Communication Machinery Corporation

EmulationEngine™ 11a/b/g

User's Guide

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Rev 2.0.0 Beta

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Radio Frequency Interference Requirements

802.11a devices transmit in the 5 GHz band. 802.11b and 802.11g devices transmit in the 2.4 GHz band. FCC regulations require this product to be used indoors to reduce the potential for interference with (to or from) other devices that operate in the same frequency range.

FCC Warning

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. There is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the radio /TV receiving antenna.
- Increase the separation between the equipment and the radio/TV receiver.
- Connect the equipment to an outlet that is on a different circuit from where the radio/TV receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Unless expressly approved by CMC, modifications to this product could void the user's authority to operate the equipment.

RF Exposure Requirements

To ensure compliance with FCC RF exposure requirements, the antenna used for this device must be installed to provide a separation distance of at least 20 cm from all persons and must not be co-located or operating in conjunction with any other antenna or radio transmitter. Installers and end-users must follow the installation instructions provided in this guide.

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CHAPTER 1: Overview

The EmulationEngine is a test and measurement device that emulates up to 64 wireless stations in an IEEE 802.11 wireless LAN environment. The EmulationEngine operates in accordance with the IEEE 802.11a, 802.11b, and 802.11g specifications. The EmulationEngine is offered in four configurations:

- EmulationEngine 11a: Supports IEEE 802.11a only.
- EmulationEngine 11b: Supports IEEE 802.11b only.
- EmulationEngine 11a/11b: Supports IEEE 802.11a and 802.11b.
- EmulationEngine 11a/b/g: Supports IEEE 802.11a, 802.11b, and 802.11g.

Each configuration is shipped with a unique feature key that is stored in the EmulationEngine's flash file system. The EmulationEngine software is locked to its specific hardware platform and feature set through the use of this feature key. Feature keys can be upgraded at any time to provide access to additional features.

The objective of the EmulationEngine is to reduce the number of PC and station NIC cards that are needed to test and stage 802.11 products and wireless LANs in terms of packet performance and number-of-stations capacity. In addition, it allows a user to fine-tune system parameters in order to maximize performance during testing. The primary difference between the EmulationEngine and other IP Load Generators is:

- IP-based Load Generators are per-station devices that do not reduce the number of PCs and station NIC cards. You can only configure an IP per station and then send traffic.
- The EmulationEngine allows all stations to be emulated on a single platform and radio chipset thus reducing the cost and complexity of multiple PCs.

CMC's EmulationEngine creates Virtual Stations (vSTAs) and generates or passes traffic that will load and stress test a Wireless LAN and 802.11 products in terms of:

- Frame performance
- Number-of-stations capacity
- Scalability
- WLAN optimization

Because a single physical 802.11a/b/g emulator emulates multiple STAs, it reduces the number of PC and station NIC cards that are needed to test and stage 802.11 products and wireless LANs.

Packaging Checklist

Your shipping container should include the following items:

- EmulationEngine
- Power Adapter
- Crossover cable
- Serial Cable
- Installation CD-ROM which includes this User's Guide & the EmulationEngine Test Setup & Configuration Guide
- Quick Start Guide
- Specifications
- Release Notes
- Warranty Card
- End User License Agreement
- Authorization Code

If any of these items are not included in your shipping container, contact CMC.

Feature List

- Supports IEEE 802.11a, 802.11b, and 802.11g
- Emulates up to 64 concurrent stations (vSTAs)
- Interaction with virtual stations (vSTAs) in real time
- Configuration and monitoring of virtual stations
- Internally inject load into a System Under Test (SUT)
- Externally forward load from third-party traffic generator into a System Under Test
- Log and performance statistics data
- vSTA support: 802.11 Authentication, Association, De-authentication, Disassociation
- ICMP Echo Request/Reply (Ping)
- WEP Encryption (Shared static key for authentication and data) per virtual station
- Persistent connection to the System Under Test
- Command Line Interface (CLI) and Web-Based User Interface.
- Telnet and Serial Port access to the CLI
- Automatically configure and run multiple virtual stations via the CLI
- The Web-Based User Interface supports:
  - ☑ Different types of graphs per time and virtual station

- ☑ Export of event log and statistics data
- ☑ Scenario scheduling to bring virtual stations online in a time appointed manner
- ☑ User defined virtual station groups based on end-user requirements
- ☑ Multiple types of reports
- ☑ The ability to save test scenario files in order to repeat a test
- ☑ Configuration and monitoring of virtual stations include: copy and paste, printing, and add and delete virtual stations
- ☑ The ability to select a System Under Test
- ☑ The ability to set up groups and select individual virtual stations to run through the 802.11 state machine

Files

The following files are maintained in the EmulationEngine's flash file system:

1) EmulationEngine Configuration (eecfg)

2) Scenario definitions

3) Logs

4) Statistics

5) EE22.SYS

6) keyfile

1) The EmulationEngine configuration file (eecfg) stores information settings that can be defined via the CLI or the web-based user interface. A backup version (.bak) of this file is also maintained in the unlikely event that the original might become corrupted. The EmulationEngine will load from this file at power-up/initialization time. It contains basic configuration information.

2) After the EmulationEngine is configured, you may create test scenarios that contain virtual station definitions that are organized into groups. This information is stored in scenario files. The scenario files are created and used by the web-based user interface. The CLI does not create or use scenario files.

3) Log files store records of all EmulationEngine activities with a time stamp indicating when the activity occurred. Logging to the CLI console, the web-based user interface, or a file can be enabled/disabled.

4) Statistics files contain statistics of a test (scenario) run. When a test is complete, a statistics file can be written in the flash file system for each virtual station involved in the test. The Reports

section of the web-based user interface can be used to show the contents of these files.

5) The EE22.SYS file is the EmulationEngine software image file.

6) The keyfile is a reserved file that contains the EmulationEngine authorization code. It is a hidden file and will only be shown in the directory list in the CLI's administrative mode. Do not delete this file or attempt to access or modify it. It is required by the system.

System Requirements

- An A/C power outlet (100~240 V, 50~60 Hz) that will supply power to the EmulationEngine
- A PC with an available serial port or 10/100 Ethernet port that can be used to send commands to the EmulationEngine
- If the web-based user interface is used, the command PC must be equipped with the following:
  - ☑ Microsoft Windows 2000/XP
  - ☑ Microsoft Internet Explorer Version 6.0 or higher
  - ☑ Recommended Memory: 256 MB
  - ☑ Recommended Virtual Memory: 300 MB
  - ☑ Recommended Processor Speed: PIII 700 MHz.

Hardware Characteristics

Ethernet Compatibility: The EmulationEngine can attach directly to 10BASE-T/100BASE-TX (twisted-pair) Ethernet LAN Hubs, segments or a PC. All of these must conform to the IEEE 802.3 specification.

Radio Characteristics: The EmulationEngine conforms to the IEEE 802.11a, 802.11b, and 802.11g specifications. In 802.11a mode, it operates at the 5GHz Unlicensed National Information Infrastructure (UNII) band. Data is transmitted over a half-duplex radio channel operating at up to 54 Megabits per second (Mbps) using OFDM (Orthogonal Frequency Division Multiplexing). In 802.11b mode, the EmulationEngine operates in the 2.4 GHz band and sends data at up to 11 Mbps. In 802.11g mode, the EmulationEngine operates within the 2.4 GHz band using OFDM at rates up to 54 Mbps.

General Usage Notes

1) The EmulationEngine's default IP address is 192.168.0.50. In order to establish initial communications between the command PC and the EmulationEngine using an Ethernet connection, you must set your PC's IP address and network mask to match this default address (e.g., IP address: 192.168.0.2, Netmask: 255.255.255.0). After you establish communications using the

default IP address, you can change the EmulationEngine's and your command PC's address to match the addressing scheme used in your network.

2) Depending on your feature key, the EmulationEngine can operate in 802.11a, 802.11b, or 802.11g wireless mode. The EmulationEngine's wireless mode affects the devices that you can select as a System Under Test. For example, an EmulationEngine that is operating in 802.11a wireless mode will not discover an 802.11b or 802.11g device. Make sure the wireless mode you select for the EmulationEngine is compatible with the device you wish to test. See EE->Configure EE in Chapter 5 and “set wirelessmode” in Chapter 6.

3) The EmulationEngine's Wireless LAN MAC address defaults to a specific address (typically in the 00:0b:cd:xx:xx:xx range). It is a globally unique MAC address that is programmed in to the EmulationEngine hardware. The WLAN base MAC address and mask (ff:ff:ff:ff:00:00) define the range of MAC addresses that can be assigned to virtual stations. When you specify a starting MAC address for virtual stations, make sure that address is within the range defined by the WLAN base MAC address and mask. See vSTA->New Emulation Group->vSTA and EE->Configure EE in Chapter 5 and “set eemac” and “set eemask” in Chapter 6.

4) If you use multiple EmulationEngine's at your facility, each should have a WLAN MAC whose prefix is unique. For example, on the first EmulationEngine , use WLAN MAC Address: 04:0d:e0:62:23:57 and on the second EmulationEngine, use WLAN MAC Address: 06:0f:14:62:32:a0.

5) The IP Mask of the EmulationEngine must match the IP subnet addressing scheme for internal mode testing (it is not used for external mode). For example, if the EmulationEngine's IP address is 10.1.40.18 and the System Under Test is 10.1.35.17, then the subnet mask must be 16 bits or 255.255.0.0 for an internal mode test.


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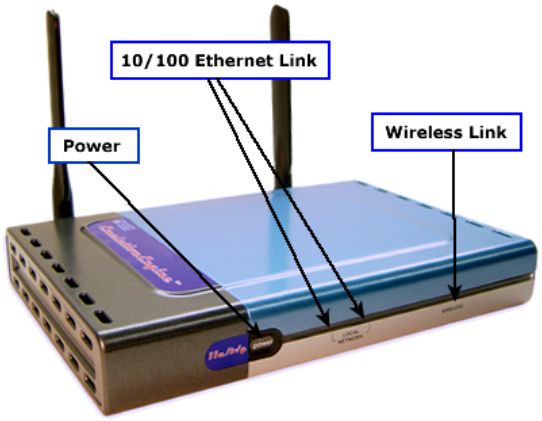
CHAPTER 2: Connectors, LEDs & Antennas

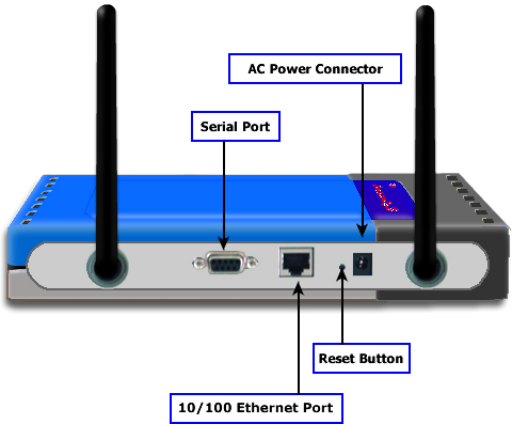
Front Panel/LEDs



LED	Status	Description
Power	Off	Power is not supplied to the EmulationEngine
	On	Power is supplied to the EmulationEngine
	Flashing	Running a self test, loading software, or system errors
Ethernet Link 10/100 (See Note below)	10/100: Off	No Ethernet activity
	100: On Green	Indicates 100 Mbps Ethernet cable link
	10: On Green	Indicates 10 Mbps Ethernet cable link
	100: Flashing Green	The EmulationEngine is transmitting or receiving data on the 100 Mbps Ethernet LAN. Blink rate is proportional to network activity.
	10: Flashing Green	The EmulationEngine is transmitting or receiving data on the 10 Mbps Ethernet LAN. Blink rate is proportional to network activity.
Wireless Link	Off	Wireless link disabled
	On	Valid wireless link but the EmulationEngine is not joined with a System Under Test or the EmulationEngine has lost communication with a System Under Test and has not joined with any other System Under Test.
	Flashing	EmulationEngine has joined with a System Under Test.

NOTE: The Ethernet LED is normally ON while a link is detected. It turns OFF when a packet is received or transmitted. The OFF period is 50 milliseconds. If packets are being transmitted or received every 50 milliseconds or faster (e.g., 20 packets per seconds evenly spaced) for a sustained period, the LED will stay off. This is done by the hardware and the timing/proportionality is not adjustable.

Back Panel



Connectors

10/100 Ethernet Connector: This connector provides 10/100 Mbps connectivity to a wired Ethernet LAN. It is used to connect a command PC to the EmulationEngine.

Serial Port: This connector can also be used to connect a command PC to the EmulationEngine. The configuration of the serial port is: 9600 bps, 8 data bits, no parity, 1 stop bit, and no flow control

AC Power Connector: This connector is used to connect the EmulationEngine to the provided power supply.

Antennas

There are two antennas on the back of the device. The system chooses the best antenna for transmit and receive. The antennas can be swiveled 180 degrees and angled up or down to optimize signal gain.

Reset Button

A recessed reset button is located between the Ethernet Connector and Power Supply Connector on the back of the unit. It can be used to perform a hard reset of the EmulationEngine. To perform a hard reset, use a paper click to press the reset button.

CHAPTER 3: Installation

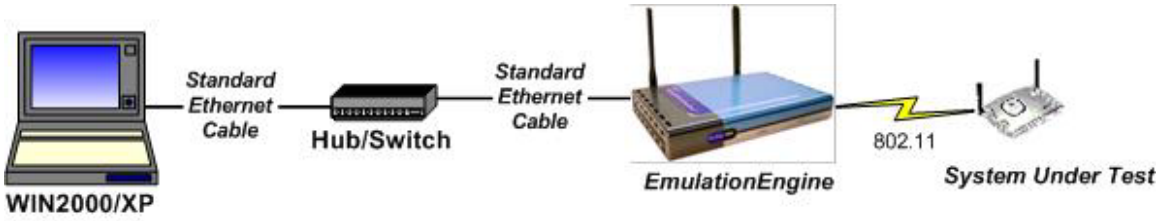
Use the provided Power Adapter to supply power to the EmulationEngine.

Connecting Directly to a Command PC

- Connect one end of the supplied Ethernet crossover cable to the Ethernet port on the command PC.
- Connect the other end of the crossover cable to the RJ-45 Ethernet Connector on the EmulationEngine.

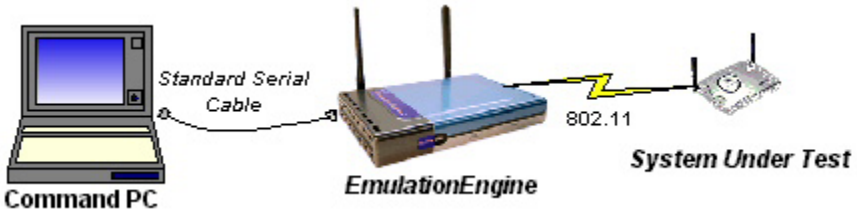
Connecting Through an Ethernet Hub/Switch

- Connect one end of a standard Ethernet cable (not provided) to the Ethernet port on the command PC. Connect the other end of the cable to the Ethernet Connector on the Ethernet hub/switch.
- Connect one end of a standard Ethernet cable to a port on the hub/switch. Connect the other end of the cable to the Ethernet Connector on the EmulationEngine.



Connecting to the Serial Port (Optional)

- A standard straight serial cable is provided with the EmulationEngine.
- Connect the female connector end of the cable to a serial port on the command PC.
- Connect the male connector end of the cable to the serial port on the EmulationEngine.

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CHAPTER 4: Initial Setup

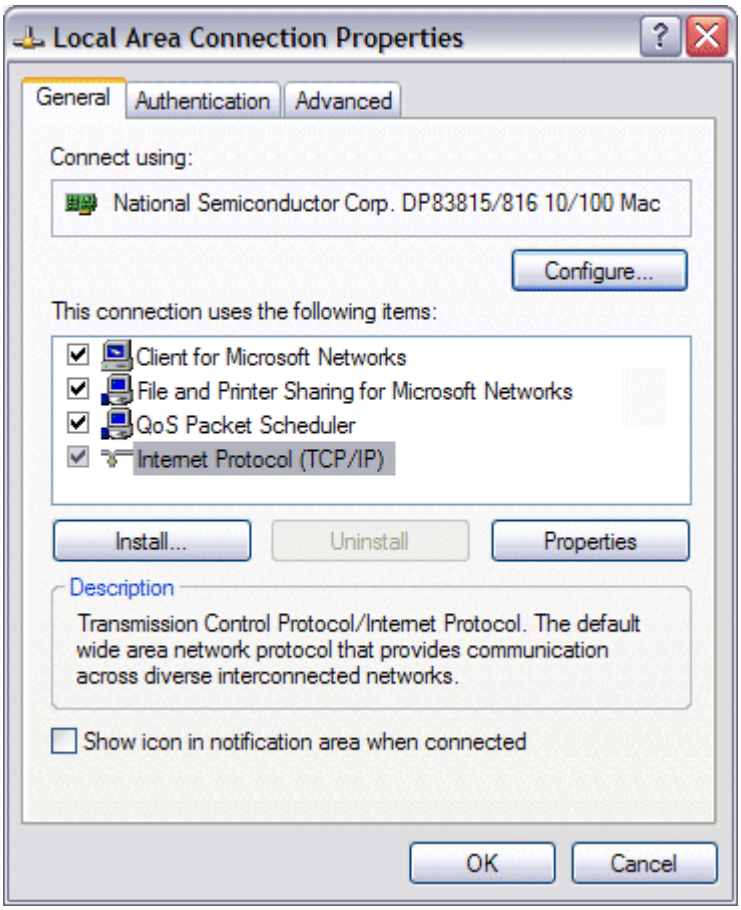
For an Ethernet Port Connection

If the Command PC is attached to the Ethernet Port on the EmulationEngine, complete the following steps to configure the Command PC and access the EmulationEngine web-based user interface or Command Line Interface (CLI):

1) Select **Control Panel** from the Start menu on the PC.

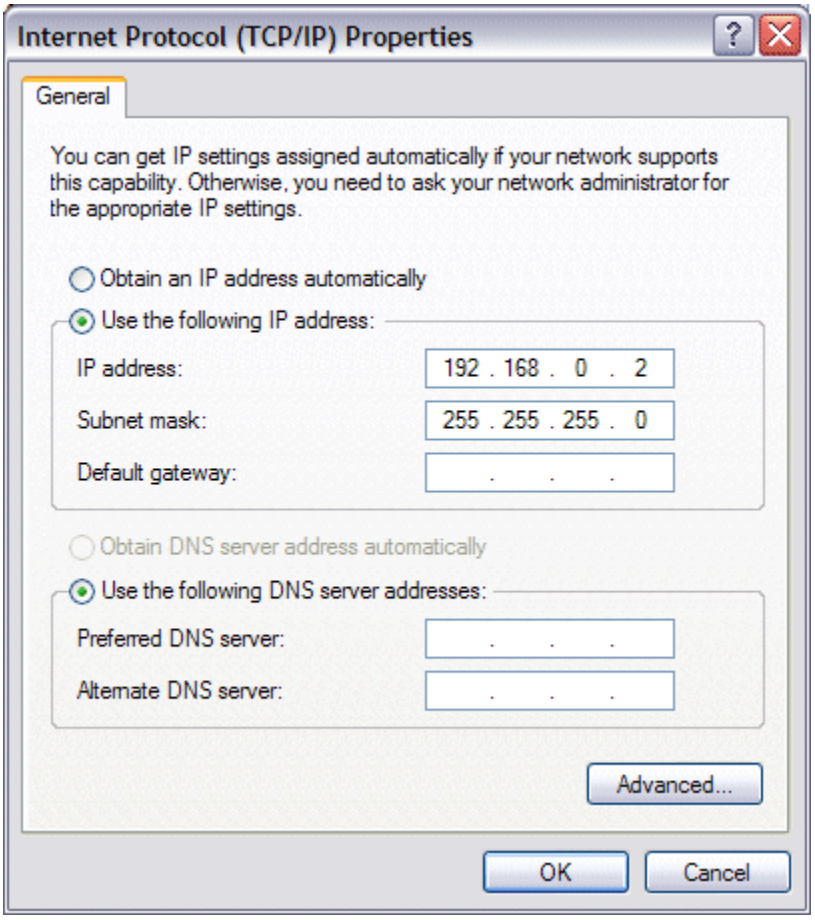
2) Double click on the **Network Connections** icon.

3) Right-click on the **Local Area Connection** icon for the Ethernet controller that is connected to the EmulationEngine. Select Properties from the right-click menu to display the Local Area Connection Properties dialog.



4) Select/highlight **Internet Protocol (TCP/IP)**.

5) Click the **Properties** button to display the Internet Protocol (TCP/IP) Properties dialog.



6) Select the “Use the following IP address” radio button and enter the IP address for the Ethernet connection. Use an IP Address that resides on the same IP subnet as the EmulationEngine. For example, use 192.168.0.2 if you are using the EmulationEngine's default IP address 192.168.0.50.

7) Click “OK” to close the Internet Protocol (TCP/IP) Properties dialog.

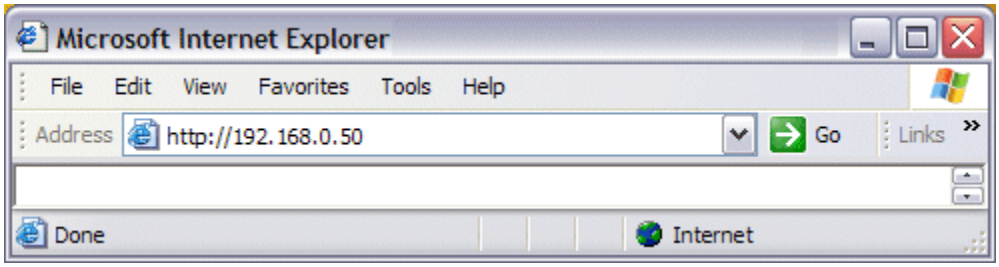
8) Click the Close button in the Local Area Connection Properties dialog.

You can access the EmulationEngine using one of the following methods.

Web-Based User Interface: You can use a PC with Microsoft Windows 2000/XP and Internet Explorer (Version 6.0 or higher) to access the web-based user interface.

- Launch Internet Explorer on the command PC.
- Select Internet Options from the Tools menu. Select the Settings button and make sure the "Every Visit to Page" radio button is selected in the Settings dialog. This step is only required the first time you use the web-based user interface.

- For initial setup, use the EmulationEngine's default IP address 192.168.0.50. Example:



Command Line Interface (CLI): You can use a PC that is connected via Telnet to access the CLI. For initial setup, use the EmulationEngine's default IP address 192.168.0.50 to establish a Telnet connection. Example:

```
telnet 192.168.0.50
```

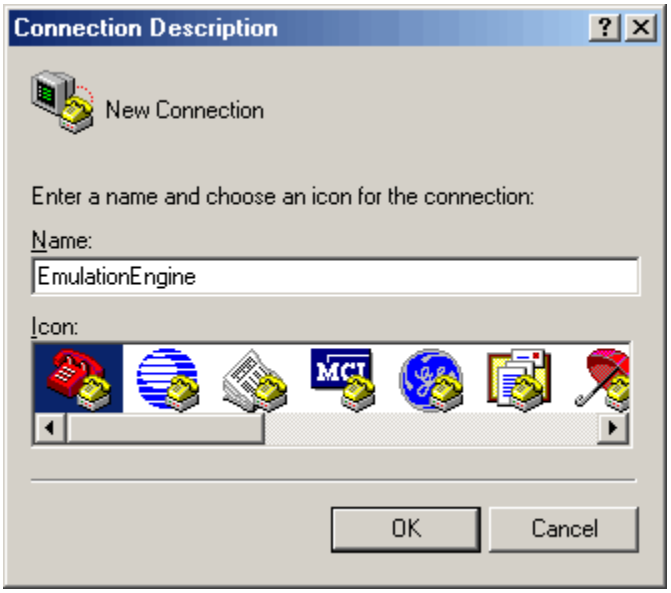
See Chapter 5 for information about using the web-based user interface. See Chapter 6 for information about using the CLI.

For a Serial Port Connection

If the command PC is connected to the EmulationEngine via the serial port, the web-based user interface is not available. Use the following procedure to configure the Command PC and access the EmulationEngine Command Line Interface (CLI):

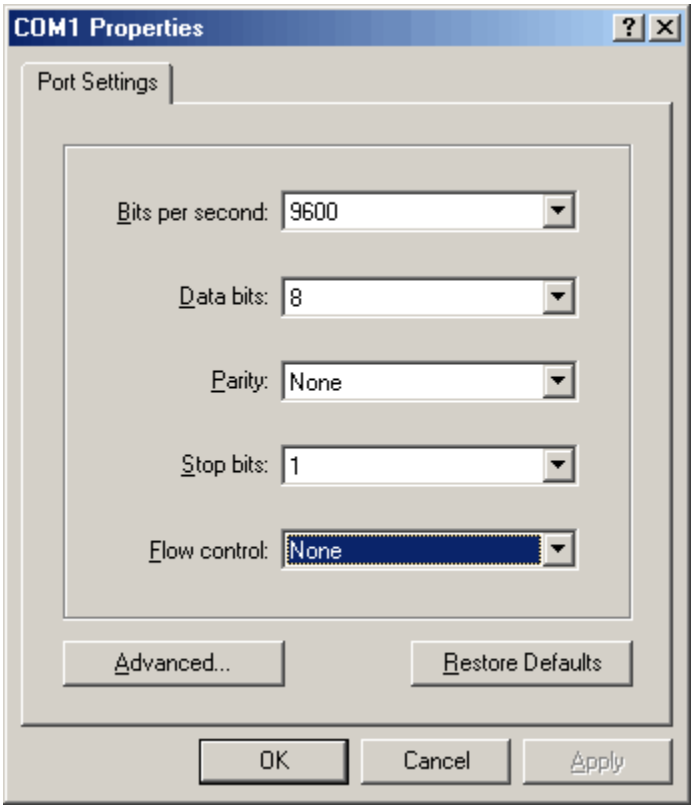
1) At the Command PC, launch a terminal-emulation program such as HyperTerminal.

2) In the Connection Description dialog, enter a name for the connection in the Name field (e.g., EmulationEngine).



3) Choose an icon for the connection and click OK to display the Connect To dialog:

4) Select the COM port that is connected to the EmulationEngine from the "Connect using" list box. Click OK to display the COM properties dialog:



5) Set the COM port settings as shown in this dialog: Bits per second: 9600, Data bits: 8, Parity: None, Stop bits: 1, Flow control: None.

6) Click OK to close the COM properties dialog.

The POST (Power On Self-Test) appears on the HyperTerminal screen a few seconds after the EmulationEngine is connected to the power source.

```
POST...
Memory test                    : passed
Ethernet MAC register test     : passed
Ethernet PHY register test     : passed
Ethernet interrupt test        : passed

Pl

Atheros AP 8245 Reference Design version 2.3.0.70
 0
auto-booting...

Attaching to TFFS... done.
Loading /fl/ee22dbg.sys...1212444
Starting at 0x480000...

Reading Configuration File "/fl/eecfg".
Configuration file checksum: 1ac34 is good
Please check the ethernet cable!
dp0 loaded
Base address = 88010000, irq 1
Attach AR5212 19 caf7b8
wlan revisions: mac 5.6 phy 4.1 analog 1.7
ar0 loaded
Attaching interface lo0...done

Adding 4986 symbols for standalone.

                 VxWorks

Copyright 1984-1998  Wind River Systems, Inc.

            CPU: Atheros AP 8245 Reference Design
        VxWorks: 5.4.2
    BSP version: 1.0/0
  Creation date: Jul  7 2003
            WDB: Ready.

Starting WLAN ...
Starting quick passive scan ...

Passive scanning 2.4GHz 54Mbps channels for 6 seconds...

CMC EmulationEngine Ready

EE login:
```

When the EE login prompt is displayed, use the information in Chapter 6 to log in and access the EmulationEngine CLI.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CHAPTER 5: The Web-Based User Interface

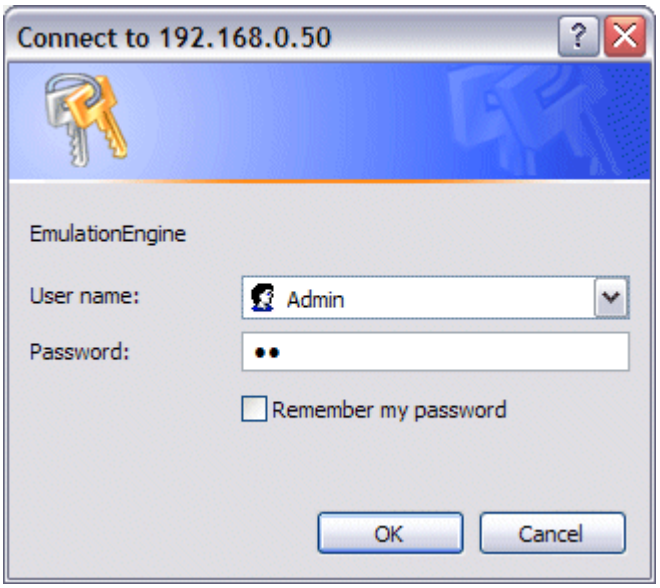
System Requirements

The command PC must be equipped with:

- Microsoft Windows 2000/XP
- Microsoft Internet Explorer Version 6.0 or higher
- Recommended Memory: 256 MB
- Recommended Virtual Memory: 300 MB
- Recommended Processor Speed: PIII 700 MHz

Start-Up/Login

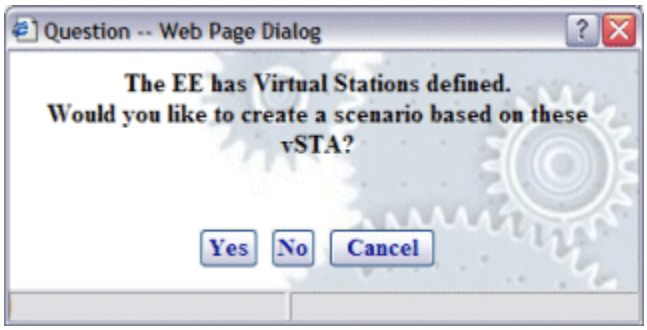
- Launch Internet Explorer.
- Enter the IP address of the EmulationEngine in the URL address field of the browser (e.g., http://192.168.0.50).



Enter your user name and password and select “OK” to access the EmulationEngine web server. The default user name is "Admin". The default password is "EE". The user name and password are case sensitive. After successful log in, a splash page will be displayed for a few seconds:

Choosing a Scenario/Test

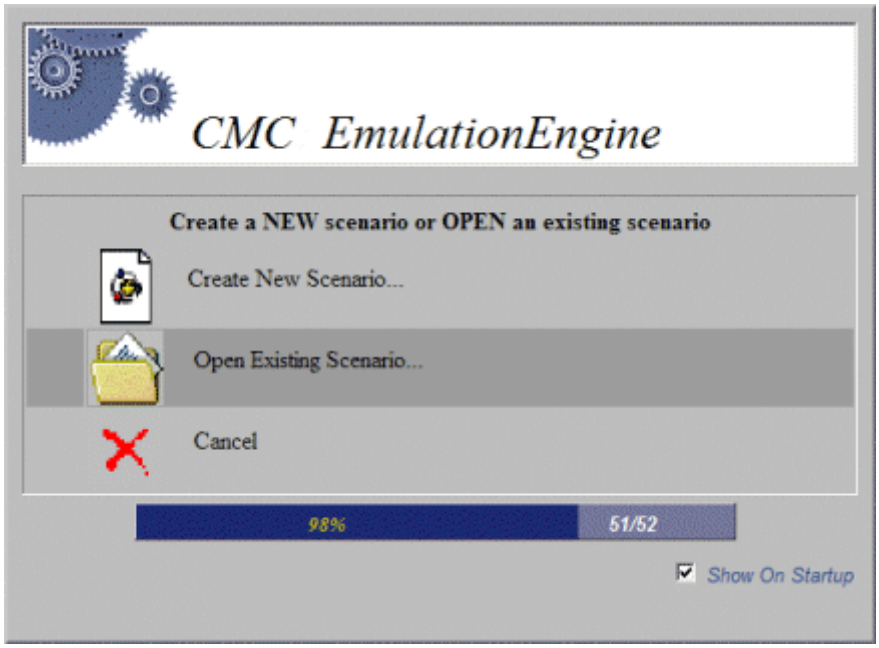
If the EmulationEngine already contains virtual station definitions, the following dialog will be displayed:



- Select “Yes” to build a scenario in the user interface that is based on the virtual stations that are already defined in the EmulationEngine.
- Select “No” to delete the virtual station definitions in the EmulationEngine and create a new empty scenario.
- Select “Cancel” to retain the virtual stations in the EmulationEngine but do not create a new empty scenario. When the main page is displayed, you can display the Scenario Summary Report, Group Summary Report, and Event Log for these existing virtual stations.

  Following a Yes, No, or Cancel selection, the web-based user interface main page is displayed.

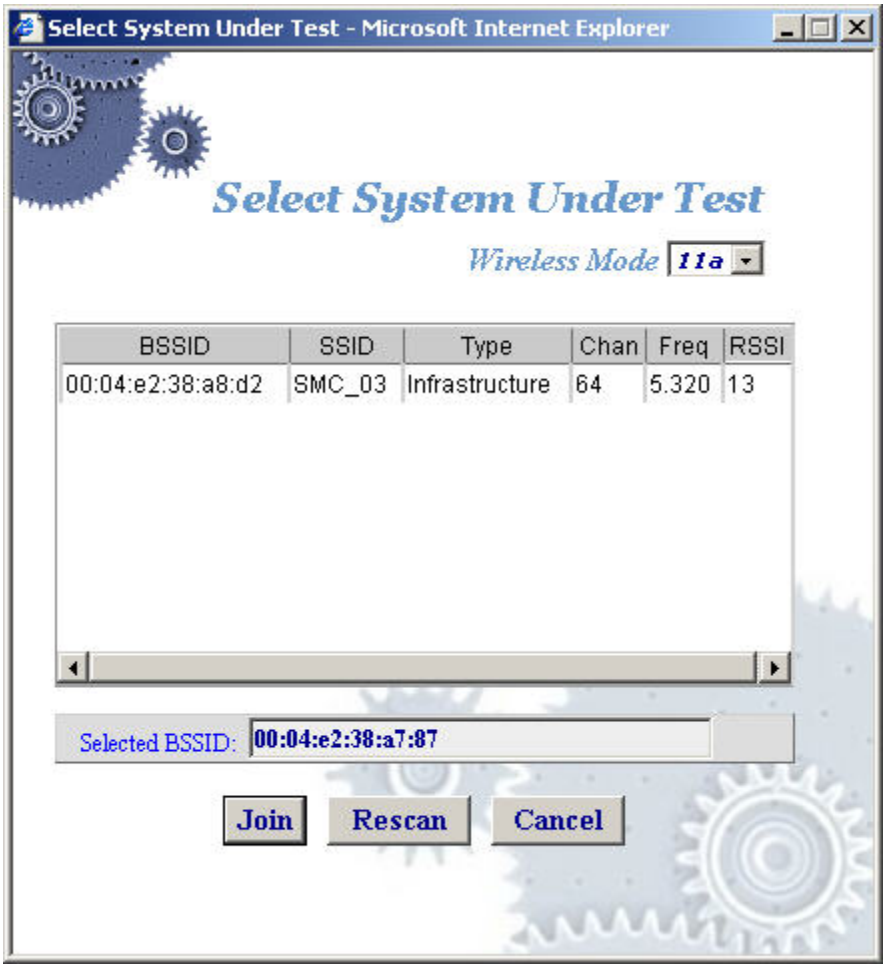
  If there are no virtual station definition in the EmulationEngine and the welcome screen has not been disabled in the UI Configuration dialog (see Configuration->Preferences), the following screen will be displayed:



- Select “Create New Scenario” to select a System Under Test. When you create a new scenario, the user interface provides a list of active Basic Service Set IDs (BSSIDs) that have been detected.
- Select “Open Existing Scenario” to choose from a list of scenario files that have already been created. When you open an existing scenario, the EmulationEngine information is already stored with the scenario file.
- Select “Cancel” to exit this dialog. You can create a new scenario or open an existing scenario in the main page.
- Uncheck the “Show On Startup” checkbox if you do not want to show this screen each time you access the EmulationEngine web server. You can restore this screen on start-up in the UI Configuration dialog (See Configuration->Preferences).

Create New Scenario

If you selected “Create New Scenario” in the welcome screen and have not previously joined with a System Under Test, the Select System Under Test dialog will be displayed:



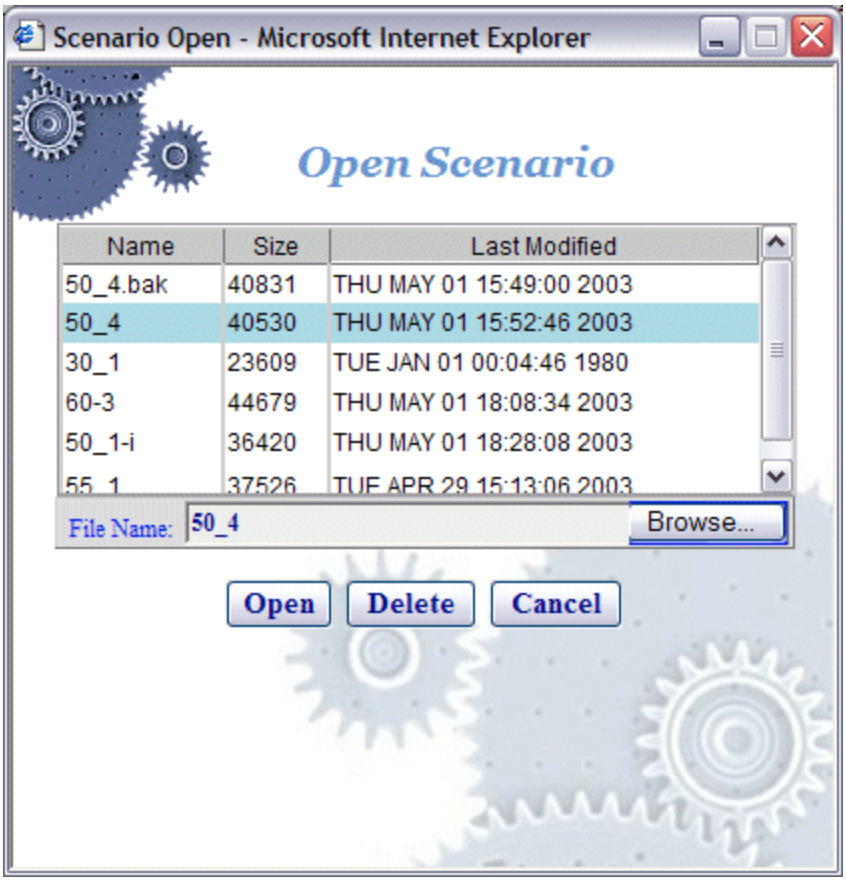
Wireless Mode: This field shows the EmulationEngine's current wireless mode (11a, 11b, or 11g). You can select a different wireless mode from the list box. The web-based user interface will issue a command to the EmulationEngine to change its wireless mode and scan for compatible systems. The results of the new scan will be reflected in the BSSIDs in the list box.

Select a BSSID in the list box. The selected BSSID will be shown in the "Selected BSSID" text box.

- Select "Join" to join with the selected target system.
- Select "Rescan" to update the list of BSSIDs. This selection will cause the EmulationEngine to scan for Basic Service Set IDs.
- Select "Cancel" to close this dialog without selecting a target system. You can select a target system and create or open an existing scenario in the main page.

Open Existing Scenario

If you selected "Open Existing Scenario" in the welcome screen and have not joined with a target system, the Select System Under Test dialog is displayed as described above. After you have joined with a target system, the Open Scenario dialog will be displayed:

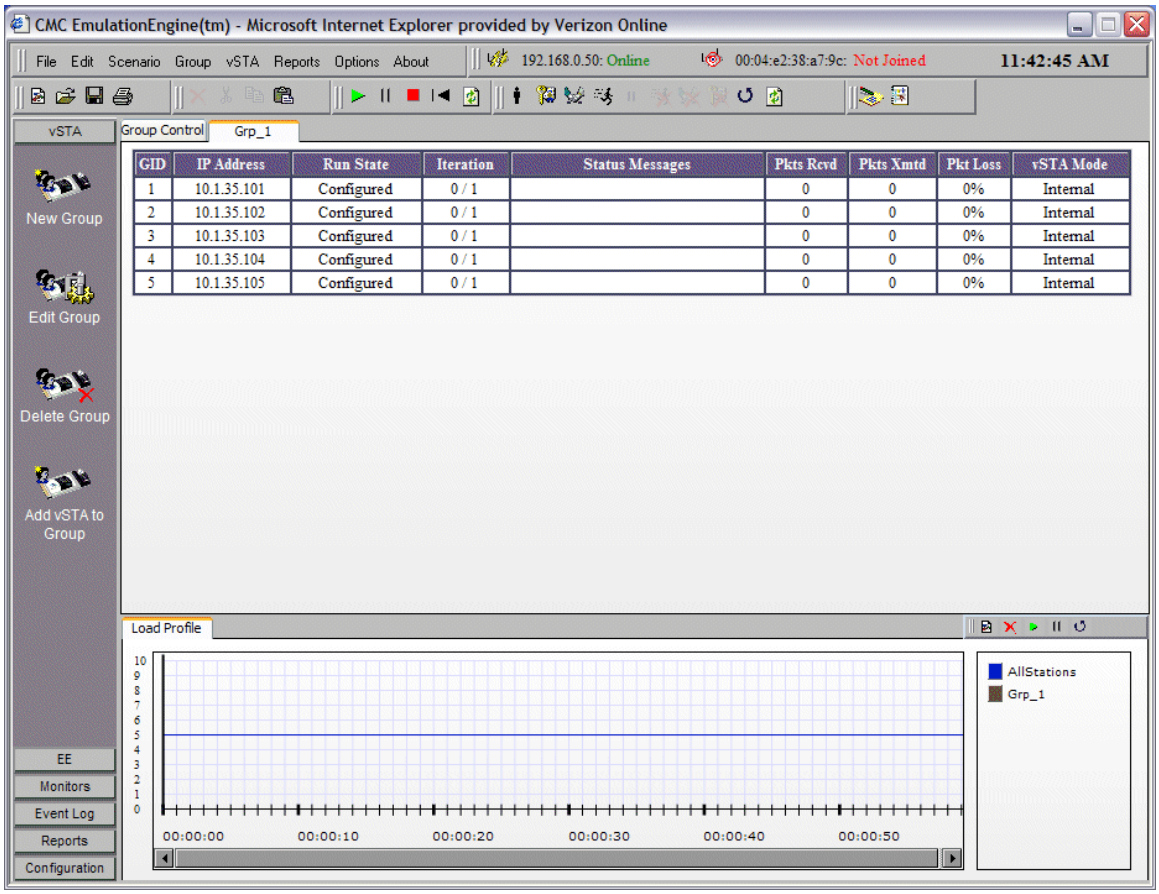


The list box shows a list of scenario files on the EmulationEngine. Select "Browse" to select from scenario files stored on the command PC. Click on a file name in the list of scenario files.

- Select "Open" to open the selected scenario file and continue.
- Select "Delete" to delete the selected file.
- Select "Cancel" to close this dialog without opening a scenario file. You can create a new scenario or open an existing scenario in the main page.

The Main Page

The following illustration shows the format of the main page that is displayed after you select any of the options in start-up dialogs:



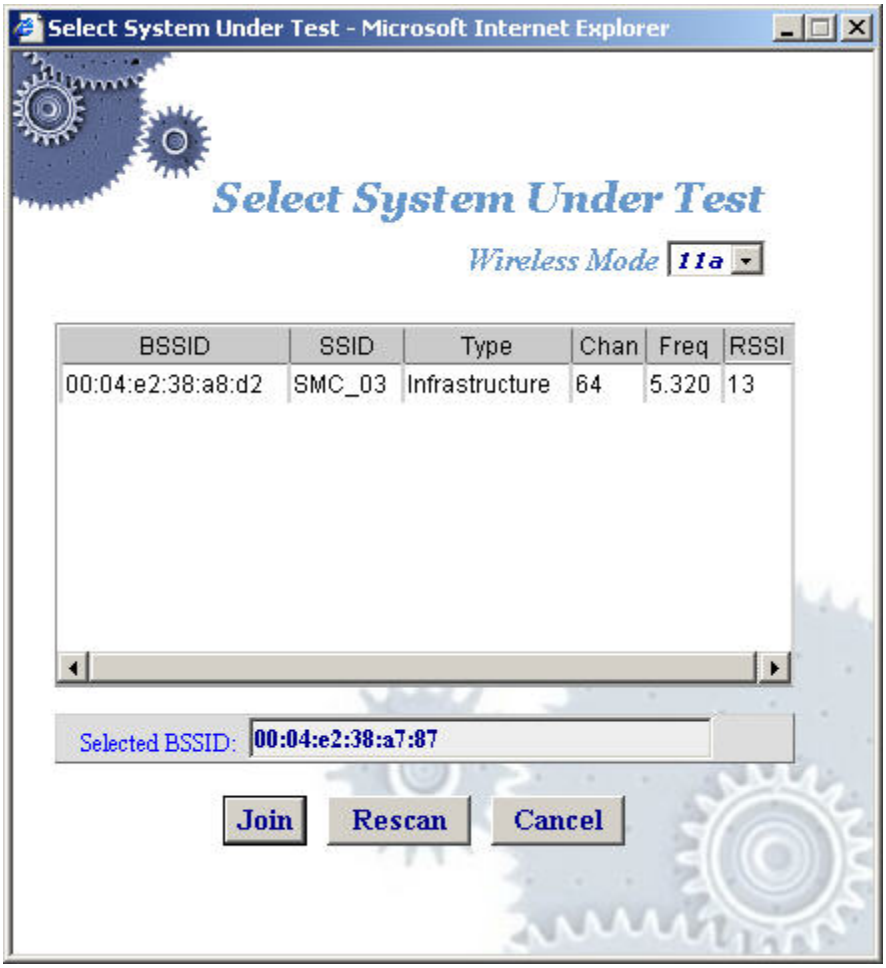
The content of this page will be different depending on whether you created a new scenario, opened an existing scenario, or cancelled/closed any of the start-up dialogs. This example page shows an existing scenario where one group is defined. This section of the page will be blank (No Scenario Defined) if a scenario has not been created.

If you successfully opened a scenario file or chose to use one that is already defined in the EmulationEngine, you can continue with the testing functions that are available in the menus and toolbar. See “Running a Test”. If you selected "Create New Scenario", you must create a group of virtual stations. If you selected "Cancel", you must select and join with a target system and create a new scenario that contains one or more group(s) of one or more virtual station(s).

Creating an Internal Mode/Ping Test

For a simple internal mode/ping test, complete the following steps.

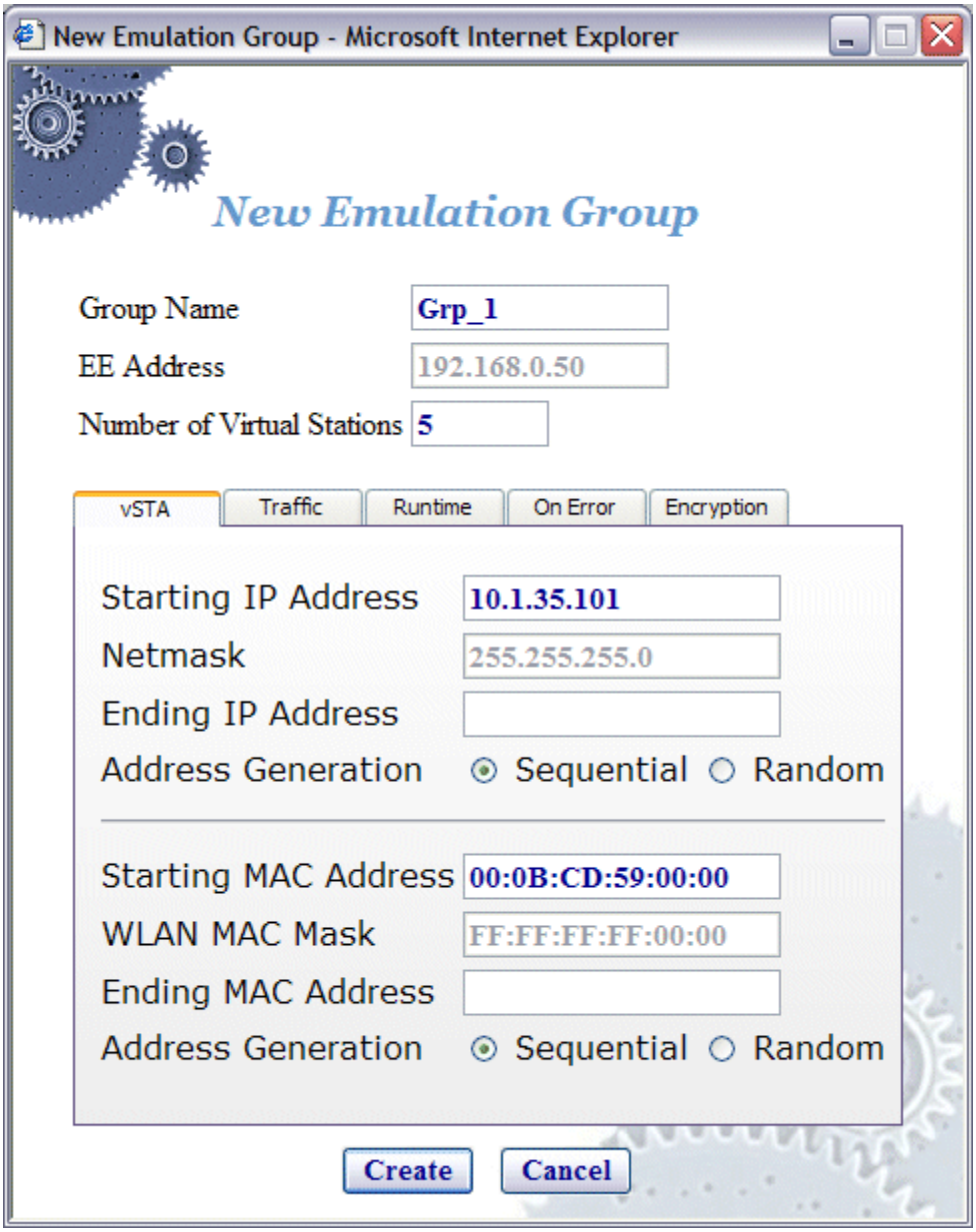
Step 1) If you have already opened or created a scenario, skip to step 2. Otherwise, select "New Scenario" from the File menu to show the Select System Under Test dialog.



Wireless Mode: This field shows the EmulationEngine's current wireless mode (11a, 11b, or 11g). You can select a different wireless mode from the list box. The web-based user interface will issue a command to the EmulationEngine to change its wireless mode and scan for compatible systems. The results of the new scan will be reflected in the BSSIDs in the list box.

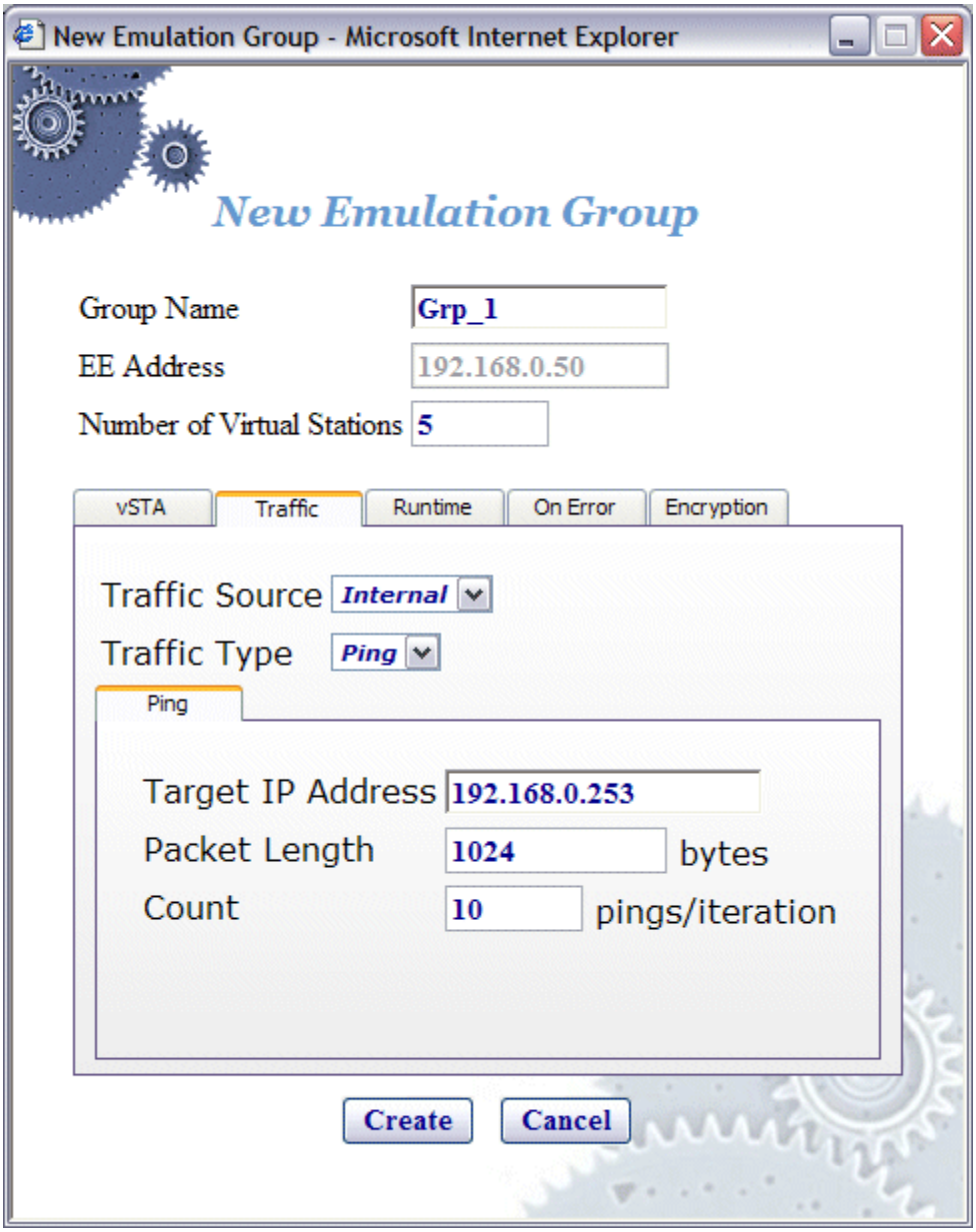
Click on a BSSID in the list box and click "Join" to continue.

Step 2) Select New Group from the vSTA side bar to show the New Emulation Group dialog.



Step 3) Enter an IP address in the Starting IP Address field to define the starting IP address to be used by virtual stations that are created in this scenario. Virtual stations will be created with unique IP addresses, sequentially or randomly, based on this starting IP address.

Step 4) Select the Traffic tab.



Step 5) Make sure the Target IP Address field is set to the address of a target server to be pinged. Click “Create” to create a group with five virtual stations. See "vSTA->New Group" for more information about defining and editing groups and virtual stations in a scenario.

Creating an External Mode Test

For an external mode test, a third-party load generator outside the EmulationEngine must be set up to provide the traffic to be forwarded to the System Under Test. Use the documentation provided by the manufacturer to set up the load generator. See the EmulationEngine Test Set-Up & Configuration Guide for more information about setting up an external mode test. The procedures for creating an internal or external mode test are

almost identical. To create the external mode test, complete steps 1) through 4) as described above for “Creating an Internal Mode Test”. In Step 5), select “External” in the “Traffic Source” field and click the Create button in the New Emulation Group dialog.

Running a Test

Click this button in the toolbar to run the scenario/test for all groups and all virtual stations in a scenario.

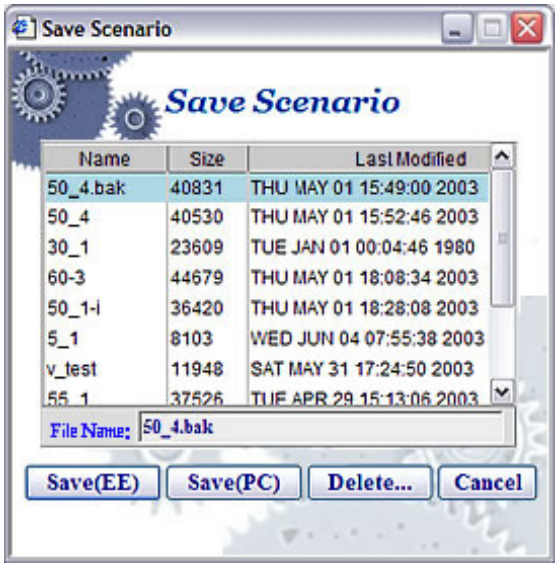
Click this button in the toolbar to run a test for selected virtual stations or groups.

If you created a new scenario and have not yet joined with a target system, the following dialog will be displayed:

Click “Yes” to show the Select System Under Test dialog and join with the System Under Test.

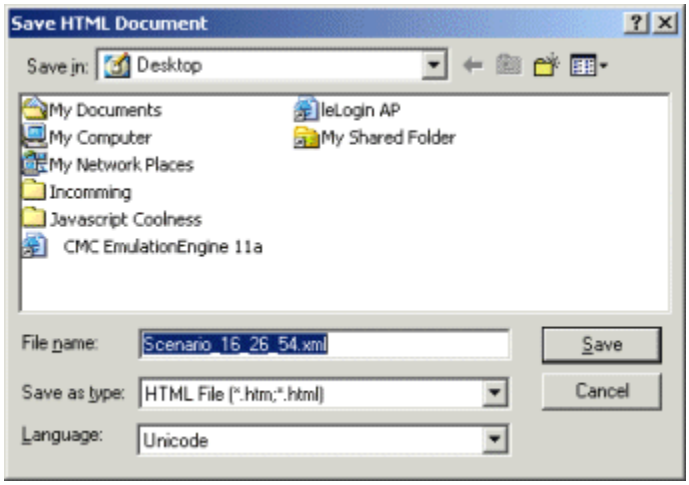
If you created a new scenario and have not saved it using the Save Scenario option in the File menu, a dialog will prompt you to save the scenario.

Select “Yes” to save the scenario file. The Save Scenario dialog is displayed:



Type a name in the File Name field. Do not use colon (:), asterisk (*), question mark (?), quotes (“”), less-than/greater than signs (< >), vertical bar (|), or spaces in a file name.

- Select “Save(EE)” to save the scenario in the EmulationEngine’s flash file system.
- Select “Save(PC)” to save the scenario on the command PC. A standard save dialog will be displayed.



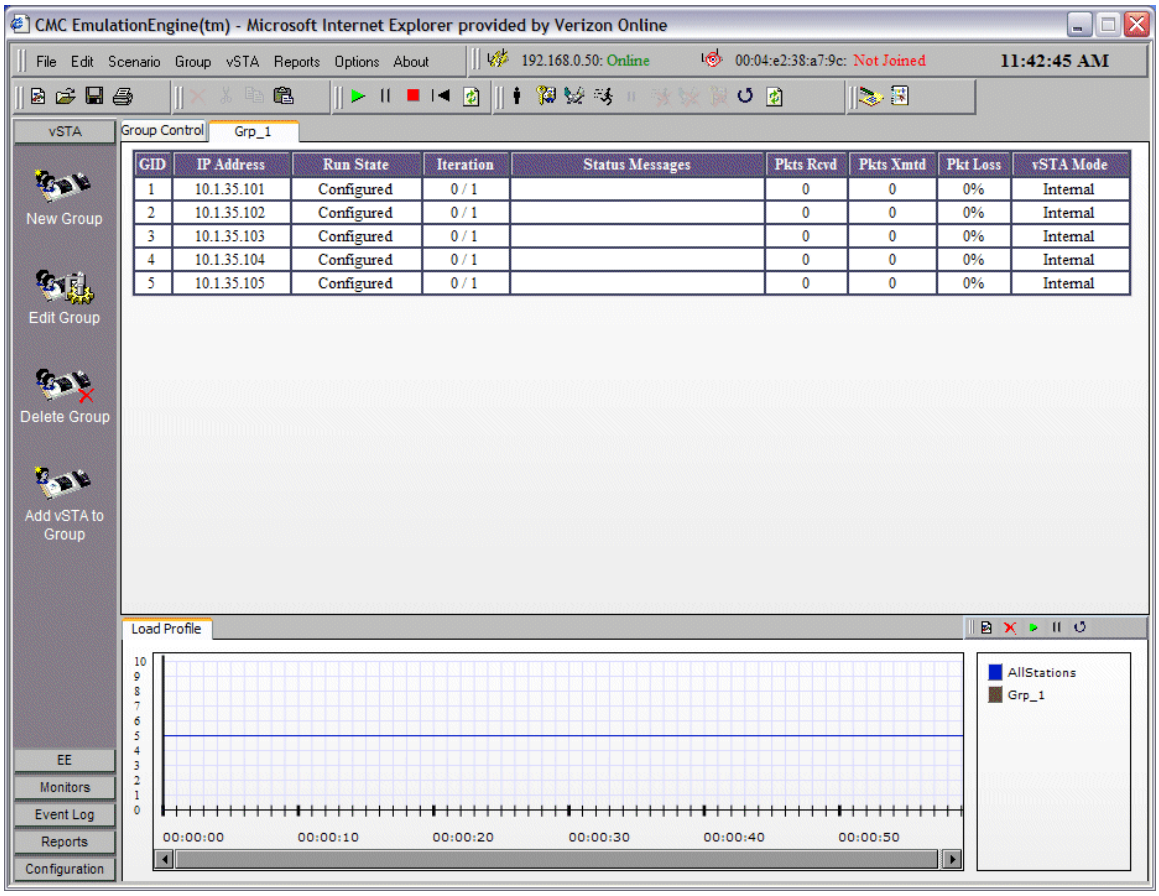
Type a name in the File Name field. Do not use colon (:), asterisk (*), question mark (?), quotes (“”), less-than/greater than signs (< >), vertical bar (|), or spaces in a file name. A disk drive specification (e.g., C:/, D:/) is optional. Select “Save” to save the scenario at the designated location on the command PC.

The virtual stations will start running a few seconds after the scenario has been saved. As the test runs, you will see the "Run State" in the group grid go through the 802.11 states: configure, initialize, authenticate, associate, and run. When an internal mode/ping test is complete, the "Run State" will display "Done".

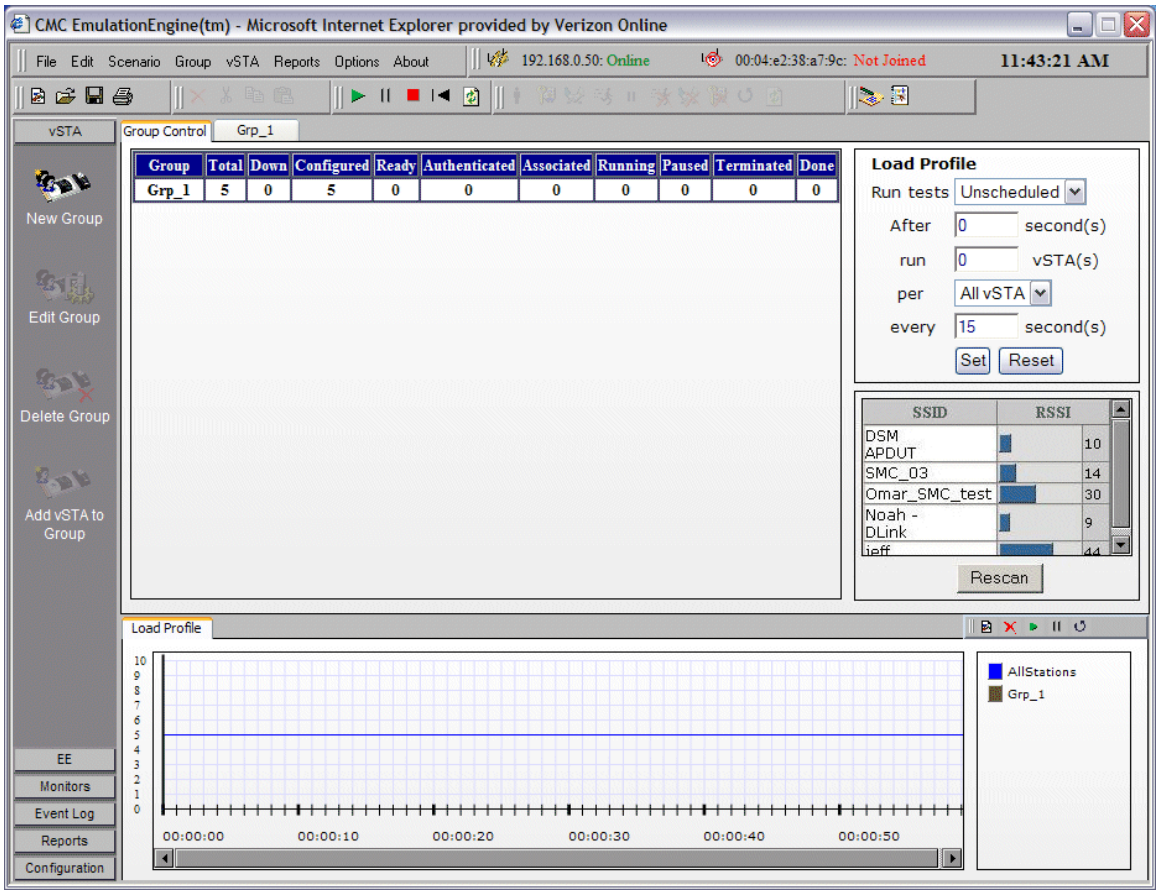
NOTE: Any interaction with a running test can affect the operation of the test which may result in skewed statistics.

About/Using the Main Page

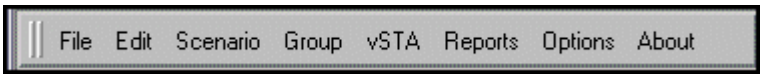
The following illustration shows the general format of the main page where a scenario with one group of virtual stations has been defined and the group tab (Grp_1) is selected:



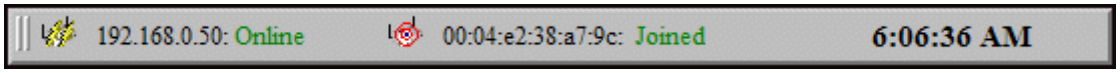
When the “Group Control” tab is selected, the main page will show the Load Profile and a list of devices that have been discovered (if any) in a scan:



- **Menu Toolbar**: The top-left toolbar at the top of the page is a drop-down menu bar of all EmulationEngine functions.



- **Status Toolbar**: The top-right toolbar shows the status of the EmulationEngine, the System Under Test and the current time on the command PC.



The status (e.g., Online) next to the EmulationEngine IP Address Address indicates the current status of the EmulationEngine with the web-based user interface. This status may intermittently display “Busy” or “Offline”. If the Busy or Offline status displays frequently or for extended periods of time, check the Polling Interval and Polling Timeout values in the Configure EmulationEngine dialog (see EE->Configure EE). Also see Chapter 9, Troubleshooting/EmulationEngine Busy or Not Responding. The status (e.g., Joined) next to the BSSID/MAC address indicates the current status of the EmulationEngine with a System Under Test.

- **File Toolbar**:This toolbar is used to create, open, save and print scenarios.

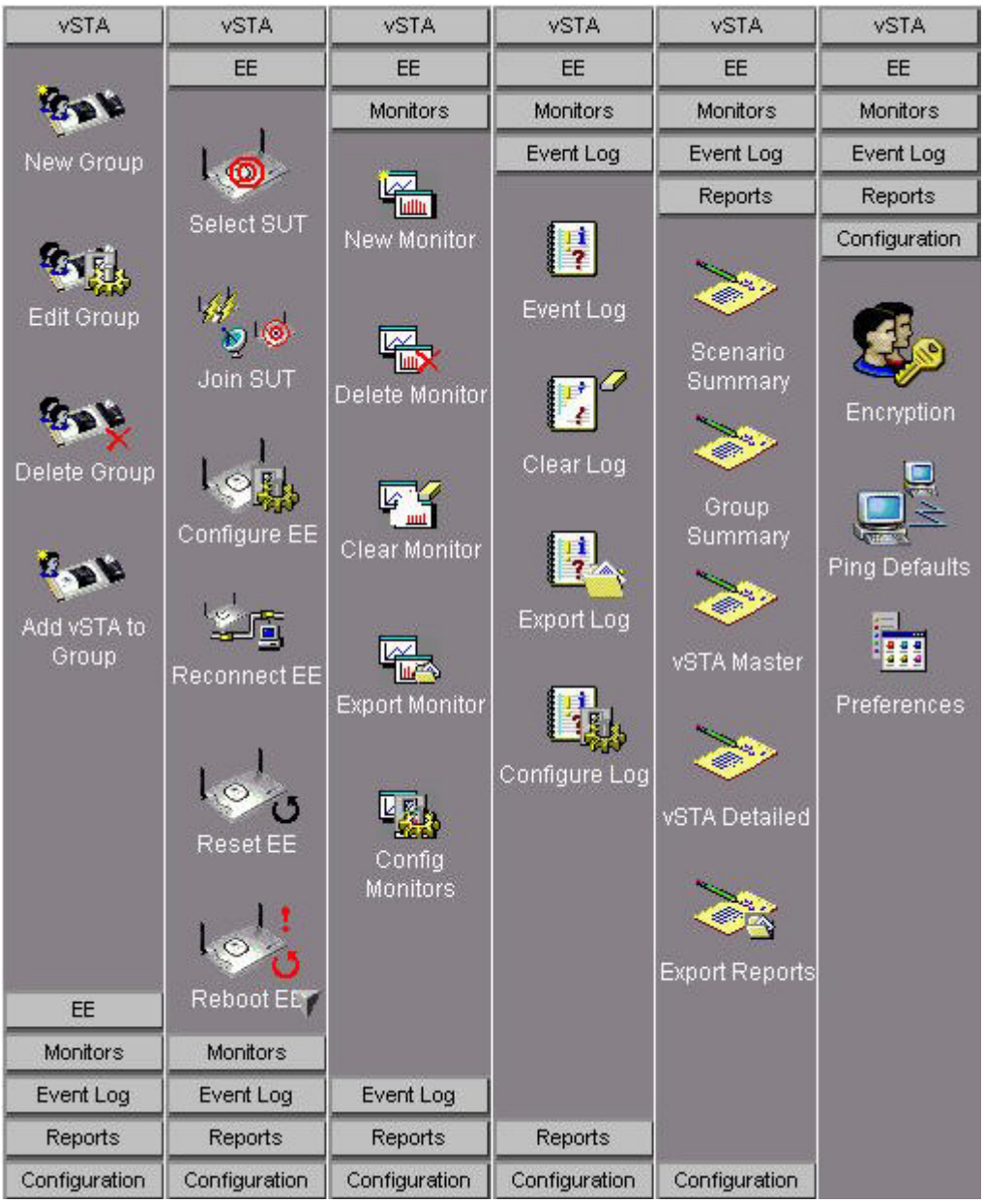
- **Edit Toolbar**: This toolbar is used to delete, cut, copy and paste virtual stations within and between groups. It can also be used to delete groups when a group is selected in the group control tab/table.

- **Scenario Toolbar**: The buttons in this section of the toolbar can be used to run, pause, stop, restart, or refresh the entire scenario of all virtual stations.

- **vSTA Toolbar**: The buttons in this toolbar are used to initialize, authenticate, associate, run, pause, stop, disassociate, deauthenticate, restart, or refresh selected virtual stations or groups of virtual stations.

- **Reports Toolbar**: The buttons in this toolbar are used to view reports and the event log:

- **Side Bar Buttons**: The buttons in the side bar provide access to most virtual station, engine, monitoring, logging and report functions as well as user interface and encryption configuration.



Group Control Grid

When the Group Control tab is selected, the table shows the status of each group and its associated virtual stations:

Group Control | Grp_1 | Grp_2 | Grp_3 | Grp_4

Group	Total	Down	Configured	Ready	Authenticated	Associated	Running	Paused	Terminated	Done
Grp_1	8	0	8	0	0	0	0	0	0	0
Grp_2	8	0	8	0	0	0	0	0	0	0
Grp_3	8	0	8	0	0	0	0	0	0	0
Grp_4	8	0	8	0	0	0	0	0	0	0

Group: This field displays the name of each group. The name is assigned in the New Emulation Group dialog (See vSTA->New Group).

The remaining fields in the group line are counters that show the state of each group's virtual stations during a test.

Total: This field shows the total number of virtual stations in each group.

Down: This field shows the total number of virtual stations in a group that have not been configured in the EmulationEngine and are in a "down" state.

Configured: This field shows the total number of virtual stations in each group that have been configured in the EmulationEngine.

Ready: This field shows the total number of virtual stations in each group that are ready (in the initialized state) to begin testing. These virtual stations have been initialized in the EmulationEngine.

Authenticated: This field shows the total number of virtual stations in each group that have authenticated with the System Under Test.

Associated: This field shows the total number of virtual stations in each group that have associated with the System Under Test.

Running: This field shows the total number of virtual stations in each group that are currently performing an operation defined by the scenario. The operation that is being performed depends on whether the virtual stations are configured for internal or external traffic generation.

Paused: This field shows the total number of virtual stations in each group that have paused in their execution.

Terminated: This field shows the total number of virtual stations in each group that have been terminated. These virtual stations must be reset before they can be used again.

Done: This field shows the total number of virtual stations in each group that have completed their run of an internal mode/ping test. This field will not be incremented for virtual stations that are running an external mode test or an internal mode test with infinite iterations.

Group Tabs: Each group defined in the scenario has its own tab. When an individual group tab is selected, the table shows details of each virtual station in the group.

Group Control | Grp_1

GID	IP Address	Run State	Iteration	Status Messages	Pkts Rcvd	Pkts Xmtd	Pkt Loss	vSTA Mode
1	10.1.35.101	Configured	0 / 1		0	0	0%	Internal
2	10.1.35.102	Configured	0 / 1		0	0	0%	Internal
3	10.1.35.103	Configured	0 / 1		0	0	0%	Internal
4	10.1.35.104	Configured	0 / 1		0	0	0%	Internal
5	10.1.35.105	Configured	0 / 1		0	0	0%	Internal

GID: The global ID is a unique ID that is assigned by the EmulationEngine to each virtual station in a scenario group. It is a unique ID across all groups in the EmulationEngine.

IP Address: This field shows each virtual station's IP Address.

Run State: This column shows the current state of each virtual station in the scenario group (i.e., Initializing, Authenticating, Authenticated, Associating, etc.).

Iteration: The two numbers in this column show the current iteration of the test that a virtual station is running or has completed and the number of iterations that are configured for the virtual station (e.g., 5/10 = 5 iterations have been completed/10 iterations are to be run). These numbers can be a value in the range zero (0) to 9999 or Infinite.

Status Messages: This column shows status and/or error messages returned by the EmulationEngine for each virtual station in the scenario group. See Appendix D for a list of messages that may be displayed in this column.

Pkts Rcvd: This column shows the total number of packets received by each virtual station in this group.

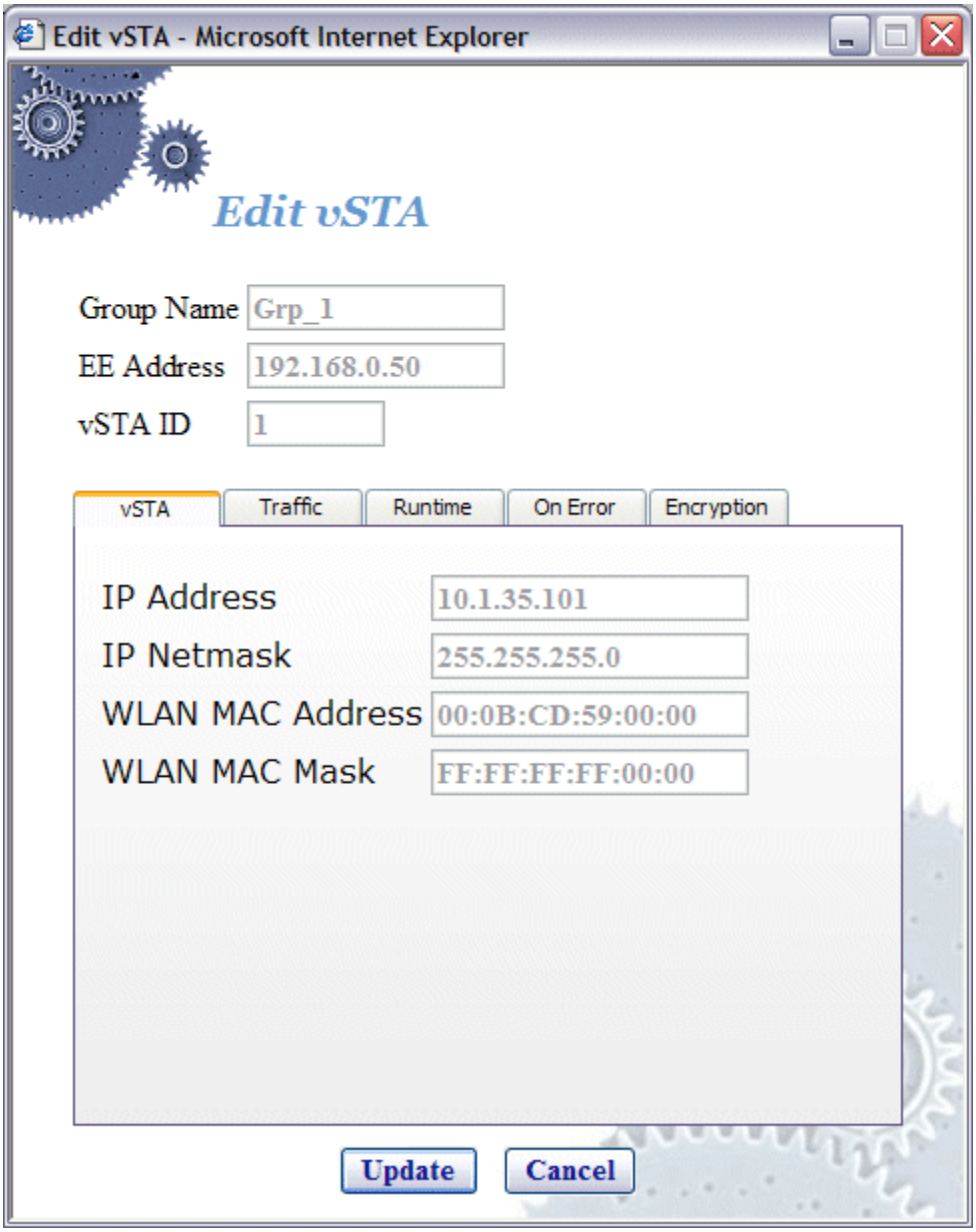
Pkts Xmts: This column shows the total number of packets transmitted by each virtual station in this group.

Pkt Loss: This column shows the percentage of packet loss for each virtual station in this group.

vSTA Mode: This column shows the traffic generation mode (Internal or External) of each virtual station in the scenario group.

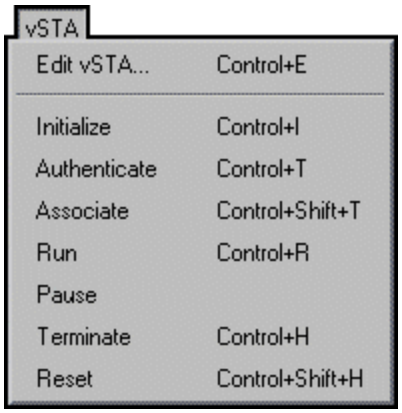
You can select one or more line items/virtual stations in the table and choose a menu item or toolbar button to execute a command for an individual or multiple virtual stations.

You can double click on a virtual station line item in the table to display the Edit Virtual Station dialog:

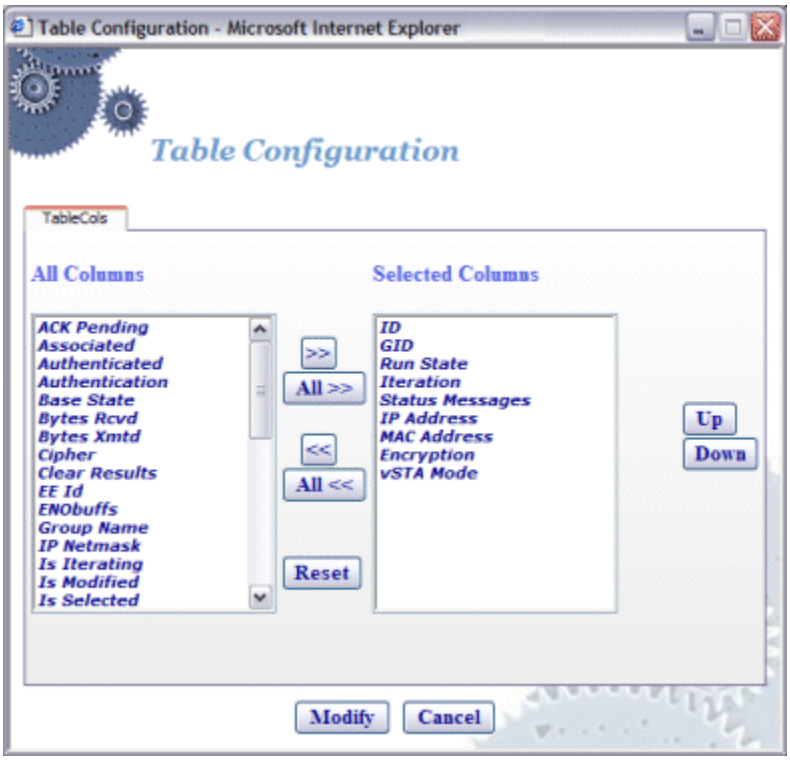


See vSTA->Add New vSTA to Group for information about the fields in this dialog.

You can right click on selected virtual stations to display the vSTA menu. Any menu option will affect the selected virtual station(s).



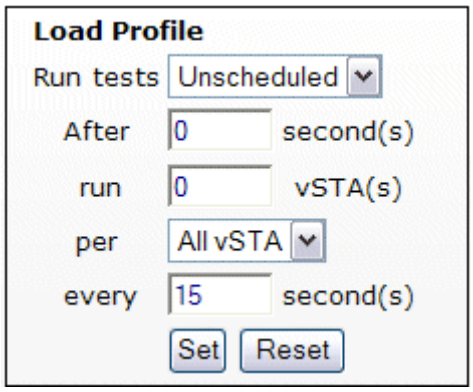
Group Tab Columns: Within a group, you can double click on the table heading to configure the columns that are displayed.



Select one or more items in the All Columns list box and click the [>>] button to move them to the Selected Columns list box. Click "Modify" to add the columns to the group table. Select "Reset" to return the columns to their default setting.

Load Profile

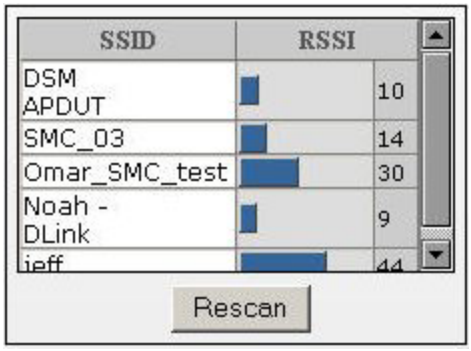
The Load Profile section of the page can be used to automatically execute scenarios at scheduled intervals.



When automatic scheduling is defined, the grid below the Scheduling/Group table will chart the status of each virtual station over the period of the test. See "Using Load Profiles" below for more information about using this feature.

Target Systems

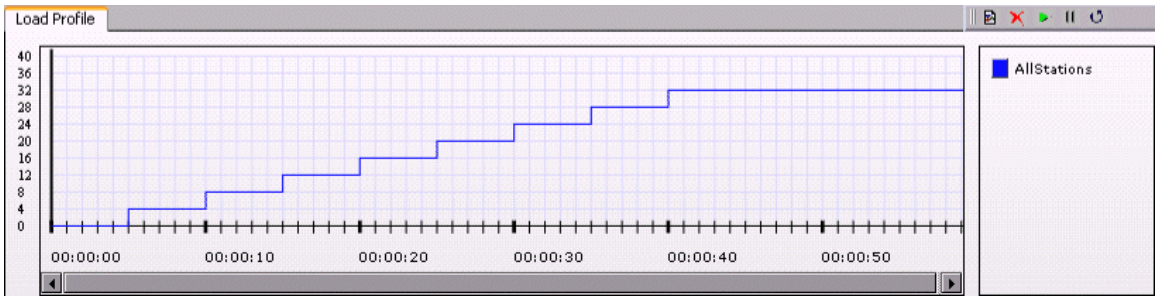
Below Load Profile, the main page displays a list of target systems and their signal strength in relationship to the EmulationEngine. Target systems with a higher signal strength value have a better/higher transmission rate to the EmulationEngine.



You can select “Rescan” to instruct the EmulationEngine to rescan for all systems. The devices shown in this list box will be displayed in the Select System Under Test dialog where you can choose a system to test.

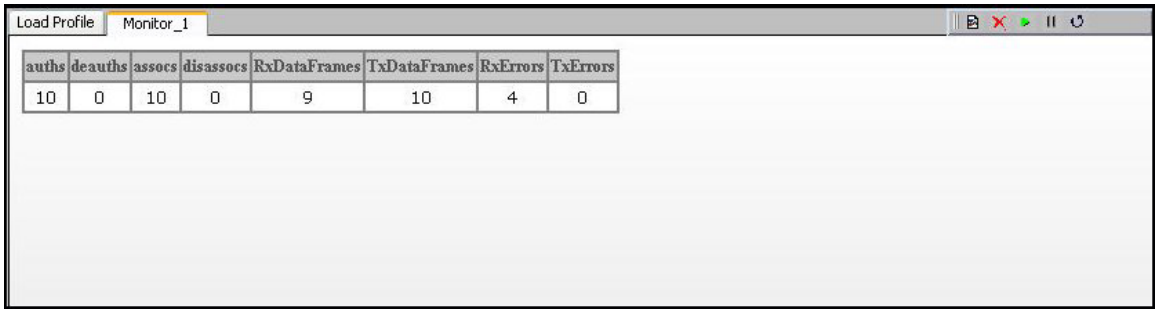
Load Profile/Monitor Graphs

The bottom half of the web page is reserved for charts that graphically illustrate a load profile and monitor test results. When the Load Profile tab is selected, a graph shows the loading profile based on an active Load Profile.



See "Using Load Profiles" below for more information about how to set up a Load Profile.

If multiple monitors have been defined, use the horizontal tabs at the top of this section of the page to select and show each monitor.



A maximum of four monitors can be defined in each scenario. The toolbar in the top-right corner of the monitor area can be used to define a new monitor, delete a monitor, run a paused monitor, pause a running monitor, and clear a monitor's display. See "Monitors Side Bar" for more information about this section of the page.

Range Checking/Error Messages

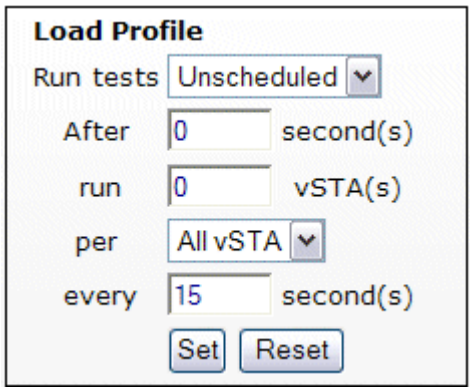
In the dialogs described later in this chapter, the user interface will verify all entries that require values within a specified range. If a field can contain a very large number, do not enter commas (,) for values larger than 999 (e.g., use 1000 rather than 1,000). If you use an invalid character in a field or specify a value that is not within range, a dialog will tell you the allowable range. Example:

When an Invalid Data dialog is displayed, click "OK" and reenter a value that is within the allowable range for the field.

Using Load Profiles

Load Profiles allow you to control the execution of virtual stations: Unscheduled or Scheduled. In Unscheduled mode, virtual stations can be manually controlled. In Scheduled mode, virtual stations can be run incrementally based on groups (all virtual stations within the group) or by individual virtual stations.

NOTE: In order to use Scheduled mode, you must disable "Batch EE Requests" in EmulationEngine configuration (See EE->Configure EE). When requests are batched for transmission to the EmulationEngine, they will not be sent at the scheduled interval defined by the Load Profile.



Run tests: Select Unscheduled or Scheduled. The default is Unscheduled. If Scheduled is selected, the Load Profile is in effect for the scenario. If Unscheduled is selected, the Load Profile is not in effect.

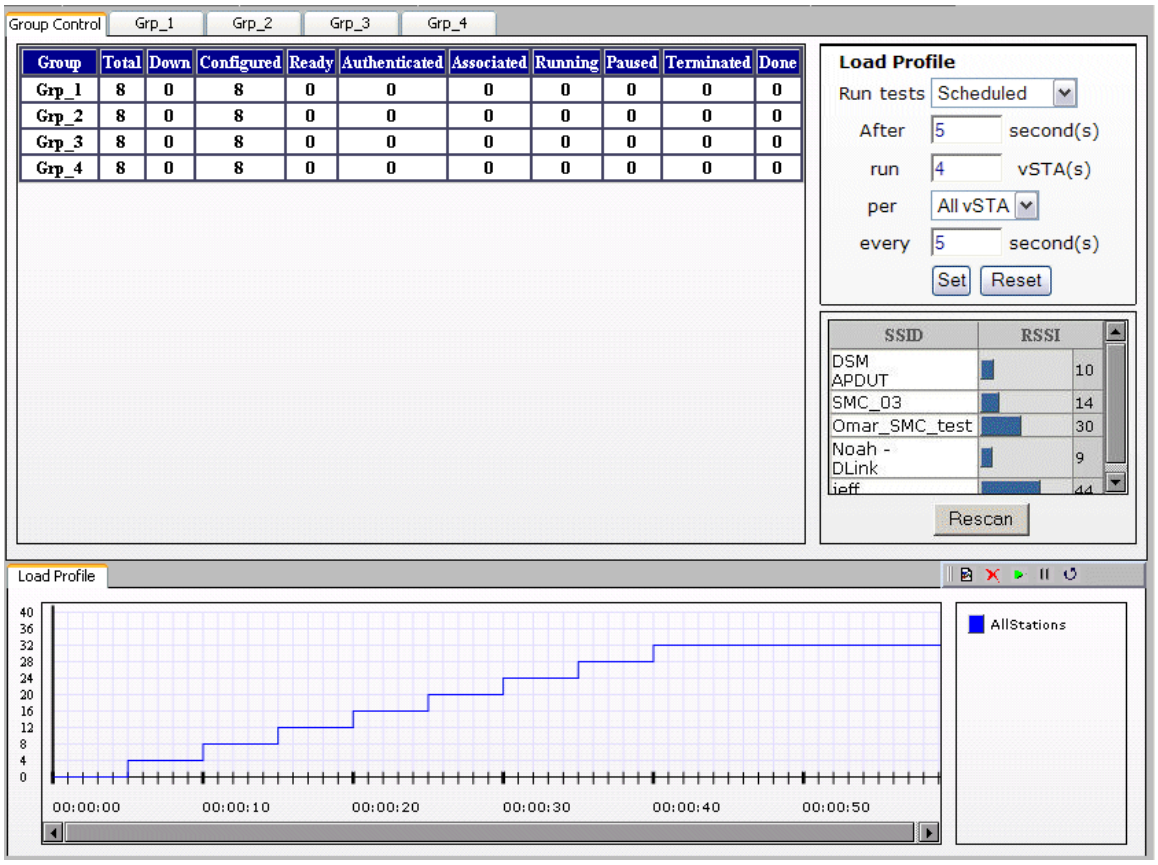
After: This field defines an initial delay before a run starts: 0...3600 seconds (1 hour). It is the number of seconds after a Run command has been issued (e.g., the Run button is selected in the toolbar) that the Load Profile will begin executing.

run: Enter the number of virtual stations to start each time interval of the load profile. The time interval is specified in the "every" field.

per: This field defines what scheduling is based on (All vSTA = all virtual stations, Groups = virtual stations within each group). If "All vSTA" is selected, the Load Profile will run the next "run" number of virtual stations at each scheduled iteration. If Group is selected, the Load Profile will run the next "run" number of virtual stations from each group at each scheduled iteration. The scheduled iteration is defined in the "every" field.

every: This field defines the number of seconds between each repetition of the Load Profile: 1...3600 seconds (1 hour). When this time expires, the next set of virtual stations (as defined in the run field) will be executed.

Select the Load Profile tab in the Load Profile/Monitors section of the page to show the Load Profile graph. The Load Profile graph displays the Load Profile setup: x-Axis = time, y-Axis = Groups or All vSTA depending on the selection in the per field. The following illustration shows an example Load Profile setup and graph:



After a delay of five seconds, the user interface will instruct the EmulationEngine to run four virtual stations. Every five seconds thereafter, the user interface will instruct the EmulationEngine to run another four virtual stations until all virtual stations have been executed. The graph depicts this scheduling scheme.

vSTA Side Bar

In the web-based user interface you can create scenarios that consist of one or more groups of virtual stations. The group configuration defines a test sequence that the EmulationEngine will activate to exercise the System Under Test. Virtual stations can be configured individually or by group. In internal mode, you can configure each virtual station and/or group to generate traffic to the system being tested. You can also configure virtual stations to operate in external mode where an external load generator will generate the traffic.

New Group: Select this button in the vSTA side bar to define a new group in a scenario.

Edit Group: Select this button in the vSTA side bar to modify the definition of a group.

Delete Group: Select this button in the vSTA side bar to remove a group and all of its virtual stations from a scenario.

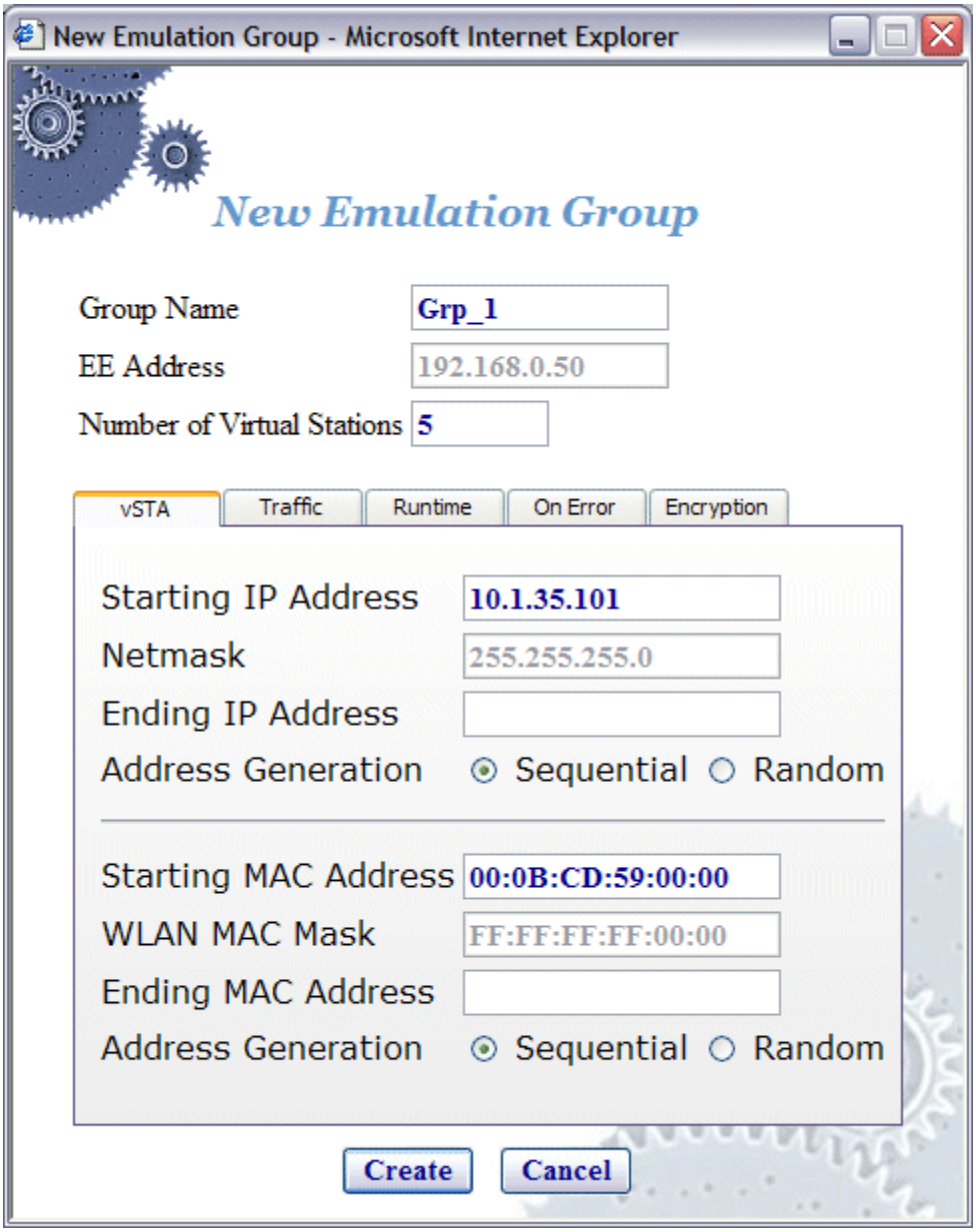
Add vSTA to Group: Select this button in the vSTA side bar to define a new virtual station in a scenario group.

vSTA->New Group

The New Group dialog is used to define new groups of virtual stations in a scenario. It is a tabbed dialog with the following sections: vSTA, Traffic, Runtime, On Error, and Encryption.

vSTA->New Group->vSTA

The vSTA section of the New Emulation Group dialog defines the range of IP and MAC addresses to be used by virtual stations. The range of MAC addresses specified in this dialog must be within the range of MAC addresses defined by the WLAN Base MAC Address and WLAN MAC Mask in EmulationEngine configuration (see EE->Configure EE).



Group Name: Use a group name that helps you identify the devices that will be tested (e.g., Warehouse, Stock_Room, Control_Tour, Shop_Floor, etc.). It can be up to 12 characters (a...z, 0..9, and underscore (_)).

EE Address: This field shows the IP address of the EmulationEngine that will run this scenario/test.

Number of Virtual Stations: Enter the number of virtual stations (0...64) to be created in this scenario group. The default value is 5. If you specify zero virtual stations in this dialog, you must use the Add vSTA to Group dialog to add one or more virtual stations to this group. The Add vSTA to Group dialog will use the default parameters you set in this group definition.

Starting IP Address: Enter the starting IP address to be used for virtual station IP address generation of newly created virtual stations in this group. Successive virtual station IP addresses will be sequentially or randomly generated from this base address.

Netmask: This field shows the network mask to be used by virtual stations in this group. It is not settable here. It is global for all virtual stations and is an EmulationEngine configuration parameter.

Ending IP Address: Enter the ending IP address to be used by virtual stations in this group when generating random addresses within a range.

Address Generation: Select the Sequential or Random radio button to instruct the EmulationEngine to sequentially or randomly assign IP addresses to newly created virtual stations.

Starting MAC Address: Enter the starting MAC address to be used for virtual station MAC address generation of newly created virtual stations in this group. Successive virtual station MAC addresses will be sequentially or randomly generated from this base address. The starting MAC address must be within the range of MAC addresses defined by the WLAN Base MAC Address and WLAN MAC Mask in EmulationEngine configuration (see EE->Configure EE).

WLAN MAC Mask: The WLAN MAC Mask is a display-only field. It is defined in EmulationEngine configuration (see EE->Configure EE). It limits the range of MAC addresses that can be detected on the wireless LAN and received by the EmulationEngine. For example, if the WLAN MAC is set to 00:0b:cd:59:23:44 and the mask is set to ff:ff:ff:ff:00:00, the only MAC addresses that can be detected on the wireless LAN and received by the EmulationEngine are: 00:0b:cd:59:00:00 - 00:0b:cd:59:ff:ff. All other MAC addresses will be filtered out.

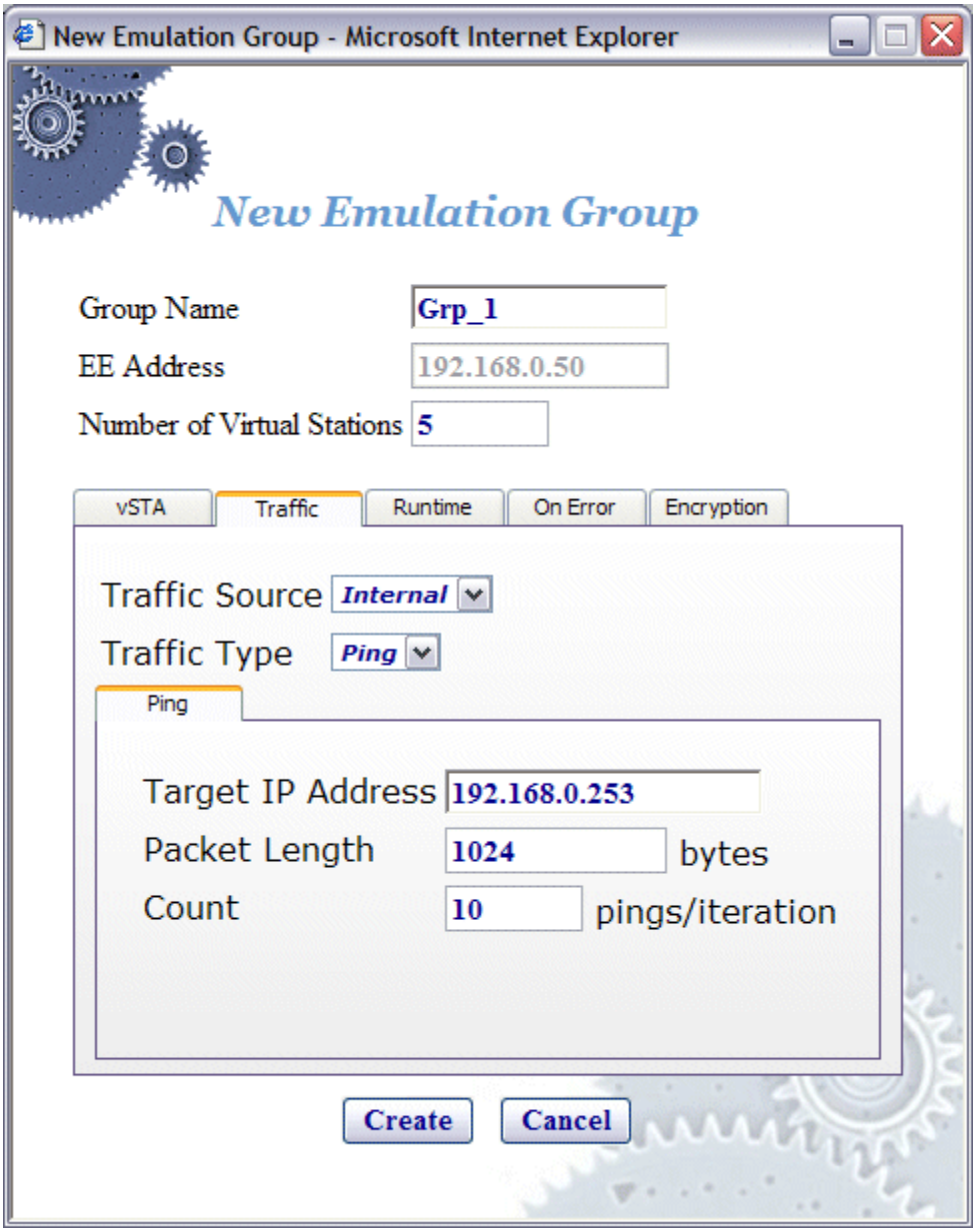
Ending MAC Address: Enter the ending MAC address to be used by virtual stations in this group.

Address Generation: Select the Sequential or Random radio button to instruct the EmulationEngine to sequentially or randomly assign MAC addresses to newly created virtual stations.

- Click “Create” to create the group.
- Click “Cancel” to exit this dialog.

vSTA->New Group->Traffic

The Traffic section of the New Emulation Group dialog defines the type of traffic (Internal/Ping or External/Load Generator) to be used by the virtual station(s).



Traffic Source: Select Internal or External from the list box. In Internal mode, traffic is generated internally by each vSTA using ICMP Echo (Ping) Request/Reply packets. In External mode, packets coming into the EmulationEngine over 802.3 are mapped to virtual stations by source IP address and forwarded via 802.11. Packets coming back via 802.11 are remapped to the originating MAC address.

Traffic Type: This selection is only applicable if the Traffic Source is set to Internal. In this release, only ICMP Echo (Ping) is supported.

Target IP Address: Enter the target IP address where ICMP Echo (Ping) Requests should be sent.

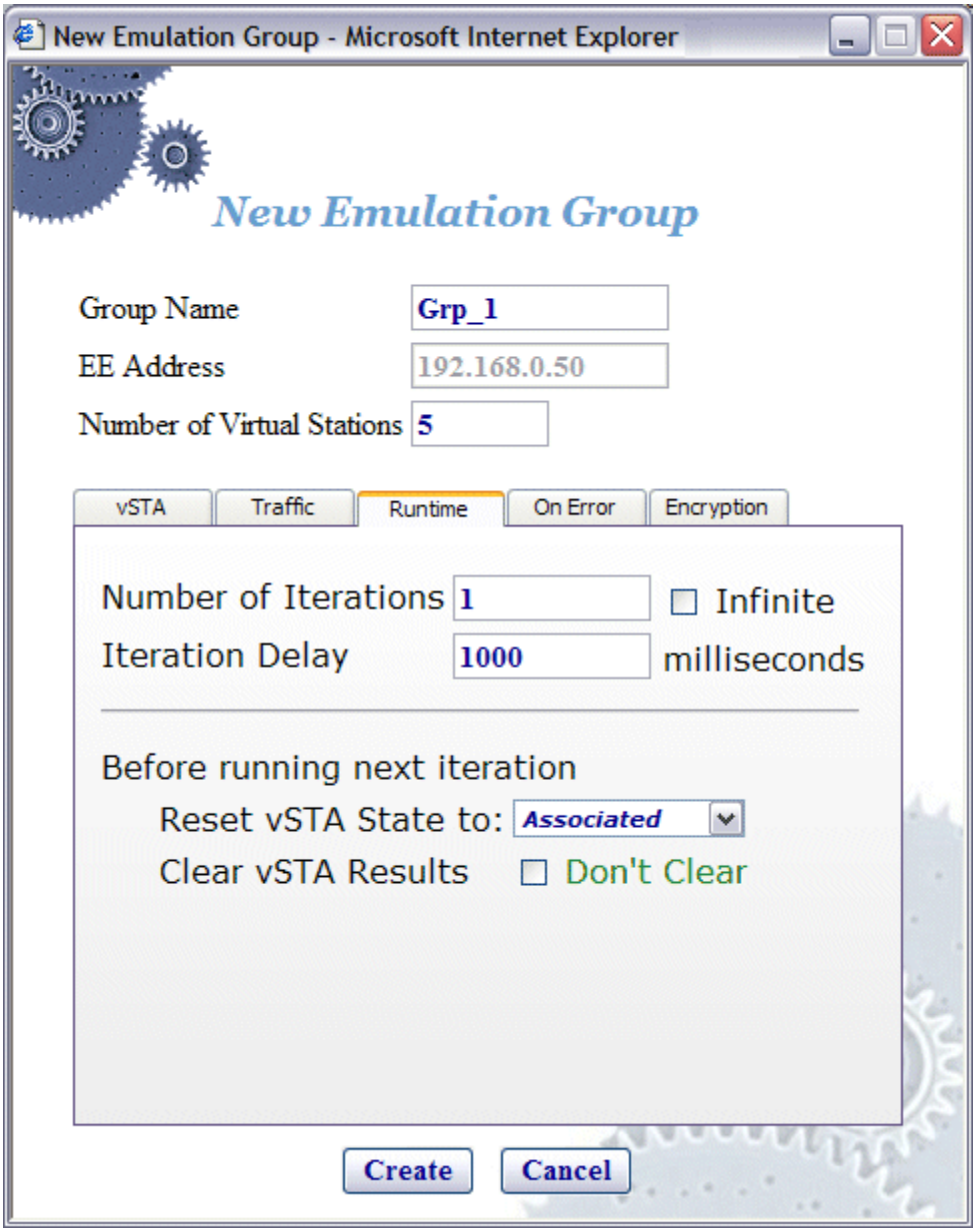
Packet Length: Specify the size of the ping data buffer (64…1024). The default is 1024.

Count: Specify the total number of pings to be sent: 0…10000 (0=None).

- Click “Create” to create the group.
- Click “Cancel” to exit this dialog.

vSTA->New Group->Runtime

The Runtime section of the New Emulation Group dialog allows you to run a virtual station’s test multiple times. This is only applicable to internal traffic generation. After each iteration of a test, the state of the virtual station can be set to a “base state”. A user-defined delay between successive iterations is defined in milliseconds. Optionally, any results collected for the virtual station can be cleared at the start of each iteration.



Number of Iterations: Enter the number of times (1…10000) to repeat the virtual station's task (Ping) or select the Infinite checkbox to continuously iterate indefinitely.

Iteration Delay: Enter the delay (in milliseconds) to be introduced between iterations of the test. It can be set to a value in the range: 0…300000 milliseconds (5 minutes).

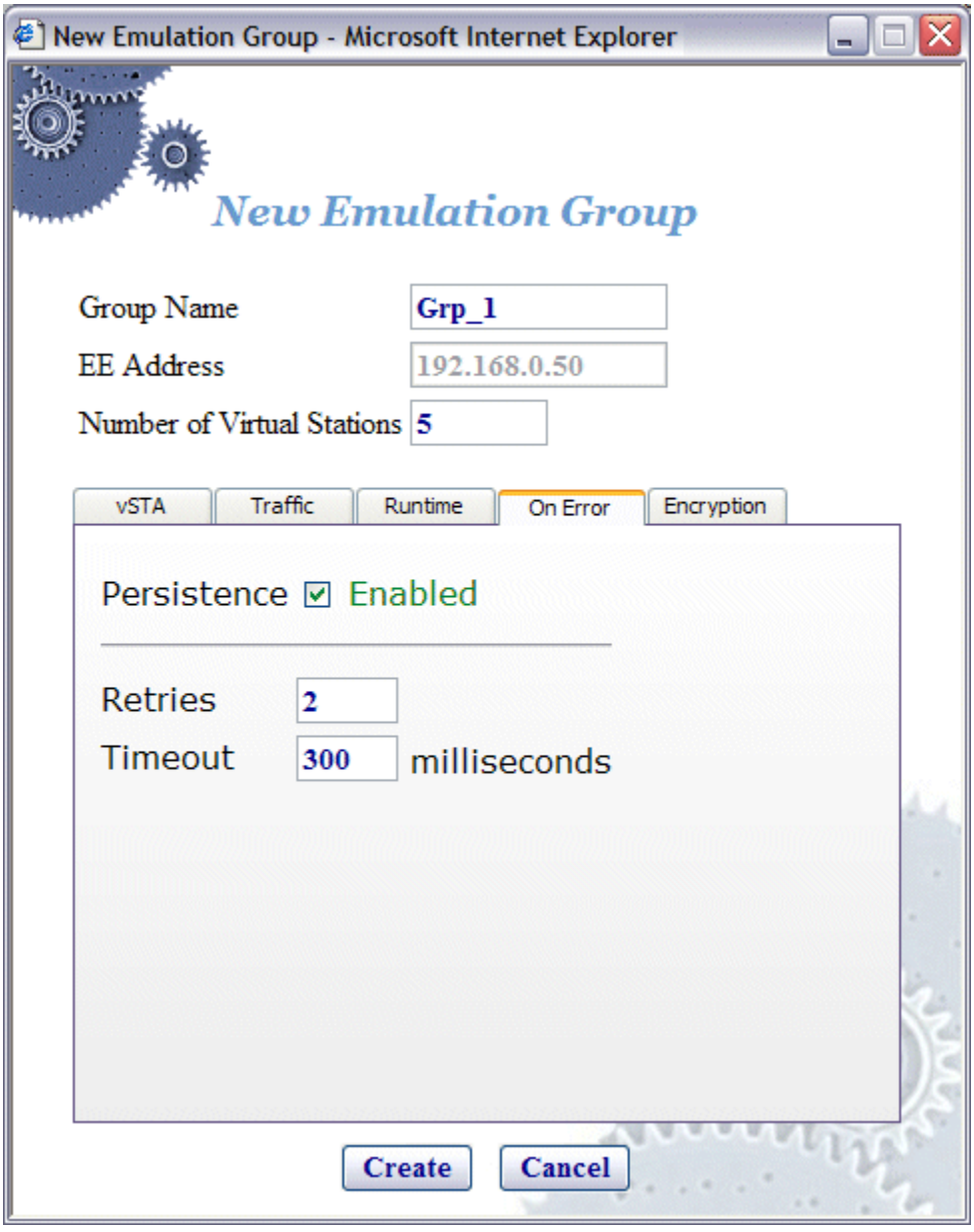
Before Running Next Iteration->Reset vSTA State to: Select a state from the list box. Each virtual station in this group will be reset to the selected state (initialized, authenticated, or associated) at the end of each iteration.

Before Running Next Iteration->Clear vSTA Results: Select this check box to clear test results before successive iterations of the test.

- Click “Create” to create the group.
- Click “Cancel” to close this dialog.

vSTA->New Group->On Error

The On Error section of the New Emulation Group dialog defines whether virtual stations should reconnect to the System Under Test during a test if the system deauthenticates or disassociates a virtual station.



Persistence: Select this checkbox to enable or disable persistent mode. When enabled, the virtual stations in this group will remain persistent (connected) to a system during a test if the system deauthenticates or disassociates the virtual station. If the EmulationEngine loses connection to a System Under Test, it

must be able to recover and continue the test at the point where it was interrupted. For example, if a virtual station is in a run or associated state and an 802.11 management frame (deauth or disassoc) is sent from the system and received by the EmulationEngine, this virtual station will attempt to go back to the state it was in prior to receiving the management frame. If the virtual station was running a ping test when interrupted, the virtual station's ping test will continue. If it was in an associated state, the virtual station will simply reissue the associate request.

Retries: This field specifies the number of times the EmulationEngine should issue authentication and association requests before failing the operation. It can be a value in the range 0...10.

Timeout: This field specifies the timeout value (in milliseconds) for authentication and association requests. It can be set to a value in the range 250...60000 milliseconds (1 minute).

- Click "Create" to create the group.
- Click "Cancel" to close this dialog.

vSTA->New Group->Encryption

This section of the New Group dialog defines whether the virtual station will use encryption, the associated cipher to be used and the type of authentication (Open System or Shared Key) to be used for authenticating with the System Under Test.

NOTE: The four shared keys for Wired Equivalency Privacy (WEP) encryption must be defined in the Encryption Defaults dialog in the Configuration side bar.

Encryption: Select this checkbox to enable/disable encryption.

Authentication: Select the authentication type: Open System or Shared Key.

Cipher Selection: Reserved for future use. WEP is the only supported selection in this release.

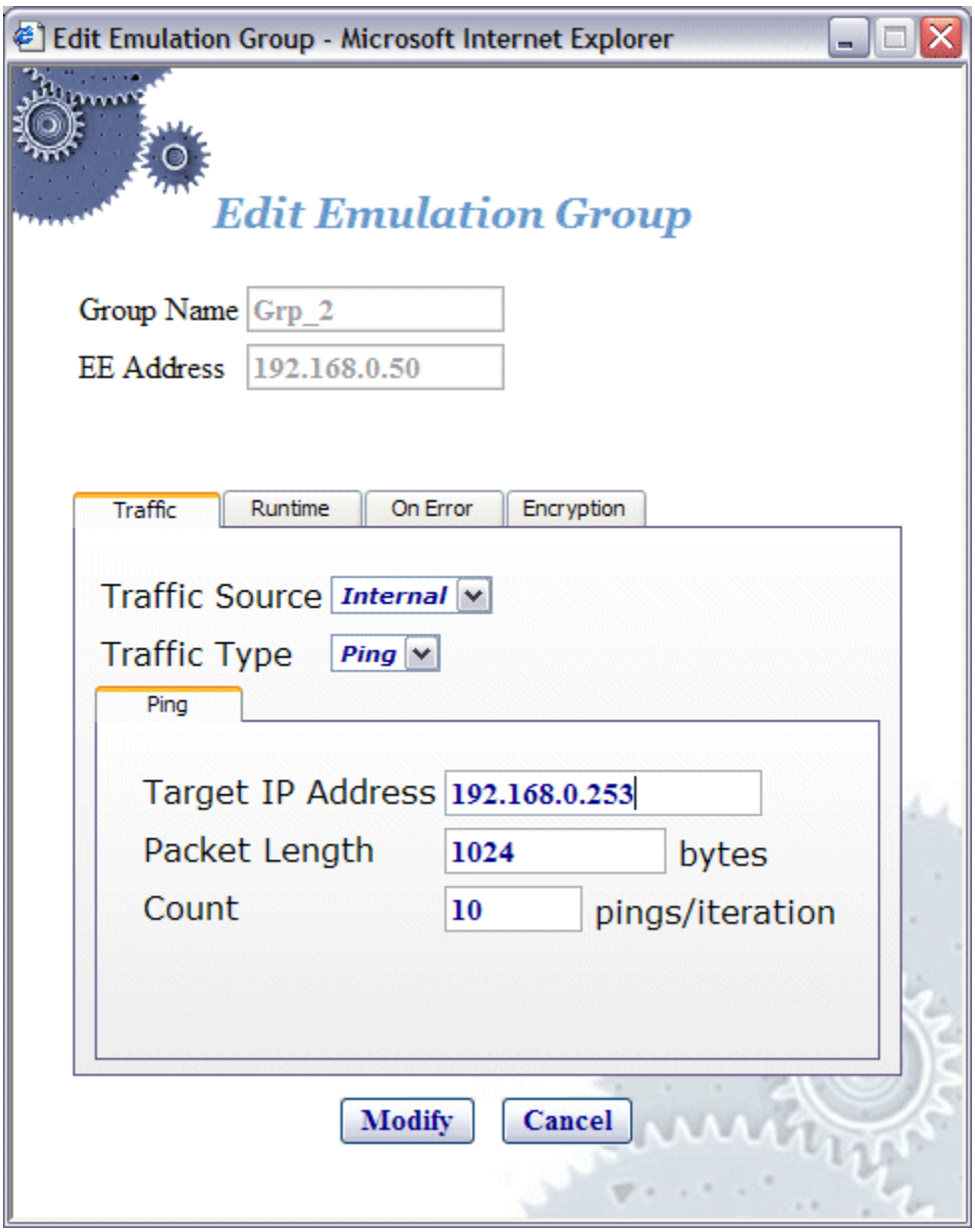
Shared Key Index: This section of the dialog will show the shared keys that were defined in the Encryption Default dialog. See "Configuration->Encryption". Select the shared key to be used.

These keys will be used for encryption by virtual stations in this scenario group with the System Under Test.

- Click “Create” to create the group.
- Click “Cancel” to close this dialog.

vSTA->Edit Group

The following dialog is displayed when the Edit Group button is selected in the vSTA side bar.



This dialog is the same as "vSTA->New Group" dialog except it does not have a vSTA tab. After virtual stations have been assigned MAC and IP Addresses, they cannot be changed. See "vSTA->New Group" for a description of the fields in this dialog.

- Click “Modify” to modify all virtual stations with the new settings.
- Click “Cancel” to close this dialog without modifying any virtual stations.

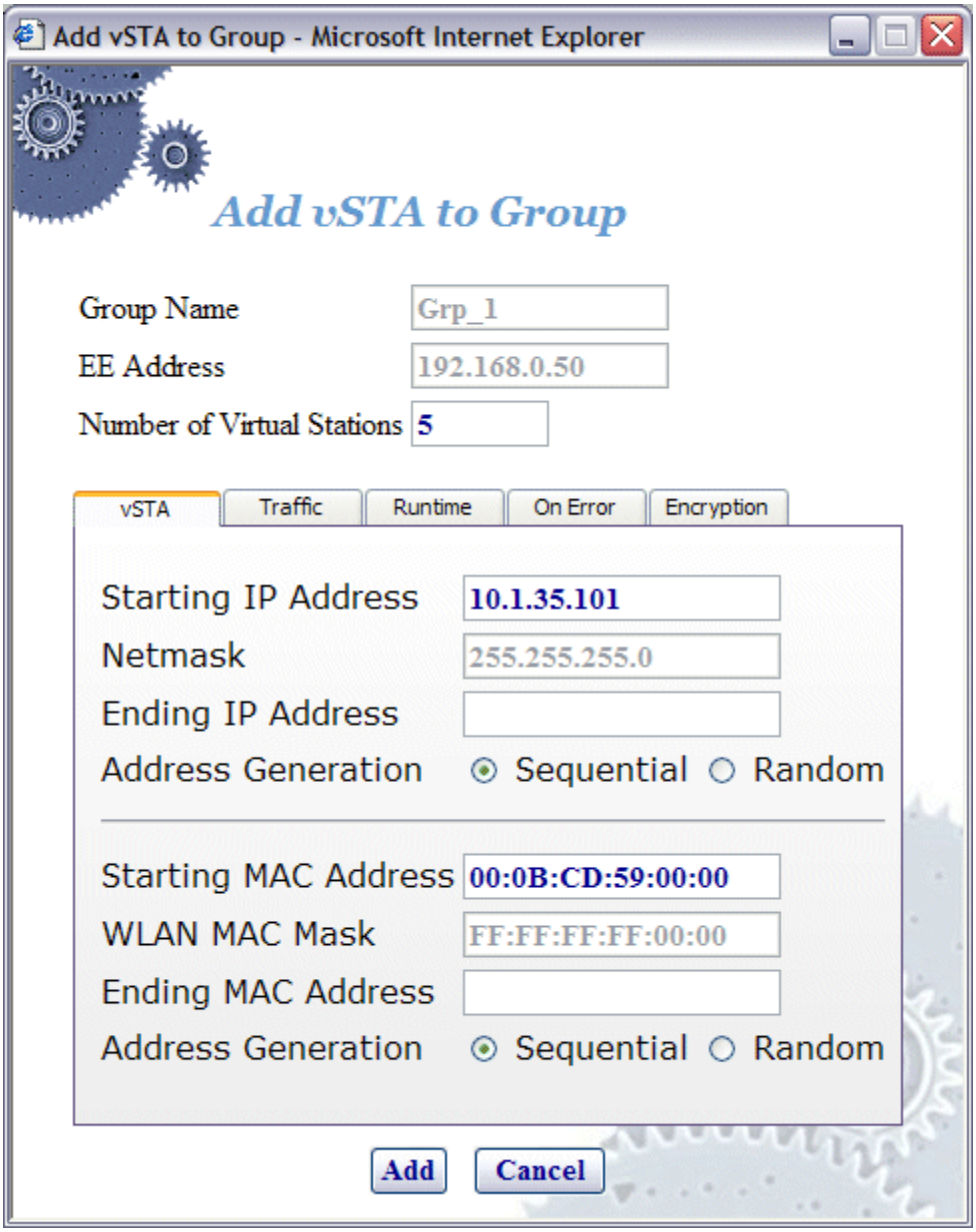
vSTA->Delete Group

When the Delete Group button is selected from the vSTA side bar, a confirmation dialog will ask you to confirm this selection.

- Click “Yes” to remove the group and all virtual stations in it from the system.
- Click “No” to close this dialog without removing the group.

vSTA->Add New vSTA to Group

The following dialog is shown when the Add New vSTA to Group button is selected in the vSTA side bar.



This dialog is used to add new virtual stations to an existing scenario group. All fields in this dialog default to the values that have were initially entered when the group was created. Any changes to this form will also update these group default values. See "vSTA->New Group" for a description of the fields in this dialog.

- Click “Add” to add the virtual station.
- Click “Cancel” to close this dialog.

EE (EmulationEngine) Side Bar

The buttons in the EE side bar are used to configure and manage the EmulationEngine and to select and join with a System Under Test.

Select SUT: Click this button in the EE side bar to display the Select System Under Test dialog.

Join SUT: Click this button in the EE side bar to join with the System Under Test.

Configure EE: Click this button in the EE side bar to configure the EmulationEngine.

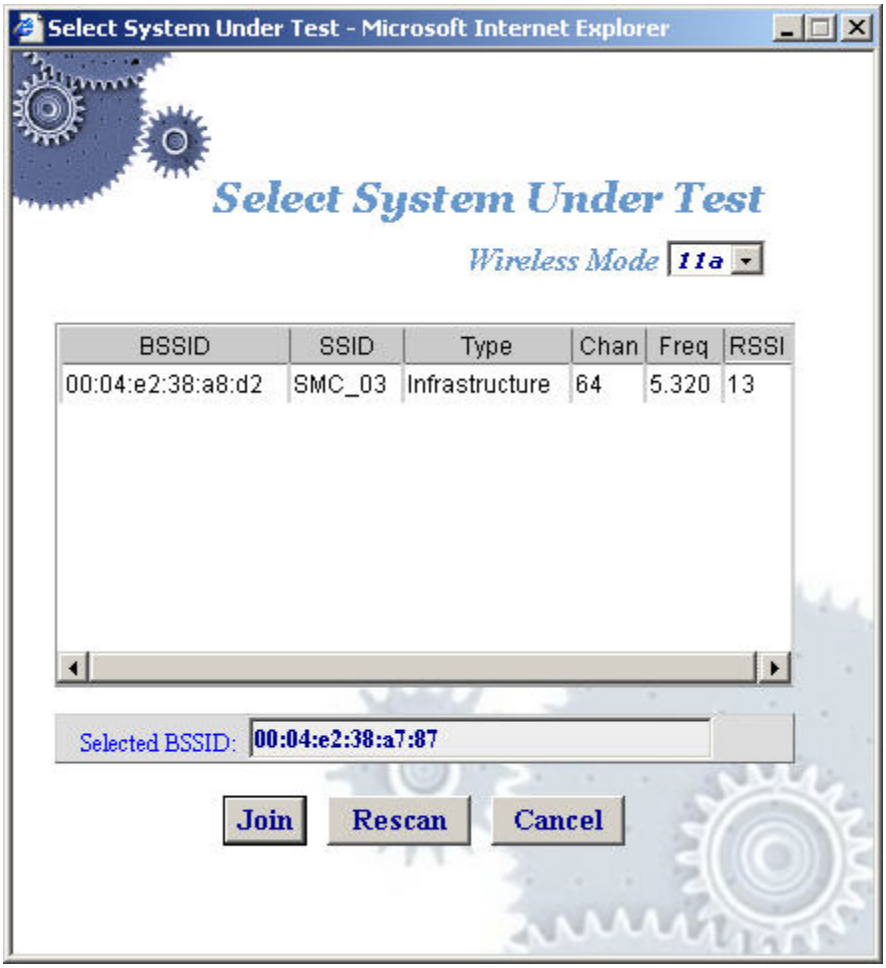
Reconnect EE: Click this button in the EE side bar to reconnect to the EmulationEngine. This is used after a reboot of the EmuationEngine.

Reset EE: Click this button in the EE side bar to reset all statistics counters to zero and all virtual stations to a configured state.

Reboot EE: Click this button in the EE side bar to reboot the EmulationEngine.

EE->Select SUT

When the Select SUT button is selected in the EE side bar, the Select System Under Test dialog is displayed:

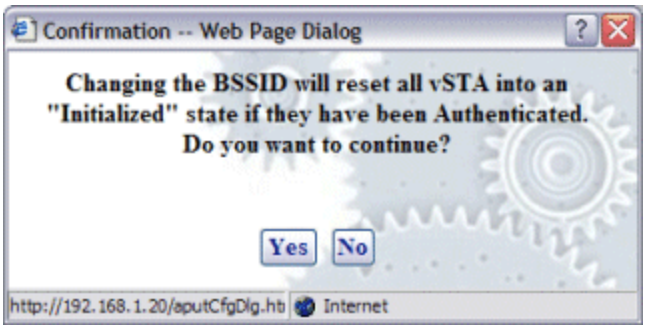


Wireless Mode: This field shows the EmulationEngine's current wireless mode (11a, 11b, or 11g). You can select a different wireless mode from the list box. The web-based user interface will issue a command to the EmulationEngine to change its wireless mode and scan for compatible systems. The results of the new scan will be reflected in the BSSIDs in the list box.

Click on a BSSID in the list box.

- Select "Join" to join with the selected System Under Test.
- Select "Rescan" to update the list of BSSIDs. This selection will cause the EmulationEngine to scan for Basic Service Set IDs and update the list of available systems.
- Click "Cancel" to close this dialog without selecting a System Under Test.

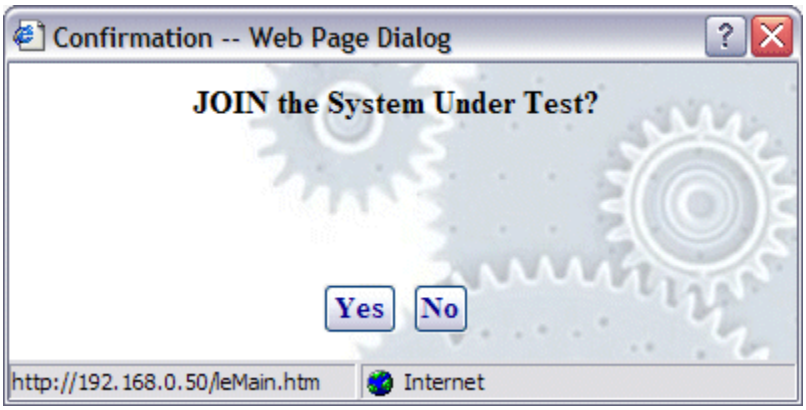
If a scenario with virtual stations already exists and you have previously joined with a system, the following dialog will be displayed if you select a different BSSID in the Select System Under Test dialog:



- Click “Yes” to continue and join with a different System Under Test.
- Click “No” to return to the Select System Under Test dialog.

EE->Join SUT

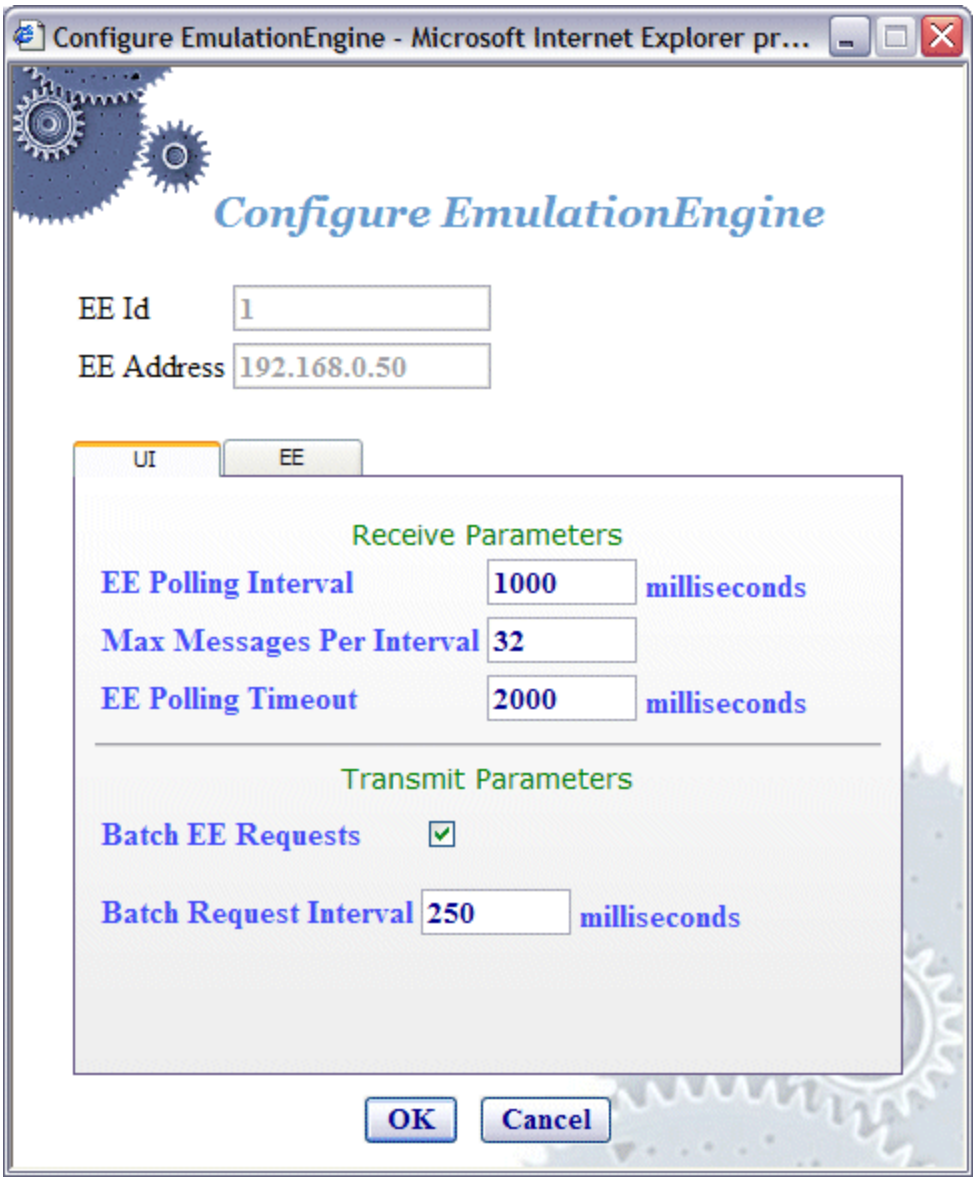
When the Join SUT button is selected in the EE side bar, a confirmation dialog is displayed:



- Click “Yes” to join with the System Under Test.
- Click “No” to cancel this operation.

EE->Configure EE

When the Configure EE button is selected in the EE side bar, the Configure EmulationEngine dialog is displayed:



EE Id: This field is set by the system and cannot be changed.

EE Address: This field shows the EmulationEngine's IP address.

Receive Parameters

EE Polling Interval: This entry defines the interval (in milliseconds) that the Command PC will poll the EmulationEngine for command and control messages from the virtual stations. It can be set to a value in the range: 250...60000 milliseconds (1 minute). If this time expires without an expected response from the EmulationEngine, the user interface will display "Busy" next to the EmulationEngine icon in the toolbar. The "Busy" message indicates that the EmulationEngine is not responding to the user interface. Under normal conditions, the "Busy" message may appear periodically for short periods of time. If the “Busy” message appears frequently, you may want to increase the value assigned

to the EE Polling Interval. Also see Chapter 9, Troubleshooting/EmulationEngine Busy or Not Responding.

Max Messages Per Interval: Specify the maximum number of messages to be sent in each poll: 1…128.

EE Polling Timeout: This entry defines the time (in milliseconds) that the Command PC will wait for a response from the EmulationEngine. It can be set to a value in the range: 500…120000 milliseconds (2 minutes). The recommended value is two times the EE Polling Interval value. If this time expires without an expected response from the EmulationEngine, the user interface will display a dialog indicating that the EmulationEngine is not responding. When you dismiss the dialog, the status of the EmulationEngine/System Under Test connection in the toolbar will display “Offline”. If this dialog and “Offline” status appears frequently, a larger value should be assigned to the EE Polling Timeout. Also see Chapter 9, Troubleshooting/EmulationEngine Busy or Not Responding.

NOTE: Also see the Monitor Update Interval and Monitor Update Timeout in Monitors->Config Monitors for the interval and update timeout values that are used by the command PC to collect statistics values.

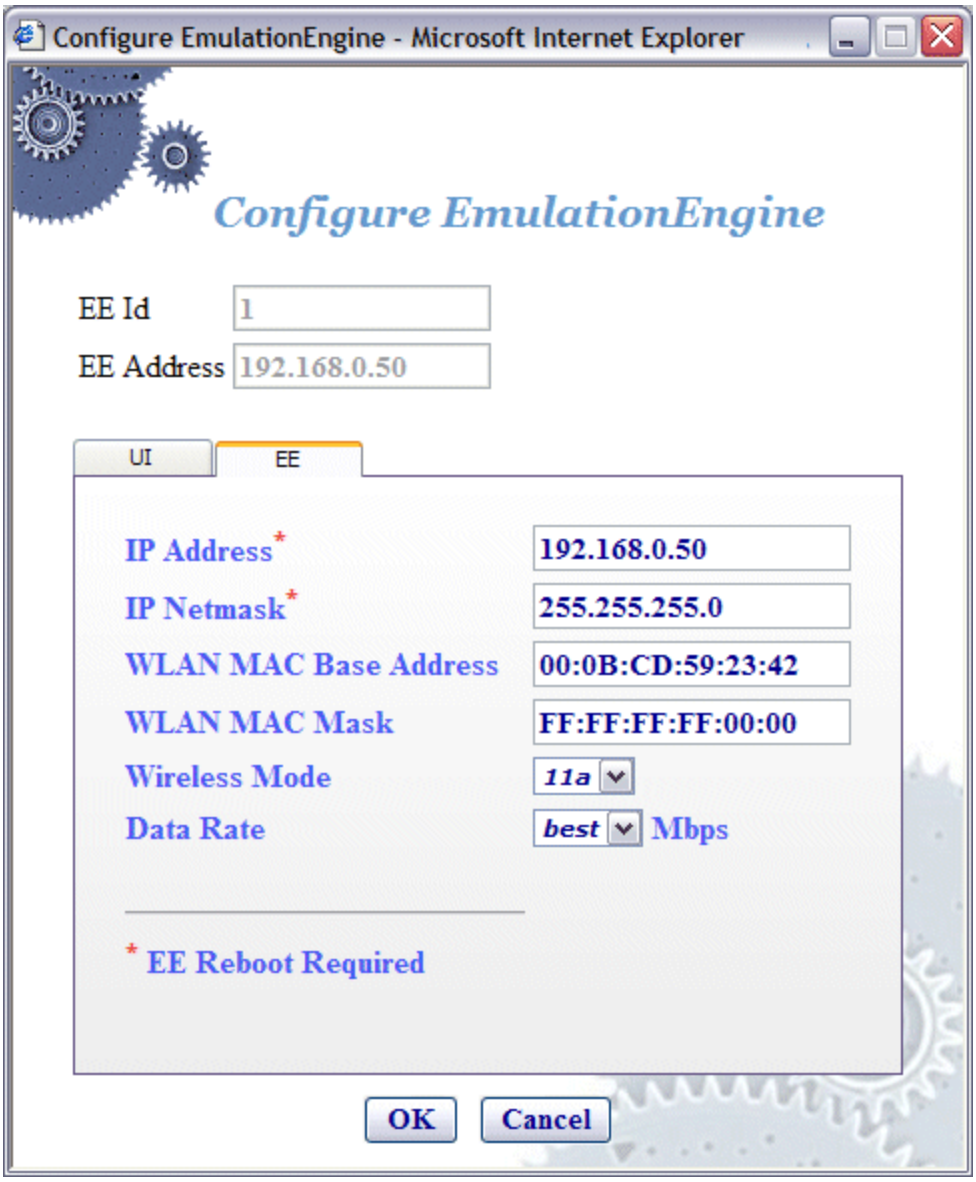
Transmit Parameters

Batch EE Requests: This checkbox enables/disables batching of request messages to be sent to the EmulationEngine. When virtual stations are running in an iterative fashion or you issue commands to many virtual stations, this will produce a large number of requests to the web server on the EmulationEngine. Request batching will maintain a number of these requests over a period of time (defined by the Batch Request Interval) and then issue one large request with all pending instructions.

NOTE: If you are currently running or intend to run a Load Profile, do not enable Batch EE Requests.

Batch Request Interval: If "Batch EE Requests" is checked/enabled, specify the interval at which the web-based user interface will collect (batch) requests and send them to the EmulationEngine. It can be set to a value in the range: 250…60000 milliseconds (1 minute).

- Select the EE tab to define the EmulationEngine's IP address and network mask.



If you change the IP Address or IP Netmask, a reboot of the EmulationEngine is required for these changes to take effect.

EE Id: This field is set by the system and cannot be changed.

EE Address: This field shows the EmulationEngine's current IP address.

IP Address: Enter the EmulationEngine's new IP address. Use a dot IP address (e.g., 192.168.0.50).

IP Netmask: Enter the EmulationEngine's network mask. The network mask of the EmulationEngine must match the IP subnet addressing scheme for internal mode testing (it is not used for external mode). For example, if the EmulationEngine's IP address is 10.1.40.18 and the system being tested is 10.1.35.17, then the subnet mask is 16 bits or 255.255.0.0.

NOTE: If you change the IP Address of the EmulationEngine and reboot, the web client does not automatically change its EmulationEngine IP address. You will need to do it manually. If you forget, you will need to restart the web browser after the EmulationEngine has rebooted. However, you can also double-click on the engine address in the toolbar->status bar to display a dialog that will let you change the address without restarting.

WLAN MAC Base Address: The Wireless LAN MAC address defaults to a specific address (typically in the 00:0b:cd:xx:xx:xx range). It is a globally unique MAC address that is programmed in to the EmulationEngine hardware. The address can be changed to any non-broadcast or non-multicast valid MAC address. If you use multiple EmulationEngine's at your facility, each should have a WLAN MAC whose prefix is unique. For example, on the first EmulationEngine , use WLAN MAC Address: 04:0d:e0:62:23:57 and on the second EmulationEngine, use WLAN MAC Address: 06:0f:14:62:32:a0.

WLAN MAC Mask: This address is used in conjunction with the WLAN Base MAC Address for configuration of virtual stations. If for example, the WLAN MAC is set to 00:0b:cd:59:23:44 and the mask is set to ff:ff:ff:ff:00:00, the only MAC addresses that can be detected on WLAN and received by the EmulationEngine are: 00:0b:cd:59:00:00 - 00:0b:cd:59:ff:ff. All other MAC addresses will be filtered out. The mask limits the range of MAC addresses that are assigned to virtual stations. The mask that is specified here will be displayed in the WLAN MAC Mask field when the vSTA tab is selected in the New Emulation Group dialog (See vSTA->New Group->vSTA).

Wireless Mode: Select a wireless mode (11a, 11b, or 11g) from the list box. The items that are available in this list box will be different depending on the feature set that you ordered from CMC. The wireless mode also affects the types of devices the EmulationEngine can discover during a scan operation. See the General Usage Notes in Chapter 1.

Data Rate: Select a data rate from the list box. The rates that are available in this list box will be different depending on the Wireless Mode selection.

- Click “OK” to save this configuration.
- Click “Cancel” to close this dialog.

EE->Reconnect EE

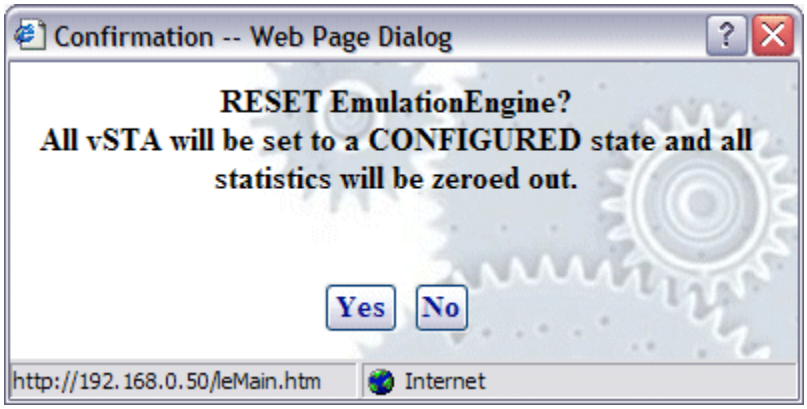
Reconnect is required after reboot or if you become disconnected from the EmulationEngine for any reason. When the Reconnect EE button is selected in the EE side bar, a confirmation dialog is displayed:

- Click “OK” to reconnect to the EmulationEngine.
- Click “No” to cancel the reconnect selection.

  Following successful reconnect, the web-based user interface will restore the scenario (if any) in the EmulationEngine.

EE->Reset EE

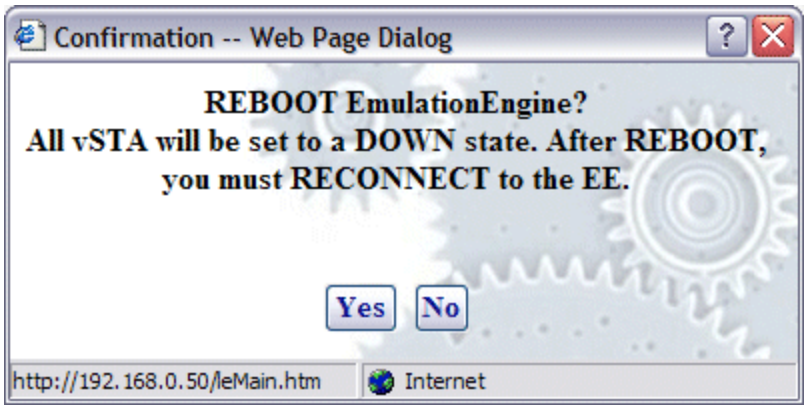
When the Reset EE button is selected in the EE side bar, a confirmation dialog is displayed:



- Click “Yes” to reset all virtual stations to a configured state and to reset all statistics counters to zero.
- Click “No” to cancel the reset selection.

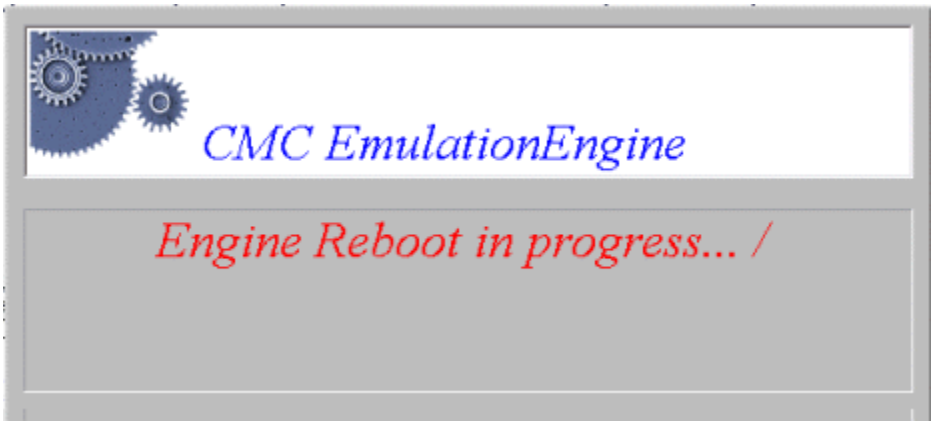
EE->Reboot EE

When the Reboot EE button is selected in the EE side bar, a confirmation dialog is displayed:



- Click “Yes” to reboot the EmulationEngine.
- Click “No” to cancel the reboot operation.

When Yes is selected, the following dialog is displayed:



Monitors Side Bar

The Monitors side bar is used to define, delete, clear, export, and configure monitors. After a monitor is defined using New Monitor, the bottom section of the main page will show statistics counters.

New Monitor: Select this button to define a new monitor. You can define up to four different monitors in each scenario.

Delete Monitor: Select this button to delete the currently displayed monitor.

Clear Monitor: Select this button to clear the statistics counters in the currently displayed monitor.

Export Monitor: Select this button to export the statistics counters for one or more monitors.

Config Monitors: Select this button to configure how monitors are maintained and updated with data from the EmulationEngine.

A monitor is one or more user-selected statistics counters that the web-based user interface will collect from the EmulationEngine and display in the user-selected format (i.e., line graph, bar graph or table). All data collected can be exported. Monitors are based on Linegraphs, Bargraphs and Tables. You can use these to monitor the summary statistics of the EmulationEngine or a summary "Master vSTA" that shows virtual station statistics across all virtual stations.

NOTES:

1) Each scenario can include up to four different monitors.

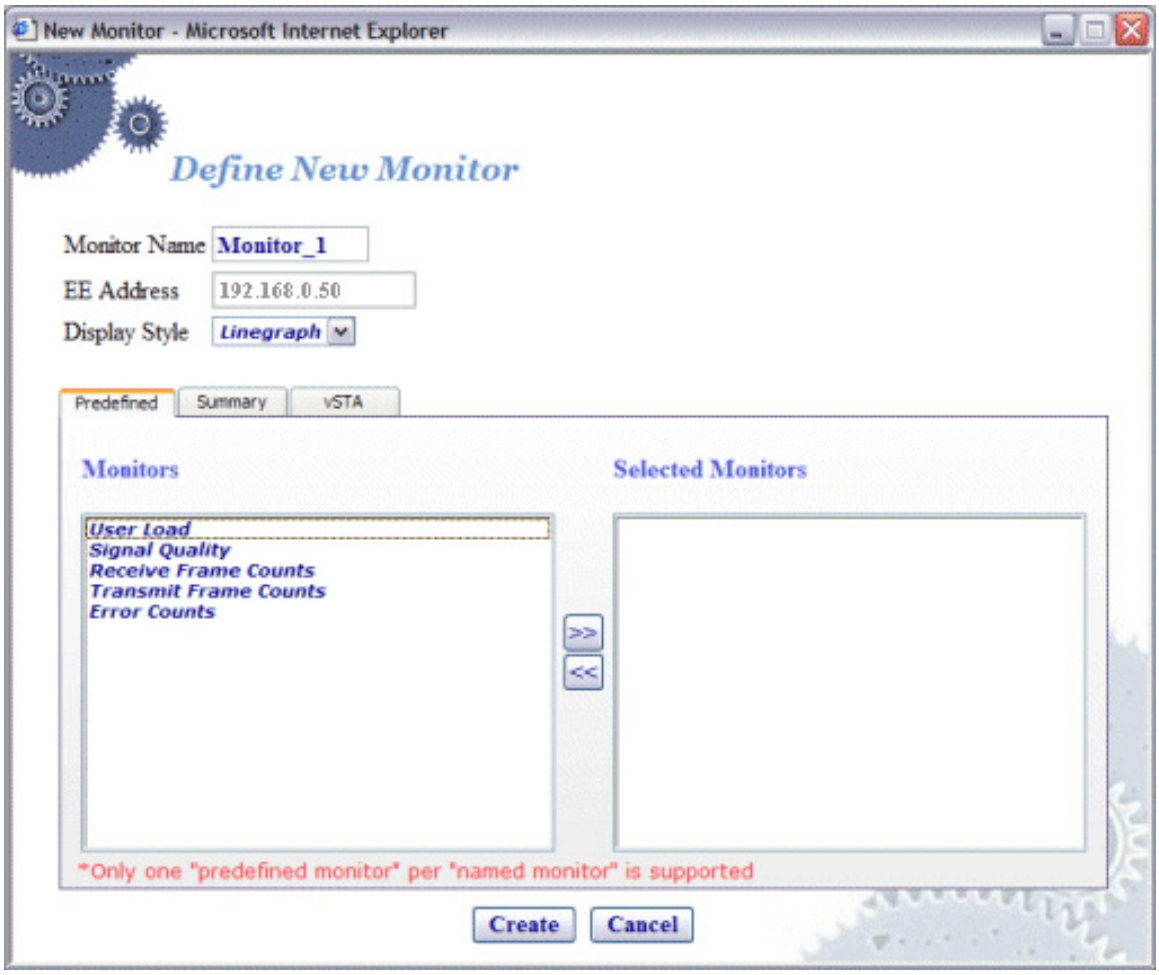
2) Monitor values are stored in memory on the command PC. If you run one or more monitors for an extended period of time, available memory may become depleted and this can affect the performance of the command PC.

Monitors->New Monitor

The New Monitor dialog is a tabbed dialog that can be used to define predefined, summary, and summary virtual station counters to be maintained during the execution of a test.

Monitors->New Monitor->Predefined

Use the Predefined section of the Define New Monitor dialog to select predefined statistics counters.



Monitor Name: Enter a monitor name. It can be up to 12 characters (a...z, 0..9, and underscore (_)).

EE Address: This field shows the EmulationEngine's IP address.

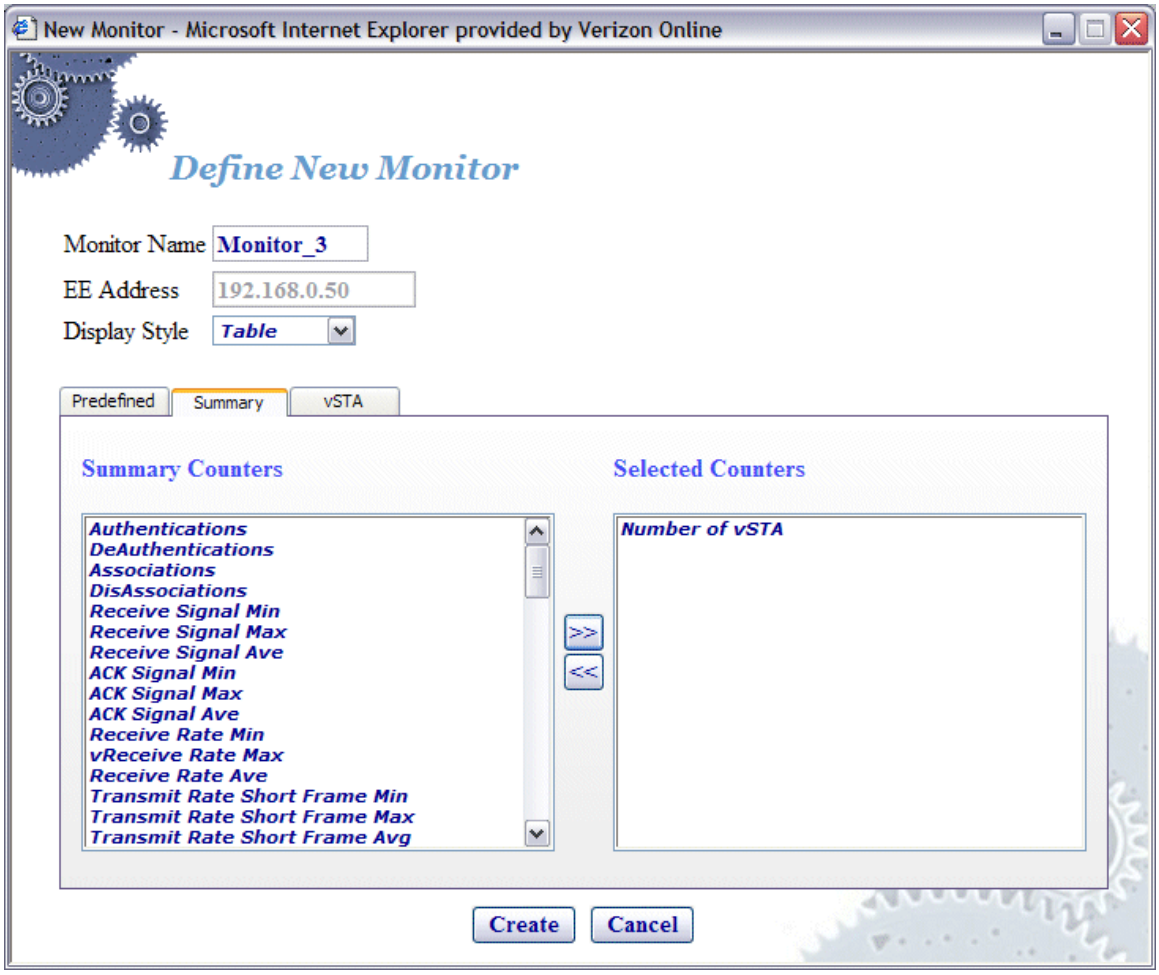
Display Style: Select a display style from the list box. It can be one of the following: Line Graph, Bar Graph, or Table.

Monitors->Selected Monitors: Select one of the monitors to be maintained. Use the [>>] button (or double-click the line item) to transfer the predefined monitor to the Selected Monitors column. See "Chapter 8, Statistics Counters" for a description of each of these statistics counters.

- Click “Create” to create and display the monitor.
- Click “Cancel” to close this dialog.

Monitors->New Monitor->Summary

Use the Summary section of the Define New Monitor dialog to select summary statistics counters.



Summary Counters->Selected Counters: Select one or more of the counters to be maintained in the test results file. Use the [>>] button to transfer the counters to the Selected Counters column. See "Chapter 8, Statistics Counters" for a description of each of these statistics counters.

- Click “Create” to create and display the monitor.
- Click “Cancel” to close this dialog.

Monitors->New Monitor->vSTA

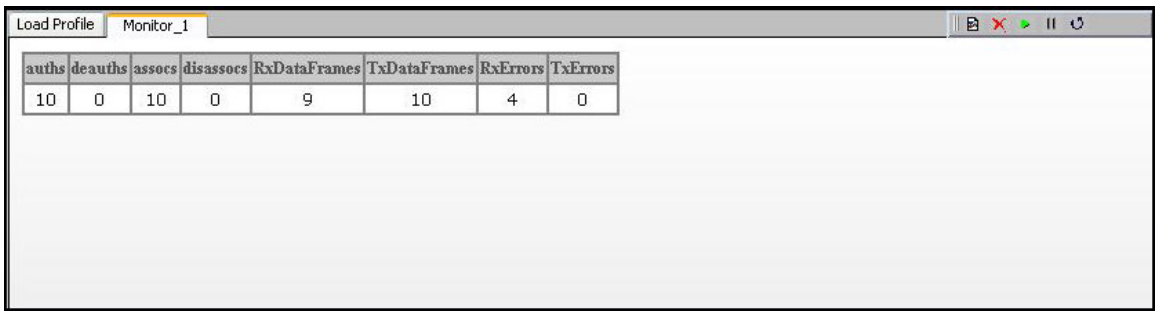
Use the vSTA section of the Define New Monitor dialog to select the master (summary) virtual station statistics counters.

vSTA (s): Select a virtual station from the list box. The Master Station is a summary that shows virtual station statistics across all virtual stations.

vSTA Counters->Selected Counters: Select one or more of the counters to be maintained in the test results file. Use the [>>] button to transfer the counters to the Selected Counters column. See "Chapter 8, Statistics Counters" for a description of each of these statistics counters.

- Click “Create” to create and display the monitor.
- Click “Cancel” to close this dialog.

When you select one or more counters and choose the Create button, the bottom half of the screen will show the current results in the selected display style. Example:



As you run scenario tests, the monitors will be updated with current data from the EmulationEngine. For chart display styles, the legends on the right side of the monitor indicate the statistics counters selected in the New Monitor dialog. For table display styles, the table headings indicate the statistics counters selected in the New Monitor dialog. See "Chapter 8, Statistics Counters" for a description of each of these statistics counters. The toolbar buttons on the right-side of the monitor display can be used for the following functions:

 Create a New Monitor

 Delete the currently selected monitor.

 Run a monitor.

 Pause a monitor.

 Reset a monitor.

See "Monitor Toolbar Buttons" for more information about these buttons.

Monitors->Delete Monitor

When the Delete Monitor button is selected in the Monitors side bar or the monitor toolbar, a confirmation dialog is displayed.

- Select “Yes” to delete the current monitor.

- Select “No” to cancel the delete selection.

Monitors->Clear Monitor

When the Clear Monitor button is selected in the Monitors side bar or the monitor toolbar, a confirmation dialog is displayed.

- Select “Yes” to clear the monitor. This will set all counters in the monitor to zero. Statistics gathered up to this point are not cleared and are still exportable.
- Select “No” to close this dialog without clearing the monitor.

Monitors->Export Monitor

This function is used to export the collected statistics in a defined monitor. For export, the data obtained from the monitor is saved.

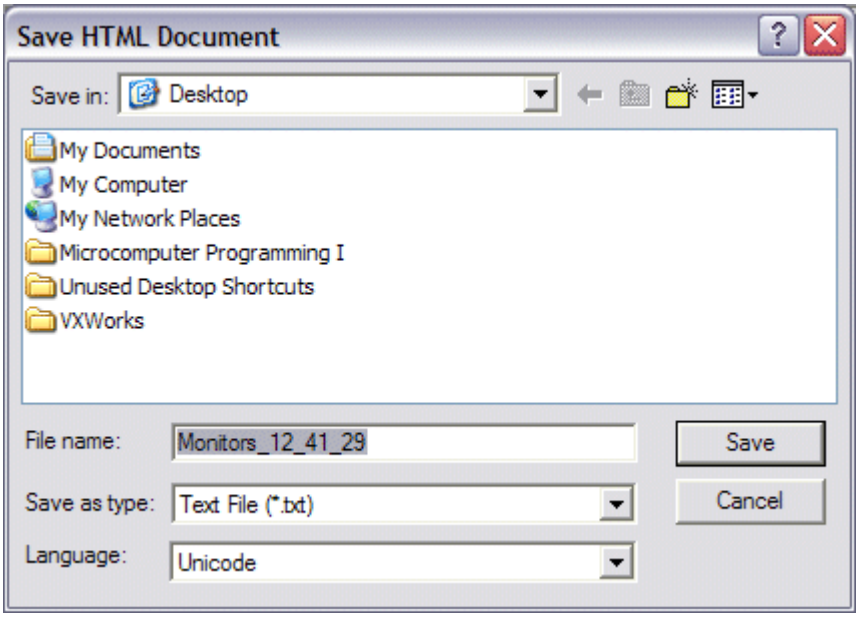
NOTE: For all graphs, each tick saves the information of each field that is requested. This can grow large depending on how long the monitor has run. An artificial limit of one hour has been enforced to clear this saved data. At the end of each hour, this stored data array is cleared.

When the Export Monitor button is selected in the Monitoring side bar, the Export Monitor dialog is displayed:

Select one or more monitors in the list box.

- Select "Export" to export the monitors in the Selected Monitors list box.
- Select "Cancel" to close this dialog without exporting monitors.

When the Export button is selected, a Save HTML Document dialog is displayed:

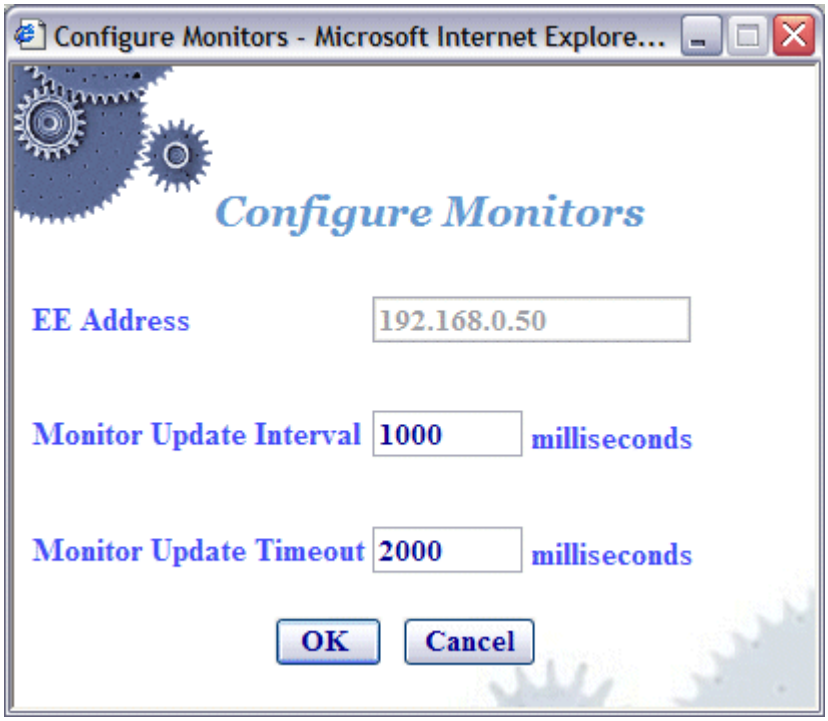


Identify the name of the file where the monitor information is to be written.

- Select “Save” to save the information in to the specified file.
- Select “Cancel” to exit this dialog without exporting any data.

Monitors->Config Monitors

When the Config Monitors button is selected in the Monitors side bar, the Configure Monitors dialog is displayed.



EE Address: This field shows the IP address of the EmulationEngine.

Monitor Update Interval: This entry defines the interval (in milliseconds) that the Command PC will poll the EmulationEngine for new statistics counters. It can be set to a value in the range: 250...60000 milliseconds (1 minute). Any value under 1000 milliseconds is not advised and may affect performance significantly. If you notice issues with update performance, try increasing this value.

Monitor Update Timeout: This entry defines the time (in milliseconds) that the Command PC will wait for a response from the EmulationEngine. It can be set to a value in the range: 500...120000 milliseconds (2 minutes). The recommended value is two times the Monitor Update Interval value. If this time expires without an expected response from the EmulationEngine, the user interface will attempt to restart the monitor update timer.

NOTE: Also see the EE Polling Interval and EE Polling Timeout in EE->Configure EE for the interval and update timeout values that

are used by the command PC to send command and control information to the EmulationEngine.

- Select “OK” to save this monitor configuration.
- Select “Cancel” to close this dialog.

Event Log Side Bar

The buttons in the Event Log side bar are used to display, clear, export, and configure the Event Log:

Event Log: Select this button to display the last 400 event log entries.

Clear Log: Select this button to clear the current contents of the event log.

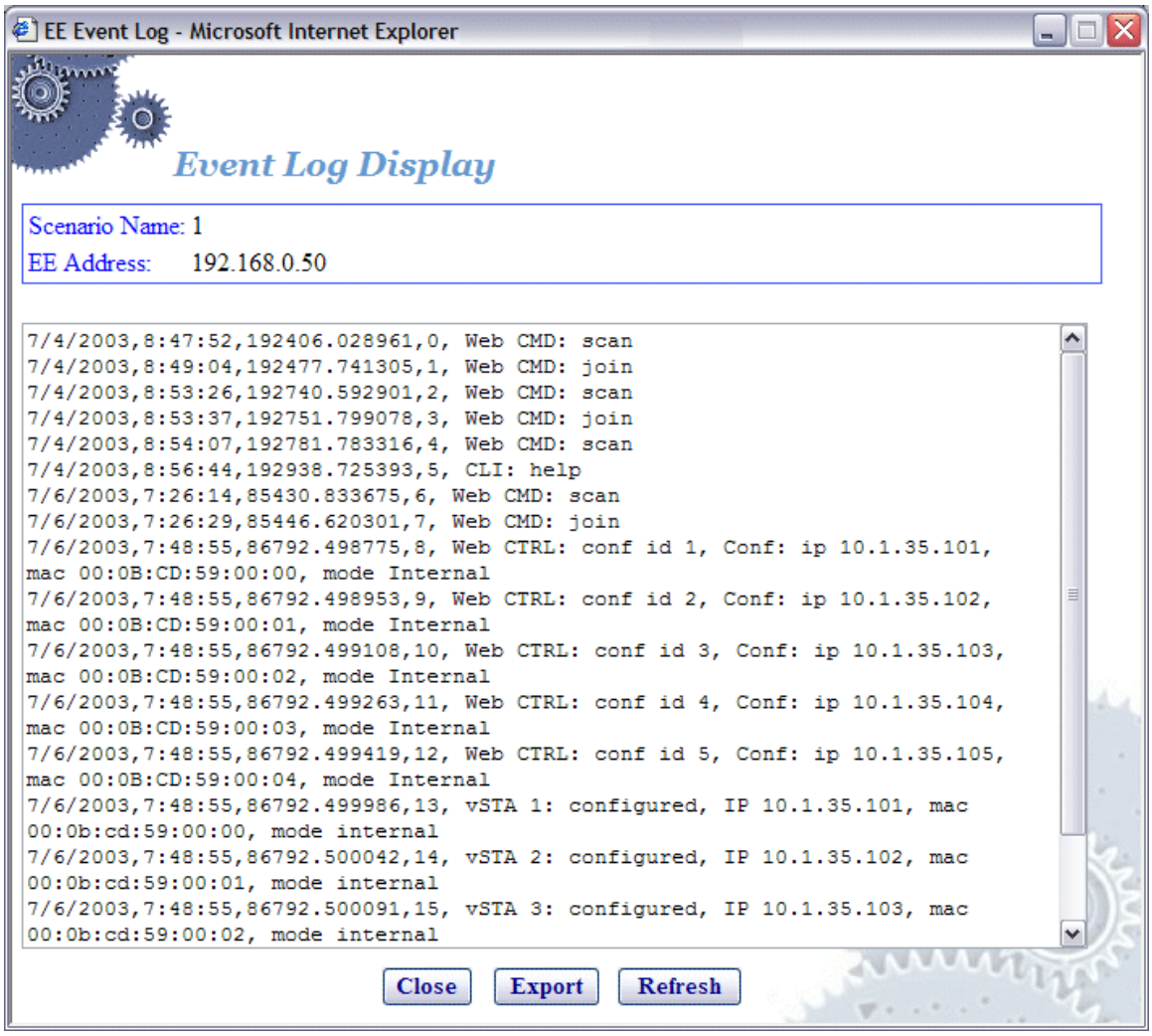
Export Log: Select this button to export the last 400 event log entries to a file.

Configure Log: Select this button to configure event logging.

Also see "Chapter 7, Event Logging" for more information about how the EmulationEngine creates and maintains the event log.

Event Log->Event Log

When the Event Log button is selected in the Event Log side bar, the last 400 event log entries are displayed. Example:



NOTE: The web-based user interface only displays the last 400 records in the event log.

- Select “Close” to close this dialog.
- Select “Export” to export this event log information to a file.
- Select “Refresh” to update the dialog with new events.

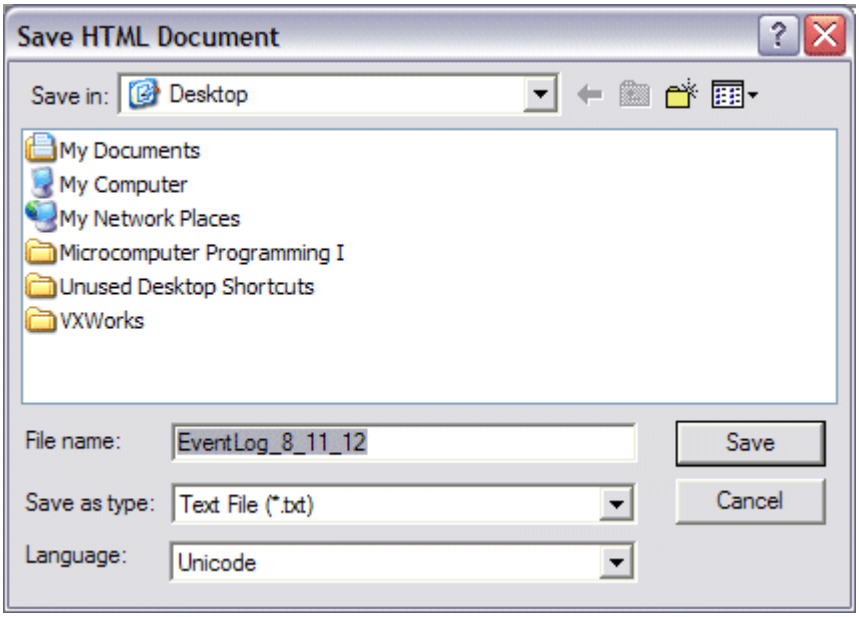
Event Log->Clear Log

When the Clear Log button is selected in the Event Log side bar, a confirmation dialog will ask you to confirm this selection.

- Select “Yes” to clear the event log.
- Select “No” to exit this dialog without clearing the event log.

Event Log->Export Log

When the Export Log button is selected in the Event Log side bar, a Save HTML Document dialog is displayed.

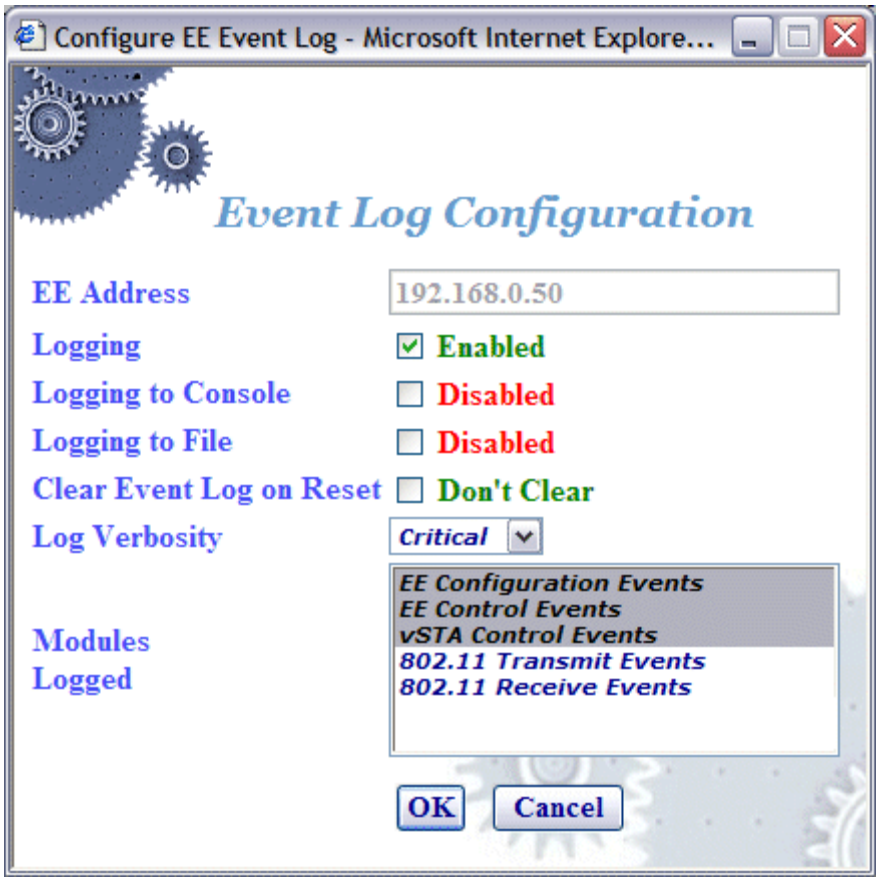


Identify the name of the file where the log is to be written.

- Select “Save” to save the event log in a file.
- Select “Cancel” to exit this dialog.

Event Log->Configure Log

When the Configure Log button is selected in the Event Log side bar, the Event Log Configuration dialog is displayed.



EE Address: This field defines the IP address of the EmulationEngine where the log file resides.

Logging: Enable/disable event logging.

Logging to Console: Enable/disable event logging to the CLI console buffer.

Logging to File: Enable/disable event logging to a file in the EmulationEngine's flash file system.

Clear Event Log on Reset: This checkbox enables/disable clearing of the event log when the scenario is reset.

Log Verbosity: The verbosity level sets thresholds for which events are to be logged: at higher verbosity more events are logged; at lower verbosity, fewer events are logged. Select Critical, Low, Medium, or High from the list box.

Modules Logged: Select one or more modules (system processes) that event messages of the selected level should be collected from.

- Select “OK” to close this dialog and save the event log configuration.
- Select “Cancel” to close this dialog without saving event log configuration.

Reports Side Bar

The options in the Reports side bar can be used to display statistics counters that are maintained by the EmulationEngine during the execution of a test.

Scenario Summary: Select this button to display summary statistics of the EmulationEngine and all virtual stations.

Group Summary: Select this button to display summary statistics of a scenario group.

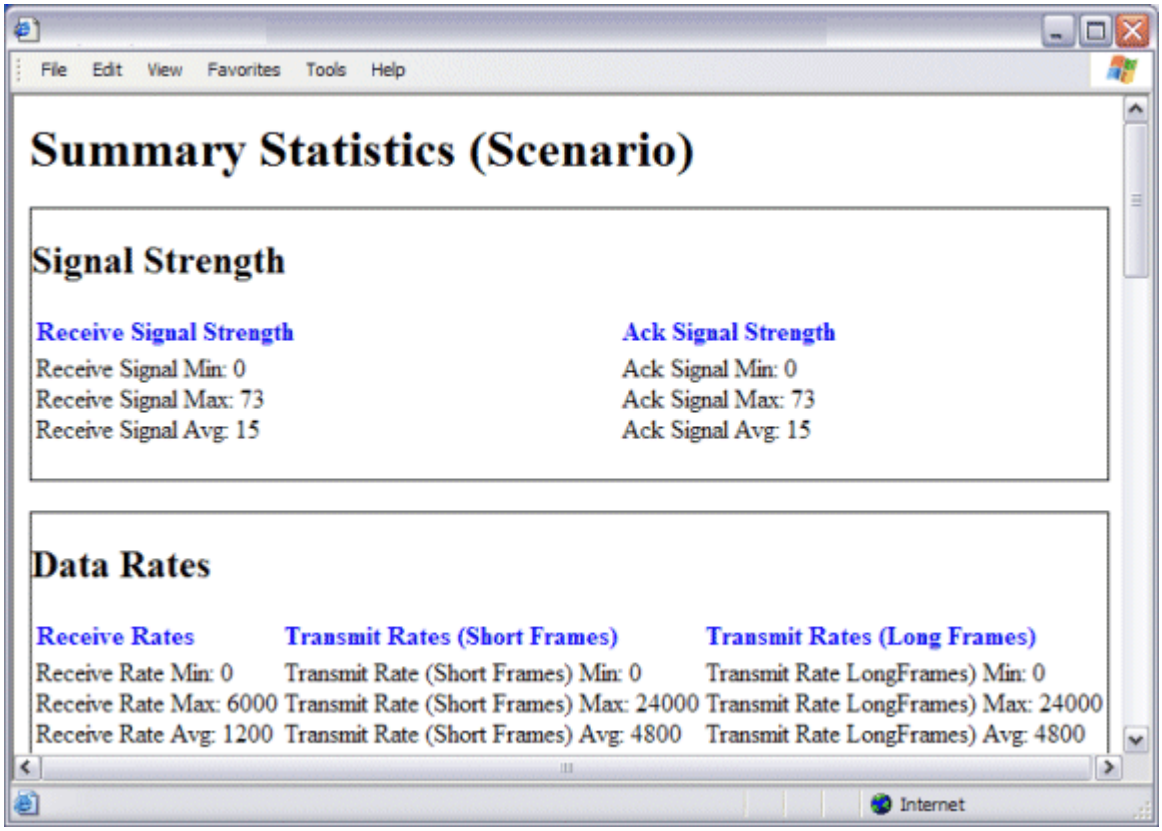
vSTA Master: Select this button to display statistics collected for all virtual stations.

vSTA Detailed: Select this button to display detailed statistics counters for each virtual station.

Export Reports: Select this button to export/view reports in a CSV (Comma-Separated-Values) file format.

Reports->Scenario Summary

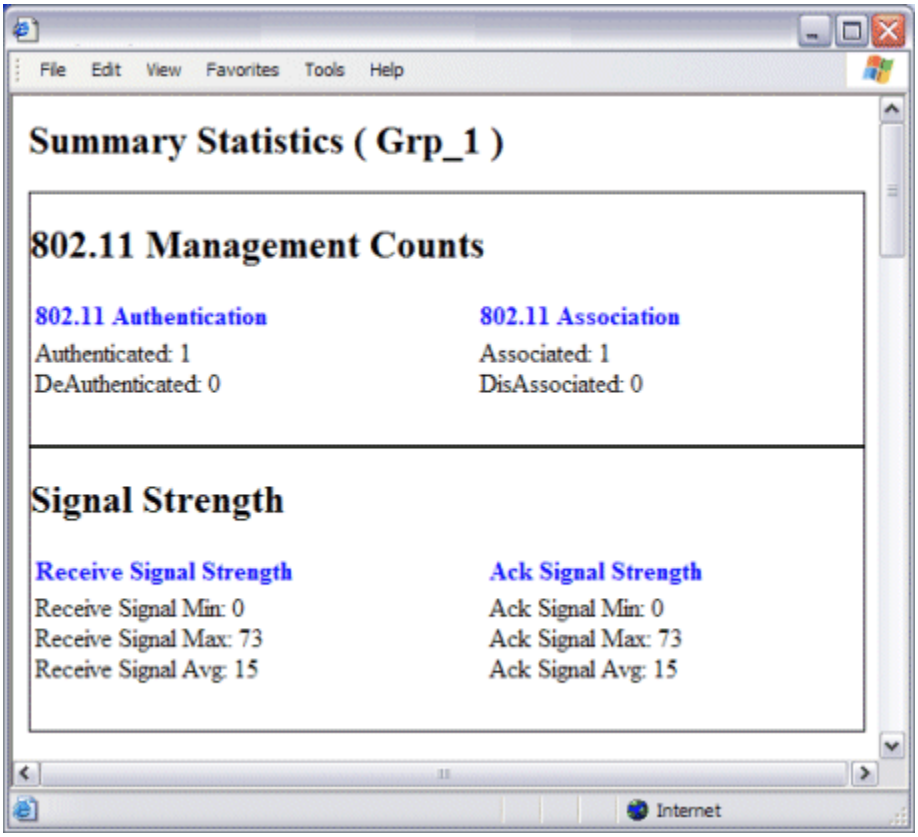
The following statistics report is displayed when the Scenario Summary button is selected in the Reports side bar.



Summary statistics provide a summary report taken over a set of virtual stations. The virtual station set can be a defined group or all virtual stations currently in the system. In contrast, the individual virtual station statistics report provides a list of statistics and counters for all virtual stations. The summary report provides a summary of the statistics and counters taken over the indicated set of virtual stations. The summary gives, for each counter, the minimum and maximum values for that counter found in the set of virtual stations examined, the average value, and where applicable the total (sum) over the set of virtual stations. The Avg fields (i.e., Receive Rate Avg, Transmit Rate (Short Frame) Avg, and Transmit Rate (Long Frame) Avg) in the Data Rate section of the summary statistics display is the average rate for the master vSTA since the time the EmulationEngine joined to a System Under Test. See "Chapter 8, Statistics Counters" for a description of statistics counters that may be displayed in this report.

Reports->Group Summary

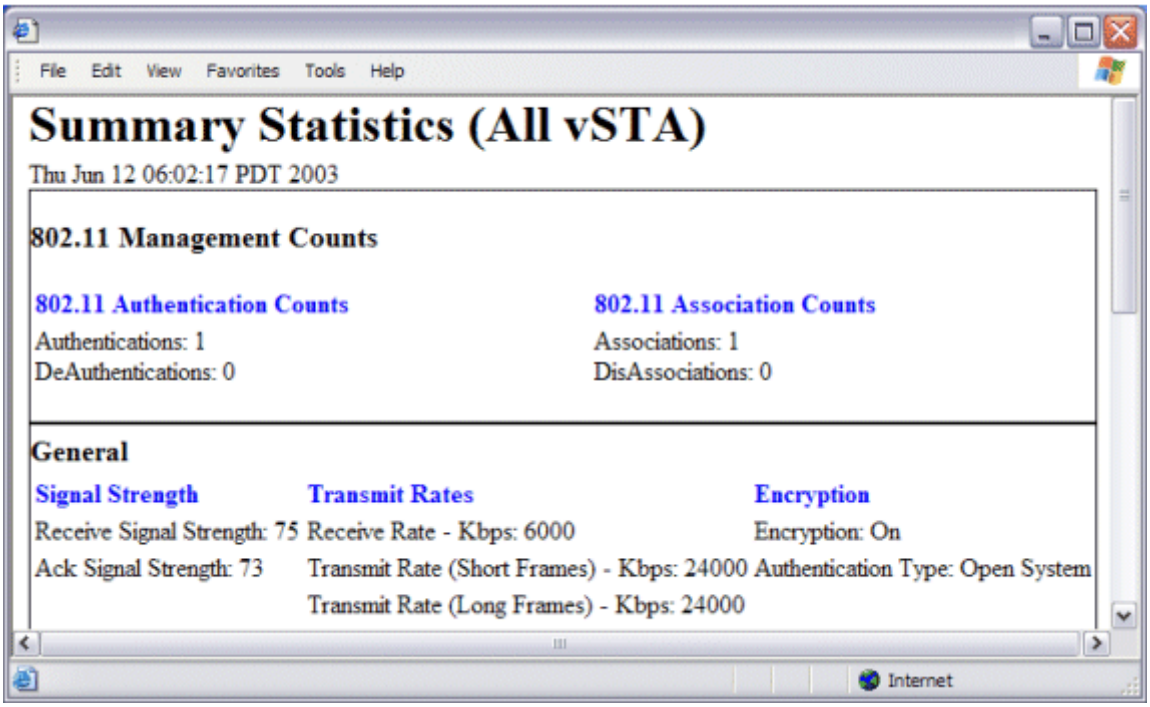
The following statistics report is displayed when the Group Summary button is selected in the Reports side bar.



See "Chapter 8, Statistics Counters" for a description of statistics counters that may be displayed in this report.

Reports->vSTA Master

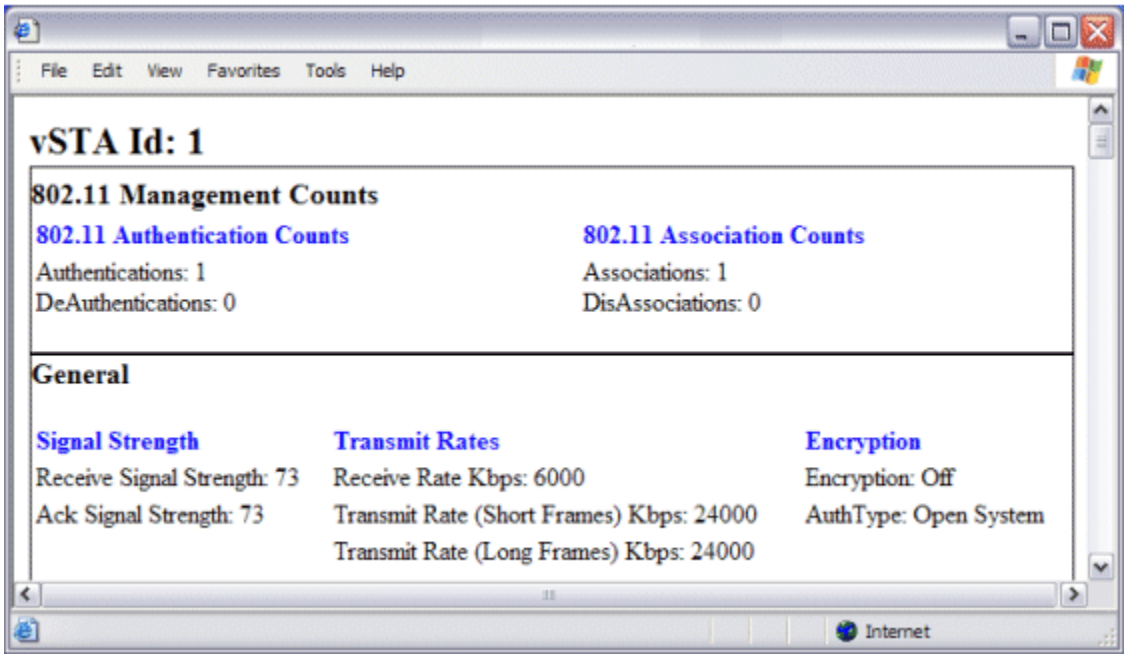
The following statistics report is displayed when the vSTA Master button is selected in the Reports side bar.



See "Chapter 8, Statistics Counters" for a description of statistics counters that may be displayed in this report.

Reports->vSTA Detail

The following statistics report is displayed when the vSTA Detail button is selected in the Reports side bar.



See "Chapter 8, Statistics Counters" for a description of statistics counters that may be displayed in this report.

Reports->Export Reports

When the Export Reports button is selected in the Reports side bar, the Generate Report dialog is displayed:

Report Details: Select one or more reports to export in the Report Details list box.

Report Templates: Defines the directory/path where XML transform files are retrieved. These XSLT files are then used to create reports from the XML data returned by the EmulationEngine. By specifying another directory path, you can customize reports to suit your needs.

- Select “Export” to export the report(s) to a comma-separated values (.CSV) file.
- Select “View” to display the selected report(s).
- Select “Cancel” to exit this dialog.

Configuration Side Bar

The buttons in the Configuration side bar are used to define encryption keys, default ping settings, and the appearance of the web-based user interface.

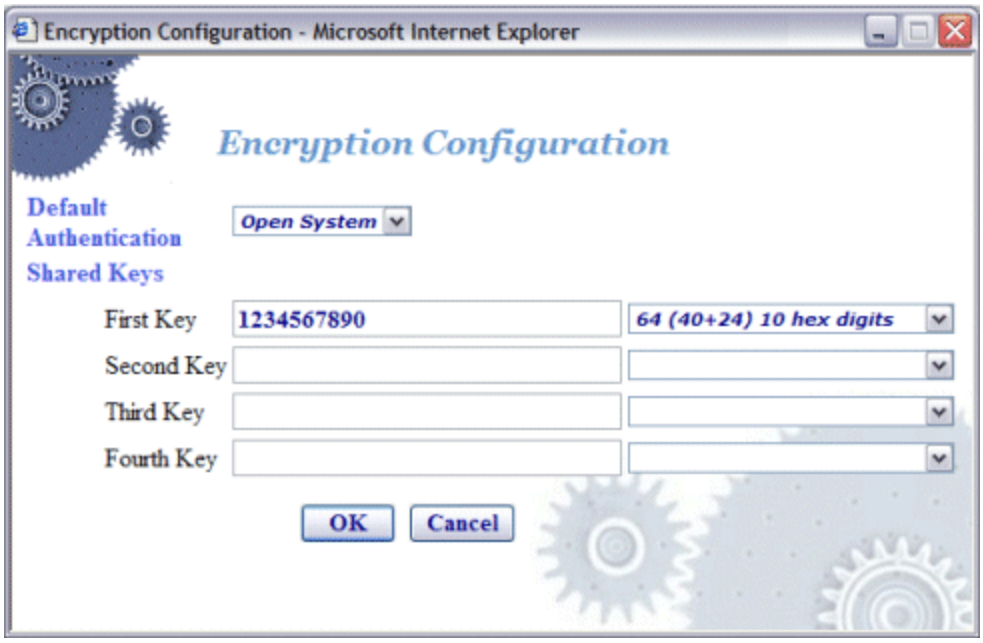
Encryption: Select this button to define Encryption keys.

Ping Defaults: Select this button to define a default ping target, ping packet length, and number of iteration values.

Preferences: Select this button to configure the appearance of the user interface.

Configuration->Encryption

When the Encryption button is selected in the Configuration side bar, the Encryption Configuration dialog is displayed:



This screen is used to define up to four shared keys for Wired Equivalency Privacy (WEP) encryption. WEP encrypts data using an RC4 stream cipher (from RSA Security) with a seed of 64, 128 or 152 bits before transmission to the wireless network. Each shared key can be 64, 128, or 152 bits. If 64 is selected in the list box, you must enter 10 hex digits. If 128 is selected in the list box, you must enter 26 hex digits. If 152 is selected in the list box, you must enter 32 hex digits. These keys will be displayed in the Encryption section of the New Emulation Group dialog, the Edit Emulation Group dialog, and the Add vSTA to Group dialog.

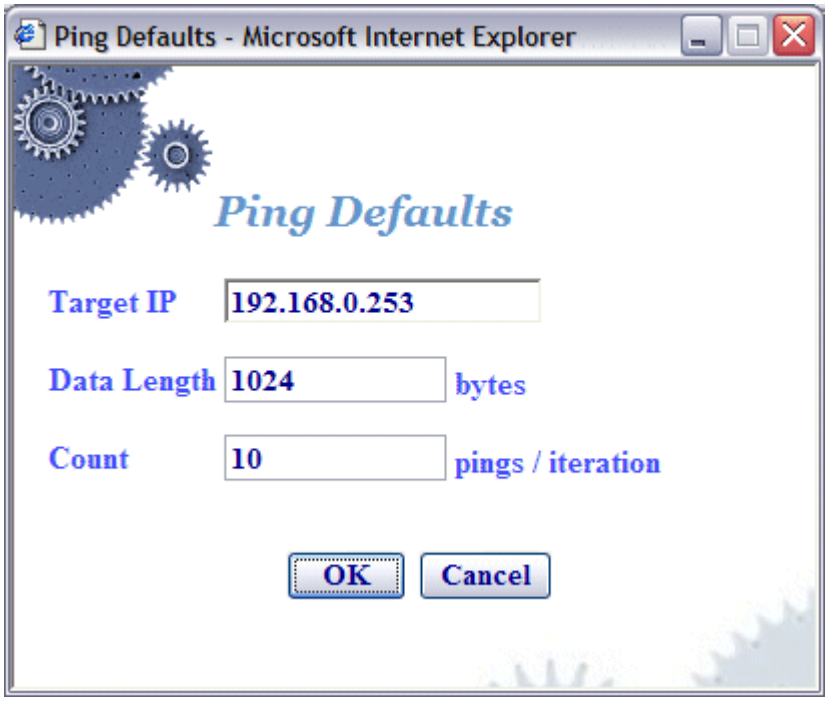
NOTE: To delete a key, remove the key from the field.

- Click “OK” to save the Encryption keys to the EmulationEngine.
- Click “Cancel” to close this dialog without saving this Encryption configuration.

Configuration->Ping Defaults

When the Ping Defaults button is selected in the Configuration side bar, the Ping Configuration dialog is displayed. Any changes

made in this dialog will affect all future group/virtual station creation defaults for this session.



Target IP: Enter the target IP address where ICMP Echo (Ping) Request/Response messages should be sent.

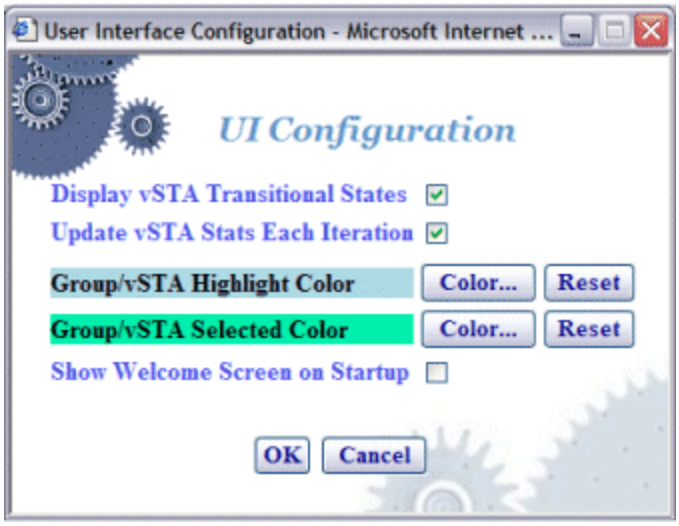
Data Length: Specify the size (64…1024) of each message.

Count: Specify the total number of pings to be sent: 0…10000 (0=None).

- Click “OK” to save the default Ping configuration.
- Click “Cancel” to close this dialog without saving this configuration.

Configuration->Preferences

When the Preferences button is selected in the Configuration side bar, the UI Configuration dialog is displayed.



Display vSTA Transitional States: This checkbox enables/disables update of the web-based user interface to show changes in virtual station transitional states such as authenticating, associating, de-authenticating and disassociating. Deselecting this option will improve user interface performance.

Update vSTA Stats Each Iteration: Select this checkbox to enable/disable automatic update of virtual station statistics. Statistics are gathered by making extra calls to the EmulationEngine. Under high virtual station load, deselecting this option will improve user interface performance.

Group/vSTA Highlight Color: Select the Color button to show a color selector dialog and choose a color to highlight groups and virtual stations in the group grid. After a color has been chosen, the Reset button can be used to reset the color to its original state.

Group/vSTA Selected Color: Select the Color button to show a color selector dialog and choose a color for selected groups and virtual stations in the group grid. After a color has been chosen, the Reset button can be used to reset the color to its original state.

Show Welcome Screen on Startup: Select this checkbox to enable/disable the welcome screen that is shown when you successfully log in to the web-based user interface.

- Select “OK” to close this page and save the configuration.
- Select “Cancel” to close this dialog without saving this configuration.

Menus & Toolbars

The menus and toolbars at the top of the web-based user interface can be used to run tests, manipulate virtual stations, show results, and configure the EmulationEngine as well as general scenario management.

File Toolbar

The buttons in this toolbar are used to create, open, save and print scenarios.


New Scenario: Create a new scenario


Open Scenario: Open an existing scenario


Save Scenario: Save the current scenario


Print: Print the scenario configuration

Edit Toolbar

The buttons in this toolbar are used to delete, cut, copy and paste virtual stations within and between groups. It can also be used to delete groups when a group is selected in the group control tab/table.


Delete: Delete currently selected group(s) or virtual station(s)


Cut: Cut the currently selected virtual station(s) and place into an internal virtual station buffer.


Copy: Copy the selected virtual station(s) into an internal virtual station buffer.


Paste: Paste the virtual station definition from the internal virtual station buffer into the currently selected group

Scenario Toolbar

The buttons in this section of the toolbar can be used to run, pause, stop, restart, or refresh the entire scenario of all virtual stations.


Run Scenario: Run the test for all groups and all virtual stations in a scenario


Pause Scenario: Pause the test for all groups and all virtual stations in a scenario


Terminate Scenario: Stop the test for all groups and all virtual stations in a scenario


Reset Scenario: Reset the test for all groups and all virtual stations in a scenario


Refresh Scenario: Refresh the test for all groups and all virtual stations in a scenario

vSTA Toolbar

The buttons in this toolbar are used to run, pause, stop, restart, or refresh selected virtual stations or groups of virtual stations. The selected action will be executed for the group(s) and/or virtual station(s) that are selected/highlighted in the group control grid.


Initialize: Initialize the currently selected groups or virtual stations


Authenticate: This selection will cause the currently selected virtual stations or all virtual stations in a group to initiate the authentication sequence with the System Under Test


Associate: This selection will cause the currently selected virtual stations or all virtual stations in a group to initiate the association sequence with the System Under Test


Run: Run a test for selected groups or virtual stations


Pause: Pause a test for selected groups or virtual stations


Stop: Terminate a test for selected groups or virtual stations


Disassociate: This selection will cause the currently selected virtual stations or all virtual stations in a group to initiate the disassociation sequence with the System Under Test


Deauthenticate: This selection will cause the currently selected virtual stations or all virtual stations in a group to initiate the deauthentication sequence with the System Under Test


Reset: Reset a test for selected groups or virtual stations


Refresh: Refresh a test for selected groups or virtual stations

Reports Toolbar

The buttons in this toolbar are used to view reports and the event log:


View Reports: This button displays the Generate Report dialog from which you can select a report to be displayed or exported.


View Event Log: This button displays the last 400 entries in the event log.

Monitor Toolbar

This toolbar is located in the top-right corner of the monitoring section of the screen. The buttons in this toolbar can be used to control monitor(s).

When the Delete Monitor button is selected in the monitor toolbar, a confirmation dialog is displayed.

Select Yes to delete the current monitor. Select No to close this dialog.

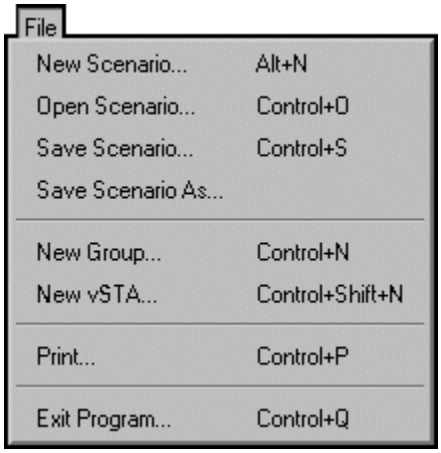
When the Run Monitor button is selected from the monitor toolbar, the currently displayed monitor will start gathering and displaying its target statistics

When the Pause Monitor button is selected from the monitor toolbar, the currently displayed monitor will stop its target statistics. However, statistics will still be accumulating in the background and are exportable.

When the Clear Monitor button is selected in the monitor toolbar, a confirmation dialog is displayed.

Select Yes to clear the current monitor. This will set all counters in the current monitor to zero. Statistics gathered up to this point are not cleared and are still exportable. Select No to close this dialog without clearing the monitor.

File Menu



New Scenario...: This selection creates a new scenario in which groups and virtual stations can be defined.

Open Scenario...: This selection shows the Open Scenario dialog where you can choose from a list of existing scenario files on the EmulationEngine or browse your PC for scenario files.

Save Scenario...: This selection will show the Save Scenario dialog.

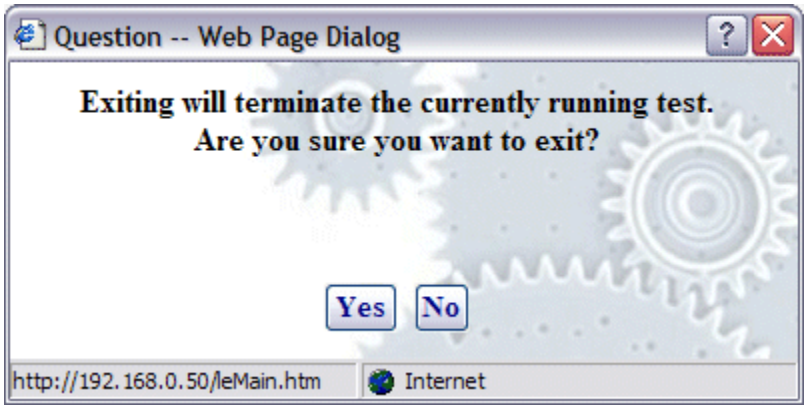
Save Scenario As...: This selection can be used to save a scenario as a new instance.

New Group...: This selection will display the New Emulation Group dialog.

New vSTA...: This selection will display the Add vSTA to Group dialog.

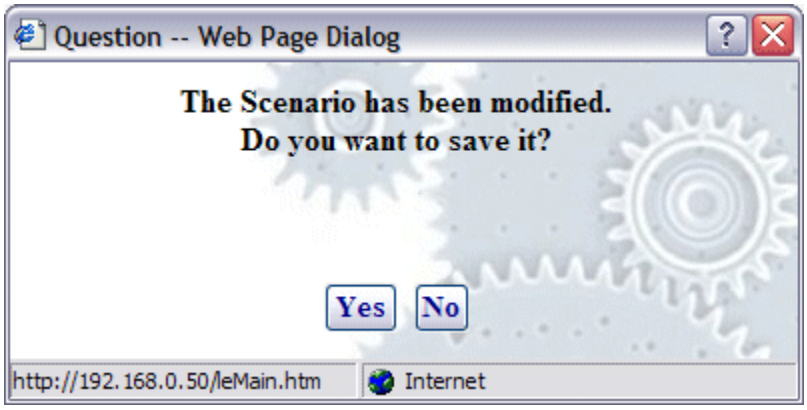
Print: Send the current scenario configuration to your printer.

Exit Program: Exit the web-based user interface. If a scenario is currently active/running, the following dialog is displayed:



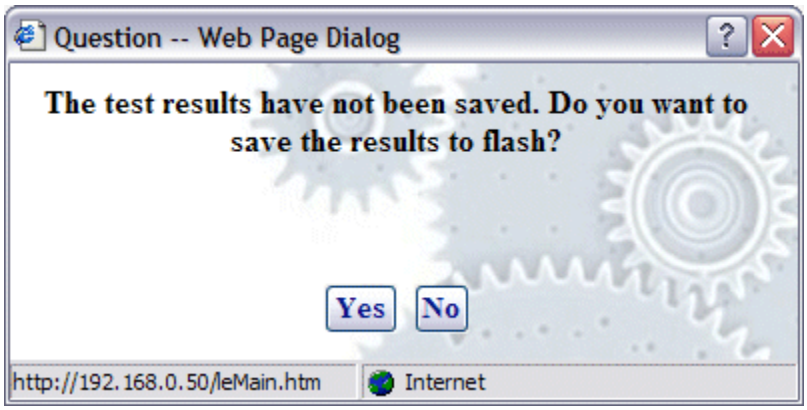
Click Yes to continue with exit from the web-based user interface. Click No to return to the currently running test.

If the current scenario has been modified during this web-based user interface session, the following dialog will prompt you to save these changes.



Click Yes to display the Save Scenario dialog and save the scenario on your PC or in flash on the EmulationEngine. Click No if you do not want to save the modified scenario.

If active virtual stations have been configured, a dialog will prompt you to save the results to flash:

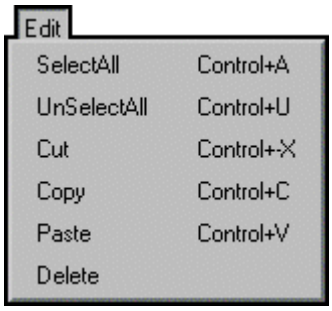


Click Yes to save the results of any active scenario(s) in the EmulationEngine's flash file system. Click No to discard current test results.

A dialog will prompt you to confirm exit from the web-based user interface:

Click Yes to exit. Click No to return to the web-based user interface.

Edit Menu



Select All: If a group tab is selected, select all virtual stations in a scenario group. If the Group Control tab is displayed, select all groups.

UnSelect All: If a group tab is selected, unselect all virtual stations in a scenario group. If the Group Control tab is displayed, unselect all groups.

Cut: Remove the definition of the currently selected virtual station and put it in the Windows clipboard.

Copy: Copy a virtual station definition to the Windows clipboard.

Paste: Paste the virtual station definition in the Windows clipboard to the currently selected group.

Delete: If a group tab is selected, delete the currently selected virtual station. If the Group Control tab is displayed, delete the currently selected group.

Scenario Menu

After you have defined a scenario, use the Scenario Menu to initialize and exercise the scenario.

Initialize: Initialize all virtual stations defined in the scenario.

Authenticate: When this option is selected, all virtual stations defined in a scenario will initiate the authentication sequence to the System Under Test.

Associate: When this option is selected, all virtual stations defined in a scenario will initiate the association sequence to the System Under Test.

Run: Start execution of the test defined by this scenario.

Pause: Pause the test and temporarily halt all virtual stations defined in the scenario. Virtual stations may be restarted by selecting the Run option. This option will be grayed-out (not selectable) if the scenario is not running.

Terminate: Stop a test and halt all virtual stations defined in the scenario. Virtual stations must be reset before they can be run again. This option will be grayed-out (not selectable) if the scenario is not running.

Reset: Reset all virtual stations in the scenario to an initialized state. Statistics for the virtual stations are reset to zero. This option can be used to restart any virtual stations that may have encountered problems during a test.

Group Menu

After you have defined a group in a scenario, use the options in the Group menu to edit and control any/all selected group(s).

Edit Group: This selection will display the Edit Emulation Group dialog.

Renumber: After new virtual stations have been cut, copied, and/or pasted into a group, virtual station numbering within the group will become out of order (see the Edit Menu). This selection will renumber all virtual stations in the group starting at one.

Initialize: Initialize all virtual stations defined in the currently selected group.

Authenticate: When this option is selected, all virtual stations in the currently selected group will initiate the authentication sequence to the System Under Test.

Associate: When this option is selected, all virtual stations in the currently selected group will initiate the association sequence to the System Under Test.

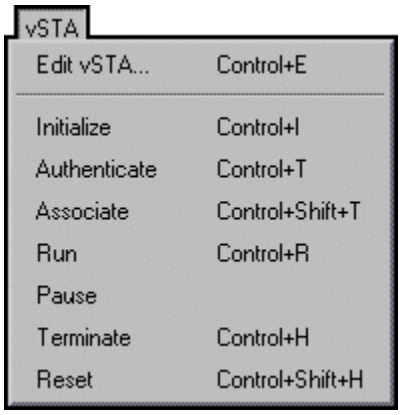
Run: Start execution of all virtual stations defined in the currently selected group(s).

Pause: Pause execution of all virtual stations defined in the currently selected group(s). This option will be grayed-out (not selectable) if the group is not running a test.

Terminate: Stop all virtual stations defined in the currently selected group(s). This option will be grayed-out (not selectable) if the group is not running a test.

Reset: Reset all virtual stations defined in the currently selected group(s).

vSTA Menu



Edit vSTA...: This selection will display the virtual station configuration dialog.

Initialize: Initialize the currently selected virtual station(s).

Authenticate: When this option is selected, the currently selected virtual station(s) will initiate the authentication sequence to the System Under Test.

Associate: When this option is selected, the currently selected virtual station(s) will initiate the association sequence to the System Under Test.

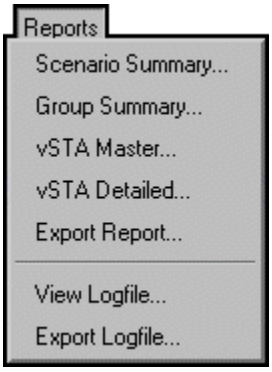
Run: Start execution of the currently selected virtual station(s).

Pause: Pause the execution of the currently selected virtual station(s). This option will be grayed-out (not selectable) if the virtual station is not running a test.

Terminate: Stop the currently selected virtual station(s). This option will be grayed-out (not selectable) if the virtual station is not running a test.

Reset: Reset the currently selected virtual station(s).

Reports Menu



Scenario Summary...: Display the scenario summary statistics report.

Group Summary...: Display the group summary statistics report.

vSTA Master...: Display the virtual station master (i.e., EmulationEngine) statistics report.

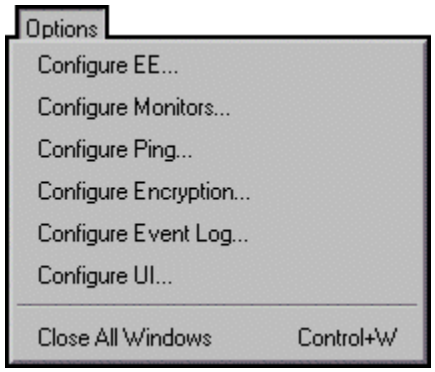
vSTA Detailed...: Display the virtual station detailed statistics report.

Export Report...: Display the Generate Report dialog.

View Logfile...: Display event log.

Export Logfile: Display the Export Logfile dialog.

Options Menu



Configure EE...: Display the Configure Emulator dialog.

Configure Monitors...: Display the Configure Monitoring dialog.

Configure Ping...: Display the Configure Ping dialog.

Configure Encryption...: Display the Configure Encryption dialog.

Configure Event Log...: Display the Configure Event Log dialog.

Configure UI...: Display the UI (User Interface) Configuration dialog.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