

NEC ESMPRO ServerAgentService Ver. 2.0 Installation Guide (Linux)

Chapter 1 Summary

Chapter 2 Installation and Upgrade

Chapter 3 Uninstallation

Chapter 4 Appendix

Contents

Contents	2
Conventions Used in This Document.....	4
Notations used in the text	4
Trademarks	5
Open-source software	6
Warnings and Additions to This Document.....	7
Latest editions	7
Chapter 1 Summary	8
1. Introduction	9
2. System Requirements.....	10
3. Function summary	11
3.1 CIM Provider	11
3.2 Monitoring Service	12
Chapter 2 Installation and Upgrade.....	13
1. Before installation	14
1.1 Pattern of installation.....	14
1.2 Setting before the installation	15
1.2.1 Check for necessary packages	15
1.2.2 Setting of SELinux	19
1.2.3 Check for iLO driver	20
1.2.4 Install of Python 2.7	21
2. Installation and Upgrade	23
2.1 Starter Pack	24
2.2 EXPRESSBUILDER.....	26
2.3 Utility Disk	28
2.4 ZIP file downloaded from Web	30
3. After installation	32
3.1 Setting after the installation	32
3.1.1 Workaround of openwsmand	32
3.1.2 Creating password file of Basic Authentication	36
3.1.3 Restart of service.....	37
3.1.4 Setting of access control.....	37
3.2 Settings of NEC ESMPRO Manager	41
3.2.1 Auto Registration	44
3.2.2 Manual Registration	47
3.3 Setting of Manager (SNMP)	50
3.4 Setting of Express Report Service	52
Chapter 3 Uninstallation	53

1. Uninstallation	54
Chapter 4 Appendix.....	55
1. The contents which an installation script sets	56
1.1 Setting before the installation	56
1.1.1 Setting of sblim-sfcb.....	56
1.1.2 Setting of sblim-sfcc.....	56
1.1.3 Setting of openwsman.conf.....	57
1.1.4 Setting of access.conf.....	57
1.1.5 Setting of CIM Server.....	58
1.1.6 Setting of tog-pegasus	58
1.1.7 Setting of rpcbind.....	59
1.1.8 Setting of snmpd	59
1.1.9 Setting of ipmi	60
1.1.10 Setting of "Linux_OperatingSystem" Class	60
1.1.11 Register with tog-pegasus.....	61
1.1.12 Setting of NetworkManager-wait-online.service	61
1.1.13 Creating selfsigned certificate of openwsman	62
1.1.14 Setting of openwsmand.....	63
2. About tools	64
2.1 The obstacle information collection tool (collectsa.sh)	64
2.2 Check for necessary packages tool (check_packages.sh)	65
3. LICENSE.....	67

Conventions Used in This Document

Notations used in the text

In addition to safety-related symbols urging caution, two other types of notations are used in this document. These notations have the following meanings.

Important	Indicates critical items that must be followed when handling operating software.
Note	Indicates items that must be confirmed when operating software.
Tips	Indicates information that is helpful to keep in mind when using this software.

Trademarks

Linux is a trademark or registered trademark of Linus Torvalds in Japan and other countries.

Red Hat and Red Hat Enterprise Linux are trademarks or registered trademarks of Red Hat, Inc. in the United States and other countries.

All other product, brand, or trade names used in this publication are the trademarks or registered trademarks of their respective trademark owners.

(TM) or (R) mark is not specified in this document.

Open-source software

Software consented to based on following license is included in this product.

GNU LESSER GENERAL PUBLIC LICENSE (LGPL)

libesmtplib.dll is included in Esmpro-Expsrv package.

Net-SNMP

ESMntagent is included in Esmpro-Cmnsrv package.

libutil.so is included in Esmpro-Cmnsrv package.

MD5

amrpop.dll is included in Esmpro-Expsrv package.

In case of iLO support model, software consented to based on following license is included in installation modules of this product.

Refer to a file bundled by software for a license.

Software with * installs only in case of Red Hat Enterprise Linux 6.

Apache License

jsonpath-rw

packaging *

python-ilorest-library

recordtype

MIT

appdirs *

pip

pyparsing *

setuptools *

six *

urlparse2

validictory

BSD License

decorator *

jsonpatch

jsonpointer *

packaging *

ply *

Refer to chapter 4 (3.LICENSE) for the license.

Refer to "Open-source software that NEC ESMPro ServerAgentService for Linux uses" showing in the next website.

http://www.express.nec.co.jp/linux/dload/esmpro/esm/private/license_en.html

Warnings and Additions to This Document

1. Unauthorized reproduction of the contents of this document, in part or in its entirety, is prohibited.
2. This document is subject to change at any time without notice.
3. Do not make copies or alter the document content without permission from NEC Corporation.
4. If you have any concerns, or discover errors or omissions in this document, contact your sales representative.
5. Regardless of article 4, NEC Corporation assumes no responsibility for effects resulting from your operations.
6. The sample values used in this document are not actual values.

<p>Keep this document for future use.</p>

Latest editions

This document was created based on the information available at the time of its creation. The screen images, messages and procedures are subject to change without notice. Substitute as appropriate when content has been modified.

You can download the latest version of NEC ESMPRO ServerAgentService from the URL.

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

Summary

This chapter describes summary of NEC ESMPRO ServerAgentService.

1. Introduction

This section describes Introduction.

2. System Requirements

This section describes System Requirements.

3. Function summary

This section describes Function summary.

1. Introduction

The installation of server management utility "NEC ESMPRO ServerAgentService" is described in this document.

NEC ESMPRO Manager and NEC ESMPRO ServerAgentService are software packages for server management aimed at the stable operation and the efficient management of servers. This software tracks configuration information and operation statuses of the server resources, detects server failures, and reports the alert to the system administrator, to prevent or quickly respond to such failures.

Read this book carefully to have you use this product definitely before using it.

You explain the contents with this book for the people whom the function of the Linux OS, an operation method are understood by enough.

2. System Requirements

NEC ESMPRO ServerAgentService requires the following hardware and software:

Hardware

Machine:

NEC Express5800 series

NEC Scalable Modular Server series (The target OS is only Red Hat Enterprise Linux 7)

Used memory:

65MB and more (Service Mode)

35MB and more (Non-Service Mode)

Free space of hard disk:

75MB and more

Software

Operating System:

Red Hat Enterprise Linux 6 (x86_64)

Red Hat Enterprise Linux 7 (x86_64)

Oracle Linux 7 (x86_64)

Management Software

Software which manages this product:

NEC ESMPRO ServerAgentService Ver.2.0 is NEC ESMPRO Manager Ver.6.20 or later (Windows)

Use the version or later of NEC ESMPRO Manager which is stored in NEC EXPRESSBUILDER for the managed component when you manage the managed component.

Tips

The latest version is recommended.

You can download the latest version of NEC ESMPRO Manager from the URL.

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

3. Function summary

NEC ESMPRO ServerAgentService provides the CIM Provider and the Monitoring Service to NEC ESMPRO Manager. "Service Mode" and "Non-Service Mode" exist in NEC ESMPRO ServerAgentService. Use BMC management for monitoring of the hardware.

With the Service Mode, it provides the CIM Provider and the Monitoring Service.

With the Non-Service Mode, it provides the CIM Provider. It not provides the Monitoring Service.

Tips

Execute the following commands, confirm which mode NEC ESMPRO ServerAgentService is installed with.

```
# rpm -qa | grep Esmpro-Cmnsrv
```

It is Service Mode when Esmpro-Cmnsrv package was displayed.

```
Esmpro-Cmnsrv-"Version Information"
```

3.1 CIM Provider

• Esmpro-Provider package

Function	Class
Note	
ESMPRO Information Provider	ESM_GeneralInformation ESM_VideoController ESM_Network ESM_Alive
This provider provides the information that is dearth in Linux standard provider.	
CPU Load Information Provider	ESM_Processor
This provider provides the CPU load information of 1 minute load average.	
Physical Memory Information Provider	ESM_PhysicalMemory
This provider provides the physical memory information.	
Virtual Memory Information Provider	ESM_VirtualMemory
This provider provides the virtual memory information.	
Page File Information Provider	ESM_PageFile
This provider provides the page file information.	

• Esmpro-strgfs-Provider package

Function	Class
Note	
Storage Information Provider	ESM_StorageThread
This provider provides the storage information. iLO support model is not supported.	
Filesystem Information Provider	ESM_FileSystemThread
This provider provides the filesystem information.	

3.2 Monitoring Service

- Esmpro-Cmnsrv package

Function	Process	Source of Alert
Note		
NEC ESMPRO ServerAgentService Basic service	ESMntserver	None
This process controls interprocess communication of NEC ESMPRO ServerAgentService.		
Monitoring Thread Start and Stop Service	ESMcmn	None
This process starts or stops in the following threads. When a state changed, monitoring thread record in a syslog and report it in CIM Indication.		
Syslog Monitoring and Report service	ESMamvmain	None
This process is monitoring syslog. It records in a syslog, and reports it in report method. It provides to reports it to a manager using TCP/IP.		
SNMP report service	ESMntagent	None
This process provides to reports it to a manager using SNMP.		

- Monitoring Thread

Function	Class	Source of Alert
Note		
CPU Load	ESM_Processor	ESMCPUERF
This thread is monitoring CPU load.		
Physical Memory Used	ESM_PhysicalMemory	ESMMEMORYUSAGE
This thread is monitoring physical memory used.		
Virtual Memory Used	ESM_VirtualMemory	ESMMEMORYUSAGE
This thread is monitoring virtual memory used.		
Page File Used	ESM_PageFile	ESMMEMORYUSAGE
This thread is monitoring page file used.		
Storage	ESM_StorageThread	ESM STORAGE SERVICE
This thread is monitoring storage. iLO support model is not supported.		
Filesystem	ESM_FileSystemThread	ESMFSSERVICE
This thread is monitoring filesystem.		
CPU and Memory Degenerate	None	ESMCOMMONSERVICE
This thread is monitoring CPU and memory degenerate in start ESMcmn.		

- Esmpro-Selsrv package

Function	Process	Source of Alert
Note		
SEL Monitoring Service	ESMsmsrv	ESMCOMMONSERVICE
This thread is monitoring Hardware Log. It records in a syslog, and reports it in report method.		

- Esmpro-Expsrv package

Function	Process	Source of Alert
Note		
Express Report Service	None	None
This package add report measures of Express Report Service to Report Service (ESMamvmain).		

Installation and Upgrade

This chapter describes installation of NEC ESMPRO ServerAgentService.

1. Before installation

This section describes how to set before installing NEC ESMPRO ServerAgentService.
It is not necessary to set it when you upgrade NEC ESMPRO ServerAgentService.

2. Installation and Upgrade

This section describes how to install and Upgrade NEC ESMPRO ServerAgentService.

3. After installation

This section describes how to set after installing NEC ESMPRO ServerAgentService.
It is not necessary to set it when you upgrade NEC ESMPRO ServerAgentService.

I. Before installation

Read by all means before beginning installation of NEC ESMPRO ServerAgentService.
Log in to the system as the root user when you set this chapter.

Important

- When using NEC ESMPRO ServerAgentService service mode in iLO model, invalidate "Thermal Shutdown" on BIOS/Platform Configuration (RBSU). After a report, NEC ESMPRO ServerAgentService shutdown the server. When using NEC ESMPRO ServerAgentService Non-Service mode or uninstalling NEC ESMPRO ServerAgentService in iLO model, validate "Thermal Shutdown".
- Do not change the setting of Encryption when using iLO model. When Production is not set, express report of a hardware fault is not performed.

I.I Pattern of installation

There are the following methods to start the use of NEC ESMPRO ServerAgentService.

Install NEC ESMPRO ServerAgentService individually.

After having installed the Linux OS using "the setup with the installer of the OS standard", install NEC ESMPRO ServerAgentService individually. Depending on storage of NEC ESMPRO ServerAgentService, install it according to the following procedures.

- When you install NEC ESMPRO ServerAgentService stored away by "Starter Pack" or "EXPRESSBUILDER" or "Utility Disk" or which you downloaded from Web, install it with reference to this chapter.

1.2 Setting before the installation

The setting before the installation is as follows.

1.2.1 Check for necessary packages

The following packages are needed to use NEC ESMPro ServerAgentService.
Install a package of the architecture same as environment installing NEC ESMPro ServerAgentService.
The package name is named by the next rule.

```
<package name>-<version>-<release>.<arch>.rpm
```

<Usage>

Execute check for necessary packages tool and the installation of a package is confirmed. When the directory in which necessary packages was stocked can be prepared such as a mount does an OS installation medium, it's possible to install. Refer to chapter 4 (2.2 Check for necessary packages tool) about an indicated message.

```
Log in to the system as the root user.
check_pkg/ follower is copied for /tmp follower by the following example.
# cp -ar {mount point}/../esmpo_sas/check_pkg/ /tmp
Move to the directory where check_packages.sh is stored.
# cd {The directory in check_packages.sh}
<In case of check for necessary packages>
# sh ./check_packages.sh
<In case of install for necessary packages>
# sh ./check_packages.sh -i {The directory in necessary packages}
```

* The check_packages.sh is different in a stocked directory depending on the media used for installation.

In case of EXPRESSBUILDER : {revision}/lnx/pp/esmpo_sas/check_pkg/

In case of Starter pack : software/{revision}/lnx/pp/esmpo_sas/check_pkg/

In case of Utility Disk : tools/lnx/esmpo_sas/check_pkg/

In case of the ZIP file downloaded from a web site : check_pkg/

When you use Express Report Service (HTTPS), install the next package.

	zip	(x86_64)	libcurl	(x86_64)
--	-----	----------	---------	----------

Because there is dependence in a package, install it in higher group order (Grp1 -> Grp2 -> Grp3).

(*1) For interdependence, you appoint package at the same time, and install it.

```
# rpm -ivh perl*.rpm
```

(*2) It is unnecessary in Red Hat Enterprise Linux 7.2 or earlier, and Oracle Linux 7.2 or earlier, and Red Hat Enterprise Linux 6.8 or earlier.

1.2.1.1. iLO support model

Red Hat Enterprise Linux 6 x86_64				
Group	Package Name			
Grp1	lm_sensors-libs	(x86_64)	perl-Pod-Escapes	(x86_64) (*1)
	perl	(x86_64) (*1)	perl-Pod-Simple	(x86_64) (*1)

Red Hat Enterprise Linux 6 x86_64				
Group	Package Name			
	perl-libs	(x86_64) (*1)	perl-version	(x86_64) (*1)
	perl-Module-Pluggable	(x86_64) (*1)		
Grp2	bind-libs	(x86_64)	openslp	(x86_64)
	net-snmp-libs	(x86_64)		
Grp3	bind-utils	(x86_64)	net-snmp	(x86_64)
	libsepol-devel	(x86_64)	tog-pegasus-libs	(x86_64)
Grp4	apr	(x86_64)	libkadm5	(x86_64) (*2)
	keyutils-libs-devel	(x86_64)	libselinux-devel	(x86_64)
	libcom_err-devel	(x86_64)	tog-pegasus	(x86_64)
	libgssglue	(x86_64)		
Grp5	apr-util	(x86_64)	sblim-cmpi-base	(x86_64)
	krb5-devel	(x86_64)	sblim-sfcc	(x86_64)
	libtirpc	(x86_64)	zlib-devel	(x86_64)
	libwsman1	(x86_64)		
Grp6	cim-schema	(noarch)	rpcbind	(x86_64)
	compat-libstdc++-33	(x86_64)	sblim-indication_helper	(x86_64)
	httpd-tools	(x86_64)	sblim-wbemcli	(x86_64)
	openssl-devel	(x86_64)	unzip	(x86_64)
	openwsman-client	(x86_64)	wsmancli	(x86_64)
	openwsman-server	(x86_64)		

When you use Express Report Service (HTTPS), install the next package.

	zip	(x86_64)	libcurl	(x86_64)
--	-----	----------	---------	----------

Red Hat Enterprise Linux 7 x86_64				
Group	Package Name			
Grp1	libsepol-devel	(x86_64)	openslp	(x86_64)
	make	(x86_64)	pcre-devel	(x86_64)
	net-snmp-libs	(x86_64)		
Grp2	apr	(x86_64)	perl-macros	(x86_64) (*1)
	keyutils-libs-devel	(x86_64)	perl-parent	(noarch) (*1)
	libcom_err-devel	(x86_64)	perl-PathTools	(x86_64) (*1)
	libkadm5	(x86_64)	perl-Pod-Escapes	(noarch) (*1)
	libselinux-devel	(x86_64)	perl-podlators	(noarch) (*1)
	libverto-devel	(x86_64)	perl-Pod-Perldoc	(noarch) (*1)
	lm_sensors-libs	(x86_64)	perl-Pod-Simple	(noarch) (*1)
	openssl	(x86_64)	perl-Pod-Usage	(noarch) (*1)
	perl	(x86_64) (*1)	perl-Scalar-List-Utils	(x86_64) (*1)
	perl-Carp	(noarch) (*1)	perl-Socket	(x86_64) (*1)
	perl-constant	(noarch) (*1)	perl-Storable	(x86_64) (*1)
	perl-Encode	(x86_64) (*1)	perl-Text-ParseWords	(noarch) (*1)
	perl-Exporter	(noarch) (*1)	perl-threads	(x86_64) (*1)
	perl-File-Path	(noarch) (*1)	perl-threads-shared	(x86_64) (*1)

Red Hat Enterprise Linux 7 x86_64				
Group	Package Name			
	perl-File-Temp	(noarch) (*1)	perl-Time-HiRes	(x86_64) (*1)
	perl-Filter	(x86_64) (*1)	perl-Time-Local	(noarch) (*1)
	perl-Getopt-Long	(noarch) (*1)	tog-pegasus-libs	(x86_64)
	perl-HTTP-Tiny	(noarch) (*1)	python-backports	(x86_64)
	perl-libs	(x86_64) (*1)		
Grp3	apr-util	(x86_64)	ruby-libs	(x86_64)
	krb5-devel	(x86_64)	sblim-indication_helper	(x86_64)
	libtirpc	(x86_64)	sblim-sfcc	(x86_64)
	libwsman1	(x86_64)	tog-pegasus	(x86_64)
	net-snmp-agent-libs	(x86_64)	zlib-devel	(x86_64)
	net-tools	(x86_64)	python-backports-ssl_match_hostname	(noarch)
	perl-Data-Dumper	(x86_64)		
Grp4	chkconfig	(x86_64)	rpcbind	(x86_64)
	cim-schema	(noarch)	sblim-cmpi-base	(x86_64)
	dmidecode	(x86_64)	sblim-wbemcli	(x86_64)
	e2fsprogs	(x86_64)	sed	(x86_64)
	glibc	(x86_64)	slang	(x86_64)
	httpd-tools	(x86_64)	systemd	(x86_64)
	initscripts	(x86_64)	tar	(x86_64)
	libstdc++	(x86_64)	unzip	(x86_64)
	libxml2	(x86_64)	wsmancli	(x86_64)
	net-snmp	(x86_64)	python-ply	(noarch)
	NetworkManager	(x86_64)	python-six	(noarch)
	newt	(x86_64)	python-decorator	(noarch)
	openssl-devel	(x86_64)	python-jsonpointer	(noarch)
	openwsman-client	(x86_64)	python-setuptools	(noarch)
	openwsman-server	(x86_64)		

When you use Express Report Service (HTTPS), install the next package.

	zip	(x86_64)	libcurl	(x86_64)
--	-----	----------	---------	----------

1.2.1.2. BMC support model.

Red Hat Enterprise Linux 6 x86_64				
Group	Package Name			
Grp1	lm_sensors-libs	(x86_64)	perl-Pod-Escapes	(x86_64) (*1)
	perl	(x86_64) (*1)	perl-Pod-Simple	(x86_64) (*1)
	perl-libs	(x86_64) (*1)	perl-version	(x86_64) (*1)
	perl-Module-Pluggable	(x86_64) (*1)		
Grp2	bind-libs	(x86_64)	openslp	(x86_64)
	net-snmp-libs	(x86_64)		
Grp3	bind-utils	(x86_64)	net-snmp	(x86_64)
	libsepol-devel	(x86_64)	tog-pegasus-libs	(x86_64)

Red Hat Enterprise Linux 6 x86_64				
Group	Package Name			
Grp4	apr	(x86_64)	libkadm5	(x86_64) (*2)
	keyutils-libs-devel	(x86_64)	libselenium-devel	(x86_64)
	libcom_err-devel	(x86_64)	tog-pegasus	(x86_64)
	libgssglue	(x86_64)		
Grp5	apr-util	(x86_64)	OpenIPMI-libs	(x86_64)
	krb5-devel	(x86_64)	sblim-cmpi-base	(x86_64)
	libtirpc	(x86_64)	sblim-sfcc	(x86_64)
	libwsman1	(x86_64)	zlib-devel	(x86_64)
Grp6	cim-schema	(noarch)	openwsman-server	(x86_64)
	compat-libstdc++-33	(x86_64)	rpcbind	(x86_64)
	httpd-tools	(x86_64)	sblim-indication_helper	(x86_64)
	OpenIPMI	(x86_64)	sblim-wbemcli	(x86_64)
	openssl-devel	(x86_64)	unzip	(x86_64)
	openwsman-client	(x86_64)	wsmancli	(x86_64)

When you use Express Report Service (HTTPS), install the next package.

	zip	(x86_64)	libcurl	(x86_64)
--	-----	----------	---------	----------

Red Hat Enterprise Linux 7 x86_64, Oracle Linux 7				
Group	PackageName			
Grp1	libsepol-devel	(x86_64)	openslp	(x86_64)
	make	(x86_64)	pcre-devel	(x86_64)
	net-snmp-libs	(x86_64)		
Grp2	apr	(x86_64)	perl-libs	(x86_64) (*1)
	keyutils-libs-devel	(x86_64)	perl-macros	(x86_64) (*1)
	libcom_err-devel	(x86_64)	perl-parent	(noarch) (*1)
	libkadm5	(x86_64) (*2)	perl-PathTools	(x86_64) (*1)
	libselenium-devel	(x86_64)	perl-Pod-Escapes	(noarch) (*1)
	libverto-devel	(x86_64)	perl-podlators	(noarch) (*1)
	lm_sensors-libs	(x86_64)	perl-Pod-Perldoc	(noarch) (*1)
	OpenIPMI-modalias	(x86_64)	perl-Pod-Simple	(noarch) (*1)
	openssl	(x86_64)	perl-Pod-Usage	(noarch) (*1)
	perl	(x86_64) (*1)	perl-Scalar-List-Utils	(x86_64) (*1)
	perl-Carp	(noarch) (*1)	perl-Socket	(x86_64) (*1)
	perl-constant	(noarch) (*1)	perl-Storable	(x86_64) (*1)
	perl-Encode	(x86_64) (*1)	perl-Text-ParseWords	(noarch) (*1)
	perl-Exporter	(noarch) (*1)	perl-threads	(x86_64) (*1)
	perl-File-Path	(noarch) (*1)	perl-threads-shared	(x86_64) (*1)
	perl-File-Temp	(noarch) (*1)	perl-Time-HiRes	(x86_64) (*1)
	perl-Filter	(x86_64) (*1)	perl-Time-Local	(noarch) (*1)
	perl-Getopt-Long	(noarch) (*1)	tog-pegasus-libs	(x86_64)
	perl-HTTP-Tiny	(noarch) (*1)		
Grp3	apr-util	(x86_64)	perl-Data-Dumper	(x86_64)

Red Hat Enterprise Linux 7 x86_64, Oracle Linux 7				
Group	PackageName			
	krb5-devel	(x86_64)	ruby-libs	(x86_64)
	libtirpc	(x86_64)	sblim-indication_helper	(x86_64)
	libwsman1	(x86_64)	sblim-sfcc	(x86_64)
	net-snmp-agent-libs	(x86_64)	tog-pegasus	(x86_64)
	net-tools	(x86_64)	zlib-devel	(x86_64)
	OpenIPMI-libs	(x86_64)		
Grp4	cim-schema	(noarch)	openwsman-server	(x86_64)
	httpd-tools	(x86_64)	rpcbind	(x86_64)
	net-snmp	(x86_64)	sblim-cmpi-base	(x86_64)
	OpenIPMI	(x86_64)	sblim-wbemcli	(x86_64)
	openssl-devel	(x86_64)	unzip	(x86_64)
	openwsman-client	(x86_64)	wsmancli	(x86_64)

When you use Express Report Service (HTTPS), install the next package.

	zip	(x86_64)	libcurl	(x86_64)
--	-----	----------	---------	----------

1.2.2 Setting of SELinux

If setting of SELinux is not "Disabled", change to "Disabled".

Tips

When you use other than "Disabled", warning or error of the security violation occurs by software and may not work normally. You understand security context of SELinux enough, and please change setting.

1. Log in to the system as the root user.
2. Run the following command to confirm current setting of SELinux.
 - In case of disabled, displayed as follows.

```
# getenforce
Disabled
```

- In case of enable, displayed as follows.

```
# getenforce
Enforcing
```

- In case of displayed to warning, displayed as follows.

```
# getenforce
Permissive
```

In case of **enabled**, execute the following command:

3. It open /etc/sysconfig/selinux by an editor and look for the following lines.

```
SELINUX=<current setting>
```

4. It edit the line mentioned above and save a file.

- In case of Disabled, edit as follows.

```
SELINUX=disabled
```

- In case of Enforcing, edit as follows.

```
SELINUX=enforcing
```

- In case of Permissive, edit as follows.

```
SELINUX=permissive
```

5. Run the following command to restart the OS.

- In case of Red Hat Enterprise Linux 6

```
# reboot
```

- In case of Red Hat Enterprise Linux 7 and Oracle Linux 7

```
# systemctl reboot
```

1.2.3 Check for iLO driver

In case of iLO support model, check the following procedure.

1. Log in to the system as the root user.
2. Run the following command to confirm installing of iLO driver.

```
# rpm -qa | grep kmod-hpilo
```

- When iLO driver is installed, displayed as follows.

```
kmod-hpilo-{version}.x86_64.rpm
```

- When iLO driver is not installed, no display.

When iLO driver is not installed, execute the following procedures to install iLO driver.

Tips

The following procedures explain "/dev/sr0", mounting as "/media/cdrom" in an origin of mount of the Laser Disk drive. When mounting is different, it read it for the following procedures appropriately, and work. In addition, optical disk drive may be mounted automatically by environment. In that case, it do not need the mount.

When you do not know a mount point, you can confirm it from the result of the mount command.

```
# mount  
/dev/sda2 on / type ext4 (rw)
```

... omission ...

```
/dev/sr0 on /media/disk type iso9660  
(ro,nosuid,nodev,uhelper=udisks,uid=0,gid=0...
```

The type becomes the DVD which a device (/dev/sr0) of iso9660 was mounted behind, and the mount point is "/media/disk". The type may become udf.

iso9660 is file system of the optical disc media (CD or DVD).

Universal Disk Format (udf) is file system of the optical disc media.

3. Insert Starter Pack the optical disk drive.
4. Run the following command to make the directory of mount point.

```
# mkdir /media/cdrom
```

5. Run the following command to mount Starter Pack.

```
# mount -r -t iso9660 /dev/sr0 /media/cdrom
```

6. Run the following command to install iLO driver.

```
# rpm -ivh /media/cdrom/packages/x64/chifdriver/ilo5/{OS version}/kmod-  
hpilo-{rpm version}.x86_64.rpm
```

* Select {OS version} according to the installed OS.

7. Run the following command to restart the OS.
- In case of Red Hat Enterprise Linux 7

```
# systemctl reboot
```

- In case of Red Hat Enterprise Linux 6

```
# reboot
```

1.2.4 Install of Python 2.7

In case of iLO support model, this product uses the function of Python 2.7.

In case of Red Hat Enterprise Linux 7, this procedure is unnecessary.

In case of Red Hat Enterprise Linux 6, Python 2.6 is installed. But for this product to use Python 2.7, install it.

1. Log in to the system as the root user.

Tips

When this server can not be connected to network, download Python 2.7 by different machine.

<https://www.python.org/ftp/python/2.7.11/Python-2.7.11.tgz>

2. In order to install Python from command line, first download the Python by running the following:

```
# wget --no-check-certificate https://www.python.org/ftp/python/2.7.11/Py
```

```
thon-2.7.11.tgz
# tar -xzf Python-2.7.11.tgz
# cd Python-2.7.11
```

Tips

The following package is needed for compile (make) to do Python 2.7.

When being not installed, install it.

The package which is needed when compiling, (gcc and dependent packages):

gcc, cloog-ppl, cpp, glibc-devel, glibc-headers, kernel-headers, libgomp, mpfr, ppl

The package which is needed when compiling Python 2.7:

bzip2-devel, gdbm-devel, keyutils-libs-devel, krb5-devel, libcom_err-devel, libkadm5, libselinux-devel, libsepol-devel, ncurses-devel, openssl-devel, readline-devel, sqlite-devel, zlib-devel

3. Python 2.7 is compiled and installed.

```
# ./configure --enable-shared --enable-unicode=ucs4 --prefix=/opt/nec/esmpro_sa/python-2.7
# make
# make altinstall
```

Tips

The meaning of the option designation to compile Python 2.7 is as follows by the configure command.

--enable-shared : To make sure that the service can use Python, a library is created.

--enable-unicode=ucs4 : Unicode (ucs4) is supported.

--prefix : Compiled Python can use this product only. Therefore an installation destination (/opt/nec/esmpro_sa/python-2.7) is designated. When this product is uninstalled, /opt/nec/esmpro_sa/python-2.7 is deleted.

Compiled Python 2.7 is checked in installation script (pp_install) by chapter 2 (2. Installation and Upgrade).

2. Installation and Upgrade

It explains a procedure to install and Upgrade NEC ESMPRO ServerAgentService.

Note

The mode change of Service Mode and Non-Service Mode is not possible by the upgrading of NEC ESMPRO ServerAgentService. When you change a mode, please install NEC ESMPRO ServerAgentService again.

Tips

The following messages are displayed when execute pp_install on the OS does not support.

```
This kernel is not supported.
```

Tips

The following error message is displayed when you run an installation script of NEC ESMPRO ServerAgentService by the OS that does not install unzip package. Install unzip package then.

```
There is no unzip command.
```

2.1 Starter Pack

When you install NEC ESMPRO ServerAgentService stored away by Starter Pack, refer to the following procedures.

1. Log in to the system as the root user.

Tips

The following procedures explain "/dev/sr0", mounting as "/media/cdrom" in an origin of mount of the Laser Disk drive. When mounting is different, it read it for the following procedures appropriately, and work. In addition, optical disk drive may be mounted automatically by environment. In that case, it do not need the mount.

When you do not know a mount point, you can confirm it from the result of the mount command.

```
# mount
/dev/sda2 on / type ext4 (rw)
... omission ....
/dev/sr0 on /media/disk type iso9660
(ro,nosuid,nodev,uhelper=udisks,uid=0,gid=0...
```

The type becomes the DVD which a device (/dev/sr0) of iso9660 was mounted behind, and the mount point is "/media/disk". The type may become udf.

iso9660 is file system of the optical disc media (CD or DVD).

Universal Disk Format (udf) is file system of the optical disc media.

2. Insert Starter Pack the optical disk drive.
3. Run the following command to make the directory of mount point.

```
# mkdir /media/cdrom
```

4. Run the following command to mount Starter Pack.

```
# mount -r -t iso9660 /dev/sr0 /media/cdrom
```

5. Move to the directory where NEC ESMPRO ServerAgentService is stored.

```
# cd /media/cdrom/software/{revision}/lnx/pp/esmpro_sas/
```

{revision} varies according to model.

001 : NEC Express5800/R120h-1M, R120h-2M

002 : NEC Express5800/R120h-1E, R120h-2E, T120h

6. Run the following command to install NEC ESMPRO ServerAgentService.

```
# sh ./pp_install -l en_US.UTF-8
```

Note

The mode change of Service Mode and Non-Service Mode is not possible by the upgrading of NEC ESMPRO ServerAgentService. When you change a mode, please install NEC ESMPRO ServerAgentService again.

Tips

Refer to chapter 4 (1.1 Setting before the installation) for setting before the installation of NEC ESMPRO ServerAgentService.

Argument of the pp_install	explanation
none (Service Mode)	All packages (Esmpro-Provider, Esmpro-strgfs-Provider, Esmpro-Cmnsrv, Esmpro-Selsrv, Esmpro-Expsrv) are installed. The process to be resident as service is installed.
-p OFF (Non-Service Mode)	Provider packages (Esmpro-Provider, Esmpro-strgfs-Provider) are installed. The process to be resident as service is not installed.

Tips

Execute the following commands, confirm which mode NEC ESMPRO ServerAgentService is installed with.

```
# rpm -qa | grep Esmpro-Cmnsrv
```

It is Service Mode when Esmpro-Cmnsrv package was displayed.

```
Esmpro-Cmnsrv-"Version Information"
```

7. Run the following command to eject Starter Pack from optical disk drive.

```
# cd / ; eject /media/cdrom
```

When you cannot use eject command, it unmount, and, take Starter Pack out of optical disk drive by manual operation.

8. Run the following command to restart the OS.

- In case of Red Hat Enterprise Linux 6

```
# reboot
```

- In case of Red Hat Enterprise Linux 7

```
# systemctl reboot
```

With the above installation of NEC ESMPRO ServerAgentService is completion.

2.2 EXPRESSBUILDER

When you install NEC ESMPro ServerAgentService stored away by EXPRESSBUILDER, refer to the following procedures.

Tips

The following procedures explain "/dev/sr0", mounting as "/media/cdrom" in an origin of mount of the Laser Disk drive. When mounting is different, it read it for the following procedures appropriately, and work. In addition, optical disk drive may be mounted automatically by environment. In that case, it do not need the mount.

When you do not know a mount point, you can confirm it from the result of the mount command.

```
# mount
/dev/sda2 on / type ext4 (rw)
... omission ....
/dev/sr0 on /media/disk type iso9660
(ro,nosuid,nodev,uhelper=udisks,uid=0,gid=0...
```

The type becomes the DVD which a device (/dev/sr0) of iso9660 was mounted behind, and the mount point is "/media/disk". The type may become udf.

iso9660 is file system of the optical disc media (CD or DVD).

Universal Disk Format (udf) is file system of the optical disc media.

1. Log in to the system as the root user.
2. Insert EXPRESSBUILDER the optical disk drive.
3. Run the following command to make the directory of mount point.

```
# mkdir /media/cdrom
```

4. Run the following command to mount EXPRESSBUILDER.

```
# mount -r -t iso9660 /dev/sr0 /media/cdrom
```

5. Move to the directory where NEC ESMPro ServerAgentService is stored.

```
# cd /media/cdrom/{revision}/lnx/pp/esmpro_sas/
```

{revision} varies according to EXPRESSBUILDER version.

In case of EXPRESSBUILDER Version 7.10-011.01, {revision} is 011.

6. Run the following command to install NEC ESMPro ServerAgentService.

```
# sh ./pp_install -l en_US.UTF-8
```

Note

The mode change of Service Mode and Non-Service Mode is not possible by the upgrading of NEC ESMPro ServerAgentService. When you change a mode, please install NEC ESMPro ServerAgentService again.

Tips

Refer to chapter 4 (1.1 Setting before the installation) for setting before the installation of NEC ESMPRO ServerAgentService.

Argument of the pp_install	explanation
none (Service Mode)	All packages (Esmpro-Provider, Esmpro-strgfs-Provider, Esmpro-Cmnsrv, Esmpro-Selsrv, Esmpro-Expsrv) are installed. The process to be resident as service is installed.
-p OFF (Non-Service Mode)	Provider packages (Esmpro-Provider, Esmpro-strgfs-Provider) are installed. The process to be resident as service is not installed.

Tips

Execute the following commands, confirm which mode NEC ESMPRO ServerAgentService is installed with.

```
# rpm -qa | grep Esmpro-Cmnsrv
```

It is Service Mode when Esmpro-Cmnsrv package was displayed.

```
Esmpro-Cmnsrv-"Version Information"
```

7. Run the following command to eject EXPRESSBUILDER from optical disk drive.

```
# cd / ; eject /media/cdrom
```

When you cannot use eject command, it unmount, and, take EXPRESSBUILDER out of optical disk drive by manual operation.

8. Run the following command to restart the OS.

- In case of Red Hat Enterprise Linux 6

```
# reboot
```

- In case of Red Hat Enterprise Linux 7 and Oracle Linux 7

```
# systemctl reboot
```

With the above installation of NEC ESMPRO ServerAgentService is completion.

2.3 Utility Disk

When you install NEC ESMPRO ServerAgentService stored away by Utility Disk, refer to the following procedures.

Tips

The following procedures explain "/dev/sr0", mounting as "/media/cdrom" in an origin of mount of the Laser Disk drive. When mounting is different, it read it for the following procedures appropriately, and work. In addition, optical disk drive may be mounted automatically by environment. In that case, it do not need the mount.

When you do not know a mount point, you can confirm it from the result of the mount command.

```
# mount
/dev/sda2 on / type ext4 (rw)
... omission ....
/dev/sr0 on /media/disk type iso9660
(ro,nosuid,nodev,uhelper=udisks,uid=0,gid=0...
```

The type becomes the DVD which a device (/dev/sr0) of iso9660 was mounted behind, and the mount point is "/media/disk". The type may become udf.

iso9660 is file system of the optical disc media (CD or DVD).

Universal Disk Format (udf) is file system of the optical disc media.

1. Log in to the system as the root user.
2. Insert Utility Disk the optical disk drive.
3. Run the following command to make the directory of mount point.

```
# mkdir /media/cdrom
```

4. Run the following command to mount Utility Disk.

```
# mount -r -t iso9660 /dev/sr0 /media/cdrom
```

5. Move to the directory where NEC ESMPRO ServerAgentService is stored.

```
# cd /media/cdrom/tools/lxx/esmpro_sas/
```

6. Run the following command to install NEC ESMPRO ServerAgentService.

```
# sh ./pp_install -l en_US.UTF-8
```

Note

The mode change of Service Mode and Non-Service Mode is not possible by the upgrading of NEC ESMPRO ServerAgentService. When you change a mode, please install NEC ESMPRO ServerAgentService again.

Tips

Refer to chapter 4 (1.1 Setting before the installation) for setting before the installation of NEC ESMPRO ServerAgentService.

Argument of the pp_install	explanation
none (Service Mode)	All packages (Esmpro-Provider, Esmpro-strgfs-Provider, Esmpro-Cmnsrv, Esmpro-Selsrv, Esmpro-Expsrv) are installed. The process to be resident as service is installed.
-p OFF (Non-Service Mode)	Provider packages (Esmpro-Provider, Esmpro-strgfs-Provider) are installed. The process to be resident as service is not installed.

Tips

Execute the following commands, confirm which mode NEC ESMPRO ServerAgentService is installed with.

```
# rpm -qa | grep Esmpro-Cmnsrv
```

It is Service Mode when Esmpro-Cmnsrv package was displayed.

```
Esmpro-Cmnsrv-"Version Information"
```

7. Run the following command to eject Utility Disk from optical disk drive.

```
# cd / ; eject /media/cdrom
```

When you cannot use eject command, it unmount, and, take Utility Disk out of optical disk drive by manual operation.

8. Run the following command to restart the OS.

```
# systemctl reboot
```

With the above installation of NEC ESMPRO ServerAgentService is completion.

2.4 ZIP file downloaded from Web

When you install NEC ESMPRO ServerAgentService which you downloaded from Web, refer to the following procedures.

1. Log in to the system as the root user.
2. Uncompress the ZIP file (Inx_esmsas-{Version}.x86_64.zip) which you downloaded in a directory of your choice.

Tips

Unzip while keeping directory composition.

```
pp_install
x86_64/Esmpro-Cmnsrv-{version}.x86_64.rpm
x86_64/Esmpro-Expsrv-{version}.x86_64.rpm
x86_64/Esmpro-Provider-{version}.x86_64.rpm
x86_64/Esmpro-Selsrv-{version}.x86_64.rpm
x86_64/Esmpro-strgfs-Provider-{version}.x86_64.rpm
```

The following messages are displayed when directory composition does not right.

```
This kernel is not supported.
```

3. Move to the directory where installation script of NEC ESMPRO ServerAgentService is stored.

```
# cd {directory of your choice}
```

4. Run the following command to install NEC ESMPRO ServerAgentService.

```
# sh ./pp_install -l en_US.UTF-8
```

Note

The mode change of Service Mode and Non-Service Mode is not possible by the upgrading of NEC ESMPRO ServerAgentService. When you change a mode, please install NEC ESMPRO ServerAgentService again.

Tips

Refer to chapter 4 (1.1 Setting before the installation) for setting before the installation of NEC ESMPRO ServerAgentService.

Argument of the pp_install	explanation
none (Service Mode)	All packages (Esmpro-Provider, Esmpro-strgfs-Provider, Esmpro-Cmnsrv, Esmpro-Selsrv, Esmpro-Expsrv) are installed. The process to be resident as service is installed.
-p OFF (Non-Service Mode)	Provider packages (Esmpro-Provider, Esmpro-strgfs-Provider) are installed. The process to be resident as service is not installed.

Tips

Execute the following commands, confirm which mode NEC ESMPRO ServerAgentService is installed with.

```
# rpm -qa | grep Esmpro-Cmnsrv  
It is Service Mode when Esmpro-Cmnsrv package was displayed.  
Esmpro-Cmnsrv-"Version Information"
```

5. Run the following command to restart the OS.

- In case of Red Hat Enterprise Linux 6

```
# reboot
```

- In case of Red Hat Enterprise Linux 7 and Oracle Linux 7

```
# systemctl reboot
```

With the above installation of NEC ESMPRO ServerAgentService is completion.

3. After installation

After having finished installation of NEC ESMPRO ServerAgentService, read by all means.

Log in to the system as the root user when you set this chapter.

It is not necessary to set it when you upgrade NEC ESMPRO ServerAgentService, but confirm the connection with NEC ESMPRO Manager.

Note

Confirm the connection with NEC ESMPRO Manager is as follows.

1. Login to NEC ESMPRO Manager.
2. Click the component name which this server, and click the "Setting" tab.
3. Click <Check Connection> button, and check connection.

3.1 Setting after the installation

The setting after the installation is as follows.

3.1.1 Workaround of openwsmand

The phenomenon that memory consumption of openwsmand increased is confirmed by our test. NEC ESMPRO ServerAgentService provides esmsas_openwsman_weekly script rebooting openwsmand as workaround once a week and restrain a memory consumption amount used for openwsmand.

1. Log in to the system as the root user.
2. Depending on storage of NEC ESMPRO ServerAgentService, install it according to the following procedures.

- When you install esmsas_openwsman_weekly script stored away by Starter Pack, refer to the following procedures.

Tips

The following procedures explain "/dev/sr0", mounting as "/media/cdrom" in an origin of mount of the Laser Disk drive. When mounting is different, it read it for the following procedures appropriately, and work. In addition, optical disk drive may be mounted automatically by environment. In that case, it do not need the mount.

When you do not know a mount point, you can confirm it from the result of the mount command.

```
# mount
/dev/sda2 on / type ext4 (rw)
... omission ....
/dev/sr0 on /media/disk type iso9660
(ro,nosuid,nodev,uhelper=udisks,uid=0,gid=0...
```

The type becomes the DVD which a device (/dev/sr0) of iso9660 was mounted behind, and the mount point is "/media/disk". The type may become udf.

iso9660 is file system of the optical disc media (CD or DVD).

Universal Disk Format (udf) is file system of the optical disc media.

1) Insert Starter Pack the optical disk drive.

2) Run the following command to make the directory of mount point.

```
# mkdir /media/cdrom
```

3) Run the following command to mount Starter Pack.

```
# mount -r -t iso9660 /dev/sr0 /media/cdrom
```

4) Copy esmsas_openwsman_weekly.tgz in a directory of your choice from Starter Pack. In the following procedures, make /tmp/esmsas directory and copy it.

```
# mkdir /tmp/esmsas
# cd /media/cdrom/software/{revision}/lnx/pp/esmpro_sas/scripts/
# cp esmsas_openwsman_weekly.tgz /tmp/esmsas
```

5) After having moved to any directory, uncompress esmsas_openwsman_weekly.tgz and install esmsas_openwsman_weekly script.

```
# cd /tmp/esmsas
# tar xzvf esmsas_openwsman_weekly.tgz
# sh ./esmsas_openwsman_weekly.sh -i
```

6) After having installed esmsas_openwsman_weekly script, move to a directory in one rank higher and delete the files which uncompress esmsas_openwsman_weekly.tgz.

```
# cd /
# rm -rf /tmp/esmsas
```

7) Run the following command to eject Starter Pack from optical disk drive.

```
# cd / ; eject /media/cdrom
```

When you cannot use eject command, it unmount, and, take Starter Pack out of optical disk drive by manual operation.

-
- When you install esmsas_openwsman_weekly script stored away by EXPRESSBUILDER, refer to the following procedures.

Tips

The following procedures explain "/dev/sr0", mounting as "/media/cdrom" in an origin of mount of the Laser Disk drive. When mounting is different, it read it for the following procedures appropriately, and work. In addition, optical disk drive may be mounted automatically by environment. In that case, it do not need the mount.

When you do not know a mount point, you can confirm it from the result of the mount command.

```
# mount
/dev/sda2 on / type ext4 (rw)
```

... omission ...

```
/dev/sr0 on /media/disk type iso9660  
(ro,nosuid,nodev,uhelper=udisks,uid=0,gid=0...
```

The type becomes the DVD which a device (/dev/sr0) of iso9660 was mounted behind, and the mount point is "/media/disk". The type may become udf.

iso9660 is file system of the optical disc media (CD or DVD).

Universal Disk Format (udf) is file system of the optical disc media.

- 1) Insert EXPRESSBUILDER the optical disk drive.
- 2) Run the following command to make the directory of mount point.

```
# mkdir /media/cdrom
```

- 3) Run the following command to mount EXPRESSBUILDER.

```
# mount -r -t iso9660 /dev/sr0 /media/cdrom
```

- 4) Copy esmsas_openwsman_weekly.tgz in a directory of your choice from EXPRESSBUILDER. In the following procedures, make /tmp/esmsas directory and copy it.

```
# mkdir /tmp/esmsas  
# cd /media/cdrom/{revision}/lnx/pp/esmpro_sas/scripts/  
# cp esmsas_openwsman_weekly.tgz /tmp/esmsas
```

- 5) After having moved to any directory, uncompress esmsas_openwsman_weekly.tgz and install esmsas_openwsman_weekly script.

```
# cd /tmp/esmsas  
# tar xzvf esmsas_openwsman_weekly.tgz  
# sh ./esmsas_openwsman_weekly.sh -i
```

- 6) After having installed esmsas_openwsman_weekly script, move to a directory in one rank higher and delete the files which uncompress esmsas_openwsman_weekly.tgz.

```
# cd /  
# rm -rf /tmp/esmsas
```

- 7) Run the following command to eject EXPRESSBUILDER from optical disk drive.

```
# cd / ; eject /media/cdrom
```

When you cannot use eject command, it unmount, and, take EXPRESSBUILDER out of optical disk drive by manual operation.

-
- When you install esmsas_openwsman_weekly script stored away by Utility Disk, refer to the following procedures.

Tips

The following procedures explain "/dev/sr0", mounting as "/media/cdrom" in an origin of mount of the Laser Disk drive. When mounting is different, it read it for the following procedures appropriately, and work. In addition, optical disk drive may be mounted automatically by environment. In that case, it do not need the mount.

When you do not know a mount point, you can confirm it from the result of the mount command.

```
# mount
/dev/sda2 on / type ext4 (rw)
... omission ....
/dev/sr0 on /media/disk type iso9660
(ro,nosuid,nodev,uhelper=udisks,uid=0,gid=0...
```

The type becomes the DVD which a device (/dev/sr0) of iso9660 was mounted behind, and the mount point is "/media/disk". The type may become udf.

iso9660 is file system of the optical disc media (CD or DVD).

Universal Disk Format (udf) is file system of the optical disc media.

8) Insert Utility Disk the optical disk drive.

9) Run the following command to make the directory of mount point.

```
# mkdir /media/cdrom
```

10) Run the following command to mount Utility Disk.

```
# mount -r -t iso9660 /dev/sr0 /media/cdrom
```

11) Copy esmsas_openwsman_weekly.tgz in a directory of your choice from Utility Disk. In the following procedures, make /tmp/esmsas directory and copy it.

```
# mkdir /tmp/esmsas
# cd /media/cdrom/tools/linux/esmpro_sas/scripts/
# cp esmsas_openwsman_weekly.tgz /tmp/esmsas
```

12) After having moved to any directory, uncompress esmsas_openwsman_weekly.tgz and install esmsas_openwsman_weekly script.

```
# cd /tmp/esmsas
# tar xzvf esmsas_openwsman_weekly.tgz
# sh ./esmsas_openwsman_weekly.sh -i
```

13) After having installed esmsas_openwsman_weekly script, move to a directory in one rank higher and delete the files which uncompress esmsas_openwsman_weekly.tgz.

```
# cd /
# rm -rf /tmp/esmsas
```

- 14) Run the following command to eject Utility Disk from optical disk drive.

```
# cd / ; eject /media/cdrom
```

When you cannot use eject command, it unmount, and, take Utility Disk out of optical disk drive by manual operation.

- When you install esmsas_openwsman_weekly script include in NEC ESMPro ServerAgentService which you downloaded from Web, refer to the following procedures.

- 1) Uncompress the file which you downloaded in a directory of your choice. In the following procedures, make /tmp/esmsas directory and copy it.

```
# mkdir /tmp/esmsas
```

- 2) Move to the directory, uncompress esmsas_openwsman_weekly.tgz and install esmsas_openwsman_weekly script.

```
# cd /tmp/esmsas/scripts/  
# tar xzvf esmsas_openwsman_weekly.tgz  
# sh ./esmsas_openwsman_weekly.sh -i
```

- 3) Run the following command to delete directory which uncompress esmsas_openwsman_weekly.tgz.

```
# cd /  
# rm -rf /tmp/esmsas
```

With the above installation of esmsas_openwsman_weekly script is completion.

Tips

The methods to uninstall only esmsas_openwsman_weekly script are as follows.

```
# cd /opt/nec/esmpro_sa/tools/  
# sh ./esmsas_openwsman_weekly.sh -e
```

3.1.2 Creating password file of Basic Authentication

In case of Red Hat Enterprise Linux 6, create password file of Basic Authentication. The user who designates it by the command designates root, and a password inputs a password of root.

In case of Red Hat Enterprise Linux 7 and Oracle Linux 7, this procedure is unnecessary.

```
# htpasswd -c /etc/openwsman/simple_auth.passwd root  
New password:  
Re-type new password:  
Adding password for user root
```

Note

When you appoint a user except root, please appoint an existing account of "uid=0" as a login user.

Tips

When changing the password of root, re-make a password file of BASIC authentication.

```
# htpasswd -c /etc/openwsman/simple_auth.passwd root
```

3.1.3 Restart of service

In case of Red Hat Enterprise Linux 6, restart openwsmand and NEC ESMPRO ServerAgentService to reflect setting to service.

In case of Red Hat Enterprise Linux 7 and Oracle Linux 7, this procedure is unnecessary.

```
# service openwsmand restart
# /opt/nec/esmpro_sa/bin/ESMRestart
```

Note

Because Monitoring Service is not installed in Non-Service Mode, service cannot reboot.

3.1.4 Setting of access control

NEC ESMPRO Manager and ServerAgentService (SAS) use the following ports. If access control is placed between Manager and SAS, or if access control is enabled on your system, open the following ports. Refer to the following files for the port range.

```
# cat /proc/sys/net/ipv4/ip_local_port_range
```

- Between SAS and Manager

Function	SAS	Direction	Manager	Note
Server Monitoring (WS-Man)	5986/tcp	← →	Auto-assignment	openwsmand (HTTPS)
CIM Indication Setting	-	← →	ICMP	ping(ICMP) Connection confirm.
CIM Indication Subscription	5989/tcp	← →	Auto-assignment	tog-pegasus (HTTPS)
CIM Indication Sending events	Auto-assignment	→ ←	6736/tcp	tog-pegasus (HTTPS)
Report to Manager (SNMP)	Auto-assignment	→	162/udp	SNMP Trap
Report to Manager (TCP/IP in Band, TCP/IP Out-of-Band)	Auto-assignment	→ ←	31134/tcp	
Express Report Service (Via Forward Manager)	Auto-assignment	→ ←	31136/tcp	
Express Report Service (HTTPS Via Forward Manager)	Auto-assignment	→ ←	31138/tcp	

* The port number of openwsmand is set in "ssl_port" at [server] section of /etc/openwsman/openwsman.conf.

* The upper direction shows the direction at start-up, and the lower shows the return.

- * For the setting of the port number for Report to Manager (TCP/IP in Band, Out-of-Band) is used as a report method.
- * The open examples of the port using iptables or firewalld are as follows.
Stop the service (iptables or firewalld) which is not used.
- + The open examples of the port using iptables are as follows.
When you use an opening example of the port using iptables, installation of iptables and iptables-services (RHEL7/OL7) are necessary beforehand.

```
# iptables -I INPUT -p tcp --dport 5986 -s <IP address of NEC ESMPRO
Manager> -j ACCEPT
# iptables -I INPUT -p icmp -j ACCEPT
# iptables -I OUTPUT -p icmp -j ACCEPT
# iptables -I INPUT -p tcp --dport 5989 -s <IP address of NEC ESMPRO
Manager> -j ACCEPT
# iptables -I OUTPUT -p tcp --dport 6736 -j ACCEPT
# iptables -I OUTPUT -p udp --dport 162 -j ACCEPT
# iptables -I OUTPUT -p tcp --dport 31134 -j ACCEPT
# iptables -I OUTPUT -p tcp --dport 31136 -j ACCEPT
# iptables -I OUTPUT -p tcp --dport 31138 -j ACCEPT
# service iptables save
```

- + The open examples of the port using firewalld are refer to the following website.
Product Documentation for Red Hat Enterprise Linux
<https://access.redhat.com/documentation/en/red-hat-enterprise-linux/>
Red Hat Enterprise Linux 7
+- Security Guide
+- 5. Using Firewalls
- * The open examples of the port using TCP Wrappers are refer to the following website.
Product Documentation for Red Hat Enterprise Linux
<https://access.redhat.com/documentation/en/red-hat-enterprise-linux/>
Red Hat Enterprise Linux 6
+- Security Guide
+- 2. Securing Your Network
+- 2.6. TCP Wrappers and xinetd
Red Hat Enterprise Linux 5
+- Deployment Guide
+- VII. Security And Authentication
+- 48. Securing Your Network
+- 48.5. TCP Wrappers and xinetd

- Between SAS and Mail Server

Function	SAS	Direction	Mail Server	Note
Express Report Service (Internet Mail)	Auto-assignment	→	25/tcp	SMTP
		←		
		→	110/tcp	POP3
		←		

- * The upper direction shows the direction at start-up, and the lower shows the return.
- * You can change the port to use than Report Setting window.
- * The open examples of the port using iptables or firewalld are as follows.
Stop the service (iptables or firewalld) which is not used.
- + The open examples of the port using iptables are as follows.

When you use an opening example of the port using iptables, installation of iptables and iptables-services (RHEL7/OL7) are necessary beforehand.

```
# iptables -I OUTPUT -p tcp --dport 25 -j ACCEPT
# iptables -I OUTPUT -p tcp --dport 110 -j ACCEPT
# service iptables save
```

- + The open examples of the port using firewalld are refer to the following website.

Product Documentation for Red Hat Enterprise Linux

<https://access.redhat.com/documentation/en/red-hat-enterprise-linux/>

Red Hat Enterprise Linux 7

+ Security Guide

+ 5. Using Firewalls

- * The open examples of the port using TCP Wrappers are refer to the following website.

Product Documentation for Red Hat Enterprise Linux

<https://access.redhat.com/documentation/en/red-hat-enterprise-linux/>

Red Hat Enterprise Linux 6

+ Security Guide

+ 2. Securing Your Network

+ 2.6. TCP Wrappers and xinetd

Red Hat Enterprise Linux 5

+ Deployment Guide

+ VII. Security And Authentication

+ 48. Securing Your Network

+ 48.5. TCP Wrappers and xinetd

- Between SAS and HTTPS Server

Function	SAS	Direction	HTTPS Server	Note
Express Report Service (HTTPS)	Auto-assignment	→ ←	443/tcp	HTTPS

- * The upper direction shows the direction at start-up, and the lower shows the return.

- * You can change the port to use than Report Setting window.

- * The open examples of the port using iptables or firewalld are as follows.

Stop the service (iptables or firewalld) which is not used.

- + The open examples of the port using iptables are as follows.

When you use an opening example of the port using iptables, installation of iptables and iptables-services (RHEL7/OL7) are necessary beforehand.

```
# iptables -I OUTPUT -p tcp --dport 443 -j ACCEPT
# service iptables save
```

- + The open examples of the port using firewalld are refer to the following website.

Product Documentation for Red Hat Enterprise Linux

<https://access.redhat.com/documentation/en/red-hat-enterprise-linux/>

Red Hat Enterprise Linux 7

+ Security Guide

+ 5. Using Firewalls

- * The open examples of the port using TCP Wrappers are refer to the following website.

Product Documentation for Red Hat Enterprise Linux

<https://access.redhat.com/documentation/en/red-hat-enterprise-linux/>

Red Hat Enterprise Linux 6

+ Security Guide

+ 2. Securing Your Network

- + 2.6. TCP Wrappers and xinetd
- Red Hat Enterprise Linux 5
- + Deployment Guide
- + VII. Security And Authentication
- + 48. Securing Your Network
- + 48.5. TCP Wrappers and xinetd

NEC ESMPRO ServerAgentService uses the following internal ports.

When it does packet filtering setting using iptables, it admits the access to these.

- Interprocess communication in the local host

Function	Port	Note
NEC ESMPRO ServerAgentService	Auto-assignment	
rpcbind	111/tcp	
	111/udp	
tog-pegasus	5988/tcp	HTTP
	5989/tcp	HTTPS
openwsmand	5986/tcp	HTTPS

* Cannot change the port number of rpcbind and tog-pegasus.

* The port number of openwsmand is set in "ssl_port" at [server] section of /etc/openwsman/openwsman.conf.

* The open examples of the port using iptables are as follows.

When you use an opening example of the port using iptables, installation of iptables and iptables-services (RHEL7/OL7) are necessary beforehand.

```
# iptables -A INPUT -i lo -j ACCEPT
# service iptables save
```

* The open examples of the port using TCP Wrappers are refer to the following website.

Product Documentation for Red Hat Enterprise Linux

<https://access.redhat.com/documentation/en/red-hat-enterprise-linux/>

Red Hat Enterprise Linux 6

- + Security Guide
- + 2. Securing Your Network
- + 2.6. TCP Wrappers and xinetd

Red Hat Enterprise Linux 5

- + Deployment Guide
- + VII. Security And Authentication
- + 48. Securing Your Network
- + 48.5. TCP Wrappers and xinetd

3.2 Settings of NEC ESMPRO Manager

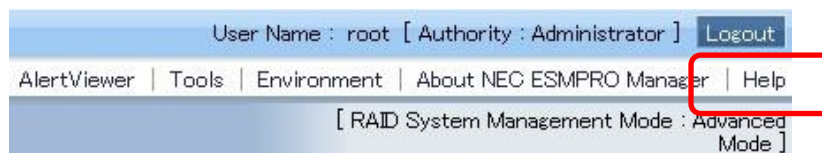
Register NEC ESMPRO ServerAgentService with NEC ESMPRO Manager by "Auto Registration" or "Manual Registration" to monitoring this server (hardware).

A screen image is sometimes different in the version of NEC ESMPRO Manager.

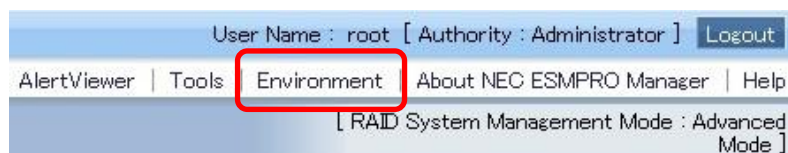
1. Login to NEC ESMPRO Manager.



For details, see NEC ESMPRO Manager online help.



2. Select "Environment"



3. Select "Allow" in "Self Signed Certificate" in WS-Man Communication of "Network" tab.
When you communicate at iLO and HTTPS in iLO support model, select "Allow" in "Self Signed Certificate" in Communication with iLO.
Click <Apply> button in this tab.

Environment [RAID System Mana

User Accounts Access Control **Network** Option Auto Registration Setting

Item Name	Setup Value
SNMP/ICMP Communication	
Packet Resend Count	3 number of times
No-response Timeout 1 (1 - 65535 seconds) [required]	4 seconds
No-response Timeout 2 (1 - 65535 seconds) [required]	4 seconds
No-response Timeout 3 (1 - 65535 seconds) [required]	4 seconds
No-response Timeout 4 (1 - 65535 seconds) [required]	4 seconds
Communication with Remote Console/Remote Drive	
No-response Timeout (20 - 1800 seconds) [required]	60 seconds
Communication with BMC	
No-response Timeout (1 - 15 seconds) [required]	5 seconds
Command Send Retry Count (0 - 10 number of times) [required]	5 number of times
Send Source Port (1025 - 65535) [required]	47117
Direct Connection Setting	
Port Number	Serial Port1
WS-Man Communication	
Self Signed Certificate	<input checked="" type="radio"/> Allow <input type="radio"/> Not Allowed
Communication with iLO	
No-response Timeout (1 - 15 seconds) [required]	3 seconds
Command Send Retry Count (0 - 10 number of times) [required]	0 number of times
Communication Protocol	<input checked="" type="radio"/> HTTPS <input type="radio"/> HTTP
Self Signed Certificate	<input checked="" type="radio"/> Allow <input type="radio"/> Not Allowed
<input type="button" value="Apply"/> <input type="button" value="Cancel"/> <input type="button" value="Default"/>	

Tips


When Self Signed Certificate is set to Not Allowed in WS-Man Communication, openwsman uses it as a certificate in Certificate Authority by appointing it in `ssl_cert_file` and `ssl_key_file` at [server] section of `/etc/openwsman/openwsman.conf`.

```
[server]
:
ssl cert file = /etc/openwsman/servercert.pem
ssl key file = /etc/openwsman/serverkey.pem
digest password file = /etc/openwsman/digest auth.passwd
basic password file = /etc/openwsman/simple auth.passwd
```

4. Register WS-Man(NEC ESM PRO ServerAgentService) and BMC or iLO by "Auto Registration" or "Manual Registration" in "Add Component" of "root".



3.2.1 Auto Registration

Item Name	Setup Value
Destination Group	root ▼
Discovery Range	
Discovery Mode	<input checked="" type="radio"/> IP Address Range Discovery <input type="radio"/> Network Address Discovery
Start Address [required]	<input type="text"/> . <input type="text"/> . <input type="text"/> . <input type="text"/>
End Address [required]	<input type="text"/> . <input type="text"/> . <input type="text"/> . <input type="text"/>
SNMP (NEC ESMPRO Agent)	
Discovery	<input checked="" type="radio"/> Enable <input type="radio"/> Disable
SNMP Community Name [required]	<input type="text" value="public"/>
WS-Man	
Discovery	<input checked="" type="radio"/> Enable <input type="radio"/> Disable
User Name/Password [required]	<input type="text"/> / <input type="text"/> <input type="button" value="Add"/>
RAID system (Universal RAID Utility)	
Discovery	<input checked="" type="radio"/> Enable <input type="radio"/> Disable
NEC ExpressUpdate (ExpressUpdate Agent)	
Discovery	<input checked="" type="radio"/> Enable <input type="radio"/> Disable
BMC (EXPRESSSCOPE Engine)	
Discovery	<input checked="" type="radio"/> Enable <input type="radio"/> Disable
 "BMC(EXPRESSSCOPE Engine)" is target for EXPRESSSCOPE Engine1/2/3/3ft/2SP/3SP,EM Card (SIGMABLADE), BMC(ECO CENTER), BMC(many core server). The case except other than the above and "iLO" and "vPro", please select "BMC(Other)".	
Features NEC ExpressUpdate	<input checked="" type="radio"/> Enable <input type="radio"/> Disable
Authentication Key [required]	<input type="text"/> <input type="button" value="Add"/>
iLO	
Discovery	<input checked="" type="radio"/> Enable <input type="radio"/> Disable
User Name/Password [required]	<input type="text"/> / <input type="text"/> <input type="button" value="Add"/>
BMC (Other)	
Discovery	<input checked="" type="radio"/> Enable <input type="radio"/> Disable
User Name/Password [required]	<input type="text"/> / <input type="text"/> <input type="button" value="Add"/>
Intel(R) vPro(TM) Technology	
Discovery	<input checked="" type="radio"/> Enable <input type="radio"/> Disable
User Name/Password [required]	<input type="text"/> / <input type="text"/> <input type="button" value="Add"/>

1. The IP address of "IP Address Range Discovery" sets it so that BMC or iLO and NEC ESMPRO ServerAgentService are included.

Discovery Range	
Discovery Mode	<input checked="" type="radio"/> IP Address Range Discovery <input type="radio"/> Network Address Discovery
Start Address [required]	<input type="text"/> . <input type="text"/> . <input type="text"/> . <input type="text"/>
End Address [required]	<input type="text"/> . <input type="text"/> . <input type="text"/> . <input type="text"/>

Note

If you register the "Management Controller" management for a server which has EXPRESSSCOPE Engine SP3 (2BMC model), you should specify the search range which includes both BMC IP addresses of Master and Standby.

2. Disable search in SNMP (NEC ESMPRO Agent).

SNMP (NEC ESMPRO Agent)	
Discovery	<input type="radio"/> Enable <input checked="" type="radio"/> Disable

3. Enable search in WS-Man. The root (User Name) and Password of monitoring target server is input to WS-Man, and click <Add> button.

WS-Man	
Discovery	<input checked="" type="radio"/> Enable <input type="radio"/> Disable
User Name/Password	<input type="text"/> / <input type="text"/> <input type="button" value="Add"/>

4. BMC or iLO is added.

BMC (EXPRESSSCOPE Engine)	
Discovery	<input checked="" type="radio"/> Enable <input type="radio"/> Disable
<p> "BMC(EXPRESSSCOPE Engine)" is target for EXPRESSSCOPE Engine1/2/3/3ft/2SP/3SP,EM Card(SIGMABLADE), BMC(ECO CENTER), BMC(many core server). The case except other than other than the above and "iLO" and "vPro", please select "BMC(Other)".</p>	
Features NEC ExpressUpdate	<input checked="" type="radio"/> Enable <input type="radio"/> Disable
Authentication Key [required]	<input type="text"/> <input type="button" value="Add"/>
iLO	
Discovery	<input checked="" type="radio"/> Enable <input type="radio"/> Disable
User Name/Password [required]	<input type="text"/> / <input type="text"/> <input type="button" value="Add"/>
BMC (Other)	
Discovery	<input checked="" type="radio"/> Enable <input type="radio"/> Disable
User Name/Password [required]	<input type="text"/> / <input type="text"/> <input type="button" value="Add"/>

<BMC(EXPRESSSCOPE Engine) support model>

Disable search in iLO and BMC(Other).

Enable search in BMC (EXPRESSSCOPE Engine). Input "Authentication Key", and click <Add> button.

<iLO support model>

Disable search in BMC (EXPRESSSCOPE Engine) and BMC(Other).

Enable search in iLO. Input "User Name/Password", and click <Add> button.

<BMC(Other) support model>


Disable search in BMC (EXPRESSSCOPE Engine) and iLO.

Enable search in BMC(Other). Input "User Name/Password", and click <Add> button.

5. Click <Run Discovery> button, and register NEC ESMPRO ServerAgentService and BMC or iLO.



3.2.2 Manual Registration

Item Name	Setup Value
Component Name [required]	<input type="text"/>
Alias	<input type="text"/>
Group	root ▼
Connection Type	<input checked="" type="radio"/> LAN <input type="radio"/> Direct <input type="radio"/> Modem
Common Setting	
OS IP Address [required]	<input type="text"/> . <input type="text"/> . <input type="text"/> . <input type="text"/>
SNMP (NEC ESMPRO Agent)/ WS-Man	
Management	<input checked="" type="radio"/> Registration <input type="radio"/> Unregistration
Management Type	<input checked="" type="radio"/> SNMP <input type="radio"/> WS-Man
SNMP Community Name(Get)	public
SNMP Community Name(Set)	<input type="text"/>
RAID system management	
Management	<input checked="" type="radio"/> Registration <input type="radio"/> Unregistration
NEC ExpressUpdate	
Updates via NEC ExpressUpdate Agent	<input checked="" type="radio"/> Registration <input type="radio"/> Unregistration
Updates via Management Controller	<input checked="" type="radio"/> Registration <input type="radio"/> Unregistration
"BMC (EXPRESSSCOPE Engine)" / "iLO" / "BMC (Other)" / "vPro" (Common)	
Management	<input checked="" type="radio"/> Registration <input type="radio"/> Unregistration
Management Type	<input checked="" type="radio"/> BMC <input type="radio"/> iLO <input type="radio"/> BMC(Other) <input type="radio"/> vPro
 "BMC(EXPRESSSCOPE Engine)" is target for EXPRESSSCOPE Engine1/2/3/3ft/2SP/3SP,EM Card (SIGMABLADE), BMC(ECO CENTER), BMC(many core server). The case except other than other than the above and "iLO" and "vPro", please select "BMC(Other)".	
Authentication Key [required]	<input type="text"/>
"BMC (EXPRESSSCOPE Engine)" / "iLO" / "BMC (Other)" / "vPro" (LAN)	
Current IP Address	<input checked="" type="radio"/> IP Address 1 <input type="radio"/> IP Address 2
Failover	<input checked="" type="radio"/> Enable <input type="radio"/> Disable
IP Address1 [required]	<input type="text"/> . <input type="text"/> . <input type="text"/> . <input type="text"/>
IP Address2	<input type="text"/> . <input type="text"/> . <input type="text"/> . <input type="text"/>
	<input type="button" value="Add"/>

1. Input the required items.

Component Name [required]	<input type="text"/>
Alias	<input type="text"/>
Group	root ▼
Connection Type	<input checked="" type="radio"/> LAN <input type="radio"/> Direct <input type="radio"/> Modem
Common Setting	
OS IP Address [required]	<input type="text"/> . <input type="text"/> . <input type="text"/> . <input type="text"/>

2. Registration in "SNMP (NEC ESMPRO Agent)/WS-Man", and select WS-Man in Management Type. The root (User Name) and Password of monitoring target server is input to WS-Man. Communication Protocol is HTTPS, and Port Number is 5986.

SNMP (NEC ESMPRO Agent)/ WS-Man	
Management	<input checked="" type="radio"/> Registration <input type="radio"/> Unregistration
Management Type	<input type="radio"/> SNMP <input checked="" type="radio"/> WS-Man
User Name [required]	<input type="text"/>
Password [required]	<input type="password"/>
Communication Protocol	<input type="radio"/> HTTP <input checked="" type="radio"/> HTTPS
Port Number [required]	<input type="text" value="5986"/>

3. Registration in ""BMC (EXPRESSSCOPE Engine)" / "iLO" / "BMC(Other)" / "vPro" (LAN)",

<BMC (EXPRESSSCOPE Engine) support model>
Select BMC. Input "Authentication Key".

"BMC (EXPRESSSCOPE Engine)" / "iLO" / "BMC (Other)" / "vPro" (Common)	
Management	<input checked="" type="radio"/> Registration <input type="radio"/> Unregistration
Management Type	<input checked="" type="radio"/> BMC <input type="radio"/> iLO <input type="radio"/> BMC(Other) <input type="radio"/> vPro
<p> "BMC(EXPRESSSCOPE Engine)" is target for EXPRESSSCOPE Engine1/2/3/3ft/2SP/3SP,EM Card (SIGMABLADE), BMC(ECO CENTER), BMC(many core server). The case except other than the above and "iLO" and "vPro", please select "BMC(Other)".</p>	
Authentication Key [required]	<input type="text"/>

Input IP address of BMC in IP Address1 of ""BMC (EXPRESSSCOPE Engine)" / "iLO" / "BMC(Other)" / "vPro" (LAN)".

"BMC (EXPRESSSCOPE Engine)" / "iLO" / "BMC (Other)" / "vPro" (LAN)	
Current IP Address	<input checked="" type="radio"/> IP Address 1 <input type="radio"/> IP Address 2
Failover	<input checked="" type="radio"/> Enable <input type="radio"/> Disable
IP Address1 [required]	<input type="text"/> . <input type="text"/> . <input type="text"/> . <input type="text"/>
IP Address2	<input type="text"/> . <input type="text"/> . <input type="text"/> . <input type="text"/>

Note

If the managed component is a server which has EXPRESSSCOPE Engine SP3 (2BMC model), you should enter the IP address of the management LAN port for the Master BMC to the IP Address1, you should enter the IP address of the management LAN port for the Standby BMC to the form.

<iLO support model>
Select iLO. Input "User Name" and "Password".

"BMC (EXPRESSSCOPE Engine)" / "iLO" / "BMC (Other)" / "vPro" (Common)	
Management	<input checked="" type="radio"/> Registration <input type="radio"/> Unregistration
Management Type	<input type="radio"/> BMC <input checked="" type="radio"/> iLO <input type="radio"/> BMC(Other) <input type="radio"/> vPro
<p> "BMC(EXPRESSSCOPE Engine)" is target for EXPRESSSCOPE Engine1/2/3/3ft/2SP/3SP,EM Card (SIGMABLADE), BMC(ECO CENTER), BMC(many core server). The case except other than other than the above and "iLO" and "vPro", please select "BMC(Other)".</p>	
User Name [required]	<input type="text"/>
Password [required]	<input type="text"/>

Input IP address of iLO in IP Address1 of ""BMC (EXPRESSSCOPE Engine)" / "iLO" / "BMC(Other)" / "vPro" (LAN)".

"BMC (EXPRESSSCOPE Engine)" / "iLO" / "BMC (Other)" / "vPro" (LAN)	
IP Address1 [required]	<input type="text"/> . <input type="text"/> . <input type="text"/> . <input type="text"/>

<BMC(Other) support model>

Select BMC(Other). Input "User Name" and "Password".

"BMC (EXPRESSSCOPE Engine)" / "iLO" / "BMC (Other)" / "vPro" (Common)	
Management	<input checked="" type="radio"/> Registration <input type="radio"/> Unregistration
Management Type	<input type="radio"/> BMC <input type="radio"/> iLO <input checked="" type="radio"/> BMC(Other) <input type="radio"/> vPro
<p> "BMC(EXPRESSSCOPE Engine)" is target for EXPRESSSCOPE Engine1/2/3/3ft/2SP/3SP,EM Card (SIGMABLADE), BMC(ECO CENTER), BMC(many core server). The case except other than other than the above and "iLO" and "vPro", please select "BMC(Other)".</p>	
User Name [required]	<input type="text"/>
Password [required]	<input type="text"/>

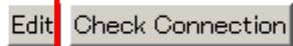
Input IP address of BMC(Other) in IP Address1 of ""BMC (EXPRESSSCOPE Engine)" / "iLO" / BMC(Other)" / "vPro" (LAN)".

"BMC (EXPRESSSCOPE Engine)" / "iLO" / "BMC (Other)" / "vPro" (LAN)	
IP Address1 [required]	<input type="text"/> . <input type="text"/> . <input type="text"/> . <input type="text"/>

- Click <Add> button, and register NEC ESM PRO ServerAgentService and BMC or iLO.



- Click the component name which registered. Click <Check Connection> button, and check connection with NEC ESM PRO ServerAgentService and BMC or iLO.



3.3 Setting of Manager (SNMP)

It is necessary to set report means in "Report Setting" to report it from NEC ESMPRO ServerAgentService to NEC ESMPRO Manager after having rebooted a system. Refer to NEC ESMPRO ServerAgentService Users Guide for the setting method of other report means.

Note

Because Monitoring Service is not installed in Non-Service Mode, cannot set report means.

Tips

This setting is needed for the syslog monitoring system. Also, this setting is needed for the function which cooperate with other product, so be sure to set.

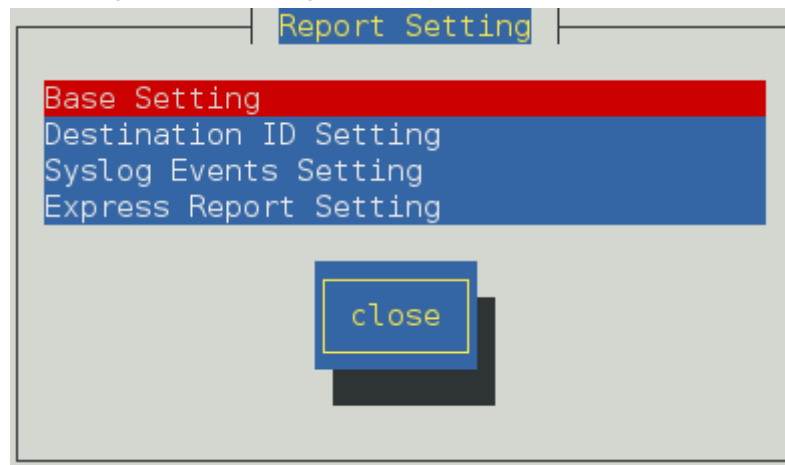
1. Log in to the system as the root user.
2. Run the following command to move to the directory where ESMamsadm is stored.

```
# cd /opt/nec/esmpo_sa/bin/
```

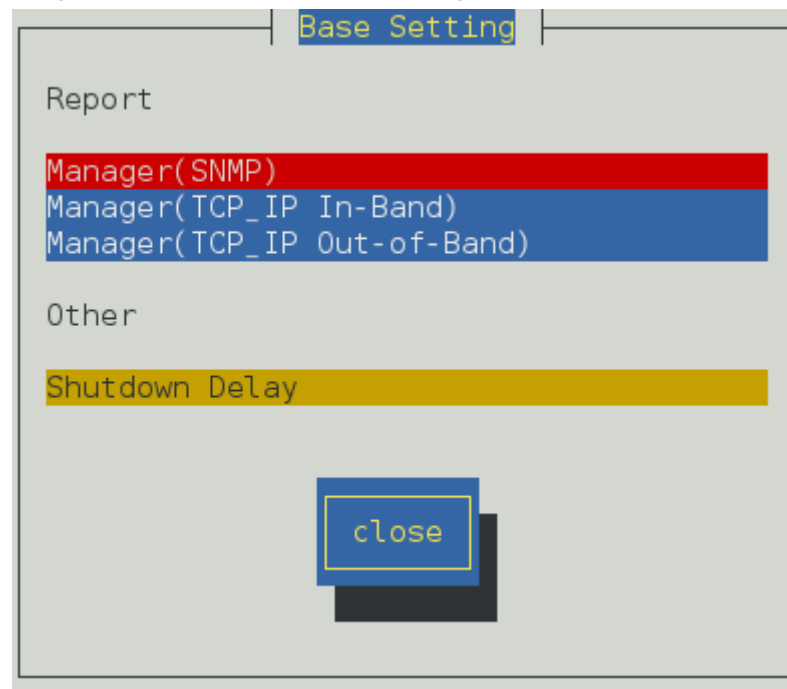
3. Run the following command to start Control Panel (ESMamsadm). [Report Setting] screen opens.

```
# ./ESMamsadm
```

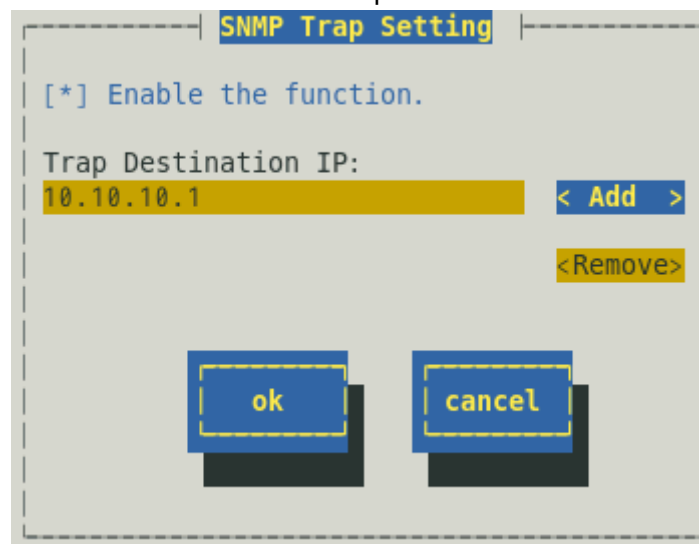
4. Select "Base Setting". [Base Setting] screen opens.



5. Select "Manager(SNMP)". [SNMP Trap Setting] screen opens.



6. Select "< Add >" and add IP address of "Trap Destination IP".



7. Select "ok", saved and [SNMP Trap Setting] screen closes.
8. Select "close", [Base Setting] screen closes.
9. Select "close", [Report Setting] screen closes.

3.4 Setting of Express Report Service

Refer to Express Report Service Setup Guide (Linux/VMware) stored away by EXPRESSBUILDER or Starter Pack, or following Web site for the setting method of the Express Report Service.

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

ESMPRO > Express Report Service (Linux)

Note

Because Monitoring Service is not installed in Non-Service Mode, cannot set to the Express Report Service.

Uninstallation

This chapter describes uninstallation of NEC ESMPRO ServerAgentService.

1. Uninstallation

This section describes how to uninstall NEC ESMPRO ServerAgentService.

1. Uninstallation

It explains a procedure to uninstall NEC ESMPRO ServerAgentService.

1. Log in to the system as the root user.
2. In case of workaround of openwsmand, uninstall esmsas_openwsman_weekly script.

```
# cd /opt/nec/esmpro_sa/tools/  
# sh ./esmsas_openwsman_weekly.sh -e
```

3. Run the following command to uninst all in order of next.
- In case of Service Mode.

```
# rpm -e Esmpro-Selsrv  
# rpm -e Esmpro-Expsrv  
# rpm -e Esmpro-Cmnsrv  
# rpm -e Esmpro-strgfs-Provider  
# rpm -e Esmpro-Provider  
# rpm -e esmrest      (iLO support model)
```

- In case of Non-Service Mode.

```
# rpm -e Esmpro-strgfs-Provider  
# rpm -e Esmpro-Provider
```

Tips

Execute the following commands, confirm which mode NEC ESMPRO ServerAgentService is installed with.

```
# rpm -qa | grep Esmpro-Cmnsrv
```

It is Service Mode when Esmpro-Cmnsrv package was displayed.

Esmpro-Cmnsrv-"Version Information"

4. Run the following command to restart the OS.

- In case of Red Hat Enterprise Linux 6

```
# reboot
```

- In case of Red Hat Enterprise Linux 7 and Oracle Linux 7

```
# systemctl reboot
```

With the above uninstallation of NEC ESMPRO ServerAgentService is completion.

Appendix

1. The contents which an installation script sets

This section describes about the installation script of NEC ESMPRO ServerAgentService.

2. About tools

This section describes about tools.

3. LICENSE

This section describes about the license of the software which NEC ESMPRO ServerAgentService uses.

1. The contents which an installation script sets

In the installation script of NEC ESMPRO ServerAgentService, execute the following setting.

1.1 Setting before the installation

The setting before the installation is as follows.

1.1.1 Setting of sblim-sfcb

In case of Red Hat Enterprise Linux 6, check that runlevel 3 and 5 of sblim-sfcb.

```
# /sbin/chkconfig --list sblim-sfcb
sblim-sfcb    0:off  1:off  2:off  3:off  4:off  5:off  6:off
```

- sblim-sfcb is not installed when sblim-sfcb is not displayed, do not change the setting of sblim-sfcb.

- In case of on, change the setting of sblim-sfcb, and stop sblim-sfcb.

```
# /sbin/chkconfig --level 35 sblim-sfcb off
# service sblim-sfcb stop
```

- In case of off, do not change the setting of sblim-sfcb.

In case of Red Hat Enterprise Linux 7 and Oracle Linux 7, check that enabled of sblim-sfcb.

```
# systemctl is-enabled sblim-sfcb.service
Enabled
```

- sblim-sfcb is not installed when "Failed to get unit file state for sblim-sfcb.service: No such file or directory" is displayed, do not change the setting of sblim-sfcb.

- In case of enabled, change the setting of sblim-sfcb, and stop sblim-sfcb.

```
# systemctl disable sblim-sfcb.service
rm '/etc/systemd/system/multi-user.target.wants/sblim-sfcb.service'
# systemctl stop sblim-sfcb.service
```

- In case of disabled, do not change the setting of sblim-sfcb.

1.1.2 Setting of sblim-sfcc

In case of Red Hat Enterprise Linux 6, create symbolic link of sblim-sfcc library.

```
# ln -s /usr/lib64/libcimcClientXML.so.0 /usr/lib64/libcimcClientXML.so
# ln -s /usr/lib64/libcimcclient.so.0 /usr/lib64/libcimcclient.so
# ln -s /usr/lib64/libcmpisfcc.so.1 /usr/lib64/libcmpisfcc.so
```


Tips

When a link is made, the following messages are displayed, but do not have any problem.

In: creating symbolic link `/usr/lib64/libcimClientXML.so': File exists

In: creating symbolic link `/usr/lib64/libcimclient.so': File exists

In: creating symbolic link `/usr/lib64/libcmpisfcc.so': File exists

1.1.3 Setting of openwsman.conf

Enable SSL access; enable (delete # of the head of a line) `ssl_port` in `[server]` of `/etc/openwsman/openwsman.conf`. The `cim_client_frontend` do not change from a default setting and assume it XML.

Before:

```
[server]
:
ipv4 = yes
ipv6 = yes

#ssl_port = 5986
:

[cim]
default_cim_namespace = root/cimv2

# set to SfcblLocal for local connection with sfcbl CIMOM running on same system
# cim_client_frontend = SfcblLocal
cim_client_frontend = XML
```

After:

```
[server]
:
ipv4 = yes
ipv6 = yes

ssl_port = 5986
:

[cim]
default_cim_namespace = root/cimv2

# set to SfcblLocal for local connection with sfcbl CIMOM running on same system
# cim_client_frontend = SfcblLocal
cim_client_frontend = XML
```

1.1.4 Setting of access.conf

Permission remote and local access to Common Information Model Object Manager (CIMOM). Edit `/etc/Pegasus/access.conf`.

Before:

```
#####  
#  
# Pegasus PAM Access Rules:  
# 1. The Remote host user access rule:  
#   By default, ONLY the pegasus user can use remote network HTTP/S  
#   service:  
#  
# -: ALL EXCEPT pegasus:wbemNetwork  
#  
#  
# 2. The Local host user access rule:  
#   By default, ONLY the pegasus and root users can use pegasus local  
#   HTTP/S service:  
#  
# -: ALL EXCEPT pegasus root:wbemLocal
```

After:

```
#####  
#  
# Pegasus PAM Access Rules:  
# 1. The Remote host user access rule:  
#   By default, ONLY the pegasus user can use remote network HTTP/S  
#   service:  
#  
# +: ALL :wbemNetwork  
#  
#  
# 2. The Local host user access rule:  
#   By default, ONLY the pegasus and root users can use pegasus local  
#   HTTP/S service:  
#  
# +: ALL :wbemLocal
```

1.1.5 Setting of CIM Server

Enable HTTP connection and remote access to CIM Server.

```
# /usr/sbin/cimconfig -p -s enableHttpConnection=true  
# /usr/sbin/cimconfig -p -s enableRemotePrivilegedUserAccess=true
```

1.1.6 Setting of tog-pegasus

In case of Red Hat Enterprise Linux 6, check that runlevel 3 and 5 of tog-pegasus.

```
# /sbin/chkconfig --list tog-pegasus  
tog-pegasus    0:off  1:off  2:off  3:off  4:off  5:off  6:off
```

- In case of on, do not change the setting of tog-pegasus. Restart the tog-pegasus.

```
# service tog-pegasus restart
```

- In case of off, change the setting of tog-pegasus, and start the tog-pegasus.

```
# /sbin/chkconfig --level 35 tog-pegasus on
# service tog-pegasus start
```

In case of Red Hat Enterprise Linux 7 and Oracle Linux 7, check that enabled of tog-pegasus.

```
# systemctl is-enabled tog-pegasus.service
enabled
```

- In case of enabled, do not change the setting of tog-pegasus. Restart the tog-pegasus.

```
# systemctl restart tog-pegasus.service
```

- In case of disabled, change the setting of tog-pegasus, and start the tog-pegasus.

```
# systemctl enable tog-pegasus.service
ln -s '/usr/lib/systemd/system/tog-pegasus.service'
'/etc/systemd/system/multi-user.target.wants/tog-pegasus.service'
# systemctl start tog-pegasus.service
```

1.1.7 Setting of rpcbind

In case of Red Hat Enterprise Linux 6, check that runlevel 3 and 5 of rpcbind.

```
# /sbin/chkconfig --list rpcbind
rpcbind      0:off  1:off  2:off  3:off  4:off  5:off  6:off
```

- In case of on, do not change the setting of rpcbind.
- In case of off, change the setting of rpcbind, and start rpcbind.

```
# /sbin/chkconfig --level 35 rpcbind on
# service rpcbind start
```

In case of Red Hat Enterprise Linux 7 and Oracle Linux 7, do not change the setting of rpcbind.

1.1.8 Setting of snmpd

In case of Red Hat Enterprise Linux 6, check that runlevel 3 and 5 of snmpd.

```
# /sbin/chkconfig --list snmpd
snmpd        0:off  1:off  2:off  3:off  4:off  5:off  6:off
```

- In case of on, do not change the setting of snmpd.
- In case of off, change the setting of snmpd, and start snmpd.

```
# /sbin/chkconfig --level 35 snmpd on
# service snmpd start
```

In case of Red Hat Enterprise Linux 7 and Oracle Linux 7, check that enabled of snmpd.

```
# systemctl is-enabled snmpd.service
Enabled
```

- In case of enabled, do not change the setting of snmpd.

- In case of disabled, change the setting of snmpd, and start snmpd.

```
# systemctl enable snmpd.service
ln -s '/usr/lib/systemd/system/snmpd.service' '/etc/systemd/system/multi-
user.target.wants/snmpd.service'
# systemctl start snmpd.service
```

1.1.9 Setting of ipmi

BMC support model only.

In case of Red Hat Enterprise Linux 6, check that runlevel 3 and 5 of ipmi.

```
# /sbin/chkconfig --list ipmi
ipmi          0:off  1:off  2:off  3:off  4:off  5:off  6:off
```

- In case of on, do not change the setting of ipmi.

- In case of off, change the setting of ipmi, and reboot.

```
# /sbin/chkconfig --level 35 ipmi on
# reboot
```

In case of Red Hat Enterprise Linux 7 and Oracle Linux 7, check that enabled of ipmi.

```
# systemctl is-enabled ipmi.service
Enabled
```

- In case of enabled, do not change the setting of ipmi.

- In case of disabled, change the setting of ipmi, and reboot.

```
# systemctl enable ipmi.service
ln -s '/usr/lib/systemd/system/ipmi.service' '/etc/systemd/system/multi-
user.target.wants/ipmi.service'
# systemctl reboot
```

1.1.10 Setting of "Linux_OperatingSystem" Class

In case of Red Hat Enterprise Linux 6, append "method" at the end of

"Linux_OperatingSystem" Class to allow NEC ESMPRO Manager to shutdown and reboot by remote control ("Linux_OperatingSystem" Class is in "/usr/share/sblim-cmpi-base/Linux_Base.registration")

Before:

```
# Classname Namespace ProviderName ProviderModule ProviderTypes ...
Linux_Processor root/cimv2 OSBase_ProcessorProvider cmpiOSBase_Processor...
Linux_UnixProcess root/cimv2 OSBase_UnixProcessProvider cmpiOSBase_UnixP...
Linux_ComputerSystem root/cimv2 OSBase_ComputerSystemProvider cmpiOSBase...
Linux_OperatingSystem root/cimv2 OSBase_OperatingSystemProvider
                        cmpiOSBase_OperatingSystemProvider instance ~~~~~
Linux_OperatingSystemStatisticalData root/cimv2 OSBase_OperatingSystemSt...
Linux_BaseBoard root/cimv2 OSBase_BaseBoardProvider cmpiOSBase_BaseBoard...
:
```

After:

```
# Classname Namespace ProviderName ProviderModule ProviderTypes ...
Linux_Processor root/cimv2 OSBase_ProcessorProvider cmpiOSBase_Processor...
Linux_UnixProcess root/cimv2 OSBase_UnixProcessProvider cmpiOSBase_UnixP...
Linux_ComputerSystem root/cimv2 OSBase_ComputerSystemProvider cmpiOSBase...
Linux_OperatingSystem root/cimv2 OSBase_OperatingSystemProvider
                        cmpiOSBase_OperatingSystemProvider instance method
Linux_OperatingSystemStatisticalData root/cimv2 OSBase_OperatingSystemSt...
Linux_BaseBoard root/cimv2 OSBase_BaseBoardProvider cmpiOSBase_BaseBoard...
:
```

1.1.11 Register with tog-pegasus

In case of Red Hat Enterprise Linux 6, re-register sblim-cmpi-base with tog-pegasus.

```
# cd /usr/share/sblim-cmpi-base
# ./provider-register.sh -t pegasus -n root/cimv2 -r Linux_Base.registration
-m Linux_Base.mof -d
# ./provider-register.sh -t pegasus -n root/cimv2 -r Linux_Base.registration
-m Linux_Base.mof
```

1.1.12 Setting of NetworkManager-wait-online.service

In case of Red Hat Enterprise Linux 7 and Oracle Linux 7, check that enabled of NetworkManager-wait-online.

```
# systemctl is-enabled NetworkManager-wait-online.service
enabled
```

- In case of enabled, do not change the setting of NetworkManager-wait-online.
- In case of disabled, change the setting of NetworkManager-wait-online, and start the NetworkManager-wait-online.

```
# systemctl enable NetworkManager-wait-online.service
ln -s '/usr/lib/systemd/system/ NetworkManager-wait-online.service'
'/etc/systemd/system/multi-user.target.wants/ NetworkManager-wait-
online.service'
# systemctl start NetworkManager-wait-online.service
```

1.1.13 Creating selfsigned certificate of openwsman

Tips

When there is a selfsigned certificate or a certificate signed in Certificate Authority, openwsman uses it as a certificate by appointing it in `ssl_cert_file` and `ssl_key_file` at [server] section of `/etc/openwsman/openwsman.conf`.

```
[server]
:
ssl_cert_file = /etc/openwsman/servercert.pem
ssl_key_file = /etc/openwsman/serverkey.pem
```

Note

`owsmangencert.sh` uses a random number to make a server certificate of openwsman. Execute `owsmangencert.sh`, but cancel it, and change `RANDFILE (/dev/random)` in `/etc/openwsman/ssleay.cnf` to `/dev/urandom` when it is not input "Country Name".

```
RANDFILE = /dev/urandom
```

Note

When you overwrite by a new selfsigned certificate, add "--force" to an argument.

```
# /etc/openwsman/owsmangencert.sh --force
```

Create selfsigned certificate of openwsman. When a certificate is stored, it do not make making (do not overwrite).

```
# /opt/nec/esmpro_sa/tools/esmsasgencert.sh
```

Tips

When it starts openwsmand without making a server certificate, the following messages are displayed.

```
FAILED: Starting openwsman server
There is no ssl server key available for openwsman server to use.
Please generate one with the following script and start the
openwsman service again:
```

```
#####
/etc/openwsman/owsmangencert.sh
=====
```

NOTE: The script uses `/dev/random` device for generating some random bits while generating the server key.

If this takes too long, you can replace the value of "RANDFILE" in `/etc/openwsman/ssleay.cnf` with

```
/dev/urandom. Please understand the implications of replacing  
the RNADFILE.
```

1.1.14 Setting of openwsmmand

In case of Red Hat Enterprise Linux 6, check that runlevel 3 and 5 of openwsmmand.

```
# /sbin/chkconfig --list openwsmmand  
openwsmmand    0:off  1:off  2:off  3:off  4:off  5:off  6:off
```

- In case of on, do not change the setting of openwsmmand.

- In case of off, change the setting of openwsmmand, and start openwsmmand.

```
# /sbin/chkconfig --level 35 openwsmmand on  
# service openwsmmand start
```

In case of Red Hat Enterprise Linux 7 and Oracle Linux 7, check that enabled of openwsmmand.

```
# systemctl is-enabled openwsmmand.service  
enabled
```

- In case of enabled, do not change the setting of openwsmmand.

- In case of disabled, change the setting of openwsmmand, and start openwsmmand.

```
# systemctl enable openwsmmand.service  
ln -s '/usr/lib/systemd/system/ openwsmmand.service'  
'/etc/systemd/system/multi-user.target.wants/ openwsmmand.service'  
# systemctl start openwsmmand.service
```

2. About tools

Log in by all means in root user to use the tool.

2.1 The obstacle information collection tool (collectsa.sh)

Functions

Collect the information of this server to investigate the problem that occurred in this server or NEC ESM PRO ServerAgentService.

Usage

The usage of collectsa.sh is as follows.

- 1) Log in to the system as the root user.
- 2) Move to any directory.
- 3) Execute collectsa.sh.

Input a password of root to gather the information of the CIM provider.

The password input into gathered information is not included.

```
# /opt/nec/esmpro_sa/tools/collectsa.sh -auth
```

Enter password for root :

collectsa.tgz is made in the current directory.

- 4) Contact us. According to the guidance in charge of us, provide collectsa.tgz.

When a problem occurs for movement of the obstacle information collection tool (collectsa.sh).

The case that the obstacle information collection tool (collectsa.sh) does not work definitely (not finished), you collect the information that has been collected, and, contact us.

- 1) Terminate collectsa.sh.

1-1) Press <Ctrl> and <C> key in a terminal execute collectsa.sh.

1-2) Check collectsa.sh was finished.

```
# ps aux | grep collectsa.sh |grep -v grep
```

For example, collectsa.sh is execute in a background when it is displayed as follows.

```
#root 11313 0.0 0.4 4196 1124 pts/0 T 14:46 0:00
```

```
/bin/bash ./collectsa.sh
```

1-3) When it is executing in a background, you terminate a process.

```
# kill -9 {pid}
```

```
[example] # kill -9 11313
```

- 2) Compress "collectsa" directory which was created in the current directory in tgz.

```
# tar czvf collectsa_dir.tgz collectsa/
```

- 3) Contact us. According to the guidance in charge of us, provide collectsa_dir.tgz.

2.2 Check for necessary packages tool (check_packages.sh)

Functions

Check the necessary packages of NEC ESMPRO ServerAgentService.

When the directory in which necessary packages was stocked can be prepared such as a mount does an OS installation medium, it's possible to install.

Usage

```
Log in to the system as the root user.
check_pkg/ follower is copied for /tmp follower by the following example.
# cp -ar {mount point}/../esmpro_sas/check_pkg/ /tmp
Move to the directory where check_packages.sh is stored.
# cd {The directory in check_packages.sh}
<In case of check for necessary packages>
# sh ./check_packages.sh
<In case of install for necessary packages>
# sh ./check_packages.sh -i {The directory in necessary packages}
```

The check_packages.sh is different in a stocked directory depending on the media used for installation.

In case of EXPRESSBUILDER: {revision}/lnx/pp/esmpro_sas/check_pkg/

In case of Starter pack : software/{revision}/lnx/pp/esmpro_sas/check_pkg/

In case of Utility Disk : tools/lnx/esmpro_sas/check_pkg/

In case of the ZIP file downloaded from a web site: check_pkg/

List of messages

Information

{package name} ({architecture}) package [{OK or NG}]

All packages are installed successfully.

Please install the package of [NG].

The package of [NG] will be installed.

Usage: {tool file name} [-i directory]

-i directory Install necessary packages those are not installed.

Directory is rpm packages's directory.

Error

ERROR: Install {package name} failed, please confirm {log file name} for detail information.

ERROR: Install perl packages failed, please confirm {log file name} for detail information.

ERROR: Not found {directory in necessary packages} directory.

ERROR: Not found {package name}

ERROR: The file {list file name} is not exist. So exit.

ERROR: This architecture is not supported. So exit.

ERROR: This kernel is not supported. So exit.

3. LICENSE

GNU LESSER GENERAL PUBLIC LICENSE(LGPL)

GNU GENERAL PUBLIC LICENSE

Version 2, June 1991

Copyright (C) 1989, 1991 Free Software Foundation, Inc.

59 Temple Place, Suite 330, Boston, MA 02111-1307 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 Library 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.

GNU GENERAL PUBLIC LICENSE

TERMS AND CONDITIONS FOR COPYING, DISTRIBUTION AND MODIFICATION

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.

NO WARRANTY

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., 59 Temple Place, Suite 330, Boston, MA 02111-1307 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 Library General
Public License instead of this License.

Net-SNMP

Various copyrights apply to this package, listed in various separate
parts below. Please make sure that you read all the parts.

---- Part 1: CMU/UCD copyright notice: (BSD like) ----

Copyright 1989, 1991, 1992 by Carnegie Mellon University

Derivative Work - 1996, 1998-2000

Copyright 1996, 1998-2000 The Regents of the University of California

All Rights Reserved

Permission to use, copy, modify and distribute this software and its

documentation for any purpose and without fee is hereby granted, provided that the above copyright notice appears in all copies and that both that copyright notice and this permission notice appear in supporting documentation, and that the name of CMU and The Regents of the University of California not be used in advertising or publicity pertaining to distribution of the software without specific written permission.

CMU AND THE REGENTS OF THE UNIVERSITY OF CALIFORNIA DISCLAIM ALL WARRANTIES WITH REGARD TO THIS SOFTWARE, INCLUDING ALL IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS. IN NO EVENT SHALL CMU OR THE REGENTS OF THE UNIVERSITY OF CALIFORNIA BE LIABLE FOR ANY SPECIAL, INDIRECT OR CONSEQUENTIAL DAMAGES OR ANY DAMAGES WHATSOEVER RESULTING FROM THE 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.

----- Part 2: Networks Associates Technology, Inc copyright notice (BSD) -----

-

Copyright (c) 2001-2003, Networks Associates Technology, 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 the Networks Associates Technology, Inc 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 HOLDERS 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.

----- Part 3: Cambridge Broadband Ltd. copyright notice (BSD) -----

Portions of this code are copyright (c) 2001-2003, Cambridge Broadband Ltd.
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.
- * The name of Cambridge Broadband Ltd. may not be used to endorse or
promote products derived from this software without specific prior
written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDER ``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 HOLDER 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.

---- Part 4: Sun Microsystems, Inc. copyright notice (BSD) ----

Copyright © 2003 Sun Microsystems, Inc., 4150 Network Circle, Santa Clara,
California 95054, U.S.A. All rights reserved.

Use is subject to license terms below.

This distribution may include materials developed by third parties.

Sun, Sun Microsystems, the Sun logo and Solaris are trademarks or registered
trademarks of Sun Microsystems, Inc. in the U.S. and other countries.

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 the Sun Microsystems, Inc. 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 HOLDERS 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.

----- Part 5: Sparta, Inc copyright notice (BSD) -----

Copyright (c) 2003-2009, Sparta, 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 Sparta, Inc 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 HOLDERS 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.

----- Part 6: Cisco/BUPTNIC copyright notice (BSD) -----

Copyright (c) 2004, Cisco, Inc and Information Network

Center of Beijing University of Posts and Telecommunications.
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 Cisco, Inc, Beijing University of Posts and
Telecommunications, nor the names of their 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 HOLDERS 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.

----- Part 7: Fabasoft R&D Software GmbH & Co KG copyright notice (BSD) -----

Copyright (c) Fabasoft R&D Software GmbH & Co KG, 2003
oss@fabasoft.com
Author: Bernhard Penz

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.
- * The name of Fabasoft R&D Software GmbH & Co KG or any of its subsidiaries,
brand or product names may not be used to endorse or promote products
derived from this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDER ``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 HOLDER 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.

---- Part 8: Apple Inc. copyright notice (BSD) ----

Copyright (c) 2007 Apple 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:

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 Apple Inc. ("Apple") 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 APPLE AND ITS 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 APPLE 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 OF THE POSSIBILITY OF SUCH DAMAGE.

---- Part 9: ScienceLogic, LLC copyright notice (BSD) ----

Copyright (c) 2009, ScienceLogic, LLC

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 ScienceLogic, LLC 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 HOLDERS 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.

MD5

```
/* Copyright (C) 1991-2, RSA Data Security, Inc. Created 1991. All
rights reserved.
```

License to copy and use this software is granted provided that it is identified as the "RSA Data Security, Inc. MD5 Message-Digest Algorithm" in all material mentioning or referencing this software or this function.

License is also granted to make and use derivative works provided that such works are identified as "derived from the RSA Data Security, Inc. MD5 Message-Digest Algorithm" in all material mentioning or referencing the derived work.

RSA Data Security, Inc. makes no representations concerning either the merchantability of this software or the suitability of this software for any particular purpose. It is provided "as is" without express or implied warranty of any kind.

These notices must be retained in any copies of any part of this documentation and/or software.

```
*/
```

Apache License

Apache License

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 [yyyy] [name of copyright owner]

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.

MIT License

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, 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.

BSD License : decorator

Copyright (c) 2005-2017, Michele Simionato
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 bytecode 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 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 HOLDERS 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.

Modified BSD License : jsonpatch, jsonpointer

Copyright (c) 2011 Stefan Kögl <stefan@skoegl.net>
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. The name of the author may not be used to endorse or promote products derived from this software without specific prior written permission.

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.

BSD License : packaging

Copyright (c) Donald Stufft and individual contributors.
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.

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 HOLDER 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.

BSD License : ply

Copyright (C) 2001-2017
David M. Beazley (Dabeaz LLC)
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 the David Beazley or Dabeaz LLC 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.

NEC ESMPRO ServerAgentService Ver.2.0
Installation Guide (Linux)

NEC Corporation
7-1 Shiba 5-Chome, Minato-Ku
Tokyo 108-8001, Japan

©NEC Corporation 2018

The contents of this manual may not be copied or altered without the prior written permission of NEC Corporation.