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FUJITSU Software Infrastructure Manager
Infrastructure Manager for PRIMEFLEX
Operating Procedures for General Monitoring

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FUJITSU LIMITED

Modification History		
Edition	Issue Date	Modification Overview
01	May, 2021	First edition
02	December, 2021	Corrected "A.1 The Functions list of the node type "Server"" Corrected "2.3.3. Creating OID configuration file"
03	August, 2022	Corrected "A.1 The Functions list of the node type "Server""

This document describes the operating procedures for the basic monitoring of the nodes by registering in ISM devices are enable of SNMP, ICMP or IPMI communication, and are not listed in "Support Matrix" in Fujitsu Software Infrastructure Manager.

Hereinafter, "Infrastructure Manager" is referred to as "ISM". Also, the basic monitoring function using SNMP is called “General SNMP Monitoring”, the basic monitoring function using ICMP (PING commands) is called "General PING Monitoring", and the basic monitoring function using IPMI is called "General IPMI Monitoring."

For the details and abbreviations used in this document, refer to the manuals listed below.

- User's Guide
- Operating Procedures
- Glossary
- Support Matrix

Note

- General SNMP Monitoring depends on the SNMP communication function of the target device. Before using this function, check the status of SNMP communication of the target device.

- General PING Monitoring depends on the result for ICMP (PING commands) of the target device. Before using this function, check the communication of the target device using ICMP (PING commands).
- General IPMI Monitoring depends on the IPMI communication function of the target device. Before using this function, check the status of IPMI communication of the target device.
- General SNMP Monitoring, General PING Monitoring, and General IPMI Monitoring are not available in Essentials mode.

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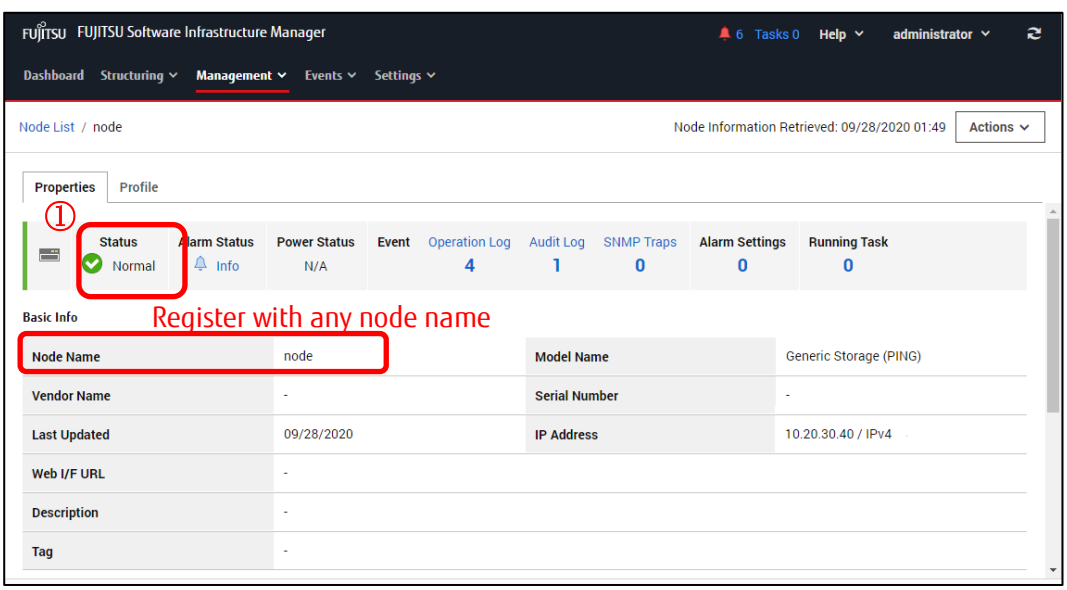
1. General PING Monitoring

1.1. Overview

General PING Monitoring can retrieve the connection status with the device and displays the status. The following figure shows the layout of the Details of Node screens.

1. Device status (Normal/Error) and alarm notification in case of error



Item	Definition for Information Retrieval
Status	Displays the results for communication checked by ICMP (PING commands). If the results are ok the status is "Normal," if not, the status is "Unknown."

Note

- N/A is displayed for Power Status.

1.1.1. Requirements for the monitoring target

The following list is the requirements for the monitoring target with General PING Monitoring.

Item	Description
Devices	Devices associate to servers, storages, switches, and facilities
Communication Protocol	ICMP

1.1.2. How to use

General PING Monitoring uses ICMP (PING commands) to retrieve the status from the monitoring target.

The workflow is as follows.

1. Node Registration in ISM
2. Operation check

1.2. Node Registration in ISM

This is the section to register the nodes for general PING monitoring with manual registration.
For the information on how to register nodes manually, refer to "3.1.2 Register a Node Directly" in "Operating Procedures."

For "Node Type" and "Model Name", specify one of the following depending on the applicable device.

Node Type	Model Name
server	General Server (PING)
switch	General Switch (PING)
storage	General Storage (PING)
facility	General Facility (PING)

1.3. Operation Check

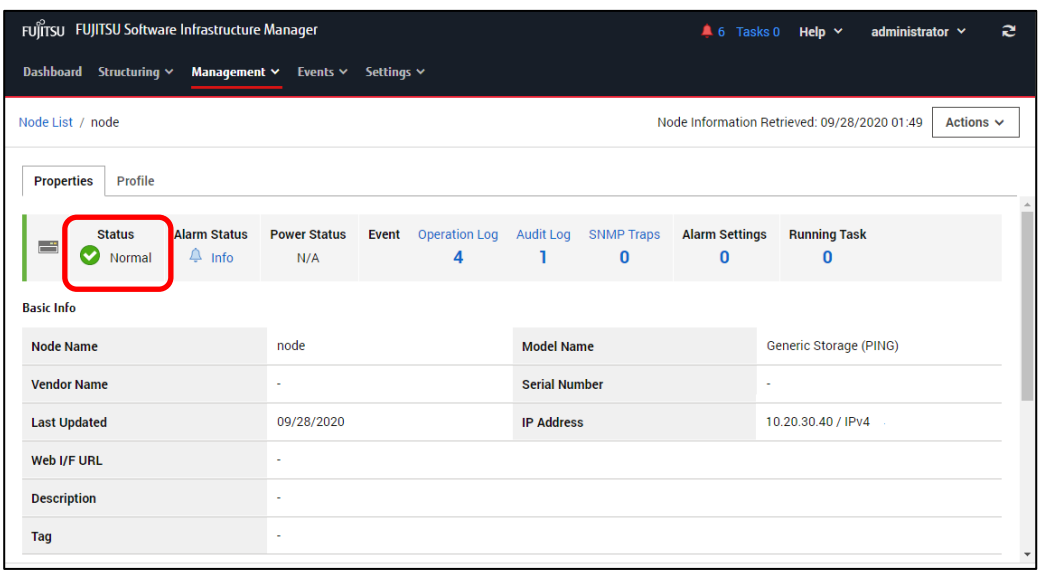
1.3.1. Status Confirmation

You can confirm the node status for General PING Monitoring.

Check the following display contents.

- "Status" can be displayed (status other than Unknown)

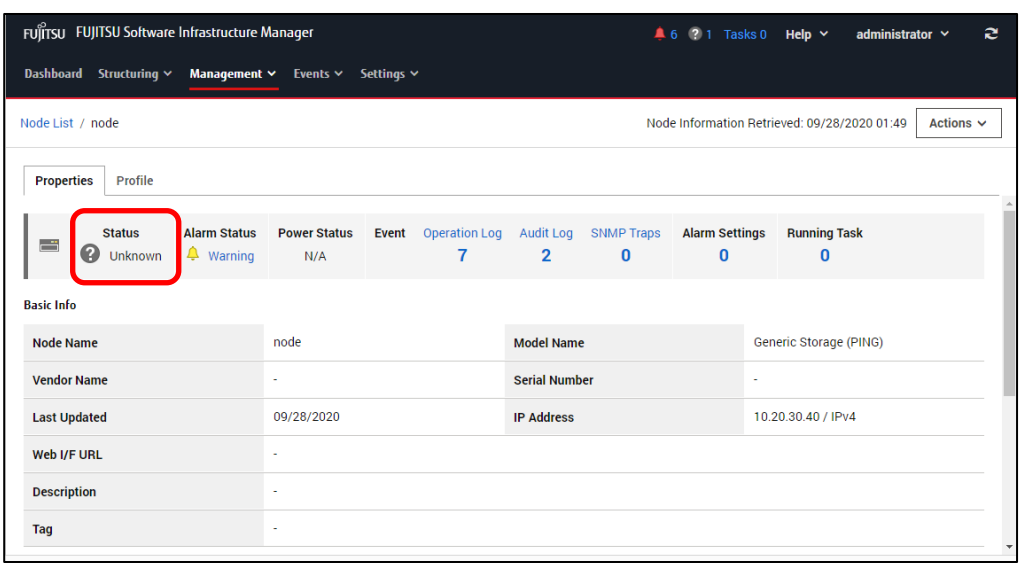
Select [Management] - [Nodes] - <target node> and check the displayed contents of the node.



If the status is "Unknown", wait at least 3 minutes, and then select the [Refresh] button to refresh the screen and check the status.

If the status is still Unknown, check the following:

- The IP address registered in ISM is the IP address for the device
- Communication can be made to the registered IP address using ICMP (PING commands)

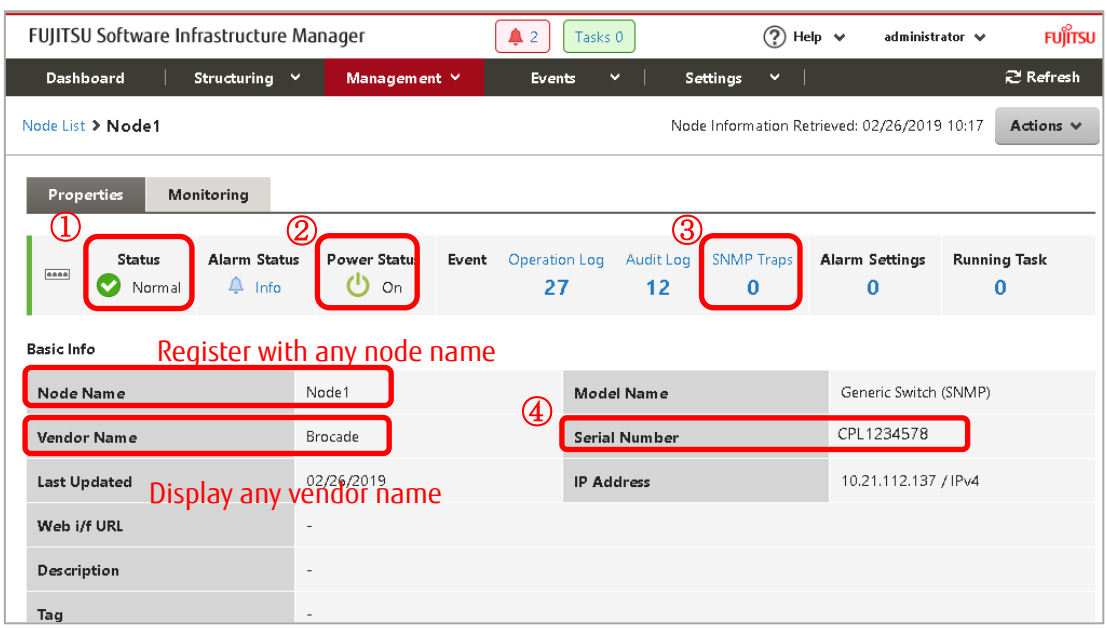


2. General SNMP Monitoring

2.1. Overview

General SNMP Monitoring can retrieve the status and device information and displays the status and other information. The following figure shows the layout of the Details of Node screens.

1. Device status (Normal/Error) and alarm notification in case of error
2. Power Status (On/Off)
3. SNMP trap reception and alarm notification in case of error
4. Serial Number of the device



Item	Definition for Information Retrieval
Status	Displays the information retrieved from the creating definition (- Label: "OverAllStatus") in “2.3.3. Creating OID configuration file” – “1. Create a definition for information retrieval of the status”.
Power Status	Displays the information retrieved from the creating definition (- Label: "PowerStatus") in “2.3.3. Creating OID configuration file” – “2. Create a definition for information retrieval of the power status”.
Serial Number	Displays the information retrieved from the creating definition (SerialNumber:) in “2.3.3. Creating OID configuration file” – “3. Create a definition for information retrieval of the serial number”.
Vendor Name	Displays the vendor name set in the created definition (“Vendor: “Vendor Name”) in “2.3.2. Editing model identified file (snmp_setting.yml)”.

2.1.1. Requirements for the monitoring target

The following list is the requirements for the monitoring target with General SMNP Monitoring.

Item	Description
Devices	Devices associate to servers, storages, switches, and facilities
Communication Protocol	SNMPv1/v2c/v3

2.1.2. How to use

General SNMP Monitoring uses SNMP to retrieve the various information (devices status, power status, and serial number) from the monitoring target.
Users are required to create a defined file that corresponding to the monitoring target in advance.

Note

Basic knowledge of SNMP is required to create a defined file.

The workflow is as follows.

1. Preparation of MIB files
2. Creation of defined files
3. Registration of defined files
4. Registration of MIB files
5. Node Registration in ISM
6. Operation check

2.2. Preparation of MIB files

Retrieve the MIB files for the monitored device.
The MIB files are used for two purposes.

(1) Use this information to create a defined file
ISM reads the device status, power status, and serial number as SNMP OIDs and the type of values that can be retrieved from the MIB file.

(2) Monitor the devices with SNMP trap reception
Register MIB file in ISM to monitor the devices using SNMP Traps.

2.3. Creation of defined files

There are two types of files to be defined.

These files are text files. To create user- defined files, a text editor that can handle line breaks "LF (\n)". (Text files using standard Windows line feed "CR + LF (\r\n)" or "CR (\r)" will not work.)

2.3.1. Files to be defined

The following two types of files are used to create user-defined files for General SMNP Monitoring.

No.	Files to be defined	Description
1	Model identified file (File name=snmp_setting.yml)	This is the file to define the identification information for the target devices for General SNMP Monitoring. This file is used to specify the OID configuration file based on the information retrieved from the device with SNMP and compare with the model identified file. For each model defined in the identified file, the OID files are created described in No.2.
2	OID configuration file (File name= “arbitrary name”.yml)	This is the file to define how to retrieve the information (OID) from SNMP for each model name. For example, if you have three types of devices to be monitored, create three OID configuration files (example: A server, B storage, C switch, etc.).

2.3.2. Editing model identified file (snmp _ setting.yml)

This step is to define the identified information of the monitoring target for General SNMP Monitoring in the model identified information.

1. Log on to console with the Administrator account.
2. Execute the following command to export the model identified file and OID configuration file.
   Export destination: /Administrator/ftp/webupload
   Command)
   # ismadm configreload export snmp -dir /Administrator/ftp/webupload

Example:

```
# ismadm configreload export snmp -dir /Administrator/ftp/webupload
SNMP-YAML was exported.
```

3. Download the exported model identified file.
   Access to "ftp://<IP address of ISM-VA>/Administrator/ftp/webupload" with FTP and download the model identified file.
4. Edit the downloaded model identified file.
   The format and setting contents are as follows:
   When adding the new definition for the monitoring target, add the following definitions after the existing definitions in the model identified file.
   Also set the "regular expression for model identification", "file name of the OID configuration", and "Vendor name" depending on the monitoring target.

```
- RegularExpression: "regular expression for model identification"
  MibFile: "OID configuration name"
  Vendor: "vendor name"
  Product:
    RegularExpression: ""
```

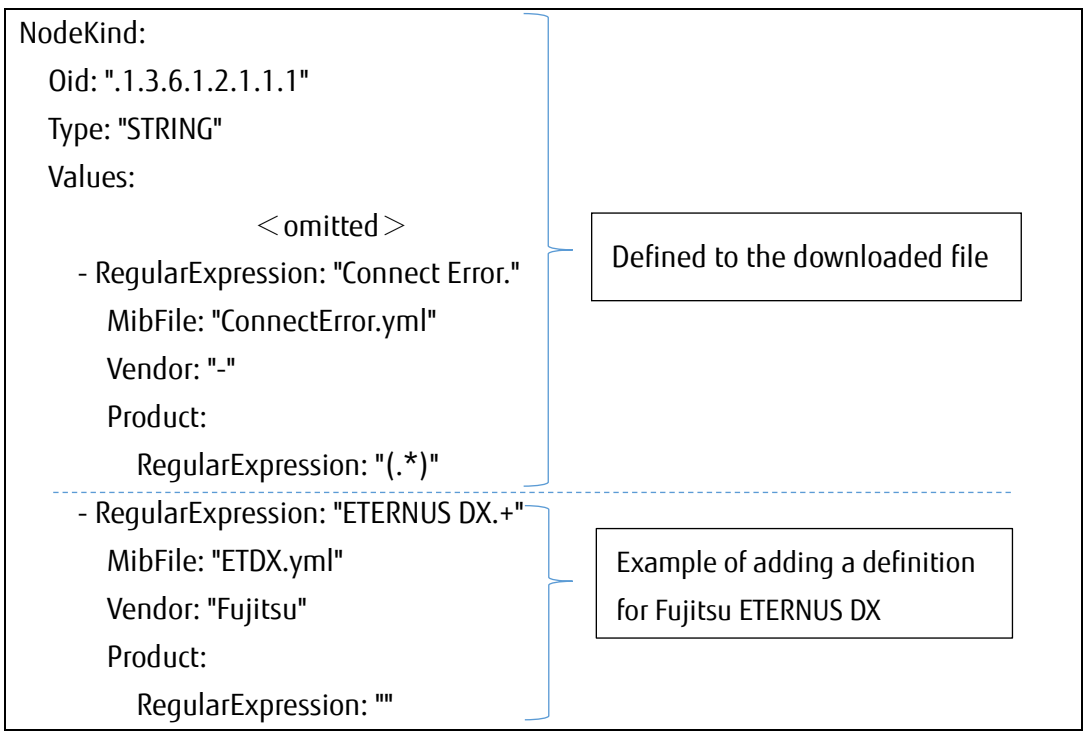
   Note that NodeKind, Oid, Type, and Values are predefined in the downloaded model defined file and they are no need to be edited.

Key	Description
NodeKind (array)	An array defines the model allocation.
Oid	Enter OID used to classify the product name.
Type	Enter the type of OID retrieval result.
Values (array)	Enter each model. You can set more than one setting.
RegularExpression	Regular expression for model identification. Enter the regular expression used to define the model. Checks if the string retrieved with OID matches the regular expression described here. Example 1: .*ETERNUS DX.+ Example 2: .*SR-X.+
MibFile	OID configuration file name. Enter the defined file name that described in "2.3.3. Creating OID configuration file". Specify any file name such as <model>.yml.
Vendor	Vendor name Enter the strings to be displayed in the "Vendor Name" on the Details of Node screen.
Product	Defines the device name. This item is not used with General SNMP Monitoring.
RegularExpression	Defines the regular expression. This item is not used with General SNMP Monitoring.

The following is an example of how Fujitsu Storage ETERNUS DX200 S5 is defined.
If the strings "ETERNUS DX 200 S5" can be retrieved from ETERNUS DX 200 S5 via SNMP communication to Oid. 1.3. 6.1. 2.1.1.1, the definition values are as follows.

Item	Value
Regular expression for model identification	ETERNUS DX.+
OID configuration file name	ETDX.yml
Vendor Name	Fujitsu

An example of the model identified file that the value entered in the definition format is shown below.



Note

- Do not edit the existing definition of the model identified file. Monitoring of the defined device may not be operated.
- Create a defined file and OID configuration file in the YAML file format (tier structure with indent).
  Indent must be entered in the unit of two half-width spaces.
- Make sure to insert a single half-width space after "-" and ":". If you do not insert it, it will not operate correctly.
- However, if ":" is at the end of the line, it is not required to insert a single half-width space after ":".
- Use “LF(\n)” for line feed code. If you use “CR+LF(\r\n)” or “CR(\r)”, it will not operate properly.

2.3.3. Creating OID configuration file

You can define the information retrieval method in the OID configuration file for each monitored device.

This file will be created with the file name described in the Model identified file (snmp_setting.yml).

In the OID configuration file, you can define how to retrieve the following information:

Information	Entry	Description
Status	Mandatory	This information is displayed in “Status” on “Node List” or the Details of node screen.
Power Status	Recommended	This information is displayed in “Power Status” on the Details of node screen. If you did not create a definition, "N/A" is displayed in [Power Status]. Note: The power OFF status may not be displayed depending on its power status since the status is made with the information retrieved from SNMP.
Serial Number	Recommended	This information is displayed in “Serial Number” on the Details of node screen. If you did not create a definition, "-" is displayed in the [Serial Number].

Note

- Create an OID configuration file in the YAML file format (tier structure with indent).
  Indent must be entered in the unit of two half-width spaces.
- Make sure to insert a single half-width space after "-" and ":". If you do not insert it, it will not operate correctly. However, if ":" is at the end of the line, it is not required to insert a single half-width space after ":".
- Use “LF(\n)” for line feed code. If you use “CR+LF(\r\n)” or “CR(\r)”, it will not operate properly.

1. Create a definition for information retrieval of the status
   The format and setting contents of the definition are as follows:

Configure “OID indicating the status of the device”, " type of OID retrieval result”, “value of OID retrieval result (Normal/Unknown/Warning/Error)”, “Status Value when OID retrieval is not defined”, and “Status Value when OID retrieval is failed” depending on the target device.

```
MonitoringInformation:
  - Label: "OverAllStatus"
    LabelGroup: "Status"
    Oid: “OID indicating the status of the device”
    Type: "type of OID retrieval result”
    Pattern: "2"
    Values:
      - MibValue: “vale of OID retrieval result (Normal)”
        Status: "0"
      - MibValue: “value of OID retrieval result (Unknown)”
        Status: "10"
      - MibValue: “value of OID retrieval result (Warning)”
        Status: "30"
      - MibValue: “value of OID retrieval result (Error)”
        Status: "50"
    DefaultStatus: "Status Value when OID retrieval is not defined"
    FailStatus: "Status Value when OID retrieval is failed"
    ValueType: "integer"
```

The key descriptions are as follows.

Key Name		Description
MonitoringInformation: (array)		The status information is defined as an element under this tier structure.
	Label	"OverAllStatus" fixed.
	LabelGroup	"Status" fixed.
	Oid	Enter OID indicates the status of device. Example: ".1.3.6.1.4.1.211.1.21.1.153.6"
	Type	Enter the type of OID retrieval result. Example: "INTEGER"、"STRING"
	Pattern	Fix the status information as “2”.

	Values: (array)		Enter the mapping table definition that to convert the values to ISM values depending on the OID retrieval result.
		MibValue	Enter the values of OID retrieval result (values of the mapping source).
		Status	Enter the values to be converted to ISM in the case of the previous section. For the status information, map the values as follows: Error="50", Warning="30", Unknown="10", Normal="0"
	DefaultStatus		Enter the values to be converted to ISM, if the values of OID retrieval result is not defined in Values.
	FailStatus		Enter the values to be converted to ISM if OID retrieval is failed.
	ValueType		"integer" fix.

Example of the descriptions for Fujitsu Storage ETERNUS DX200 S5 is listed as follows.
Refer to the MIB file and set "fjdaryUnitStatus" to the status.

```
fjdaryUnitStatus OBJECT-TYPE
    SYNTAX INTEGER {
        unknown(1),
        unused(2),
        ok(3),
        warning(4),
        failed(5)
    }
    ACCESS read-only
    STATUS mandatory
    DESCRIPTION
        "Overall status of this system. Status becomes warning or failed
         when there are broken parts in the system.
         But, it doesn't become warning or failed when maintaining it.
         (In the maintenance work, fjdaryMgtMaintenanceMode is on)"
    ::= { fjdarye153 6 }
```

Note

- You can set only one OID for status of information retrieval. You cannot set multiple OID.
- All values retrieved with OID are recommended to list in "MibValue" in the defined file.

The definition values from the MIB file and MIB information retrieval result are as follows. When OID retrieval is not defined and when the information retrieval is failed, the Status Value is Unknown (10).

Item	Value
OID indicates the status of device	.1.3.6.1.4.1.211.1.21.1.153.6
Type of OID retrieval result	INTEGER
Value of OID retrieval result (Normal)	3
Value of OID retrieval result (Unknown)	1, 2
Value of OID retrieval result (Warning)	4
Value of OID retrieval result (Error)	5
Status Value when OID retrieval is not defined	10
Status Value when OID retrieval is failed	10

When the values are applied to the format, the status definition is as follows.

```
MonitoringInformation:
  - Label: "OverAllStatus"
    LabelGroup: "Status"
    Oid: ".1.3.6.1.4.1.211.1.21.1.153.6"
    Type: "INTEGER"
    Pattern: "2"
    Values:
      - MibValue: "3"
        Status: "0"
      - MibValue: "1"
        Status: "10"
      - MibValue: "2"
        Status: "10"
      - MibValue: "4"
        Status: "30"
      - MibValue: "5"
        Status: "50"
    DefaultStatus: "10"
    FailStatus: "10"
    ValueType: "integer"
```

2. Create a definition for information retrieval of the power status
   The format and setting contents of the definition are as follows:

Configure ”OID indicating the power status of the device”, "type of OID retrieval result”, “value of OID retrieval result (On/Off)”, “status Value when OID retrieval is not defined”, and “status value when information retrieval is failed” depending on the target device.

```
MonitoringInformation:
  - Label: "PowerStatus"
    LabelGroup: "Status"
    Oid: ”OID indicating the power status of the device”
    Type: "type of OID retrieval result”
    Pattern: "2"
    Values:
      - MibValue: “value of OID retrieval result (On)"
        Status: "1"
      - MibValue: "value of OID retrieval result (Off)"
        Status: "0"
    DefaultStatus: "status Value when OID retrieval is not defined"
    FailStatus: "status value when information retrieval is failed"
    ValueType: "integer"
```

The key descriptions are as follows.

Key Name		Description
MonitoringInformation: (array)		The power status information is defined as an element under this tier structure.
	Label	"PowerStatus" fixed.
	LabelGroup	"Status" fixed.
	Oid	Enter OID indicates the status of device. Example: ".1.3.6.1.4.1.211.1.21.1.153.1.4"
	Type	Enter the type of OID retrieval result. Example: "INTEGER"、"STRING"
	Pattern	Fix the power status information as “2”.
	Values: (array)	Enter the mapping table definition that to convert the values to ISM values depending on the OID retrieval result.

		MibValue	Enter the values of OID retrieval result (values of the mapping source).
		Status	Enter the values to be converted to ISM in the case of the previous section. For the stats information, map the values as follows: On=”1”, Off=”0”, Unknown="10"
	DefaultStatus		Enter the values to be converted to ISM if OID retrieval is failed when the OID retrieval result value is not defined in Values.
	FailStatus		Enter the values to be converted to ISM if OID retrieval is failed.
	ValueType		"integer" fix.

Example of the descriptions for Fujitsu Storage ETERNUS DX200 S5 is listed as follows.
ETERNUS DX200 S5 does not have MIB that indicates the power status of the device using SNMP. The power is turned ON when SNMP communication is succeeded.
MIB consists: fjdarySspVenderId

```
fjdarySspVenderId OBJECT-TYPE
    SYNTAX OCTET STRING (SIZE (0..256))
    ACCESS read-only
    STATUS mandatory
    DESCRIPTION
        "The value of this object indecates the Vender ID."
    ::= { fjdarySsp 4 }
```

Note

- You can set only one OID for status of information retrieval. You cannot set multiple OID.
- All values retrieved with OID are recommended to list in “MibValue” in the defined file.

The definition values from the MIB file and MIB information retrieval result are as follows.
When OID retrieval is not defined and when the information retrieval is failed, the Status Value is Unknown (10).

Item	Value
OID indicates the status of device	.1.3.6.1.4.1.211.1.21.1.153.1.4
Type of OID retrieval result	STRING
Value of OID retrieval result (On)	FUJITSU
Status Value when OID retrieval is not defined	10
Status Value when OID retrieval is failed	10

When the values are applied to the format, the status definition is as follows.

```
MonitoringInformation:
  - Label: "PowerStatus"
    LabelGroup: "Status"
    Oid: ".1.3.6.1.4.1.211.1.21.1.153.1.4"
    Type: "STRING"
    Pattern: "2"
    Values:
      - MibValue: "FUJITSU "
        Status: "1"
    DefaultStatus: "10"
    FailStatus: "10"
    ValueType: "integer"
```

3. Create a definition for information retrieval of the serial number
   The format and setting contents of the definition are as follows:
   Configure “OID indicates the serial number of the device” depending on the target device.

```
NodeInformation:
  SerialNumber:
    Oid: “OID indicates the serial number of the device"
    Type: "STRING"
    RegularExpression: “Regular expression which the serial number strings to be retrieved”
```

The key descriptions are as follows.

Key Name			Description
NodeInformation: (array)			Defines the information to display in [Properties] on the details of nodes. If you do not retrieve it, delete all definition from the line of “NodeInformation” to “RegularExpression”.
	SerialNumber:		Defines the serial number information.
		Oid	Enter OID indicates the serial number of the device. Example: ".1.3.6.1.4.1.211.1.21.1.153.1.1"
		Type	Enter the type of OID retrieval result. "STRING" fixed.
		RegularExpression	The regular expression that specifies how to retrieve the serial number strings from the returned value. Specify (. *) to use the retrieved value as is.

Example of descriptions for Fujitsu Storage ETERNUS DX200 S is listed as follows.
Refer to the MIB file and retrieve from fjdarySspMachineId.

```
fjdarySspMachineId OBJECT-TYPE
    SYNTAX OCTET STRING (SIZE (0..256))
    ACCESS read-only
    STATUS mandatory
    DESCRIPTION
        "This value indicates the identification number of this system.
         ttsssssssssssmmmmmmmmmmmmmccsssssssssss
         | |          |          | |
         | |          |          | +-serial number(12byte)
         | |          |          +-check code(2byte)
         | |          +-model name(12byte)
         | +-series name(12byte)
         +-type code(2byte)"
    ::= { fjdarySsp 1 }
```

Note

- You can set only one OID for serial number of information retrieval. You cannot set multiple OID.

The definition values from the MIB file, related documents, and MIB information of retrieval result are as follows.

Item	Value
OID indicates the serial number of the device	.1.3.6.1.4.1.211.1.21.1.153.1.1
Regular expression which the serial number strings to be retrieved	.{28}([^#]*)#*

When the values are applied to the format, the status definition is as follows.

```
NodeInformation:
  SerialNumber:
    Oid: ".1.3.6.1.4.1.211.1.21.1.153.1.1"
    Type: "STRING"
    RegularExpression: ".{28}([^#]*)#*"
```

The OID configuration file created in the previous example (ETDX.yml) is as follows.
Note that "MonitoringInformation:" of the power status line is no need to be entered.

```
MonitoringInformation:
  - Label: "OverAllStatus"
    LabelGroup: "Status"
    Oid: ".1.3.6.1.4.1.211.1.21.1.153.6"
    Type: "INTEGER"
    Pattern: "2"
    Values:
      - MibValue: "3"
        Status: "0"
      - MibValue: "1"
        Status: "10"
      - MibValue: "2"
        Status: "10"
      - MibValue: "4"
        Status: "30"
      - MibValue: "5"
        Status: "50"
    DefaultStatus: "10"
    FailStatus: "10"
```

```
      ValueType: "integer"
  - Label: "PowerStatus"
      LabelGroup: "Status"
      Oid: ".1.3.6.1.4.1.211.1.21.1.153.1.4"
      Type: "STRING"
      Pattern: "2"
      Values:
        - MibValue: "FUJITSU "
          Status: "1"
      DefaultStatus: "10"
      FailStatus: "10"
      ValueType: "integer"
NodeInformation:
  SerialNumber:
      Oid: ".1.3.6.1.4.1.211.1.21.1.153.1.1"
      Type: "STRING"
      RegularExpression: ".{28}([^#]*)#*"
```

2.4. Registration of defined files

This is the section to register the defined file in ISM. There are two operations:

1. File transfer
2. Execution of registration command

2.4.1. File transfer

Log in to the GUI of ISM as a user with Administrator privilege and transfer the defined file with the function of “Upload”. The forwarding destination is the following directory.

Forwarding destination： /Administrator/ftp/webupload

For the information on how to transfer the file, refer to "1.4.1 Upload Files to ISM-VA” in “Operating Procedures."
Select [File Type] – [Other].

2.4.2. Executing registration command

Execute the registration command and register the deified file in ISM.

1. After transferring the defined file, log in to ISM -VA console via SSH as a user with Administrator privilege.
2. Execute the following command to register the defined file.

   ```
   # ismadm configreload reload snmp -dir /Administrator/ftp/webupload
   ```

   When the registration is succeeded, the following message is displayed.

   ```
   SNMP-YAML was reloaded (Reloaded time 2020-06-01 12:00:00).
   ```

   If the registration fails, the message other than the above is displayed. Check that the command or file name and execute the registration command again.

3. After registration is completed, delete the transferred file.
   For the information on how to delete the file, refer "1.4.2 Delete Files Uploaded to ISM-VA" in "Operating Procedures."

Point

You can initialize the defined file if, for example, you no longer want to use general SNMP monitoring or if you accidentally registered the defined file. After initialization, the defined file registered with this procedure will be deleted.

Execute the following command:

```
# ismadm configreload init snmp
```

If the initialization is succeeded, the following message is displayed.

```
SNMP-YAML was initialized (Initialized time 2020 -06 -01 12:00:00).
```

2.5. Registration of MIB files

To receive SNMP traps and monitor devices with ISM, register the MIB files in ISM. There are two operations:

1. Transferring MIB Files
2. Registering MIB Files

For the information on how to transfer/register MIB file, refer to "3.2.2 Set Trap Reception for SNMP" in "Operating Procedures."

If you do not need to monitor the SNMP traps, this procedure is not required.

2.6. Node Registration in ISM

This is the section to register the nodes for general SNMP monitoring with manual registration.
For the information on how to register nodes manually, refer to "3.1.2 Register a Node Directly" in "Operating Procedures."

For "Node Type" and "Model Name", specify one of the following depending on the applicable device.

Node Type	Model Name
server	General Server (SNMP)
switch	General Switch (SNMP)
storage	General Storage (SNMP)
facility	General Facility (SNMP)

2.7. Operation Check

2.7.1. Registration Confirmation

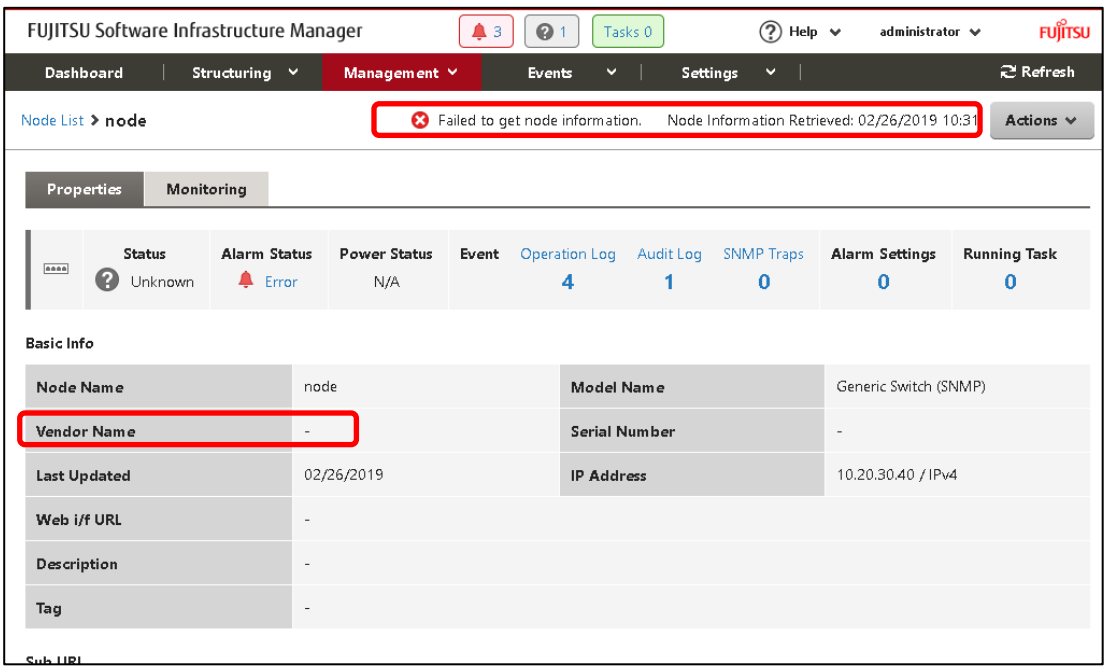
You can confirm the registration of the node for General SNMP Monitoring.

1. From the Global Navigation menu of the GUI of ISM, select [Management] – [Nodes].
2. From the "Node List" screen, select the target node and select the [Properties] tab.
3. Select [Actions] – [Get Node Information].
   After retrieving the node Information, confirm that "Vendor Name" is the name specified in the defined file.

   If "Vendor Name" is displayed correctly, proceed to the next section.
   If it is failed, check the following settings.

Failure Example:

The message "Failed to get node information" is displayed to the left of the [Actions] button. In addition, "-" is displayed in the "Vendor Name".



Cause	Action
Incorrect IP address	Select [Actions] – [Edit], and then correct the information. Check the firmware settings to enable the SNMP communication with devices. After the correction, select [Actions] – [Get Node Information].
Incorrect SNMP information: such as community name	
Unable to communicate with SNMP	
Incorrect snmp_setting.yml file (Unable to retrieve the model information to determine the device definitions)	Correct the defined file as the procedure of "2.3. Creation of defined files", and then re-register the file as the procedure of "2.4. Registration of defined files". After registration, select [Actions] – [Get Node Information].
There is no OID configuration file for each model. Incorrect file format of the OID configuration file	

2.7.2. Status Confirmation

You can confirm the node status, power status, and serial number for General SNMP Monitoring.

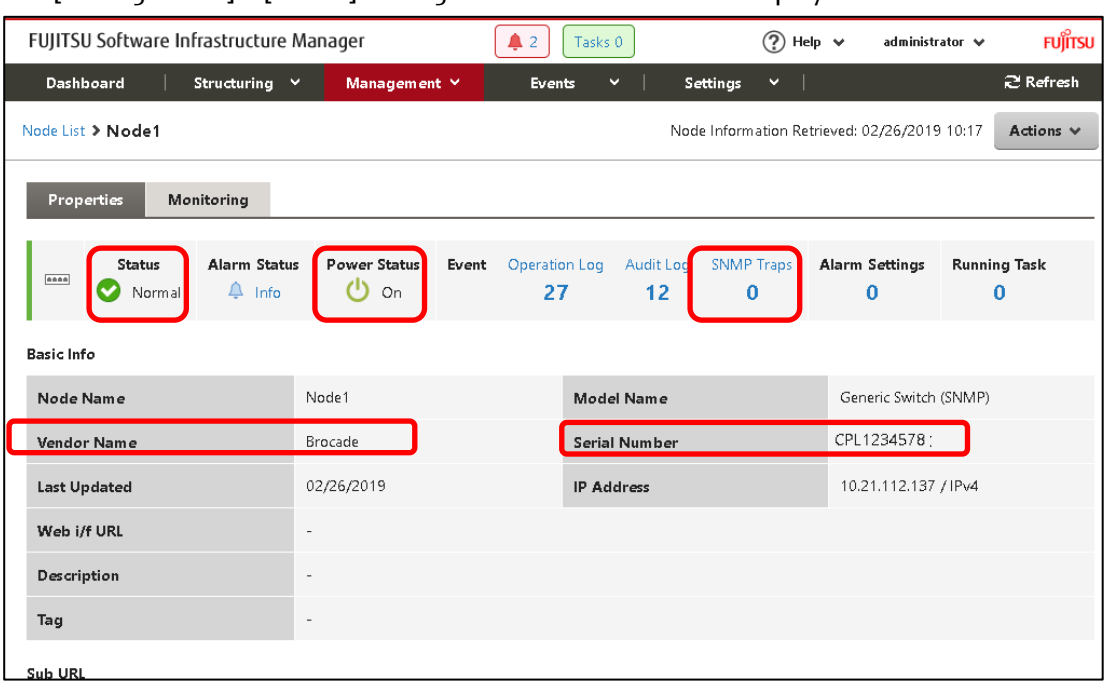
Point

The default setting of ISM updates the status every 3 minutes. You can reduce the wait time by shorten the monitoring interval. (minimum is 60 seconds)
Select a node in [Management] - [Nodes]. Select the [monitoring] tab - [Monitoring Actions] - [Set Monitoring Interval].

Check the following display contents.

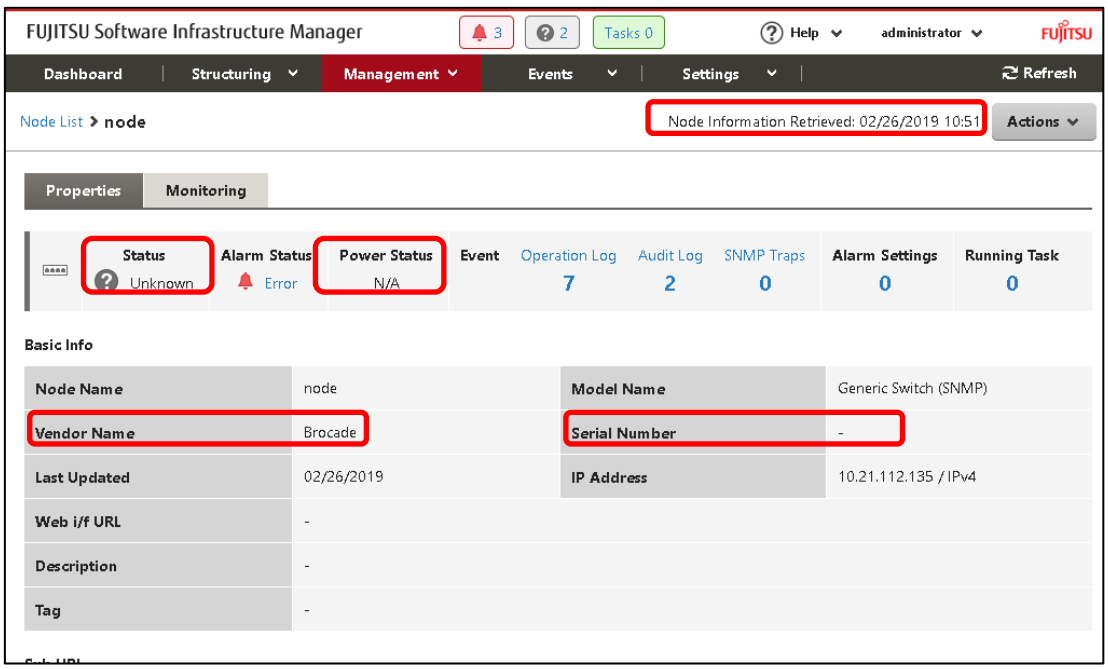
- "Status" can be displayed (status other than Unknown)
- "Power Status" and "Serial Number" can be displayed (when defined them in the defined file)

Select [Management] - [Nodes] - <target node> and check the displayed contents of the node.



If the displayed information is not correct, wait at least 3 minutes, and then select the [Refresh] button to refresh the screen and check the defined file.

The status and power status are retrieved from the Set Monitoring Interval of the monitored devices.
If the display is still incorrect after refresh, check the definition file.



Action: Correct the defined file as the procedure of "2.3. Creation of defined files", and then re-register the file as the procedure of "2.4. Registration of defined files".

After registration, execute the following action.

- Check the serial number
  Select [Actions] – [Get Node Information], and then select the [Refresh] button update the screen.
- Check the status/power status
  Wait at least 3 minutes, and then select the [Refresh] button to update the screen.

2.7.3. Trap Confirmation

When sending an SNMP trap from a device, check that the value of "SNMP Traps" increases and that its contents are displayed in [Events] - [Events] - [SNMP Traps].

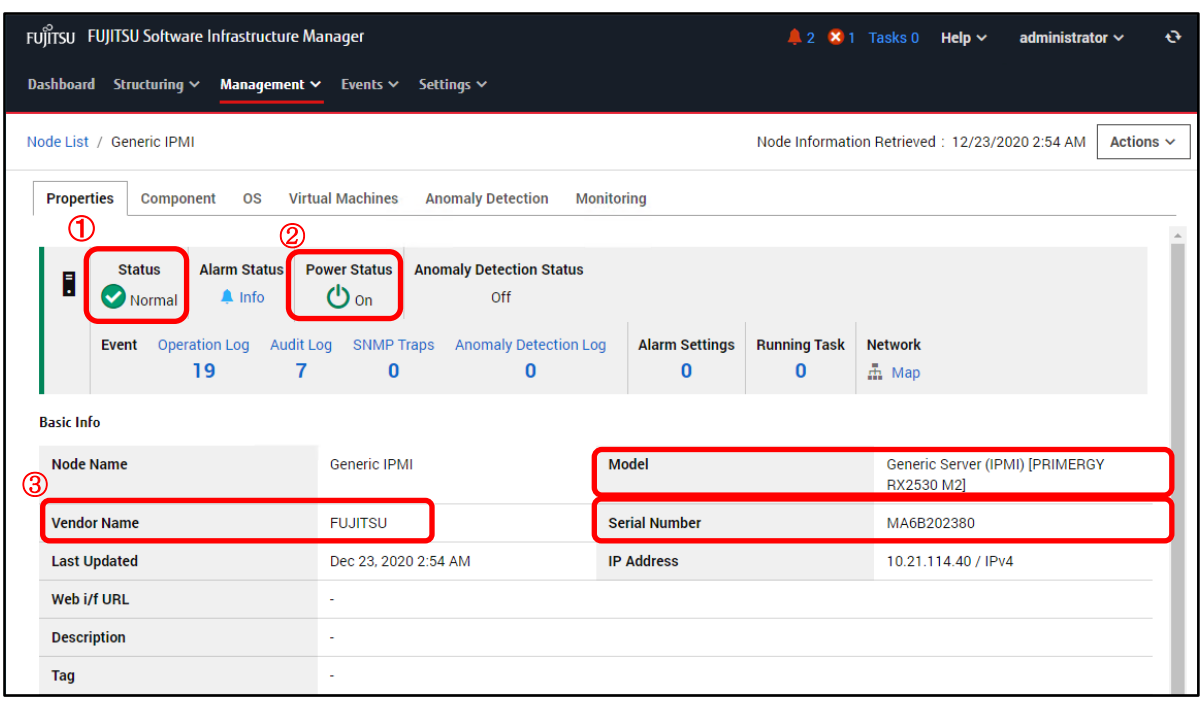
If the trap cannot be received, check the settings such as the setting of target devices or setting of Trap Reception.

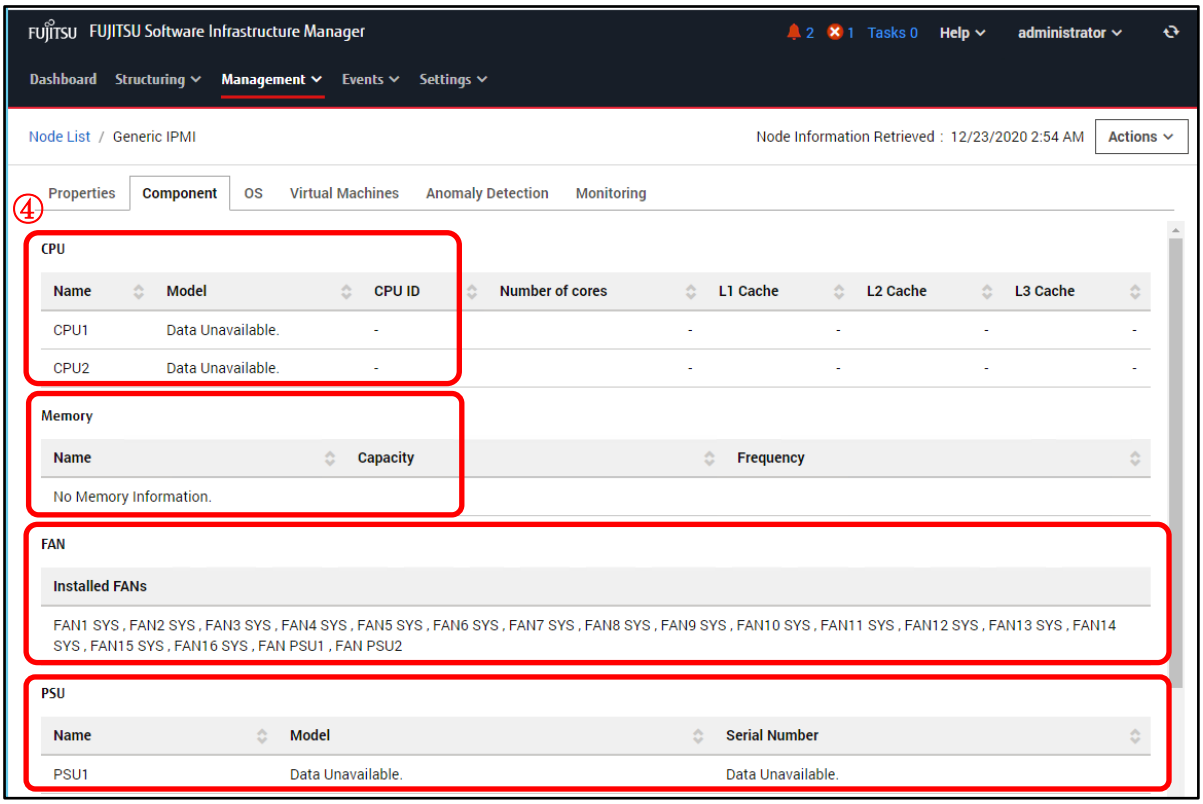
3. General IPMI Monitoring

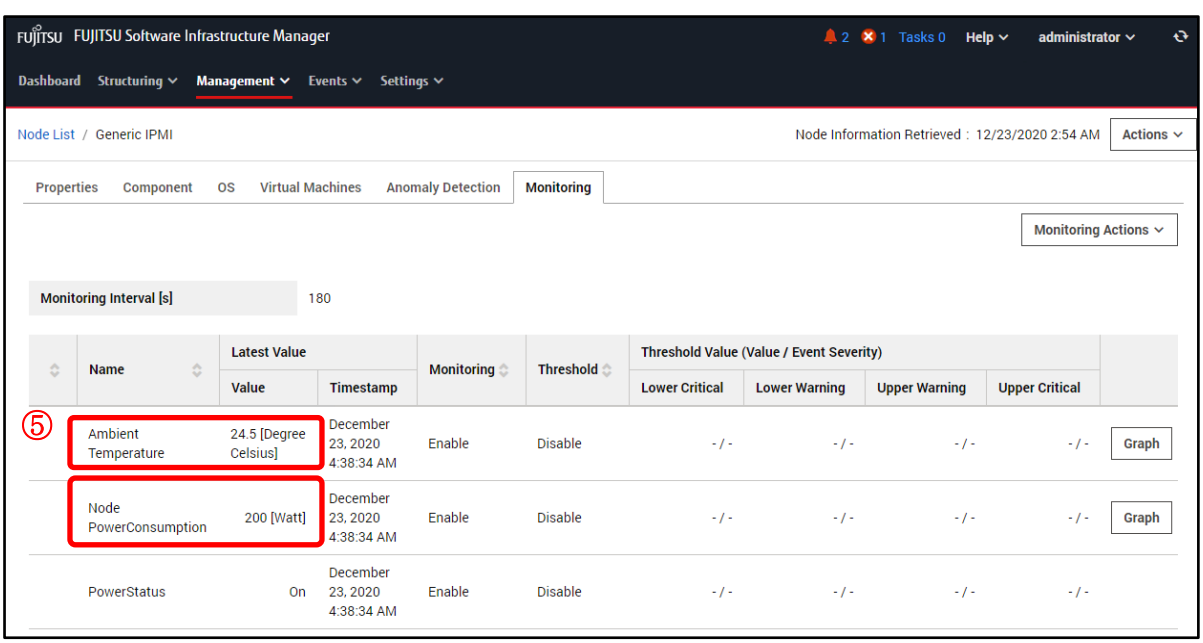
3.1. Overview

"General IPMI Monitoring" can retrieve the status and device information and displays the status and other information. The following figure shows the layout of the Details of Node screens.

1. Node Status (Normal/Error)
2. Power Status (On/Off)
3. Device information (Vendor Name, Model Name, Serial Number)
4. Component information of the device
5. Ambient temperature and power consumption of the device







3.1.1. Requirements for the monitoring target

The following list is the requirements for the monitoring target with General IPMI Monitoring.

Item	Description
Devices	Devices associate to servers
Communication Protocol	IPMI

3.1.2. How to use

General IPMI Monitoring uses IPMI commands to retrieve the various information (devices status, power status, and serial number, component information, etc.) from the monitoring target.

The workflow is as follows.

1. Node Registration in ISM
2. Operation check

3.2. Node Registration in ISM

This is the section to register the nodes for general IPMI monitoring with manual registration.
For the information on how to register nodes manually, refer to "3.1.2 Register a Node Directly" in "Operating Procedures."

For "Node Type" and "Model Name", specify the following depending on the applicable device.

Node Type	Model Name
server	General Server (IPMI)

3.3. Operation Check

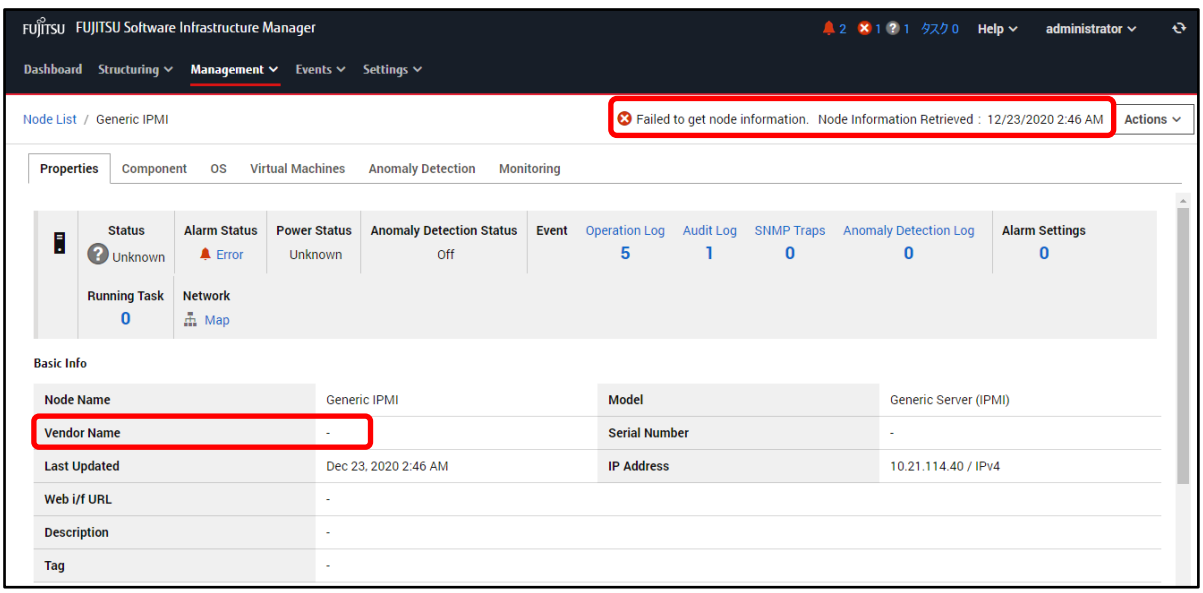
3.3.1. Registration Confirmation

You can confirm the registration of the node for General IPMI Monitoring.

1. From the Global Navigation menu of the GUI of ISM, select [Management] – [Nodes].
2. From the "Node List" screen, select the target node and select the [Properties] tab.
3. Select [Actions] – [Get Node Information].
   After retrieving the node Information, confirm that "Vendor Name" is entered.
   If "Vendor Name" is displayed correctly, proceed to the next section.
   If it is failed, check the following settings.

Failure Example:

The message "Failed to get node information" is displayed to the left of the [Actions] button.
In addition, "-" is displayed in the “Vendor Name”.



Cause	Action
Incorrect IP address	Select [Actions] – [Edit], and then correct the information. Check the firmware settings to enable the IPMI communication with devices. After the correction, select [Actions] – [Get Node Information].
Unable to communicate with IPMI	

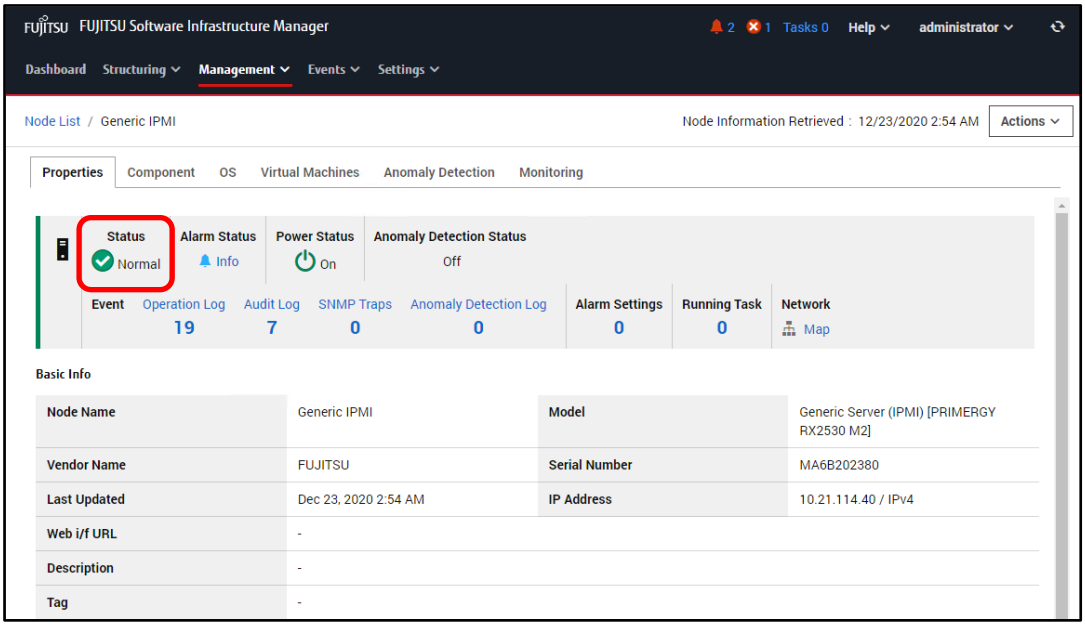
3.3.2. Status Confirmation

You can confirm the node status for General IPMI Monitoring.

Check the following display contents.

- "Status" can be displayed (status other than Unknown)

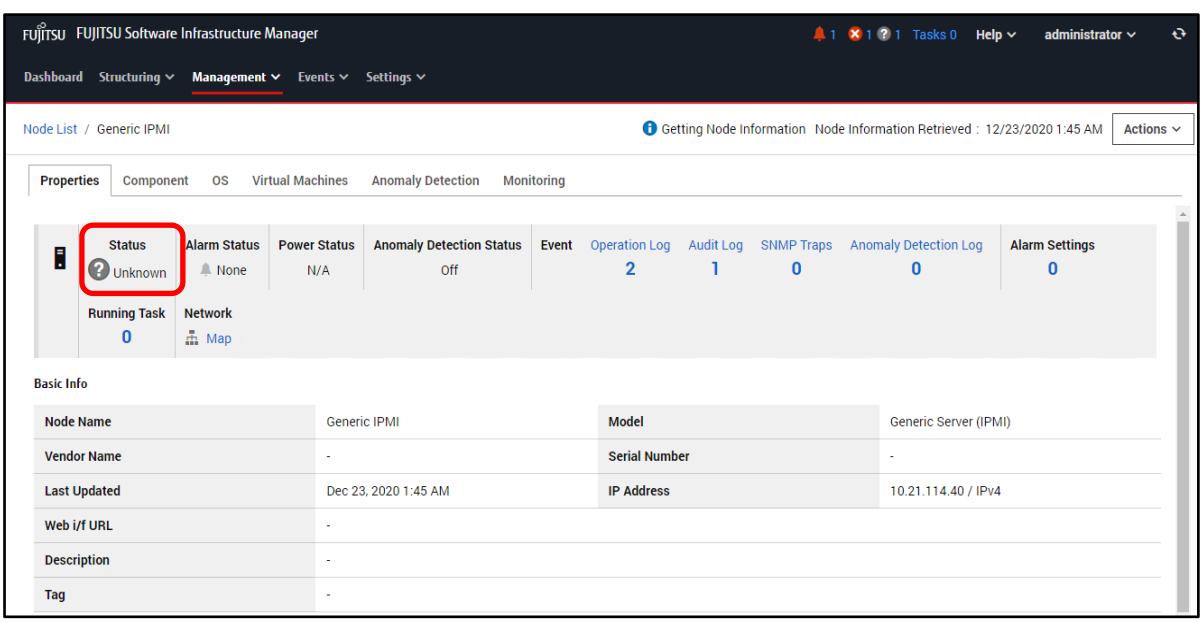
Select [Management] - [Nodes] - <target node> and check the displayed contents of the node.



If the status is "Unknown", wait at least 3 minutes, and then select the [Refresh] button to refresh the screen and check the status.

If the status is still Unknown, check the following:

- The IP address registered in ISM is the IP address for the device
- Communication can be made to the registered IP address using IPMI commands



If the status is Unknown after performing the above check, you can also use the IPMI commands to get information from a Linux device other than ISM-VA and check the status.

Information is retrieved using IPMI commands. IPMItool is a tool that runs on Linux and requires

the installation of the IPMItool package.

To install on Linux, execute the following command:

yum-y install OpenIPMI-tools

The following describes how to use IPMI commands to confirm information.

(1) Node status (Normal/Error)

Check the string in the judgment item from the information retrieved using the ipmitool command. It determines the value of the item and display the status on the GUI.

Command line	ipmitool -I lanplus -H <IP Address> -U <Username> -P <Password> chassis status
Judgment item	Power Overload Main Power Fault Power Control Fault Drive Fault Cooling/Fan Fault

The node status is judged (decision) by the following judgment conditions.

Judgment condition	Node status
When all of the values for the judgment item is false.	Normal
When at least one of the values for the judgment items is true.	Error

ipmitool Command Execution Example (IP address: 10.12.255.255, username: admin, password: pass)

```
# ipmitool -I lanplus -H 10.12.255.255 -U admin -P pass chassis status
  System Power             : on
  Power Overload           : false
  Power Interlock          : inactive
  Main Power Fault         : false
  Power Control Fault      : false
  Power Restore Policy     : previous
  Last Power Event         : ac-failed
  Chassis Intrusion        : active
  Front-Panel Lockout      : inactive
  Drive Fault              : false
  Cooling/Fan Fault        : false
  Front Panel Control      : none
```

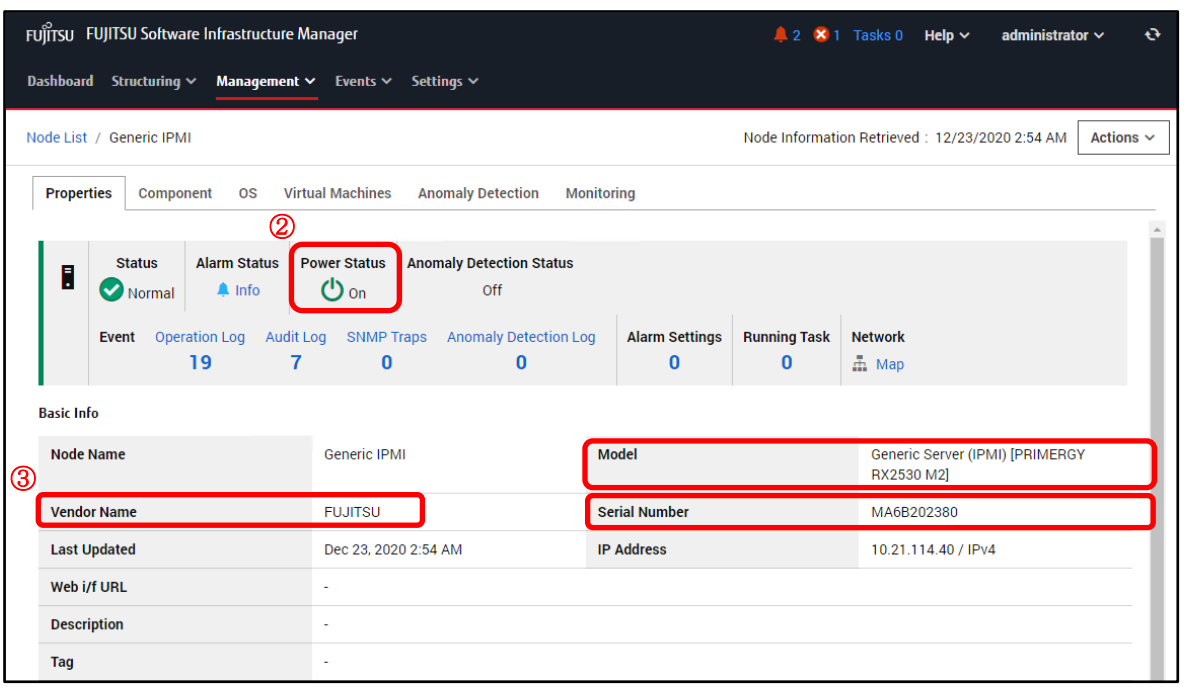
All values of judgment items are false, so they are displayed as "Normal" in the GUI.

3.3.3. Other Items Confirmation

Check that the GUI displays the contents of items other than those listed in "3.3.2. Status Confirmation."

In addition, if the information is not available on the GUI, you can use IPMI commands to confirm the information.

The following describes how to verify using IPMI commands.



(2) Power Status (On/Off)

Check the string in the judgment item from the information retrieved using the ipmitool.

It determines the value of the item and displays the power status on the GUI.

Command line	ipmitool -I lanplus -H <IP Address> -U <Username> -P <Password> chassis status
Judgment item	System Power

The power status is judged (decision) by the following judgment conditions.

Judgment condition	Node status
When the value for the judgment item is on.	On
When the value for the judgment item is off.	Off

ipmitool Command Execution Example (IP address: 10.12.255.255, username: admin, password: pass)

```
# ipmitool -I lanplus -H 10.12.255.255 -U admin -P pass chassis status
System Power             : on
Power Overload           : false
Power Interlock          : inactive
Main Power Fault         : false
Power Control Fault      : false
Power Restore Policy     : previous
Last Power Event         : ac-failed
Chassis Intrusion        : active
Front-Panel Lockout      : inactive
Drive Fault              : false
Cooling/Fan Fault        : false
Front Panel Control      : none
```

The value of judgment item (System Power) (on/off) is used to judge the power status.

(3) Device information (Vendor Name, Model Name, Serial Number)

Check the string in the judgment item from the information retrieved using the ipmitool.

The presence or absence of information for each item is determined and displayed on the GUI.

Command line		ipmitool -I lanplus -H <IP Address> -U <Username> -P <Password> fru
Judgment item	**Vendor Name**	Product Manufacturer
	Model Name	Product Name
	Serial Number	Product Serial

The device information is judged (decision) by the following judgment conditions.

Judgment condition	Device information
When there is a value for each judgment item	Use the value of each judgment item (Product Manufacturer, Product Name, Product Serial)
When there is no value for each judgment item	Not Displayed

ipmitool Command Execution Example (IP address: 10.12.255.255, username: admin, password: pass)

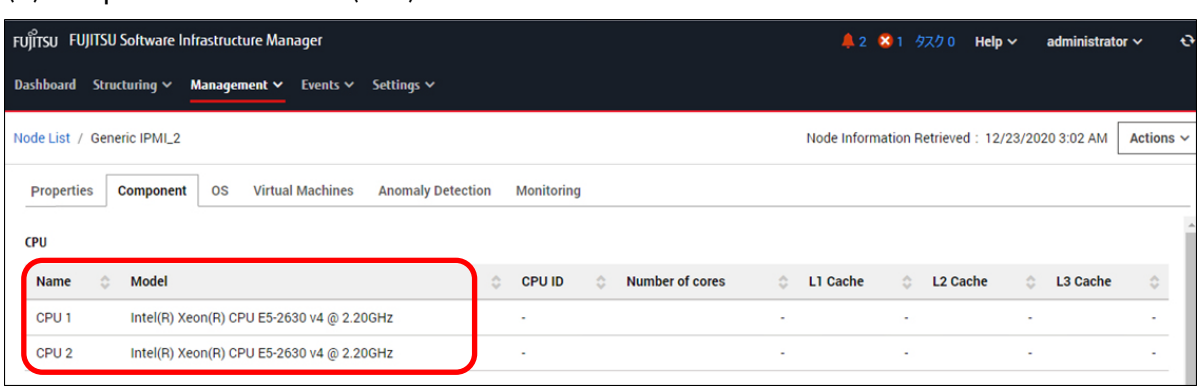
```
[root@localhost ~]# ipmitool -I lanplus -H 10.12.255.255 -U admin -P pass fru
FRU Device Description : Builtin FRU Device (ID 0)
  Board Mfg Date          : Wed Nov 23 18:23:00 2016
  Board Mfg               : FUJITSU
  Board Product           : D3279
  Board Serial            : 51664951
  Board Part Number       : S26361-D3279-B12
  Board Extra             : WGS03 GS02
  Board Extra             : 02

FRU Device Description : Chassis (ID 2)
  Chassis Type            : Rack Mount Chassis
  Chassis Extra           : RX2530M2R2
  Product Manufacturer    : FUJITSU
  Product Name            : PRIMERGY RX2530 M2
  Product Part Number     : S26361-K1565-Vxxx
  Product Serial          : MA6B202380
  Product Asset Tag       : 15
  Product Extra           : 90a2a8
  Product Extra           : 0464
  Product Extra           : CS0f
      :
(Below is omitted)
```

"FUJITSU" is the vendor name

"PRIMERGY RX 2530 M2" is the model

"MA6B202380" is the serial number

(4) Component information (CPU)



For the CPU name

The CPU name is determined from the information (judgment item) obtained by using ipmitool and displayed on the GUI.

Command line	ipmitool -I lanplus -H <IP Address> -U <Username> -P <Password> sdr type 0x07
Judgment item	From the information retrieved, the information without the following items is extracted, and the contents displayed from the beginning of the line to the first "|" are extracted. • Protocol Err • Bus PERR • Init Err • Machine Chk

The CPU name is judged (decision) by the following judgment conditions.

Judgment condition	CPU name
When information on judgment items is available	Display as CPU name
When there is no information on judgment items	No CPU name

ipmitool Command Execution Example (IP address: 10.12.255.255, username: admin, password: pass)

```
[root@localhost ~]# ipmitool -I lanplus -H 10.12.255.255 -U admin -P pass sdr type 0x07
CPU1                  | 4Bh | ok    |    3.0 | Presence detected
CPU2                  | 4Ch | ok    |    3.1 | Presence detected
```

Uses the "CPU1" and "CPU2" listed from the beginning of the line to the first "|" as the name of the CPU

For the CPU model

The CPU model is determined from the information (judgment item) obtained by using ipmitool and displayed on the GUI.

Command line	ipmitool -I lanplus -H <IP Address> -U <Username> -P <Password> fru
Judgment item	Extract display portion of "FRU Device Description: CPU" (Excluding those containing the indication of "DIMM")

The CPU model is judged (decision) by the following judgment conditions.

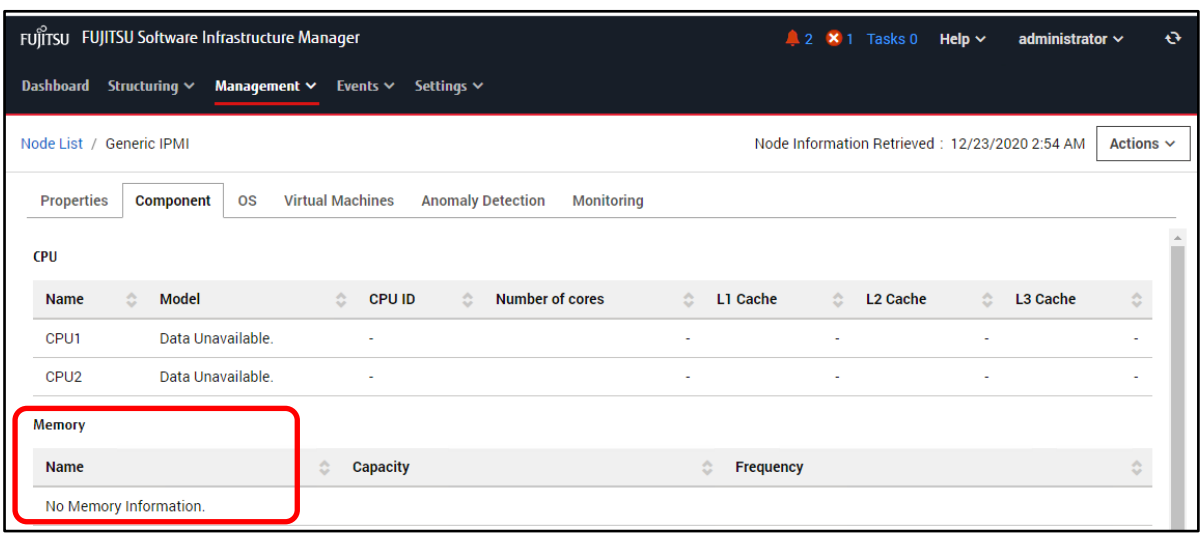
Judgment condition	CPU model
When there is Product Name information in the judgment items	Display Product Name Values
When there is no Product Name information in the judgment items	Display "Data Unavailable"

ipmitool Command Execution Example (IP address: 10.12.255.255, username: admin, password: pass)

```
[root@localhost ~]# ipmitool -I lanplus -H 10.12.255.255 -U admin -P pass fru
FRU Device Description : Builtin FRU Device (ID 0)
 Chassis Type             : Rack Mount Chassis
 Chassis Serial           : SGH631X50A
 Board Mfg Date           : Wed Jan  1 09:00:00 2003
 Board Mfg                : HP
 Board Product            : ProLiant DL180 Gen9
 Board Serial             : SGH631X50A
 Board Part Number        : 833991-295
 Product Manufacturer     : HP
 Product Name             : ProLiant DL180 Gen9
 Product Part Number      : 833991-295
 Product Serial           : SGH631X50A
 :
FRU Device Description : CPU 1 (ID 16)
 Product Manufacturer     : Intel(R) Corporation
 Product Name             : Intel(R) Xeon(R) CPU E5-2630 v4 @ 2.20GHz

FRU Device Description : CPU 2 (ID 17)
 Product Manufacturer     : Intel(R) Corporation
 Product Name             : Intel(R) Xeon(R) CPU E5-2630 v4 @ 2.20GHz

FRU Device Description : CPU 1 DIMM 1 (ID 110)
 Device not present (Command response could not be provided)
     :
(Below is omitted)
```

Use the Product Name value of the judgment item ("FRU Device Description: CPU") as the CPU model.

(4) Component information (Memory)



The memory name is determined from the information (judgment item) obtained by using ipmitool and displayed on the GUI.

Command line	ipmitool -I lanplus -H <IP Address> -U <Username> -P <Password> sensor
Judgment item	Extract display portion of "DIMM.* discrete", and the contents displayed from the beginning of the line to the first "|" are extracted.

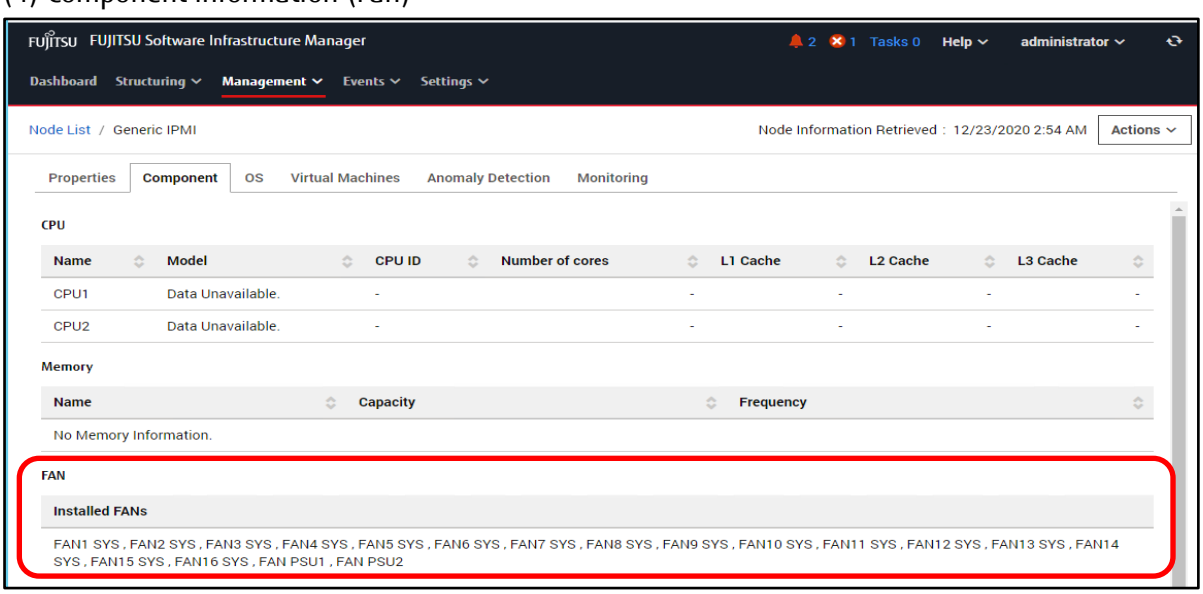
The memory name is judged (decision) by the following judgment conditions.

Judgment condition	Memory
When there are judgment items	Display as Memory name
When there are no judgment items	Display "No Memory information"

ipmitool Command Execution Example (IP address: 10.12.255.255, username: admin, password: pass)
(The results below are for cases where there is no information that matches the search criteria)

```
# ipmitool -I lanplus -H10.12.255.255 -U admin -P pass sensor
 Ambient          | 26.000     | degrees C  | ok    | na        | 1.000     | 6.000     | 37.000    | 42.000    | na
 Systemboard      | 49.000     | degrees C  | ok    | na        | na        | na        | 75.000    | 80.000    | na
 CPU1             | 60.000     | degrees C  | ok    | na        | na        | na        | 96.000    | 97.000    | na
 CPU2             | 60.000     | degrees C  | ok    | na        | na        | na        | 96.000    | 97.000    | na
 MEM A            | 39.000     | degrees C  | ok    | na        | na        | na        | 78.000    | 82.000    | na
 MEM B            | 40.000     | degrees C  | ok    | na        | na        | na        | 78.000    | 82.000    | na
  : (omitted)
 Ambient          | 0x0        | discrete   | 0x0280| na        | na        | na        | na        | na        | na
 Ambient          | 0x0        | discrete   | 0x0180| na        | na        | na        | na        | na        | na
 CPU1             | 0x0        | discrete   | 0x8080| na        | na        | na        | na        | na        | na
 CPU2             | 0x0        | discrete   | 0x8080| na        | na        | na        | na        | na        | na
(Below is omitted)
```

(4) Component information (Fan)



The fan information is determined from the information (judgment item) obtained by using ipmitool and displayed on the GUI.

Command line	ipmitool -I lanplus -H <IP Address> -U <Username> -P <Password> sdr type 0x04
Judgment item	From the information retrieved, the information without the following items is extracted, and the contents displayed from the beginning of the line to the first "|" are extracted. ・ Redundancy ・ Fans ・ DutyCycle ・ Presence ・ Disabled ・ ns ・ Transition to Off Line

The fan is judged (decision) by the following judgment conditions.

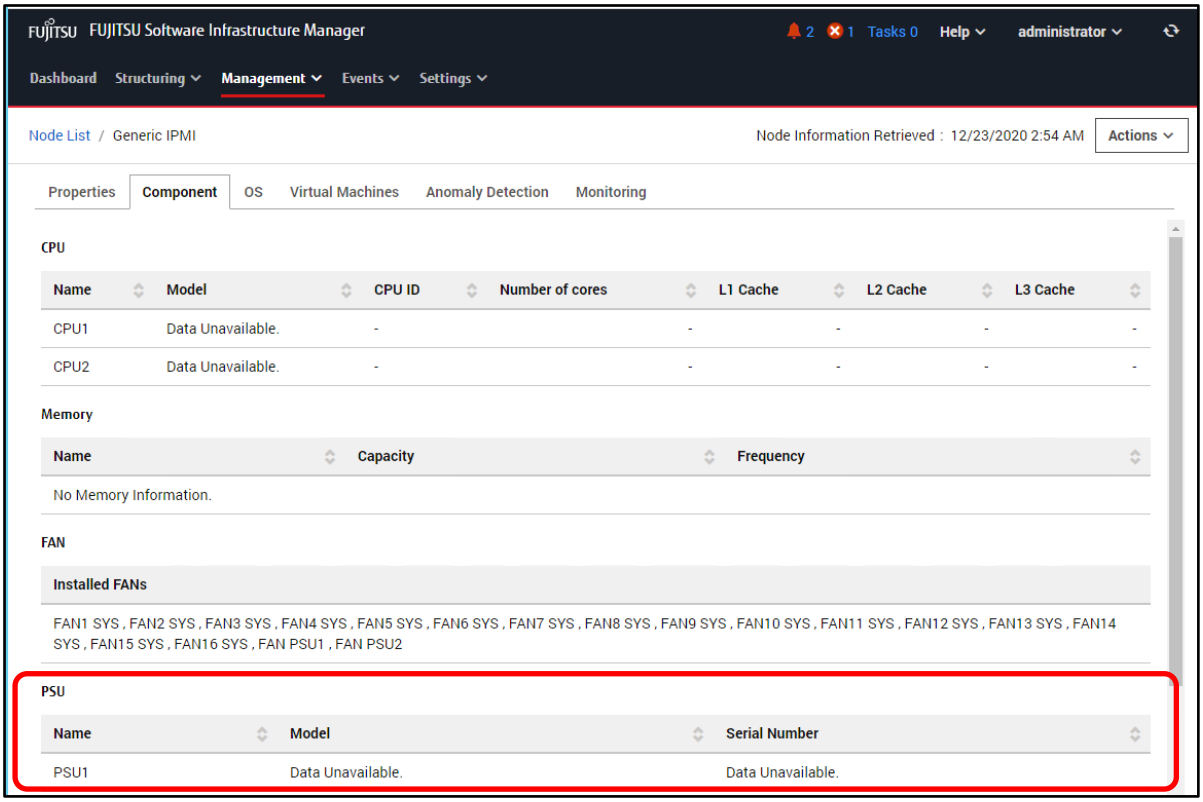
Judgment condition	Fan
When information on judgment items is available	Display as installed FANs information
When there is no information on judgment items	Display "No Fan information"

ipmitool Command Execution Example (IP address: 10.12.255.255, username: admin, password: pass)

```
[root@localhost ~]#ipmitool -I lanplus - H 10.12.255.255 -U admin -P pass sdr type 0x04
FAN1 SYS         | 2Ah | ok    | 29.0 | 3720 RPM
FAN2 SYS         | 2Bh | ok    | 29.1 | 4200 RPM
FAN3 SYS         | 2Ch | ok    | 29.2 | 3720 RPM
FAN4 SYS         | 2Dh | ok    | 29.3 | 4200 RPM
FAN5 SYS         | 2Eh | ok    | 29.4 | 3720 RPM
FAN6 SYS         | 2Fh | ok    | 29.5 | 4320 RPM
FAN7 SYS         | 30h | ok    | 29.6 | 3600 RPM
FAN8 SYS         | 31h | ok    | 29.7 | 4320 RPM
   : (omitted)
FAN15 SYS        | 38h | ok    | 29.14 | 5400 RPM
FAN16 SYS        | 39h | ok    | 29.15 | 6600 RPM
FAN PSU1         | 3Ah | ok    | 10.4 | 3600 RPM
FAN PSU2         | 3Bh | ok    | 10.8 | 4720 RPM
```

Uses the "FAN* SYS"..."FAN PSU2" listed from the beginning of the line to the first "|" as the installed FANs

(4) Component information (PSU)



For the PSU name

The PSU name is determined from the information (judgment item) retrieved by using ipmitool and displayed on the GUI.

Command line	ipmitool -I lanplus -H <IP Address> -U <Username> -P <Password> sdr type 0x08
Judgment item	From the information retrieved, the information without the following items is extracted, and the contents displayed from the beginning of the line to the first "|" are extracted. ・ Redundancy ・ Supplies ・ Output ・ Device Present ・ Device Absent ・ ns

The PSU name is judged (decision) by the following judgment conditions.

Judgment condition	PSU name
When information on judgment items is available	Display as PSU name
When there is no information on judgment items	No PSU name

ipmitool Command Execution Example (IP address: 10.12.255.255, username: admin, password: pass)
(The results below are for cases where there is no information that matches the search criteria)

```
# ipmitool -I lanplus -H 10.12.255.255 -U admin -P pass sdr type 0x08
Power Supply 1     | 3Ah | ns    | 10.1 | No Reading
PS 1 Output        | 3Bh | ns    | 10.1 | No Reading
PS 1 Presence      | 3Ch | ns    | 10.1 | No Reading
Power Supply 2     | 3Dh | ns    | 10.2 | No Reading
PS 2 Output        | 3Eh | ns    | 10.2 | No Reading
PS 2 Presence      | 3Fh | ns    | 10.2 | No Reading
```

For the PSU detail information (model, serial number)

The PSU detail information is determined from the information (judgment item) obtained by using ipmitool and displayed on the GUI.

Command line	ipmitool -I lanplus -H <IP Address> -U <Username> -P <Password> fru
Judgment item	Extract display portion of "FRU Device Description: PSU"

The PSU detail information is judged (decision) by the following judgment conditions.

Judgment condition	PSU detail information
When there is information for Product Serial or Product Name information in the judgment items	Display Product Name as Model and Product Serial as Serial Number
When there is no information for Product Serial or Product Name information in the judgment items	Display "Data Unavailable"

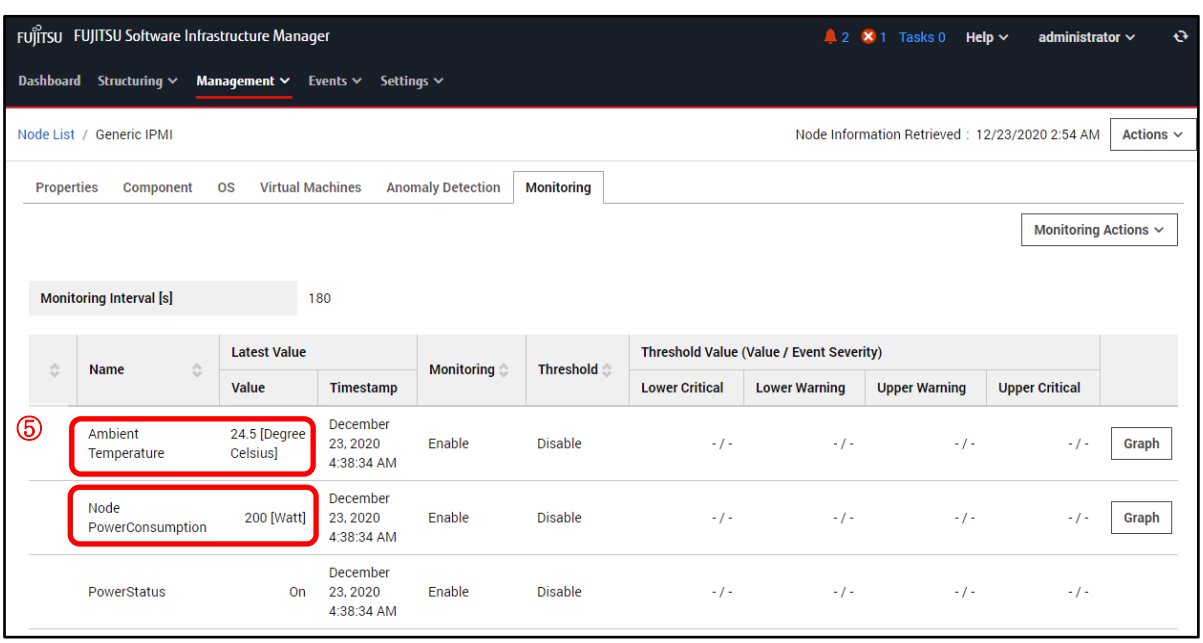
ipmitool Command Execution Example (IP address: 10.12.255.255, username: admin, password: pass)

(The results below are for cases where there is no information that matches the search criteria)

```
[root@localhost ~]# ipmitool -I lanplus -H 10.12.255.255 -U admin -P pass fru
FRU Device Description : Builtin FRU Device (ID 0)
 :  (omitted)
FRU Device Description : PSU1 (ID 10)
  Board Mfg Date            : Wed Nov  2 01:18:00 2016
  Board Mfg                 : DELTA
  Board Product             : DPS-800AB-1 A
  Board Serial              : GPBD1644081633
  Board Part Number         : A3C40175928
  Board Extra               : S4A
  Board Extra               : 08

FRU Device Description : PSU2 (ID 11)
  Board Mfg Date            : Wed Nov  2 01:18:00 2016
  Board Mfg                 : DELTA
  Board Product             : DPS-800AB-1 A
  Board Serial              : GPBD1644081637
  Board Part Number         : A3C40175928
  Board Extra               : S4A
  Board Extra               : 08
      :
(Below is omitted)
```

There is a display part of "FRU Device Description: PSU", but there is no Product Name and Product Serial, so the display on the GUI shows "Data Unavailable."

(5) Ambient temperature and power consumption of the device



For Ambient Temperature

Command line	ipmitool -I lanplus -H <IP Address> -U <Username> -P <Password> sdr type 0x01
Judgment item	The display part of the following items is extracted from the information retrieved. ・ Ambient ・ Inlet Temp ・ Temp 1 ・ Fnt Pnl Temp

The Ambient Temperature is judged (decision) by the following judgment conditions.

Judgment condition	Ambient Temperature
When there is a value of degrees C in the value of judgment item	Display
When there is no value of degrees C in the value of judgment item	Not displayed

ipmitool Command Execution Example (IP address: 10.12.255.255, username: admin, password: pass)

```
# ipmitool -I lanplus -H 10.12.255.255 -U admin -P pass sdr type 0x01
Ambient          | 01h | ok  | 55.0 | 25.50 degrees C
Systemboard      | 02h | ok  |  7.0 | 48 degrees C
CPU1             | 04h | ok  |  3.0 | 57 degrees C
CPU2             | 05h | ok  |  3.1 | 63 degrees C
MEM A            | 06h | ok  | 32.0 | 39 degrees C
MEM B            | 07h | ok  | 32.1 | 39 degrees C
      :
(Below is omitted)
```

The value of degrees C in the judgment item ("Ambient") is used.

For Node PowerConsumption

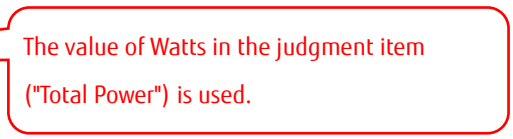
Command line	ipmitool -I lanplus -H <IP Address> -U <Username> -P <Password> sdr
Judgment item	The display part of the following items is extracted from the information retrieved. ・ Total Power *| .*Watt ・ Pwr Consumption *| .*Watt ・ Power Meter *| .*Watt ・ POWER *| .*Watt ・ System Power *| .*Watt

The Node PowerConsumption is judged (decision) by the following judgment conditions.

Judgment condition	Node PowerConsumption
When there is a value of Watt in the value of judgment item	Display
When there is no value of Watt in the value of judgment item	Not displayed

ipmitool Command Execution Example (IP address: 10.12.255.255, username: admin, password: pass)

```
ipmitool -I lanplus -H 10.12.255.255 -U admin -P pass sdr
Ambient              | 25.50 degrees C     | ok
Systemboard          | 48 degrees C        | ok
CPU1                 | 58 degrees C        | ok
 :   (omitted)
Total Power          | 192 Watts           | ok
Total Power Out      | 148 Watts           | ok
      :
(Below is omitted)
```



Appendix A General Monitoring Functions list

The following functions are supported.

A.1 The Functions list of the node type "Server"

Note: X : Supported -: Not supported

Outline of Functions		Functions in Detail	General Node		
			PING	SNMP	IPMI
Monitoring	Discovery and Registration of New Nodes	Manual Discovery	-	-	-
		Auto Discovery	-	-	-
		Registration of nodes	X	X	X
		IP address settings for Manual Discovery Node	-	-	-
		IP address settings for Auto Discovery Node	-	-	-
		Monitoring Policy Settings in Node Registration	-	-	-
		Display of the mounting position of the nodes in the rack	X	X	X
	Monitoring of Server	Status	X	X	X
		Alarm Status	X	X	X
		LED status indication (Power, Error, CSS, Location)	-	-	-
		SNMP Trap Reception	X	X	X
		Single Sign-On to managed devices from the GUI of ISM	-	-	-
	Display of Network Connection Information	Automatic collection and display of connection information (LAN)	-	-	-
		Automatic collection and display of connection information (SAN)	-	-	-
		Enter and display of manual connection information (LAN/SAN)	-	-	-
		Display of connection status change	-	-	-
		Display of network statistics	-	-	-
		Display of impacted area	-	-	-

Outline of Functions		Functions in Detail	General Node		
			PING	SNMP	IPMI
	Record of Monitoring Information (Information Retrieval/Management of Threshold/Display of Graph/CSV Output)	Component temperatures (CPU/Memory/PSU)	-	-	-
		Intake air temperature	-	-	X
		Housing temperature	-	-	-
		Housing power consumption	-	-	X
		PSU power consumption	-	-	-
		Fan rotation frequency	-	-	-
		Performance information (CPU Busy Rate/Memory Utilization/ Disk Utilization)	-	-	X
	Notification	Send Mail	X	X	X
		Execution of Remote Script	X	X	X
		SNMP Trap Forward	X	X	X
		Syslog Forward	X	X	X
	Display of Device Information	Information of mounted components	-	-	X
		OS information	-	-	X
		Information of virtual machine	-	-	X
		Information of Packet Analysis of Virtual Network	-	-	-
		Information of disk volume (capacity, used capacity)	-	-	X
	Log Management	Log Collection (OS)	-	-	X
		Log Collection (Hardware)	-	-	-
Node Operation	Operation of ID LED		-	-	-
	Operation of Power Source (On)		-	-	-
	Power Capping (not supported for ISM PRIMEFLEX)		-	-	-
Model Settings	Profile Assignment	BIOS/iRMC settings	-	-	-
		Virtual IO settings	-	-	-
		OS installation	-	-	-
		OS installation (eLCM)	-	-	-
	Hardware Settings	Backup/Restore Hardware Settings	-	-	-
		Add Profile/Policy from Backup	-	-	-

Outline of Functions		Functions in Detail	General Node		
			PING	SNMP	IPMI
		Hardware Settings and Verification of Profiles	-	-	-
Maintenance Support	Display of Firmware Version	Display of currently operating version	-	-	-
		Display of difference from repository	-	-	-
	Management of Firmware Versions	Comparison display of the firmware versions between the version defined in Firmware Baseline and operating version	-	-	-
	Firmware Update (Online Update)	BIOS firmware update	-	-	-
		iRMC/BMC firmware update	-	-	-
		BX management blade firmware update	-	-	-
		PRIMEQUEST firmware update	-	-	-
		PCI Card firmware update	-	-	-
	Firmware Update (Offline Update)	BIOS firmware update	-	-	-
		iRMC/BMC firmware update	-	-	-
		PRIMEQUEST firmware update	-	-	-
		PCI Card firmware update	-	-	-
	Firmware Update (eLCM Offline Update)	BIOS firmware update	-	-	-
		iRMC/BMC firmware update	-	-	-
		PCI Card firmware update	-	-	-

A.2 The Functions list of the node type "Switch", "Storage", and "Facility"

Note: X : Supported - : Not supported

* IPMI does not apply to these node types

Outline of Functions		Functions in Detail	General Node *	
			PING	SNMP
Monitoring	Discovery and Registration of New Nodes	Manual Discovery	-	-
		Auto Discovery	-	-
		Registration of nodes	X	X
		IP address settings for Manual Discovery Node	-	-
		IP address settings for Auto Discovery Node	-	-
		Display of the mounting position of the nodes in the rack	X	X
	Monitoring of Storage/Network	Status	X	X
		Alarm Status	X	X
		LED status indication (Power)	-	-
		SNMP Trap Reception	X	X
	Display of Network Connection Information	Automatic collection and display of connection information (LAN)	-	-
		Automatic collection and display of connection information (SAN)	-	-
		Enter and display of manual connection information (LAN/SAN)	-	-
		Display of VLAN/Link Aggregation	-	-
		Display of network statistics	-	-
		Display of impacted area	-	-
	Record of Monitoring Information (Information Retrieval/Management of Threshold/Display of Graph/CSV Output)	Component temperatures (CPU/Memory/PSU)	-	-
		Intake air temperature	-	-
		Housing temperature	-	-
		Housing power consumption	-	-
		PSU power consumption	-	-
		Fan rotation frequency	-	-

Outline of Functions		Functions in Detail	General Node *	
			PING	SNMP
		Performance information (CPU Busy Rate/Memory Utilization)	-	-
		Information of Network Statistics	-	-
	Notification	Send Mail	X	X
		Execution of Remote Script	X	X
		SNMP Trap Forward	X	X
		Syslog Forward	X	X
	Display of Device Information	Information of mounted components	-	-
	Node Management	Log Collection (Hardware)	-	-
	Virtual Resource Management		-	-
Node Operation	Operation of ID LED		-	-
	Operation of Power Source (On)		-	-
	Power Capping (not supported for ISM PRIMEFLEX)		-	-
Model Settings	Profile Assignment	Switch settings	-	-
		Storage settings	-	-
	Hardware Settings	Backup/Restore Hardware Settings	-	-
		Add Profile/Policy from Backup	-	-
	Network Settings	VLAN/Link Aggregation Settings	-	-
Maintenance Support	Display of Firmware Version	Display of currently operating version	-	-
		Display of difference from repository	-	-
	Management of Firmware Versions	Comparison display of the firmware versions between the version defined in Firmware Baseline and operating version	-	-
	Firmware Update	Switch firmware update	-	-
		Storage firmware update	-	-