





## WES (Wireless Enterprise Security) Installation Manual



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Installation



# 01

## **WES Features Overview**

**1.1 Features** 

1.2 Hardware & Software

### **1.1 Features**



WES Features

The Samsung Wireless Enterprise Security (WES) product is a software tool for detecting, blocking and managing threats and attacks on an enterprise class WLAN. WES provides device classification, threat detection, monitoring, attack containment, forensic reporting, and additional WLAN performance management features available via a web-based GUI.

#### The following is a quick overview of the main features of WES:

#### **Device Classification**

The Samsung WES monitors the RF environment of your Enterprise in order to identify any devices that are interacting or attempting to interact with the WLAN. The system allows for the detection of all kinds of wireless devices using the standard protocols of 802.11a/b/g/n/ac and detects ranges of 2.4 GHz and 5 GHz bandwidths simultaneously. The WES classifies all wireless devices into groups whereby operational policies can be applied. Employing event, security, and operational policies, the WES can effectively manage and secure enterprise wireless services.

Item	Classifications
Access Points	Managed / Unmanaged / Rogue / Neighbor
User Stations	Managed / Unmanaged / Rogue / Temporary
Device Info	MAC / Vendor / SSID / Rogue / RSSI (Signal Strength)

#### Intrusion & Air Attack Detection

The Samsung WES can cope with a number of wireless security threats, prevent internal information leakages, and avoid security-related accidents before they affect the WLAN. WES can detect intentional network intrusions such as rogue AP's, MAC-spoofing AP's or stations, and ad-hoc devices. The WES system also detects a large amount of air attacks and identifies possible vulnerabilities:

Attack Type	WES Detection Types
Network Intrusion	Rogue AP's / MAC Spoofing AP's and Stations / Ad-hoc Devices
Denial of Service	Association / Disassociation / Authentication / Deauthentication Broadcasting / PS-Poll / Probe Request / RTS / CTS / EAPOL
RF Jamming	Microwave / Bluetooth / Wireless Video / Zigbee / Unknown Interference
Specific Attacks	Man in the Middle / Honeypot / WEP Cracking / AP Flooding
Vulnerabilities	Mismatched AP's and Stations / Hotspot AP via Cellular / WiFi Direct Mismatched Encryption Types, Authentications, Data Rates Wrong or Hidden SSID's

#### **Threat Containment**

In addition to detecting threats the WES system also contains them quickly in real time. Employing configurable automatic and manual containment rules and policies, WES can react to threats as they happen.

### **1.1 Features**

#### WES Features

#### **Forensics & Location Tracking**

WES provides an at-a-glance dashboard to view important information on the status of servers, wireless devices, and even policy violations. The dashboard puts the functions of network logging, statistics, and reports at the fingertips of system administrators and managers.

Using custom uploaded floor plans, the WES system allows location tracking of both legitimate network events as well as unplanned network activity. RF environment data can be seen overlaid upon the network floorplan in order to pinpoint the location of wireless threats as well as normal network activities.

#### **WLAN Performance Management**

The WES assists in overall WLAN performance management for your network, either alone or interconnected to your current APC and/or WEM. By detecting misconfigured or vulnerable areas of your network, the WES system provides the ability to control the communication volume and operation policies of your WLAN via location and/or threshold based policies. Such information can also be used as supplementary data for enhancing the performance of networks in the future, managing the life-cycle of traffic in devices, and can serve as a traffic monitoring tool for checking trends in traffic changes.





## 1.2 Hardware & Software

#### Minimum WES Server Hardware Requirements

WES Server	Item	Minimum System Requirements
	CPU	INTEL Pentium 1403v2 2.60 GHz
WES Sensors	MEM	8 GByte
up to Qty: 200	HDD	1 TByte
(License required)	Interface	1 GBps $\times$ 2, USB $\times$ 2, VGA, Console
	Power Supply	Dual Hot Plug Power Supplies 350W
	CPU	INTEL Xeon E5-1410v2 2.80 GHz
WES Sensors	MEM	16 GByte
up to Qty: 500	HDD	1 TByte x 2, RAID
(License required)	Interface	1 GBps $\times$ 2, USB $\times$ 2, VGA, Console
	Power Supply	Dual Hot Plug Power Supplies 350W

#### Compatible Samsung APC and AP software versions

APC Model	AP Controller Software	Access Points 3xx	Access Points 4xx
WEC8500 Controller	wec8500_2.4.12R	weafama_2.4.12R	weafamb_2.4.12R
WEC8050 Controller	wec8050_2.4.12R	weafama_2.4.12R	weafamb_2.4.12R



# **O2** Installation of WES Products

- 2.1 Server
- 2.2 Sensor
- 2.3 Network Ports
- 2.4 Administrator GUI



## 2.1 Server

## 2.1 Server

#### WES Installation

- 1. Insert and boot the server with the installation CD-ROM
- 2. When the OS selection screen is displayed, select "Install Samsung WES Server". \*Note: the install will run automatically after a delay if the option is not physically selected.
- 3. The install process will complete automatically and shutdown the server after installation is complete.
- 4. After tuning on Server Power, remove the installation CD-ROM.
- 5. Use the following login and password to reach the server setup utility:

Login: samsung

Password: samsung

 Complete the above process for the standby server if using High Availability mode.







Use the following instructions to configure the WES in a single Standalone server mode. If configuring High Availability (Active/Standby) mode, skip to section <u>2.1.2: High Availability Server</u>

• Select "Setup WIPS Server"

Samsung Wireless Enterprise Security utility         Move using [UP1 DOWN], Enter1 to Select         Start       Start WIPS Server         Status       Show WIPS Server's status         Replication       Relication WIPS Database         Reboot       Reboot WIPS Server         Update       Update WIPS Server         Exit       Exit         Exit       Exit         Samsung Wireless Enterprise Security setup utility         Move using [UP1 DOWN], Enter1 to Select         Save       Save & Quit	msung Wireless	Enterprise Security utility	
Start Start WIPS Server   Status Status   Status Show WIPS Server   Status Reboot   Reboot Reboot WIPS Server   Update Update WIPS Server   Shutdown Shutdown WIPS Server   Exit Exit   Reboot   Reboot Reboot WIPS Server   Shutdown Shutdown WIPS Server   Update Update WIPS Server   Shutdown Shutdown WIPS Server   Exit Exit   Resonal Wireless Enterprise Security setup utility   Move using [UP1 [DOWM], [Enter] to Select   Image: Save Save & Quit   Save Save & Quit   Save Save & Quit	Sa Move using f	umsung Wireless Enterprise Security utility	1
msung Wireless Enterprise Security setup utility Move using [UP1 [DOWN], [Enter] to Select Save Save & Quit (		Start     Start     Start WIPS Server       Start     Start WIPS Server       Status     Show WIPS Server       Status     Show WIPS Server       Status     Show WIPS Server       Status     Show WIPS Server       Update     Update WIPS Server       Shudown     Shudown WIPS Server       Exit     Exit	
Assung Wireless Enterprise Security Setup Move using [UP] [DOWN], [Enter] to Select [IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII			
Samsung Wireless Enterprise Security Setup Move using [UP] [DOWN], [Enter] to Select [10.10.100.112/24 (eth0] HA TO Save Save & Quit (Cancel>	nsung Wireless	Enterprise Security setup utility	
III       10.100.112/24 (eth0)         III       10         Save       Save & Quit	S Move using [	amsung Wireless Enterprise Security Setup UP] [DOWN], [Enter] to Select	
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	L		

• Select "Network"

Select and enter each of the items.

- Hostname (Enter Hostname)
- Device (Enter Network device name(eth0, em1 etc.)

To apply settings, select 'Save & Quit'

• IP (Enter Server IP address)

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- Gateway (Enter Gateway address)
- Nameserver (Enter DNS address)

amsung Wireless E	Interprise Security setup utility	
Move using [U	Network Setup P] [DOWN], [Enter] to Select Device eth0 IP 10.10.100.112/24 Gateway 10.10.100.1 Nameserver 168.126.63.1	
	<mark>&lt; <u>0</u>∦ &gt;  <cancel></cancel></mark>	
amsung Wireless E	nterprise Security setup utility	
San Move using [U]	msung Wireless Enterprise Security Setup P] [DOWN], [Enter] to Select	
	Network 10.10.100.112/24 (eth0) HA no Mave Save & Quit	
		-

#### WES Installation

Verify the settings entered and select 'Save'

Type 'Yes' to reboot the server in order to complete the configuration.

Your server will reboot into the normal WES operating mode.





#### WES Installation

How to configure servers for High Availability Mode:

• Perform these setup steps on both servers.



So Move using	amsung Wireless (UP] IDUWN], II Start Status Replication Reboot Update Shutdown Exit	s Enterprise Security utility Enterl to Select Start WIPS Server Ster WIPS Server Setup WIPS Server Show WIPS Server Update WIPS Server Shutdown WIPS Server Exit	
• Se	elect "So	etup WIPS Server'	
Samsung Wireless	Enterprise Sec	curity setup utility	
Samsung Wireless Move using	Enterprise Sec Samsung Wireles (UP) (DOWN), (H Retwork Ha Save	setup utility setup setup utility setup Saterl to Select 10.10.100.112/24 (eth0) Save & Quit Cancel>	

Select "Network"

Move using [	UP] [DOWN], [Enter] to Select	
	InstrumeLocathost.localdomainDeviceeth0IP10.10.100.112/24Gateway10.10.100.1Nameserver168.126.63.1	
L		-

Select and enter each of the items.

- Hostname (Enter Hostname)
- Device (Enter Network device name(eth0, em1 etc.)
- IP (Enter Server IP address)
- Gateway (Enter Gateway address)
- Nameserver (Enter DNS address)

#### WES Installation

Samsung Wireless Enterprise Security setup utility
Samsung Wireless Enterprise Security Setup
Network 18 19 192/24 (eth8)
Engine Wigalars Entennaica Eccupity catum utility
Samsung Wireless Enterprise Security Secup utility
HA Enable-
Select HA enable:
() no HA disable (*) yes HA enable
< OK > <cancel></cancel>

How to configure servers for High Availability Mode:

• Perform these setup steps on both servers.

• Select 'HA'

- Select 'Yes'.
- Arrow keys move up and down, and space bar selects the item.

#### WES Installation

How to configure servers for High Availability Mode:

• Perform these setup steps on both servers.

Move using [UP]	[DOWN], [Enter] to Select	
	HA Owner master HA Device	
	Virtual IP Master TP	
	Master Hostname	
	Slave IP Slave Hostname	
	Dead time 5	
	Send Interval 1	
L		
	< <mark>IK &gt; <cancel></cancel></mark>	
ng Wireless Ent	erprise Security setup utility	
ing Wireless Ent	erprise Security setup utility	
ng Wireless Ent	erprise Security setup utility HA Owner	
ng Wireless Ent	HA Owner	
ng Wireless Ent	erprise Security setup utility HA Owner (*) master ( ) slave Slave	
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ng Wireless Ent elect Owner:	HA Owner HA Owner () master Master () slave Slave	
ng Wireless Ent	HA Owner HA Owner () master Master () slave Slave	
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ng Wireless Ent	HA Owner HA Owner () master Master () slave Slave	
ng Wireless Ent	HA Owner HA Owner () master Master () slave Slave	
ng Wireless Ent	erprise Security setup utility HA Owner (*) master (*) slave Slave	

• Select 'HA Owner'.

- Select the type for the server you are currently configuring.
- Arrow keys move up and down, and space bar selects the item.

#### WES Installation

HA Setup Move using [UP] [DOWN], [Enter] to Select HA Owner HA Device
HA Owner master HA Device
Virtual IP
Master IP Master Hostname Slave IP Slave Hostname
Dead time 5 Send Interval 1
< <mark>0K &gt; <c< mark="">ancel&gt;</c<></mark>
usung Wireless Enterprise Security setup utility
Heartbeat Device
eth0
< OK > <cancel></cancel>

How to configure servers for High Availability Mode:

• Perform these setup steps on both servers.

• Select 'HA Device'.

•Enter Network device name (eth0, eth1 ...etc.) which will transmit HA heartbeat message.

#### WES Installation

How to configure servers for High Availability Mode:

• Perform these setup steps on both servers.

ing Wireless B	interprise Security setup utility	
Move using [l	HA Setup JP] [DOWN], [Enter] to Select	
	A Owner master Ha Device Virtual IP Master IP Master Hostname Slave IP	
	Dead time 5 Send Interval 1	
	< OK > <cancel></cancel>	
ung Wireless l	Interprise Security setup utility	
Enter virtua	Virtual IP address l ip address:	]
10.10.100.1	11_	
	<b>Cancel&gt;</b> <cancel></cancel>	-

• Select 'Virtual IP'.

• Enter the Virtual IP address that will be used to access via the administrator GUI.

#### WES Installation

How to configure servers for High Availability Mode:

• Perform these setup steps on both servers.

Move using [UP] [	DOWNJ, [Enter] to S			
	HA Owner HA Device	master		
	Virtual IP			
	Master IP Master Hostname			
	Slave IP			
	Dead time	5		
	Send Interval	1		
l				
		(Cancel)		
		Contery		
ing Wireless Enter	onnise Securitu seti	un utilitu		
ing Wireless Enter	prise Security set	ıp utility		
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ıng Wireless Enter	prise Security sett Master IP add	ıp utility Iress	ľ	
ing Wireless Enter Enter master ip a	prise Security set Master IP add ddress:	up utility Iress		
ung Wireless Enter Enter master ip a [10.10.100.112_	Pprise Security sett Master IP add address:	ıp utility Iress		
ing Wireless Enter Enter master ip a [10.10.100.112_	Master IP add	np utility Iress		
ing Wireless Enter Enter master ip a [10.10.100.112_	<pre>Prise Security set Master IP add address:</pre>	up utility Iress <cancel></cancel>		
ing Wireless Enter Enter master ip a [10.10.100.112_	<pre>Prise Security set( Master IP add iddress: </pre>	ip utility dress <cancel></cancel>		
ing Wireless Enter Enter master ip a [10.10.100.112_	Master IP add ddress:	up utility Iress <cancel></cancel>		

• Select 'Master IP'.

•Enter IP address of the Master (Active) server

#### WES Installation

How to configure servers for High Availability Mode:

• Perform these setup steps on both servers.

HA Setup Move using [UP] [DOWN], [Enter] to Select HA Owner master HA Device Virtual IP Master IP Master IP Slave IP Slave Hostname Dead time 5 Send Interval 1 Cancel>
A Owner HA Device Virtual IP Master IP Master Hostname Slave Hostname Dead time 5 Send Interval 1 Cancel>
HA Device HA Device Virtual IP Master IP Master Hostname Slave Hostname Dead time 5 Send Interval 1 Cancel>
Virtual IP Master TP Master Hostname Slave IP Slave Hostname Dead time 5 Send Interval 1 Cancel>
Master Hostname Slave IP Slave Hostname Dead time 5 Send Interval 1 Cancel>
Slave Hostname Dead time 5 Send Interval 1
Dead time 5 Send Interval 1
<pre>Cancel&gt;</pre>
<pre>Cancel&gt;</pre>
<pre>Cancel&gt;</pre>
msung Wireless Enterprise Security setup utility
Master Hostname
Enter master hostname:
master-wes
(OV ) (farcel)
Concer/

Select 'Master Hostname'.

• Enter the hostname of the Master (Active) server

#### WES Installation

Samsung Wireless Enterprise Security setup utility
HA Setup Move using [UP] [DOWN], [Enter] to Select
A Owner master HA Device Virtual IP Master IP Master IP Slave IP Slave Hostname Dead time 5 Send Interval 1
<pre><cancel></cancel></pre>
Samsung Wireless Enterprise Security setup utility
Enter slave ip address: [10.10.100.113_

How to configure servers for High Availability Mode:

• Perform these setup steps on both servers.

• Select 'Slave IP'.

•Enter IP address of the Slave (Standby) server

#### WES Installation

How to configure servers for High Availability Mode:

• Perform these setup steps on both servers.

Samsung Wireless Enterprise Security setup utility			
HA Setup Move using [UP] [DOWN], [Enter] to Select			
A Owner master HA Device Virtual IP Master IP Master Hostname Slave IP			
Slave Hostname Dead time 5 Send Interval 1			
< Cancel>			
Samsung Wireless Enterprise Security setup utility			
Enter slave hostname:			
< OK > <cancel></cancel>			

• Select 'Slave Hostname'.

• Enter the hostname of the Slave (Standby) server

#### WES Installation

Samsung Wireless Enterprise Security setup utility	
HA Setup Move using [UP] [DOWN], [Enter] to Select	
A Owner master HA Device Virtual IP Master IP Master Hostname Slave IP Slave Hostname Dead time 5 Send Interval 1	
< IK > <cancel></cancel>	
Samsung Wireless Enterprise Security setup utility	
Heartbeat dead time Enter dead time (second)	
< OK > <cancel></cancel>	

How to configure servers for High Availability Mode:

• Perform these setup steps on both servers.

• Select 'Dead Time'.

- Enter the response wait time in seconds.
- This value is the amount of time that the server will wait for a health check (heartbeat) message from the other server.
  If it does not see the message from the other server then a failover is triggered.
- This value must be larger than the Send Interval

#### WES Installation

How to configure servers for High Availability Mode:

• Perform these setup steps on both servers.

Samsung Wireless Enterprise Security setup utility
HA Setup Move using [UP] [DOWN], [Enter] to Select
A Owner master HA Device Virtual IP Master IP Master Hostname
Slave P Slave Hostname Dead time 5 Send Interval 1
< <mark>Cancel&gt;</mark>
Samsung Wireless Enterprise Security setup utility
Heartbeat send packet interval Enter send interval (second):
1
< OK > <cancel></cancel>

• Select 'Send Interval'.

- Set the health check message transmission cycle time in seconds.
- This value must be smaller than the Dead Time value.

#### WES Installation

How to configure servers for High Availability Mode:

• Perform these setup steps on both servers.

Samsung Wireless Enterprise Security setup utility	
Samsung Wireless Enterprise Security Setup Move using [UP] [DOWN], [Enter] to Select	
Network 10.100.112/24 (eth0) HA no Fave & Quit	
<u>&lt; 0</u> ★ > <cance 1=""></cance>	

• To apply settings, select 'Save & Quit'

#### WES Installation

Verify the settings entered and select 'Save'

Type 'Yes' to reboot the server in order to complete the configuration.

Your server will reboot into the normal WES operating mode.



#### WES Installation

How to configure servers for High Availability Mode:

- This step should only be performed on the Master (Active) Server.
- Perform this step ONLY after finishing the setup steps on the Slave (Standby) server.
  - Select 'Replication'.
  - This step synchronizes the databases between your Master (Active) and Slave (Standby) Servers.
  - When prompted for a password, enter: adminme09@
  - When this step is complete, your WES servers will be running in normal High Availability mode.

Move using [	UP] [DOWN], [	Enter] to Select	]
Г Г	Start	Start WIPS Server	
	Stop	Stop WIPS Server	
-	Setup	Setup WIPS Server	
	Status	Show WIPS Server's status	
	Replication	Replication WIPS Database	
	Reboot	Reboot WIPS Server	
	Update	Update WIPS Server	
	Shutdown	Shutdown WIPS Server	
	Exit	Exit	
L			
		< <mark>O</mark> K >	1



#### WES Installation

• This section details how to manually configure your AP using the console to run in Sensor mode.



- Please use a station emulator like a PuTTY to program the AP
- Use the following connection values:
- Speed : 115200
- Data bits : 8
- Stop bits : 1
- Parity : None
- Flow control : None

R PuTTY Configuration		×
Category:		
	Options controlling loca	al serial lines
Logging	Select a serial line	
Keyboard	Serial line to connect to	COM3
Bell Features	Configure the serial line	
⊡Window	Speed (baud)	115200
···· Appearance ···· Behaviour	Data bits	8
···· Translation	Stop bits	1
Selection Colours	Parity	None
Connection	Flow control	None
Proxy		
Telnet		
Serial		
About	Open	Cancel

% Connect SSH(telnet) Sensor : SSH port : 50022, telnet port : 50023

• Enter ID and Password for your AP to login

• The current operating mode of the sensor can be viewed by typing

```
"show config wips summary"
```

- To change the operating mode from AP to Sensor, type "config wips mode <sensor>"
  - Note: The AP will reboot after this command is entered.
- Sensor + Integrated AP type can be set through the GUI if employing an APC Link

234_30x# show config interface summary
Name br0
Mode Static
MAC F4:D9:FB:35:7F:AD
IP address
Subnet Mask 255.255.0
Gateway address
PHY Status UP
Interface Status
234_30x#
234_30x#
234_30x#
234_30x#
234_30x# config interface address
Usage: 234_30x/address <ipaddr> <netmask> <gateway></gateway></netmask></ipaddr>
234_30x# config interface address 10.10.100.117 255.255.255.0 10.10.100.1
234 30x#

• You can check the network setting information of the sensor by typing

"show configure interface summary"

• To change the sensor's network settings, type

"config interface address <IPADDR> <NETMASK> <GATEWAY>"

212_30x# show config wips summary	
wips mode	WIPS_SENSOR_MODE
wips server ip	10.10.200.162
wips nat	1
wips sharedkey	0000000

• Sensor server link info can be viewed (server IP, NAT mode, shared key) by entering "show config wips summary"

212\_30x# config wips server Usage: 212\_30x/server <wips\_serverip><wips\_nat><shared\_key> 212\_30x# config wips server 0.0.0.0 1 00000000

- To modify server link settings type ""config wips server <wips server ip> <nat mode> < shared key >"
  - To not use NAT mode(X) = 1, Use NAT mode(O) = 2
  - If not using NAT mode : connected from server to sensor
  - If using NAT mode : connected from sensor to server

212_30x# show config wips summary	
wips mode	WIPS_SENSOR_MODE
wips server ip	10.10.100.112
wips nat	2
wips sharedkey	0000000



## 2.3 Network Ports

Port number	Listen	Purpose	Remarks
13444/TCP	Server Listen	Sensor-Server communication Sensor Upgrade	Sensor < -> Server
22/TCP	Server Listen	Connection Server Cli (SSH)	Manager -> Server
50022/TCP	Sensor Listen	Connection Sensor Cli(SSH)	Manager -> Sensor
50023/TCP	Sensor Listen	Connection Sensor Cli(Telnet)	Manager -> Sensor
8443/TCP	Server Listen	Connection Server GUI	Manager -> Server
161/UDP	APC Listen	APC Link(SNMP)	
2002/TCP	Server Listen	Troubleshooting Sensors	Sensor -> Manager
22/TCP	Server Listen	APC data Link	APC -> Server



#### WES Installation

- Access the web browser based administrator GUI by connecting to:
  - https://<WES Virtual IP address>:8443



- Select the "Continue to this website" option.
  - The WES security certificate will have to be manually installed to bypass this warning screen.



#### WES Installation

- How to manually install the website certificate:
  - In Internet Options > Security > Trusted Sites, add the WES GUI address to the list of trusted sites.



	igs.
Add this website to the sone:	
https://192.168.62.50	Add
https://arrows3.sharepoint.com https://arrows3-admin.sharepoint.com https://arrows3-my.sharepoint.com	Remov
Require server verification (https:) for all sites ir	n this zone



• Click on the Certificate Error Warning in the Browser Address bar, then select "View Certificates"

#### WES Installation

- In the Certificate Window, go to the "Certification Path" tab.
- Select the "AnyClick Certificate Publisher 3"
- Click on "View Certificate"

Certificate	X
General Details Certification Path	
Certification path	
AnyClick Certificate Publisher3	
	View Cortificate
	view cer difcate

eneral Details C	Certification Path
Certific	cate Information
This CA Root certificate is not trusted. To enable trust, install this certificate in the Trusted Root Certification Authorities store.	
Issued to	x AnyClick Certificate Publisher3
Valid from	m 11/12/2013 to 10/26/2080
	······································
,	Install Certificate
earn more about <u>c</u>	ertificates

#### • On the Wizard, click "Next"



#### WES Installation

- · Select "Place all certificates in the following store"
- Click on "Browse



· You will receive the following warning, click on "Yes".

- Close the remaining Certificate windows.
- Now when browsing to the GUI address, the certificate warning screen is bypassed.

- Use the following credentials to login to the administrator for the first time:
- User ID: samsung
- Password: samsung00!

Samsun <b>Wíre</b> l	9 Iess Ente	rprîse WL	AN Sec	curity
	2			
	Save ID	Save PW	ENG 🔻	
		LOGIN		

- An initial configuration dialog box will appear.
- Here you create the Root Administrator Account.
- After creating the root admin account, you may login with that account.

Root administrator account		
ID		
Password		
Confirm PWD		
Name		
Email		
Email PWD		