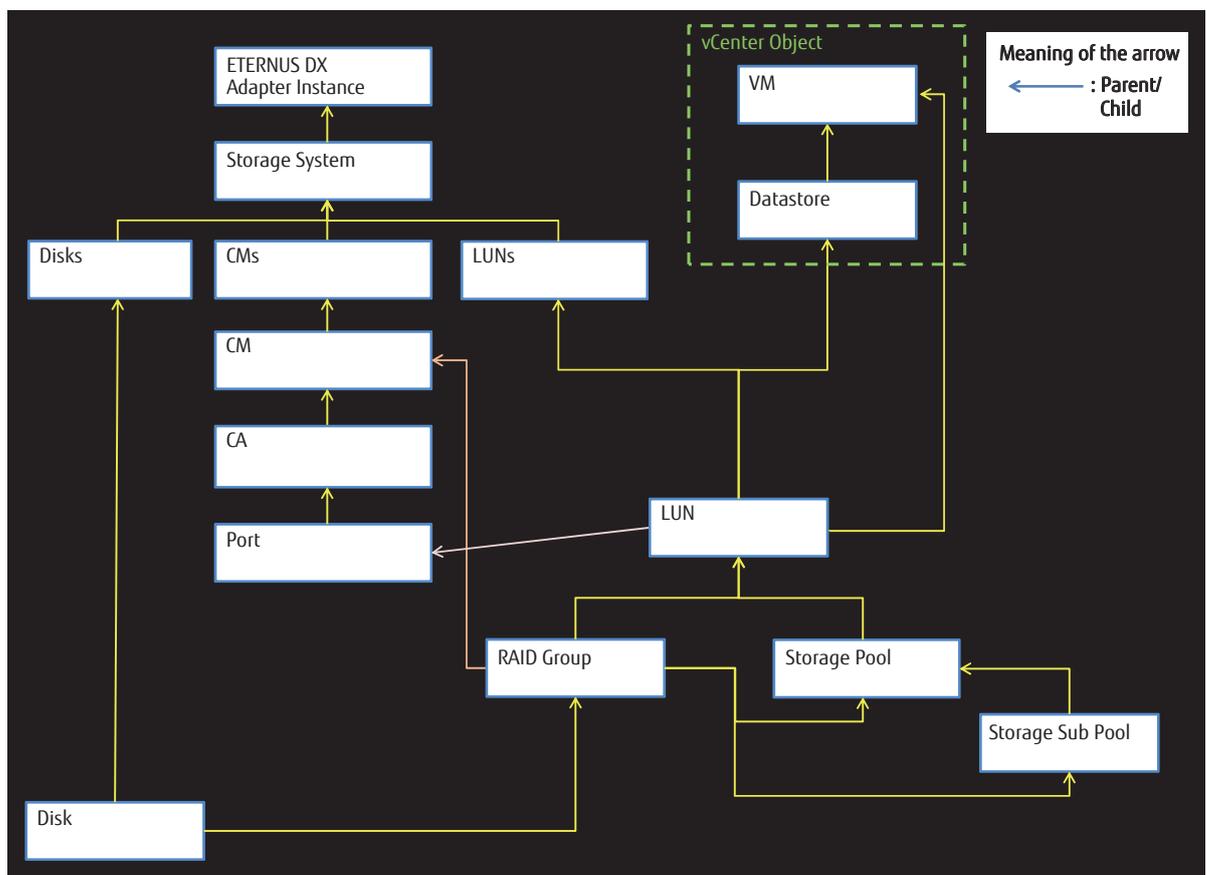


Table B.1 Parent-Child relationship list

Parent	Child
ETERNUS DX Adapter Instance	Storage System
Storage System	CMs
	LUNs
	Disks
CMs	CM
CM	CA
	RAID Group
CA	Port
Port	LUN
LUNs	LUN
LUN	Storage Pool
	RAID Group
Storage Pool	RAID Group
	Storage Sub Pool
Storage Sub Pool	RAID Group
Disks	Disk
RAID Group	Disk
(Datastore)	LUN
(VM)	LUN

Table B.2 Object list

No.	Object name	Meaning	Contents
1	ETERNUS DX Adapter Instance	ETERNUS DX adapter instance	Entered by users when the instance is created.
2	Storage System	ETERNUS DX	Storage system name that is set to the ETERNUS DX (IP address when the storage name is not set)
3	CMs	CM container	CM container that is installed in the ETERNUS DX
4	CM	CM	CM number (CE + CM) (*2) Format: CM#xx
5	CA	CA	CM number (CE + CM) (*2) and CA number Format: CM#xx CA#y
6	Port	CA port (*1)	CM number (CE + CM) (*2), CA number, and port number Format: CM#xx CA#y Port#z
7	LUNs	LUN container	Volume container that is set to the ETERNUS DX
8	LUN	LUN (volume)	Volume name that is set to the ETERNUS DX
9	RAID Group	RAID group	RAID group name that is set to the ETERNUS DX
10	Storage Pool	Storage pool	Thin Provisioning Pool name or Flexible Tier Pool name that is set to the ETERNUS DX
11	Storage Sub Pool	Storage sub pool	Flexible Tier Sub Pool name that is set to the ETERNUS DX

No.	Object name	Meaning	Contents
12	Disks	Physical disk container	Physical disk container that is installed in the ETERNUS DX
13	Disk	Physical disk	Enclosure (*3) and slot numbers Format: Enclosure#xx Slot#yy

*1: Displaying only FC and iSCSI ports is supported.

*2: For models other than the FUJITSU Storage ETERNUS DX8700 S3/DX8900 S3, "0" is displayed for the CE number.

*3: "Enclosure#00" is displayed when disks are installed in the controller enclosure.

Table B.3 Metric list

No.	Metric	Target Object	Group	Explanation
1	Number of Objects collected	ETERNUS DX Adapter Instance	Instance Attributes	The number of Objects collected
2	Read IOPS (IO/s)	Storage System	Performance	Read IOPS (IO/s)
3	Read Throughput (MB/s)	Storage System	Performance	Read throughput (MB/s)
4	Read Response Time (ms)	Storage System	Performance	Read response time (ms)
5	Read Cache Hit Ratio (%)	Storage System	Performance	Read cache hit ratio (%)
6	Read Cache Hit Response Time (ms)	Storage System	Performance	Read cache hit response time (ms)
7	Write IOPS (IO/s)	Storage System	Performance	Write IOPS (IO/s)
8	Write Throughput (MB/s)	Storage System	Performance	Write throughput (MB/s)
9	Write Response Time (ms)	Storage System	Performance	Write response time (ms)
10	Write Cache Hit Ratio (%)	Storage System	Performance	Write cache hit ratio (%)
11	Write Cache Hit Response Time (ms)	Storage System	Performance	Write cache hit response time (ms)
12	Total IOPS (IO/s)	Storage System	Performance	Total IOPS (IO/s)
13	Total Throughput (MB/s)	Storage System	Performance	Total throughput (MB/s)
14	Total Response Time (ms)	Storage System	Performance	Total response time (ms)
15	IOPS other than read/write (IO/s)	Storage System	Performance	IOPS other than read/write (IO/s)
16	CPU Usage Ratio (%)	Storage System	Performance	CPU usage ratio (%)
17	Power Consumption(W)	Storage System	Performance	Power consumption (W)
18	Temperature(C)	Storage System	Performance	Temperature (°C)
19	Storage System Name	Storage System	Configuration	Storage system name that is set to the ETERNUS DX
20	IP address	Storage System	Configuration	ETERNUS DX IP address
21	Model Name	Storage System	Configuration	ETERNUS DX model name
22	Serial No.	Storage System	Configuration	ETERNUS DX serial number
23	Storage System ID	Storage System	Configuration	ID that identifies the ETERNUS DX (BOX-ID)
24	Storage Status	Storage System	Configuration	ETERNUS DX status (Normal, Warning, or Error)
25	Storage Firmware Version	Storage System	Configuration	ETERNUS DX firmware version
26	Management Software URL	Storage System	Configuration	ETERNUS DX management software URL
27	Management Status	Storage System	Configuration	Management status
28	Total Disk Count	Storage System	Configuration	Total number of disks (Disk)

No.	Metric	Target Object	Group	Explanation
29	Working Disk Count	Storage System	Configuration	Number of working disks (Disk)
30	Performance Latest Update Counter	Storage System	Configuration	The last update counter of the performance information
31	LUN Count	Storage System	Configuration	Number of LUNs
32	Maximum number of LUNs	Storage System	Configuration	Maximum number of LUNs
33	LUN creation ratio (%)	Storage System	Configuration	Ratio (%) of the number of LUNs to the maximum number of LUNs (*1)
34	CM Count	CMs	Configuration	Number of CMs
35	Read IOPS (IO/s)	CM	Performance	Read IOPS (IO/s)
36	Read Throughput (MB/s)	CM	Performance	Read throughput (MB/s)
37	Read Response Time (ms)	CM	Performance	Read response time (ms)
38	Read Cache Hit Ratio (%)	CM	Performance	Read cache hit ratio (%)
39	Read Cache Hit Response Time (ms)	CM	Performance	Read cache hit response time (ms)
40	Write IOPS (IO/s)	CM	Performance	Write IOPS (IO/s)
41	Write Throughput (MB/s)	CM	Performance	Write throughput (MB/s)
42	Write Response Time (ms)	CM	Performance	Write response time (ms)
43	Write Cache Hit Ratio (%)	CM	Performance	Write cache hit ratio (%)
44	Write Cache Hit Response Time (ms)	CM	Performance	Write cache hit response time (ms)
45	Total IOPS (IO/s)	CM	Performance	Total IOPS (IO/s)
46	Total Throughput (MB/s)	CM	Performance	Total throughput (MB/s)
47	Total Response Time (ms)	CM	Performance	Total response time (ms)
48	IOPS other than read/write (IO/s)	CM	Performance	IOPS other than read/write (IO/s)
49	CPU Usage Ratio (%)	CM	Performance	CPU usage ratio (%)
50	CM No.	CM	Configuration	CM number (CE + CM) (*2)
51	CM Status	CM	Configuration	CM status (such as Online)
52	Copy remaining amount (MB)	CM	Configuration	Copy remaining amount (MB)
53	Read IOPS (IO/s)	CA	Performance	Read IOPS (IO/s)
54	Read Throughput (MB/s)	CA	Performance	Read throughput (MB/s)
55	Read Response Time (ms)	CA	Performance	Read response time (ms)
56	Read Cache Hit Ratio (%)	CA	Performance	Read cache hit ratio (%)
57	Read Cache Hit Response Time (ms)	CA	Performance	Read cache hit response time (ms)
58	Write IOPS (IO/s)	CA	Performance	Write IOPS (IO/s)
59	Write Throughput (MB/s)	CA	Performance	Write throughput (MB/s)
60	Write Response Time (ms)	CA	Performance	Write response time (ms)
61	Write Cache Hit Ratio (%)	CA	Performance	Write cache hit ratio (%)
62	Write Cache Hit Response Time (ms)	CA	Performance	Write cache hit response time (ms)
63	Total IOPS (IO/s)	CA	Performance	Total IOPS (IO/s)
64	Total Throughput (MB/s)	CA	Performance	Total throughput (MB/s)
65	Total Response Time (ms)	CA	Performance	Total response time (ms)
66	IOPS other than read/write (IO/s)	CA	Performance	IOPS other than read/write (IO/s)

No.	Metric	Target Object	Group	Explanation
67	CM No.	CA	Configuration	CM number (CE + CM) (*2)
68	CA No.	CA	Configuration	CA number
69	CA Status	CA	Configuration	CA status (such as Online)
70	CA Type	CA	Configuration	CA type (such as 8G-FC 2ports)
71	Read IOPS (IO/s)	Port	Performance	Read IOPS (IO/s)
72	Read Throughput (MB/s)	Port	Performance	Read throughput (MB/s)
73	Read Response Time (ms)	Port	Performance	Read response time (ms)
74	Read Cache Hit Ratio (%)	Port	Performance	Read cache hit ratio (%)
75	Read Cache Hit Response Time (ms)	Port	Performance	Read cache hit response time (ms)
76	Write IOPS (IO/s)	Port	Performance	Write IOPS (IO/s)
77	Write Throughput (MB/s)	Port	Performance	Write throughput (MB/s)
78	Write Response Time (ms)	Port	Performance	Write response time (ms)
79	Write Cache Hit Ratio (%)	Port	Performance	Write cache hit ratio (%)
80	Write Cache Hit Response Time (ms)	Port	Performance	Write cache hit response time (ms)
81	Total IOPS (IO/s)	Port	Performance	Total IOPS (IO/s)
82	Total Throughput (MB/s)	Port	Performance	Total throughput (MB/s)
83	Total Response Time (ms)	Port	Performance	Total response time (ms)
84	IOPS other than read/write (IO/s)	Port	Performance	IOPS other than read/write (IO/s)
85	CM No.	Port	Configuration	CM number (CE + CM) (*2)
86	CA No.	Port	Configuration	CA number
87	Port No.	Port	Configuration	Port number
88	Port Status	Port	Configuration	Port status (such as Online)
89	Port Type	Port	Configuration	Port type (such as FC and iSCSI)
90	Port Mode	Port	Configuration	Port mode (such as CA and RA)
91	LUN Count	LUNs	Configuration	Number of LUNs
92	Read IOPS (IO/s)	LUN	Performance	Read IOPS (IO/s)
93	Read Throughput (MB/s)	LUN	Performance	Read throughput (MB/s)
94	Read Response Time (ms)	LUN	Performance	Read response time (ms)
95	Read Cache Hit Ratio (%)	LUN	Performance	Read cache hit ratio (%)
96	Read Cache Hit Response Time (ms)	LUN	Performance	Read cache hit response time (ms)
97	Write IOPS (IO/s)	LUN	Performance	Write IOPS (IO/s)
98	Write Throughput (MB/s)	LUN	Performance	Write throughput (MB/s)
99	Write Response Time (ms)	LUN	Performance	Write response time (ms)
100	Write Cache Hit Ratio (%)	LUN	Performance	Write cache hit ratio (%)
101	Write Cache Hit Response Time (ms)	LUN	Performance	Write cache hit response time (ms)
102	Total IOPS (IO/s)	LUN	Performance	Total IOPS (IO/s)
103	Total Throughput (MB/s)	LUN	Performance	Total throughput (MB/s)
104	Total Response Time (ms)	LUN	Performance	Total response time (ms)
105	IOPS other than read/write (IO/s)	LUN	Performance	IOPS other than read/write (IO/s)
106	Capacity (GB)	LUN	Capacity	Total capacity (GB)

No.	Metric	Target Object	Group	Explanation
107	Used Capacity (GB)	LUN	Capacity	Used capacity (GB)
108	Usage Ratio (%)	LUN	Capacity	Usage ratio (%)
109	Volume No.	LUN	Configuration	Volume number
110	Volume Name	LUN	Configuration	Volume name
111	Volume Status	LUN	Configuration	Volume status (such as Available)
112	Volume Type	LUN	Configuration	Volume type (such as Standard and FTV)
113	Volume Alarm Status	LUN	Capacity	Volume alarm status (such as Normal and Caution)
114	Extreme Read Cache Status	LUN	Configuration	Extreme Cache (Read) (Enable/Disable)
115	UID	LUN	Configuration	An identifier (device name) used for identifying volumes from the open system server
116	QoS Target Response Time (ms)	LUN	Configuration	Target response time of the volume that is used by users Use the QoS automation function to specify when an FTV is created (*3)
117	Attention Threshold (%)	LUN	Capacity	Attention threshold of the usage capacity ratio Specify when an FTV is created
118	Flexible Tiering Low Ratio (%)	LUN	Capacity	Percentage that is allocated to the low sub-pool for re-allocation Specify when an FTV is created (*3)
119	Flexible Tiering Middle Ratio (%)	LUN	Capacity	Percentage that is allocated to the middle sub-pool for re-allocation Specify when an FTV is created (*3)
120	Flexible Tiering High Ratio(%)	LUN	Capacity	Percentage that is allocated to the high sub-pool for re-allocation Specify when an FTV is created (*3)
121	Flexible Tiering Low Usage Ratio (%)	LUN	Capacity	Low usage ratio when the total physical capacity that is allocated to the FTV is 100
122	Flexible Tiering Middle Usage Ratio (%)	LUN	Capacity	Middle usage ratio when the total physical capacity that is allocated to the FTV is 100
123	Flexible Tiering High Usage Ratio (%)	LUN	Capacity	High usage ratio when the total physical capacity that is allocated to the FTV is 100
124	VVOL ID	LUN	Configuration	VVOL ID
125	VVOL Name	LUN	Configuration	VVOL name
126	VVOL Type	LUN	Configuration	VVOL type
127	VVOL VM ID	LUN	Configuration	VVOL VM ID
128	Total Capacity (GB)	RAID Group	Capacity	Total capacity (GB)
129	Total Free Space (GB)	RAID Group	Capacity	Total free space (GB)
130	Disk Count	RAID Group	Capacity	Number of disks
131	LUN Count	RAID Group	Capacity	Number of LUNs
132	RAID Group No.	RAID Group	Configuration	RAID group number

No.	Metric	Target Object	Group	Explanation
133	RAID Group Name	RAID Group	Configuration	RAID group name
134	RAID Group Status	RAID Group	Configuration	RAID group status (such as Available)
135	RAID Type	RAID Group	Configuration	RAID level (such as Mirroring (RAID1))
136	Total Capacity (GB)	Storage Pool	Capacity	Total capacity (GB)
137	Used Capacity (GB)	Storage Pool	Capacity	Used capacity (GB)
138	Disk Count	Storage Pool	Capacity	Number of disks
139	LUN Count	Storage Pool	Capacity	Number of LUNs
140	Warning Threshold (%)	Storage Pool	Capacity	Warning threshold (%)
141	Attention Threshold (%)	Storage Pool	Capacity	Attention threshold (%)
142	Over Capacity For Warning Threshold (GB)	Storage Pool	Capacity	Capacity is over the warning threshold (GB)
143	Usage Ratio (%)	Storage Pool	Capacity	Usage ratio (%)
144	Storage Pool No.	Storage Pool	Configuration	Storage pool number
145	Storage Pool Name	Storage Pool	Configuration	Storage pool name
146	Storage Pool Status	Storage Pool	Configuration	Storage pool status (such as Available)
147	Storage Pool Alarm Status	Storage Pool	Capacity	Storage pool alarm status (such as Normal and Caution)
148	Usage	Storage Pool	Configuration	Usage (such as TPV)
149	Storage Pool Type	Storage Pool	Configuration	Storage pool type (Thin Provisioning Pool or Flexible Tier Pool)
150	Flexible Tiering Status	Storage Pool	Configuration	Flexible Tiering Status (Start/Stop)
151	Total Capacity (GB)	Storage Sub Pool	Capacity	Total capacity (GB)
152	Used Capacity (GB)	Storage Sub Pool	Capacity	Used capacity (GB)
153	Usage Ratio (%)	Storage Sub Pool	Capacity	Usage ratio (%)
154	Storage Pool No.	Storage Sub Pool	Configuration	Storage pool number
155	Storage Sub Pool No.	Storage Sub Pool	Configuration	Storage sub pool number
156	Storage Sub Pool Name	Storage Sub Pool	Configuration	Storage sub pool name
157	Storage Sub Pool Status	Storage Sub Pool	Configuration	Storage sub pool status (such as Available)
158	Disk Count	Disks	Configuration	Number of disks
159	Busy Ratio (%)	Disk	Performance	Busy ratio (%)
160	Disk Size	Disk	Configuration	Disk size
161	Enclosure	Disk	Configuration	Enclosure
162	Slot No.	Disk	Configuration	Slot number
163	Disk Status	Disk	Configuration	Disk status (such as Available)
164	Disk Speed	Disk	Configuration	Disk speed (rpm)
165	Disk Type	Disk	Configuration	Disk type (such as SAS)

*1: There are possibilities that the LUNs cannot be created before the ratio reaches 100%.

*2: For models other than the FUJITSU Storage ETERNUS DX8700 S3/DX8900 S3, "0" is displayed for the CE number.

*3: If the specification is omitted, the Metric value is displayed as "-1".

Appendix C

Solutions for Frequently Asked Questions

This appendix provides the solutions for frequently asked questions.

Note

If a problem persists after taking appropriate action, obtain troubleshooting information and contact a Fujitsu engineer.

For details, refer to "[Chapter 8 How to Obtain Troubleshooting Information](#)" (page 53).

■ "Collection Status" for the ETERNUS DX Adapter Instance is "Object down"

Communication with the ETERNUS VMware support package has failed.
Perform the following procedure.

Procedure

- 1 Perform [Step 6](#) through [Step 9](#) in "[5.3 Recreating the Server Certificate of the ETERNUS VMware Support Package](#)" (page 38).
- 2 Check if the [Review and Accept Certificate] screen is displayed.



- If the [Review and Accept Certificate] screen is displayed
Click the [OK] button and accept the server certificate. Proceed to [Step 3](#).
 - If the [Review and Accept Certificate] screen is not displayed
Check the network environment and restart the procedure from [Step 1](#).
- 3 Click the [Close] button.

4 Check the server certificate.

For the procedure to check the server certificate, refer to [Step 8](#) in "[5.1 Registering an Adapter Instance](#)" ([page 31](#)).

End of procedure

■ "Collection Status" for all the Objects under the storage system is "Object down"

The storage system that is managed by ETERNUS SF Storage Cruiser is in an abnormal state. Check the management status of the target storage system using ETERNUS SF Storage Cruiser.

■ "Collection Status" for the ETERNUS DX Adapter Instance is "Object error"

An internal error was detected and information could not be obtained. Obtain troubleshooting information and contact a Fujitsu engineer. For details, refer to "[Chapter 8 How to Obtain Troubleshooting Information](#)" ([page 53](#)).

■ Some Objects are not displayed or "Collection Status" for some objects are empty

The number of Objects being monitored by the vRealize Operations node and the supported number of Metrics have exceeded the upper limit. Check whether the alert has been displayed. If the alert has been displayed, take appropriate action according to the recommended method that is described in the alert details.

■ Some or all of the Metrics are not collected

The collection process was suspended because the process did not finish within the collection interval. Check whether the alert has been displayed. If the alert has been displayed, take appropriate action according to the recommended method that is described in the alert details.

■ The information of the Metric or the property is different from what is expected

The information of the Metric or the property is obtained from ETERNUS SF Storage Cruiser. Check if the contents that are displayed for ETERNUS SF Storage Cruiser are correct. If incorrect, take appropriate action according to the troubleshooting for ETERNUS SF Storage Cruiser.

■ Object relationships are different from what is expected

Updates may not be reflected. Perform [Step 6](#) onwards in "[5.3 Recreating the Server Certificate of the ETERNUS VMware Support Package](#)" ([page 38](#)) and check the relationships again after the next information collection.

■ Abnormal values such as extremely large values and negative values are displayed in a performance information graph

Abnormal values such as extremely large values and negative values are displayed for the performance information immediately after the master CM is switched or the ETERNUS DX is rebooted. Ignore this part. Refer to the values that are displayed after the invalid values are displayed.

- A "?" is displayed for the property value in the Property List widget

The value may take time to be reflected.

Wait for a while, clear the Property List, and display the value again.

- Although the ETERNUS DX state has changed, the Metric of the relevant Object state has not changed

The information of ETERNUS SF Storage Cruiser may have not been updated.

Check the relevant Object state using ETERNUS SF Storage Cruiser.

If the information has not been updated, reload to get the latest information using ETERNUS SF Storage Cruiser.

ETERNUS Management Pack for VMware vRealize Operations 1.1
User's Guide

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