

# **EXPRESSSCOPE Engine 3 User's Guide**

**Scalable Modular Server**

**DX2000**

- 1. Overview**
- 2. Configuring the Server Module**
- 3. Configuring a Management PC**
- 4. Networking**
- 5. Using Remote Management**
- 6. Troubleshooting**

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## **ABOUT THIS USER' S GUIDE**

This User's Guide provides the instructions for properly using the EXPRESSSCOPE Engine 3. Please keep this document at hand for a quick reference and use it when you encounter any questions or troubles while using the EXPRESSSCOPE Engine 3 for remote control, monitoring, and management of the Server Module.

# Table of Contents

Trademarks and Patents .....	2
Notes .....	2
About This User' s Guide .....	2
Glossary.....	5
Symbols .....	7
Preface .....	8
<b>1. Overview .....</b>	<b>9</b>
<b>2. Configuring the Server Module .....</b>	<b>10</b>
Default Network Settings .....	10
Management LAN Settings .....	11
<b>3. Configuring a Management PC .....</b>	<b>14</b>
Setting your browser .....	14
Supported browsers .....	14
Java Runtime Environment.....	15
<b>4. Networking .....</b>	<b>17</b>
TCP/IP Ports .....	17
<b>5. Using Remote Management .....</b>	<b>18</b>
Overview .....	18
Connecting to the web server .....	18
Login and logout .....	20
HEADER MENU .....	22
SERVER PANEL.....	23
SYSTEM .....	24
REMOTE ACCESS .....	27
Remote KVM/media .....	28
CONFIGURATION .....	31
UPDATE.....	40
<b>6. Troubleshooting .....</b>	<b>41</b>
Error messages.....	41
About ECO Setting.....	41
About Network information.....	41
Others Tips.....	41
<b>License Notes .....</b>	<b>43</b>
GNU General Public License .....	43
GNU Lesser General Public Licsense .....	49
OpenSSL Toolkit .....	57
MIT License .....	60
BSD License .....	61
SHA2.....	61
HMAC-SHA2 .....	61
lighttpd.....	62
NET-SNMP .....	63
TCP Wrapper .....	69
Portable SDK for UPnP Devices (libupnp) .....	69
EDK II .....	70
Other open source software programs .....	70
OpenSSH .....	70
OpenSLP.....	75
OpenLDAP .....	75
sblim-sfcb .....	76
SQLite .....	77
MD2.....	77
MD5.....	78

ExploerCanvas.....	79
js-tables.....	79
IPA Font License Agreement v1.0 .....	82
Oracle Code sample License Note.....	85

## GLOSSARY

Term	Description
AC-LINK	This function is used to control the power state after AC power is turned on. It can be set on Server Module BIOS.
Active Directory	This means Microsoft's directory service.
Aggressive Mode	This function suppresses the power consumption of the Server Module to less than the upper limit threshold that is specified by the user.(Old name is "Critical Power Capping")
BMC	Baseboard Management Controller This management controller complies with the IPMI specification and provides the monitoring capabilities of system's hardware without depending on the state and OS of the target Server Module. This controller is standard and be equipped with the motherboard.
Boot Time Configuration	This function can reduce the power consumption and can change the number of cores of the CPU at the server power on time.
CIFS	One of the file sharing protocol. It can be used in Windows OS and many other OS.
CPU Throttling	This function suppresses the frequency of CPU depending on the load status of the server.
ECO	This is a generic name of power management function.
ESMPRO/Server Manager	The server management software that is introduced to the management PC.
EXPRESSSCOPE Engine 3	This is a server management controller for Express 5800 and Scalable Modular Server series and is equipped in the server that has shipped after fiscal year 2011. This contains the function of BMC that complies with IPMI specification, and provides various functions.
FRU	Field Replaceable Unit It is maintenance and replacement parts information that has been defined by the IPMI specification.
IPMI	Intelligent Platform Management Interface It is a standard interface specification for monitoring the server's hardware without depending on the state and OS of the Server Module.
LDAP	Lightweight Directory Access Protocol It is a protocol for connecting to a directory service.
NFS	One of the file sharing protocol. It can be mainly used in Unix OS and Linux OS.
Non-Aggressive Mode	This function reduces the power consumption of the Server Module while suppressing the degradation of performance to minimum. (Old name is "Non-Critical Power Capping")
Safe Power Capping	This function will be forced to control the power if the power consumption of the server has been to an unmeasurable state.
SEL	System Event Log It is hardware log information that has been defined by the IPMI specification.
SDR	Sensor Data Record

	It is sensor information that has been defined by the IPMI specification.
SNMP	Simple Network Management Protocol A protocol for monitoring/control network equipment and computer and so on. The IPMI compliant SNMP alert function is only used in EXPRESSSCOPE Engine 3.
SOL	Serial Over LAN This function redirects the serial port input/output of the managed server to the management PC that is connected to the managed server in LAN.
VLAN	Virtual Local Area Network The virtual network which is configured separately from physical connection by the network device such as switches.
RA	Router Advertisement It is one of the mechanisms for automatic allocation of an IPv6 address.
Access log	This function records the information about login/logout and several operations to EXPRESSSCOPE Engine 3.
Image Redirection	EXPRESSSCOPE Engine 3 can mount the specified file server and can virtually display the image files on file server as the USB memory or CD/DVD or FD media on managed server.
Search Base	It is a search start position when searching on the LDAP server. Specifies whether to search for any entry under the directory tree structure.
Memory Throttling	This function suppresses bandwidth of the memory depending on the load status of the Server Module.
Domain Controller	It is a server which provides centralized management of the authentication in the network. In this document, it refers to the Active Directory server.
Bind Domain Name	It is an identifier of the bind user to perform search operation in LDAP.
Bind Password	It is a password of the bind user.
Automatic Video Recording	This function automatically records the video screen output while in BIOS POST (Power On Self-Test) or in OS stall (When the IPMI defined Watch Dog Timer has timed out).
Remote KVM	Remote Keyboard Video Mouse This function has virtually realized the video output and keyboard/mouse input of the managed Server Module on management PC.
Remote Media	This function has virtually recognized the USB Memory, CD/DVD ROM, FD media of the management PC on the managed server.
Management PC	The generic name of the personal computer which manages the managed server from remote in the network.

## SYMBOLS

The following symbols are used throughout this manual.



Items to be observed or points to be noted when using this Server Module.



Items to be checked when using this Server Module or software.



Information useful or convenient for you.



Example of troubles occurred.

## **PREFACE**

The EXPRESSSCOPE Engine 3 enables you to monitor the operating status of the Server Module (temperature and so forth), to operate the Server Module's keyboard, video, and mouse (KVM) from a remote console and to access to CD-ROM/Floppy disk drives on a remote site\*. The EXPRESSSCOPE Engine 3 is enabled by a system management LSI called "BMC (Baseboard Management Controller)" and thus referred to as the "BMC" hereinafter in this User's Guide.



# 1. Overview

The Server Module comes standard with the BMC (system management LSI) and a management LAN port dedicated to the BMC. By connecting the management LAN port to your network, you can monitor and control the Server Module from a remote site via a Web browser.

You can operate the Server Module's KVM (keyboard, video, and mouse) from a remote console and access CD-ROM/DVD-ROM/floppy disk drives and USB memory in a remote site(Remote KVM/media).

## 2. Configuring the Server Module

This chapter describes the settings necessary to configure the BMC in the Server Module.

### DEFAULT NETWORK SETTINGS

The BMC's default network settings are as follows:

<b>IP Address:</b>	<b>Obtain IP address automatically from DHCP server</b>
<b>User Name:</b>	<b>Administrator</b>
<b>Password:</b>	<b>Administrator</b>
<b>DHCP</b>	<b>Enabled</b>
<b>VLAN</b>	<b>Enabled</b>
<b>VLANID</b>	<b>4092</b>



For security reasons, change the above default settings (User Name, and Password) to the ones appropriate in your network environment. Refer to "Chapter 5: Using Remote Management" for details.

## MANAGEMENT LAN SETTINGS

You can configure basic setting of management LAN settings of BMC for remote management using Web server function of BMC by using some tools.

- Web Browser  
Please refer to Chapter 5 for details.
- Server Configuration Utility (Off-line)  
Press the F4 key during POST(Power on Self-Test) or displaying logo immediately after power on or reset the Server Module to enter the Server Configuration Utility.

The item that can be set with each tool is different. Please refer to help of each tool for details of a set item.

Setting item	Web Browser	Off-line Server Configuration Utility	On-line Server Configuration Utility (Windows/Linux)
IP Address Subnet Mask Default Gateway DHCP VLAN VLAN ID VLAN Priority IPv6 Address Assignment Mode IPv6 Link Local Address IPv6 Static Address IPv6 Prefix Length IPv6 Global Address IPv6 Gateway Address IPv6 DNS Server Address	OK	OK	OK
Service Settings HTTP/HTTPS	OK	OK	OK
BMC Initialization	NG	OK	OK

### Connection Type

A Server Module supports only Auto Negotiation.



**Because the Server Module supports only Auto Negotiation as Connection Type, Link speed and Duplex mode (Connection Type) of the LAN switch should select [Auto Negotiation].**

### IP Address

If DHCP has been used, an automatically obtained IP address will appear.

If DHCP is not used to automatically obtain an IP address, enter the BMC's IP address.

(IPv4 default setting is 192.168.1.1. IPv6 default setting is link local address (\*2))

rather than global address.)

#### Subnet Mask

If DHCP has been used, an automatically obtained subnet mask IP address will appear.

If DHCP is not used to automatically obtain a subnet mask IP address, enter the subnet mask of your management LAN.  
(Default setting is 255.255.255.0.)

#### Default Gateway

If DHCP has been used, an automatically obtained default gateway will appear.

If DHCP is not used to automatically obtain a default gateway IP address, enter the default gateway of your management LAN.  
(Default setting is 0.0.0.0.)

#### DHCP

If you want to obtain an IP address, choose [Enabled].

If you want to manually configure an IP address, choose [Disabled].

(Default setting is [Enabled]( \*1 ).)

#### IPv6 Address Assignment Mode

Please choose "Static" or "Dynamic". (Default setting is [Dynamic].)

#### IPv6 Link Local Address

BMC's IPv6 Link Local Address is displayed.

#### IPv6 Static Address

It is displayed for "Static" IPv6 Assignment Mode. Please set a static address.

#### IPv6 Prefix Length

Please set a prefix length. (Default setting is [64].)

#### IPv6 Global Address

It is displayed for "Dynamic" IPv6 Assignment Mode. IPv6 global address which is assigned by RA (Router Advertisement) is displayed.

#### IPv6 Gateway Address

It is displayed for "Static" IPv6 Assignment Mode. Please set IPv6 Gateway address.  
(Default setting is [0::0].)

#### IPv6 DNS Server Address

It is displayed for "Static" IPv6 Assignment Mode. Please set IPv6 DNS server address. (Default setting is [0::0].)

#### Web Interface:

##### HTTP Interface

Select [Enabled] to use the Web Server function using the HTTP. If not, select [Disabled]. (Default setting is [Enabled]. )

##### HTTP Port Number

Specify the HTTP port number. (Default setting is 80.)

##### HTTPS Interface

Select [Enabled] to use the Web Server function using the HTTPS(SSL). If not, select [Disabled]. (Default setting is [Enabled].)

## HTTPS Port Number

Specify the HTTPS(SSL)port number. (Default setting is 443.)

## BMC Initialization

The BMC Configuration will be cleared. Please use this function when you forgot your user name and password, etc. for remote management via a Web browser and command line interface. This function will be executed when you select "YES" on confirmation menu which appears after pressing the "Enter" key. This menu invokes the BMC configuration clear operation after selecting the "YES".



- **These BMC Management LAN-related settings of BMC are not changed to default settings by executing the "Load Setup Default" of BIOS Setup Utility. (Execute the "BMC Initialization" to set default settings to the BMC Management LAN settings.)**
- **When "BMC Initialization" is executed, BMC is reset. It will take about three minutes by the time initialization is completed after it executes it. During the initialization, Do not shutdown the system, reboot the system, or perform any switch operation after pressing the BMC reset button,**



**The BMC Initialization also deletes the settings for NEC ESM PRO Manager. Be sure to perform a backup for the NEC ESM PRO Manager settings before you change the BMC settings.**

\*2 This address is granted to BMC network interface and It is automatically generated to be unique form as (FE80 :: /64) within one subnet. Even if IPv6 setting is disabled, this address is granted.

IPv6 supports both of manual setting and RA (Router Advertisement) setting, but does not support DHCP server. Also, the user interface available in IPv6 is only connection from Web browser.

The following list shows the available function menu in each IPv4 and IPv6.

Function items		IPv4	IPv6
Connection from Web browser	DNS Server	OK	OK
	DHCP Server	OK	NG
	Active Directory	OK	NG
	LDAP	OK	NG
	Mail Alert	OK	OK
	SNMP Alert	OK	NG
	Remote KVM/Media	OK	OK
	Image Redirection	OK	OK
	Access log	OK	OK

# 3. Configuring a Management PC

This chapter describes the settings necessary for the remote management PC that will be connected to the Server Module.

## SETTING YOUR BROWSER

Configure the following settings:

- Enable SSL.
- Allow JavaScript execution.
- Allow Java execution.
- Accept Cookies.
- Allow Popup.
- Enable Stylesheet.
- Enable HTTP1.1.

\* If you use Microsoft Internet Explorer, the following configurations are required.

- Add BMC's address to Trusted Sites.
- Set Trusted Site's security level to Medium.
- If Enhanced Security is enabled, adding [about:blank] to Trusted Sites is required.
- If the "Do Not Save Encrypted Pages To Disk" of [Security]-[Advanced]-[Internet Options] is check on, un-check this item is required.
- If the "Play animations in web pages" of [Multimedia]-[Advanced]-[Internet Options] is check off, check this item is required.
- Because the security settings of browser are enhanced on server OS, if you use browser, you might find that some of the buttons has no response. In this case, it is necessary to be off the IE SEC settings.
- please disable "Use SSL 3.0" and enable TLS protocol 1.0 or later from [Advanced]-[Internet Options].

\* If you use Mozilla Firefox (Supported only on Linux OS), below configuration is required.

- Enter URL "about:config" and change the value of "network.http.max-persistent-connections-per-server" to 4.
- Enter URL "about:config" and change the following value to disable SSL protocol 3.0.  
For ESR17, "security.enable\_ssl3" to "false"  
For ESR24 or later, "security.tls.version.min" to "1"

## SUPPORTED BROWSERS

The following browsers are supported by Windows Vista (SP2), Windows 7, Windows 8, Windows 8.1, Windows 10, Windows Server 2008, Windows Server 2008 R2 (SP1), Windows Server 2012 and Windows Server 2012 R2:

- Microsoft Internet Explorer 8.0 -
- Microsoft Internet Explorer 9.0 -
- Microsoft Internet Explorer 10.0 -
- Microsoft Internet Explorer 11.0

The following browser is supported by Red Hat Enterprise Linux WS (version 6.5 or more/version 7.0 or more) and Red Hat Enterprise Linux Desktop (version 6.5 or more/version 7.0 or more):

- Firefox ESR31 or ESR38

It's recommended that a browser be applied the latest service pack and the security patch.

Beginning January 12, 2016, only the most current version of Internet Explorer available for a supported operating system will receive technical support and security upgrades. About Microsoft Lifecycle Support policy for Internet Explorer, please refer the following URL.

<https://www.microsoft.com/en-us/WindowsForBusiness/End-of-IE-support>

<https://support.microsoft.com/en-us/lifecycle#gp/Microsoft-Internet-Explorer>

Operation guarantee of Firefox is only for ESR version.

## JAVA RUNTIME ENVIRONMENT

The management PC requires Java Runtime Environment (JRE), Standard Edition 8.0.

JRE is available free of charge from Oracle Corporation. For security reasons, you are recommended to use the latest JRE update. In addition, only the 32 bit version of Java Runtime Environment is supported.

It is necessary to set the following in the Java control panel.

- Add BMC's IP address (both HTTP/HTTPS) to [Exception Site List]-[Security].
- If the [Enable the next-generation Java Plug-in (requires browser restart)]-[Java Plug-in]-[Advanced] is not checked, please check. This item is required.
- please disable "Use SSL 3.0" and enable TLS protocol 1.0 or later from [Advanced Security Settings]-[Advanced].



**If you open multiple BMC Web using Tab browser, you may not use Remote KVM/Media successfully. In this case, please use another browser instead of browser's tab.**



**If you use Java8, you may see the dialog of 'Running this application may be a security risk'. In this case, you need to check 'I accept the risk and want to run this application' and press Run button.**



**If you use Java8, you may see the dialog of 'Block potentially unsafe components from being run?'. In this case, you need to press 'Don't Block' button or please choose the 'Enable-hide warning and run with protections' from the Mixed code of Advanced menu of Java control panel.**



**If you use Java8, it may take some time to start for certificate revocation checking of the signed Java Applet/Application. In this case, once you need to close the browser and choose the 'Do not**

**check (not recommended)' from the [Perform signed code certificate revocation checks on] of Advanced menu of Java control panel and then login again from the browser.**



## 4. Networking

### TCP/IP PORTS

The BMC uses the TCP/IP ports listed below. If you use the BMC in a firewall environment, you need to allocate the port numbers (shown in the right column) to the individual non-block ports.

Module name	Port #	Protocol	Direction	Module name	Port #
Remote Media (Non-Encryption)	Dynamic(*1)	TCP	↔	BMC	5120(CD/DVD) 5122(USB MEM) 5123(FD) (*2)
Remote Media (Encryption)	Dynamic(*1)	TCP	↔	BMC	5124(CD/DVD) 5126(USB MEM) 5127(FD) (*2)
Web browser (Non-Encryption)	Dynamic(*1)	TCP	↔	BMC	80(*3)
Web browser (Encryption)	Dynamic(*1)	TCP	↔	BMC	443(*3)
Remote KVM Console (Non-Encryption)	Dynamic(*1)	TCP	↔	BMC	7578(*2)
Remote KVM Console (Encryption)	Dynamic(*1)	TCP	↔	BMC	7582(*2)
SMTP server	25(*4)	TCP	↔	BMC	Dynamic
LDAP server	389(*5)	TCP	↔	BMC	Dynamic
SNMP server	162	UDP	↔	BMC	Dynamic

\*1 The Dynamic ports are dynamically allocated ports and usually ranged from 1024 to 65535.

\*2 Go to [Configuration]-[System Operation] to change the port number.

\*3 Go to [Configuration]-[Network]-[Service] to change the port number.

\*4 Go to [Configuration]-[Alert]-[Mail Alert] to change the port number.

\*5 Go to [Configuration]-[User Management]-[LDAP] to change the port number.



**BMC doesn't support connection via HTTP proxy server.**



It is recommended to use the network in more than 100BASE-TX (10Mbps bandwidth or more) for remote management feature.

# 5. Using Remote Management

## OVERVIEW

The BMC Web Server function allows you to control the Server Module's power and KVM from a remote console via a Web browser.

Part of the above function is implemented by Java Applet.

## CONNECTING TO THE WEB SERVER

Access the following URL from the Web browser on the remote management PC:

`http://BMC_HostPort` or `https://BMC_HostPort`



The “BMC\_HostPort” URL includes the BMC's IP address or host name and a colon followed by a port number for HTTP or HTTPS connection: e.g. 192.168.1.1:80 If the port number is 80 for HTTP or 443 for HTTPS (default), you may omit the port number.



For security reasons, you are recommended to use HTTPS (SSL) connection. For better communication performance, use HTTP on a secured network.



When you connect via SSL, security warning messages may appear.



If you did not register the SSL server certificate, the following page is displayed and HTTPS connection is blocked. In this case, select "Continue to this website" to continue (The image if you are using Internet Explorer is as follows).



There is a problem with this website's security certificate.

The security certificate presented by this website was not issued by a trusted certificate authority.

Security certificate problems may indicate an attempt to fool you or intercept any data you send to the server.

**We recommend that you close this webpage and do not continue to this website.**

 [Click here to close this webpage.](#)

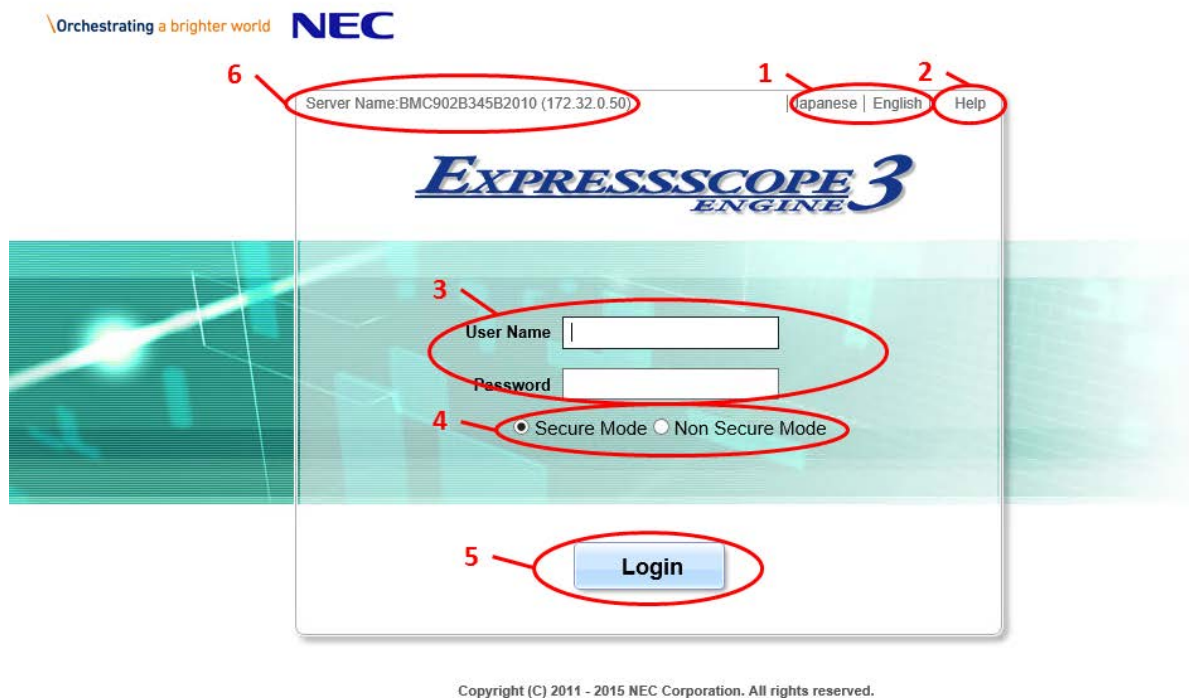
 [Continue to this website \(not recommended\).](#)

 [More information](#)

## LOGIN AND LOGOUT

### Login

When the login page appears, input the user name and password, and then click [Login].



1. The display language can be selected to English or Japanese.
2. The online help is displayed.
3. Please input username and password.
4. Secure Mode(HTTPS) or Non Secure Mode(HTTP) can be selected.
5. Please push "Login" button.
6. Server Name (BMC's IP address) is displayed (\*).

(\*) Even if you use IPv6 address to login to BMC, BMC's IP address is displayed as IPv4 address.



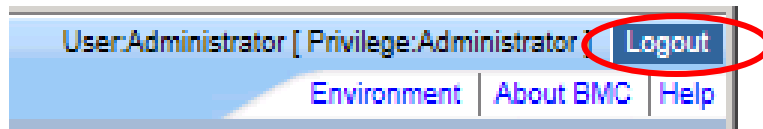
**You can select the display language only in the login page. If you want to change the language after login, log out once and change the language in the login page.**



Do not use the “Forward”, “Back” or “Reload” button in your browser after login.

## Logout

Click “Logout” in the upper right corner of the window. When a confirmation dialog appears, click [OK] to log out.



After you log out, you return to the login page. Besides, all the remote device windows that were opened during login will be closed.



If the browser is slow during login procedure, please restart your browser or logout.



BMC FW will be restarted very rare. In this case, it does not affect the software on the Server Module OS, but an existing network connection to the BMC will be disconnected, so, please connect again when you use it via network.



If it is repeatedly login to the BMC without logout normally, you cannot login to the BMC because it is reached to the maximum number of simultaneous login users caused by the Web sessions that are not terminated and are remained or because it is reached to the maximum number of simultaneous login users (4). In this case, please wait for the BMC's automatic logout time (30 minutes or more), and try again or press BMC reset button of the Server Module.

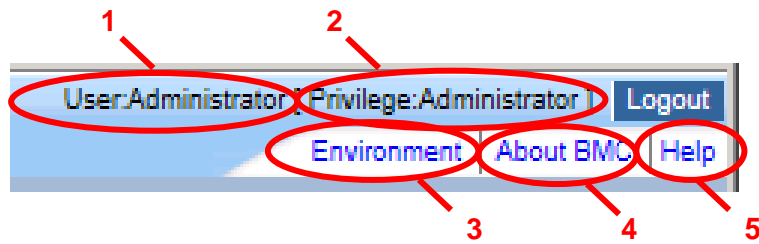


Login failure may occur after network setting to the BMC or shortly after the BMC reset. In this case, please try to login again.



Login page of BMC may be displayed when you open BMC Web from NEC ESM PRO Manager. In this case, please log-in from login page or reopen the BMC Web from NEC ESM PRO Manager.

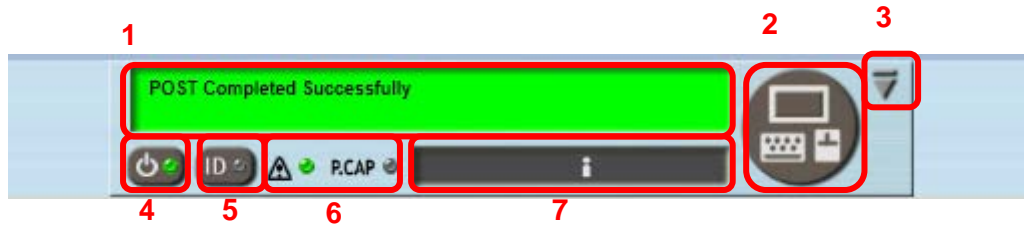
## HEADER MENU



1. Login user name is displayed.
2. Login user's privilege is displayed.
3. The environment of management PC is displayed, and set by clicking "Environment"..
4. License information is displayed.
5. The online help is displayed.

## SERVER PANEL

The server panel is displayed under a browser after log in. The server panel has following functions.

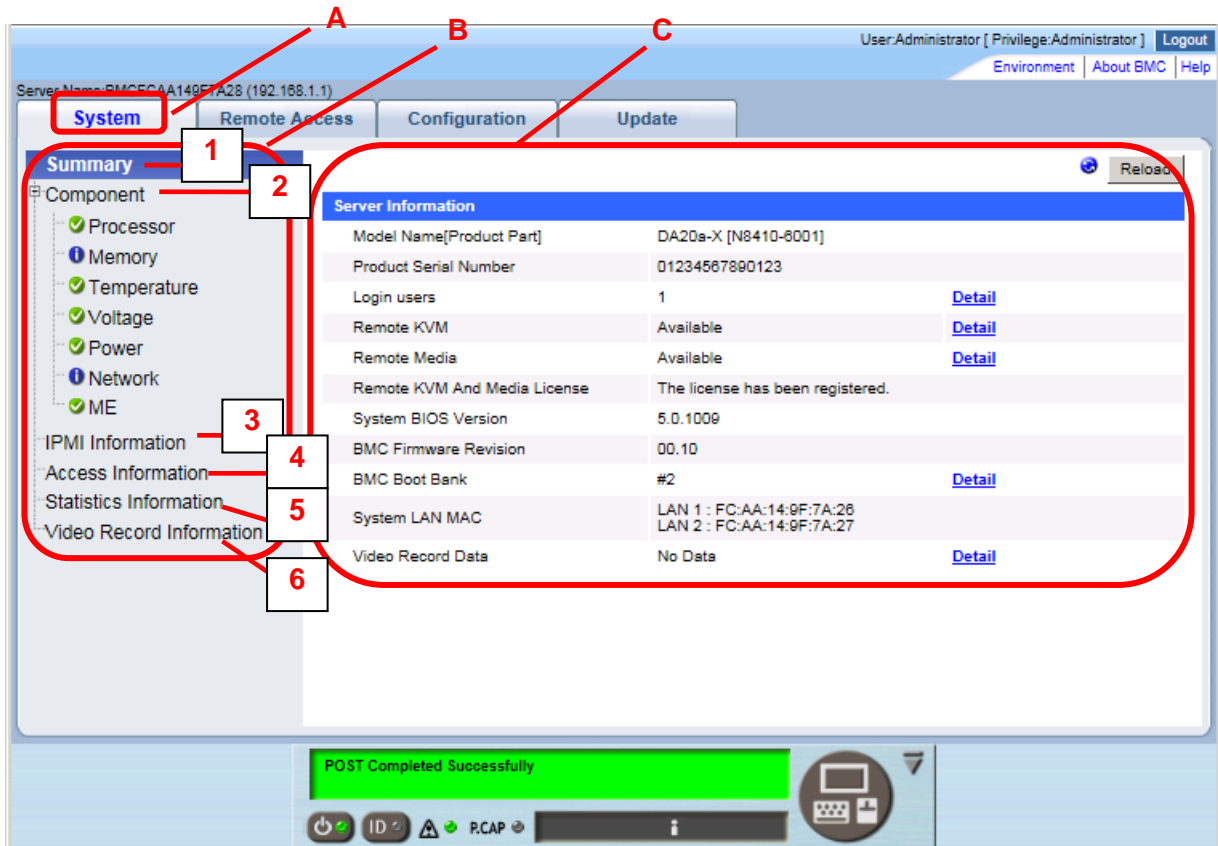


1. The virtual LCD that displays the state of the Server Module.
2. The Button to start RemoteKVM/Media
3. The button that minimizes the server panel.
4. The power switch and a lamp of the Server Module. The state of the power supply of the Server Module is shown.
5. The UID(Unit ID) switch and a lamp of the Server Module.
6. The status lamp and power capping lamp of the Server Module. The state of the Server Module is shown.
7. The login status to the BMC, the remote media or Image Redirection usage condition and automatic video record setting, whether the video data is recorded or not, and alert setting are displayed.



**Refer to Maintenance Guide of the Server Module for the message displayed in the Virtual LCD.**

## SYSTEM



- A. The system tab. BMC supported functions are displayed.
- B. The menu that can be selected in the system tab is displayed.
- C. Information selected by B is displayed. The screen of "Summary" is displayed in the above-mentioned example.

### Menu

#### 1 Summary

The state of information and BMC of the Server Module is displayed.

#### 2 Component

Only items supported with the Server Module are displayed for each item of composition information. (processor, memory, temperature, voltage, power, network and ME). Moreover, the item supported with the Server Module might not be displayed depending on the state of the system power supply and the presence state of the components such as devices.

#### 3 IPMI Information

Information (SEL,SDR,FRU,MC) is displayed in accordance with IPMI and it backs up. The preserved backup data can be referred to from the server management software (ESRAS utility and NEC ESMPRO manager).

#### 4 Access Information



Login/Logout information and operation log are displayed.

## 5 Statistics Information

The Power Graph which shows power consumption changes of latest 10 minutes or 24 hours are displayed.

## 6 Video Record Information(\*1)

If the automatic video recording function is enabled from configuration tab, the video records which were recorded at the time of BIOS POST or OS stall (\*2) are displayed. Also you can playback or download or delete them.

(\*1) The video length is maximum 5 minutes but it might be shorter than 5 minutes depending on the size limit of regions of video record data or the size of the resolution of screen to be recorded.

(\*2) OS stall is defined as the state where the BMC's IPMI watchdog timer (software stall monitoring timer) has not been updated and to be timeout when the application service (e.g NEC ESM/PRO/ServerAgent) of the host system OS monitors the stall by using watchdog timer.



**If the hardware clock setting (RTC) is set by the Server Module OS to the time in UTC offset, The timestamp of SEL (System Event Log) will be set to the time in UTC offset instead of local timestamp. Please notice that the time difference between UTC time and local time will occur.**



**When the AC power of the Server Module is turned off, the video record data that was saved by the automatic video recording function will be erased.**



**The video record data during BIOS POST will be overwritten at next collection time. On the other hand, the video record data during OS stall will be saved and not be collected at next collection time until it is deleted manually.**



**If the automatic video recording is run opening the Remote KVM/Media, the video record data on the playback screen might be displayed broken very rarely. In this case, please run the automatic video recording without opening the Remote KVM/Media.**

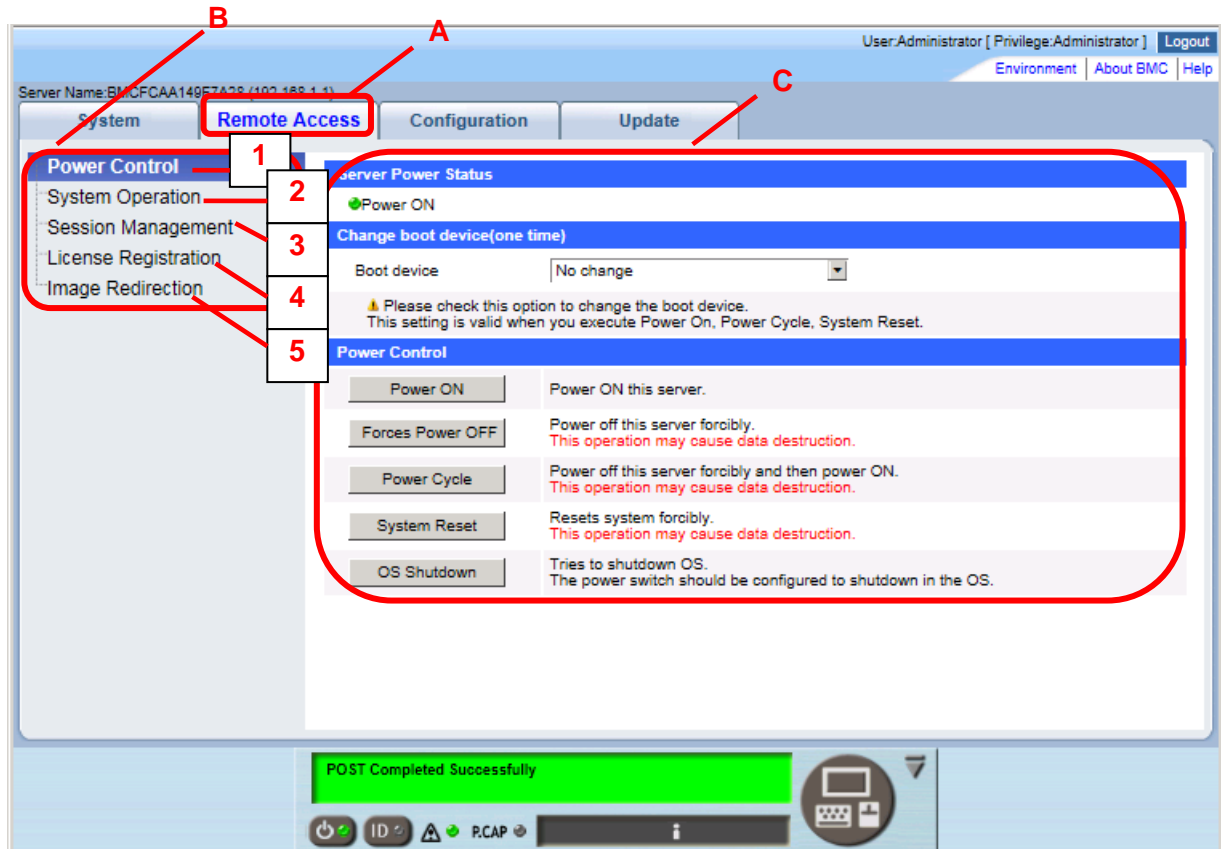


**If the host system power on by the AC-LINK with the automatic video recording is enabled, the video record data during BIOS POST might not be collected even if the AC-LINK delay time to the DC ON is short. In this case, please set the AC-LINK delay time to 65 seconds or more (recommends 70 seconds or more).**



If you start automatic video recording with launching the Remote KVM/Media, automatic video recording will be stopped as the same time as the Remote KVM/Media is closed even if the recording period remains. If the Remote KVM/Media is launched, please do not close it during the automatic recording period or please start automatic video recording without launching the Remote KVM/Media.

## REMOTE ACCESS



- A. The remote access tab. BMC supported functions are displayed.
- B. The menu that can be selected in the remote access tab is displayed
- C. Information selected by B is displayed. The screen of "Power Control" is displayed in the above-mentioned example.

### Menu

#### 1 Power Control

Select Boot device of the Server Module, powering on/off, power cycle, reset the system, and shutdown the OS.

#### 2 System Operation

Start RemoteKVM/Media, turn on/off of UID lamp, press Dump switch and reset BMC.

#### 3 Session Management

The user who is logging in BMC can be managed.

#### 4 License Information

The license to use remote KVM/media is registered.

#### 5 Image Redirection

It is possible to be recognized the image files (FD, CD/DVD and USB Memory) on

network file server as a virtual drive on the Server Module. CIFS or NFS are supported as the “Share Type”.



If you execute “power cycle” under the condition that the “Power Save” is enabled by BIOS Setup Utility, the powering on after the powering off will not work. In this case, please try to press power button of the Server Module.



Click “BMC Reset” only if a problem occurs in EXPRESSSCOPE Engine 3 (BMC). Do not click “BMC Reset” in usual operation. Do not shutdown the system, reboot the system, or perform any switch operation after clicking the “BMC Reset” for approximately 3 minutes.



The connections with Web browser and SSH client are disconnected if you reset the BMC.



Clicking the “BMC Reset” cannot reboot the server.

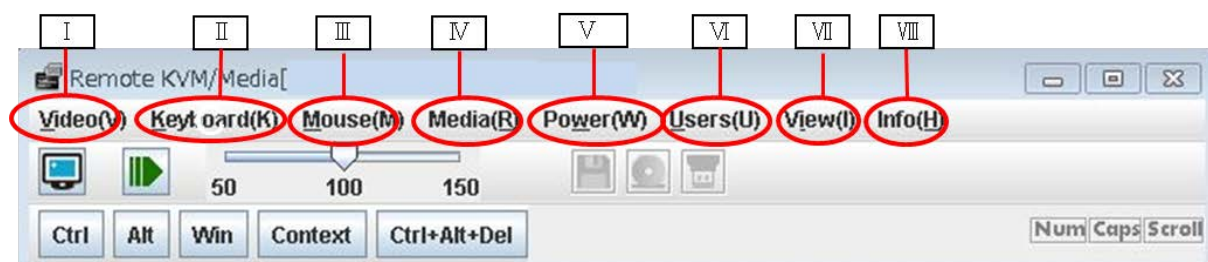


If the configuration is changed from [System Operation] during connecting the image files by Image Redirection, Image Redirection settings might become incorrect state. If you change configuration from [System Operation], please disconnect all the image files before changing.



If the Remote KVM Media License has already integrated in the factory, you cannot delete it on the License Registration screen in view.

## REMOTE KVM/MEDIA



### Menu

#### I. Video

The features such as Refresh screen, Low bandwidth mode (Normal, 8bpp, 8bpp B&W, 16bpp display mode are supported depending on the network bandwidth.), manual video recording, capture screen, full screen are available.

#### II. Keyboard

The features such as user defined macros, virtual keyboard (software keyboard) for Japanese/English/French/German are available.

III. Mouse

The features such as changing or synchronizing the mouse cursor, changing the mouse coordinate mode are available.

IV. Media

Enable or disable the remote device and open the remote media window to connect or disconnect the remote media.

V. Power

You can do the power on, power off, power cycle, reset, OS Shutdown, NMI dump (If the memory dump is set on the Server Module OS.) to the Server Module.

VI. Users

Display the user information that is using the Remote KVM/Media. Up to 2 users can use Remote KVM/Media simultaneously. (\*)

VII. View

Control the visibility of tool bar (control box area and hot key area). The 'Request Full Control' menu will be displayed for the Remote KVM/Media that is launched as view only mode and it is possible to request for permission to the Remote KVM/Media that is launched as full control mode.

VIII. Info

Display the version information.

(\*) If you change access privilege between multiple Remote KVM Console, in order to use stable Remote KVM Console, please grant partial access privilege (only video) and then grant full access privilege to one of the Remote KVM Console.



**The host system detects remote media as following devices: Remote devices are disabled just after the remote KVM/Media is started. It is displayed only when they are enabled from the “Media” menu.**

- AMI Remote FD
- AMI Remote CD/DVD
- AMI Remote USB Mem



**The access lamp comes to remain lighting after it connects it according to the kind of the floppy disk drive of management PC.**



**When the operation into which the resolution on the Server Module side frequently changes after remote KVM is started, the remote KVM connection might be disconnect. In that case, please start remote KVM again.**



**When you log on to the BMC from the Server Module, do not access the Remote KVM Console from a Web browser in the Server Module. You will not be able to use keyboard and mouse.**



On some browsers, if you want to start the Remote KVM/Media, you may see the dialog 'jviewer.jnlp couldn't be downloaded'. In this case, please download again by pressing 'Retry'.



If the mouse pointer is not displayed properly on Remote KVM/Media, please try the following setting on the Server Module OS.

- Lowered one scale from "Full" to "None" side on the [Hardware acceleration]-[Troubleshoot]-[Advanced settings]-[Screen Resolution]-[Display] of Control Panel.
- Uncheck the box for [Enhance pointer precision]-[Motion]-[Pointer Options]-[Mouse Properties] of Control Panel. Also, try to check the box for [Display pointer trails]-[Visibility].



If you change keyboard language after adding user defined macro on the Remote KVM/Media, the user defined macro that was created with the previous keyboard language might not work well because some keyboard key has different key code depending on the language. In this case, please create the macro again with the current keyboard language.



If the manual video recording is run under '8bpp B&W' mode which was set by Low bandwidth mode, the created video file (AVI formatted) might not be playback by Windows Media Player. In this case, please try to install the codec pack which includes Motion JPEG codec to the management PC or try the other playback software.



If you use Windows OS on the Server Module and connect media by Remote Media or Image Redirection, the following system event log might be collected. There is no problem on system operation.

Event ID: 1  
Source: VDS Basic Provider  
Level: Error  
Message: Unexpected failure. Error code: 32@01000004



When you enter the RAID Configuration Utility screen and operate mouse pointer on Remote KVM/Media, you have to set mouse coordinate mode to be "Relative".

## CONFIGURATION

The screenshot shows the BMC Configuration interface. The top navigation bar includes 'System', 'Remote Access', 'Configuration' (highlighted with a red box and labeled 'A'), and 'Update'. The left sidebar menu is labeled 'B' and contains items 1 through 8. Item 1 is 'Network', 2 is 'User Management', 3 is 'Alert', 4 is 'System Operation', 5 is 'Miscellaneous', 6 is 'ECO', 7 is 'System BIOS', and 8 is 'Backup/Restore'. The main content area, labeled 'C', displays the 'ECO' configuration page. It includes a 'Reference' table, a 'Warning' box, and three tables for 'Power', 'CPU Throttling', and 'Memory Throttling'. The 'ECO' section shows 'Aggressive Mode' set to 'Enable', 'Power Threshold(Pa) (10 - 90)' set to '14(W)', and 'Correction time limit(6 - 600)' set to '6Second'. A green status bar at the bottom indicates 'POST Completed Successfully'.

A. The configuration tab. BMC supported functions are displayed.

B. The menu that can be selected in the configuration tab is displayed.

C. Information selected by B is displayed. The screen of "ECO" is displayed in the above-mentioned example.

### Menu

#### 1 Network

Set IP address and the service of the BMC and the SSL public key can be made.

#### 2 User Management

Maintain user and Active directory/LDAP setting.

#### 3 Alert

The setting of which it alerts by using E-mail and SNMP from BMC can be done.

#### 4 System Operation

Set the RemoteKVM/Media and Image Redirection configuration.

#### 5 Miscellaneous

Set the behavior when the SEL repository is full, the access log setting, AC-LINK setting, PEF setting, management setting from the management software, and the automatic

video recording setting.

## 6 ECO

Power consumption and the throttling situation are displayed and the power capping can be set.

## 7 System BIOS

Some functions of Server Module BIOS can be set.

## 8 Backup/Restore

Backup and Restore each item that was set.



The strings “InternalUseOnly”, “MWA”, “AccessByEM-Poem” are reserved by BMC. Please do not add or remove these characters as User Name. The user account is synchronized with the IPMI user account. If you want to add or remove users in the IPMI command tool, you can use User ID from 6 to 16.



Please do not remove character “Administrator” if there is no administrator privilege user except for “Administrator”. If you remove it and logout, you cannot add any new account at next login because there is no longer administrator privilege user.



If the unspecified address is set on [IPv6]-[Property]-[Network], it will be shown as “0::0” or “::”.



If the Dynamic DNS is enabled on [Property]-[Network], you can set up to total of 252 characters to Host Name and Domain Name.



For Backup/Restore of the System BIOS, only the items that can be set by “7 System BIOS” are the target.

The file name that can be specified in each target during restore is only the following.



Network : network.json

User Management : useraccount.json

Alert : alert.json

System Operation : operation.json

Miscellaneous : basic.json

ECO : eco.json

System BIOS : bios.json (battery supported server only)



For each BMC setting, the “Default” value of the setting from Web browser of BMC, Server Configuration Utility, NEC ESMPRO Manager and the initial value of BMC Initialization are as the following table (There are some items of Server Configuration Utility, NEC ESMPRO Manager that are not displayed in the Menu.). “No change” in “BMC Initialization” means that the setting values from the Web Browser/Server Configuration Utility/NEC ESMPRO manager are preserved by executing BMC Initialization.

Menu	Setting	Web Browser Server Configuration Utility NEC ESMPRO Manager “Default” value	BMC Initialization (Factory “Default” value)
Network	Management LAN(*1)	Shared BMC LAN	Shared BMC LAN
	Shared BMC LAN Duplicable	Disabled	Disabled
	VLAN	Enabled	Enabled
	VLAN ID	4092	4092
	VLAN Priority	0	0
	Connection Type(*1)	Auto Negotiation	Auto Negotiation
	DHCP	Enable	Enable
	IP address	Obtain IP address automatically from DHCP server	Obtain IP address automatically from DHCP server
	Subnet Mask	Obtain subnet mask automatically from DHCP server	Obtain subnet mask automatically from DHCP server
	Default Gateway	Obtain default gateway automatically from DHCP server	Obtain default gateway automatically from DHCP server
	Dynamic DNS	Disable	Disable
	DNS Server	0.0.0.0	0.0.0.0
	Host Name	Blank	"BMC" + MAC address
	Domain Name	Blank	Blank
	Limitation Type	Allow All	Allow All
	IPv6(*2)	Disable	Disable
	IPv6 Address Assignment Mode(*3)	Dynamic	Dynamic
	IPv6 Static Address	0::0	::(*4)
	IPv6 Prefix Length	64	64
	IPv6 Gateway Address	0::0	::(*4)
	IPv6 DNS server Address	0::0	::(*4)
	HTTPS	Enable	Enable
	HTTPS Port	443	443
	HTTP	Enable	Enable

	HTTP Port	80	80
User Management	Active Directory Authentication	Disable	Disable
	Authentication User	Blank	Blank
	Authentication Password	Blank	Blank
	User Domain Name	Blank	Blank
	Timeout	120	120
	Domain Controller Server Address1	0.0.0.0	Blank
	Domain Controller Server Address2	Blank	Blank
	Domain Controller Server Address3	Blank	Blank
	Group Name	Blank	Blank
	Group Domain	Blank	Blank
	Privilege	Administrator	Administrator
	LDAP Authentication	Disable	Disable
	IP address	0.0.0.0	Blank
	Port	389	389
	Search Base	Blank	Blank
	Bind Domain Name	Blank	Blank
	Bind Password	Blank	Blank
	Group Name	Blank	Blank
	Group Search Base	Blank	Blank
	Privilege	Administrator	Administrator
Alert	Mail Alert	Disable	Disable
	Waiting time for SMTP server's response	30	30
	To:1	Enable	Blank
	To:2	Disable	Blank
	To:3	Disable	Blank
	From	Blank	Blank
	Reply-To	Blank	Blank
	Subject	Blank	Blank
	Subject Option	Disable	Disable
	X-Priority	Enable	Enable
	Date Formats	MM/DD/YYYY	MM/DD/YYYY
	SMTP Server	0.0.0.0	0.0.0.0
	Port	25	25
	Authentication	Disable	Enable
	Authentication Type	All checked	All checked
	User Name	Blank	Blank
	Password	Blank	Blank
	Alert Level	Error, Warning	Separate Setting
	SNMP Alert	Disable	Disable

	Computer Name	Blank	Blank
	Community Name	public	public
	Alert Process	One Alert Receiver	One Alert Receiver
	Alert Acknowledge	Enable	Disable
	Alert Receiver1	Enable	Enable
	Alert Receiver2	Disable	Disable
	Alert Receiver3	Disable	Disable
	Alert Level	Error, Warning	Separate Setting
	Alert Retry Count	3	0
	Alert Timeout	6	3
System Operation	Remote KVM Console Encryption	Enable	Disable
	Port (No Encryption)	7578	7578
	Port (Encryption)	7582	7582
	Cursor Mode	Dual	Single
	Coordinate Mode	Absolute(*4)	Absolute
	Keyboard Language	When login in Japanese; Japanese, When login in English; English	English
	Remote Media Encryption	Enable	Disable
	Port (No Encryption)	5120	5120
	Port (Encryption)	5124	5124
	FD image	Blank	Blank
	CD/DVD image	Blank	Blank
	USB Memory image	Blank	Blank
	Image Redirection	Disable	Disable
	Server Address	Blank	Blank
	Source Path	Blank	Blank
	Share Type	CIFS	CIFS
	User Name	Blank	Blank
	Password	Blank	Blank
	Domain Name	Blank	Blank
ECO	Aggressive Mode	Disable	Disable(*10)
	Power Threshold(Pa)	Maximum Power Consumption	Maximum Power Consumption
	Correction time limit	6	6
	Shutdown System	Disable	Disable
	Non-Aggressive Mode	Disable	Disable
	Power Threshold(Pn)	Maximum Power Consumption - 10	Maximum Power Consumption - 10
	Correction time limit	10	10
	Safe Power Capping	Disable	Disable
	Boot Time Configuration	Disable	Disable
	Performance Mode	Performance	Performance

		Optimized	Optimized
	Disable CPU Cores	0	0
Miscellaneous	Behavior when SEL repository is full	Overwrite oldest SEL	Overwrite oldest SEL
	Access Log HTTP	Disable	Disable
	HTTPS	Disable	Disable
	Operation	Disable	Disable
	Power Restore Delay AC-LINK	StayOff	StayOff
	Delay Time	Random	Random
	Platform Event Filtering	Enable	Disable
	ESMPRO Management	no change	Disable
	Authentication Key	guest	Blank
	Redirection (LAN)	Enable	Disable
	Automatic Video Recording	Disable	Disable

\*1: Display only, unchangeable.

\*2: If this value is enabled, it is possible to use in IPv4/IPv6 address mixed environment.

\*3: If this value is "Dynamic", only the state-less setting of RA (Router Advertisement) is available. The state-full setting of RA is not supported.

\*4: "::" and "0::0" means the same value.

For each System BIOS setting, the possible values and the value of BIOS Initialization are as the following table.

Item Name	Setting	Possible Values(*1)	BIOS Initialization (*2)
BIOS Basic	POST Error Pause	Enable/Disable	Enable
	Memory Error(*1)	Halt	Halt
	CLI SETUP(*2)	Disable	Disable
Serial Port A	Serial Port A(*2)	Disable	Disable
	Serial A Base I/O	2E8h 2F8h 3E8h 3F8hBlank	3F8h
	Serial A Interrupt	IRQ 3 IRQ 4	IRQ 4
Serial Port B	Serial Port B(*3)	Enable	Enable
	Serial B Base I/O	2E8h 2F8h 3E8h 3F8h	2F8h
	Serial B Interrupt	IRQ 3 IRQ 4	IRQ 3
Console Redirection	BIOS Redirection Port(*4)	Disabled Serial Port B	Serial Port B
	Terminal Type	VT100+ VT-UTF8	VT100+

		PC-ANSI	
	Baud Rate	9600 19200 57600 115200	115200
	Data Bits	7 8	8
	Parity	None Even Odd	None
	Stop Bits	1 2	1
	Flow Control	None Hardware RTS/CTS	Hardware RTS/CTS
	Continue C.R. after POST	Enable/Disable	Enable

\*1: Only "Halt" is supported as the setting value. Any other setting values are not reflected to BIOS setting of a Server Module.

\*2: Only "Disable" is supported as the setting value. Any other setting values are not reflected to BIOS setting of a Server Module.

\*3: Only "Enable" is supported as the setting value. Any other setting values are not reflected to BIOS setting of a Server Module.

\*4: Only "Disable" and "Serial Port B" are supported as the setting value. Any other setting values are not reflected to BIOS setting of a Server Module.



### **Example of an E-mail alert:**

Following contents are sent as E-mail alert.

#### **Virtual LCD Message:**

**Processor Voltage Lower Non-Critical**

#### **Event Information:**

**Record ID: 012Ch**

**Timestamp: 2016/01/07 01:26:06**

**Severity: Non-critical**

#### **Description:**

**Voltage - Error**

**Lower Non-critical - going low**

#### **Dump:**

**2C 01 02 AE BE 8D 56 20 00 04 02 11 01 50 A7 AC**

#### **URL:**

**<https://192.168.1.11:443>**

**[https:// \[2001:db8:1000:1::100\]:443](https://[2001:db8:1000:1::100]:443)**

#### **BMC Network Information:**

**BMC IPv6 Address: 2001:db8:1000:1::100**

**BMC Host Name: BMCxxxxxxxxxxxx**

#### **Firmware Revision:**

**System BIOS Revision: x.x.xxxx**

**BMC Firmware Revision: xx.xx**  
**SDR Revision: SDR Version xx.xx**

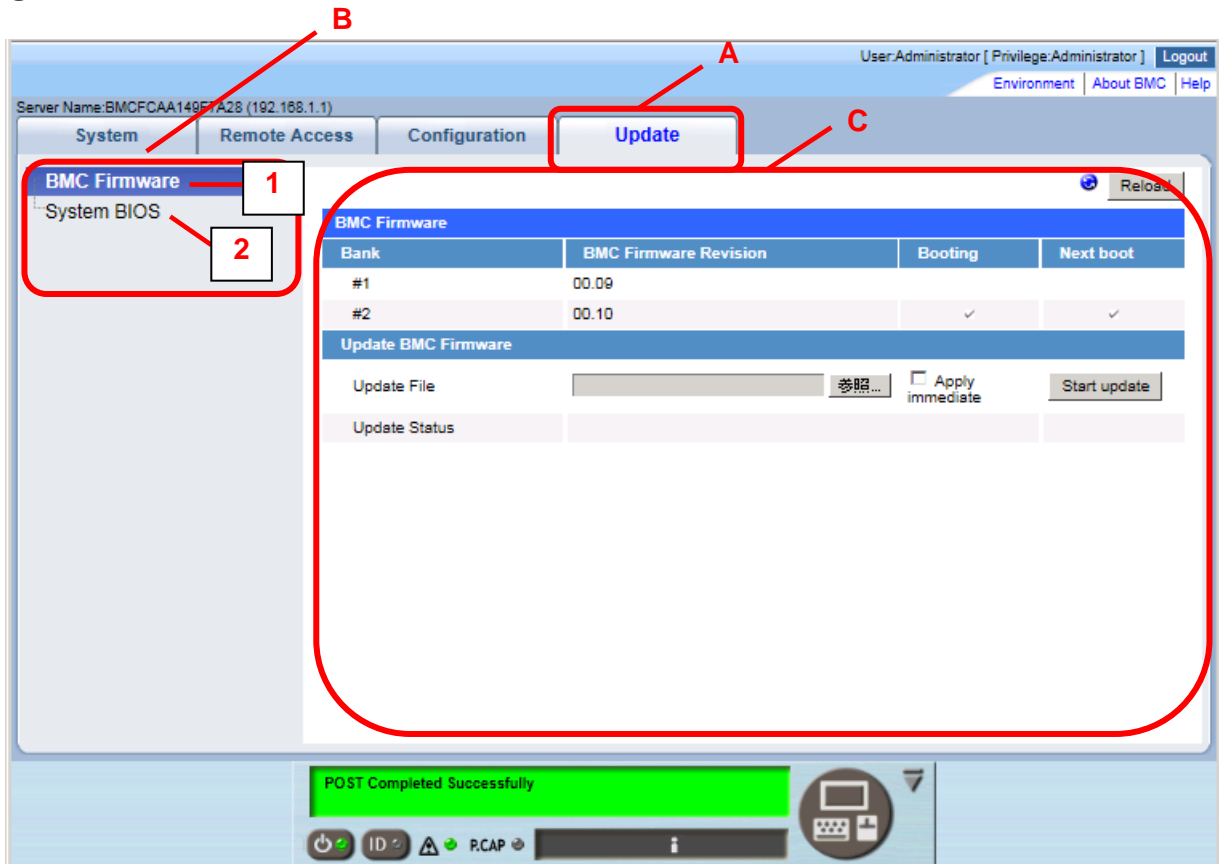
**Product Information:**

**Manufacturer: xxx**  
**Product Name: xxxxxxxxxxxx/xxxxx-xx**  
**Part/Model Number: [xxxxx-xxxxx]**  
**Version: FR1.0**  
**Serial Number: xxxxxxxx**  
**Asset Tag: xxx-xxxxxx-xxx**



- You should use a straight through Ethernet cable if you set 10Mbps or 100Mbps as 'Connection Type' of Network.

## UPDATE



A. The update tab. BMC supported functions are displayed.

B. The menu that can be selected in the update tab is displayed

C. Information selected by B is displayed. The screen of "BMC Firmware" is displayed in the above-mentioned example.

### Menu

#### 1 BMC Firmware

Update the BMC firmware regardless of power-off/on of the Server Module.

#### 2 System BIOS

Update the System BIOS regardless of power-off/on of the Server Module.



## 6. Troubleshooting

### ERROR MESSAGES

Abnormality occurs while using remote management, and the error dialog might be displayed in management PC. Please refer to the list of the message of the online help for the main message and the coping process.

### ABOUT ECO SETTING



The electric power value may not be reached to Power Cap Value.

☒ The electric power value might not necessarily reach even the value of Power Cap value. The electric power control lowers the power consumption of the system by lowering the frequency of CPU/Memory.

When CPU/Memory Throttling value reaches 100%, the electric power value doesn't fall any more.



**“Failed to access BMC.” error has occurred while executing ECO setting.**

☒ If you execute ECO setting during shutdown the OS of the Server Module, ECO setting may not be set correctly. In this case, please execute again after shutdown process is finished.

For more detail about the Power Monitoring and Power Control Function, please reference the following site.

<http://www.58support.nec.co.jp/global/download/index.html>

[Others] - [Technology papers]

### ABOUT NETWORK INFORMATION

Please note that the “Link status”(\*) may not be displayed correctly depending on the OS of the Server Module, because the link status of the system LAN can not get properly depending on the version of the LAN drivers that are used by the OS.

(\*) [System] - [Component] - [Network] - [System LAN Information]

### OTHERS TIPS

Should you have troubles while using the BMC for remote control, monitoring, and management of the Server Module, please first check the system according to the online help to troubleshoot your issue prior to sending it for repair.

For the issues regarding your system operation, please refer to the User's Guide attached to your system.

If your issue is not described below, or should the provided instructions do not resolve your

issue, please contact your service center.

# License Notes

This Server Module includes open source software programs described below.

## GNU General Public License

- Busybox
- Linux Kernel
- U-Boot
- stunnel

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 * Last update: 02/02/2007
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 *
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 */
```

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```
/*
 * HMAC-SHA-224/256/384/512 implementation
 * Last update: 06/15/2005
 * Issue date: 06/15/2005
 *
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## MD5

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