Express **5800**

**NEC**

**NEC Express Server**

**Express5800 Series**

# EXPRESSSCOPE Engine 3 User's Guide

1. Overview

2. Configuring the Host System

3. Configuring a Management PC

4. Networking

5. Using Remote Management

6. Command Line Interface

7. WS-Management (Web Service for Management)

8. Troubleshooting

## TRADEMARKS AND PATENTS

## NOTES

## 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 host system.

# Table of Contents

## SYMBOLS

The following symbols are used throughout this manual.

Items to be observed or points to be noted when using this product.

Items to be checked when using this product 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 host system (power supplies, fans, temperature and so forth), to operate the host system'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.
*The Remote KVM and Remote Media functions are optional.

# 1. Overview

The host system 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 host system from a remote site via a Web browser and SSH client.

With the optional N8115-04 Remote KVM and Media License, you can operate the host system'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.

# 2. Configuring the Host System

This chapter describes the settings necessary to configure the BMC in the host system.

## DEFAULT NETWORK SETTINGS

The BMC's default network settings are as follows:

**IP Address:**     **192.168.1.1**

**User Name:**     **Administrator**

**Password:**     **Administrator**

- Connect the management LAN port to the private network on which the default IP address "192.168.1.1"is reachable. If the default IP address is not reachable on the network, assign a new IP address to the management LAN by using the BMC Configuration of the Off-line Tool in the host system. Refer to "Management LAN Settings" in the next page for the settings.

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

- The remote management function is enabled by default. (In some systems, the remote management function is disabled by default.) So, If the remote management function is not used, disable this settings by using the BMC Configuration of the Off-line Tool. Refer to "Management LAN Settings" in the next page for the settings.

# MANAGEMENT LAN SETTINGS

You can configure basic setting of management LAN settings of BMC for remote management using Web server function and command line interface of BMC by using some tools

- Web Browser
  Please refer to Chapter 5 for details.

- BMC Configuration (Off-line)
  Press the F4 key during POST(Power on Self test) or displaying logo immediately after power on or reset the host system to enter the BMC Configuration.

- BMC Configuration (On-line Windows/Linux).
  It is possible to install it from NEC EXPRESSBUILDER of the host system attachment.

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<br>BMC Configuration | On-line<br>BMC Configuration Tool<br>(Windows/Linux) |
|---|---|---|---|
| BMC LAN Setting<br>Shared LAN Port or<br>Management LAN Port | NG | OK | NG |
| IP Address<br>Subnet Mask<br>Default Gateway<br>DHCP | OK | OK | OK |
| Service Settings<br>HTTP/HTTPS/SSH | OK | OK | OK |
| BMC Initialization | NG | OK | OK |

Management LAN / Shared BMC LAN
> The function for BMC to use operation LAN of the host system is called Shared BMC LAN.
> Select [Enabled] to share a system LAN port with BMC LAN.   If you use a management LAN port for the BMC, select [Disabled]. The management LAN port is not available when this setting is set [Enabled]. (Default setting is [Enabled]. In some systems, this menu is not supported. Please refer to the User's Guide of your host system for more details.)

IP Address
> If DHCP is not used to automatically obtain an IP address, enter the BMC's IP address.
> If DHCP has been used, an automatically obtained IP address will appear.
> (Default setting is 192.168.1.1.)

Subnet Mask
> If DHCP is not used to automatically obtain a subnet mask IP address, enter the

subnet mask of your management LAN.
If DHCP has been used, an automatically obtained subnet mask IP address will appear. (Default setting is 255.255.255.0.)

Default Gateway
If DHCP is not used to automatically obtain a default gateway IP address, enter the default gateway of your management LAN.
If DHCP has been used, an automatically obtained default gateway will appear. (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 [Disabled](*).)

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.)

Command Line Interface:
SSH
Select [Enabled] to use the Command Line Interface using SSH. If not, select [Disabled]. (Default setting is [Enabled](*).)
SSH Port Number
Specify the BMC's SSH port number. (Default setting is 22.)

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".

**Notice**

- **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 tens of seconds by the time initialization is completed after it executes it.**

> **The BMC Initialization also deletes the settings for ESMPRO/ServerManager(a software application bundled for remote management). Be sure to perform a backup for the ESMPRO/ServerManager settings before you change the BMC settings.**

\* In some systems, the default settings are different for DCHP, HTTP, HTTPS, and/or SSH.

# 3. Configuring a Management PC

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


## SETTING YOUR BROWSER

Configure the following settings:

- Enable SSL.
- Allow Java Script execution.
- Allow Java execution.
- Accept Cookies.
- Allow Popup.
- Enable Stylesheet.


\* 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.


## SUPPORTED BROWSERS

The following browsers are supported by Windows XP (SP3), Windows Server 2003 R2 (SP2), Windows Server 2008, Windows Vista (SP1) and Windows Server 2008:

- Microsoft Internet Explorer 7.0
- Microsoft Internet Explorer 8.0

The following browser is supported by Red Hat Enterprise Linux WS(version 4), Red Hat Desktop(version 4), Red Hat Enterprise Linux WS(version 5) and Red Hat Desktop(version 5):

- Firefox 3.6

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


## J2SE RUNTIME ENVIRONMENT

The management PC requires Java2 Runtime Environment (JRE), Standard Edition 6.0.

JRE is available free of charge from Oracle Corporation. For security reasons, you are recommended to use the latest JRE update.

| | **If the management PC runs Windows XP, remote media function may not work. You need to apply the latest Service Pack.** |
| :--: | :-- |
| **Notice** | |

| | **If the management PC runs Linux, you can't install operating system to the host system with the Express Setup of NEC EXPRESSBUILDER by using remote media. Please don't choose [Os installation] from NEC EXPRESSBUILDER Boot selection menu.** |
| :--: | :-- |
| **Notice** | |

# 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) |
| SSH client | Dynamic(*1) | TCP | ⟷ | BMC | 22(*3) |
| SMTP server | 25(*4) | TCP | ⟷ | BMC | Dynamic |
| LDAP server | 389(*5)(*6) | 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 If use TLS/SSL, default port number is 636.

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

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

# 5. Using Remote Management

## OVERVIEW

The BMC Web Server function allows you to control the host system'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 use Internet Explorer 7(or 8), the following page is displayed and HTTPS connection is blocked. In this case, select "Continue to this website" to continue.**

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].
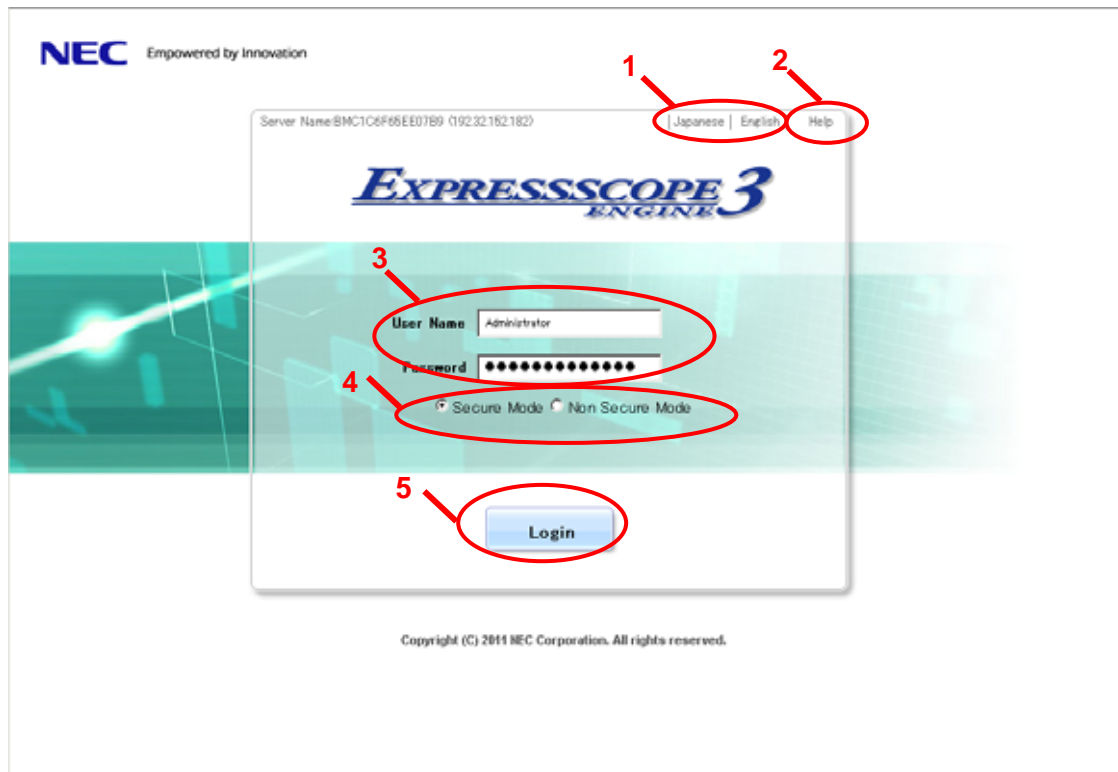


1. The display language can be selected to English or Japanese.
2. The online help is displayed.
3. Please input username and password.
4. Secure Mode(HTTPS) or Non Secure Mode(HTTP) can be selected.
5. Please push "Login" button.

> **Notice** **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.**

> **Notice** **Do not use the "Reload" button in your browser after login.**

> **Notice** **If you use Active Directory authentication, you need to input with the form of username@domainname in "User Name".**

**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 brower or logout.**

## 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.
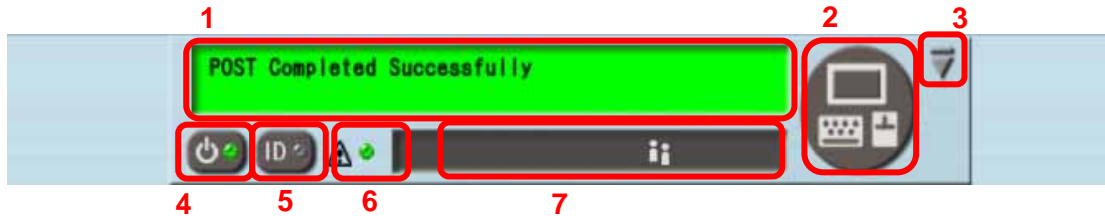


1. The virtual LCD that displays the state of the host system.

2. The Button to start RemoteKVM/Media

3. The button that minimizes the server panel.

4. The power switch and a lamp of the host system. The state of the power supply of the host system is shown.

5. The UID(Unit ID) switch and a lamp of the host system.

6. The status lamp of the host system. The state of the host system is shown.

7. The log in situation and the remote media usage condition of BMC are displayed.


> **Even if actual UID LED is not mounted into the host system, the UID LED indicator of the Server Panel functions as virtual UID LED.**

> **Refer to Maintenance Guide of the system for the message displayed in the Virtual LCD.**

# SYSTEM
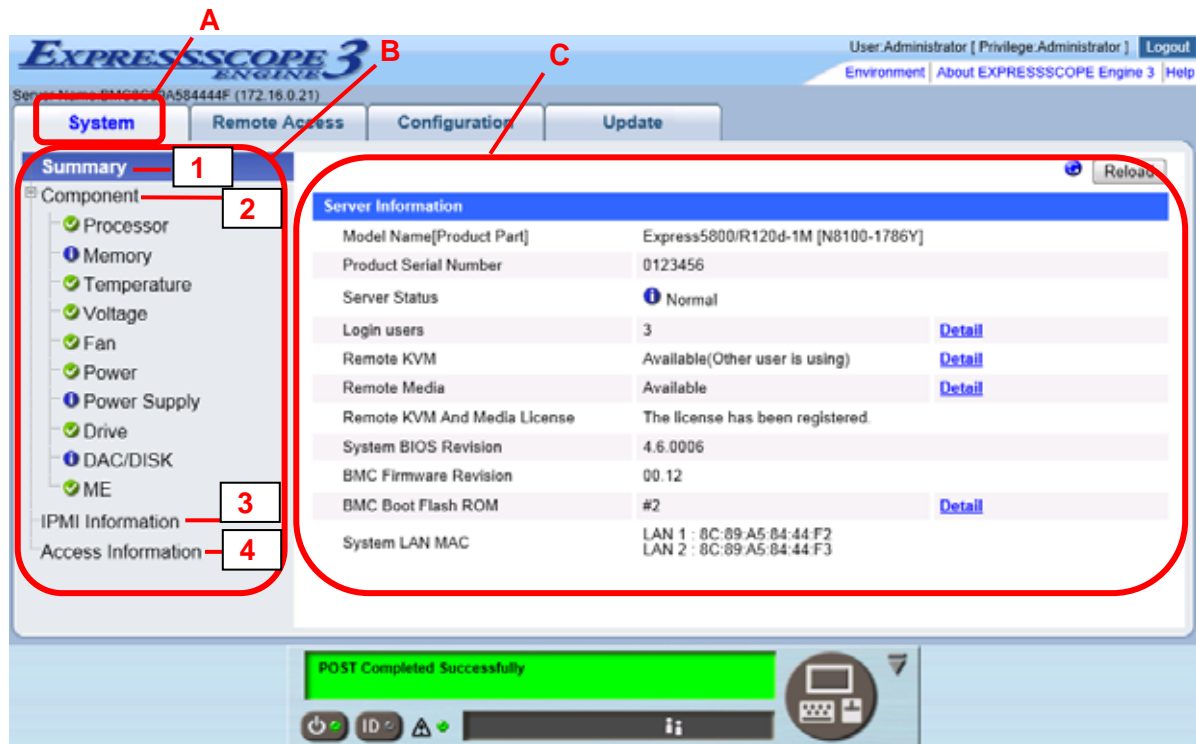


A. The system tab. BMC supported functions are displayed.

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 host system is displayed.

**2** Component

Only items supported with the host system are displayed for each item of composition information. (processor, memory, temperature, voltage, fan, power, power supply, drive, DAC/DISK, and ME). Moreover, the item supported with the host system 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 off-line maintenance utility).

**4** Access Information

Login/Logout information and operation log are displayed.

# REMOTE ACCESS
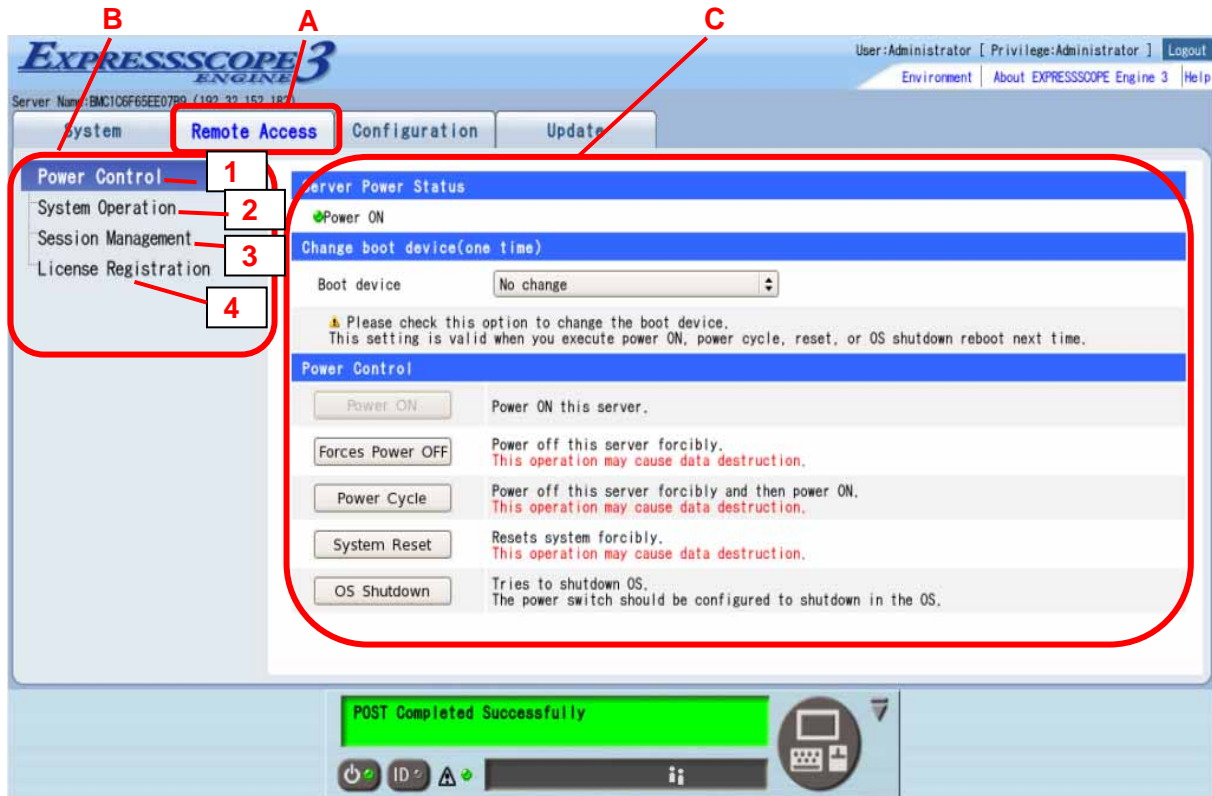


A. The remote access tab. BMC supported functions are displayed.

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 host system, powering on/off and reset the system, 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** Access Information

The license to use remote KVM/media is registered.

**Check** The host system detects remote media as following devices:
- **AMI Remote FD**
- **AMI Remote CD/DVD**
- **AMI Remote USB Mem**

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

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

# CONFIGURATION



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, register the SSH public Key.

**3**  Alert

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

**4**  System Operation

   RemoteKVM/media setting.

**5**  ECO

Power consumption and the throttling situation are displayed. Set to manage the electric power control.

**6** Miscellaneous

Set to manage from SEL, the access log, AC-LINK, PEF, and the management software.

**7** Backup/Restore

Restored as the backup of the set each item.

**8** System BIOS

Some functions of System BIOS can be set.

For each BMC setting, the "Default" value of the setting from Web browser of BMC and the initial value of BMC Initialization are as the following table.

| Menu | Setting | Web Browser "Default" value | BMC Initialization |
|---|---|---|---|
| Network | Management LAN | Management LAN | Management LAN |
| | Connection Type | Auto Negotiation | Auto Negotiation |
| | DHCP | Disable | Disable |
| | IP address | 192.168.1.1 | 192.168.1.1 |
| | Subnet Mask | 255.255.255.0 | 255.255.255.0 |
| | Default Gateway | 0.0.0.0 | 0.0.0.0 |
| | 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 |
| | | | |
| | HTTPS | Enable | Enable |
| | HTTPS Port | 80 | 80 |
| | HTTP | Enable | Enable |
| | HTTP Port | 443 | 443 |
| | SSH | Enable | Enable |
| | SSH  Port | 22 | 22 |
| User Management | Active Directory Authentication | Disable | Disable |
| | User  Domain Name | Blank | Blank |
| | Timeout | 120 | 120 |
| | Domain Controller Server Address | 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 | User |
| | | | |
| | LDAP Authentication | Disable | Disable |
| | IP address | 0.0.0.0 | Blank |
| | Port | 389 or 639 | 389 |
| | Search Base | Blank | Blank |
| | Bind Domain Name | Blank | Blank |
| | Bind Password | Blank | Blank |
| Alert | Mail Alert | Disable | Disable |
| | Waiting time for SMTP server's response | 30 | 30 |
| | To:1 | Enable | Disable |
| | To:2 | Disable | Disable |
| | To:3 | Disable | Disable |
| | From | Blank | Blank |
| | Reply-To | Blank | Blank |
| | Subject | Blank | Blank |
| | SMTP Server | 0.0.0.0 | 0.0.0.0 |
| | Port | 25 | 25 |
| | Authentication | Disable | Enable |
| | Alert Level | Error, Warning | Separate Setting |
| | | | |
| | SNMP Alert | Disable | Disable |
| | Computer Name | Blank | Blank |
| | Community Name | public | public |
| | Alert Progress | One Alert Receiver | One Alert Receiver |
| | Alert Acknowledge | Enable | Disable |
| | Alert Receiver1 | Enable | Disable |
| | Alert Receiver2 | Disable | Disable |
| | Alert Receiver3 | Disable | Disable |
| | Alert Level | Error, Warning | Separate Setting |
| | Alert Retry Count | 3 | 0 |
| | Alert Timeout | 6 | 0 |
| System Operation | Remote KVM Console Encryption | Enable | Disable |
| | Port (No Encryption) | 7578 | 7578 |
| | Port (Encryption) | 7582 | 7582 |
| | Cursor Mode | Dual | Single |
| | Coordinate Mode | Relative | 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 |
| ECO | Aggressive Mode | Disable | No change |
| | Power Threshold(Pa) | Max Power Consumption | No change |
| | Correction time limit | 2 | No change |
| | Shutdown System | Disable | No change |
| | Non-Aggressive Mode | Disable | No change |
| | Power Threshold(Pn) | Max Power Consumption - 10 | No change |
| | Correction time limit | 10 | No change |
| | Safe Power Capping | Disable | No change |
| | Boot Time Configuration | Disable | No change |
| | Performance Mode | Performance Optimized | No change |
| | Disable CPU Cores | 0 | No change |
| Miscellaneous | Behavior when SEL repository is full | Stop logging SEL | No change |
| | Access Log HTTP | Disable | No change |
| | HTTPS | Disable | No change |
| | SSH | Disable | No change |
| | Operation | Disable | No change |
| | Power Restore Delay AC-LINK | Last state | No change |
| | Delay Time | Minimum configurable time | No change |
| | Platform Event Filtering | Enable | Disable |
| | ESMPRO Management | no change | Disable |
| | Authentication Key | guest | Blank |
| | Redirection (LAN) | Enable | Disable |

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

Following contents are sent as E-mail alert.

**Virtual LCD Message:**
    **System Rear FAN4 Lower Non-Critical**

**Event Information:**
    **Record ID: 0AA0h**
    **Timestamp: 10/13/2011 17:59:23**
    **Severity: Non-critical**
    **Description:**
        **Fan(Speed) - Error**
        **Lower Non-critical - going low**
    **Dump:**
    **A0 0A 02 FB 26 97 4E 20 00 04 04 43 01 57 FF B6**

**URL:**
    **http://192.168.1.11:80**
    **https://192.168.1.11:443**

**BMC Network Information:**
    **BMC IP Address: 192.168.1.1**
    **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: xxxxxxxxxxx/xxxxx-xx**
    **Part/Model Number: [xxxxx-xxxxx]**
    **Version: FR1.0**
    **Serial Number: xxxxxxx**
    **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
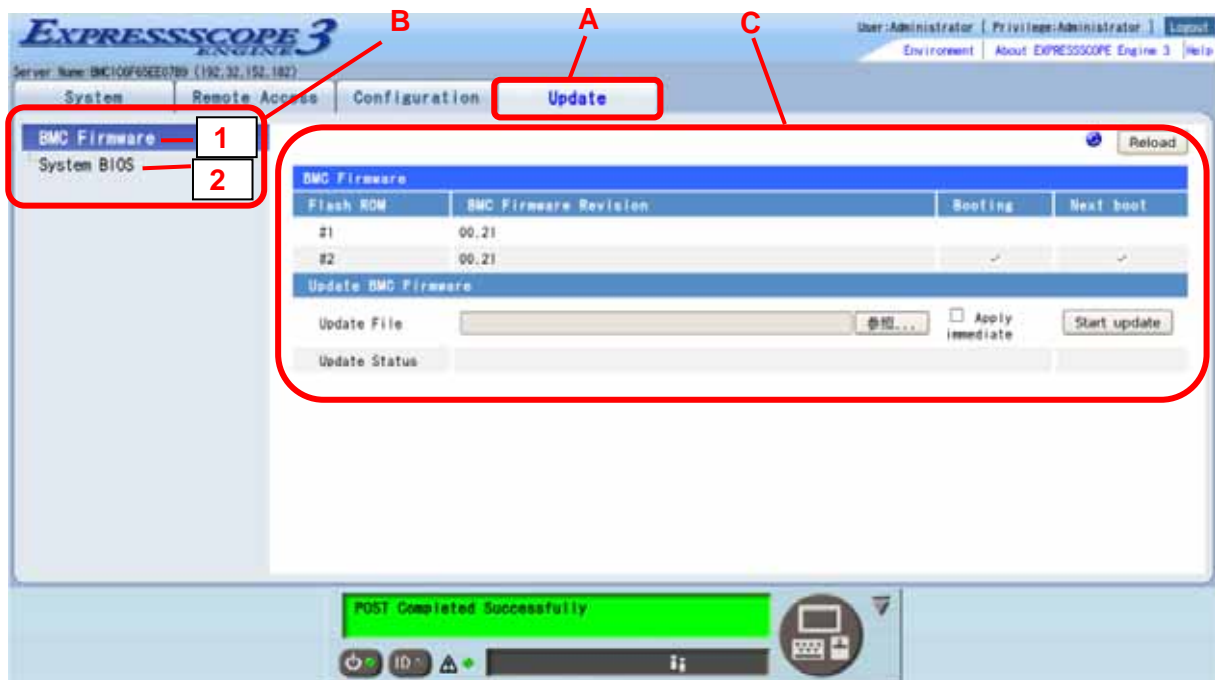


A. The update tab. BMC supported functions are displayed.

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 host system.

**2** System BIOS

Update the System BIOS regardless of power-off/on of the host system.

# 6. Command Line Interface

## OVERVIEW

With the BMC Command Line Interface, you can control the host system from a remote SSH client. The BMC supports SSH (Version 2) protocol.

## CONNECTING TO BMC

Access the BMC IP address or DNS host name from SSH client on the remote management PC.

**To use Command Line Interface, you need to change the configuration of the command line interface (SSH) to be enabled by any of the setting of the Off-line BMC Configuration Tool or On-line BMC Configuration Tool or Setting of Web browser. Refer to the "Management LAN Settings" in the "Chapter 2: Configuring the Host System".**

**You can change the BMC's SSH port number by using the Off-line BMC Configuration Tool, On-line BMC Configuration Tool or a web browser. The default settings are as follows:**
   **SSH:          22**

**A security warning messages regarding your server certificate may be displayed when you access the BMC from a SSH client.**

**SSH connection is disconnected automatically after one minute of inactivity after login prompt is displayed.**

# LOGIN AND LOGOUT

## Login

Enter your user name and password at login prompt. A command prompt will be displayed after login. Also you can login by using public key authentication.

> **The user account is common to the one for a remote management function via web browser.**

> **The number of users who can log in the system using the command line interface at the same time is three users or less. Therefore, you cannot log in the system when other three users have been logging in the system using SSH clients via the command line interface. Check whether other three users are logging in the system, if you cannot log in via the command line interface.**

> **Only a single user among users who are using the command line interface or ESMPRO/ServerManager can use a character-based remote console via the command line interface. Check whether another user is using a character-based remote console, if you cannot use a character-based remote console.**

> **Refer to the "CONFIGURATION" in the Chapter 5: Using Remote Management" for registering SSH public key.**

## Logout

Enter the "exit" command at the command prompt. The SSH client will be disconnected from the BMC after logout.

# BASIC COMMANDS

This section describes basic commands to use them as the command line interface. These basic commands manage the host system by using the concept of command (verb) and target (Managed Element) proposed by DMTF (Distributed Management Task Force).

Each basic command functions to a specified target. The target points the managed element by address path much like the path to a file in a file system.

Both absolute path, which is started from "/", and relative path are available for pointing the target. Specifically, "." and ".." are supported. The "." means the current default target and the ".." means the parent target.

Each basic command functions to the current default target when the <target>, which is an argument pointing a target for the command, is not specified to the basic command. The current default target can be changed by the cd command. The current default target is "/admin1" when the command line interface session is started.

The current default target is displayed at the left side of the command prompt ("->").

Help string, command syntax, of each command appears when "-h" option is specified as the <options> of the command. The argument placed between "[" and "]" is omissible.

> **The user must have an account as the following user level to use the basic commands:**
> - **cd, exit, help, show and version can be used under an account as all user levels.**
> - **stop, start and reset are needed an account as operator or administrator user level to use these commands.**
> - **set is needed an account as administrator user level to use this command.**

> **Maximum number of input character for command line interface is 250.**

## cd

### Syntax:

**cd [<options>] [<target>]**

### Description:

The cd command changes the current default target to the target specified by the <target> argument.

## exit

### Syntax:

**exit [<options>]**

### Description:

The exit command terminates and logs out the user session.

## help

**Syntax:**

**help [<options>] [<help topics>]**

**Description:**

A basic command, <command>, can be specified for the <help topics>. The help command displays the help string for specified basic command when <command> argument is specified.

## reset

**Syntax:**

**reset [<options>] [<target>]**

**Description:**

The reset command performs a hardware reset on the <target>.

/admin1/system1 and /admin1/sp1 are available for the <target> of the reset command. For /admin1/system1, the host system is reset. For /admin1/sp1, the BMC is reset.

> **Notice** **Reset the BMC only if a problem occurs in the BMC and don't reset the BMC in normal operation. Also the connections with Web browser and SSH client are disconnected if you reset the BMC.**

## set

**Syntax:**

**set [<options>] [<target>] <propertyname>=<value>**

**Description:**

The set command is used to set the value of one or more properties of target specified by the <target>. The command accepts a target specified by the <target> and series of <propertyname>=<value> pairs which is will try and apply. The <propertyname> means a name of property set by the command. The <value> means a new value set by the command.

One or more <propertyname>=<value> pairs can be specified by delimiting between each pair in space.

The set command requires <propertyname>=<value> command line argument except when -h is specified as the <options>.

## show

**Syntax:**

**show [<options>] [<target>] [<properties>]**

**Description:**

The show command is used to display information about the target specified by the <target> argument.

The command displays the target specified by the <target> as the first line of the information. It displays the current default target in the first line if <target> is not specified.

The default behavior of the command for the target specified by the <target> is as follows. The command display targets which are contained by the specified target after the "Targets" string. The command displays properties which are contained by the specified target after the "Properties" string. The properties are displayed in the form of property=value. The command displays basic commands (verbs) and special extended commands which are available for the specified target after the "Verbs" string.

The command displays the property specified by the <properties> in the form of property=value if the <properties> is specified. The command displays all properties which are contained by the specified target if the <properties> is not specified.

There is -display <arg values> option which can be specified by the <options> for the show command. The option can control the type of information that is displayed about the target specified by the <target>. Valid option argument values as the <arg values> for this option include "targets", "properties", "verbs", and "all". The option argument values can select the above "Targets", "Properties" and "Verbs" information that is displayed. "all" displays the whole. The default for the -display option control is "all".

## start

### Syntax:

**start [<options>] [<target>]**

### Description:

/admin1/system1 and /admin1/system1/textredirectsvc1 are available for the target of the start command.

The start command performs a power on to the host system if /admin1/system1 is specified by the <target>.

The start command starts a character-based remote console if /admin1/system1/ textredirectsvc1 is specified by the <target>.

## stop

### Syntax:

**stop [<options>] [<target>]**

### Description:

The stop command performs a normal power off request (OS shutdown request) or a forced power off request.

/admin1/system1 is available for the target of the stop command. The stop command with no option as the <options> performs a normal power off request (OS shutdown request) to the host system if /admin1/system1 is specified by the <target>. The command with -f (or -force) as the <options> performs a forced power off request to the host system if /admin1/system1 is specified by the <target>.

## version

**Syntax:**

**version [<options>]**

**Description:**

The version command is used to display the version of the command line protocol specification which is supported.

# REMOTE CONTROL

You can perform remote control of the host system at the command prompt.

**Performing remote control when the operating system is running may cause the loss of data in the host system.**

**The user must have an account as operator or administrator for remote control.**

## Power ON

Enter the following command at the command prompt.

```
start /admin1/system1
```

## Forced Power OFF

Enter the following command at the command prompt.

```
stop -force /admin1/system1
   or
stop -f /admin1/system1
```

## OS Shutdown

Enter the following command at the command prompt.

```
stop /admin1/system1
```

**The above OS shutdown is equivalent to pressing the POWER switch when the power of the host system is on. Your operating system must be set to shut down when you power off the system.**

## System Reset

Enter the following command at the command prompt.

```
reset /admin1/system1
```

**An above system reset is failed when the power of the host system is off.**

# Remote Console

To start a character-based remote console, enter the following command at the command prompt.

```
start /admin1/system1/textredirectsvc1
```

To return from the character-based remote console to the command interface session, enter the **<ESC>stop** keys (<ESC>key, <s>key, <t>key, <o>key and <p>key) during the character-based remote console.

> **Notice**
>
> **The standard serial port B (COM B) on the host system cannot be used for connecting another device in this cases because the BMC occupies the serial port B.**
>
> **Tips**
>
> **To use a character-based remote console, set appropriate settings for the console redirection function of the host system's serial port on the BIOS Setup Utility in advance.**
> **Especially, please use the following items by the following setting:**
> - **BIOS Redirection Port :    Serial Port B**
> - **Baud Rate :                       19.2K**
> - **Flow Control:                    CTS/RTS**
> - **Terminal Type:                  PC ANSI**
>
> **For the system BIOS Setup Utility, please refer to the User's Guide of your host system.**

> **Tips**
>
> **Only a single user among users who are using the command line interface or ESMPRO/ServerManager (a software application bundled for remote management) can use a character-based remote console via the command line interface or ESMPRO/ServerManager. Once the first user uses the character-based remote console, other users cannot use any character-based remote console from any SSH clients or ESMPRO/ServerManager. Check whether another user is using a character-based remote console, if you cannot use a character-based remote console.**

To show the usage status of the character-based remote console by other users of the command line interface or ESMPRO/ServerManager, enter the following command at the command prompt.

**show /admin1/system1/textredirectsvc1/textredirectsap1**

You can confirm the usage state by value of EnabledState of the "Properties" which is displayed by the command.

EnabledState=2 : Using the character-based remote console by current user or other user.

EnabledState=6 : Not in use.

To stop the character-based remote console using by other user forcibly, enter the following command at the command prompt.

set /admin1/system1/textredirectsvc1/textredirectsap1 EnabledState=6

**Please confirm in advance whether it is OK to stop the character-based remote console using by other user forcibly.**

**The user must have an account as administrator for stopping the character-based remote console forcibly.**

# UID Switch Control

You can turn on/off the UID (Unit ID) LED on the host system by the virtual UID switch through the command line interface. This function is available only in the host system with UID LED.

> **Notice**
>
> **The user must have an account as administrator for UID Switch Control (turning on or turning off the UID LED) because of using the set command for the UID Switch Control.**

## Turning on UID LED

Enter the following command at the command prompt. State of the UID LED becomes same state of turning on the LED by using UID (Unit ID) switch of the host system.

```
set /admin1/system1/led1 ActivateState=2
```

## Turning off UID LED

Enter the following command at the command prompt. State of the UID LED becomes same state of turning off the LED by using UID (Unit ID) switch of the host system.

```
set /admin1/system1/led1 ActivateState=4
```

## Confirmation of state of turning on UID LED

Enter the following command at the command prompt.

```
show /admin1/system1/led1
```

You can confirm the state of the UID LED by value of ActivateState of the "Properties" which is displayed by the command.

ActivateState=2 : UID LED state is turned on by UID switch .
ActivateState=3 : UID LED sate is blinking by the management software .
ActivateState=4 : UID LED state is turned off by UID switch .

> **Tips**
>
> **If the UID LED is not mounted into the host system, the "UID Switch Control" function works only to the virtual UID LED of the Server Panel. Please refer to the User's Guide of your host system for the description of the UID LED.**

**Tips**

- **The UID LED will blink (flash) when it is controlled by Chassis Identify function of management software such as ESMPRO/ ServerManager. The UID LED will turn on when it is controlled by pushing the UID switch of the host system or using UID switch control function of BMC's web server or command line interface. For actual display state of the UID LED, blinking (flashing) the UID LED is higher priority than turning on it when it is controlled at a same time (blinking state AND turning on state).**

- **Blinking (flashing) UID LED by management software can be turned off (release the blinking state) only by management software. Turning on UID LED by UID switch control (actual switch of the host system or the function of BMC's web server or command line interface) can be turned off (release turning on state) only by the UID switch control.**

# SYSTEM EVENT LOG

You can display system event log and modify setting of the system event log through the command line interface.

## Viewing system event log

To move the current default target to /admin1/system1/log1, enter the following command at the command prompt.

```
cd /admin1/system1/log1
```

Here, to confirm the total number of system event log records, enter the following command. The "Targets" section reported by the following command indicates the "record<N>" target(s). <N> means any value between 1 and the total number of the system event log records.

```
show
```

> **To show the total number of system event log records more than 1000 event logs, it may take about tens of seconds.**

Next, when the following command is input, information of a specific record is displayed at "Properties" section: Here, <N> means record number which you would like to confirm.

```
show record<N>
```

For example, enter the following command when you would like to confirm the number 1 record.

```
show record1
```

The example of displaying information in this case is shown below.

```
-> show record1
Command Status: COMMAND COMPLETED

ufip=/admin1/system1/log1/record1
    Properties:
        RecordID=1
        CreationTimeStamp=20110324130745.000000+000
        RecordFormat=*RecordID*RecordType*TimeStamp*GeneratorID*EvMRev*Sens
        orType*SensorNumber*EventType*EventData1*EventData2*EventData3*
        RecordData=*1*2*1300972065*32*4*16*9*111*66*143*255*
    Verbs:
        cd
        exit
        help
        show
        version
```

## Setting of system event log

To move the current default target to /admin1/system1/log1, enter the following command at the command prompt.

```
cd /admin1/system1/log1
```

The "Properties" section reported by the following command indicates the current setting of system event log.

```
show
```

Enter the following command if you would like to modify a property of the setting of system event log .

```
set <Property>=<New value>
```

The properties which the system event log target contains are as follows:

- **oemnec_selbehavior**

    This specifies the behavior when the system event log repository is full. The valid values for this property are followings. This is the dynamic setting.

    0 : Stop logging the system event log. The system event log is not recorded any more when the system event log is full.

    1: Clear all system event logs. All system event logs are cleared when the system event log is full.

    2: Overwrite oldest system event log. Oldest system event log is overwritten with new system event log when the system event log is full.

For example, enter the following command when you would like to enable the auto clear of system event log.

```
set oemnec_selbehavior=1
```

**The user must have an account as administrator for modifying the setting of the system event log.**

# ACCESS LOG

You can display, clear, and set the access log for the management LAN.

<table>
<tr>
<td>☑<br>Check</td>
<td><b>The user must have an account as administrator for clearing and setting the access log.</b></td>
</tr>
</table>

<table>
<tr>
<td>Tips</td>
<td><b>The following are events supported by the Access Log function.</b><br>
• <b>Login and logout events for HTTP, HTTPS, and SSH connections</b><br>
• <b>System control (Power OFF/ON, system reset, etc…) via Web browser.</b><br>
• <b>Modify the setting (Network setting, etc…) via Web browser.</b><br>
• <b>Start the remote KVM</b></td>
</tr>
</table>

<table>
<tr>
<td>Tips</td>
<td><b>User Information is not registered by logout events for SSH connections.</b></td>
</tr>
</table>

## Viewing access log

To move the current default target to /admin1/sp1/log1/record1, enter the following command at the command prompt.

```
cd /admin1/sp1/log1/record1
```

Enter the following command, if you would like to confirm the access log.

```
show
```

The example of displaying the access log is shown below.

```
timestamp      user      ipaddress       protocol         event
----------------+-----------+----------------------+-------------+-----------------------------------------
06/10/2009    ope        192.168.2.14      SSH         Login Successful 13:52:19
----------------------------------------------------------------------------------------------------
06/10/2009    admin      192.168.2.14      SSH         Login Successful 13:53:14
----------------------------------------------------------------------------------------------------
06/10/2009    user       192.168.2.14      HTTP        Login Successful 13:55:49
----------------------------------------------------------------------------------------------------
```

You can display only access log that corresponded to the specified from following condition.

- **timestamp**

   Specify the date by the following format: MM/DD/YYYY

- **user**

   Specify the user name.

- **ipaddress**

   Specify the IP address on the remote management PC by the following format:
   XXX.XXX.XXX.XXX

- **protocol**

   Specify the following protocol: HTTP, HTTPS, SSH

- **event**

   Specify the following event: normal, error
   "normal" means not error event. "error" means error event.

You can change the displaying sequence of access log and display the specified number of access log by the specified from following options.

- **oemnec_headlog <number>**

   Display from <number> head of the access log.

- **oemnec_taillog <number>**

   Display from <number> back of the access log.

Enter the following command when you would like to use the above condition.

e.g.1) Display the access log whose username is Administrator.

   **show user==Administrator**

e.g.2) Display the access log whose IP address is 192.168.1.100 and protocol is HTTP and
   event is error.

   **show ipaddress==192.168.1.100,protocol==HTTP,event==error**

e.g.3) Display from 100 back of the access log whose timestamp is 10/10/2010 and protocol
   is HTTPS.

   **show –oemnec_taillog 100 timestamp==01/01/2010,protocol==HTTPS**

> **Tips** | **Access log might not be correctly displayed with timestamp condition about the log of recorded from AC ON to DC ON on host system.**

## Clearing access log

To move the current default target to /admin1/sp1/log1/record1, enter the following command at the command prompt.

```
cd /admin1/sp1/log1/record1
```

Enter the following command, if you would like to clear the access log.

```
delete
```

## Setting access log

To move the current default target to /admin1/sp1/log1, enter the following command at the command prompt.

```
cd /admin1/sp1/log1
```

Enter the following command, if you would like to confirm the access log as properties of the access log target which is /admin1/sp1/log1.

```
show
```

Enter the following command if you would like to modify a property of the setting access log.

```
set <Property>=<New value>
```

The properties which the access log target contains are as follows:

- **oemnec_operationlog_enable**

   This specifies whether access log for the system control and the BMC setting modification via Web browser is enabled. The valid values for this property are "2" and "3". "2" means that the access log is enabled. "3" means that the access log is disabled. This is the dynamic setting.

- **oemnec_sshlog_enable**

   This specifies whether access log for login/logout of SSH is enabled. The valid values for this property are "2" and "3". "2" means that the access log is enabled. "3" means that the access log is disabled. This is the dynamic setting.

- **oemnec_httpslog_enable**

   This specifies whether access log for login/logout of HTTPS is enabled. The valid values for this property are "2" and "3". "2" means that the access log is enabled. "3"

means that the access log is disabled. This is the dynamic setting.

- **oemnec_httplog_enable**

    This specifies whether access log for login/logout of HTTP is enabled. The valid values for this property are "2" and "3". "2" means that the access log is enabled. "3" means that the access log is disabled. This is the dynamic setting.

For example, enter the following command when you would like to use the access log for login/logout of HTTPS.

    **set** oemnec_httpslog_enable=2

# USER SETTINGS

This section describes how to confirm and modify the user account through the command line interface. To move the current default target to an user account target which you would like to confirm or (and) modify, enter the following command at the command prompt. <N> means any value between 1 and 12: Therefore you can select a user account between account1 and account12. The <N> corresponds to an order from the list of user accounts top on the user account configuration page through a Web browser.

```
cd /admin1/sp1/account<N>
```

Enter the following command, if you would like to confirm the information which the selected user account has as its properties.

```
show
```

Enter the following command if you would like to modify a property of the selected user account.

```
set <Property>=<New value>
```

The properties which the selected user account target contains are as follows:

- **UserID**

    This corresponds to a user name (login name). It becomes effective at next login if you change it.

- **UserPassword**

    This is the user password (only can be changed). "UserPassword=" is displayed but the password setting, value of this property, is not displayed when this property is displayed. It becomes effective at next login if you change it.

- **oemnec_Group**

    This specifies the user level. The valid values for this property are "User", "Operator" and "Administrator". It becomes effective at next login if you change it.

> **Notice**
>
> **A user name can contain up to 15 alphanumeric characters, including "- (minus)" and "_ (underscore)". "- (minus)" can not be used for the top of a user name. The password accepts up to 19 ASCII characters, except for " (space)", ""(quotation marks)", "&", "?", "=".**

# NETWORK SETTINGS

This section describes how to confirm and modify the network setting for management LAN through the command line interface. To move the current default target to /admin1/sp1/enetport1, enter the following command at the command prompt:

```
cd /admin1/sp1/enetport1
```

Enter the following command, if you would like to confirm properties of the Ethernet port target which is /admin1/sp1/enetport1.

```
show
```

The properties which the Ethernet port target contains are as follows:

- **PermanentAddress**

    This specifies the MAC address for the management LAN. This property is read-only.

- **AutoSense**

    This indicates whether Auto Negotiation is enabled for the LAN Connection Type setting of the management LAN. Note that, the valid values for this property are "TRUE" and "FALSE". "TRUE" means that the Auto Negotiation is enabled. "FALSE" means that the Auto Negotiation is disabled. This property is read-only.

- **FullDuplex**

    This indicates whether Full Duplex Mode is enabled for the LAN Connection Type setting of the management LAN when the Auto Negotiation (AutoSense) is disabled (FALSE). The value of this property is not displayed when the Auto Negotiation (AutoSense) is enabled (TRUE). This property is read-only.

- **PortType**

    This indicates Link Speed ("10Base-T" or "100Base-TX") for the LAN Connection Type setting of the management LAN when the Auto Negotiation (AutoSense) is disabled (FALSE). The value of this property is not displayed when the Auto Negotiation (AutoSense) is enabled (TRUE). This property is read-only.

Followings describe how to confirm and modify the access limitation setting for management LAN through the command line interface. To move the current default target to /admin1/sp1/enetport1/lanendpt1, enter the following command at the command prompt:

```
cd /admin1/sp1/enetport1/lanendpt1
```

Enter the following command, if you would like to confirm properties of the access limitation target which is /admin1/sp1/enetport1/lanendpt1.

```
show
```

Enter the following command if you would like to modify a property of the access limitation target.

```
set <Property>=<New value>
```

The properties which the access limitation target contains are as follows:

- **oemnec_allowedaccessips**

    This specifies the IP addresses that permit access to the management LAN. Divide IP address by "," (ex. 192.168.1.2, 192.168.1.2, …) or use asterisk (ex. 192.168.1.*), if you would like to set multiple permit IP address. Set "0.0.0.0" or no <value> (*) to this property, if you would like to clear the value of this property, It becomes effective at next login if you change it. The value of this property is cleared if oemnec_deniedaccessips is set.

    > \* "Set no <value>" means to input [Enter] key next to "=" key like following example.
    >     set oemnec_allowedaccessips=[Enter]

- **oemnec_deniedaccessips**

    This specifies the IP addresses that reject access to the management LAN. Divide IP address by "," (ex. 192.168.1.2, 192.168.1.2, …) or use asterisk (ex. 192.168.1.*), if you would like to set multiple reject IP address. Set "0.0.0.0" or no <value> (*) to this property, if you would like to clear the value of this property, It becomes effective at next login if you change it. The value of this property is cleared if oemnec_allowedaccessips is set.

    > \* "Set no <value>" means to input [Enter] key next to "=" key like following example.
    >     set oemnec_deniedaccessips=[Enter]

For example, enter the following command when you would like to permit access from 192.168.1.* and 192.168.3.4.

`set` oemnec_allowedaccessips=192.168.1.*,192.168.3.4

> **Clear all oemnec_allowedaccessips/oemnec_deniedaccessips values, if you would like NOT to restrict access by IP address for the management LAN.**

> **The communication with ESMPRO/ServerManager is also restricted by this configuration. Permit the IP address used by the communication with ESMPRO/ServerManager if you would like to use ESMPRO/ServerManager.**

> **To restrict access by IP address used by logging in to the BMC's SSH server is impossible. So, if you would like to restrict the IP address, the following procedures are necessary.**
> **At first, log out of current BMC's SSH session using the IP address and log in to the BMC's SSH server once again by using other IP address permitted by oemnec_allowedaccessips / oemnec_deniedaccessips (Access Permission Address) Configuration. Then change the configuration for NOT permitting the IP address which is previously used by the BMC's SSH server.**

> **You can set the access restriction settings to 222 characters. The indication by the show command is displayed to 255 characters. The access restriction settings from Web browser are possible to 255**

| **characters.**

Followings describe how to confirm and modify the DHCP setting for management LAN through the command line interface. To move the current default target to /admin1/sp1/enetport1/lanendpt1/ipendpt1, enter the following command at the command prompt:

```
cd /admin1/sp1/enetport1/lanendpt1/ipendpt1
```

Enter the following command, if you would like to confirm properties of the DHCP target which is /admin1/sp1/enetport1/lanendpt1/ipendpt1.

```
show
```

Enter the following command if you would like to modify a property of the DHCP target.

```
set <Property>=<New value>
```

The properties which the DHCP target contains are as follows:

- **AddressOrigin**

  This specifies whether DHCP is enabled for the management LAN. Note that, the valid values for this property are "3" and "4". "3" means that the DHCP is disabled. "4" means that the DHCP is enabled. This is the dynamic setting.

- **IPv4Address**

  This specifies the IP address for the management LAN. This property is read-only.

- **SubnetMask**

  This specifies the subnet mask for the management LAN. This property is read-only.

For example, enter the following command when you would like to enable DHCP.

```
set AddressOrigin=4
```

Followings describe how to confirm the gateway setting for management LAN through the command line interface. To move the current default target to /admin1/sp1/enetport1/lanendpt1/ipendpt1/gateway1, enter the following command at the command prompt:

```
cd /admin1/sp1/enetport1/lanendpt1/ipendpt1/gateway1
```

Enter the following command, if you would like to confirm properties of the gateway target which is /admin1/sp1/enetport1/lanendpt1/ipendpt1/gateway1.

```
show
```

The properties which the gateway target contains are as follows:

- **InfoFormat**

    The value is "3". This specifies the AccessInfo is IPv4 address. This property is read-only.

- **AccessInfo**

    This specifies the IP address of the default gateway for the management LAN. This property is read-only.

Followings describe how to confirm and modify the network setting with disabling DHCP for management LAN through the command line interface. To move the current default target to /admin1/sp1/enetport1/lanendpt1/ipendpt1/staticipsettings1, enter the following command at the command prompt:

```
cd /admin1/sp1/enetport1/lanendpt1/ipendpt1/staticipsettings1
```

Enter the following command, if you would like to confirm properties of the static network setting target which is /admin1/sp1/enetport1/lanendpt1/ipendpt1/staticipsettings1.

```
show
```

Enter the following command if you would like to modify a property of the static network setting target.

```
set <Property>=<New value>
```

The properties which the static network setting target contains are as follows:

- **IPv4Address**

    This specifies the IP address for the management LAN when DHCP is disabled. This is the dynamic setting.

- **SubnetMask**

    This specifies the subnet mask for the management LAN when DHCP is disabled. This is the dynamic setting.

- **GatewayIPv4Address**

    This specifies the IP address of the default gateway for the management LAN when DHCP is disabled. This is the dynamic setting

Followings describe how to confirm and modify the HTTP service for management LAN through the command line interface. To move the current default target to /admin1/sp1/httpsvc1, enter the following command at the command prompt:

```
cd /admin1/sp1/httpsvc1
```

Enter the following command, if you would like to confirm properties of the HTTP service target which is /admin1/sp1/httpsvc1.

```
show
```

Enter the following command if you would like to modify a property of the HTTP service target.

```
set <Property>=<New value>
```

The properties which the HTTP service target contains are as follows:

- **EnabledState**

    This specifies whether HTTP port is enabled for the management LAN. The valid values for this property are "2" and "3". "2" means that the HTTP port is enabled. "3" means that the HTTP port is disabled. This is the dynamic setting.

- **oemnec_httpport**

    This specifies the HTTP port for the management LAN. This is the dynamic setting.

Followings describe how to confirm and modify the HTTPS service for management LAN through the command line interface. To move the current default target to /admin1/sp1/httpssvc1, enter the following command at the command prompt:

```
cd /admin1/sp1/httpssvc1
```

Enter the following command, if you would like to confirm properties of the HTTPS service target which is /admin1/sp1/httpssvc1.

```
show
```

Enter the following command if you would like to modify a property of the HTTPS service target.

```
set <Property>=<New value>
```

The properties which the HTTPS service target contains are as follows:

- **EnabledState**

    This specifies whether HTTPS port is enabled for the management LAN. The valid values for this property are "2" and "3". "2" means that the HTTPS port is enabled. "3" means that the HTTPS port is disabled. This is the dynamic setting.

- **oemnec_httpsport**

    This specifies the HTTPS port for the management LAN. This is the dynamic setting.

Followings describe how to confirm and modify the SSH service for management LAN through the command line interface. To move the current default target to /admin1/sp1/sshsvc1, enter the following command at the command prompt:

```
cd /admin1/sp1/sshsvc1
```

Enter the following command, if you would like to confirm properties of the SSH service

target which is /admin1/sp1/sshsvc1.

```
show
```

Enter the following command if you would like to modify a property of the SSH service target.

```
set <Property>=<New value>
```

The properties which the SSH service target contains are as follows:

- **EnabledState**

    This specifies whether SSH port is enabled for the management LAN. The valid values for this property are "2" and "3". "2" means that the SSH port is enabled. "3" means that the SSH port is disabled. This is the dynamic setting.

- **oemnec_sshport**

    This specifies the SSH port for the management LAN. This is the dynamic setting.

# POWER CONSUMPTION CONTROL

You can control the power consumption of the host system through the command line interface.

> **The user must have an account as administrator for controlling the power consumption.**

To move the current default target to /admin1/system1, enter the following command at the command prompt:

```
cd /admin1/system1
```

**State confirmation and modification of Power Consumption Control**

Enter the following command, if you would like to confirm properties related to the power consumption.

```
show
```

Enter the following command if you would like to modify a property related to the power consumption.

```
set <Property>=<New value>
```

The properties related to power consumption on /admin1/system1 are as follows:

- **EnabledState**

    The value is always "2".This specifies whether SSH port is enabled for the management LAN. This property is read-only.

- **oemnec_SafePowerCapping**

    This specifies whether fault check of the power consumption sensor is enabled. The valid values for this property are "enabled" and "disabled". "enabled" means that the fault check is enabled. "disable" means that the fault check is disabled. Default setting is "disabled".

- **oemnec_ProcessorCoreDisableMax**

    This specifies Max Core number which can be set from oemnec_ProcessorCoreDisable property. This property is not displayed if oemnec_BootTimeConfig is disabled.

- **oemnec_ProcessorCoreDisable**

    This specifies the number of CPU core to disable. This is the dynamic setting. This property is not displayed if oemnec_BootTimeConfig is disabled.

- **oemnec_BootPerformanceOptimized**

    This specifies whether Performance Optimized mode is enabled. This is the dynamic setting. This property is not displayed if oemnec_BootTimeConfig is disabled.

- **oemnec_BootTimeConfig**

  This specifies whether BootingMode is enabled. This is the dynamic setting. Default value is "disabled". This property supported by specific product.

- **oemnec_NonAggressiveModeCorrectionTimeLimit**

  Specify the maximum time to take corrective actions in order to bring the system power consumption back to the specified 'Power Threshold (Pn)' before generating System Event Log and sending alert. This is the dynamic setting. This property is not displayed if oemnec_NonAggressiveMode is disabled.

- **oemnec_NonAggresiveModeCapvalue**

  This specifies the value of the power consumption starting he power consumption control. This is the dynamic setting. This property is not displayed if oemnec_NonAggressiveMode is disabled.

- **oemnec_NonAggressiveModeSetableCapvalue**

  This specifies the value range of the settable oemnec_NonAggressiveModeCapvalue. This property is read-only. This property is not displayed if oemnec_NonAggressiveMode is disabled.

- **oemnec_NonAggressiveMode**

  Non-Aggressive Mode brings the system power consumption under the specified upper limit threshold without extremely decreasing system performance. The valid values for this property are "enabled" and "disabled". "enabled" means that the power control is enabled. "disable" means that the power control is disabled. Default setting is "disabled".

- **oemnec_ExceptionAction_Shutdown_Enable**

  This specifies whether the shutdown function of the system is enabled when power consumption control is of no effect within a given oemnec_AggressiveModeCorrectionTimeLimit after the power consumption pass oemnec_AggressiveModeCapvalue. The valid values for this property are "enabled" and "disabled". "enabled" means that the shutdown function is enabled. "disable" means that the shutdown function is disabled. This is the dynamic setting. This property is not displayed if oemnec_AggressiveMode is disabled.

- **oemnec_AggressiveModeCorrectionTimeLimit**

  The shutdown of the system will be done according to setting of oemnec_ExceptionAction_Shutdown_Enable when power consumption control is of no effect within a given oemnec_AggressiveModeCorrectionTimeLimit (seconds) after the power consumption pass oemnec_AggresiveModeCapvalue. This is the dynamic setting. This property is not displayed if oemnec_AggressiveMode is disabled.

- **oemnec_AggresiveModeCapvalue**

  This specifies the value of the power consumption starting he power consumption control. This is the dynamic setting. This property is not displayed if oemnec_AggressiveMode is disabled.

- **oemnec_AggressiveModeSetablePowerCapvalue**

This specifies the value range of the settable oemnec_AggressiveModeCapvalue. This property is read-only. This property is not displayed if oemnec_AggressiveMode is disabled.

- **oemnec_AggressiveMode**

    This specifies whether the power consumption control under the specified upper limit threshold is enabled. The valid values for this property are "enabled" and "disabled". "enabled" means that the power control is enabled. "disable" means that the power control is disabled. Default setting is "disabled".

**The system performance, such as frequency of CPU, decreases for reducing power consumption when the power control is enabled.**

# CONFIRMING SYSTEM INFORMATION

This section describes how to confirm the system information (product, BIOS/BMC firmware revision, MAC address of System LAN, CPU, Memory) through the command line interface.

> **The values of the properties for items not supported by the host system is not displayed for the system information. Moreover, the values of the properties for items supported with the host system might not be displayed the system information according to a state of a power supply and mounting such as a device of the system either.**

## Confirming Product Information

You can confirm the product information through the command line interface by entering following the basic command at the command prompt.

```
show /admin1/system1
```

In this case, value of oemnec_productname property indicates "Product Name" information at the "Properties" section. Also value of oemnec_modelnumber property indicates "Part / Model Number" information and value of oemnec_serialnumber property indicates "Product Serial Number" information. These properties for the product information are read-only.

## Confirming MAC address of System LAN

To move the current default target to /admin1/system1, enter the following command at the command prompt.

```
cd /admin1/system1
```

Here, to confirm all the targets for System LAN (onboard LAN), enter the following command at the command prompt. All the System LAN targets are represented as enetport<N> strings at "Targets" section. <N> means value of one-origin integer.

```
show
```

Next, when the following command is input, the MAC address of the System LAN target is appeared at the right side of "PermanentAddress=" string. <N> means the number of the System LAN target which you would like to confirm.

```
show enetport<N>
```

For example, enter the following command when you would like to confirm the MAC address of LAN Port1.

```
show enetport1
```

**Confirming System BIOS revision**

You can confirm the System BIOS revision through the command line interface by entering following the basic command at the command prompt.

```
show /admin1/system1/swid1
```

In this case, the System BIOS revision is appeared at the right side of "VersionString=" string in the "Properties" section.

**Confirming BMC firmware revision**

You can confirm the BMC firmware revision through the command line interface by entering following the basic command at the command prompt.

```
show /admin1/sp1/swid1
```

In this case, the BMC firmware revision is appeared at the right side of "VersionString=" string in the "Properties" section. Also the SDR revision is appeared at the right side of "oemnec_sdrversion =" string.

**Confirming CPU Information**

To move the current default target to /admin1/system1, enter the following command at the command prompt.

```
cd /admin1/system1
```

Here, to confirm all the targets for CPU, enter the following command at the command prompt. All the CPU targets are represented as cpu<N> strings at "Targets" section. <N> means value of one-origin integer.

```
show
```

Next, when the following command is input, information of a specific CPU target is displayed at "Properties" section. Here, <N> means CPU target number which you would like to confirm.

```
show cpu<N>
```

The EnabledState property of the CPU target indicates the CPU status. "2" indicates CPU installed. No value (Only "EnabledState=" string is displayed.) indicates CPU not installed. "3" indicates that the CPU is defected. The values of the other properties (such as oemnec_clock) are not displayed (Only property name with "=" string is displayed.). if the CPU is not installed (Only "EnabledState=" string is displayed.). Also, the values of the properties not supported by the host system are not displayed.

For example, enter the following command when you would like to confirm the information of CPU1.

```
show cpu1
```

The example of displaying information in this case is shown below.

```
ufip=/admin1/system1/cpu1
        Properties:
            EnabledState=enabled
            oemnec_clock=2660MHz
            oemnec_validcore=4
            oemnec_maxcore=4
            oemnec_validthread=8
            oemnec_maxthread=8
            oemnec_l1cache=256KB
            oemnec_l2cache=1024KB
            oemnec_l3cache=8192KB

        Verbs:
            cd
            exit
            help
            show
            version
```

**Confirming Memory Information**

To move the current default target to /admin1/system1, enter the following command at the command prompt.

```
cd /admin1/system1
```

Here, to confirm all the targets for memory (DIMM), enter the following command at the command prompt. All the memory (DIMM) targets are represented as memory<N> strings at "Targets" section. <N> means value of one-origin integer.

```
show
```

Next, when the following command is input, information of a specific memory (DIMM) target is displayed at "Properties" section. Here, <N> means memory (DIMM) target number which you would like to confirm.

```
show memory<N>
```

The EnabledState property of the memory target indicates the memory (DIMM) status. "2" indicates memory (DIMM) installed. No value (Only "EnabledState=" string is displayed.) indicates memory (DIMM) not installed. "3" indicates memory (DIMM) error. The values of the other properties (such as oemnec_clocksize) are not displayed (Only property name with "=" string is displayed.). if the memory (DIMM) is not installed (Only "EnabledState=" string is displayed.). Also, the values of the properties not supported by the host system are not displayed.

For example, enter the following command when you would like to confirm the information of memory1 (CPU1_DIMM1).

```
show memory1
```

The example of displaying information in this case is shown below.

```
ufip=/admin1/system1/memory1
    Properties:
        enabledstate=enabled
        oemnec_slotname=CPU1_DIMM1
        oemnec_clocksize=1024MB 1066MHz

    Verbs:
        cd
        exit
        help
        show
        version
```

# SPECIAL EXTENDED COMMANDS

This section describes the special extended command which can do state acquisition (powerstate, lampstate) and interrupt generation for OS dump (nmidump). The special extended commands use the syntaxes different from the basic command's ones.

## State Acquisition

You can acquire the state of the system at the command prompt:

**Commands to acquire the state are executable in all user levels.**

### Power State acquisition

Power state acquisition command (powerstate) is executable only when current default target is "/admin1" or "/admin1/system1".

Enter the following command, if the current default target is not "/admin1" and "/admin1/system1".

```
cd /admin1
  or
cd /admin1/system1
```

Enter the following command at the command prompt:

```
powerstate
```

One of the following responses is returned according to the power state.

**power on**
    System power is on.

**power off**
    System power is off.

### Lamp State acquisition

Lamp state acquisition command (lampstate) is executable only when current default target is "/admin1", "/admin1/system1" or "/admin1/system1/led1".

Enter the following command, if the current default target is not "/admin1", "/admin1/system1" or "/admin1/system1/led1".

```
cd /admin1
  or
cd /admin1/system1
  or
cd /admin1/system1/led1
```

**Status LED state acquisition**

Enter the following command at the command prompt:

```
lampstate -statuslamp
```

One of the following responses is returned according to the STATUS LED state.

**off**
STATUS LED is turned off.

**green on**
STATUS LED lights in green.

**green blink**
STATUS LED is blinking in green.

**amber on**
STATUS LED lights in amber.

**amber blink**
STATUS LED is blinking in amber.

**red on**
STATUS LED lights in red.

**red blink**
STATUS LED is blinking in red.

> **The state of the STATUS LED and the meaning are different according to the system. Refer to the User's Guide of the system for details.**

**UID LED State acquisition**

Enter the following command at the command prompt:

```
lampstate -uidlamp
```

One of the following responses is returned according to actual display state of the UID LED.

**off**
UID LED is turned off.

**on**
UID LED is turned on (lights).

**blink**
UID LED is blinking (flashing).

> **If the UID LED is not mounted into the host system, the "UID LED State acquisition" function works only to the virtual UID LED of the Server Panel. Please refer to the User's Guide of your host system for the description of the UID LED.**

# Interrupt Generation for OS Dump

You can execute OS dump by entering following command at the command prompt.

```
nmidump /admin1/system1
```

| | |
|---|---|
| **Notice** | **The user must have an account as administrator for executing the nmidump command.** |

| | |
|---|---|
| **Tips** | **The above command behavior is equivalent to pressing the DUMP switch on the host system.** |

# 7. WS-Management (Web Service for Management)

## OVERVIEW

With the WS-Management Protocol, you can control the host system and check the sensor of host system.

> **EXPRESSSCOPE Engine 3 implementation of WS-Management complies with the specification, DTMF Web Services for Management 1.0.0.**

> **EXPRESSSCOPE Engine 3 is confirmed the WS-Management operation with the following tools that support the WS-Management protocol.**
> - **Windows Remote Management (WinRM) 2.0**

> **To use WS-Management, you need to configure HTTPS connection to be enabled. Refer to the "Management LAN Settings" in the "Chapter 2: Configuring the Host System".**

## POWER CONTROL

You can perform power control of the host system.

> **The user must have an account as operator or administrator for power control.**

> **Performing power control when the operating system is running may cause the loss of data in the host system.**

## Power ON

Create the file input-RequestPowerStateChange2.xml and enter the following command, if you use WinRM.

**winrm invoke RequestPowerStateChange**
**http://schemas.dmtf.org/wbem/wscim/1/cim-schema/2/CIM_PowerManagementServ**
**ice?__cimnamespace=root/cimv2+Name=IPMI¥_Power¥_Service+CreationClassNa**
**me=CIM_PowerManagementService+SystemName=Unknown.IPMI¥_BMC¥_DeviceI**
**D.32+SystemCreationClassName=Host_ComputerSystem**
**-r:https://IP_ADDRESS/wsman -username:USERNAME -password:PASSWORD**
**-auth:basic -encoding:utf-8 -format:xml -file:input-RequestPowerStateChange2.xml**
**-skipCAcheck -skipCNcheck -skipRevocationcheck**

**input-RequestPowerStateChange2.xml**

```
<n1:RequestPowerStateChange_INPUT
xmlns:n1="http://schemas.dmtf.org/wbem/wscim/1/cim-schema/2/CIM_Power
ManagementService"
xmlns:wsa="http://schemas.xmlsoap.org/ws/2004/08/addressing"
xmlns:wsman="http://schemas.dmtf.org/wbem/wsman/1/wsman.xsd">
<n1:PowerState>2</n1:PowerState>
<n1:ManagedElement>
<wsa:ReferenceParameters>
<wsman:ResourceURI>http://schemas.dmtf.org/wbem/wscim/1/cim-schema/2/
Host_ComputerSystem</wsman:ResourceURI>
<wsman:SelectorSet>
<wsman:Selector Name='__cimnamespace'>root/cimv2</wsman:Selector>
<wsman:Selector
Name='CreationClassName'>Host_ComputerSystem</wsman:Selector>
<wsman:Selector Name='Name'>Unknown.IPMI BMC
DeviceID.32</wsman:Selector>
</wsman:SelectorSet>
</wsa:ReferenceParameters>
</n1:ManagedElement>
</n1:RequestPowerStateChange_INPUT>
```

**Please change according to your environment.**
**"IP_ADDRESS" : IP address of EXPRESSSCOPE Engine 3.**
**"USERNAME/PASSWORD": username/password of EXPRESSSCOPE**
**Engine 3.**

## Forced Power OFF

Create the file input-RequestPowerStateChange6.xml and enter the following command, if you use WinRM.

**winrm invoke RequestPowerStateChange**
**http://schemas.dmtf.org/wbem/wscim/1/cim-schema/2/CIM_PowerManagementServ**
**ice?__cimnamespace=root/cimv2+Name=IPMI¥_Power¥_Service+CreationClassNa**
**me=CIM_PowerManagementService+SystemName=Unknown.IPMI¥_BMC¥_DeviceI**

**D.32+SystemCreationClassName=Host_ComputerSystem**
**-r:https://IP_ADDRESS/wsman -username:USERNAME -password:PASSWORD**
**-auth:basic -encoding:utf-8 -format:xml -file:input-RequestPowerStateChange6.xml**
**-skipCNcheck -skipCAcheck -skipRevocationcheck**

**input-RequestPowerStateChange6.xml**

```
<n1:RequestPowerStateChange_INPUT
xmlns:n1="http://schemas.dmtf.org/wbem/wscim/1/cim-schema/2/CIM_Power
ManagementService"
xmlns:wsa="http://schemas.xmlsoap.org/ws/2004/08/addressing"
xmlns:wsman="http://schemas.dmtf.org/wbem/wsman/1/wsman.xsd">
<n1:PowerState>6</n1:PowerState>
<n1:ManagedElement>
<wsa:ReferenceParameters>
<wsman:ResourceURI>http://schemas.dmtf.org/wbem/wscim/1/cim-schema/2/
Host_ComputerSystem</wsman:ResourceURI>
<wsman:SelectorSet>
<wsman:Selector Name='__cimnamespace'>root/cimv2</wsman:Selector>
<wsman:Selector
Name='CreationClassName'>Host_ComputerSystem</wsman:Selector>
<wsman:Selector Name='Name'>Unknown.IPMI BMC
DeviceID.32</wsman:Selector>
</wsman:SelectorSet>
</wsa:ReferenceParameters>
</n1:ManagedElement>
</n1:RequestPowerStateChange_INPUT>
```

> **Please change according to your environment.**
> **"IP_ADDRESS" : IP address of EXPRESSSCOPE Engine 3.**
> **"USERNAME/PASSWORD": username/password of EXPRESSSCOPE**
> **Engine 3.**

# OS Shutdown

Create the file input-RequestPowerStateChange8.xml and enter the following command, if you use WinRM.

> **winrm invoke RequestPowerStateChange http://schemas.dmtf.org/wbem/wscim/1/cim-schema/2/CIM_PowerManagementService?__cimnamespace=root/cimv2+Name=IPMI¥_Power¥_Service+CreationClassName=CIM_PowerManagementService+SystemName=Unknown.IPMI¥_BMC¥_DeviceID.32+SystemCreationClassName=Host_ComputerSystem -r:https://IP_ADDRESS/wsman -username:USERNAME -password:PASSWORD -auth:basic -encoding:utf-8 -format:xml -file:input-RequestPowerStateChange8.xml -skipCAcheck -skipCNcheck -skipRevocationcheck**

> **input-RequestPowerStateChange8.xml**
>
> ```
> <n1:RequestPowerStateChange_INPUT
> xmlns:n1="http://schemas.dmtf.org/wbem/wscim/1/cim-schema/2/CIM_Power
> ManagementService"
> xmlns:wsa="http://schemas.xmlsoap.org/ws/2004/08/addressing"
> xmlns:wsman="http://schemas.dmtf.org/wbem/wsman/1/wsman.xsd">
> <n1:PowerState>8</n1:PowerState>
> <n1:ManagedElement>
> <wsa:ReferenceParameters>
> <wsman:ResourceURI>http://schemas.dmtf.org/wbem/wscim/1/cim-schema/2/
> Host_ComputerSystem</wsman:ResourceURI>
> <wsman:SelectorSet>
> <wsman:Selector Name='__cimnamespace'>root/cimv2</wsman:Selector>
> <wsman:Selector
> Name='CreationClassName'>Host_ComputerSystem</wsman:Selector>
> <wsman:Selector Name='Name'>Unknown.IPMI BMC
> DeviceID.32</wsman:Selector>
> </wsman:SelectorSet>
> </wsa:ReferenceParameters>
> </n1:ManagedElement>
> </n1:RequestPowerStateChange_INPUT>
> ```

> **The above OS shutdown is equivalent to pressing the POWER switch when the power of the host system is on. Your operating system must be set to shut down when you power off the system.**

> **Please change according to your environment.**
> **"IP_ADDRESS" : IP address of EXPRESSSCOPE Engine 3.**
> **"USERNAME/PASSWORD": username/password of EXPRESSSCOPE Engine 3.**

# System Reset

Create the file input-RequestPowerStateChange10.xml and enter the following command, if you use WinRM.

> **winrm invoke RequestPowerStateChange http://schemas.dmtf.org/wbem/wscim/1/cim-schema/2/CIM_PowerManagementService?__cimnamespace=root/cimv2+Name=IPMI¥_Power¥_Service+CreationClassName=CIM_PowerManagementService+SystemName=Unknown.IPMI¥_BMC¥_DeviceID.32+SystemCreationClassName=Host_ComputerSystem -r:https://IP_ADDRESS/wsman -username:USERNAME -password:PASSWORD -auth:basic -encoding:utf-8 -format:xml -file:input-RequestPowerStateChange10.xml -skipCAcheck -skipCNcheck -skipRevocationcheck**
>
> **input-RequestPowerStateChange10.xml**
>
> **<n1:RequestPowerStateChange_INPUT xmlns:n1="http://schemas.dmtf.org/wbem/wscim/1/cim-schema/2/CIM_PowerManagementService" xmlns:wsa="http://schemas.xmlsoap.org/ws/2004/08/addressing" xmlns:wsman="http://schemas.dmtf.org/wbem/wsman/1/wsman.xsd">**
> **<n1:PowerState>10</n1:PowerState>**
> **<n1:ManagedElement>**
> **<wsa:ReferenceParameters>**
> **<wsman:ResourceURI>http://schemas.dmtf.org/wbem/wscim/1/cim-schema/2/Host_ComputerSystem</wsman:ResourceURI>**
> **<wsman:SelectorSet>**
> **<wsman:Selector Name='__cimnamespace'>root/cimv2</wsman:Selector>**
> **<wsman:Selector Name='CreationClassName'>Host_ComputerSystem</wsman:Selector>**
> **<wsman:Selector Name='Name'>Unknown.IPMI BMC DeviceID.32</wsman:Selector>**
> **</wsman:SelectorSet>**
> **</wsa:ReferenceParameters>**
> **</n1:ManagedElement>**
> **</n1:RequestPowerStateChange_INPUT>**

> **Please change according to your environment.**
> **"IP_ADDRESS" : IP address of EXPRESSSCOPE Engine 3.**
> **"USERNAME/PASSWORD": username/password of EXPRESSSCOPE Engine 3.**

# Interrupt Generation for OS Dump

Create the file input-RequestPowerStateChange11.xml and enter the following command, if you use WinRM.

> **winrm invoke RequestPowerStateChange http://schemas.dmtf.org/wbem/wscim/1/cim-schema/2/CIM_PowerManagementService?__cimnamespace=root/cimv2+Name=IPMI¥_Power¥_Service+CreationClassName=CIM_PowerManagementService+SystemName=Unknown.IPMI¥_BMC¥_DeviceID.32+SystemCreationClassName=Host_ComputerSystem -r:https://IP_ADDRESS/wsman -username:USERNAME -password:PASSWORD -auth:basic -encoding:utf-8 -format:xml -file:input-RequestPowerStateChange11.xml -skipCAcheck -skipCNcheck -skipRevocationcheck**
>
> **input-RequestPowerStateChange11.xml**
>
> **<n1:RequestPowerStateChange_INPUT xmlns:n1="http://schemas.dmtf.org/wbem/wscim/1/cim-schema/2/CIM_PowerManagementService" xmlns:wsa="http://schemas.xmlsoap.org/ws/2004/08/addressing" xmlns:wsman="http://schemas.dmtf.org/wbem/wsman/1/wsman.xsd">**
> **<n1:PowerState>11</n1:PowerState>**
> **<n1:ManagedElement>**
> **<wsa:ReferenceParameters>**
> **<wsman:ResourceURI>http://schemas.dmtf.org/wbem/wscim/1/cim-schema/2/Host_ComputerSystem</wsman:ResourceURI>**
> **<wsman:SelectorSet>**
> **<wsman:Selector Name='__cimnamespace'>root/cimv2</wsman:Selector>**
> **<wsman:Selector Name='CreationClassName'>Host_ComputerSystem</wsman:Selector>**
> **<wsman:Selector Name='Name'>Unknown.IPMI BMC DeviceID.32</wsman:Selector>**
> **</wsman:SelectorSet>**
> **</wsa:ReferenceParameters>**
> **</n1:ManagedElement>**
> **</n1:RequestPowerStateChange_INPUT>**

> **Tips** **The above command behavior is equivalent to pressing the DUMP switch on the host system.**

> **Tips** **Change according to your environment.**
> **"IP_ADDRESS" : IP address of EXPRESSSCOPE Engine 3.**
> **"USERNAME/PASSWORD": username/password of EXPRESSSCOPE Engine 3.**

> **Notice** **Performing interrupt generation for OS dump when the operating system is running may cause the loss of data in the host system.**

# SENSOR INFORMATION

You can get sensor information either by enumeration of all sensors or by retrieving specified sensor.

## Enumeration of All Sensors

Enter the following command, if you enumerate numeric sensors (e.g.: temperature, voltage) with WinRM.

> **winrm enumerate**
> **http://schemas.dmtf.org/wbem/wscim/1/cim-schema/2/CIM_NumericSensor**
> **-username:USERNAME -password:PASSWORD -r:https://IP_ADDRESS/wsman**
> **-auth:basic -encoding:utf-8 -skipCAcheck -skipCNcheck -skipRevocationcheck**

Enter the following command, if you enumerate non-numeric sensors (e.g.: PSU, HDD) with WinRM.

> **winrm enumerate**
> **http://schemas.dmtf.org/wbem/wscim/1/cim-schema/2/CIM_Sensor**
> **-username:USERNAME -password:PASSWORD -r:https://IP_ADDRESS/wsman**
> **-auth:basic -encoding:utf-8 -skipCAcheck -skipCNcheck -skipRevocationcheck**

> **Change according to your environment.**
> **"IP_ADDRESS" : IP address of EXPRESSSCOPE Engine 3.**
> **"USERNAME/PASSWORD": username/password of EXPRESSSCOPE Engine 3.**

## Retrieving Specified Sensor

You can retrieve the sensor by specifying sensor number.

Enter the following command, if you retrieve the sensor of sensor number 48 with the WinRM.

> **winrm get**
> **"http://schemas.dmtf.org/wbem/wscim/1/cim-schema/2/CIM_NumericSensor?SystemCreationClassName=CIM_ComputerSystem+CreationClassName=CIM_NumericSensor+SystemName=Unknown.IPMI BMC DeviceID.32+DeviceID=1.48.0.32.1.99"**
> **-r:https://IP_ADDRESS/wsman -username:USERNAME -password:PASSWORD**
> **-auth:basic -encoding:utf-8 -skipCAcheck -skipCNcheck -skipRevocationcheck**

> **Change according to your environment.**
> **"IP_ADDRESS" : IP address of EXPRESSSCOPE Engine 3.**
> **"USERNAME/PASSWORD": username/password of EXPRESSSCOPE Engine 3.**

> **Specify the "Device ID" returned in the response of enumerating all sensors.**

# 8. 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 host system, 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]

## OTHERS TIPS

Should you have troubles while using the BMC for remote control, monitoring, and management of the host system, 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 product includes open source software programs described below.

## GNU General Public License

- Busybox
- Linux Kernel
- U-Boot
- stunnel

GNU GENERAL PUBLIC LICENSE
Version 2, June 1991

Copyright (C) 1989, 1991 Free Software Foundation, Inc.,
51 Franklin Street, Fifth Floor, Boston, MA 02110-1301 USA
Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.

Preamble

The licenses for most software are designed to take away your
freedom to share and change it.    By contrast, the GNU General Public
License is intended to guarantee your freedom to share and change free
software--to make sure the software is free for all its users.    This
General Public License applies to most of the Free Software
Foundation's software and to any other program whose authors commit to
using it.    (Some other Free Software Foundation software is covered by
the GNU Lesser General Public License instead.)    You can apply it to
your programs, too.

When we speak of free software, we are referring to freedom, not
price.    Our General Public Licenses are designed to make sure that you
have the freedom to distribute copies of free software (and charge for
this service if you wish), that you receive source code or can get it
if you want it, that you can change the software or use pieces of it
in new free programs; and that you know you can do these things.

To protect your rights, we need to make restrictions that forbid
anyone to deny you these rights or to ask you to surrender the rights.
These restrictions translate to certain responsibilities for you if you
distribute copies of the software, or if you modify it.

For example, if you distribute copies of such a program, whether
gratis or for a fee, you must give the recipients all the rights that
you have.    You must make sure that they, too, receive or can get the
source code.    And you must show them these terms so they know their
rights.

We protect your rights with two steps: (1) copyright the software, and
(2) offer you this license which gives you legal permission to copy,
distribute and/or modify the software.

Also, for each author's protection and ours, we want to make certain
that everyone understands that there is no warranty for this free

software.   If the software is modified by someone else and passed on, we
want its recipients to know that what they have is not the original, so
that any problems introduced by others will not reflect on the original
authors' reputations.

   Finally, any free program is threatened constantly by software
patents.   We wish to avoid the danger that redistributors of a free
program will individually obtain patent licenses, in effect making the
program proprietary.   To prevent this, we have made it clear that any
patent must be licensed for everyone's free use or not licensed at all.

   The precise terms and conditions for copying, distribution and
modification follow.

<div align="center">

GNU GENERAL PUBLIC LICENSE
TERMS AND CONDITIONS FOR COPYING, DISTRIBUTION AND MODIFICATION

</div>

   0. This License applies to any program or other work which contains
a notice placed by the copyright holder saying it may be distributed
under the terms of this General Public License.   The "Program", below,
refers to any such program or work, and a "work based on the Program"
means either the Program or any derivative work under copyright law:
that is to say, a work containing the Program or a portion of it,
either verbatim or with modifications and/or translated into another
language.   (Hereinafter, translation is included without limitation in
the term "modification".)   Each licensee is addressed as "you".

Activities other than copying, distribution and modification are not
covered by this License; they are outside its scope.   The act of
running the Program is not restricted, and the output from the Program
is covered only if its contents constitute a work based on the
Program (independent of having been made by running the Program).
Whether that is true depends on what the Program does.

   1. You may copy and distribute verbatim copies of the Program's
source code as you receive it, in any medium, provided that you
conspicuously and appropriately publish on each copy an appropriate
copyright notice and disclaimer of warranty; keep intact all the
notices that refer to this License and to the absence of any warranty;
and give any other recipients of the Program a copy of this License
along with the Program.

You may charge a fee for the physical act of transferring a copy, and
you may at your option offer warranty protection in exchange for a fee.

   2. You may modify your copy or copies of the Program or any portion
of it, thus forming a work based on the Program, and copy and
distribute such modifications or work under the terms of Section 1
above, provided that you also meet all of these conditions:

     a) You must cause the modified files to carry prominent notices
     stating that you changed the files and the date of any change.

     b) You must cause any work that you distribute or publish, that in
     whole or in part contains or is derived from the Program or any
     part thereof, to be licensed as a whole at no charge to all third
     parties under the terms of this License.

c) If the modified program normally reads commands interactively
when run, you must cause it, when started running for such
interactive use in the most ordinary way, to print or display an
announcement including an appropriate copyright notice and a
notice that there is no warranty (or else, saying that you provide
a warranty) and that users may redistribute the program under
these conditions, and telling the user how to view a copy of this
License.   (Exception: if the Program itself is interactive but
does not normally print such an announcement, your work based on
the Program is not required to print an announcement.)

These requirements apply to the modified work as a whole.   If
identifiable sections of that work are not derived from the Program,
and can be reasonably considered independent and separate works in
themselves, then this License, and its terms, do not apply to those
sections when you distribute them as separate works.   But when you
distribute the same sections as part of a whole which is a work based
on the Program, the distribution of the whole must be on the terms of
this License, whose permissions for other licensees extend to the
entire whole, and thus to each and every part regardless of who wrote it.

Thus, it is not the intent of this section to claim rights or contest
your rights to work written entirely by you; rather, the intent is to
exercise the right to control the distribution of derivative or
collective works based on the Program.

In addition, mere aggregation of another work not based on the Program
with the Program (or with a work based on the Program) on a volume of
a storage or distribution medium does not bring the other work under
the scope of this License.

   3. You may copy and distribute the Program (or a work based on it,
under Section 2) in object code or executable form under the terms of
Sections 1 and 2 above provided that you also do one of the following:

    a) Accompany it with the complete corresponding machine-readable
    source code, which must be distributed under the terms of Sections
    1 and 2 above on a medium customarily used for software interchange; or,

    b) Accompany it with a written offer, valid for at least three
    years, to give any third party, for a charge no more than your
    cost of physically performing source distribution, a complete
    machine-readable copy of the corresponding source code, to be
    distributed under the terms of Sections 1 and 2 above on a medium
    customarily used for software interchange; or,

    c) Accompany it with the information you received as to the offer
    to distribute corresponding source code.   (This alternative is
    allowed only for noncommercial distribution and only if you
    received the program in object code or executable form with such
    an offer, in accord with Subsection b above.)

The source code for a work means the preferred form of the work for
making modifications to it.   For an executable work, complete source
code means all the source code for all modules it contains, plus any
associated interface definition files, plus the scripts used to
control compilation and installation of the executable.   However, as a
special exception, the source code distributed need not include

anything that is normally distributed (in either source or binary form) with the major components (compiler, kernel, and so on) of the operating system on which the executable runs, unless that component itself accompanies the executable.

If distribution of executable or object code is made by offering access to copy from a designated place, then offering equivalent access to copy the source code from the same place counts as distribution of the source code, even though third parties are not compelled to copy the source along with the object code.

   4. You may not copy, modify, sublicense, or distribute the Program except as expressly provided under this License.   Any attempt otherwise to copy, modify, sublicense or distribute the Program is void, and will automatically terminate your rights under this License. However, parties who have received copies, or rights, from you under this License will not have their licenses terminated so long as such parties remain in full compliance.

   5. You are not required to accept this License, since you have not signed it.   However, nothing else grants you permission to modify or distribute the Program or its derivative works.   These actions are prohibited by law if you do not accept this License.   Therefore, by modifying or distributing the Program (or any work based on the Program), you indicate your acceptance of this License to do so, and all its terms and conditions for copying, distributing or modifying the Program or works based on it.

   6. Each time you redistribute the Program (or any work based on the Program), the recipient automatically receives a license from the original licensor to copy, distribute or modify the Program subject to these terms and conditions.   You may not impose any further restrictions on the recipients' exercise of the rights granted herein. You are not responsible for enforcing compliance by third parties to this License.

   7. If, as a consequence of a court judgment or allegation of patent infringement or for any other reason (not limited to patent issues), conditions are imposed on you (whether by court order, agreement or otherwise) that contradict the conditions of this License, they do not excuse you from the conditions of this License.   If you cannot distribute so as to satisfy simultaneously your obligations under this License and any other pertinent obligations, then as a consequence you may not distribute the Program at all.   For example, if a patent license would not permit royalty-free redistribution of the Program by all those who receive copies directly or indirectly through you, then the only way you could satisfy both it and this License would be to refrain entirely from distribution of the Program.

If any portion of this section is held invalid or unenforceable under any particular circumstance, the balance of the section is intended to apply and the section as a whole is intended to apply in other circumstances.

It is not the purpose of this section to induce you to infringe any patents or other property right claims or to contest validity of any such claims; this section has the sole purpose of protecting the integrity of the free software distribution system, which is

implemented by public license practices.    Many people have made
generous contributions to the wide range of software distributed
through that system in reliance on consistent application of that
system; it is up to the author/donor to decide if he or she is willing
to distribute software through any other system and a licensee cannot
impose that choice.

This section is intended to make thoroughly clear what is believed to
be a consequence of the rest of this License.

    8. If the distribution and/or use of the Program is restricted in
certain countries either by patents or by copyrighted interfaces, the
original copyright holder who places the Program under this License
may add an explicit geographical distribution limitation excluding
those countries, so that distribution is permitted only in or among
countries not thus excluded.    In such case, this License incorporates
the limitation as if written in the body of this License.

    9. The Free Software Foundation may publish revised and/or new versions
of the General Public License from time to time.    Such new versions will
be similar in spirit to the present version, but may differ in detail to
address new problems or concerns.

Each version is given a distinguishing version number.    If the Program
specifies a version number of this License which applies to it and "any
later version", you have the option of following the terms and conditions
either of that version or of any later version published by the Free
Software Foundation.    If the Program does not specify a version number of
this License, you may choose any version ever published by the Free Software
Foundation.

    10. If you wish to incorporate parts of the Program into other free
programs whose distribution conditions are different, write to the author
to ask for permission.    For software which is copyrighted by the Free
Software Foundation, write to the Free Software Foundation; we sometimes
make exceptions for this.    Our decision will be guided by the two goals
of preserving the free status of all derivatives of our free software and
of promoting the sharing and reuse of software generally.

<div align="center">NO WARRANTY</div>

    11. BECAUSE THE PROGRAM IS LICENSED FREE OF CHARGE, THERE IS NO WARRANTY
FOR THE PROGRAM, TO THE EXTENT PERMITTED BY APPLICABLE LAW.    EXCEPT WHEN
OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES
PROVIDE THE PROGRAM "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED
OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF
MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.    THE ENTIRE RISK AS
TO THE QUALITY AND PERFORMANCE OF THE PROGRAM IS WITH YOU.    SHOULD THE
PROGRAM PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING,
REPAIR OR CORRECTION.

    12. IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING
WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MAY MODIFY AND/OR
REDISTRIBUTE THE PROGRAM AS PERMITTED ABOVE, BE LIABLE TO YOU FOR DAMAGES,
INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING
OUT OF THE USE OR INABILITY TO USE THE PROGRAM (INCLUDING BUT NOT LIMITED
TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY
YOU OR THIRD PARTIES OR A FAILURE OF THE PROGRAM TO OPERATE WITH ANY OTHER

PROGRAMS), EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

END OF TERMS AND CONDITIONS

How to Apply These Terms to Your New Programs

    If you develop a new program, and you want it to be of the greatest possible use to the public, the best way to achieve this is to make it free software which everyone can redistribute and change under these terms.

    To do so, attach the following notices to the program.    It is safest to attach them to the start of each source file to most effectively convey the exclusion of warranty; and each file should have at least the "copyright" line and a pointer to where the full notice is found.

        <one line to give the program's name and a brief idea of what it does.>
        Copyright (C) <year>    <name of author>

        This program is free software; you can redistribute it and/or modify
        it under the terms of the GNU General Public License as published by
        the Free Software Foundation; either version 2 of the License, or
        (at your option) any later version.

        This program is distributed in the hope that it will be useful,
        but WITHOUT ANY WARRANTY; without even the implied warranty of
        MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE.    See the
        GNU General Public License for more details.

        You should have received a copy of the GNU General Public License along
        with this program; if not, write to the Free Software Foundation, Inc.,
        51 Franklin Street, Fifth Floor, Boston, MA 02110-1301 USA.

Also add information on how to contact you by electronic and paper mail.

If the program is interactive, make it output a short notice like this
when it starts in an interactive mode:

        Gnomovision version 69, Copyright (C) year name of author
        Gnomovision comes with ABSOLUTELY NO WARRANTY; for details type `show w'.
        This is free software, and you are welcome to redistribute it
        under certain conditions; type `show c' for details.

The hypothetical commands `show w' and `show c' should show the appropriate
parts of the General Public License.    Of course, the commands you use may
be called something other than `show w' and `show c'; they could even be
mouse-clicks or menu items--whatever suits your program.

You should also get your employer (if you work as a programmer) or your
school, if any, to sign a "copyright disclaimer" for the program, if
necessary.    Here is a sample; alter the names:

    Yoyodyne, Inc., hereby disclaims all copyright interest in the program
    `Gnomovision' (which makes passes at compilers) written by James Hacker.

    <signature of Ty Coon>, 1 April 1989
    Ty Coon, President of Vice

This General Public License does not permit incorporating your program into proprietary programs.   If your program is a subroutine library, you may consider it more useful to permit linking proprietary applications with the library.   If this is what you want to do, use the GNU Lesser General Public License instead of this License.

# GNU Lesser General Public Licsense

- glibc

GNU LESSER GENERAL PUBLIC LICENSE
Version 2.1, February 1999

Copyright (C) 1991, 1999 Free Software Foundation, Inc.
51 Franklin Street, Fifth Floor, Boston, MA   02110-1301   USA
Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.

[This is the first released version of the Lesser GPL.   It also counts
as the successor of the GNU Library Public License, version 2, hence
the version number 2.1.]

Preamble

The licenses for most software are designed to take away your freedom to share and change it.   By contrast, the GNU General Public Licenses are intended to guarantee your freedom to share and change free software--to make sure the software is free for all its users.

This license, the Lesser General Public License, applies to some specially designated software packages--typically libraries--of the Free Software Foundation and other authors who decide to use it.   You can use it too, but we suggest you first think carefully about whether this license or the ordinary General Public License is the better strategy to use in any particular case, based on the explanations below.

When we speak of free software, we are referring to freedom of use, not price.   Our General Public Licenses are designed to make sure that you have the freedom to distribute copies of free software (and charge for this service if you wish); that you receive source code or can get it if you want it; that you can change the software and use pieces of it in new free programs; and that you are informed that you can do these things.

To protect your rights, we need to make restrictions that forbid distributors to deny you these rights or to ask you to surrender these rights.   These restrictions translate to certain responsibilities for you if you distribute copies of the library or if you modify it.

For example, if you distribute copies of the library, whether gratis or for a fee, you must give the recipients all the rights that we gave you.   You must make sure that they, too, receive or can get the source code.   If you link other code with the library, you must provide complete object files to the recipients, so that they can relink them with the library after making changes to the library and recompiling it.   And you must show them these terms so they know their rights.

We protect your rights with a two-step method: (1) we copyright the library, and (2) we offer you this license, which gives you legal permission to copy, distribute and/or modify the library.

To protect each distributor, we want to make it very clear that there is no warranty for the free library.   Also, if the library is modified by someone else and passed on, the recipients should know that what they have is not the original version, so that the original author's reputation will not be affected by problems that might be introduced by others.

Finally, software patents pose a constant threat to the existence of any free program.   We wish to make sure that a company cannot effectively restrict the users of a free program by obtaining a restrictive license from a patent holder.   Therefore, we insist that any patent license obtained for a version of the library must be consistent with the full freedom of use specified in this license.

Most GNU software, including some libraries, is covered by the ordinary GNU General Public License.   This license, the GNU Lesser General Public License, applies to certain designated libraries, and is quite different from the ordinary General Public License.   We use this license for certain libraries in order to permit linking those libraries into non-free programs.

When a program is linked with a library, whether statically or using a shared library, the combination of the two is legally speaking a combined work, a derivative of the original library.   The ordinary General Public License therefore permits such linking only if the entire combination fits its criteria of freedom.   The Lesser General Public License permits more lax criteria for linking other code with the library.

We call this license the "Lesser" General Public License because it does Less to protect the user's freedom than the ordinary General Public License.   It also provides other free software developers Less of an advantage over competing non-free programs.   These disadvantages are the reason we use the ordinary General Public License for many libraries.   However, the Lesser license provides advantages in certain special circumstances.

For example, on rare occasions, there may be a special need to encourage the widest possible use of a certain library, so that it becomes a de-facto standard.   To achieve this, non-free programs must be allowed to use the library.   A more frequent case is that a free library does the same job as widely used non-free libraries.   In this case, there is little to gain by limiting the free library to free software only, so we use the Lesser General Public License.

In other cases, permission to use a particular library in non-free programs enables a greater number of people to use a large body of free software.   For example, permission to use the GNU C Library in non-free programs enables many more people to use the whole GNU operating system, as well as its variant, the GNU/Linux operating system.

Although the Lesser General Public License is Less protective of the users' freedom, it does ensure that the user of a program that is

linked with the Library has the freedom and the wherewithal to run that program using a modified version of the Library.

The precise terms and conditions for copying, distribution and modification follow.   Pay close attention to the difference between a "work based on the library" and a "work that uses the library".   The former contains code derived from the library, whereas the latter must be combined with the library in order to run.

GNU LESSER GENERAL PUBLIC LICENSE
TERMS AND CONDITIONS FOR COPYING, DISTRIBUTION AND MODIFICATION

0. This License Agreement applies to any software library or other program which contains a notice placed by the copyright holder or other authorized party saying it may be distributed under the terms of this Lesser General Public License (also called "this License"). Each licensee is addressed as "you".

A "library" means a collection of software functions and/or data prepared so as to be conveniently linked with application programs (which use some of those functions and data) to form executables.

The "Library", below, refers to any such software library or work which has been distributed under these terms.   A "work based on the Library" means either the Library or any derivative work under copyright law: that is to say, a work containing the Library or a portion of it, either verbatim or with modifications and/or translated straightforwardly into another language.   (Hereinafter, translation is included without limitation in the term "modification".)

"Source code" for a work means the preferred form of the work for making modifications to it.   For a library, complete source code means all the source code for all modules it contains, plus any associated interface definition files, plus the scripts used to control compilation and installation of the library.

Activities other than copying, distribution and modification are not covered by this License; they are outside its scope.   The act of running a program using the Library is not restricted, and output from such a program is covered only if its contents constitute a work based on the Library (independent of the use of the Library in a tool for writing it).   Whether that is true depends on what the Library does and what the program that uses the Library does.

1. You may copy and distribute verbatim copies of the Library's complete source code as you receive it, in any medium, provided that you conspicuously and appropriately publish on each copy an appropriate copyright notice and disclaimer of warranty; keep intact all the notices that refer to this License and to the absence of any warranty; and distribute a copy of this License along with the Library.

You may charge a fee for the physical act of transferring a copy, and you may at your option offer warranty protection in exchange for a fee.

2. You may modify your copy or copies of the Library or any portion of it, thus forming a work based on the Library, and copy and

distribute such modifications or work under the terms of Section 1
above, provided that you also meet all of these conditions:

 a) The modified work must itself be a software library.

 b) You must cause the files modified to carry prominent notices
 stating that you changed the files and the date of any change.

 c) You must cause the whole of the work to be licensed at no
 charge to all third parties under the terms of this License.

 d) If a facility in the modified Library refers to a function or a
 table of data to be supplied by an application program that uses
 the facility, other than as an argument passed when the facility
 is invoked, then you must make a good faith effort to ensure that,
 in the event an application does not supply such function or
 table, the facility still operates, and performs whatever part of
 its purpose remains meaningful.

 (For example, a function in a library to compute square roots has
 a purpose that is entirely well-defined independent of the
 application.   Therefore, Subsection 2d requires that any
 application-supplied function or table used by this function must
 be optional: if the application does not supply it, the square
 root function must still compute square roots.)

These requirements apply to the modified work as a whole.   If
identifiable sections of that work are not derived from the Library,
and can be reasonably considered independent and separate works in
themselves, then this License, and its terms, do not apply to those
sections when you distribute them as separate works.   But when you
distribute the same sections as part of a whole which is a work based
on the Library, the distribution of the whole must be on the terms of
this License, whose permissions for other licensees extend to the
entire whole, and thus to each and every part regardless of who wrote
it.

Thus, it is not the intent of this section to claim rights or contest
your rights to work written entirely by you; rather, the intent is to
exercise the right to control the distribution of derivative or
collective works based on the Library.

In addition, mere aggregation of another work not based on the Library
with the Library (or with a work based on the Library) on a volume of
a storage or distribution medium does not bring the other work under
the scope of this License.

  3. You may opt to apply the terms of the ordinary GNU General Public
License instead of this License to a given copy of the Library.   To do
this, you must alter all the notices that refer to this License, so
that they refer to the ordinary GNU General Public License, version 2,
instead of to this License.   (If a newer version than version 2 of the
ordinary GNU General Public License has appeared, then you can specify
that version instead if you wish.)   Do not make any other change in
these notices.

  Once this change is made in a given copy, it is irreversible for
that copy, so the ordinary GNU General Public License applies to all

subsequent copies and derivative works made from that copy.

This option is useful when you wish to copy part of the code of the Library into a program that is not a library.

4. You may copy and distribute the Library (or a portion or derivative of it, under Section 2) in object code or executable form under the terms of Sections 1 and 2 above provided that you accompany it with the complete corresponding machine-readable source code, which must be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange.

If distribution of object code is made by offering access to copy from a designated place, then offering equivalent access to copy the source code from the same place satisfies the requirement to distribute the source code, even though third parties are not compelled to copy the source along with the object code.

5. A program that contains no derivative of any portion of the Library, but is designed to work with the Library by being compiled or linked with it, is called a "work that uses the Library".   Such a work, in isolation, is not a derivative work of the Library, and therefore falls outside the scope of this License.

However, linking a "work that uses the Library" with the Library creates an executable that is a derivative of the Library (because it contains portions of the Library), rather than a "work that uses the library".   The executable is therefore covered by this License. Section 6 states terms for distribution of such executables.

When a "work that uses the Library" uses material from a header file that is part of the Library, the object code for the work may be a derivative work of the Library even though the source code is not. Whether this is true is especially significant if the work can be linked without the Library, or if the work is itself a library.   The threshold for this to be true is not precisely defined by law.

If such an object file uses only numerical parameters, data structure layouts and accessors, and small macros and small inline functions (ten lines or less in length), then the use of the object file is unrestricted, regardless of whether it is legally a derivative work.   (Executables containing this object code plus portions of the Library will still fall under Section 6.)

Otherwise, if the work is a derivative of the Library, you may distribute the object code for the work under the terms of Section 6. Any executables containing that work also fall under Section 6, whether or not they are linked directly with the Library itself.

6. As an exception to the Sections above, you may also combine or link a "work that uses the Library" with the Library to produce a work containing portions of the Library, and distribute that work under terms of your choice, provided that the terms permit modification of the work for the customer's own use and reverse engineering for debugging such modifications.

You must give prominent notice with each copy of the work that the Library is used in it and that the Library and its use are covered by

this License. You must supply a copy of this License. If the work during execution displays copyright notices, you must include the copyright notice for the Library among them, as well as a reference directing the user to the copy of this License. Also, you must do one of these things:

a) Accompany the work with the complete corresponding machine-readable source code for the Library including whatever changes were used in the work (which must be distributed under Sections 1 and 2 above); and, if the work is an executable linked with the Library, with the complete machine-readable "work that uses the Library", as object code and/or source code, so that the user can modify the Library and then relink to produce a modified executable containing the modified Library. (It is understood that the user who changes the contents of definitions files in the Library will not necessarily be able to recompile the application to use the modified definitions.)

b) Use a suitable shared library mechanism for linking with the Library. A suitable mechanism is one that (1) uses at run time a copy of the library already present on the user's computer system, rather than copying library functions into the executable, and (2) will operate properly with a modified version of the library, if the user installs one, as long as the modified version is interface-compatible with the version that the work was made with.

c) Accompany the work with a written offer, valid for at least three years, to give the same user the materials specified in Subsection 6a, above, for a charge no more than the cost of performing this distribution.

d) If distribution of the work is made by offering access to copy from a designated place, offer equivalent access to copy the above specified materials from the same place.

e) Verify that the user has already received a copy of these materials or that you have already sent this user a copy.

For an executable, the required form of the "work that uses the Library" must include any data and utility programs needed for reproducing the executable from it. However, as a special exception, the materials to be distributed need not include anything that is normally distributed (in either source or binary form) with the major components (compiler, kernel, and so on) of the operating system on which the executable runs, unless that component itself accompanies the executable.

It may happen that this requirement contradicts the license restrictions of other proprietary libraries that do not normally accompany the operating system. Such a contradiction means you cannot use both them and the Library together in an executable that you distribute.

7. You may place library facilities that are a work based on the Library side-by-side in a single library together with other library facilities not covered by this License, and distribute such a combined library, provided that the separate distribution of the work based on the Library and of the other library facilities is otherwise

permitted, and provided that you do these two things:

    a) Accompany the combined library with a copy of the same work
    based on the Library, uncombined with any other library
    facilities.   This must be distributed under the terms of the
    Sections above.

    b) Give prominent notice with the combined library of the fact
    that part of it is a work based on the Library, and explaining
    where to find the accompanying uncombined form of the same work.

  8. You may not copy, modify, sublicense, link with, or distribute
the Library except as expressly provided under this License.  Any
attempt otherwise to copy, modify, sublicense, link with, or
distribute the Library is void, and will automatically terminate your
rights under this License.  However, parties who have received copies,
or rights, from you under this License will not have their licenses
terminated so long as such parties remain in full compliance.

  9. You are not required to accept this License, since you have not
signed it.  However, nothing else grants you permission to modify or
distribute the Library or its derivative works.  These actions are
prohibited by law if you do not accept this License.  Therefore, by
modifying or distributing the Library (or any work based on the
Library), you indicate your acceptance of this License to do so, and
all its terms and conditions for copying, distributing or modifying
the Library or works based on it.

  10. Each time you redistribute the Library (or any work based on the
Library), the recipient automatically receives a license from the
original licensor to copy, distribute, link with or modify the Library
subject to these terms and conditions.  You may not impose any further
restrictions on the recipients' exercise of the rights granted herein.
You are not responsible for enforcing compliance by third parties with
this License.

  11. If, as a consequence of a court judgment or allegation of patent
infringement or for any other reason (not limited to patent issues),
conditions are imposed on you (whether by court order, agreement or
otherwise) that contradict the conditions of this License, they do not
excuse you from the conditions of this License.  If you cannot
distribute so as to satisfy simultaneously your obligations under this
License and any other pertinent obligations, then as a consequence you
may not distribute the Library at all.  For example, if a patent
license would not permit royalty-free redistribution of the Library by
all those who receive copies directly or indirectly through you, then
the only way you could satisfy both it and this License would be to
refrain entirely from distribution of the Library.

If any portion of this section is held invalid or unenforceable under any
particular circumstance, the balance of the section is intended to apply,
and the section as a whole is intended to apply in other circumstances.

It is not the purpose of this section to induce you to infringe any
patents or other property right claims or to contest validity of any
such claims; this section has the sole purpose of protecting the
integrity of the free software distribution system which is
implemented by public license practices.  Many people have made

generous contributions to the wide range of software distributed
through that system in reliance on consistent application of that
system; it is up to the author/donor to decide if he or she is willing
to distribute software through any other system and a licensee cannot
impose that choice.

This section is intended to make thoroughly clear what is believed to
be a consequence of the rest of this License.

  12. If the distribution and/or use of the Library is restricted in
certain countries either by patents or by copyrighted interfaces, the
original copyright holder who places the Library under this License may add
an explicit geographical distribution limitation excluding those countries,
so that distribution is permitted only in or among countries not thus
excluded.   In such case, this License incorporates the limitation as if
written in the body of this License.

  13. The Free Software Foundation may publish revised and/or new
versions of the Lesser General Public License from time to time.
Such new versions will be similar in spirit to the present version,
but may differ in detail to address new problems or concerns.

Each version is given a distinguishing version number.   If the Library
specifies a version number of this License which applies to it and
"any later version", you have the option of following the terms and
conditions either of that version or of any later version published by
the Free Software Foundation.   If the Library does not specify a
license version number, you may choose any version ever published by
the Free Software Foundation.

  14. If you wish to incorporate parts of the Library into other free
programs whose distribution conditions are incompatible with these,
write to the author to ask for permission.   For software which is
copyrighted by the Free Software Foundation, write to the Free
Software Foundation; we sometimes make exceptions for this.   Our
decision will be guided by the two goals of preserving the free status
of all derivatives of our free software and of promoting the sharing
and reuse of software generally.

<div align="center">NO WARRANTY</div>

  15. BECAUSE THE LIBRARY IS LICENSED FREE OF CHARGE, THERE IS NO
WARRANTY FOR THE LIBRARY, TO THE EXTENT PERMITTED BY APPLICABLE LAW.
EXCEPT WHEN OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR
OTHER PARTIES PROVIDE THE LIBRARY "AS IS" WITHOUT WARRANTY OF ANY
KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE
IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR
PURPOSE.   THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE
LIBRARY IS WITH YOU.   SHOULD THE LIBRARY PROVE DEFECTIVE, YOU ASSUME
THE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

  16. IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN
WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MAY MODIFY
AND/OR REDISTRIBUTE THE LIBRARY AS PERMITTED ABOVE, BE LIABLE TO YOU
FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR
CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE
LIBRARY (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING
RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR THIRD PARTIES OR A

FAILURE OF THE LIBRARY TO OPERATE WITH ANY OTHER SOFTWARE), EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

<div align="center">END OF TERMS AND CONDITIONS</div>

<div align="center">How to Apply These Terms to Your New Libraries</div>

If you develop a new library, and you want it to be of the greatest possible use to the public, we recommend making it free software that everyone can redistribute and change.   You can do so by permitting redistribution under these terms (or, alternatively, under the terms of the ordinary General Public License).

To apply these terms, attach the following notices to the library.   It is safest to attach them to the start of each source file to most effectively convey the exclusion of warranty; and each file should have at least the "copyright" line and a pointer to where the full notice is found.

    <one line to give the library's name and a brief idea of what it does.>
    Copyright (C) <year>   <name of author>

    This library is free software; you can redistribute it and/or
    modify it under the terms of the GNU Lesser General Public
    License as published by the Free Software Foundation; either
    version 2.1 of the License, or (at your option) any later version.

    This library is distributed in the hope that it will be useful,
    but WITHOUT ANY WARRANTY; without even the implied warranty of
    MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE.   See the GNU
    Lesser General Public License for more details.

    You should have received a copy of the GNU Lesser General Public
    License along with this library; if not, write to the Free Software
    Foundation, Inc., 51 Franklin Street, Fifth Floor, Boston, MA   02110-1301   USA

Also add information on how to contact you by electronic and paper mail.

You should also get your employer (if you work as a programmer) or your school, if any, to sign a "copyright disclaimer" for the library, if necessary.   Here is a sample; alter the names:

  Yoyodyne, Inc., hereby disclaims all copyright interest in the
  library `Frob' (a library for tweaking knobs) written by James Random Hacker.

  <signature of Ty Coon>, 1 April 1990
  Ty Coon, President of Vice

That's all there is to it!


# OpenSSL Toolkit

This product includes software developed by the OpenSSL Project for use in the OpenSSL Toolkit (http://www.openssl.org/).
This product includes cryptographic software written by Eric Young (eay@cryptsoft.com).

LICENSE ISSUES
==============

The OpenSSL toolkit stays under a dual license, i.e. both the conditions of
the OpenSSL License and the original SSLeay license apply to the toolkit.
See below for the actual license texts. Actually both licenses are BSD-style
Open Source licenses. In case of any license issues related to OpenSSL
please contact openssl-core@openssl.org.

OpenSSL License
---------------

```
/* ====================================================================
 * Copyright (c) 1998-2011 The OpenSSL Project.    All rights reserved.
 *
 * Redistribution and use in source and binary forms, with or without
 * modification, are permitted provided that the following conditions
 * are met:
 *
 * 1. Redistributions of source code must retain the above copyright
 *        notice, this list of conditions and the following disclaimer.
 *
 * 2. Redistributions in binary form must reproduce the above copyright
 *        notice, this list of conditions and the following disclaimer in
 *        the documentation and/or other materials provided with the
 *        distribution.
 *
 * 3. All advertising materials mentioning features or use of this
 *        software must display the following acknowledgment:
 *        "This product includes software developed by the OpenSSL Project
 *        for use in the OpenSSL Toolkit. (http://www.openssl.org/)"
 *
 * 4. The names "OpenSSL Toolkit" and "OpenSSL Project" must not be used to
 *        endorse or promote products derived from this software without
 *        prior written permission. For written permission, please contact
 *        openssl-core@openssl.org.
 *
 * 5. Products derived from this software may not be called "OpenSSL"
 *        nor may "OpenSSL" appear in their names without prior written
 *        permission of the OpenSSL Project.
 *
 * 6. Redistributions of any form whatsoever must retain the following
 *        acknowledgment:
 *        "This product includes software developed by the OpenSSL Project
 *        for use in the OpenSSL Toolkit (http://www.openssl.org/)"
 *
 * THIS SOFTWARE IS PROVIDED BY THE OpenSSL PROJECT ``AS IS'' AND ANY
 * EXPRESSED OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE
 * IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR
 * PURPOSE ARE DISCLAIMED.   IN NO EVENT SHALL THE OpenSSL PROJECT OR
 * ITS CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL,
 * SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT
 * NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES;
 * LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION)
 * HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT,
 * STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE)
 * ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED
```

# MIT Licsense

- iniParser
Copyright (c) 2000-2011 by Nicolas Devillard.
- jQuery
Copyright (c) 2011 John Resig, http://jquery.com/
- canvas-text
Copyright (c) 2008 Fabien Menager
- jQuery TreeView
Copyright (c) 2007 Jorn Zaefferer
- jQuery tablesorter
Copyright (c) 2007 Christian Bach
- typeface.js
Copyright (c) 2008, David Chester (davidchester@gmx.net)
- JSDeferred
Copyright (c) 2007 cho45 ( www.lowreal.net )
- jQuery upload
Copyright (c) 2010 lagos
- jQuery LoadMask
Copyright (c) 2009 Sergiy Kovalchuk (serg472@gmail.com)

# Other open source software programs

## OpenSSH

1)

```
 * Copyright (c) 1995 Tatu Ylonen <ylo@cs.hut.fi>, Espoo, Finland
 *                  All rights reserved
 *
 * As far as I am concerned, the code I have written for this software
 * can be used freely for any purpose. Any derived versions of this
 * software must be clearly marked as such, and if the derived work is
 * incompatible with the protocol description in the RFC file, it must be
 * called by a name other than "ssh" or "Secure Shell".
```

[Tatu continues]
```
 *  However, I am not implying to give any licenses to any patents or
 * copyrights held by third parties, and the software includes parts that
 * are not under my direct control. As far as I know, all included
 * source code is used in accordance with the relevant license agreements
 * and can be used freely for any purpose (the GNU license being the most
 * restrictive); see below for details.
```

[However, none of that term is relevant at this point in time. All of
these restrictively licenced software components which he talks about
have been removed from OpenSSH, i.e.,

 - RSA is no longer included, found in the OpenSSL library
 - IDEA is no longer included, its use is deprecated
 - DES is now external, in the OpenSSL library
 - GMP is no longer used, and instead we call BN code from OpenSSL
 - Zlib is now external, in a library
 - The make-ssh-known-hosts script is no longer included
 - TSS has been removed
 - MD5 is now external, in the OpenSSL library
 - RC4 support has been replaced with ARC4 support from OpenSSL
 - Blowfish is now external, in the OpenSSL library

[The licence continues]

Note that any information and cryptographic algorithms used in this
software are publicly available on the Internet and at any major
bookstore, scientific library, and patent office worldwide. More
information can be found e.g. at "http://www.cs.hut.fi/crypto".

The legal status of this program is some combination of all these
permissions and restrictions. Use only at your own responsibility.
You will be responsible for any legal consequences yourself; I am not
making any claims whether possessing or using this is legal or not in
your country, and I am not taking any responsibility on your behalf.


                              NO WARRANTY

BECAUSE THE PROGRAM IS LICENSED FREE OF CHARGE, THERE IS NO WARRANTY
FOR THE PROGRAM, TO THE EXTENT PERMITTED BY APPLICABLE LAW. EXCEPT WHEN
OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES
PROVIDE THE PROGRAM "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED
OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF
MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS
TO THE QUALITY AND PERFORMANCE OF THE PROGRAM IS WITH YOU. SHOULD THE
PROGRAM PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING,
REPAIR OR CORRECTION.

IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING
WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MAY MODIFY AND/OR
REDISTRIBUTE THE PROGRAM AS PERMITTED ABOVE, BE LIABLE TO YOU FOR DAMAGES,
INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING
OUT OF THE USE OR INABILITY TO USE THE PROGRAM (INCLUDING BUT NOT LIMITED
TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY
YOU OR THIRD PARTIES OR A FAILURE OF THE PROGRAM TO OPERATE WITH ANY OTHER
PROGRAMS), EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE
POSSIBILITY OF SUCH DAMAGES.

2)
    The 32-bit CRC compensation attack detector in deattack.c was
    contributed by CORE SDI S.A. under a BSD-style license.

     * Cryptographic attack detector for ssh - source code
     *

```

```
     * Copyright (c) 1998 CORE SDI S.A., Buenos Aires, Argentina.
     *
     * All rights reserved. Redistribution and use in source and binary
     * forms, with or without modification, are permitted provided that
     * this copyright notice is retained.
     *
     * THIS SOFTWARE IS PROVIDED ``AS IS'' AND ANY EXPRESS OR IMPLIED
     * WARRANTIES ARE DISCLAIMED. IN NO EVENT SHALL CORE SDI S.A. BE
     * LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY OR
     * CONSEQUENTIAL DAMAGES RESULTING FROM THE USE OR MISUSE OF THIS
     * SOFTWARE.
     *
     * Ariel Futoransky <futo@core-sdi.com>
     * <http://www.core-sdi.com>

3)
    ssh-keyscan was contributed by David Mazieres under a BSD-style
    license.

     * Copyright 1995, 1996 by David Mazieres <dm@lcs.mit.edu>.
     *
     * Modification and redistribution in source and binary forms is
     * permitted provided that due credit is given to the author and the
     * OpenBSD project by leaving this copyright notice intact.

4)
    The Rijndael implementation by Vincent Rijmen, Antoon Bosselaers
    and Paulo Barreto is in the public domain and distributed
    with the following license:

     * @version 3.0 (December 2000)
     *
     * Optimised ANSI C code for the Rijndael cipher (now AES)
     *
     * @author Vincent Rijmen <vincent.rijmen@esat.kuleuven.ac.be>
     * @author Antoon Bosselaers <antoon.bosselaers@esat.kuleuven.ac.be>
     * @author Paulo Barreto <paulo.barreto@terra.com.br>
     *
     * This code is hereby placed in the public domain.
     *
     * THIS SOFTWARE IS PROVIDED BY THE AUTHORS ''AS IS'' AND ANY EXPRESS
     * OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED
     * WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE
     * ARE DISCLAIMED.  IN NO EVENT SHALL THE AUTHORS OR CONTRIBUTORS BE
     * LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR
     * CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF
     * SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR
     * BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY,
     * WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE
     * OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE,
     * EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

5)
    One component of the ssh source code is under a 3-clause BSD license,
    held by the University of California, since we pulled these parts from
    original Berkeley code.

     * Copyright (c) 1983, 1990, 1992, 1993, 1995
     *      The Regents of the University of California.  All rights reserved.
     *
     * Redistribution and use in source and binary forms, with or without
     * modification, are permitted provided that the following conditions
     * are met:
     * 1. Redistributions of source code must retain the above copyright
     *    notice, this list of conditions and the following disclaimer.
     * 2. Redistributions in binary form must reproduce the above copyright
     *    notice, this list of conditions and the following disclaimer in the
     *    documentation and/or other materials provided with the distribution.
     * 3. Neither the name of the University nor the names of its contributors
     *    may be used to endorse or promote products derived from this software
     *    without specific prior written permission.
     *
     * THIS SOFTWARE IS PROVIDED BY THE REGENTS AND CONTRIBUTORS ``AS IS'' AND
     * ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE
```

```
 *  IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE
 *  ARE DISCLAIMED.  IN NO EVENT SHALL THE REGENTS OR CONTRIBUTORS BE LIABLE
 *  FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL
 *  DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS
 *  OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION)
 *  HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT
 *  LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY
 *  OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF
 *  SUCH DAMAGE.
```

6)
   Remaining components of the software are provided under a standard
   2-term BSD licence with the following names as copyright holders:

        Markus Friedl
        Theo de Raadt
        Niels Provos
        Dug Song
        Aaron Campbell
        Damien Miller
        Kevin Steves
        Daniel Kouril
        Wesley Griffin
        Per Allansson
        Nils Nordman
        Simon Wilkinson

   Portable OpenSSH additionally includes code from the following copyright
   holders, also under the 2-term BSD license:

        Ben Lindstrom
        Tim Rice
        Andre Lucas
        Chris Adams
        Corinna Vinschen
        Cray Inc.
        Denis Parker
        Gert Doering
        Jakob Schlyter
        Jason Downs
        Juha Yrjölä
        Michael Stone
        Networks Associates Technology, Inc.
        Solar Designer
        Todd C. Miller
        Wayne Schroeder
        William Jones
        Darren Tucker
        Sun Microsystems
        The SCO Group
        Daniel Walsh

```
 *  Redistribution and use in source and binary forms, with or without
 *  modification, are permitted provided that the following conditions
 *  are met:
 *  1. Redistributions of source code must retain the above copyright
 *     notice, this list of conditions and the following disclaimer.
 *  2. Redistributions in binary form must reproduce the above copyright
 *     notice, this list of conditions and the following disclaimer in the
 *     documentation and/or other materials provided with the distribution.
 *
 *  THIS SOFTWARE IS PROVIDED BY THE AUTHOR ``AS IS'' AND ANY EXPRESS OR
 *  IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES
 *  OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED.
 *  IN NO EVENT SHALL THE AUTHOR BE LIABLE FOR ANY DIRECT, INDIRECT,
 *  INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT
 *  NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE,
 *  DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY
 *  THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT
 *  (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF
 *  THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.
```

8) Portable OpenSSH contains the following additional licenses:

a) md5crypt.c, md5crypt.h

```
* "THE BEER-WARE LICENSE" (Revision 42):
* <phk@login.dknet.dk> wrote this file.  As long as you retain this
* notice you can do whatever you want with this stuff. If we meet
* some day, and you think this stuff is worth it, you can buy me a
* beer in return.   Poul-Henning Kamp
```

b) snprintf replacement

```
* Copyright Patrick Powell 1995
* This code is based on code written by Patrick Powell
* (papowell@astart.com) It may be used for any purpose as long as this
* notice remains intact on all source code distributions
```

c) Compatibility code (openbsd-compat)

Apart from the previously mentioned licenses, various pieces of code
in the openbsd-compat/ subdirectory are licensed as follows:

Some code is licensed under a 3-term BSD license, to the following
copyright holders:

```
Todd C. Miller
Theo de Raadt
Damien Miller
Eric P. Allman
The Regents of the University of California
Constantin S. Svintsoff
```

```
* Redistribution and use in source and binary forms, with or without
* modification, are permitted provided that the following conditions
* are met:
* 1. Redistributions of source code must retain the above copyright
*    notice, this list of conditions and the following disclaimer.
* 2. Redistributions in binary form must reproduce the above copyright
*    notice, this list of conditions and the following disclaimer in the
*    documentation and/or other materials provided with the distribution.
* 3. Neither the name of the University nor the names of its contributors
*    may be used to endorse or promote products derived from this software
*    without specific prior written permission.
*
* THIS SOFTWARE IS PROVIDED BY THE REGENTS AND CONTRIBUTORS ``AS IS'' AND
* ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE
* IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE
* ARE DISCLAIMED.  IN NO EVENT SHALL THE REGENTS OR CONTRIBUTORS BE LIABLE
* FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL
* DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS
* OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION)
* HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT
* LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY
* OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF
* SUCH DAMAGE.
```

Some code is licensed under an ISC-style license, to the following
copyright holders:

```
Internet Software Consortium.
Todd C. Miller
Reyk Floeter
Chad Mynhier
```

```
* Permission to use, copy, modify, and distribute this software for any
* purpose with or without fee is hereby granted, provided that the above
* copyright notice and this permission notice appear in all copies.
*
* THE SOFTWARE IS PROVIDED "AS IS" AND TODD C. MILLER DISCLAIMS ALL
* WARRANTIES WITH REGARD TO THIS SOFTWARE INCLUDING ALL IMPLIED WARRANTIES
* OF MERCHANTABILITY AND FITNESS. IN NO EVENT SHALL TODD C. MILLER BE LIABLE
* FOR ANY SPECIAL, DIRECT, INDIRECT, OR CONSEQUENTIAL DAMAGES OR ANY DAMAGES
* WHATSOEVER RESULTING FROM LOSS OF USE, DATA OR PROFITS, WHETHER IN AN ACTION
* OF CONTRACT, NEGLIGENCE OR OTHER TORTIOUS ACTION, ARISING OUT OF OR IN
* CONNECTION WITH THE USE OR PERFORMANCE OF THIS SOFTWARE.
```

```
        Some code is licensed under a MIT-style license to the following
        copyright holders:

            Free Software Foundation, Inc.

            * Permission is hereby granted, free of charge, to any person obtaining a  *
            * copy of this software and associated documentation files (the          *
            * "Software"), to deal in the Software without restriction, including      *
            * without limitation the rights to use, copy, modify, merge, publish,      *
            * distribute, distribute with modifications, sublicense, and/or sell       *
            * copies of the Software, and to permit persons to whom the Software is     *
            * furnished to do so, subject to the following conditions:                *
            *                                                                        *
            * The above copyright notice and this permission notice shall be included  *
            * in all copies or substantial portions of the Software.                  *
            *                                                                        *
            * THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS  *
            * OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF              *
            * MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT.   *
            * IN NO EVENT SHALL THE ABOVE COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM,   *
            * DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR    *
            * OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR    *
            * THE USE OR OTHER DEALINGS IN THE SOFTWARE.                              *
            *                                                                        *
            * Except as contained in this notice, the name(s) of the above copyright   *
            * holders shall not be used in advertising or otherwise to promote the     *
            * sale, use or other dealings in this Software without prior written       *
            * authorization.                                                          *
            **************************************************************************
*/
```

# OpenSLP

The following copyright and license is applicable to the entire OpenSLP project (libslp, slpd, and related documentation):

Copyright (C) 2000 Caldera Systems, Inc

All rights reserved.

Redistribution and use in source and binary forms, with or without modification, are permitted provided that the following conditions are met:

Redistributions of source code must retain the above copyright notice, this list of conditions and the following disclaimer.

Redistributions in binary form must reproduce the above copyright notice, this list of conditions and the following disclaimer in the documentation and/or other materials provided with the distribution.

Neither the name of Caldera Systems nor the names of its contributors may be used to endorse or promote products derived from this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS ``AS IS'' AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE CALDERA SYSTEMS OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

# OpenLDAP

Copyright 1998-2009 The OpenLDAP Foundation

## TCP Wrapper

```
 * copies.
 *
 * This software is provided "as is" and without any expressed or implied
 * warranties, including, without limitation, the implied warranties of
 * merchantibility and fitness for any particular purpose.
 **************************************************************************/

/*
 * Copyright (c) 1987 Regents of the University of California.
 * All rights reserved.
 *
 * Redistribution and use in source and binary forms are permitted
 * provided that the above copyright notice and this paragraph are
 * duplicated in all such forms and that any documentation,
 * advertising materials, and other materials related to such
 * distribution and use acknowledge that the software was developed
 * by the University of California, Berkeley.  The name of the
 * University may not be used to endorse or promote products derived
 * from this software without specific prior written permission.
 * THIS SOFTWARE IS PROVIDED ``AS IS'' AND WITHOUT ANY EXPRESS OR
 * IMPLIED WARRANTIES, INCLUDING, WITHOUT LIMITATION, THE IMPLIED
 * WARRANTIES OF MERCHANTIBILITY AND FITNESS FOR A PARTICULAR PURPOSE.
 */
```

## sblim-sfcb

```
/*
 *
 * (C) Copyright IBM Corp. 2005
 *
 * THIS FILE IS PROVIDED UNDER THE TERMS OF THE ECLIPSE PUBLIC LICENSE
 * ("AGREEMENT"). ANY USE, REPRODUCTION OR DISTRIBUTION OF THIS FILE
 * CONSTITUTES RECIPIENTS ACCEPTANCE OF THE AGREEMENT.
 *
 * You can obtain a current copy of the Eclipse Public License from
 * http://www.opensource.org/licenses/eclipse-1.0.php
 *
 */
/* -------------------------------------------------------------------------
 */
/*                                                                         */
/* Copyright (c) 2006 The Open Group                                       */
/*                                                                         */
/* Permission is hereby granted, free of charge, to any person obtaining a */
/* copy of this software (the "Software"), to deal in the Software without */
/* restriction, including without limitation the rights to use, copy,      */
/* modify, merge, publish, distribute, sublicense, and/or sell copies of   */
/* the Software, and to permit persons to whom the Software is furnished    */
/* to do so, subject to the following conditions:                          */
/*                                                                         */
/* The above copyright notice and this permission notice shall be included  */
/* in all copies or substantial portions of the Software.                  */
/*                                                                         */
/* THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS  */
/* OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF              */
/* MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT.   */
/* IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY     */
/* CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT
 */
/* OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR */
/* THE USE OR OTHER DEALINGS IN THE SOFTWARE.                              */
/*                                                                         */
/* -------------------------------------------------------------------------
 */
```

## SQLite

SQLite is in the Public Domain

All of the deliverable code in SQLite has been dedicated to the public domain by the authors. All code authors, and representatives of the companies they work for, have signed affidavits dedicating their contributions to the public domain and originals of those signed affidavits are stored in a firesafe at the main offices of Hwaci. Anyone is free to copy, modify, publish, use, compile, sell, or distribute the original SQLite code, either in source code form or as a compiled binary, for any purpose, commercial or non-commercial, and by any means.

The previous paragraph applies to the deliverable code in SQLite - those parts of the SQLite library that you actually bundle and ship with a larger application. Portions of the documentation and some code used as part of the build process might fall under other licenses. The details here are unclear. We do not worry about the licensing of the documentation and build code so much because none of these things are part of the core deliverable SQLite library.

All of the deliverable code in SQLite has been written from scratch. No code has been taken from other projects or from the open internet. Every line of code can be traced back to its original author, and all of those authors have public domain dedications on file. So the SQLite code base is clean and is uncontaminated with licensed code from other projects.

## MD2

```
/* crypto/md2/md2.c */
/* Copyright (C) 1995-1998 Eric Young (eay@cryptsoft.com)
* All rights reserved.
*
* This package is an SSL implementation written
* by Eric Young (eay@cryptsoft.com).
* The implementation was written so as to conform with Netscapes SSL.
*
* This library is free for commercial and non-commercial use as long as
* the following conditions are aheared to. The following conditions
* apply to all code found in this distribution, be it the RC4, RSA,
* lhash, DES, etc., code; not just the SSL code. The SSL documentation
* included with this distribution is covered by the same copyright terms
* except that the holder is Tim Hudson (tjh@cryptsoft.com).
*
* Copyright remains Eric Young's, and as such any Copyright notices in
* the code are not to be removed.
* If this package is used in a product, Eric Young should be given attribution
* as the author of the parts of the library used.
* This can be in the form of a textual message at program startup or
* in documentation (online or textual) provided with the package.
*
* Redistribution and use in source and binary forms, with or without
* modification, are permitted provided that the following conditions
* are met:
* 1. Redistributions of source code must retain the copyright
* notice, this list of conditions and the following disclaimer.
* 2. Redistributions in binary form must reproduce the above copyright
* notice, this list of conditions and the following disclaimer in the
* documentation and/or other materials provided with the distribution.
* 3. All advertising materials mentioning features or use of this software
* must display the following acknowledgement:
* "This product includes cryptographic software written by
* Eric Young (eay@cryptsoft.com)"
* The word 'cryptographic' can be left out if the rouines from the library
* being used are not cryptographic related :-).
* 4. If you include any Windows specific code (or a derivative thereof) from
* the apps directory (application code) you must include an acknowledgement:
* "This product includes software written by Tim Hudson (tjh@cryptsoft.com)"
*
* THIS SOFTWARE IS PROVIDED BY ERIC YOUNG ``AS IS'' AND
```

## MD5

## SHA1

```
 *    may be used to endorse or promote products derived from this software
 *    without specific prior written permission.
 *
 * THIS SOFTWARE IS PROVIDED BY THE PROJECT AND CONTRIBUTORS ``AS IS'' AND
 * ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE
 * IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE
 * ARE DISCLAIMED.  IN NO EVENT SHALL THE PROJECT OR CONTRIBUTORS BE LIABLE
 * FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL
 * DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS
 * OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION)
 * HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT
 * LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY
 * OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF
 * SUCH DAMAGE.
 */
```

## HMAC-SHA1

```
/*-
 * HMAC-SHA-224/256/384/512 implementation
 * Last update: 06/15/2005
 * Issue date:  06/15/2005
 *
 * Copyright (C) 2005 Olivier Gay <olivier.gay@a3.epfl.ch>
 * All rights reserved.
 *
 * Redistribution and use in source and binary forms, with or without
 * modification, are permitted provided that the following conditions
 * are met:
 * 1. Redistributions of source code must retain the above copyright
 *    notice, this list of conditions and the following disclaimer.
 * 2. Redistributions in binary form must reproduce the above copyright
 *    notice, this list of conditions and the following disclaimer in the
 *    documentation and/or other materials provided with the distribution.
 * 3. Neither the name of the project nor the names of its contributors
 *    may be used to endorse or promote products derived from this software
 *    without specific prior written permission.
 *
 * THIS SOFTWARE IS PROVIDED BY THE PROJECT AND CONTRIBUTORS ``AS IS'' AND
 * ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE
 * IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE
 * ARE DISCLAIMED.  IN NO EVENT SHALL THE PROJECT OR CONTRIBUTORS BE LIABLE
 * FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL
 * DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS
 * OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION)
 * HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT
 * LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY
 * OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF
 * SUCH DAMAGE.
```

## ExploerCanvas

Apache License

Version 2.0, January 2004

http://www.apache.org/licenses/

TERMS AND CONDITIONS FOR USE, REPRODUCTION, AND DISTRIBUTION

1. Definitions.

   "License" shall mean the terms and conditions for use, reproduction,
   and distribution as defined by Sections 1 through 9 of this document.

"Licensor" shall mean the copyright owner or entity authorized by
the copyright owner that is granting the License.

"Legal Entity" shall mean the union of the acting entity and all
other entities that control, are controlled by, or are under common
control with that entity. For the purposes of this definition,
"control" means (i) the power, direct or indirect, to cause the
direction or management of such entity, whether by contract or
otherwise, or (ii) ownership of fifty percent (50%) or more of the
outstanding shares, or (iii) beneficial ownership of such entity.

"You" (or "Your") shall mean an individual or Legal Entity
exercising permissions granted by this License.

"Source" form shall mean the preferred form for making modifications,
including but not limited to software source code, documentation
source, and configuration files.

"Object" form shall mean any form resulting from mechanical
transformation or translation of a Source form, including but
not limited to compiled object code, generated documentation,
and conversions to other media types.

"Work" shall mean the work of authorship, whether in Source or
Object form, made available under the License, as indicated by a
copyright notice that is included in or attached to the work
(an example is provided in the Appendix below).

"Derivative Works" shall mean any work, whether in Source or Object
form, that is based on (or derived from) the Work and for which the
editorial revisions, annotations, elaborations, or other modifications
represent, as a whole, an original work of authorship. For the purposes
of this License, Derivative Works shall not include works that remain
separable from, or merely link (or bind by name) to the interfaces of,
the Work and Derivative Works thereof.

"Contribution" shall mean any work of authorship, including
the original version of the Work and any modifications or additions
to that Work or Derivative Works thereof, that is intentionally
submitted to Licensor for inclusion in the Work by the copyright owner
or by an individual or Legal Entity authorized to submit on behalf of
the copyright owner. For the purposes of this definition, "submitted"
means any form of electronic, verbal, or written communication sent
to the Licensor or its representatives, including but not limited to
communication on electronic mailing lists, source code control systems,
and issue tracking systems that are managed by, or on behalf of, the
Licensor for the purpose of discussing and improving the Work, but
excluding communication that is conspicuously marked or otherwise
designated in writing by the copyright owner as "Not a Contribution."

"Contributor" shall mean Licensor and any individual or Legal Entity
on behalf of whom a Contribution has been received by Licensor and
subsequently incorporated within the Work.


2. Grant of Copyright License. Subject to the terms and conditions of
   this License, each Contributor hereby grants to You a perpetual,
   worldwide, non-exclusive, no-charge, royalty-free, irrevocable
   copyright license to reproduce, prepare Derivative Works of,
   publicly display, publicly perform, sublicense, and distribute the
   Work and such Derivative Works in Source or Object form.


3. Grant of Patent License. Subject to the terms and conditions of
   this License, each Contributor hereby grants to You a perpetual,
   worldwide, non-exclusive, no-charge, royalty-free, irrevocable
   (except as stated in this section) patent license to make, have made,

use, offer to sell, sell, import, and otherwise transfer the Work,
where such license applies only to those patent claims licensable
by such Contributor that are necessarily infringed by their
Contribution(s) alone or by combination of their Contribution(s)
with the Work to which such Contribution(s) was submitted. If You
institute patent litigation against any entity (including a
cross-claim or counterclaim in a lawsuit) alleging that the Work
or a Contribution incorporated within the Work constitutes direct
or contributory patent infringement, then any patent licenses
granted to You under this License for that Work shall terminate
as of the date such litigation is filed.

4. Redistribution. You may reproduce and distribute copies of the
   Work or Derivative Works thereof in any medium, with or without
   modifications, and in Source or Object form, provided that You
   meet the following conditions:

   (a) You must give any other recipients of the Work or
       Derivative Works a copy of this License; and

   (b) You must cause any modified files to carry prominent notices
       stating that You changed the files; and

   (c) You must retain, in the Source form of any Derivative Works
       that You distribute, all copyright, patent, trademark, and
       attribution notices from the Source form of the Work,
       excluding those notices that do not pertain to any part of
       the Derivative Works; and

   (d) If the Work includes a "NOTICE" text file as part of its
       distribution, then any Derivative Works that You distribute must
       include a readable copy of the attribution notices contained
       within such NOTICE file, excluding those notices that do not
       pertain to any part of the Derivative Works, in at least one
       of the following places: within a NOTICE text file distributed
       as part of the Derivative Works; within the Source form or
       documentation, if provided along with the Derivative Works; or,
       within a display generated by the Derivative Works, if and
       wherever such third-party notices normally appear. The contents
       of the NOTICE file are for informational purposes only and
       do not modify the License. You may add Your own attribution
       notices within Derivative Works that You distribute, alongside
       or as an addendum to the NOTICE text from the Work, provided
       that such additional attribution notices cannot be construed
       as modifying the License.

   You may add Your own copyright statement to Your modifications and
   may provide additional or different license terms and conditions
   for use, reproduction, or distribution of Your modifications, or
   for any such Derivative Works as a whole, provided Your use,
   reproduction, and distribution of the Work otherwise complies with
   the conditions stated in this License.

5. Submission of Contributions. Unless You explicitly state otherwise,
   any Contribution intentionally submitted for inclusion in the Work
   by You to the Licensor shall be under the terms and conditions of
   this License, without any additional terms or conditions.
   Notwithstanding the above, nothing herein shall supersede or modify
   the terms of any separate license agreement you may have executed
   with Licensor regarding such Contributions.

6. Trademarks. This License does not grant permission to use the trade
   names, trademarks, service marks, or product names of the Licensor,
   except as required for reasonable and customary use in describing the
   origin of the Work and reproducing the content of the NOTICE file.

7. Disclaimer of Warranty. Unless required by applicable law or
   agreed to in writing, Licensor provides the Work (and each

Contributor provides its Contributions) on an "AS IS" BASIS,
WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or
implied, including, without limitation, any warranties or conditions
of TITLE, NON-INFRINGEMENT, MERCHANTABILITY, or FITNESS FOR A
PARTICULAR PURPOSE. You are solely responsible for determining the
appropriateness of using or redistributing the Work and assume any
risks associated with Your exercise of permissions under this License.

8. Limitation of Liability. In no event and under no legal theory,
   whether in tort (including negligence), contract, or otherwise,
   unless required by applicable law (such as deliberate and grossly
   negligent acts) or agreed to in writing, shall any Contributor be
   liable to You for damages, including any direct, indirect, special,
   incidental, or consequential damages of any character arising as a
   result of this License or out of the use or inability to use the
   Work (including but not limited to damages for loss of goodwill,
   work stoppage, computer failure or malfunction, or any and all
   other commercial damages or losses), even if such Contributor
   has been advised of the possibility of such damages.

9. Accepting Warranty or Additional Liability. While redistributing
   the Work or Derivative Works thereof, You may choose to offer,
   and charge a fee for, acceptance of support, warranty, indemnity,
   or other liability obligations and/or rights consistent with this
   License. However, in accepting such obligations, You may act only
   on Your own behalf and on Your sole responsibility, not on behalf
   of any other Contributor, and only if You agree to indemnify,
   defend, and hold each Contributor harmless for any liability
   incurred by, or claims asserted against, such Contributor by reason
   of your accepting any such warranty or additional liability.

END OF TERMS AND CONDITIONS

APPENDIX: How to apply the Apache License to your work.

   To apply the Apache License to your work, attach the following
   boilerplate notice, with the fields enclosed by brackets "[]"
   replaced with your own identifying information. (Don't include
   the brackets!)  The text should be enclosed in the appropriate
   comment syntax for the file format. We also recommend that a
   file or class name and description of purpose be included on the
   same "printed page" as the copyright notice for easier
   identification within third-party archives.

Copyright 2006 Google Inc.

Licensed under the Apache License, Version 2.0 (the "License");
you may not use this file except in compliance with the License.
You may obtain a copy of the License at

   http://www.apache.org/licenses/LICENSE-2.0

Unless required by applicable law or agreed to in writing, software
distributed under the License is distributed on an "AS IS" BASIS,
WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied.
See the License for the specific language governing permissions and
limitations under the License.

## IPA Font License Agreement v1.0

**The Licensor provides the Licensed Program (as defined in Article 1 below) under
the terms of this license agreement ("Agreement").  Any use, reproduction or
distribution of the Licensed Program, or any exercise of rights under this Agreement
by a Recipient (as defined in Article 1 below) constitutes the Recipient's
acceptance of this Agreement.**

**Article 1 (Definitions)**

1. "Digital Font Program" shall mean a computer program containing, or used to render or display fonts.

2. "Licensed Program" shall mean a Digital Font Program licensed by the Licensor under this Agreement.

3. "Derived Program" shall mean a Digital Font Program created as a result of a modification, addition, deletion, replacement or any other adaptation to or of a part or all of the Licensed Program, and includes a case where a Digital Font Program newly created by retrieving font information from a part or all of the Licensed Program or Embedded Fonts from a Digital Document File with or without modification of the retrieved font information.

4. "Digital Content" shall mean products provided to end users in the form of digital data, including video content, motion and/or still pictures, TV programs or other broadcasting content and products consisting of character text, pictures, photographic images, graphic symbols and/or the like.

5. "Digital Document File" shall mean a PDF file or other Digital Content created by various software programs in which a part or all of the Licensed Program becomes embedded or contained in the file for the display of the font ("Embedded Fonts"). Embedded Fonts are used only in the display of characters in the particular Digital Document File within which they are embedded, and shall be distinguished from those in any Digital Font Program, which may be used for display of characters outside that particular Digital Document File.

6. "Computer" shall include a server in this Agreement.

7. "Reproduction and Other Exploitation" shall mean reproduction, transfer, distribution, lease, public transmission, presentation, exhibition, adaptation and any other exploitation.

8. "Recipient" shall mean anyone who receives the Licensed Program under this Agreement, including one that receives the Licensed Program from a Recipient.


Article 2 (Grant of License)

The Licensor grants to the Recipient a license to use the Licensed Program in any and all countries in accordance with each of the provisions set forth in this Agreement. However, any and all rights underlying in the Licensed Program shall be held by the Licensor. In no sense is this Agreement intended to transfer any right relating to the Licensed Program held by the Licensor except as specifically set forth herein or any right relating to any trademark, trade name, or service mark to the Recipient.


1. The Recipient may install the Licensed Program on any number of Computers and use the same in accordance with the provisions set forth in this Agreement.

2. The Recipient may use the Licensed Program, with or without modification in printed materials or in Digital Content as an expression of character texts or the like.

3. The Recipient may conduct Reproduction and Other Exploitation of the printed materials and Digital Content created in accordance with the preceding Paragraph, for commercial or non-commercial purposes and in any form of media including but not limited to broadcasting, communication and various recording media.

4. If any Recipient extracts Embedded Fonts from a Digital Document File to create a Derived Program, such Derived Program shall be subject to the terms of this agreement.

5. If any Recipient performs Reproduction or Other Exploitation of a Digital Document File in which Embedded Fonts of the Licensed Program are used only for rendering the Digital Content within such Digital Document File then such Recipient shall have no further obligations under this Agreement in relation to such actions.

6. The Recipient may reproduce the Licensed Program as is without modification and transfer such copies, publicly transmit or otherwise redistribute the Licensed Program to a third party for commercial or non-commercial purposes ("Redistribute"), in accordance with the provisions set forth in Article 3 Paragraph 2.

7. The Recipient may create, use, reproduce and/or Redistribute a Derived Program under the terms stated above for the Licensed Program: provided, that the Recipient shall follow the provisions set forth in Article 3 Paragraph 1 when Redistributing the Derived Program.


Article 3 (Restriction)

The license granted in the preceding Article shall be subject to the following restrictions:


1. If a Derived Program is Redistributed pursuant to Paragraph 4 and 7 of the preceding Article, the following conditions must be met :

* (1) The following must be also Redistributed together with the Derived Program, or be made available online or by means of mailing mechanisms in exchange for a cost which does not exceed the total costs of postage, storage medium and handling fees:

o (a) a copy of the Derived Program; and

o (b) any additional file created by the font developing program in the course of creating the Derived Program that can be used for further modification of the Derived Program, if any.

* (2) It is required to also Redistribute means to enable recipients of the Derived Program to replace the Derived Program with the Licensed Program first released under this License (the "Original Program"). Such means may be to provide a difference file from the Original Program, or instructions setting out a method to replace the Derived Program with the Original Program.

* (3) The Recipient must license the Derived Program under the terms and conditions of this Agreement.

* (4) No one may use or include the name of the Licensed Program as a program name, font name or file name of the Derived Program.

* (5) Any material to be made available online or by means of mailing a medium to satisfy the requirements of this paragraph may be provided, verbatim, by any party wishing to do so.

2. If the Recipient Redistributes the Licensed Program pursuant to Paragraph 6 of the preceding Article, the Recipient shall meet all of the following conditions:

* (1) The Recipient may not change the name of the Licensed Program.

* (2) The Recipient may not alter or otherwise modify the Licensed Program.

* (3) The Recipient must attach a copy of this Agreement to the Licensed Program.

3. THIS LICENSED PROGRAM IS PROVIDED BY THE LICENSOR "AS IS" AND ANY EXPRESSED OR IMPLIED WARRANTY AS TO THE LICENSED PROGRAM OR ANY DERIVED PROGRAM, INCLUDING, BUT NOT LIMITED TO, WARRANTIES OF TITLE, NON-INFRINGEMENT, MERCHANTABILITY, OR FITNESS FOR A PARTICULAR PURPOSE, ARE DISCLAIMED. IN NO EVENT SHALL THE LICENSOR BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXTENDED, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO; PROCUREMENT OF SUBSTITUTED GOODS OR SERVICE; DAMAGES ARISING FROM SYSTEM FAILURE; LOSS OR CORRUPTION OF EXISTING DATA OR PROGRAM; LOST PROFITS), HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE INSTALLATION, USE, THE REPRODUCTION OR OTHER EXPLOITATION OF THE LICENSED PROGRAM OR ANY DERIVED PROGRAM OR THE EXERCISE

OF ANY RIGHTS GRANTED HEREUNDER, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

4. The Licensor is under no obligation to respond to any technical questions or inquiries, or provide any other user support in connection with the installation, use or the Reproduction and Other Exploitation of the Licensed Program or Derived Programs thereof.


## Article 4 (Termination of Agreement)

1. The term of this Agreement shall begin from the time of receipt of the Licensed Program by the Recipient and shall continue as long as the Recipient retains any such Licensed Program in any way.

2. Notwithstanding the provision set forth in the preceding Paragraph, in the event of the breach of any of the provisions set forth in this Agreement by the Recipient, this Agreement shall automatically terminate without any notice. In the case of such termination, the Recipient may not use or conduct Reproduction and Other Exploitation of the Licensed Program or a Derived Program: provided that such termination shall not affect any rights of any other Recipient receiving the Licensed Program or the Derived Program from such Recipient who breached this Agreement.


## Article 5 (Governing Law)

1. IPA may publish revised and/or new versions of this License. In such an event, the Recipient may select either this Agreement or any subsequent version of the Agreement in using, conducting the Reproduction and Other Exploitation of, or Redistributing the Licensed Program or a Derived Program. Other matters not specified above shall be subject to the Copyright Law of Japan and other related laws and regulations of Japan.

2. This Agreement shall be construed under the laws of Japan.


## Oracle Code sample License Note

[Oracle Code sample] Copyright © 2008, 2010 Oracle and/or its affiliates. All rights reserved. Use is subject to license terms.
- Redistributions of source code must retain the above copyright notice, this list of conditions and the following disclaimer.
  - Redistributions in binary form must reproduce the above copyright notice, this list of conditions and the following disclaimer in the documentation and/or other materials provided with the distribution.
  - Neither the name of Oracle Corporation nor the names of its contributors may be used to endorse or promote products derived from this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS "AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT OWNER OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.