NEC

ESMPRO
Server Management Guide
iLO-Installed Server

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Menu

Terms

Table 1. Descriptions of Terms

Terms	Descriptions
Management Server	The computer on whitch NEC ESMPRO Manager is installed. Personal computer can be used for installation.
Management Target Server	The server which is managed by NEC ESMPRO Manager.
AMS	An abbreviation of Agentless Management Service. This service runs on the OS and sends iLO some information such as OS events which iLO cannot acquired directly.
BMC	An abbreviation of Baseboard Management Controller. A management controller that monitors and makes reports about the system hardware, without relying on the state of the system or the OS. In NEC, BMC is called as EXPRESSSCOPE Engine.
DAC	An abbreviation of Disk Array Controller. This device controls various storage disks.
IETF	An abbreviation of Internet Engineering Task Force. It is the body which defines standard Internet operating protocols.
iLO	An abbreviation of Integrated Lights-Out. It is a controller which enables monitoring of hardware, in accordance with IPMI2.0 which is a standard interface specification.
IML	An abbreviation of Integrated Management Log. It indicates a hardware log of the iLO-installed server.
IPMI	An abbreviation of Intelligent Platform Management Interface. This is a standard interface specification to manage servers, without relying on the system or the OS.
Intel vPro™ Technology	Hardware bland name of Intel's client computer. It enables remote management without relying on the state of the system power.
NIC	An abbreviation of Network Interface Card. It is a device which processes communications between devices via network.
NMI	An abbreviation of non-maskable interrupt. A signal is sent to the OS by the non-maskable interrupt, when an error occurs.
RAID reporting service	It monitors the status of RAID and sends an alarm, when an error occurs.
SNMP	An abbreviation of Simple Network Management Protocol. It indicates simple network management protocols standardized by IETF.
SPP	Standard Program Package (SPP) is a set of fundamental firmware and software, such as BIOS/FW and OS driver. SPP is included in the Starter Pack.
Starter Pack	A software package including SPP, management applications and electronic manuals. It is purchased as an optional a product or can be downloaded, and used on the OS (Windows/Linux).
WBEM	An abbreviation of Web-Based Enterprise Management. Defined by DMTF.
WS-Man	An abbreviation of Web Service Management. It is a technical specification which provides a common way to access management information across the IT system.

Associated Documents

Table 2. Associated Documents

Name	Storing Place
NEC ESMPRO Manager Ver.6 Installation Guide (Windows)	・Web (*1)
NEC ESMPRO Manager Ver.6 Setup Guide	・Web (*1)
NEC ESMPRO ServerAgentService Installation Guide (Windows)	・Web (*1)
NEC ESMPRO ServerAgentService Installation Guide (Linux)	・Web (*1)
NEC ESMPRO ServerAgentService User's Guide (Linux)	・Web (*1)
Express Report Service / Express Report Service (HTTPS) Installation Guide (Windows) Express Report Service (MG) Installation Guide (Windows)	・Web (*1) (*3)
Express Report Service Setup Guide (Linux/VMware)	・Web (*4)
NEC ESMPRO Manager Ver.6 RAID System Management Guide for VMware ESXi 5 or later	・Web (*1)
NEC ESMPRO Manager Ver.6 Command Line Interface	・Web (*1)
NEC ESMPRO Manager Ver.6 User's Guide RESTful API Reference	・WEB (*1)
Module Installation Procedures for Express Report Service (MG) for VMware ESXi-installed Equipment	・WEB (*1)
ESMPRO alert list	・Web (*1)
NEC iLO SNMP alert list	・Web (*1)
iLO User's Guide	・Web (*2)
Smart Storage Administrator User's Guide	・Web (*2)

(* 1) The documents associated with ESMPRO are on the website below:
Refer to "Download".
http://www.58support.nec.co.jp/global/download/index.html
(* 2) The guide is on the information page of each device. Access the page from the website below:
http://www.58support.nec.co.jp/global/download/index.html
(* 3) The documents associated with Express Report Service (Windows) are on the website below:
http://www.58support.nec.co.jp/global/download/index.html
(* 4) The documents associated with Express Report Service (Linux/VMware) are on the website below:
http://www.58support.nec.co.jp/global/download/index.html

Chapter 1 **Introduction**

The purpose of this document is to provide customers who purchased NEC Express5800 series with the simpler server management by using NEC ESMPRO Manager, server management software of NEC Corporation.
As of March 2018, this document supports the following versions of software.

Table 3. Target device and software version

Software	Condition	Version
NEC ESMPRO Manager	Windows	6.30
	(Linux *1)	-
NEC ESMPRO ServerAgentService	Windows	2.06
	Linux	2.0.7

*1 Linux version of NEC ESMPRO Manager does not support the management of the iLO-installed servers.

Chapter 1 Introduction
This chapter

Chapter 2 NEC ESMPRO Manager Ver. 6 Overview
Describes the overview of NEC ESMPRO Manager as the core of NEC server management software.

Chapter 3 Introduction and Initial Setting
Describes the introduction and the initial setting of NEC ESMPRO Manager and its related software.

Chapter 4 Server Management
Describes how to register the management target servers to NEC ESMPRO Manager.

Chapter 5 NEC ESMPRO ServerAgentService
Describes NEC ESMPRO ServerAgent Service.

Chapter 6 Server Fault Detection and Report Service
Describes how to confirm the server fault information and report service.

Chapter 7 Configuration Management
Describes manageable items by NEC ESMPRO Manager.

Chapter 8 Remote Control
By using NEC ESMPRO Manager, Power control and Power management of the management target servers can be performed by remote control. This chapter describes how to operate remote control.

Chapter 9 Settings
Describes how to operate remote control. This chapter describes the settings for connecting to the management target server and how to remotely set NEC ESMPRO ServerAgentService from NEC ESMPRO Manager.

Chapter 10 IML Monitoring Feature
Describes the feature to monitor IML, a hardware log of the iLO-installed server, by using NEC ESPRO Manager.

Chapter 11 External Interface
Describes the remote server management with an interface other than Web console of NEC ESMPRO Manager.

Chapter 2 **NEC ESMPRO Manager Ver.6 Summary**

2.1 About NEC ESMPRO Manager Ver.6

NEC ESMPRO Manager Ver.6 is the server management software which enables the steady operation of the server system and more efficient system operation. It manages the configuration information/running status of the server resources and it sends alerts to the system administrator upon detecting the server failure in order to provide the prompt response to the issues.

NEC ESMPRO Manager Ver.6 is a web-based application. With the server and browser capable of communicating with the management target server on which the NEC ESMPRO Manager is installed, you can manage and monitor the server from any location.

2.2 Importance of the Server Management

Stable server operation is essential to ensure the stability of customers' computer system. The high load on the server management also needs to be reduced to ensure the stable operation.

- Stable operation of the server
  Unplanned server stop leads immediately to the loss of customers' sales opportunities and profits. Therefore, the server is expected to run perfectly at any time. In the event of a server failure, quick acknowledgement of the incident and an investigation of the cause and troubleshooting are necessary. The sooner the damage recovery is achieved, the less cost will be incurred consequently.

- Reducing the cost of the server management
  Server management requires a great deal of labor especially in the large-scale distribution system, or the server management in remote sites. Reducing the cost of the server management is the most certain way to the eventual cost down (benefit to customers).

2.3 Server Management in NEC Express5800 iLO-installed Server Series

NEC Express5800 iLO-installed server series are managed by using the following NEC software and iLO. iLO is a dedicated controller installed on the motherboard of Express 5800 series and it provides the remote control functions, such as monitoring the condition of power supply, fan, temperature on the main device components, as well as the control over the keyboard, video, mouse (KVM) by the network for management, and remote access to CD/DVD-ROM/Floppy Disk Drives/ISO Image/USB Memory from the server.

Table 4. Software used in server management

Name	Summary	Source of Supply
NEC ESMPRO Manager (ESMPRO/SM)	Software installed on the management server to manage the multiple target servers. It supports Windows. *1	・Web *2
NEC ESMPRO ServerAgentService (ESMPRO/SAS)	Software to collect the detailed information of the management target server and to provide the alert function. It is installed on the OS of the management target server. It supports Windows and Linux.	・Web *2 ・Pre-install *3 ・Starter Pack
WebSAM AlertManager	Optional software to substantially expand the standard alert feature of NEC ESMPRO Agent, NEC ESMPRO	・Since this product is sold separately,

	Manager, and WebSAM ClientManager. It supports Windows.	please make an inquiry via the website.. *4
Agentless Management Service (AMS)	This service provides iLO with some information such as OS events which run on the OS and cannot be directly acquired by iLO. It supports Windows, Linux, and VMware ESXi6 or later.	・Pre-install * 3 ・Starter Pack * 6 ・Web * 6
RAID Report Service (RAID Report Service) (RRS)	This service reports the events which occur in RAID controller and the device connected to RAID controller. Additionally, using the event monitoring function of NEC ESMPRO ServerAgentService, it sends important events influencing the operational management of servers as an alert. It supports Windows and Linux.	・Pre-install * 3 ・Starter Pack
WBEM provider and CLI tool	A module which controls RAID system information in the server to be managed. It supports VMware ESXi6 or later.	・Web * 5

*1：Linux version does not support the management of the iLO-installed server.
*2：Refer to http://www.58support.nec.co.jp/global/download/index.html.
*3：In the case of pre-install model, the software is installed at the time of factory shipment.
*4：Refer to http://www.nec.co.jp/middle/WebSAM/products/p_am/.
*5：Refer to http://www.58support.nec.co.jp/global/download/index.html.
*6：Windows and Linux versions of AMS can be obtained from the Starter Pack. VMware ESXi6 or later of AMS can be obtained from http://www.58support.nec.co.jp/global/download/index.html.

The following is the software correlation diagram.

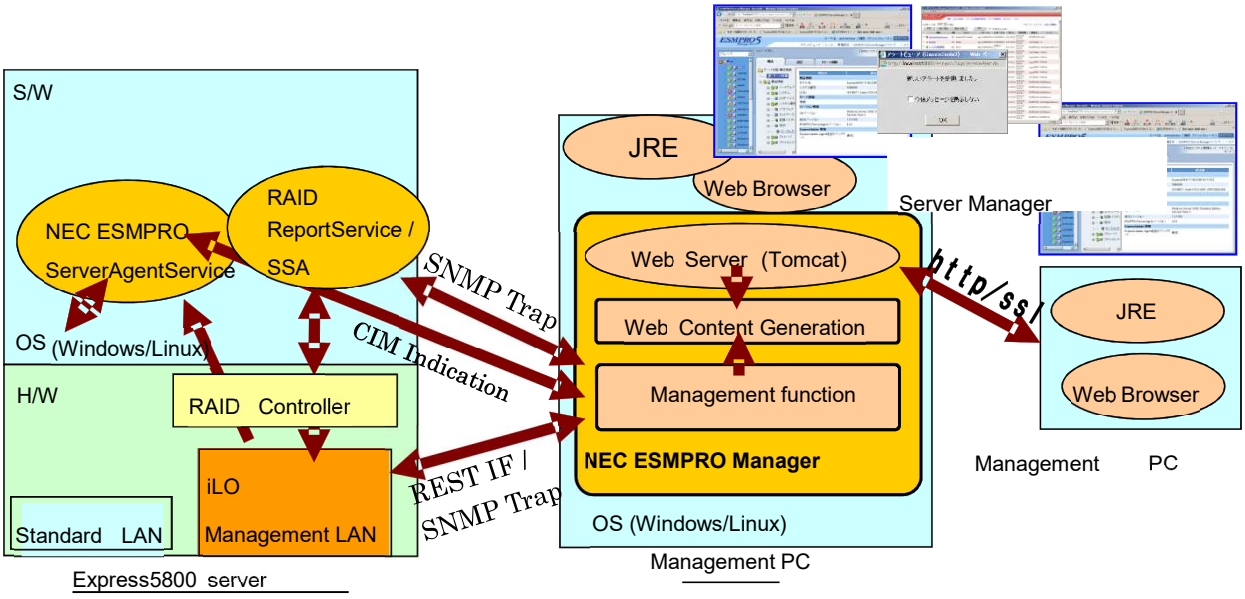


Figure 1. Software correlation diagram

2.4 Function Summary Achieved by NEC ESMPRO Manager

The following operation can be realized by using NEC ESMPRO Manager and the related software.

2.4.1 Reporting Function

Reporting sent from the NEC ESMPRO ServerAgentService or iLO installed on the management target servers to the NEC ESMPRO Manager is available in the event of a failure. The content of the report can be checked on the AlertViewer on the Web Console of NEC ESMPRO Manager.

There are two methods for report management. One is the self-management by the customer, and the other is by the Express Report Service which automatically reports to the maintenance center. Refer to the “Reporting Functions” described in the related documentation for the types and features of the report function.

2.4.2 Configuration Management

Various information about the server and the OS can be managed and monitored by the NEC ESMPRO Manager. If iLO is installed, the hardware management and monitoring can be performed by registering iLO to the NEC ESMPRO Manager as a management item, instead of using the Agent software. By installing the NEC ESMPRO ServerAgentService on the management target servers, more information including the one on the OS can also be managed and monitored.

In the case of the VMware ESXi on which NEC ESMPRO ServerAgentService cannot be installed, information managed by the VMware ESXi can be checked as a result of the direct communication between the NEC ESMPRO Manager and the VMware ESXi.

2.4.3 Remote Control

Remote control of the power supply of the management target servers can be executed from NEC ESMPRO Manager.

2.4.4 Management Target Server Setting

The settings of NEC ESMPRO ServerAgentService for the management target server can be remotely configured from NEC ESMPRO Manager.

Chapter 3 **Implementation and Initial Settings**

This chapter describes the implementation and initial settings for the NEC ESMPRO Manager and the related software.

3.1 Software which Requires the Installation and Settings.

Software installation and settings are required according to the functions employed in order to manage the NEC Express5800 iLO-installed server series by using the NEC ESMPRO Manager. Be sure to perform the installation and settings necessary for the adopted functions.

Table 5. Software which requires the installation and settings

Function	Required Software
Management and Monitoring of the Multiple Servers	• NEC ESMPRO Manager
Report Function	• iLO5 • NEC ESMPRO Manager • NEC ESMPRO ServerAgentService • WebSAM AlertManager *1 • AMS *2 • RAID Report Service *3 • WBEM Provider and CLI tool *4
Configuration Management	• iLO5 • NEC ESMPRO Manager • NEC ESMPRO ServerAgentService • AMS *2
Remote Control	• NEC ESMPRO Manager • iLO5

* 1 For details of the way to install WebSAM AlertManager, check the setup card attached to this guide.
* 2 Windows and Linux versions of AMS can be obtained from the Starter Pack. VMware ESXi6 or later of AMS can be obtained from http://www.58support.nec.co.jp/global/download/index.html.
* 3 For details of the way to install RAID Report Service, refer to Smart Storage Administrator User's Guide in the website below:
  http://www.58support.nec.co.jp/global/download/index.html
* 4 For more information on WBEM provider and CLI tool, refer to the following website:
  http://www.58support.nec.co.jp/global/download/index.html

3.2 Installing the NEC ESMPRO Manager and Environment Settings

The followings are the descriptions of the installation and necessary environment settings of the NEC ESMPRO Manager which plays the core role in the server management.

3.2.1 Installing the NEC ESMPRO Manager

The latest version of the NEC ESMPRO Manager can be downloaded from NEC Corporate Website (http://www.58support.nec.co.jp/global/download/index.html).
For details of installing NEC ESMPRO Manager, refer to "NEC ESMPRO Manager Ver. 6 Installation Guide (Windows)". The management of the iLO-installed servers only supports Windows version of NEC ESMPRO Manager.

1. Download the installation modules for NEC ESMPRO Manager for Windows OS.
2. Execute “SM<version>_E\ESMMENU\SETUP.EXE” after decompressing the downloaded ZIP file.
3. Select “NEC ESMPRO Manager” from the main menu within setup.
4. Configure the settings for the installation, according to the installer.
5. Once the installation has completed, restart the OS (Restart it manually).

3.2.2 Setting up the NEC ESMPRO Manager

For details of the setup, refer to “NEC ESMPRO Manager Ver.6 Setup Guide”.

1. Connect the NEC ESMPRO Manager-installed management PC to the iLO-installed server on the same network.
2. Configure iLO. For detail, refer to Section 3.4.
3. Configure environmental settings for NEC ESMPRO Manager.
4. Register the component into NEC ESMPRO Manager.

3.3 Installing and Setting up the NEC ESMPRO ServerAgentService

This section describes the installation and initial settings of the NEC ESMPRO ServerAgentService is required when using the reporting functions and system management functions.

3.3.1 Installing and Setting up the NEC ESMPRO ServerAgentService

Modules to be installed on the NEC ESMPRO ServerAgentService vary depending on the management target OS.

Table 6. NEC ESMPRO ServerAgentService

Monitoring Item	Module Storage Location
Windows	Starter Pack or Web
Linux	Starter Pack or Web
VMware (ESXi 6 or later)	NA
Virtual Machine	NA

When using Windows and Linux for NEC Express5800 iLO-installed server series or Scalable Enterprise Server series, install the NEC ESMPRO ServerAgentService from the Starter Pack attached to the server.
VMware ESXi 6 does not have the service console capacity. So, the NEC ESMPRO ServerAgentService cannot be installed. Consequently, the monitoring must be performed directly from the NEC ESMPRO Manager.

For the NEC Express5800 series or Scalable Enterprise Server series of the pre-install model, no installation is required as the installation of the NEC ESMPRO ServerAgentService should be completed at the time of factory shipment.

The latest module is released in the following website:
http://www.58support.nec.co.jp/global/download/index.html
Refer to the installation guides for how to install and perform the initial settings.

3.4 Setting up the iLO

This section describes the procedure of the settings for receiving the SNMP Report of iLO by the NEC ESMPRO Manager.

POINT

Before configuring the settings in WebConsole of iLO, it is necessary to configure the network settings of iLO. For the network settings of iLO, refer to the user's guide of the server.

1. Start the WebConsole of iLO in the following way:

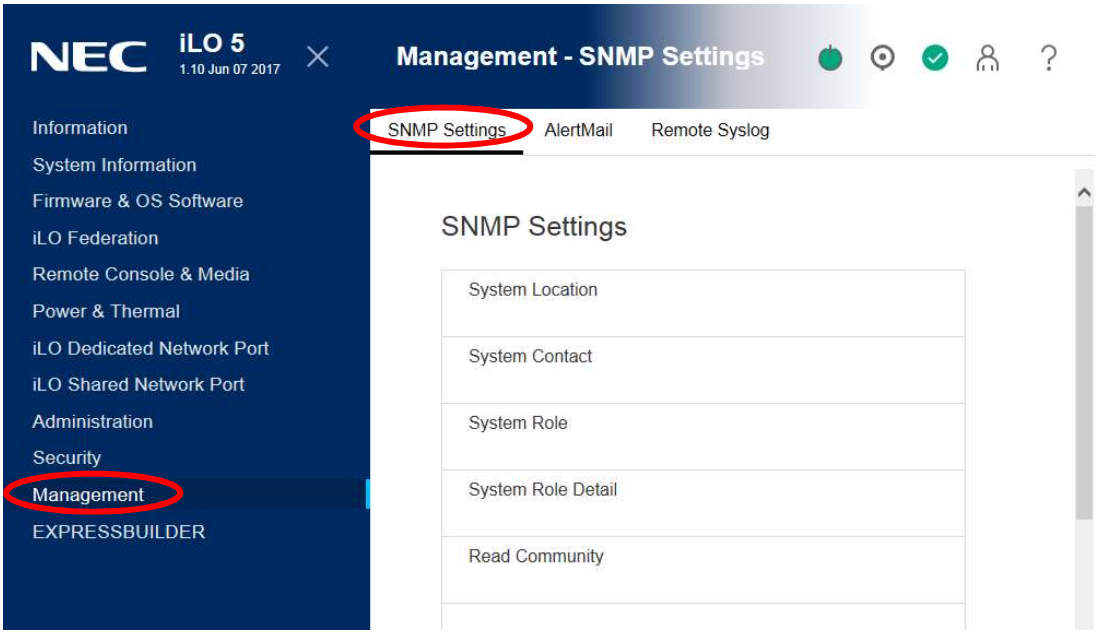
After the Web browser has started, enter the following URL:

When the IP address of iLO is 192.168.1.1 and the settings of HTTPS is enabled.

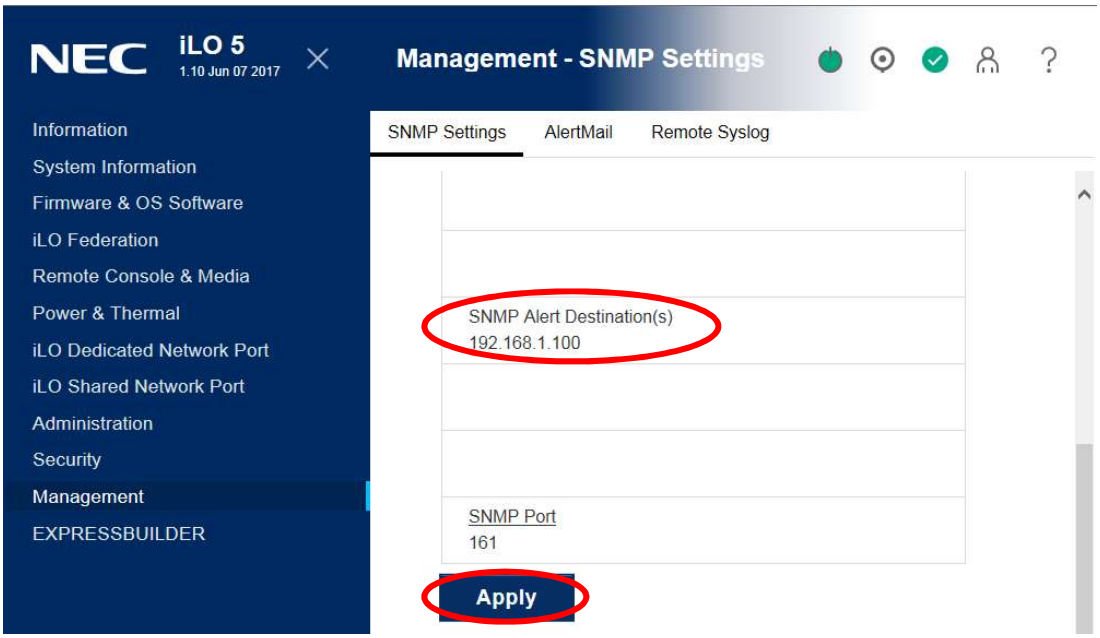
```
https://192.168.1.1/
```

2. The login screen of iLO is displayed.

After logging in to the screen, select "Management" – "SNMP Settings" on the menu of WebConsole.



3. In SNMP Alert Destination (s), set the IP address of the management PC in which the NEC ESMPRO Manager has been installed, and then click the "Apply" button. Furthermore, this procedure varies depending on FW versions of iLO. For details, refer to the chapter "Configure iLO of components" in "NEC ESMPRO Manager Ver.6 Setup Guide".


NEC
iLO 5
1.10 Jun 07 2017
Management - SNMP Settings
Information
System Information
Firmware & OS Software
iLO Federation
Remote Console & Media
Power & Thermal
iLO Dedicated Network Port
iLO Shared Network Port
Administration
Security
Management
EXPRESSBUILDER
SNMP Settings
AlertMail
Remote Syslog
SNMP Alert Destination(s)
192.168.1.100
SNMP Port
161
Apply

Chapter 4 **Server Management**

Preparation for registering the management target servers to the NEC ESMPRO Manager should be done by the operations up to the previous chapter. This chapter describes the method of registering the management target server on the NEC ESMPRO Manager.

4.1 About NEC ESMPRO Manager Web Console

Web Console of the NEC ESMPRO Manager consists of the following four areas.

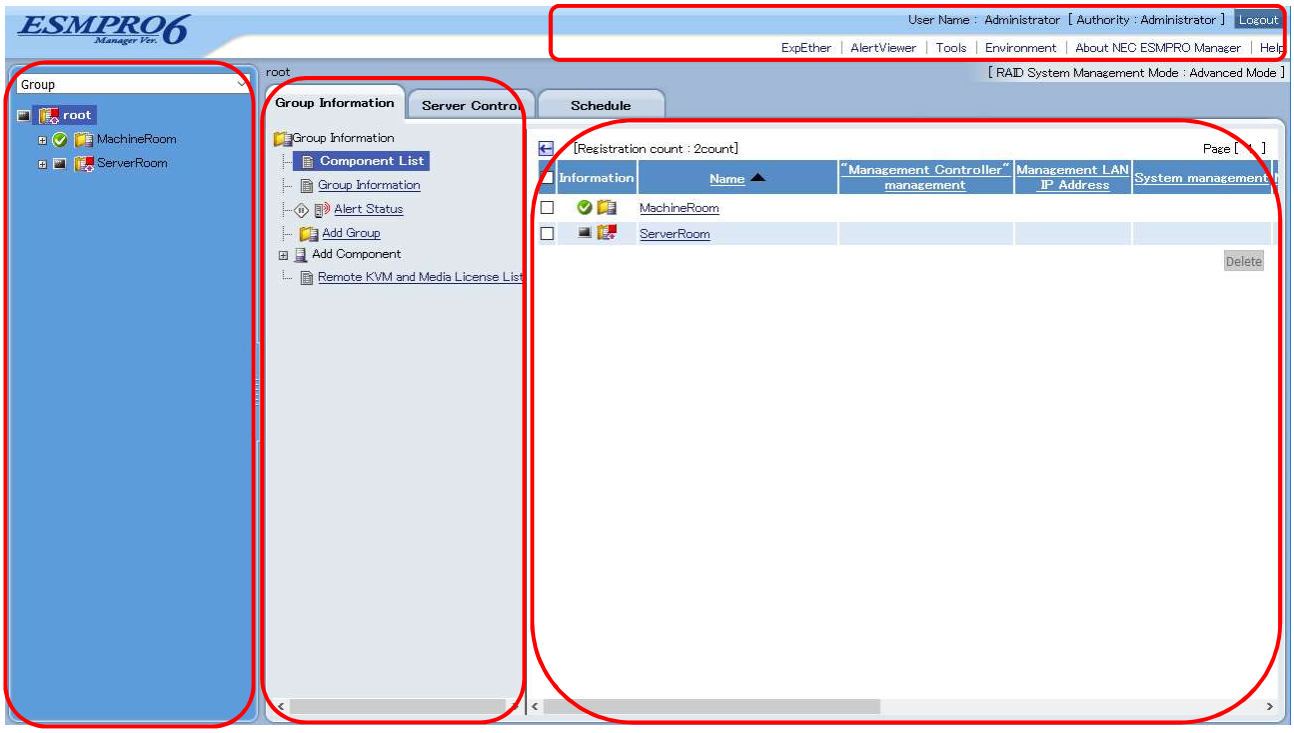


Figure 2. NEC ESMPRO Manager Web Console

POINT Web Console of the NEC ESMPRO Manager logs out automatically if left for more than 30 minutes without being operated.

POINT Update interval of the screen can be changed from “Environment” → “Option” → “Automatically update display” on the “Header Menu”.

4.1.1 Header Menu (1)

This is the menu for the functions that can be operated at any time. Startup of the AlertViewer or displaying and saving the logs of the NEC ESMPRO Manager and logging out of the NEC ESMPRO Manager can be performed.

Table 7. Header Menu

Menu Hierarchy1	Menu Hierarchy1	Descriptions
AlertViewer	—	It displays the alert received from the NEC ESMPRO ServerAgentService or iLO.
Tool	IPMI Information Backup File List	When backing up the IPMI information, the list of the backup files is displayed. Registering or deleting the file is also available. The iLO-installed server does not support the backup of the IPMI information.
	Searching Registered Components	It searches for the management target servers registered to the NEC ESMPRO Manager.
	NEC ExpressUpdate Management Information	It displays the related information or configures the options of the NEC ExpressUpdate. The iLO-installed server does not support ExpressUpdate.
	IML Backup File List	When backing up IML, the list of the backup files is displayed.
Environment	User Accounts	It manages the users of the NEC ESMPRO Manager.
	Access Control	It configures the access control to the Web Console of the NEC ESMPRO Manager.
	Network	It configures the details required when managing the servers.
	Option	It configures the option of the NEC ESMPRO Manager.
About NEC ESMPRO Manager	—	It shows the version information of the NEC ESMPRO Manager and the logs can be displayed and downloaded.
Help	—	It shows the Online Help information of the NEC ESMPRO Manager.

4.1.2 Tree View (2)

It displays the management target servers managed by the NEC ESMPRO Manager in hierarchical view. Select the tree format from the pull-down menu of “Group”, “Chassis” and “Power group”. Editing the edit group can be performed from the “Edit group set”. Refer to 4.2 for details.

4.1.3 Local Navigation (3)

Information is displayed when a group or the management target server is selected. It shows a group/management target server information. It can also show the operations that can be executed to the group/management target server. It depends on the registration status of the management target server, but it shows generally the four tabs of “Constitution” “Setting” “Remote Control” and “Schedule”.

Table 8. Local navigation when selecting the management target server

Tab Name	Description
Constitution	It displays the constitutional information if the registration status is the management target server managing the NEC ESMPRO ServerAgentService or iLO. For details, refer to Chapter 77 Configuration Management.
Setting	Connection settings of the management target server and power supply option can be changed. For details, refer to 9 Settings.
Remote Control	Power control, display and save of IML, login to the Web Console of iLO can be executed from this tab. For details, refer to Chapter 88 Remote Control.
Schedule	It configures the scheduled running which performs the power control at a specified time, and the remote batch function which performs the NEC ESMPRO Manager functions at a specified time. The iLO-installed server does not support this function.

When “Group” is selected, the three tabs, “Group Information”, “Server Control” and “Schedule” are displayed.

Table 9. Local navigation when selecting “Group”

Tab Name	Description
Group Information	It displays the list of the management target servers existing in the selected group. Addition of the subgroup to the group, addition and deletion of the management target servers can be executed from this tab. For details, refer to 4.2 Group for details.
Server Control	Select this tab when performing the batch operation on the management target servers in a group. The menu of the power control for a group is displayed.
Schedule	Same as when selecting the management target server. The iLO-installed server does not support this function.

4.1.4 Operation Area (4)

Information selected from the menu and local navigation is displayed.

4.2 Group

NEC ESMPRO Manager allows you to manage the management target servers by dividing them into groups. By creating a group, you can execute the batch operation to the serves in a group. From the pull-down menu on the top right of the tree view, you can switch the group to be displayed.

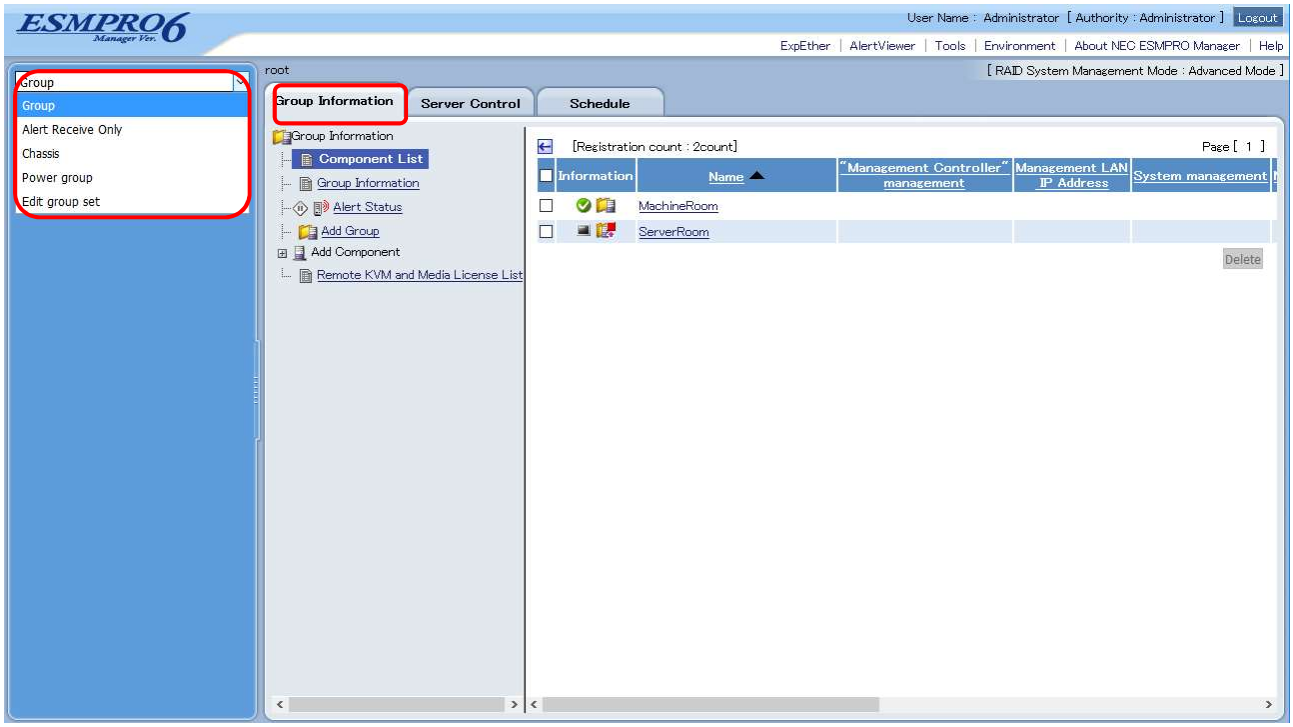


Figure 3. Switching the groups

4.2.1 Group

This is a group to manage the server. This menu is set by default after logging in to the NEC ESMPRO Manager. The structure of this group can be changed from the “Group Information”.

- Adding a group
  Select the group to be added on the Tree View and select “Group Information” → “Add Group”.
- Deleting a group
  On the Tree View, select the group to which the group to be deleted belongs and select “Group Information” → “Component List”. Press “Delete” displayed on the right corner of the Operation Area.

4.2.2 Chassis

When managing the blade servers, etc. selecting this menu shows the information about each chassis.

4.2.3 Power Group

This is a dedicated group to use the group power control function. The iLO-installed server does not support the group power control function.

4.2.4 Edit Group Set

This is the menu to edit the group structure.

4.3 Registering a Server

There are two methods of registering a management target server to the NEC ESMPRO Manager; the auto registration and manual registration. For details of the two methods, refer to “NEC ESMPRO Manager Ver.6 Setup Guide”.

Be sure to use one NEC ESMPRO Manager for managing iLO.

Chapter 5 **NEC ESMPRO ServerAgentService**

This chapter explains NEC ESMPRO ServerAgentService.

NEC ESMPRO ServerAgentService is a program to provide various information available via OS by using “WS-Management (WS-Man)”, an OS standard protocol and to control servers. The operation styles including NEC ESMPRO ServerAgentService are selectable according to the needs of customers.

5.1 About NEC ESMPRO ServerAgentService

ESMPRO collects various information within the server products from Out Of Band (OOB: firmware attached to the server, such as iLO, etc.) or from In Band (IB: operating system installed in the server). NEC ESMPRO ServerAgentService has greatly advanced to "Agentless" by minimizing information collected from IB, compared to the conventional NEC ESMPRO Agent, and by collecting OOB information by NEC ESMPRO Manager. However, when it becomes agentless, a function of ESMPRO to report failure within OS will be unavailable. Therefore, the report function is provided by NEC ESMPRO ServerAgentService.

5.2 Service Mode and Non-Service Mode

In NEC ESMPRO ServerAgentService, “Service Mode" and “Non-Service Mode” are selectable at the installation. In “Non-Service Mode”, various information can be acquired by using WS-Man. In "Service Mode", where the software is resident, alert to NEC ESMPRO Manager by CIM Indication, trap notification via SNMP, and report to the maintenance center are available in addition to the feature of Non-Service Mode. It is recommended to select Service Mode for management and monitoring of the system.

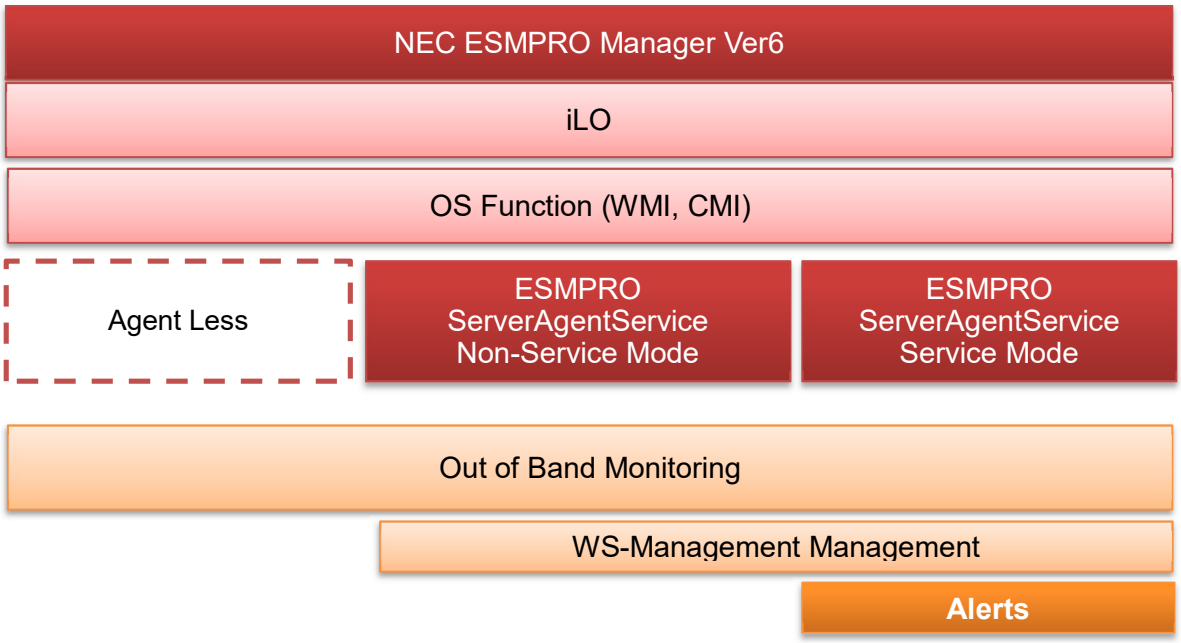


Figure 4. Configuration Diagram of Operation Management

The following diagram indicates the relations of NEC ESMPRO Manager, NEC ESMPRO ServerAgentService, and relating components.

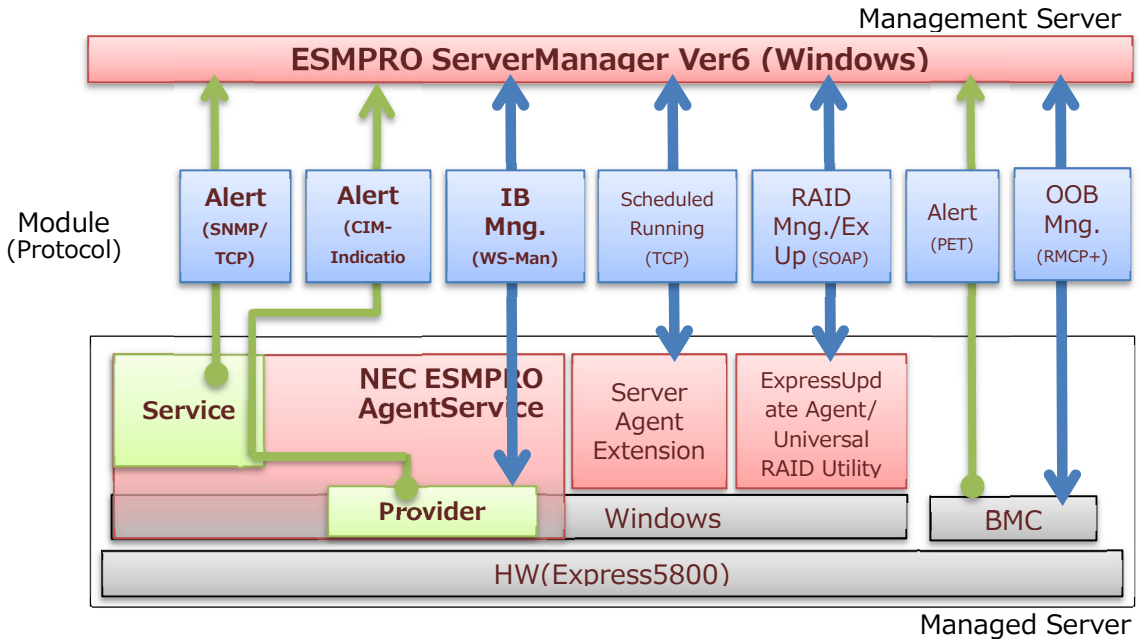


Figure 5. Configuration Diagram of Operation Management (Service Mode)

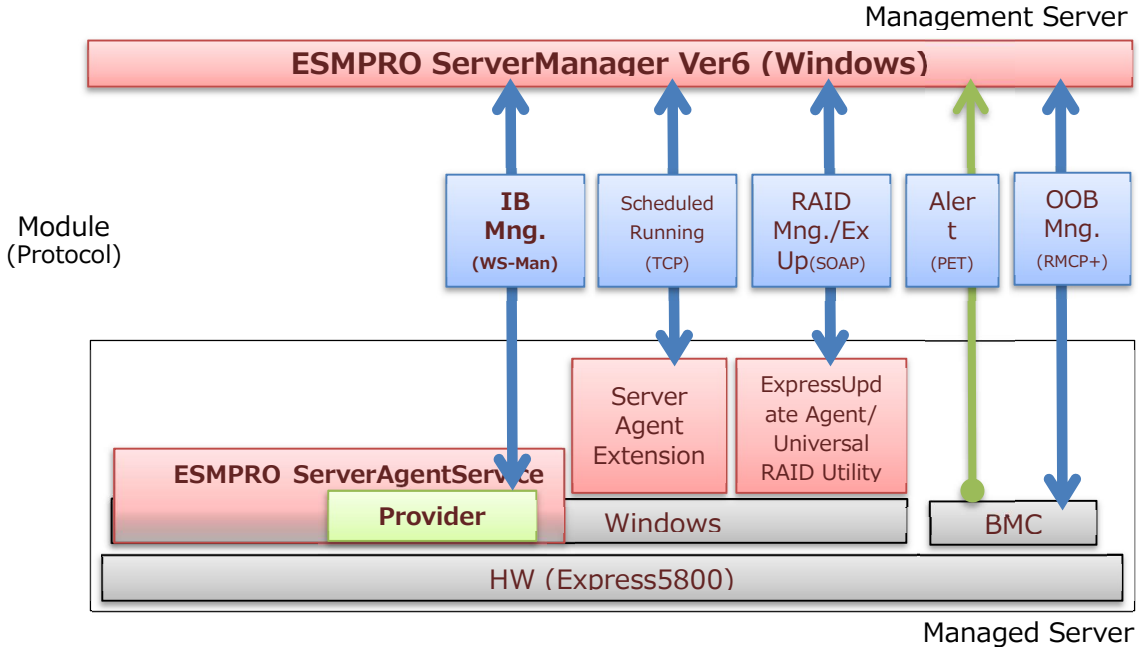


Figure 6. Configuration Diagram of Operation Management (Non Service Mode)

Chapter 6 **Server Fault Detection and Notification**

This chapter describes confirmation method and notification when a fault occurs on a server managed by the NEC ESMPRO Manager.

6.1 Referencing Server Fault Information (Web Console)

Icons that display the operating state and status of each server are shown in the managed server list screen and the tree view in the Web Console in NEC ESMPRO Manager. Checking those icons will enable you to immediately identify the server where a fault is occurring.

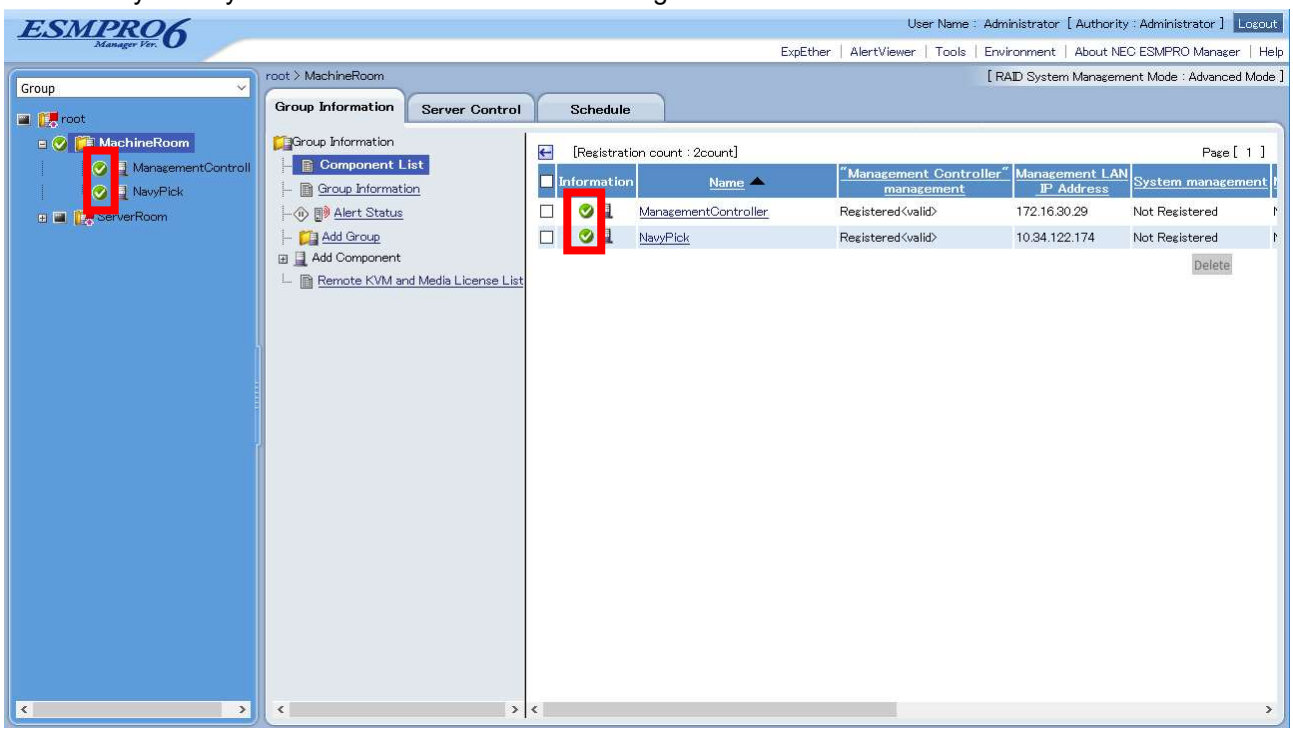


Figure 7. Managed Server List Screen in Web Console

The icons that are displayed for the state of each managed server have the following meanings.

Icon	State	Priority
	Unmonitored	Low ↓ High
	Currently Acquiring State	
	Normal	
	Unclear	
	DC-OFF, POST, OS Panic	
	Warning	
	Fault	

6.2 Referencing Server Fault Information (Alert Viewer)

Alerts sent to NEC ESMPRO Manager can be checked in Alert Viewer on a Web browser.

6.2.1 Starting Alert Viewer

1. Log in to the NEC ESMPRO Manager Web Console and click on Alert Viewer.

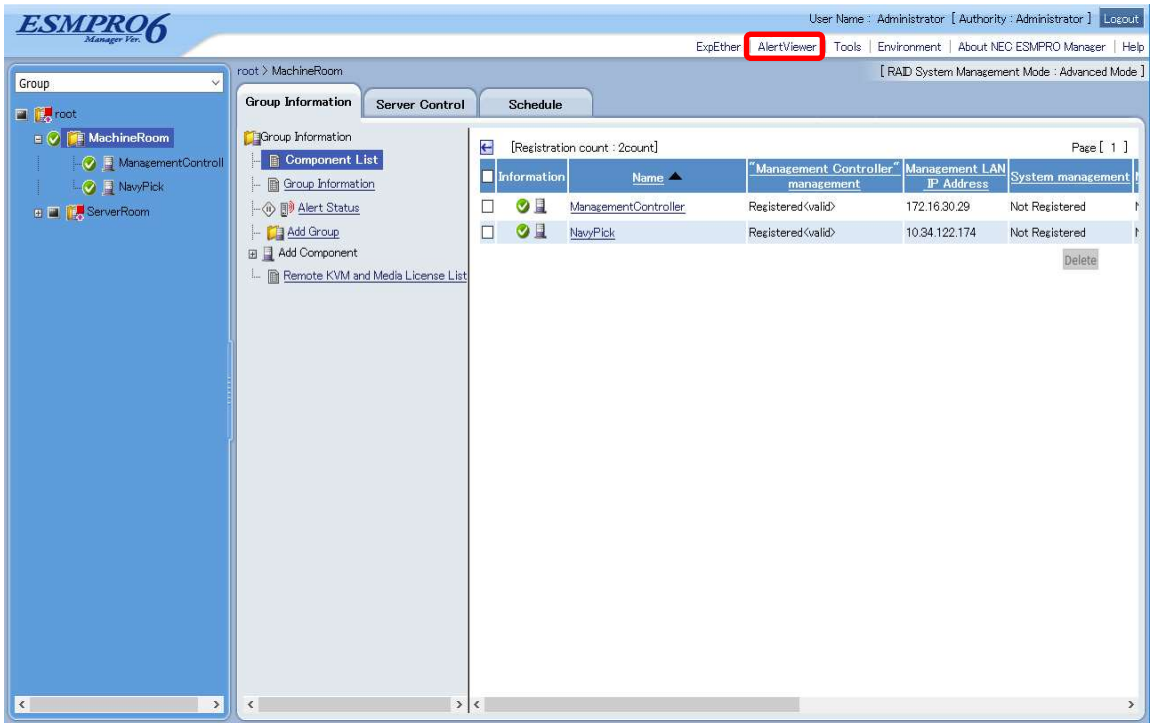


Figure 8. Web Console's Home Page

2. Alert Viewer starts and a list of received alerts is displayed.

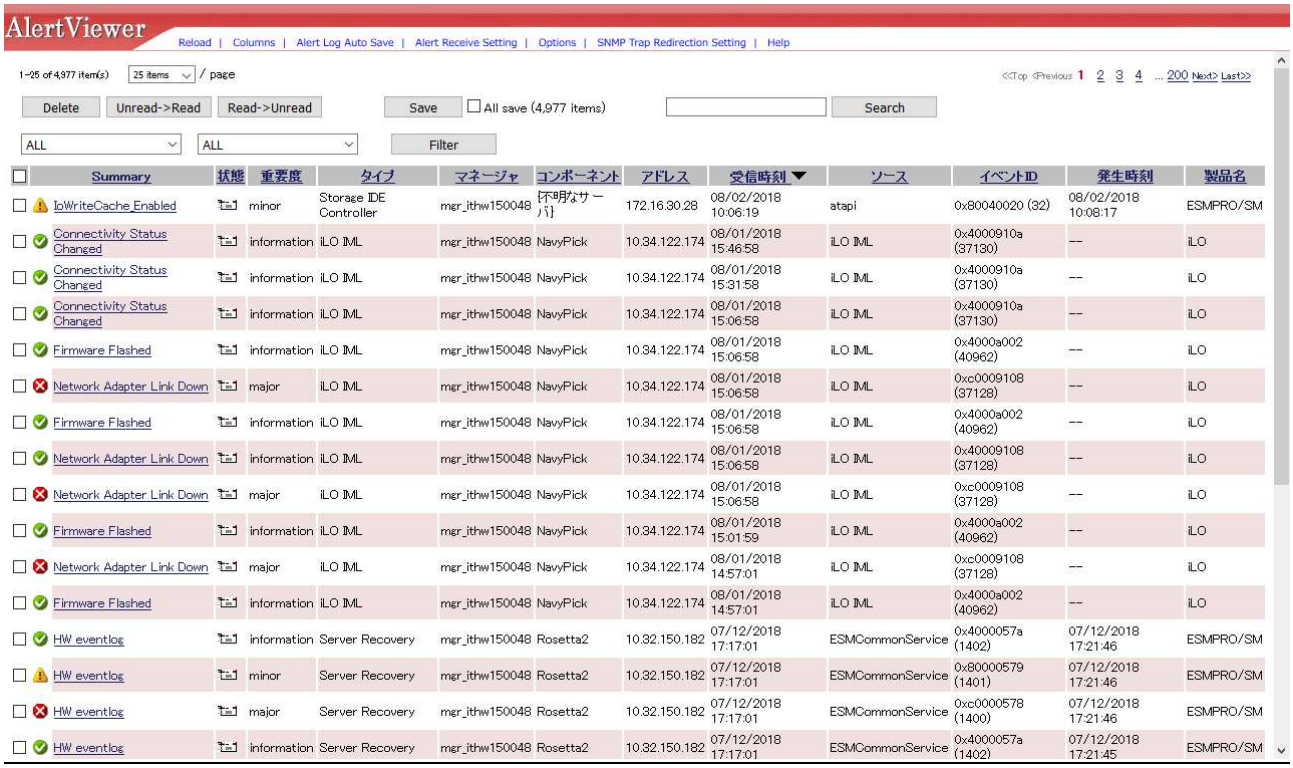


Figure 9. Alert Viewer

6.2.2 Referencing Detailed Information for an Alert

1. Click “Overview” of the Alert for which you want to reference details.
2. The Alert Details window will open, displaying detailed information for the alert.

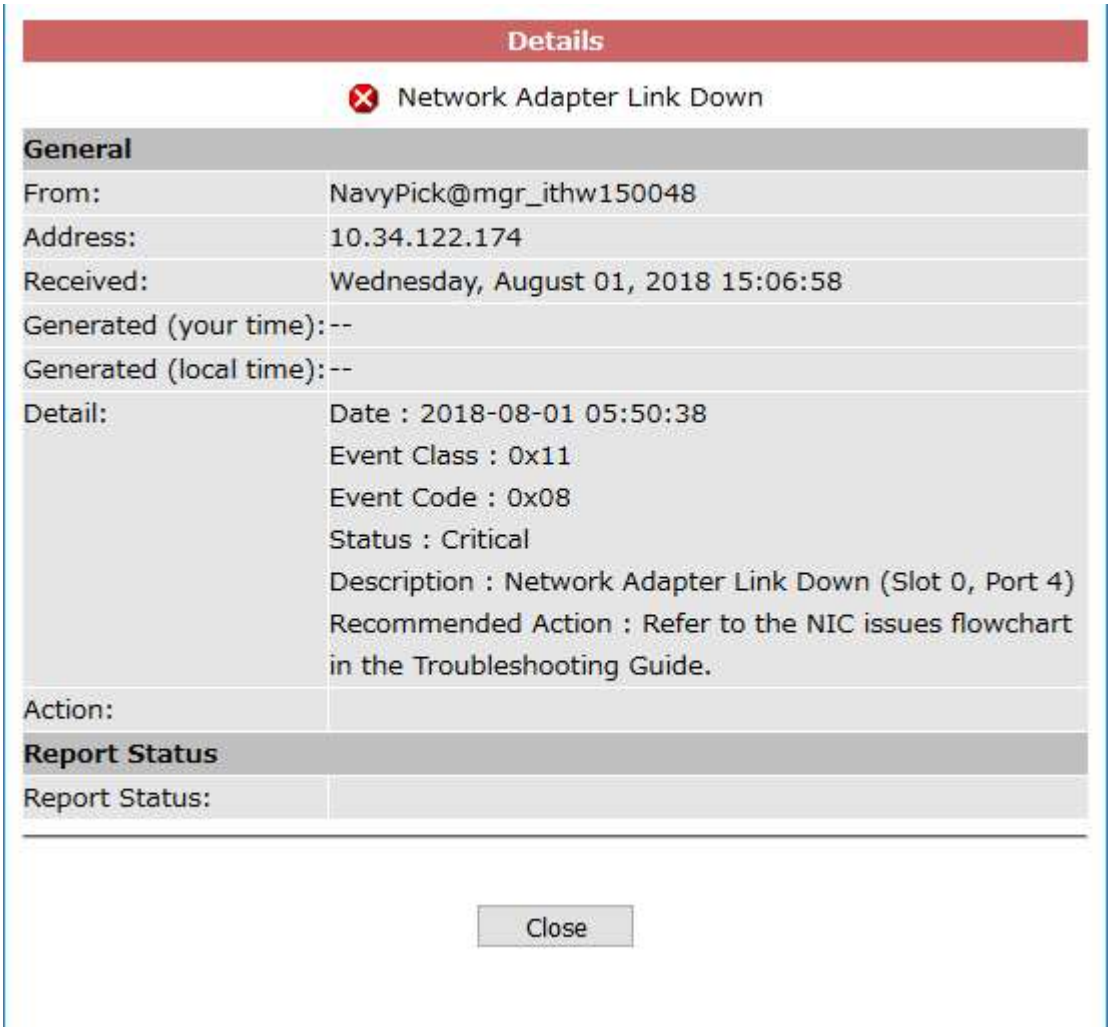


Figure 10. Alert Details Window

6.2.3 Automatically Saving Received Alerts to a File

When you configure auto-save for the NEC ESMPRO Manager alert log, information for all received alerts will be saved to a file.

CAUTION

Since there is no limitation on the number of alerts that can be saved to the alert log, periodically back this file up and delete it, with consideration for your free disk space.

CAUTION

The save location of the relevant file cannot be changed. The default location is:
<NEC ESMPRO Manager Installation Location>\ ESMWEB\wbserver\webapps\esmpro \WEB-INF\service\alertlog

Configuring Auto-Save for the Alert Log

1. Log in to the NEC ESMPRO Manager Web Console and click on “Alert Viewer”.
2. Click “Alert Log Auto-Save Settings” from within “Alert Viewer”.

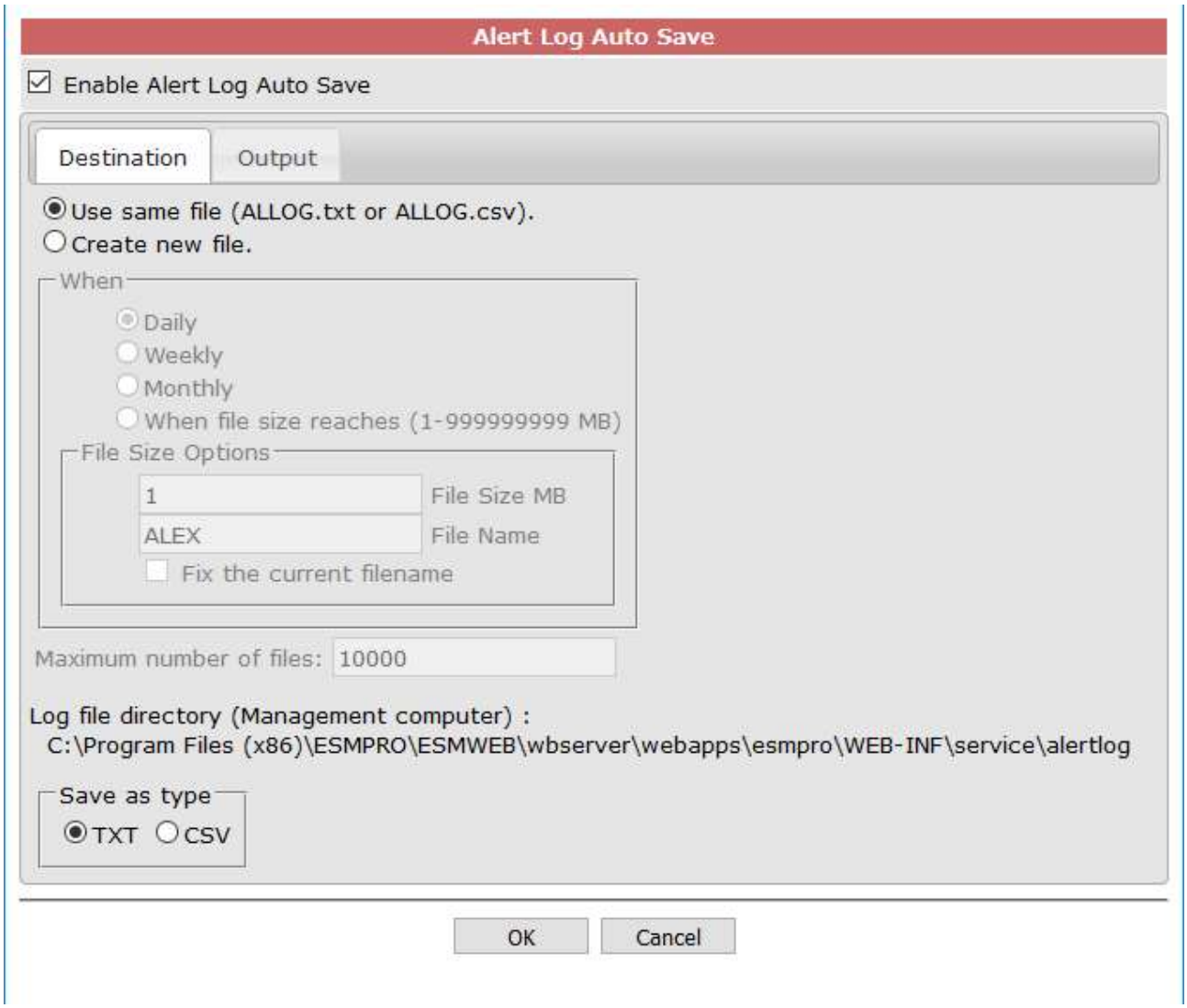


Figure 11. Alert Log Auto-Save Settings Screen

3. Check the “Perform alert log auto-saves” checkbox.
4. If you do not wish to overwrite the saved file, select “Do not overwrite the saved file”. To overwrite the saved file at the desired interval or file size, select “Overwrite the saved file”.
5. Select an extension (TXT or CSV) for the saved file.
6. Lastly, click the “OK” button.

POINT

See the NEC ESMPRO Manager Online Help for more information on the timing for the alert log’s auto-save overwrite feature, as well as each of the other items on the configuration screen.

6.2.4 Hiding the Specific Alert of All the Received Alerts

It is possible to hide a specific alert of all the received alerts in Alert Viewer.

Procedure for hiding the alert

1. Log in to a management server as a user with administrative privilege.

2. Click “Control Panel”, “Administrative Tools” and “Services” to stop the services in the following order.
    1) ESMPRO/SM Web Container
    2) ESMPRO/SM Event Manager
    3) ESMPRO/SM Base AlertListener
    4) ESMPRO/SM Common Component
3. Open the following setup file.
   <Installation path of NEC ESMPRO Manager>\
   ESMWEB\wbserver\webapps\esmpro\WEB-INF\service\alertviewer\
   alertmanager.properties
4. After specifying the source and the priority of the alert which you want to hide, save the file.
   <How to specify>
   ALERT_OPTION_DROP_ALERT={Source name}:{Priority},{Source name}:{Priority}
   * It is possible to set more than one condition.
   {Source}
   Specify the content of “Source”, a category of Alert Viewer.
   {Priority}
   Specify the content of “Priority”, a category of Alert Viewer, as described below.
   Information: Information
   Warning: Warning
   Fault: Critical
   Unclear: Unknown
   Hide all the priorities: All
   Example: Hide the alert in which “iLO SNMP Trap” is set for the source and “Warning” is set for the priority.
   ALERT_OPTION_DROP_ALERT=iLO SNMP Trap:Information, iLO SNMP Trap:Warning

5. Click “Control Panel”, “Administrative Tools” and “Services” to start the services in the following order.
   1) ESMPRO/SM Common Component
   2) ESMPRO/SM Base AlertListener
   3) ESMPRO/SM Event Manager
   4) ESMPRO/SM Web Container

6. Log in to the NEC ESMPRO Manager Web Console and click on “Alert Viewer”.
   The specified alert will be hidden in the list of alerts.

The above setting to hide the alert is only for hiding the alert in Alert Viewer. The alert information is stored.

6.3 Server Fault Notification (Linking with WebSAM AlertManager)

The notification feature can be expanded by linking NEC ESMPRO Agent and NEC ESMPRO Manager with WebSAM AlertManager.

Expanding the Notification Feature of NEC ESMPRO Agent, NEC ESMPRO ServerAgentService
The notification feature of NEC ESMPRO Agent and NEC ESMPRO ServerAgentService can be expanded to include the following new features: e-mailing of alert information, popup notifications to operators, output of alert information to printers and/or files, and the launching of specified applications when alerts occur.

Expanding the Notification Feature of NEC ESMPRO Manager

Several of the Express Report Service that can be performed as batch notifications from NEC ESMPRO Agent and NEC ESMPRO ServerAgentService are included in the expanded set of notification features: e-mailing of alert information, popup alerts, sending alert information to printers and/or files, and the launching of specified applications when alerts occur.

In NEC ESMPRO Manager Version 6.20 or later, if the enterprise is “1.3.6.1.4.1.232.9.4.11” or “1.3.6.1.4.1.232”, the alert type of the trap is “iLO SNMP Trap”. If WebSAM AlertManager is used as the alert type when NEC ESMPRO Manager whose version is between 6.20 and 6.25 is installed, add an alert type manually. For details, refer to the websites below:

- Product page FAQ for WebSAM AlertManager
  http://www.nec.co.jp/middle/WebSAM/products/p_am/qabody.html#43
  Q43. What is the additional procedure for the alert type?
- NEC support portal
  http://www.support.nec.co.jp/View.aspx?id=3150024817
  WebSAM AlertManager (Former product name: NEC ESMPRO/AlertManager): What is the additional procedure for the alert type?

6.3.1 Expandable Notification Methods and Features

The expanded notification features are as follows.

E-mail Notifications

Notifications are made with e-mail via an e-mail server that supports the SMTP protocol.
The e-mail server can exist in either a LAN or a WAN environment.

Command Execution

Specified commands can be run when an alert occurs.
The computer on which the fault occurred, the time the fault occurred, and a description of the fault can all be passed as arguments to the commands.

Signal Tower Notification

A signal tower can be lit when an alert occurs.

File Output

Text can be written out to a file when an alert occurs.

Printer Output

Output can be sent to a printer when an alert occurs. Network printers are also supported.

Popup Messages

Display popup messages on screen.
A single popup message is continually displayed on screen. When there are multiple messages, pressing a button will cycle you through to the next ones.

Express Report Service via Manager

Transferring express reports from multiple NEC ESMPRO Agents or NEC ESMPRO ServerAgentService to one administrative server can allow you to send express reports via the administrative server (NEC ESMPRO Manager).

You will need to install WebSAM AlertManager on the administrative server.

Expansion with the following features is also possible.

Notification Suppression
It is possible to suppress notifications for multiple occurrences of an identical event within a set period of time. You can also suppress notifications using a number of occurrences as a threshold value. It is also possible to combine these two options.

Saving and Restoring Notification Settings
When managing multiple servers and clients with the same hardware and software configurations installed, it is possible to completely copy your notification settings from one server to another or from one client to another, without the need to repeat the same notification settings on each server.

6.3.2 Convenient Notification Methods

You will find it convenient to use the expanded notification methods available through WebSAM AlertManager in situations such as the following.

To notify maintenance personnel in remote areas when a fault occurs
- The use of e-mail enables maintenance personnel in remote areas to be notified.

To execute arbitrary commands such as those for recovery when a fault occurs
- The use of command execution can allow for arbitrary commands to be executed. Output to event logs, etc. is enabled by using this feature.

To keep records of fault occurrence
- The use of file and printer output can record and save a description of the fault, which is useful for analysis purposes.

To display the description of a fault on screen when a fault occurs
- The use of popup messages displays a popup message on screen when a fault occurs, enabling real-time notification.

To trigger a visual or auditory response when a fault occurs
- The use of signal tower notifications can light up a signal tower when a fault occurs, making it easier to identify when an occurrence has happened.

To use the administrative server to batch process express reports
- The use of the batch processing feature for express reports allows you to receive express report requests from multiple NEC ESMPRO/ServerAgentService all at once, then notify the maintenance center.

6.3.3 Expanding Notification Methods

The settings for the WebSAM AlertManager notification methods are described in the online documentation and product page FAQ for WebSAM AlertManager. See the following URL.

The WebSAM AlertManager website (Japanese):
http://www.nec.co.jp/middle/WebSAM/products/p_am/index.html

See the Express Report Service/Express Report Service (HTTPS) installation guide stored in EXPRESSBUILDER for more on how to set Express Report Service/Express Report Service (HTTPS) via an administrative server.

The installation guide and modules can be downloaded from the NEC support portal. See the following URL.

The NEC support portal (Japanese):
http://www.58support.nec.co.jp/global/download/index.html

6.4 Transferring Notifications from NEC ESMPRO ServerAgentService or iLO to Another Manufacturer's Console (Trap Transfers)

There is an extremely high number of notification types from NEC ESMPRO Agent, NEC ESMPRO ServerAgentService or iLO. Displaying these directly on another manufacturer's console requires the use of message definition files for each type of notification.
When you use the trap transfer feature, NEC ESMPRO Agent, NEC ESMPRO ServerAgentService or iLO notifications received by NEC ESMPRO Manager can be converted into a single format and sent to another manufacturer's management console. This significantly reduces the work needed to display notifications on those consoles.

You cannot transfer or display traps to/on NEC ESMPRO Manager.

See the Trap Transfer Destination Settings Help for more information on the trap transfer feature. SNMP Trap Transfer Destination Settings Help is available from the "NEC ESMPRO Manager Online Help. Select "Alert Viewer" → "SNMP Trap Redirection".

6.4.1 Transferring Traps

Setting the Transfer Destination

1. Start up the Alert Viewer from the NEC ESMPRO Manager screen.
2. Click SNMP Trap Transfer Destination Settings on the Alert Viewer to display the following screen.

Figure 12. SNMP Trap Transfer Destination Settings screen

3. Enter either the transfer destination's host name or IP address in the "Host Name/IP Address" field. Enter the community name to use when transferring the SNMP trap in the "Community Name" field.
4. Click the "Add" button to save your settings and close the screen.

6.4.2 Format of the Transferred Trap

The specifications of the trap sent as a result of trap transfer are as shown below.
For more information, see the MIB definition files (ESMMNGR.MIB and ESMTPGEN.MIB) in the \ESMPRO\ESMWEB\mib folder in the directory in which NEC ESMPRO Manager was installed.
The SNMP version is SNMPv1.

ESMMNGR.MIB	Lists the managerTrap definitions.
ESMTPGEN.MIB	The import destination for the trap object used by managerTrap. There are also trap definitions within this file, but they are not sent with this feature.

Table 10. List of Trap Fields

Field	Value	Description
Enterprise	managerTrap (1.3.6.1.4.1.119.2.2.4.4.100.2)	—
Agent address	IP address of the server that sent the trap	—
Generic trap type	Enterprise Specific(6)	General trap code 6: vendor-defined trap
Specific trap type	managerTrapInformation(1) managerTrapWarning(2) managerTrapFatal(3)	Specific trap codes 1: information trap 2: warning trap 3: fault trap
Timestamp	Always '0'	—
Variable Bindings	managerName	The manager name affiliated with the server that sent the trap
	managerHostName	The name of the server that sent the trap will be *unknown* when not registered in the operations window.
	managerIPAddress	IP address of the server that sent the trap
	trapGenName	Overview of the trap
	trapGenDetailInfo	Detailed trap information
	trapGenAction	Action required for the trap
	trapGenClassification	The trap's product name
	trapGenSourceName	The trap's service
	trapGenEventID	The trap's event ID Will be *ffffffff (-1)* when there is no data.
	trapGenAlertType	The trap's alert type
	trapGenEventTimeStampWithOffsetFromUTC	Time when the trap occurred Format : YYYYMMDDHHMMSS.UUUUUU±OOO YYYYMMDD year, month, day HHMMSS hour, minute, second UUUUUU microsecond ±OOO offset (in minutes) from UTC

6.4.3 Settings on Other Manufacturers' Management Consoles

Settings specific to the product will be necessary to display transferred traps on other manufacturers' management consoles.

For more information, either see the manuals for the specific console or inquire with its manufacturer.

6.5 Receiving Alerts from a Device on which NEC ESMPRO ServerAgentService cannot be installed

It is also possible to display notifications in NEC ESMPRO Manager's alert viewer from devices on which NEC ESMPRO ServerAgentService could not be installed.

Table 11. List of NEC ESMPRO Manager's Support Status

Managed Type	Required Work
VMware ESXi 6 (RAID-specific information)	- Standard support with NEC ESMPRO Manager.
SNMP trap from iLO	- Standard support with NEC ESMPRO Manager.
Others (notifications from unsupported devices)	- Standard support not offered, but display is possible when an alert definition file is created. See the following URL for more on the settings involved. The NEC support portal (Japanese): http://www.support.nec.co.jp/View.aspx?id=3150102015

VMware ESXi 6 is supported with NEC ESMPRO Manager Version 6.20 or later.

6.6 Lists of Notification Items

Each managed server sends a variety of alerts to NEC ESMPRO Manager when faults occur. See the following URLs for lists of the alerts sent by the servers.

Table 12. List of Notification Items

Component	URL	Overview
NEC ESMPRO ServerAgentService (Windows)	http://www.58support.nec.co.jp/global/download/index.html	A list of event items sent as notifications from NEC ESMPRO ServerAgentService (Windows).
NEC /ServerAgentService (Linux)	http://www.58support.nec.co.jp/global/download/index.html	A list of items sent as notifications from NEC ESMPRO ServerAgentService (Linux).
iLO	http://www.58support.nec.co.jp/global/download/index.html	A list of event items sent as notifications from iLO. Used when not using a VMware ESXi environment or NEC ESMPRO ServerAgentService.
Universal RAID Utility (Windows/Linux)	http://www.58support.nec.co.jp/global/download/index.html (*) Select your server in the website above.	A list of RAID-related event items sent as notifications from the Universal RAID Utility.
WBEM provider and CLI tool (VMware ESXi 6)	http://www.58support.nec.co.jp/global/download/index.html	A list of RAID-related event items in the VMware ESXi 6 or later environment, sent as notifications from the WBEM provider.

6.7 Express Report Service

Express Report Service is a service wherein hardware faults are detected as early as possible, and notifications are sent immediately to the maintenance center. For more information, see the related documentation, *Introducing the Notification Feature*.
When in the VMware ESXi 6 or later environment, see the related documentation, *Module Installation Procedures for Express Report Service (MG) for VMware ESXi-installed Equipment* and *The NEC ESMPRO Manager RAID System Administration Features Guide (VMware ESXi 5 or later)*.

It is possible to download *Module Installation Procedures for Express Report Service (MG) for VMware ESXi-installed Equipment* from the NEC support portal. See the following URL.

The NEC support portal:
http://www.58support.nec.co.jp/global/download/index.html

Chapter 7 **Configuration Management**

This is a description of items that can be managed using NEC ESMPRO Manager. They are broadly divided into three topics: items that can be managed using NEC ESMPRO Manager and NEC ESMPRO ServerAgentService; items that can be managed through direct communication between NEC ESMPRO Manager and VMware ESXi 6 or later; and items that can be managed without NEC ESMPRO ServerAgentService by connecting to iLO (for management with the Management Controller).

7.1 Manageable Items

The following are the items which can be managed by using NEC ESMPRO Manager and iLO, or NEC ESMPRO Manager and ESMPRO ServerAgentService.

Function Name		Description	ServerManager Ver6.30 or later		
			OS + iLO	**iLO + SAS Non-Service Mode**	**iLO + SAS Service Mode**
Hardware	Memory Bank	A feature to monitor garbled memory and to display physical information.	○	○	○
	Device Information	A feature to display device-specific information.	○	○	○
	CPU	A feature to monitor CPU failure and to display physical information and operational status.	○	○	○
System	CPU	A feature to display logical information of CPU and to monitor CPU utilization.	▲ Only information is displayed.	▲ No report feature	○
	Memory	A feature to display logical information of memory and to monitor its status.	▲ Only information is displayed.	▲ No report feature	○
I/O Device		A feature to display information of I/O devices (serial port, parallel port, keyboard, mouse, video, etc.).	×	○	○
System Environment	Temperature	A feature to monitor temperature inside the chassis.	○	○	○
	Fan	A feature to monitor fans.	○	○	○
	Power Supply	A feature to monitor power supply units.	○	○	○
Software		A feature to display information of services, driver, and OS.	×	○	○
Network		A feature to display information on network (LAN) and to monitor packets.	○	○	○
BIOS		A feature to display BIOS	○	○	○

	information.			
Storage	A feature to monitor storage devices such as HDD and controllers and to display the configuration information.	○	○	○
File System	A feature to display the file system configuration and to monitor its utilization.	×	▲ No report feature	○
Event log /Syslog Monitoring	A feature to monitor event logs on Windows OS and Syslog on Linux OS.	×	×	○
Server Monitoring	A feature to alive monitor the server with ping.	○	○	○

○ Supported

▲ Part of displayed items/features are supported.

× Not supported

7.2 System Management (ServerAgentService)

The following are the items which can be managed by using NEC ESMPRO Manager and NEC ESMPRO ServerAgentService.

7.2.1 CPU Monitoring

A server's CPU can be monitored using NEC ESMPRO Manager and NEC ESMPRO ServerAgentService.

7.2.1.1 Setting Items for CPU Monitoring

NEC ESMPRO ServerAgentService reports to NEC ESMPRO Manager when it detected the CPU load state exceeding the preset threshold. The state fluctuation of each CPU can be confirmed from Web Console of NEC ESMPRO Manager.

CPU Name	Each CPU, sum of CPU (CPU TOTAL)
Set Value	Abnormal threshold value, abnormal release value, warning threshold value, warning release value

By default, the above items are disabled in all CPU. Enable the monitoring targets and change the respective set values. The default value of each set value is 100%, 97%, 95%, and 92% from left.

Abnormality release value and warning release value are to reset abnormal state and warning state caused by exceeding abnormal and warning threshold value, when values fall below these release values. For example, in the case of default set value, CPU state turns warning when CPU utilization exceeds 95%, and warning state is released and turns normal when it falls below 92%.

7.2.1.2 How to Monitor CPU

By monitoring CPU load state, CPU utilization of each preset monitoring interval can be acquired. And the set value for the collected data can be selected from the table below.

Monitoring Target (Utilization)	**1 minute**, 5 minutes, 30 minutes, 1 hour, 1 day, 1 week
Monitoring Interval (second)	1, 2, 3, 4, 5, 6, **10**, 12, 15, 20, 30, 60

By default, "Utilization for 1 minute" and "10 seconds" are set, which means, CPU utilization rate is monitored for a minute with the interval of 10 seconds.

7.2.2 Memory Monitoring

Memory usage of the server can be monitored by using NEC ESMPRO Manager and NEC ESMPRO ServerAgentService.

7.2.2.1 Setting Items for Memory Monitoring

NEC ESMPRO ServerAgentService reports to NEC ESMPRO Manager when it detected the memory usage exceeding the preset threshold. The state fluctuation of each memory can be confirmed from Web Console of NEC ESMPRO Manager.

Monitoring Target	Physical memory, virtual memory, page file
Set Value	Error threshold value, error reset value, warning threshold value, warning reset value

By default, all the items are disabled. Enable the monitoring targets and change the set values upon necessity. Each default set value is calculated based on the total capacity of physical memory, virtual memory and page file. For example, error value is 95 % of total capacity, error reset value is 90% of total capacity, warning value is 85% of total capacity and warning reset value is 80% of total capacity. For details of each set value, refer to documents on NEC ESMPRO ServerAgentService.

7.2.2.2 How to Monitor Memory

Memory monitoring acquires the target memory usage by monitoring interval, and reports when it exceeds the above described set value. Settable value for the monitoring interval ranges from 1 to 32767. By default, it is set to “60 seconds”.

7.2.3 File System Monitoring

File system (in Windows, drive) usage of the server can be monitored by using NEC ESMPRO Manager and NEC ESMPRO ServerAgentService.

7.2.3.1 Setting Items for File System Monitoring

NEC ESMPRO ServerAgentService reports to NEC ESMPRO Manager when it detected the file system usage exceeding the preset threshold. The state fluctuation of each file system can be confirmed from Web Console of NEC ESMPRO Manager. Each default set value is calculated based on the size of each drive. For example, Error value is about 1% of total capacity and Warning value is about 10% of total capacity.

Monitoring Target	Each file system (drive)
Set Value	Error, Warning

7.2.3.2 How to Monitor File System

File system monitoring acquires the target file system capacity by preset monitoring interval, and reports when it exceeds the above described set value. Settable value for the monitoring interval ranges from 10 to 3600 (seconds).

By default, monitoring free space of File System is enabled and the monitoring interval is set to “60 seconds”.

7.3 System Management (VMware ESXi 6 or later)

By registering VMware ESXi 6 or later which cannot use ESMPRO ServerAgentService to ESMPRO

Manager, it becomes possible to display configuration information.

7.3.1 VMware ESXi 6 or later Monitoring

When VMware ESXi 6 or later is registered to ESMPRO Manager, the system management features are registered.

See the *ESMPRO Manager Version 6 Installation Guide* for more on how to register VMware ESXi 6 or later to ESMPRO Manager.

7.3.1.1 Referencing CPU Information

It is possible to confirm the VMware ESXi 6 or later CPU usage rate and name, etc., using ESMPRO Manager. It is possible to confirm the number of physical CPUs, the number of physical cores, whether hyperthreading is enabled, the CPU name and type, the clock cycles, and the usage rate for each logical CPU in the web console.

Threshold monitoring for CPU usage rates cannot be performed.

You can confirm the CPU usage rate for the host (VMware ESXi 6 or later). You cannot do so for any virtual machines.

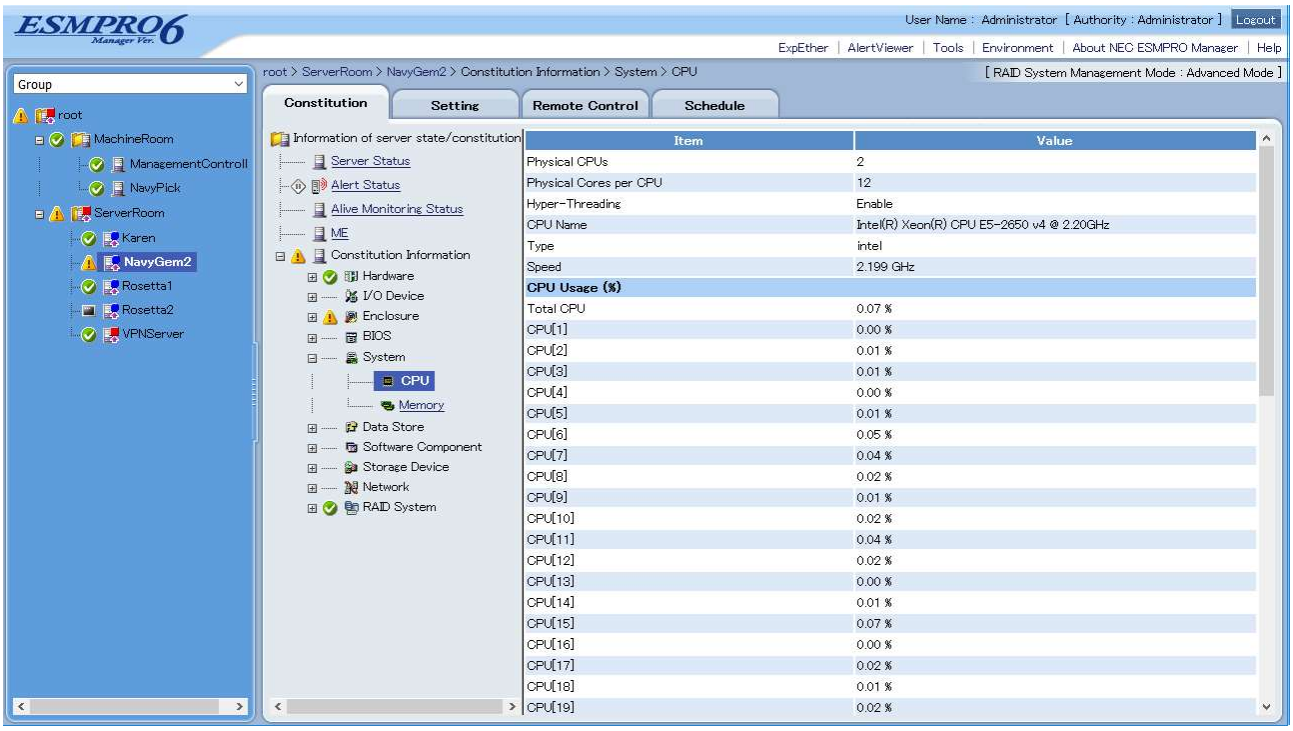


Figure 13. “System” → “CPU” in the Web Console

7.3.1.2 Referencing Memory Information

It is possible to confirm the amount of memory used for VMware ESXi 6 or later using ESMPRO Manager. It is possible to confirm the total amount of physical memory, the amount of available memory, and the amount in use, in the web console.

CAUTION Threshold monitoring cannot be performed.

CAUTION You can confirm memory information for the host (VMware ESXi 6 or later). You cannot confirm amounts of memory used by any virtual machines.

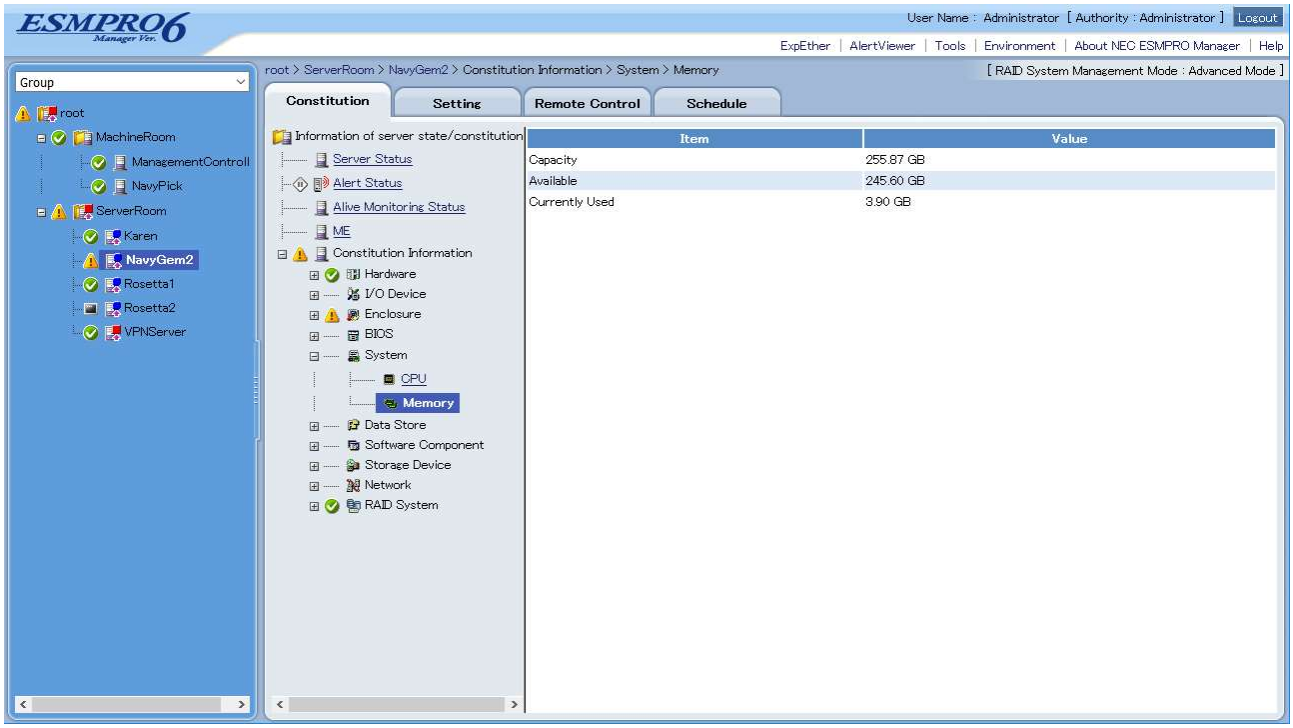


Figure 14. "System" → "Memory" in the Web Console

7.3.1.3 Referencing Data Stores

It is possible to confirm information for data stores managed by VMware ESXi 6 or later using NEC ESMPRO Manager. It is possible to confirm the data store name, capacity, available capacity, and the ratio of available capacity, in the web console.

CAUTION Threshold monitoring cannot be performed.

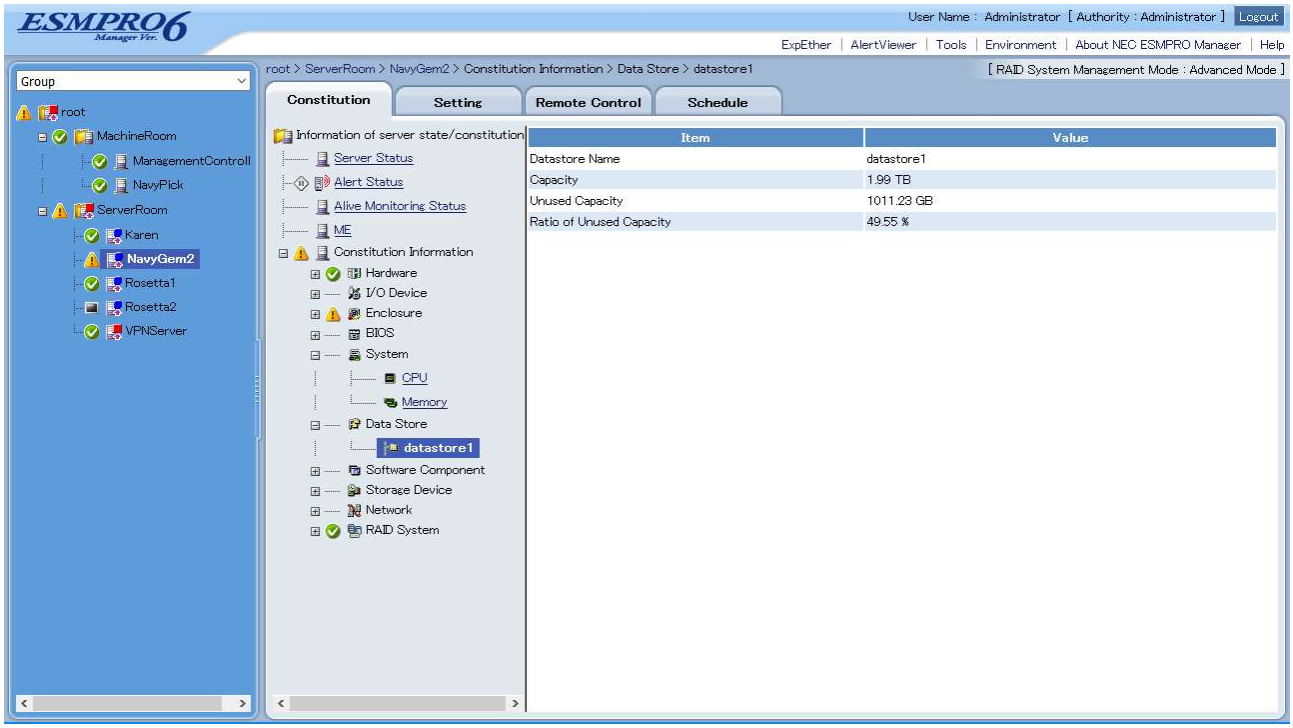


Figure 15. “Data Stores” in the Web Console

7.3.1.4 Referencing Software Information

It is possible to reference information for software managed by VMware ESXi 6 or later using ESMPRO Manager. It is possible to reference the VMware ESXi 6 or later management information (description, version, manufacturer, and release date), the BIOS information and the driver information in the web console.

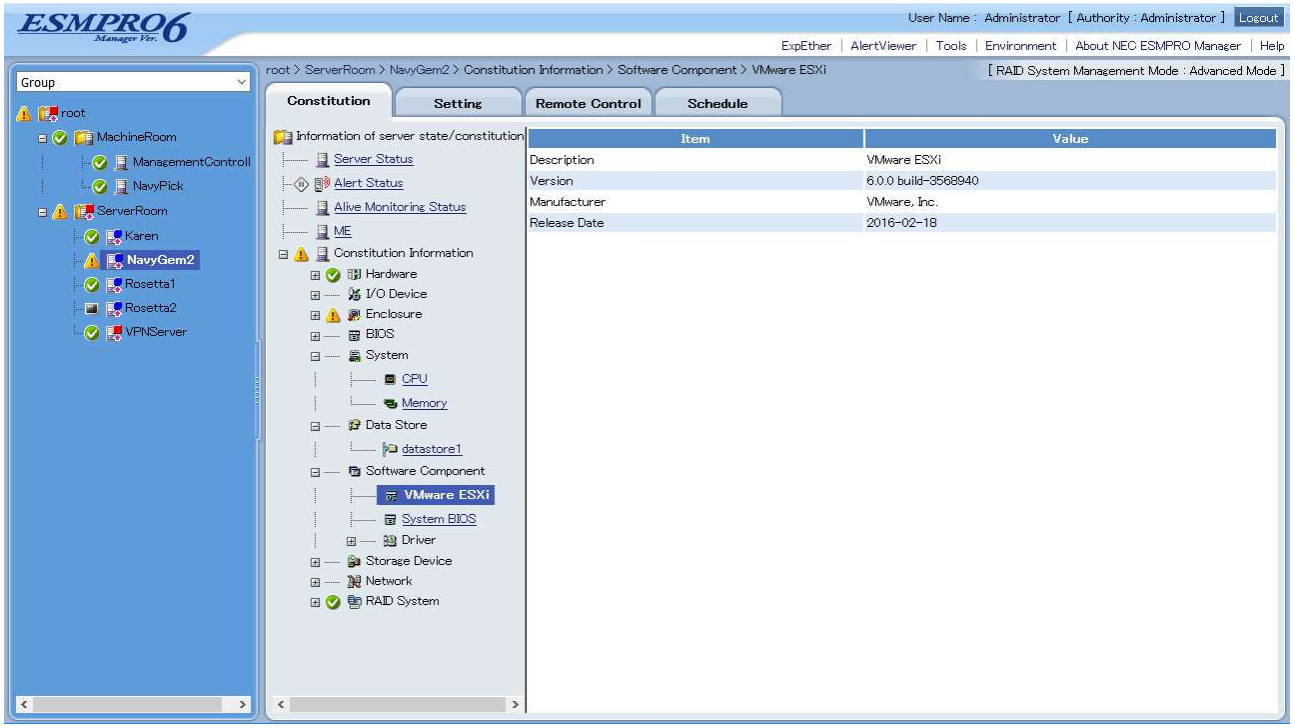


Figure 16. “Software Components” → “VMware ESXi” in the Web Console

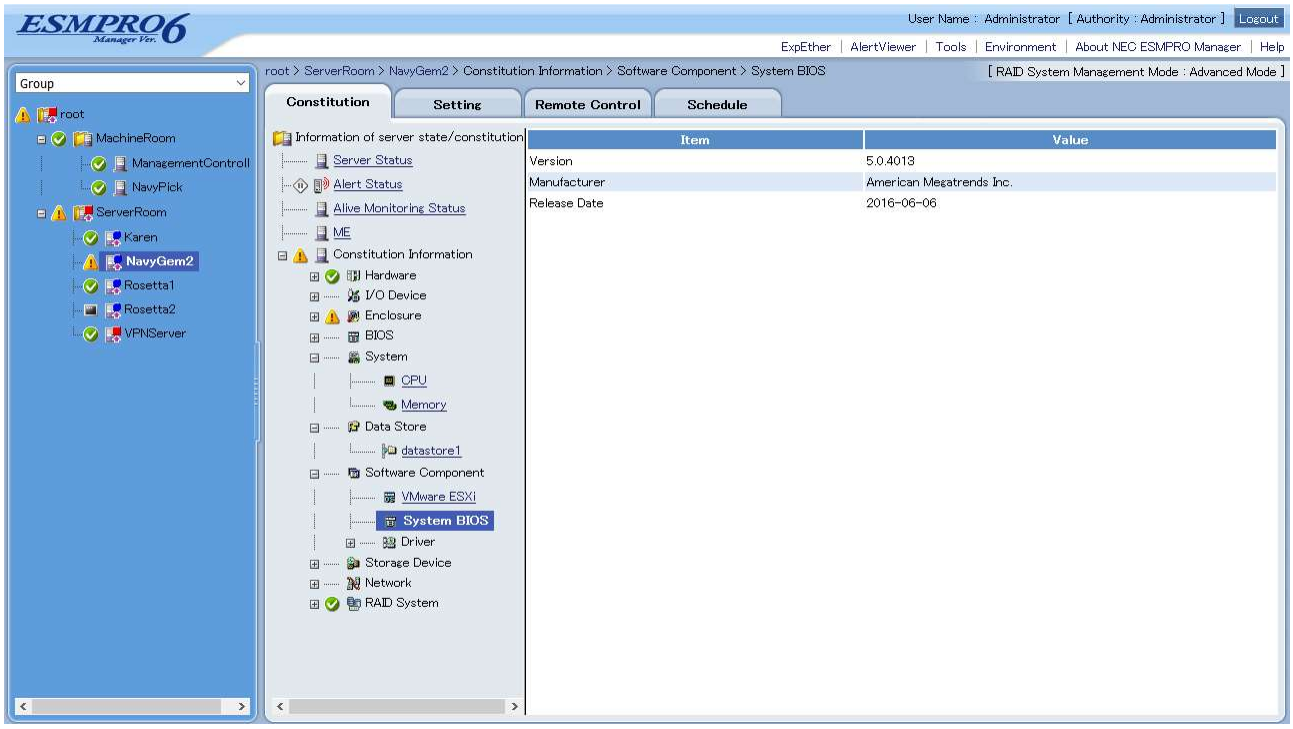


Figure 17. “Software Components” → “System BIOS” in the Web Console

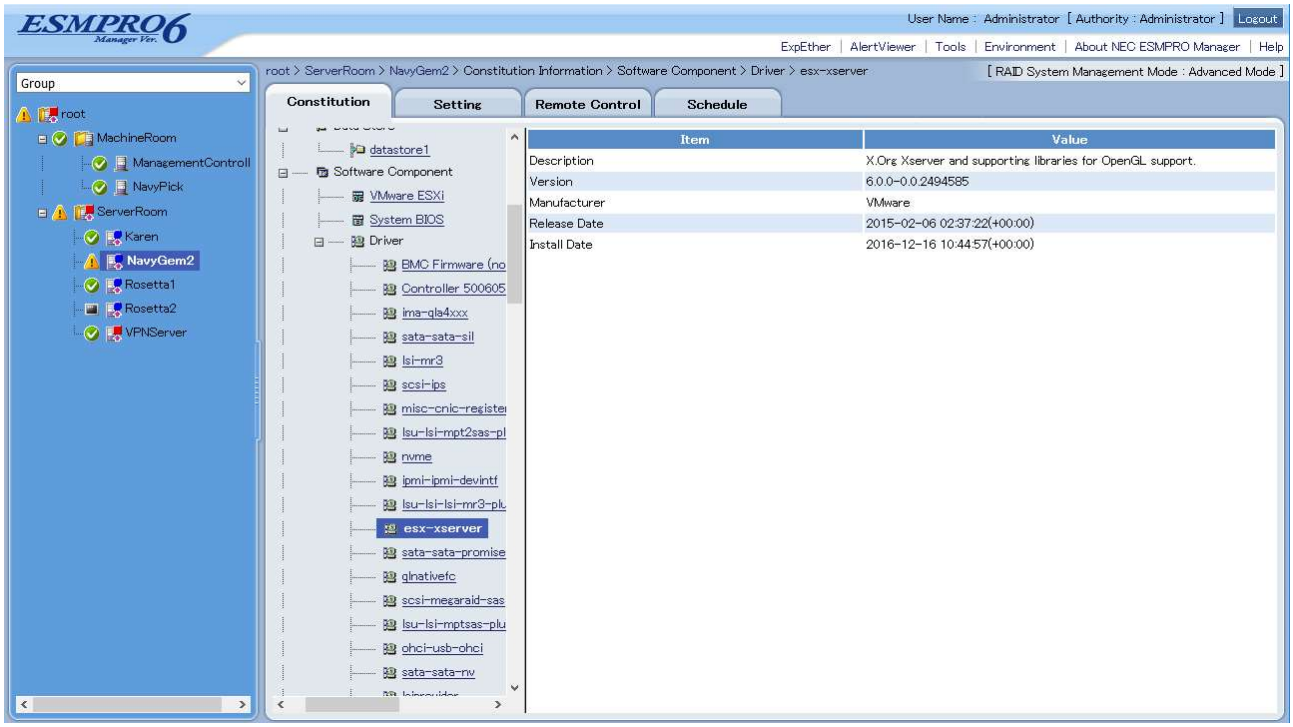


Figure 18. “Software Components” → “Drivers” in the Web Console

7.3.1.5 Referencing Storage Device Information

It is possible to confirm information for devices such as hard disks and CD-ROMs that connect to VMware ESXi 6 or later with a SCSI or IDE interface using NEC ESMPRO Manager.

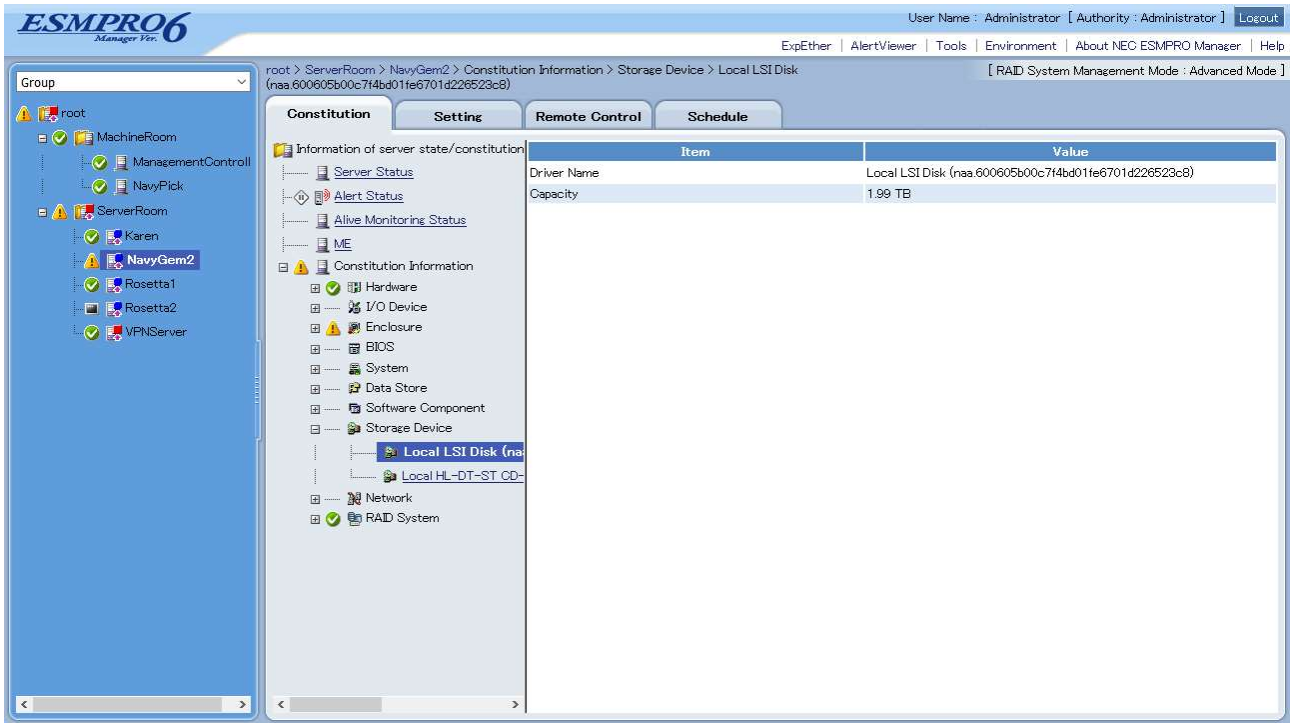


Figure 19. “Storage Devices” in the Web Console

7.3.1.6 Referencing Network Information

It is possible to confirm information for networks managed with VMware ESXi 6 or later using NEC ESMPRO Manager. It is possible to confirm the type, status, MTU, physical (MAC) address and speed (transfer speed) for NICs that connect to VMware ESXi 6 or later in the web console.

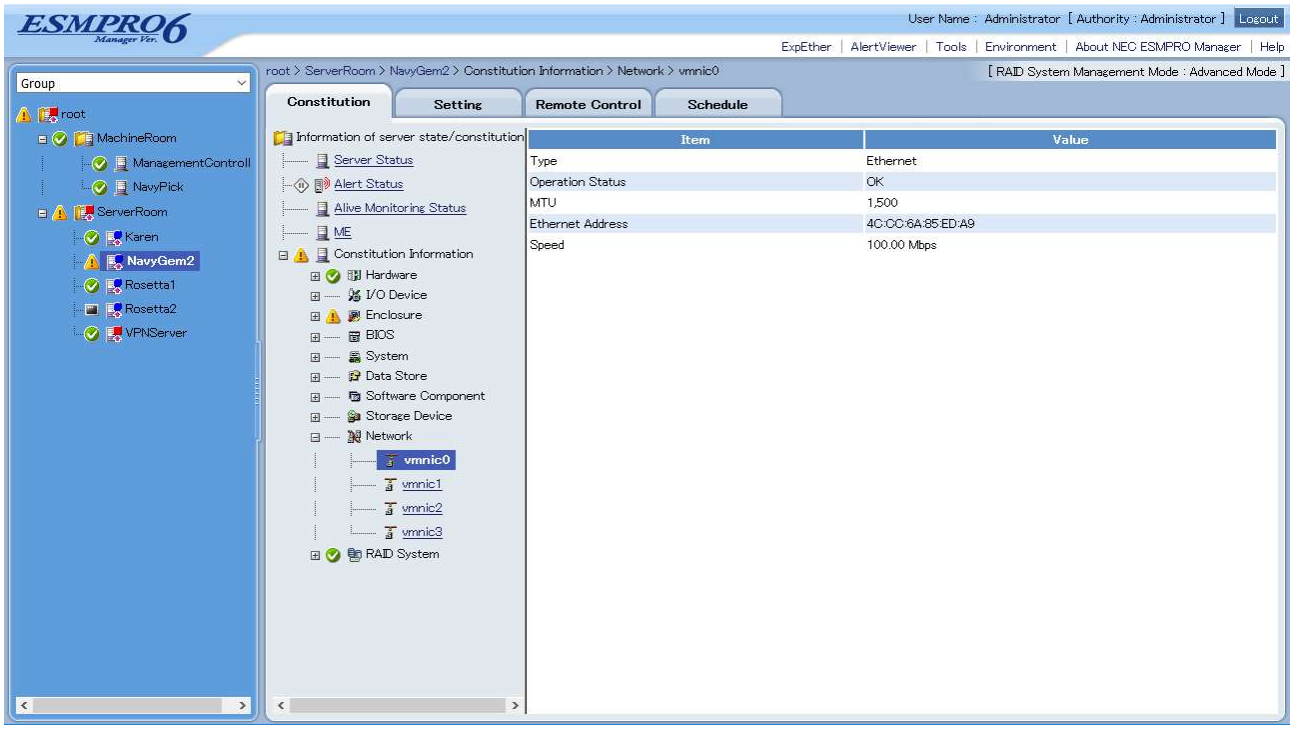


Figure 20. “Networks” in the Web Console

7.4 Management with the Management Controller

The following is a list of items that can be managed by connecting NEC ESMPRO Manager to iLO, for devices on which NEC ESMPRO ServerAgentService is either not installed or is installed but not powered on.

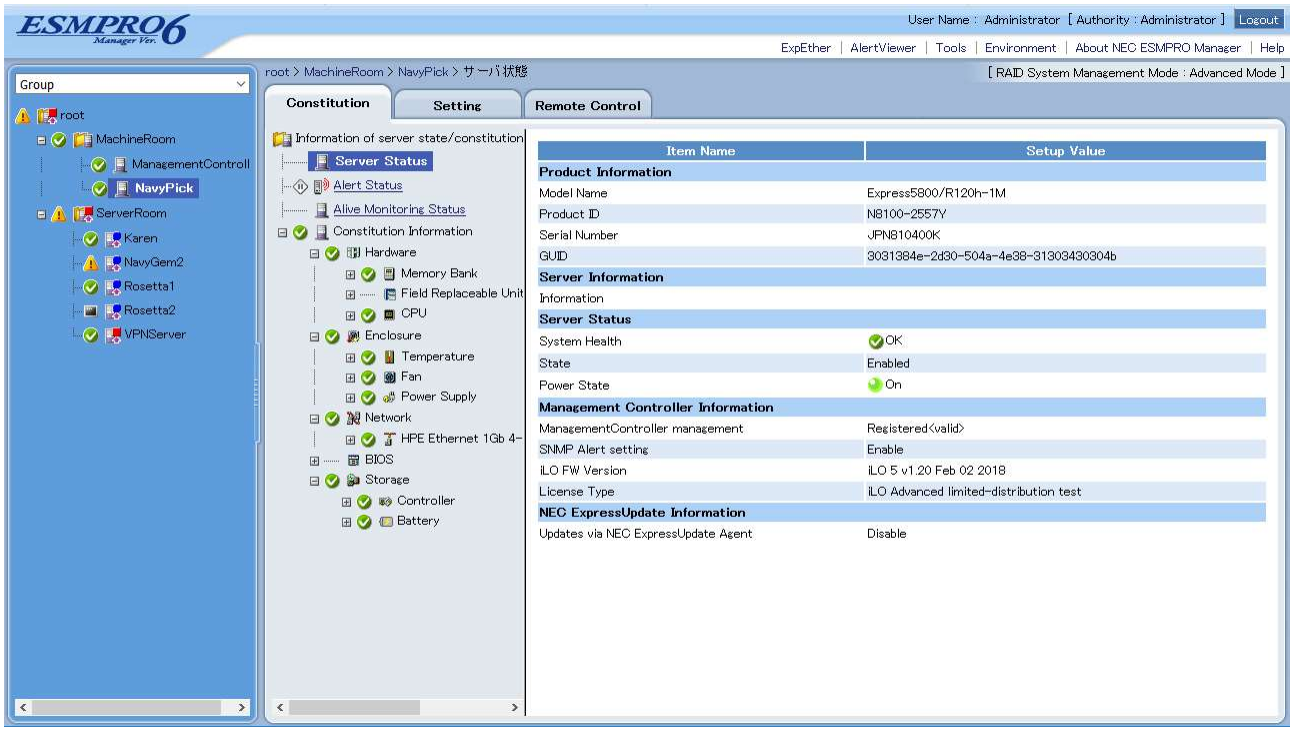


Figure 21. NEC ESMPRO Manager Web Console

7.4.1 Server Status

1. System Health
   Displays the status of the system health for the managed server.
   The green icon is displayed while the managed server is operating normally.

2. Power Status
   Displays the status of the power for the managed server.

7.4.2 Configuration Information

1. Hardware
   Displays detailed information (from the hardware perspective) specific to memory banks, device information and CPUs.
2. System Environment
   Displays detailed information specific to temperature, fans, and power supplies.
3. BIOS
   Displays detailed information specific to system BIOS.
4. Network
   Displays detailed information specific to the network (LAN).
5. Storage
   Displays detailed information specific to storage devices such as HDD and controllers.

Chapter 8 **Remote Control**

By using the NEC ESMPRO Manager, the power control of the management target servers can be remotely executed.

8.1 Remote Power Control

The following operations can be executed for the management target servers. When selecting a group from the tree view, the remote power control can be executed simultaneously for the management target servers under the group.

Table 13. Remote power control

Operation	Description
Power ON *	It executes the power ON of the management target server which is in the power OFF status. If the management target server is in sleep mode, the status can be recovered by performing this operation.
Reset *	It executes the forced reset.
Power OFF	It executes the forced power OFF.
OS Shutdown	It shuts down the OS. Shutdown may not be properly executed as it does not wait for the running applications and services to stop. Selecting “OS Shutdown Reboot*” can perform rebooting after the shutdown.
NMI	It behaves in the same way as when the Non-Maskable Interrupt (NMI) is generated.
Clear IML	It clears the HW Log (IML) in the iLO.
Chassis Identify	It executes the chassis identification. The ID LED of the server blinks in blue while the chassis identification is executed by the NEC ESMPRO Manager.

*: Specifying the One-Time Boot Device allows you to change the Boot device for the next startup.

8.2 iLO Information

When “Management Controller” is registered as “Enable” on the iLO-installed server at the time of registering the management target servers, the iLO information of the management target server can be displayed and collected.

Table 14. iLO information

Function	Description
Displaying IML	It displays the HW log (IML).
Storing IML	It stores the above data in the NEC ESMPRO Manager. Data can be downloaded from the screen after storing the data. The stored file can be checked and deleted from “Tools” → “IML Information Backup File List”.

8.3 Logging in to the iLO

When “Management Controller” is registered as “Enable” at the time of registering the management target servers on the iLO-installed server, you are redirected from the NEC ESMPRO Manager to Web Console of iLO.

Chapter 9 **Settings**

The connection setting of the management target server and the NEC ESMPRO ServerAgentService setting can be performed remotely.

9.1 Connection Setting

The content of the connection setting to the management target servers can be changed. Press “Check Connection” button after making a change. Refer to the Online Help for the details about each item.

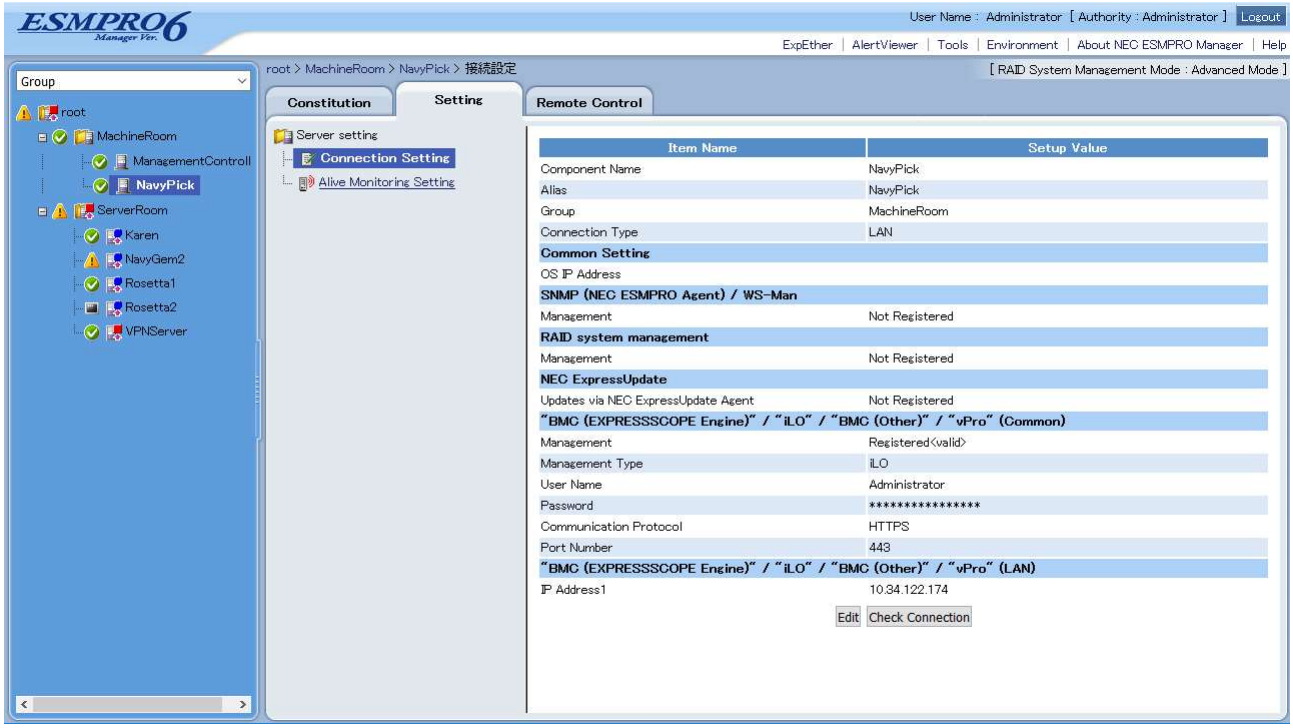


Figure 22. Connection setting screen

9.2 NEC ESMPRO ServerAgentService Setting

This setting is available when using NEC ESMPRO ServerAgentService.

9.2.1 CPU

This setting enables to monitor utilization of each and whole CPU.

Table 15. NEC ESMPRO ServerAgentService Setting –CPU-

Item Name		Descriptions
Reading Period	Utilization Rate	It specifies the type of CPU utilization (criterion time of CPU utilization) to be monitored.
	Sample Interval (Seconds)	It specifies monitoring intervals. Changing the interval resets the CPU utilization calculated until the time it is changed, and starts new calculation of the utilization.(NEC ESMPRO ServerAgentService Ver1.1 or later)
Threshold	Monitoring	It enables/disables the monitoring of CPU utilization rate.
	Fatal %	It sets the upper limit to determine errors.If this value is exceeded, an error alert will be sent.
	Reset (Error) %	It sets the value to reset the determination of abnormality.If falling

		below this value, a warning-level alert will be sent to notify it is recovered from error level to warning level.
	Warning %	It sets the upper limit to determine warnings.If this value is exceeded, a warning-level alert will be sent.
	Reset (Warning) %	It sets the value to reset the determination of warning.If falling below this value, a normal-level alert will be sent to notify it is recovered from abnormal level to normal level.

9.2.2 Memory

This setting enables to monitor memory usage amount of physical memory, virtual memory, and page file, respectively.

Table 16. NEC ESMPRO ServerAgentService Setting –Memory-

Item Name		Descriptions
Reading Period	Sample Interval (Seconds)	It specifies monitoring intervals.
Threshold	Monitoring	It enables/disables each memory monitoring item.
	Fatal (MB)	It sets the upper limit to determine errors. If this value is exceeded, an error level alert will be sent.
	Reset (Error) (MB)	It sets the value to reset the determination of error.If falling below this value, a warning level alert will be sent to notify it is recovered from error level to warning level
	Warning (MB)	It sets the upper limit to determine warnings.If this value is exceeded, a warning-level alert will be sent.
	Reset (Warning) (MB)	It sets the value to reset the determination of warning.If falling below this value, a normal-level alert will be sent to notify it is recovered from warning level to normal level.

9.2.3 File System

This setting enables to monitor usage amount of each file system.

Table 17. NEC ESMPRO ServerAgentService Setting –File System-

Item Name		Descriptions
Reading Periods	Sample Interval (Seconds)	It specifies monitoring intervals.
Threshold	Monitoring	It enables/disables the monitoring of each storage.
	Fatal (MB)	It sets the upper limit to determine errors.If falling below this value, an error level alert will be sent.
	Warning (MB)	It sets the upper limit to determine warnings.If falling below this value, a warning-level alert will be sent.

9.3 Alive Monitoring Setting

Periodical monitoring and alert registration at the time of the non-response/recovery detection of the management target servers of the NEC ESMPRO Manager are configured. See “NEC ESMPRO Manager Server Alive Monitoring Feature” described in Associated Documents for more information on the alive monitoring feature.

Table 18. Alive Monitoring Setting

Item Name		Descriptions
Ping	Alive Monitoring	It configures whether to periodically monitor the operation

		status of the management target servers. It is set to “Disable” by default. If set to “Enable”, it conducts the alive monitoring by Ping and if no response is sent from the management target server, the icon of the tree view will be displayed as “?”.
	Register Alert Upon No Response from Server	It is enabled when the “Watch Status” is “Enable”. It is set to “Disable” by default. If set to “Enable”, it registers the alert to the AlertViewer when no response is sent from the management target server and when it recovers from the status.
WS-Man	Watch Status	It configures whether to regularly monitor the status of the management target servers by using the WS-Management communication.
	Register Alert Upon No Response from Server	It is enabled when the “Watch Status” is “Enable”. If set to “Enable”, an alert is registered to the AlertViewer when no response through the WS-Management communication is detected and when it recovers from the status.
Monitoring Interval	Monitoring Interval	This setting is available when “Watch Status” or “Alive Monitoring” is enabled. This is set to 1 minute by default. Set the monitoring interval to check status of target devices.
Alert Restraint	-	This setting is enabled when “Watch Status” and “Register Alert Upon No Response from Server” is enabled, or “Alive Monitoring” or “Register Alert Upon No Response from Server” is enabled. When an alert detecting no response from the service or the management target server/an alert when detecting the recovery is registered intermittently, it can be restrained by appropriately setting the retry count value. Alternatively, by setting the schedule, the alert registration at detection of non-response/recovery can be restrained. If the periodical shutdown of the management target server is executed due to the operational reason for example, the alert sending can be restrained by the prior schedule setting.
	Max Retries on Error	It configures the retry count until the alert is registered when there is no response detected. It is set to “0” by default and registers an alert upon detecting non-response from the service or the management target server. If “2” is set, it will register an alert after detecting the non-response consecutively twice from the service or the management target server. The value can be set in a range from 0 to 100.
	Schedule Form	It configures the schedule form from the list registered in the Manager. “Register Always” is set by default. At the start-up, the name of the schedule form set to the management target server is displayed, but the following cases are regarded

		as “Send Always”. ・When the Schedule Form is not configured. ・When the configured Schedule Form does not exist.

- If the Schedule Form configured on the multiple target servers is deleted, the management target servers on which the form is configured will be regarded as “Register Always”.
- If the content of the Schedule Form configured on the multiple target servers is changed, the schedule setting of all the management target servers on which the form is configured will be changed.

Chapter 10 IML Monitoring Feature

This chapter describes the IML monitoring feature of NEC ESMPRO Manager.

10.1 Description

This feature regularly collects IML registered in iLO of the management target server. After detecting the IML registered when a failure occurs and is restored, it registers an alert to the AlertViewer.
This feature is always enabled when the iLO-installed server is registered in the management target iLO.

If Express Report of an IML event is performed in the environment where Express Report Service (MG) is used, it sends the information of IML when a fault detected by this feature occurs. Therefore, the timing for Express Report depends on when the IML is detected by this feature. If you want to detect IML within a certain amount of time, you can adjust the time. For details, refer to “10.2 Settings”.

10.2 Settings

The IML monitoring feature makes it possible to set the regular monitoring interval and the number of threads to be monitored. Refer to this chapter to configure settings in various cases, such as detecting a fault within a certain amount of time.

Table 19 shows the default values and the available setting ranges of each setup item. For how to configure the settings, refer to “How to Change IML Monitoring Settings” on the next page.

Table 19. Default Value & Settable Range of IML Monitoring Settings

Setup Item	Default Value	Settable Range
Regular monitoring interval	5 minutes	5 to 100 minutes
Number of threads to be monitored	1	1 to 15

When six or more iLO-installed servers are managed, the monitoring of the IMLs for those managed servers may not complete within 5 minutes, which are the default value of the regular monitoring interval. In order to complete the monitoring of all the IMLs within the regular monitoring interval, change the regular monitoring interval or the number of threads to be monitored to meet the following calculation formula:

Calculation Formula:
Number of the iLO-installed servers to be managed≦Regular monitoring interval×Number of thread to be monitored

If the formula is not met, the monitoring of the IMLs for the managed servers may not complete within a regular monitoring interval. Even in such a case, however, the monitoring of the IMLs continues until it completes.

Table 20 describes the examples of settings to meet the formula:

Table 20. Examples of IML Monitoring Settings

Number of iLO-installed servers to be managed	Regular Monitoring Interval	Number of threads to be managed
10	5 minutes	2
30	5 minutes	6
50	5 minutes	10
100	7 minutes	15

If you increase the number of threads to be monitored, the CPU usage rates and the amounts of memory used also increase. According to your current system environment, extend the regular monitoring interval by decreasing the number of threads to be monitored.
Table 21 describes the examples of increases in CPU usage rates and the amounts of memory used. (The increase rates are calculated according to one thread.)

Table 6 Examples of Increases in CPU Usage Rate & Amount of Memory Used

Number of threads	Average usage rate of CPU	Maximum usage rate of CPU	Amount of memory used
1	Criterion value	Criterion value	Criterion value
3	+2.8%	+7.5%	+17MB
5	+2.7%	+17.8%	+18MB
10	+2.9%	+29.0%	+56MB
15	+4.3%	+38.7%	+93MB

This chapter is based on the following system environment. The results may vary according to your system environment.
OS : Windows Server 2012 R2 Standard
CPU : Intel(R) Xeon(R) CPU E3-1275L v3 @ 2.70GHz
Memory: 4.00GB

How to change IML monitoring settings

1. Log in to the management server as a user with administrative privilege.
2. Click “Control Panel”, “Administrative Tools” and “Services” to stop the services in the following order.
   1) ESMPRO/SM Web Container
   2) ESMPRO/SM Event Manager
   3) ESMPRO/SM Base AlertListener
   4) ESMPRO/SM Common Component

3. Open the setup file below:
   <*Installation path of NEC* ESMPRO Manager>\ESMWEB\wbserver\webapps\esmpro\WEB-INF\service\imlmonitoring\ImlMonitoring.properties

4. Save the file after changing the number of threads to be monitored and the regular monitoring interval described on the file.
   <How to specify>
   IML_MONITORING_THREAD_COUNT = {Number of threads to be monitored}
   IML_MONITORING_INTERVAL_MINUTES = {Regular monitoring interval}
   {Number of threads to be monitored} : Specify a value between 1 and 15 (one-byte figure).
   {Regular monitoring interval} : Specify a value between 5 and 100 minutes (one-byte figure).
   Example: Specify 5 for the number of threads to be monitored and 10 minutes for the regular monitoring interval, respectively.
   IML_MONITORING_THREAD_COUNT=5
   IML_MONITORING_INTERVAL_MINUTES=10

5. Click “Control Panel”, “Administrative Tools” and “Services” to start the services in the following order.
   1) ESMPRO/SM Common Component
   2) ESMPRO/SM Base AlertListener
   3) ESMPRO/SM Event Manager
   4) ESMPRO/SM Web Container

Chapter 11 External Interface

11.1 NEC ESMPRO Manager command line interface

NEC ESMPRO Manager Command Line Interface provides a command set which enables to control the management target server by the command line from the server on which NEC ESMPRO Manager behaves. The command set covers a part of the functions which are executable by using a Web browser.
Refer to NEC ESMPRO Manager Ver. 6 Command Line Interface for details.

Additionally, there is an unsupported command set for a management of the iLO-installed server. See NEC ESMPRO ServerManager RESTful API described below:

11.2 NEC ESMPRO Manager RESTful API

NEC ESMPRO Manager RESTful API is executed by issuing an http request from REST client to a device in which NEC ESMPRO Manager runs.
Refer to NEC *ESMPRO Manager Ver.6 User's Guide RESTful API Reference* for details.
The following is an execution example of API to collect the status of a component registered in NEC ESMPRO Manager.

1. Collect a list of components registered in NEC ESMPRO Manager.

URL:

GET /esmpro/api/components

Request:

None

Response Body:

Key		Description
components		Array of information on management for each component Type: array
	guid	GUID of device to be managed Type: String (string length of a GUID, one-byte alphabetic character, hyphen '-') Fixed to 35 characters
	bmcIpAddress	IP address of management controller. A null character "" is returned, unless an IP address for managing the management controller is set. Type: String Four sets of figures between 0 and 255 are represented in comma-delimited format.
	osIpAddress	IP address of OS of component. A null character "" is returned, unless an IP address for managing the component is set. Type: String Four sets of figures between 0 and 255 are represented in comma-delimited format.
	serverId	ID of the component managed by ESMPRO/SM Type: Integer

Example:

Request
GET /esmpro/api/components Cookie: JSESSIONID=206C9F1D25E7AB9E1F1AFAA8AC51B083 X-ESMPRO-API-Version:1.0

Response
HTTP 1.1 200 OK X-ESMPRO-API-Version:1.0 Content-type : application/json; charset=utf-8 { "components": [{ "guid": "5f3cc680-cf1b-11e0-8001-00255cc64b2e", "bmcIpAddress":"192.168.1.1", "osIpAddress":"10.34.123.1", "serverId":1 },

```
    {
      "guid": "5f3cc680-cf1b-11e0-8001-001234567890",
      "bmcIpAddress":"192.168.1.2",
      "osIpAddress":"",
      "serverId":2
    }
  ]
}
```

2. Collect the status of the component by specifying the GUID collected above.

URL:

GET /esmpro/api/components/server/server-status/*{guid}*

Request:

None

Response Body:

Key	Description
status	Status of component Type: Integer 0: NO_MONITORING (Unmonitored) 1: NORMAL (Normal) 2: UNKNOWN (Unclear, network error) 3: DC-OFF, POST, OS Panic 4: WARNING (Warning) 5: ERROR (Fault)

Example:

Request
GET /esmpro/api/components/server/server-status/5f3cc680-cf1b-11e0-8001-00255cc64b2e Cookie: JSESSIONID=206C9F1D25E7AB9E1F1AFAA8AC51B083 X-ESMPRO-API-Version:1.0

Response

HTTP 1.1 200 OK
X-ESMPRO-API-Version:1.0
Content-type : application/json; charset=utf-8
 	
{
"status":1
}

Appendix A Log Collection

This appendix describes how to collect logs in an event of an issue occurred when NEC ESMPRO Manager or NEC ESMPRO ServerAgentService are running.

1. NEC ESMPRO Manager

The following two types of logs need to be collected.

- Log collected by logging in the management server (collectm)
- Application log collected on WebConsole.

The methods of how to collect logs are described below.

Log collected by logging in the management server (collectm))

1. Log in to a management server as a user with administrative privilege.
2. Execute collectm.exe located in the following folder.
   *<*Installation path of NEC ESMPRO Manager*>\esmsm\collectm\collectm.exe
3. smlog folder is created. The log is stored under the folder.

A method of application log collection

Go to “About NEC ESMPRO Manager” and select “Application Log” tab to collect the log. The application log is a log that records communication with the management target servers and events triggered by operations or tasks performed by the operator, and is sorted by the date/time. Clicking the item name allows you to sort out the list by the item. Clicking the “Download” allows you to download the application log and the other information on NEC ESMPRO Manager. The maximum number of application logs can be modified by selecting “Environment Setting” and “Option Setting”. When the number of logs collected surpasses the maximum number, it deletes from oldest log and records a new log.

Follow the steps below when log-in to the WebConsole is failed, and the application logs cannot be collected.

1. Log in to the management server as a user with administrative privilege.
2. Click “Control Panel”, “Administrative Tools” and “Services” to stop the services by the following order.
   1) ESMPRO/SM Web Container
   2) ESMPRO/SM Event Manager
   3) ESMPRO/SM Base AlertListener
   4) ESMPRO/SM Common Component
3. <*Installation path of NEC ESMPRO Manager*>¥
   ESMWEB\wbserver\webapps\esmpro\WEB-INF\service
   Collect the file stored under the “service” folder.
4. Click “Control Panel”, “Administrative Tools” and “Services” to start the services by the following order.
   1) ESMPRO/SM Common Component
   2) ESMPRO/SM Base AlertListener
   3) ESMPRO/SM Event Manager
   4) ESMPRO/SM Web Container

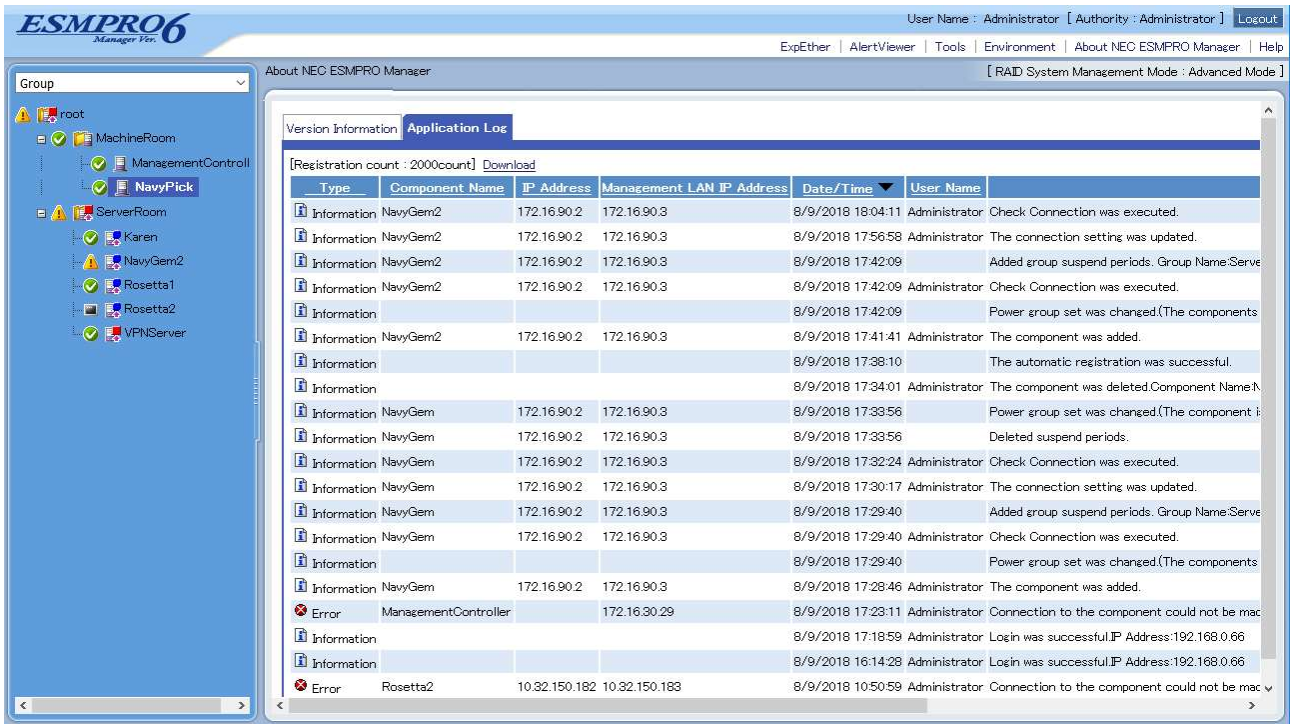


Figure 23. Application Log

2. NEC ESMPRO ServerAgentService

<Managed machines (Windows)>

1. Log in as a user with administrator privilege.
2. Execute collect.exe stored in %esmdir%\tool.
   The log folder is created, and the data is stored under the folder. For details, refer to readme.txt stored under %esmdir%\tool. When a log folder is already placed in the current folder in which collect.exe exists, the folder needs to be either deleted or renamed.
3. Zip the created log folder and collect the zipped file.

In the case a failure occurs on execution of collect.exe (Windows)
Refer to the following phenomena and workarounds.

Table 22. Workaround in the case a failure occurs during log collection (Windows)

Phenomenon	Workaround
A message, "Cannot access xxx.txt." (e.g., Applicat.txt, Security.txt, or System.txt) is output to command prompt during COLLECT Log collection.	This occurs when event log size is big. COLLECT collects event logs also in text format, and when the size is too big, a creation of xxx.txt takes longer time. In such a case, an error message, “Cannot access xxx.txt.” may be output.
An application error occurs when running eventlog.exe during COLLECT Log collection.	A known issue of COLLECT. The correction modules for known issues are available in currently published COLLECT.Obtain the latest COLLECT (*) and collect information.
The file size of registry information keeps on increasing during COLLECT Log collection.	A known issue of COLLECT. The correction modules for known issues are available in currently published COLLECT.Obtain the latest COLLECT (*) and collect information.
The following appears during COLLECT Log collection and the process stops. =====Error Contents===== Command : logfile.exe collect.inf log\collect.inf Command : cmd.exe /C move Errorinf.log log\Errorinf.log The process cannot access the file.It is being used by other process.	This is the waiting state for the completion of collection due to reasons such as the log file size is big. Wait until the collection completes. COLLECT Log collects various logs to utilize them for various inspections. It may be taking time for collection of logs not directly relevant to the failure inspection you are performing. When it took too long for log collection and the process was halted, even COLLECT Logs in the middle of collection may be inspectable.In such a case, contact NEC customer support center with the following attachments: Error message contents Collected COLLECT Logs errorinf.log stored in the same folder as the executed Collect.exe
The screen remains COLLECT END and does not proceed to the next during COLLECT Log collection.	This is the waiting state for the completion of collection due to reasons such as the log file size is big.Wait until the collection completes. COLLECT Log collects various logs to be utilized for various inspections. It may be taking time for collection of logs not directly relevant to the failure inspection you are performing. When it took too long for log collection and the process was halted, even COLLECT Logs in the middle of collection may be inspectable.In such a case, contact NEC customer support center with the

	following attachments: Error message contents Collected COLLECT Logs errorinf.log stored in the same folder as the executed Collect.exe

(*) http:/www.support.nec.co.jp/View.aspx?id=3140100402

<Managed machine (Linux)>

1. Log in as a root user.
2. Navigate to any directory.
3. Execute the following command.
   # tar czvf ntagent.log.tgz /opt/nec/esmpro_sa/log/ntgaent.*
4. Execute collectsa.sh.
   # /opt/nec/esmpro_sa/tools/collectsa.sh
   Collect collectsa.tgz and tagent.log.tgz files which are created in the current directory.

In the case issues occur during operation of collectsa.sh (Linux)
If fault information collection tool (collectsa.sh) does not operate (terminate) correctly, attach the collected information and contact NEC customer support center.

1. Close the fault information collection tool (collectsa.sh).
   1). Press <Ctrl>+<C> keys on the terminal on which the fault information collection tool (collectsa.sh) is operating.
   2). Confirm that the fault information collection tool (collectsa.sh) is closed.
   # ps aux | grep collectsa.sh |grep -v grep
   If the following is displayed, collectsa.sh runs in the background.
   #root 9913 0.0 0.4 4196 1124 pts/0 T 9:46 0:00 /bin/bash ./collectsa.sh
   3). In this case, terminate the process.
   # kill -9 {pid}
   (e.g.) # kill -9 9913
2. Compress “collectsa” directory created in the current directory in tgz format.
   # tar czvf collect_dir.tgz collectsa/
3. Collect the compressed file.

Revision History

Revision	Issue Date	Contents
1.1e	Sep 28, 2018	New document