Samsung Wireless Enterprise Manager (WEM)

Installation Manual

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This manual should be read and used as a guideline for properly installing and operating the product. All reasonable care has been made to ensure that this document is accurate.

INTRODUCTION

Purpose

The Wireless Enterprise WLAN Manager (WEM) installation manual describes the basic software required to operate the WEM, management software, and the information required to install client.

Document Content and Organization

This manual consists of eight Chapters, two Annexes, and a list of Abbreviations. Summaries of each chapter are provided below.

CHAPTER 1. Before Installation

This chapter describes the basic details for the installation of the WEM.

CHAPTER 2. Installing Operating System

This chapter describes the establishment of the OS environments of the server required to run the WEM server.

CHAPTER 3. Installing WEM Server

This chapter describes the procedure for installing the WEM server.

CHAPTER 4. Upgrading WEM

This chapter describes the upgrading procedure for the WEM software.

CHAPTER 5. Operating WEM

This chapter describes the procedure for operating the WEM server.

CHAPTER 6. Connecting to WEM

This chapter describes the procedure for connecting to the WEM using the PC client.

CHAPTER 7. Checking WEM Operation

This chapter describes the procedure for checking whether the WEM has been installed normally.

CHAPTER 8. Configuring HTTPs

This chapter describes the process for creating a certificate for HTTP connections.

ANNEX A. First-Time Login

This annex describes the process for logging in to the WEM for the first time.

ANNEX B. Changing WEM IP Address

This annex describes the procedure for changing the IP address of the WEM.

Abbreviation

This chapter provides the definitions of the abbreviations used in this manual.

Conventions

The following types of paragraphs contain special information that must be carefully read and thoroughly understood. Such information may or may not be enclosed in a rectangular box, separating it from the main text, but is always preceded by an icon and/or a bold title.



CHECKPOINT

Provides the operator with checkpoints for stable system operation.



NOTE

Indicates additional information as a reference.

Console Screen Output

- The lined box with 'Courier New' font will be used to distinguish between the main content and console output screen text.
- **'Bold Courier New'** font will indicate the value entered by the operator on the console screen.

Revision History

V	ERSION	DATE OF ISSUE	REMARKS
	1.0	July 2015	North America Release Version

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CHAPTER 1. Before Installation

This chapter describes the hardware and software required to install the WEM.

1.1 Hardware and Software Requirements

1.1.1 Hardware

Any system that uses Red Hat Enterprise Linux can be used for the WEM server hardware. For the client hardware, regular PCs are used. In addition, laser printers can be used for message output.

The hardware of the WEM server and the client must meet the following minimum specifications.

Category	Specification
CPU	3.0 GHz (Intel Xeon processor) or higher is recommended
Main Memory	16 GB or higher is recommended
Hard Disk	300 GB or higher is recommended
Drive	DVD-ROM drive
Monitor	17-inch color monitor
LAN Card	10/100 Base-T (RJ-45 connector)

Server

Client

Category	Specification
CPU	3.0 GHz (Pentium IV processor) or higher
Main Memory	2 GB or higher
Hard Disk	100 GB or higher
Monitor	Color monitor with 1280 × 1024 resolution
LAN Card	10/100 Base-T (RJ-45 connector)



Hardware Requirements

The specifications outlined above are for a low-capacity WEM. For a mid-/highcapacity configuration, the hardware specifications are subject to change depending on the management capacity.

1.1.2 Software

For the WEM to operate normally, the following software environments must be established.

Server

Category	Software
Operating System	Linux (Red Hat Enterprise 5.5 or 6.3)
JSP/Servlet Engine	Tomcat 5.0.28
Database	MySQL Enterprise 5.5
JVM	JDK 1.7.0_55
Management Protocol	SNMP
Other Protocols	FTP, TELNET (SSH)

* The version of each software must be exactly same as specified.

Client

Category	Software
Operating System	Windows XP~Windows 7
Web Brower	Microsoft Internet Explorer version 8,9 and 10 is recommended
Media	Flash Player 11 Active X version or higher

* The version of each software must be exactly same as specified.

Installing software 1.2

The following programs are installed on the WEM server.

Software	Installation Directory	Ver.	ltem
Operating System	-	Red Hat Enterprise	Refer to the item for Operating
MySQL	/db/mysql/app	5.5	Included in the installation package, license must be purchased seperately.
JDK	/usr/jdk1.7.0_55	1.7.0_55	Included in the installation package.
Tomcat	/usr/local/tomcat	5.0.28	Included in the installation package.
WEM Server	/home	-	Included in the installation package.



Precautions when Installing the Operating System

- Check the version.

CHECK

- Verify the hardware specifications and the operation system version before installing the WEM server. Red Hat Enterprise Linux ES release 5.5 or higher is recommended for the server's Operating System.
- Do not install the MySQL, JAVA, and WEB servers. Since the MySQL, JAVA, and WEB servers are provided by the WEB installation package by default, do not install other versions of MySQL, JAVA, and WEB servers included in Linux.
- Install the FTP and Telnet (SSH) servers. The WEM collects statistics data from the management object device using the FTP protocol (mandatory). Installing the Telnet or SSH server helps facilitate remote management (recommended).

CHAPTER 2. Installing Operating System

This chapter describes the precautions that need to be taken when installing the Operation System of the WEM server and when establishing the environments required for WEM server operation.

2.1 Installing Linux

This description is based on Red Hat Enterprise Linux 6. For steps not specified in this manual, the default settings may be used.

 Insert the Linux installation DVD into the DVD-ROM drive and start the server. The following window will appear; select 'Install or upgrade an existing system' to proceed.



2) Click the [Skip] button in the 'Disc Found' window. (If you click the [OK] button, the DVD test will start.)

Welcome to Red Hat En	terprise Linux for x86_64
	To begin testing the media before installation press OK. Choose Skip to skip the media test and start the installation.
<tab>/<alt-tab> bet</alt-tab></tab>	ween elements <space> selects <f12> next screen</f12></space>

 After selecting the language, keyboard, and storage device, the 'Hostname' input window appears as shown below. <u>Important: You must enter the hostname as</u> <u>'ENTNMS'</u>.

In addition, click the [Network Settings] button below to configure the IP address settings. (Even if you skip the configuration in this step, you can configure the IP address settings after the installation is complete.)

Please name this computer. The hostname identifies the computer on a network.
Hostname: ENTNMS
Configure Network
▲ Back ▶ Next

- 4) After specifying the city, specify a password for the root account. Then, you can specify the disk partition on the screen, as shown below. After checking the 'Review and modify partitioning layout (V)' checkbox, partition the disk according to the ratios shown below using the [Create] and [Edit (E)] buttons.
 - · /boot: 200 MB (If already specified, you may use the specified size).
 - /swap: Twice the size of the total memory is recommended.
 - /: 25 %
 - /home: 35 %
 - /db: 40 %

Which typ	e of installation would you like?		
•	Use All Space Removes all partitions on the selected device(s). This includes partitions created by other operating systems.		
	Tip: This option will remove data from the selected device(s). Make sure you have backups.		
0	Replace Existing Linux System(s) Removes only Linux partitions (created from a previous Linux installation). This does not remove other partitions you may have on your storage device(s) (such as VFAT or FAT32).		
	Tip: This option will remove data from the selected device(s). Make sure you have backups.		
0 [05]	Shrink Current System Shrinks existing partitions to create free space for the default layout.		
0 1	Use Free Space Retains your current data and partitions and uses only the unpartitioned space on the selected device (s), assuming you have enough free space available.		
° ?	Create Custom Layout Manually create your own custom layout on the selected device(s) using our partitioning tool.		
☐ Encrypt system ☑ Review and modify partitioning layout			
	◆ <u>B</u> ack ▶ <u>N</u> ext		

Device	Size (MB)	Mount Point/ RAID/Volume	Туре	Format		
7 LVM Volume Groups						
vg_entnms	476436					
lv_root	119112	/	ext4	\checkmark		
lv_swap	3904		swap	\checkmark		
LogVol03	186664	/db	ext4	\checkmark		
lv_home	166756	/home	ext4	\checkmark		
Hard Drives						
∽ sda (/dev/sda)						
sdal	500	/boot	ext4	\checkmark		
sda2	476439	vg_entnms	physical volume (LVM)	\checkmark		
					<u>C</u>reate	Delete Rese

When you double-click an item or click on the [Edit (E)] bottom, a window opens, as shown below. After checking 'Mount Point (M)', enter a size into the 'Size (MB) (S)' field by referring to the disk ratios.

	Edit LVM V	olum	ne Grou	ıp: vg_en	tnms				
<u>V</u> olume Group	Name:	vg_e	entnms						
Physical Extent		4 M	В						\$
		v :	sda2	476436.0	00 MB				
Physical Volum	Edit Lo	gica	l Volun	ne: lv_roo	t				
r nysicar volam	<u>M</u> ount Point:		/			~			
Used Cases	<u>F</u> ile System Type:		ext4			\$			
Free Space:	<u>L</u> ogical Volume Na	ame:	lv_root	t					
Logical Volu	<u>S</u> ize (MB):		11911	.2					
Logical Volu	<u>Encrypt</u>		(Max si	ze is 5120	0 MB)				
lv_root			<u>C</u> ar	ncel	<u>о</u> к			Add	
lv_home	monie		12155	2]	<u>E</u> dit	
lv_swap			3904					Delete	
					<u>C</u> and	el		<u>0</u> K	

	Edit LVM V	olum	e Gro	up: vg_en	tnms		
<u>V</u> olume Group	Name:	vg_e	entnms				
<u>P</u> hysical Exten	t:	4 M	В				\$
		✓ 9	sda2	476436.	00 MB		
Physical Volum	Edit Log	gical	Volun	1e: lv_hon	ne		
r nysicar voian	<u>M</u> ount Point:		/home			~	
Lised Space	<u>F</u> ile System Type:		ext4			\$	
Free Space:	Logical Volume Na	ame:	[lv_hor	ne			
Logical Volu	<u>S</u> ize (MB):		16675	56			
Logical Volu	🗆 <u>E</u> ncrypt		(Max s	ize is 4213	32 MB)	
lv_root			<u>C</u> a	ncel	<u>0</u> K		Add
lv_home			1210	·			<u>E</u> dit
lv_swap			3904				Delete

	Edit LVM Vol	lume Group: vg_er	ntnms	
Volume Group	Name: v	/g_entnms		
<u>P</u> hysical Exten	t: 4	4 MB		\$
	6	✔ sda2 476436.	.00 MB	
Physical Volum	Make	e Logical Volume		
Filysical volum	<u>M</u> ount Point:	/db	~	
Lised Space	<u>F</u> ile System Type:	ext4	\$	
Free Space:	Logical Volume Nan	me: LogVol03		
Logical Volu	<u>S</u> ize (MB):	186664		
Logical Volu	<u>Encrypt</u>	(Max size is 1866	564 MB)	
lv_root		Cancel	<u>о</u> к	Add
lv_swap	18/75	5501		Edit
lv_home	/home	166756		Delete
		(<u>C</u> ancel	<u>о</u> к

5) Select the type of Linux you want to install. Select 'Basic Server' and 'Red Hat Enterprise Linux' and then select the 'Customize now (C)' item as shown below to install the required software.

Basic Server				
Database Server				
Web Server				
Identity Management Server				
Virtualization Host				
Deskton				
Software Development Workstation				
Minimal				
see select any additional repositories that yo	u want to use for software installatio	n.		
ase select any additional repositories that yo High Availability	u want to use for software installatio	n.		
ase select any additional repositories that yo High Availability Lad Balancer	u want to use for software installatio	n.		
ase select any additional repositories that yo High Availability Load Balancer Berl Hat Enterprise Linuy	u want to use for software installatio	n.		
ase select any additional repositories that yo High Availability Load Balancer Red Hat Enterprise Linux	u want to use for software installatio	n.		
ase select any additional repositories that yo High Availability Load Balancer Red Hat Enterprise Linux	u want to use for software installatio	n.		
ase select any additional repositories that yo High Availability Load Balancer Red Hat Enterprise Linux	u want to use for software installatio	n.		
ase select any additional repositories that yo High Availability Load Balancer Red Hat Enterprise Linux Additional software repositories add additional software the software selection pagement annication	u want to use for software installatio	n.		
ase select any additional repositories that yo High Availability Load Balancer Red Hat Enterprise Linux Baldi additional software repositories can further customize the software selection nagement application.	u want to use for software installatio	n.		

6) Select and install the FTP server, Telnet server, and other required environments. Items that cannot be installed in this stage may be installed later using the 'Software add/delete' feature.



- Development \rightarrow Development Tools \rightarrow Select 'gcc'

Base System	🚾 🗆 Backup Server
Servers	💮 🗆 CIFS file server
Web Services	Provide the server and the server an
Databases	🖉 🗆 E-mail server
System Management	■ FTP server
Virtualization	💮 🗆 Identity Management Server
Desktops	How I have a server
Applications	🖶 🗆 Network Infrastructure Server
Languages	🖶 🗆 Network Storage Server
Languages	Print Server
	Image: Server Platform
	🚯 🗆 System administration tools
Allows the system to act as an FTP server.	
	Optional packages selected: 0 of 1
	Optional packages

7) The 'Create User' window is depicted below. Create a user account if necessary.

Welcome License Information Set Up Software Updates > Create User Date and Time Kdump	State User You must create a 'username' for regular (non-administrative) use of your system. To create a system 'username', please provide the information requested below. Username:
	If you need to use network authentication, such as Kerberos or NIS, please click the Use Network Login button. Use Network Login If you need more control when creating the user (specifying home directory, and/or UID), please click the Advanced button. Advanced
	Back Eorward

CHAPTER 3. Installing WEM Server

This chapter describes the procedure for installing the WEM server. (WEM v3.1.3 or higher).

Installation in a remote access environment (such as Telnet or SSH) is also possible.

3.1 Copying WEM Package

Create a WEM server account.

- 1) Log in with the root account in the Linux server console terminal.
- 2) Copy the package and license file from the CD using the following command. The version of the WEM can be different.

```
# cp /media/xxxx/WEM_v3.1.3_install.zip /root/← Copy the WEM package
file.
# unzip WEM_v3.1.3_install.zip
# cd Linux
# chmod +x *
# chmod +x *
# cp ActivationKey.key /root/ ← Copy the license file.
The file name must be 'ActivationKey.key'. (after v2.0)
```

 If you want to configure WEM Environment and install the WEM package, you can execute the below command. If not, please refer to '3.2 Configuring WEM Environment', '3.3 Installing Package'.

```
# cd /root/Linux
# ./install.sh
```

3.2 Configuring WEM Environment

- 1) Log in with the root account to the WEM server.
- 2) Start the Configuring WEM Environment with below command.

```
# cd /root/Linux
# install.sh env
```

3) Input the three values as follow: IP, gateway, subnet-MASK

```
Enter a ip-address: (input your IP)
Enter a gateway-address: (input your gateway)
Enter a subnet-MASK: (input your subnet-MASK)
```

4) If three values is entered correctly, preferences in the following order is automatically performed.

- Stop NetworkManager service
- Set the IP-address, hostname
- firewall set to disable
- set the ftp, telnet
- xinetd service restart
- pre-Installed MySQL package delete



Precautions when Configuring WEM Environment

- IP input is available in Ipv4.
- CHECK
- Check the Network Interface Name. It can check with "# ifconfig" command.

When setting the IP-address, it use the first in the set of network interface with names beginning with "e".(ex. eth0, eth1, em0, em1, ...)

If your WEM server have other network interface name, it is recommended that you don't use this script.

3.3 Installing WEM Package

1) Log in with the root account to the WEM server.

2) Start the Installing WEM Package with below command.

cd /root/Linux
install.sh wem

3) Install process is performed automatically as	follow.
>> Making account (entnms, mysql)	[1/12]
>> Installing JDK	[2/12]
>> Installing cronolog	[3/12]
>> Installing tomcat	[4/12]"
>> Installing lz4	[5/12]
>> Installing WEM	[6/12]
>> Copying MySQL	[7/12]
>> Installing MySQL	[8/12]
>> Making ID for MySQL	[9/12]
>> Making database	[10/12]
>> Starting tomcat	[11/12]
>> Starting WEM	[12/12]

(There are WEM auto-start feature is included in the 12th step.)

If the installation is not proceed in the 12th step with below log, please enter "Ctrl + C".

```
>> Starting WEM .....
[12/12]
WEM will be started. plz wait...
EMS system started.
_____
entnms 10208 1 21 10:08 ? 00:00:03 launcher
_____
entnms 10251 10208 37 10:08 ?
                                                     00:00:02 us
 _____

      entnms
      10396
      10208
      44
      10:08
      ?
      00:00:02
      mf.cm

      entnms
      10436
      10208
      49
      10:08
      ?
      00:00:02
      mf.dbld

      entnms
      10323
      10208
      32
      10:08
      ?
      00:00:02
      mf.fm

      entnms
      10279
      10208
      46
      10:08
      ?
      00:00:03
      mf.gm

      entnms
      10364
      10208
      48
      10:08
      ?
      00:00:02
      mf.report

      entnms
      10489
      10208
      51
      10:08
      ?
      00:00:02
      mf.report

      entnms
      10523
      10208
      46
      10:08
      ?
      00:00:01
      mf.spectrum

entnms 10624 10208 35 10:08 ? 00:00:00 mf.spot
entnms 10591 10208 47 10:08 ?
                                                    00:00:01 mf.vqm
_____
entnms 10549 10208 52 10:08 ?
                                                    00:00:02 ni.snmp
_____
WEM license file is already exist in "/root".
```

```
letter.version=Ver.3.1.5.R
Press "Ctrl + c" ~~!!
```

4) If you see the below log, WEM installation is finished.

5) Enable FTP server manually.

```
#service vsftpd status <-to check the running status
#chkconfig vsftpd on <-to start ftp at boot
#service vsftpd start <-to start ftp service</pre>
```



- Configuring the WEM environment and installing WEM package is save the log with below path in the WEM server. /tmp/wem_install.log: WEM package installation log

/tmp/wem_envConfig.log: WEM environment configuration log

3.4 E-mail Configuration and WEM host Configuration (Optional)

For the e-mail transmission function to work in case of an alarm occurrence, the e-mail settings must be configured on the server.

After logging in with the root account, open the '/etc/hosts' file and add the IP address and host name of the server you want to use as the e-mail server.

```
# su - root
# vi /etc/hosts
# Do not remove the following line, or various programs
# that require network functionality will fail.
127.0.0.1 localhost
xxx.xxx.xxx ENTNMS ENTNMS. loghost ← WEM IP and hostname
xxx.xxx.xxx.xxx mailServer ← E-mail server IP address and
hostname
→ Ensure that localhost is placed at the beginning of all the aliases
of 127.0.0.1.
```

Open the '\$NMS_HOME/data/properties/project-resources.properties' file and modify the host name of the e-mail server. At this point, the host name must be identical to the host name of the e-mail server set in the '/etc/hosts' file.

```
# vi $NMS_HOME/data/properties/project-resources.properties
fm.tt.email.host=mailServer
```

Reboot the server when the host file configuration is complete.

CHAPTER 4. Upgrading WEM

This chapter describes the procedure for upgrading the operating WEM to a higher version. The upgrade package is different from the new installation package, so make sure to check the package file before upgrading.

1) Log in with the entrms account and copy the package file for the upgrade. (Assume that the package file is on a USB memory stick.)

cp /media/disk/v3.1.8.R.tar.gz /home/entnms/

2) Stop the WEM server and back up the existing directory, and then install the upgrade package.

```
# EMS stop
license file to the current directory. (Only the first time.)
# mv wem wem yymmdd
                                  ← Back up the existing
WEM directory
# tar -xvfz v3.1.8.R.tar.gz
                                  ← Install the upgrade
file.
# cp ActivationKey.key /home/wem/data/license/ <->
    Restore the license
file.
file used in the RF map.
# cd /home/wem/dbschema
# ./patch_db_wem_3_1_8_R.sh
                                  ← Run a DB patch file
whose version is higher than the current one. If there is none, skip
this step.
```

3) Run the WEM server.

EMS start

CHAPTER 5. Operating WEM

This chapter describes the procedure for running the WEM server after rebooting. You can set and operate the WEM server in one of two modes: automatic running and manual running.

5.1 Manual Running

After booting the WEM server, the user runs the applications in the following order: MySQL \rightarrow Tomcat \rightarrow WEM.

1) Log in with the MySQL account and run the database daemon.

```
# su - mysql
Passwd : ******
$ app/support-files/mysql.server start
```

2) Log in with the root account and run Tomcat.

```
$ su -
passwd : *****
# cd /usr/local/tomcat/bin/
# ./startup.sh
```

3) Log in with the entrms account and run the Web server.

```
$ su - entnms
passwd : *****
# EMS start
```

4) When shutting down the server, make sure to shut down the server only after executing EMS stop. If the server is shut down while DB tasks are being performed, the DB table can be damaged.

```
$ su - entnms
passwd : *****
# EMS stop
```

5.2 Automatic Running (Preferred)

When the WEM server is booted, the procedure required to operate the WEM is executed automatically, without any additional configuration by the operator. The following procedure needs to be executed only once.

1) Log in with the root account and execute the script.

```
$ su -
passwd : *****
# ./auto_start.sh
```

2) When shutting down the server, make sure to shut down the server only after executing the command below.

```
$ su -
passwd : *****
# service wemd stop
```

CHAPTER 6. Connecting to WEM

This chapter describes the procedure for connecting to the WEB from the client.

The WEM program provides a Web-based Graphic User Interface (GUI). The operator can conveniently manage the WEB management program using Microsoft Internet Explorer; JAVA and Flash Player of Adobe must be installed for this operation.

6.1 Java Installation

Java that should be installed to the client PC for WEM operation can be downloaded from WEM. WEM currently supports Java 6 only. Java 7 will be supported from WEM V2.0. Since Java tends to have version compatibility issues, it is strongly recommended to download Java from WEM server in order to use WEM without any problem.

Execute Internet Explorer and enter WEM URL to open the login window.
 Click on the 'here' at the bottom of the login window to open the WEM Helper page window.

	MEMORACION Men accessione anno anno anno Anno accessione accessione anno Menoracione accessione accessione Menoracione accessione accessione Accessione accessione			- 444.355 - 445.355 - 446.3555
UTL 24 28 10 28	AND DESCRIPTION OF THE OWNER			
				\$
San	nsung Wl	LAN Ma	nager	
San User ID	nsung Wl	LAN Ma		id
User ID Password	nsung Wl	LAN Ma	nager	id
User ID Password Language	nsung Wl	LAN Ma	Save user	id

🧉 Helpe	r page - Windows Internet Explorer		
		Client uses IRE/inva suptime environment) to display window	-
	Download JRE 1.7.0_25	If your PC doesn't install JRE, please install JRE.	_
		JRE uses windows fonts.	-
	Install badfonts.txt	Some corrupted fonts cause JRE error. badfonts.txt prevent these error.	

Figure 2. JRE File Download Window

3) Click on the 'Download JRE 1.7.0.55' and install Java.

4) If error occurs (e.g., fonts garbled) due to compatibility issue with window fonts, fix the error by clicking on the 'Install adfont.txt'. (Generally it does not need to be executed.)

5) If the network uses firewall or redundant equipment, or WEM connection does not proceed from the figure below due to security issues, change Java Security setting in Java Control Panel.



Best viewed with Microsoft Explorer 8.0 and 1280 * 1024 resolution.

Figure 3. WEM Connection in Progress

6.2 Flash Player Installation

Flash Player that should be additionally installed to the client PC for WEM operation can be downloaded from <u>http://get.adobe.com/kr/flashplayer</u>.

Since Flash Player seldom has version compatibility issue, install version 11 or above.

6.3 Java Settings

If WEM connection does not continue or the connection is slow, change the Java and Explorer settings as follows.

6.3.1 Java Network Settings

Go to program page of window control panel. Open Java control panel by clicking on the Java icon and select 'general' window.

1) If the WEM server and the operator PC are on the same network, select 'Direc t connection' as shown below.

Network Settings
Network Proxy Settings
Use direct connection,
O <u>Use browser settings</u>
© Use <u>p</u> roxy server
Address: Port: Advanced
Bypass proxy server for local addresses
Use automatic proxy configuration script
Script location:
Oirect connection
OK Cancel

Figure 4. Java Network Settings Window

2) If the WEM server and the operator PC are on different networks (e.g., connect ion via proxy), select 'Use browser settings' or 'Use proxy server'.

6.3.2 Java Temporary Internet Files Settings

If some screens (such as Tree screen on the left of WEM) of the WEM connection screen are not displayed properly, change Java temporary files settings by unchecking the box that says 'Keep temporary files on my computer' as shown below.

Temporary Files Settings
Experimentary files on my computer.
Location
Select the location where temporary files are kept:
pData\LocalLow\Sun\Java\Deployment\cache Change
Disk Space Select the compression level for JAR files: None Set the amount of disk space for storing temporary files: 1000 MB
Delete Files Restore Defaults OK Cancel

Figure 5. Java Temporary Files Settings Window

6.3.3 Java Security Settings

For Security reasons, change security levels to middle (bottom of slide bar) in security tab.

🛃 Java Control Panel	
General Update Jav	a Security Advanced
🔽 Enable Java conte	nt in the browser
Security Level	
	- Very High
	- High (minimum recommended)
	📥 Medium
Least secure setting presenting a security	 All Java applications will be allowed to run after prompt,
	<u>M</u> anage Certificates
	OK Cancel Apply

Figure 6. Java Security Settings Window

6.3.4 Java Advenced Settings

If your client PC was not connected to Internet, Change check "Perform certificate revocation check on " to Do not check.

ſ	🛃 Java Control Panel
	General Update Java Security Advanced
	Enable - hide warning and run with protections
	Enable - hide warning and don't run untrusted code
	Disable verification (not recommended)
	Perform certificate revocation checks on
l	Publisher's certificate only
	All certificates in the chain of trust
	O not check (not recommended)
	Check for certificate revocation using
	Certificate Revocation Lists (CRLs)
	Online Certificate Status Protocol (UCSP) Online Certificate Status Protocol (UCSP)
	Adversed Security Settings
	Auvanceu Security Settings
	Finable blacklist revocation check
	Inable blacking revocation check In the provide the providet the
	Use SSL 2.0 compatible ClientHello format
	Vise SSL 3.0
	Use TLS 1,0
	Use TLS 1,1
	OK Cancel Apply

Figure 7. Java Advanced Settings Window

CHAPTER 7. Checking WEM Operation

This chapter describes the procedure for checking whether the WEM has been installed normally.

7.1 Checking WEB Server

Type the following URL into the browser and verify that the project initial window appears. If the window appears, this indicates that Tomcat installation has been successfully completed.



Message:							
Manager							
List Applications		HTML Manager H	lelp	Manage	er Help		Server Status
Applications	21						
Path	Display N	ame	Running	Sessions		Comm	hands
1	Welcome	to Tomcat	true	<u>0</u>	Start St	op <u>Reload</u>	Undeploy
<u>/admin</u>	Tomcat A	dministration Application	true	<u>0</u>	Start St	op <u>Reload</u>	<u>Undeploy</u>
/balancer			true	<u>0</u>	Start St	op <u>Reload</u>	<u>Undeploy</u>
/entnms			false	<u>0</u>	Start St	op Reload	Undeploy
/jsp-examples	JSP 2.0 E	xamples	true	<u>0</u>	Start St	op <u>Reload</u>	<u>Undeploy</u>
/manager	Tomcat M	anager Application	true	<u>0</u>	Start St	op Reload	Undeploy
/servlets-examples	Servlet 2.4	Examples	true	0	Start St	op <u>Reload</u>	<u>Undeploy</u>
/tomcat-docs	Tomcat D	ocumentation	true	<u>0</u>	Start St	op Reload	Undeploy
/webdav	Webdav C	ontent Management	true	<u>0</u>	Start St	op <u>Reload</u>	<u>Undeploy</u>

Click 'Tomcat Manager' in the window and enter the password (tomcat/tomcat) to go to the window below. Click on 'Start' in the Commands item of '/entnms' to start the WEB server.

Message:	OK				
Manager					
			1	 	

List Applications	HTML Manager Help	Manager Help	Server Status
-------------------	-------------------	--------------	---------------

Applications								
Path	Display Name	Running	Sessions	Commands				
L	Welcome to Tomcat	true	<u>0</u>	Start Stop Reload Undeploy				
<u>/admin</u>	Tomcat Administration Application	true	<u>0</u>	Start Stop Reload Undeploy				
/balancer		true	<u>0</u>	Start Stop Reload Undeploy				
/entnms		false	<u>0</u>	Start Stop Reload Undeploy				
/jsp-examples	JSP 2.0 Examples	true	<u>0</u>	Start <u>Stop Reload</u> <u>Undeploy</u>				
/manager	Tomcat Manager Application	true	<u>0</u>	Start Stop Reload Undeploy				
/servlets-examples	Servlet 2.4 Examples	true	<u>0</u>	Start Stop Reload Undeploy				
/tomcat-docs	Tomcat Documentation	true	<u>0</u>	Start Stop Reload Undeploy				
/webdav	Webdav Content Management	true	<u>0</u>	Start Stop Reload Undeploy				

7.2 Checking Process

Log in with the entrms account to the terminal and check the status of the WEM process.

# PS	← Ca	apital				
entnms	4214	1 () S	Sep24 ?		00:00:25 java -Dproc.name=launcher
entnms	4261	4214	0	Sep24	?	00:04:57 java -Dproc.name=us
entnms	4367	4214	0	Sep24	?	00:16:44 java -Dproc.name=mf.pm
entnms	4288	4214	0	Sep24	?	00:13:49 java -Dproc.name=mf.gm
entnms	4324	4214	0	Sep24	?	00:00:23 java -Dproc.name=mf.fm
entnms	4412	4214	0	Sep24	?	00:00:20 java -Dproc.name=mf.cm
entnms	4461	4214	0	Sep24	?	00:02:31 java -Dproc.name=mf.dbld
entnms	4494	4214	0	Sep24	?	00:00:14 java -
Dproc.nam	me=mf.	report				
entnms	4550	4214	0	Sep24	?	00:00:14 java -
Dproc.nam	me=mf.	spectr	um			
entnms	4620	4214	0	Sep24	?	00:00:19 java -Dproc.name=mf.vqm
entnms	4587	4214	0	Sep24	?	00:00:37 java -Dproc.name=ni.snmp

7.3 Check Trap Server and Data Server Settings

After logging in to the WEB:

1) Check if the trap server of the device is configured as the WEM IP address in Configuration \rightarrow APC/Switch \rightarrow SNMP \rightarrow Trap.

Samsung	Monitor Conf	iguration Admin	Tools (General Secu	urity Help
wireless Enterprise	Settings License				
P ahnmin [group01] Logout	Critical 9 Major (1164 Minor 0			
	Topology Controller				
WEM 👻					
AP_Team	General SNNP DHCP	Alarm Server	QoS Security	y ACL WLAN	Radio Interfa
Bapcon 🕨	Compunity Trap				
🗁 SIT 🔹					
APC_194	Community				
APC_251	COMMUNITY NAME	ACCESS TYPE	IP VERSION	IPv4 ADDRESS	
APC_252	public	Read Only	IPv4	0.0.0.0	00:000:000
Field_10_64_2_26	private	Read Write	IPv4	0.0.0.0	0000:0000:000
Field_10_64_2_27	dd	Read Only	IPv4	0.0.0.0	0000:0000:00
General 249					
poe 226					
poe 250					
STT Cluster >	User				
Temp Cluster	NAME	ACCESS TYPE	E AU	TH PROTOCOL	AUTH KEY
WooSiNam	test	Read Only		MD5	2141

2) Check if the data 'Server IP Address' of the device is configured as the WEM IP address in Admin \rightarrow Data Server.

Samsung	Monitor	Configuration	n Admin	Tools	General	Security	Help
Wireless Enterprise	Settings	License					
စို ahnmin ၊ [group01] Logout	Critical 9	Major 1165 N	Ainor 0				
Topology Controller Settings							
Alarm Control Alarm Filter Data Se	rver						
DATA TRANSFER	🔵 Disabl	e					
DATA SERVER WEM	Other	Server					

				Save								
Data S	Data Server Information											
	CONTROLLER NAME	CONTROLLER IP ADDRESS	STATUS	SERVER DIRECTORY PA	SERVER IP ADDRESS	USER NA						
	AP_Team	10.251.193.115	Enable	wem/var/ftp	10.251.191.246	entnm						
	APC_251	10.251.191.251	Enable	wem/var/ftp	10.251.191.246	entnm						
	Field_10_64_2_26	10.64.2.26	Enable	wem/var/ftp	10.251.191.246	entnm						
	autotest_name	10.251.191.228	Enable	0	0.0.0.0	0						
	Field_10_64_2_27	10.64.2.27	Enable	wem/var/ftp	10.251.191.246	entnm						
	APC_252	10.251.191.252	Enable	wem/var/ftp	10.251.191.246	entnm						

7.4 Checking Dashboard

Open Monitoring \rightarrow Dashboard and check if each item is displayed appropriately. The values on the dashboard are calculated based on statistics data; therefore, this is a check for whether the controller forwards statistics data accurately.

CHAPTER 8. Configuring HTTPs

This chapter describes the process for creating a certificate for HTTP connections.

1) Log in with the entrms account and execute 'makeEmsServerKey.sh'.

```
# ./makeEmsServerKey.sh
\rightarrow clean old keystore and certificate file for server
\rightarrow Creating pkcs12 keystore and certificate file for server
\rightarrow Creating a private key and certificate request for our CA
Generating a 1024 bit RSA private key
.....++++++
.....++++++
writing new private key to 'server.key'
You are about to be asked to enter information that will be
incorporated
into your certificate request.
What you are about to enter is what is called a Distinguished Name or
a DN.
There are quite a few fields but you can leave some blank
For some fields there will be a default value,
If you enter '.', the field will be left blank.
____
Country Name (2 letter code) [AU]:KR
State or Province Name (full name) [Some-State]:GYEONGGI
Locality Name (eg, city) []:SUWON
Organization Name (eg, company) [Internet Widgits Pty Ltd]:SAMSUNG
Organizational Unit Name (eg, section) []:127.0.0.1
Common Name (eg, your name or your server's hostname) []:ENTNMS
Email Address []:someone@samsung.com
Please enter the following 'extra' attributes
to be sent with your certificate request
A challenge password []:changeit
An optional company name []: </ (Enter)
→ Create a CA's self-signed certificate
Signature ok
subject=/C=KR/ST=GYEONGGI/L=SUWON/O=SAMSUNG/OU=127.0.0.1/CN=ENTNMS/ema
ilAddress=someone@samsung.com
Getting Private key
```

```
\rightarrow Import the CA certificate into the JDK certificate authorities
Owner: EMAILADDRESS=someone@samsung.com, CN=ENTNMS, OU=127.0.0.1,
O=SAMSUNG, L=SUWON, ST=GYEONGGI, C=KR
Issuer: EMAILADDRESS=someone@samsung.com, CN=ENTNMS, OU=127.0.0.1,
O=SAMSUNG, L=SUWON, ST=GYEONGGI, C=KR
Serial Number: bb22c70138f2e8e1
Start Date: Thu Apr 10 16:53:12 KST 2014, Expiration Date: Sat Apr 02
16:53:12 KST 2044
Certificate Fingerprint:
       MD5: 1B:22:31:55:EA:1A:28:05:6D:E5:F8:9E:7A:10:BC:D9
        SHA1:
61:9A:B7:7C:82:31:1F:7C:E1:E5:D2:95:64:54:08:70:66:04:97:0C
Do you trust this certificate? [No]: Y
Certification is added to keystore.
\rightarrow Creating pkcs12 file from server.pem and server.key

ightarrow copy keystore and certificate file to keystore directory
```

2) Log in with the root account and execute 'makeWebServerKey.sh'.

```
# su -
passwd : *****
# ./makeWebServerKey.sh
[ Removing your keystore file... ]
[ Input IP address or DNS name. ]
10.251.195.105 ← (WEM Server IP address)
[ Generating keystore file... ]
Enter keystore password: changeit
Re-enter new password: changeit
Generating 2,048 bit RSA key pair and self-signed certificate
(SHA256withRSA) with a validity of 10,950 days
      for: CN=10.251.195.105, OU=TELECOM, O=SAMSUNG, L=SUWON,
ST=GYEONGGI, C=KR
Enter key password for <tomcat>
       (RETURN if same as keystore password): (press ENTER key)
  [Storing /root/.keystore]
  Do you want to certificate your key from Certificate Authority?
[y|n]
 n
Keystore file is saved in your home directory. See you!
```

3) Re-run Tomcat to reflect the certificate.

```
# cd /usr/local/tomcat/bin
# ./shutdown.sh
# ./startup.sh
```

ANNEX A. First-Time Login

A.1 Logging in with Default Operator Account

After installing the WEM web client for the first time, you must first register an operator account; the root account is used for basic operator registration/deletion.

The root account allows you to only register or delete the initial operator information. The root account cannot be used to manage AP and APC devices.

Log in with the default user account 'root' and the default password '1234'. After logging in, change the password of the 'root' account. After the password change, you can use the 'root' account with the new password you have specified.

San	HURHANDER HERRICHARDER HERRI	LAN Mai	
User ID			🗖 Save user id
Password			Full screen
Language	English	-	Login
- Click here	for help. 2012 SAMSUNG EL	EC. ALL RIGHTS RESERVED	

A.2 Registering User Privileges

The WEM web client can be operated only by an allowed user and an allowed terminal (the IP address of the PC). Therefore, the administrator must register an operator and configure the IP address after the initial installation.

A.2.1 Registering Operator

1) Click 'User Manager'.

WEB EMS	[165.213.177.144] - 3,177.144/entrms/main.do	Windows Internet Explorer				
Samsung Wireles	ss Enterprise	Security User Manager Change Pa	ssword Initialize Password Gr	oup Manager 🛛 IP Manag	ger	٩
9 root 🛛 -	Logout					
User Mar	nager					
User Ma	nager					
User ID			Privilege All			User Profile
Status	All		- Group			User ID : apteam
User Manag	jer]		Search	Total C	ount : 26 1 / 3 Go	Status : Enable Login Type : Multiple(5) Group : group01
No.	Select	[^] User ID	Privilege	Status	Group	Last Login IP : 10.85.137.222
1	۲	apteam	Administrator	Enable	group01	Last Login Time: 2013-04-09 14:40:12 Description :
2	0	bryan	Administrator	Enable	group01	
3	0	chrisloi	Administrator	Enable	group01	Managing Node
4	0	daemogkim	Administrator	Enable	group01	'/FIELD_TEST/POE_12 '/FIELD_TEST/POE_13
5	0	dbkim	Administrator	Enable	group01	*/FIELD_TEST/PoE_14 */FIELD_TEST/Field_10_64_2_24
6	0	gjkwon	Administrator	Enable	group01	
7	0	jky96	Administrator	Enable	group01	
8	0	jslee	Administrator	Enable	group01	
9	0	jsnam	Administrator	Enable	group01	
10	0	jwjeong	Administrator	Enable	group01	
		Add	4 1 [2][3] * ³⁹			
		Add	Delete			

Figure 8. User Manager Window

2) Click the [Add] button; the [Register User] window will appear to the left. Fill in the required items and click the [OK] button.

Register Use	r]	
User ID		2
Password		2
Re-Password		
Privilege	Administrator	- 2
Group	 Default group Choose the groups. 	
aroup		
Login Type	 Single Multiple Count 	
Login Type E-Mail	 Single Multiple Count 	

Figure 9. Register User Window (Add)

Input Items	Description
User ID	Operator ID
Password	Operator password
Re-Password	Confirm the password
Privilege	Operator privileges for the following user types: Administrator, Operator, and Guest.
Network Group	Sets the NE group that an operator can manage. The operator of the highest rank must select the default group.
Login Type	Specifies whether to allow concurrent access with the same ID; if allowed, enter the number of access sessions allowed.
E-mail	E-mail address

For network groups, one default group is already registered. The administrator can register a network group and then change it later.

3) When a new operator is registered, it will be reflected in the result table.

A.2.2 Allowing Client IP Address

1) Select 'IP Manager'.

	Login Allowand		Deny	IP Address	
			Search		
Manag	jer]				
No.	Select	IP Address	Login Allowance	Sessions	Description
			No. of Concession, Name	1000	

Figure 10. IP Manager Window

2) Enter the required information like the IP address range or the IP address of the computer you want to connect to (e.g. 192.168.25. *, 192.168.0.2). Then, click on the [OK] button.

IP Address	192.168.25.116
Login Allowance	
Sessions	5
Description	

Figure 11. Add IP Address Window (Add)

ltem	Description
IP Address	Client IP information
Description	Description of the IP address you want to register.
Туре	This parameter determines whether to allow or deny login. If the value is 'Allow', login from the registered IP is allowed. If the value is 'Deny', login from the registered IP is denied.
Session	The number of simultaneous login sessions, if login is allowed.

3) The registered IP address will be displayed in the top window.

ANNEX B. Changing WEM IP Address

B.1 Environment Settings

When changing the IP address of the WEM server, you must also change the required system environment information.

1) Log in with the root account in the terminal as shown below.

```
$ su-
Passwd : *****
```

2) Change the IP address in the '/etc/hosts' file.

B.2 Configuring Devices

Change the trap server and data server information of the management object device to the changed IP address.

- Change the existing trap server to the new trap server in Configuration → Controller
 → SNMP → Trap.
- Update the data server to the new WEM server after selecting 'Controller' in Admin → Settings → Data Server.

ABBREVIATION



	NMS	Network Management System
0		
	OS	Operation System
S		
	SNMP	Simple Network Management Protocol
	SSH	Secure Shell
U		
	URL	Uniform Resource Locator
	USB	Universal Serial Bus
W		
	WEM	Wireless Enterprise WLAN Manager
	WLAN	Wireless Local Area Network

WEM Installation Manual

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