

Telnet Configuration Settings

Note: To use HyperTerminal for CLI access, make sure to check “Send line ends with line feeds” in the ASCII Setup window (click **Properties** from the HyperTerminal window; select **Setup**, then **ASCII Setup**. See “HyperTerminal Connection Properties” on page 31 for more information).

Telnet Interface Bitmask

Select the interface (Ethernet, Wireless, All Interfaces) from which you can manage the MP.11/a through telnet. This parameter can also be used to disable telnet management.

Telnet Port Number

The default port number for Telnet applications is 23. However, you can use this field if you want to change the Telnet port for security reasons (but your Telnet application also must support the new port number you select).

Telnet Login Timeout (seconds)

Enter the number of seconds the system is to wait for a login attempt. The MP.11/a terminates the session when it times out. The range is 1 to 300 seconds; the default is 30 seconds.

Telnet Session Timeout (seconds)

Enter the number of seconds the system is to wait during a session while there is no activity. The MP.11/a ends the session upon timeout. The range is 1 to 36000 seconds; the default is 900 seconds.

Serial Configuration Settings

The serial port interface on the MP.11/a is enabled at all times. See “Serial Port” on page 30 for information on how to access the CLI interface through the serial port. You can configure and view following parameters:

Serial Baud Rate

Select the serial port speed (bits per second). Choose between **2400**, **4800**, **9600**, **19200**, **38400**, or **57600**; the default Baud Rate is **9600**.

Serial Flow Control

Select either **None** (default) or **Xon/Xoff** (software controlled) data flow control.

To avoid potential problems when communicating with the MP.11/a through the serial port, Proxim recommends that you leave the **Flow Control** setting at **None** (the default value).

Serial Data Bits

This is a read-only field and displays the number of data bits used in serial communication (8 data bits by default).

Serial Parity

This is a read-only field and displays the number of parity bits used in serial communication (no parity bits by default).

Serial Stop Bits

This is a read-only field that displays the number of stop bits used in serial communication (1 stop bit by default).

The serial port bit configuration is commonly referred to as 8N1.

7) Security

MAC Authentication

Click the **Configure** button, the **Security** tab, and the **MAC Auth** sub-tab to build a list of authorized wireless stations that can register at the MP.11/a and access the network.

MAC authentication is available only for Base Station units.

The screenshot shows the 'Security' tab with the 'MAC Auth' sub-tab selected. The 'MAC Access Control Status' is set to 'Disable' and 'MAC Access Control Operation' is set to 'Allow'. Below these are 'OK' and 'Cancel' buttons. A section titled 'Wireless MAC Access Control Table' contains a table with columns 'MAC Address', 'Comment', and 'Status'. Below the table are 'Add Table Entries' and 'Edit/Delete Table Entries' buttons.

This feature is supported on the wireless interface and only wireless MAC addresses should be entered in the list. For example, build a list of the wireless MAC addresses on the Base Station for the authorized SUs.

To add table entries, click the **Add Table Entries** button; a window such as the following is displayed:

The screenshot shows a window titled 'MAC Access Control Table' with input fields for 'MAC Address' and 'Comment', and a 'Status' column. Below the inputs is a note: 'NOTE: The value added will only take effect after the device is rebooted.' At the bottom are 'Add', 'Cancel', and 'Back' buttons.

Enter the MAC address and any comment, then click **Add**.

To edit or delete table entries, click the **Edit/Delete Table Entries** button; make your corrections in the window displayed and click **OK**.

RADIUS Authentication

Click the **Configure** button, the **Security** tab, and the **Radius Auth** sub-tab to set the IP address of the RADIUS server containing the central list of MAC addresses that are allowed to access the network.

RADIUS authentication is available only for Base Station units.

The screenshot shows the 'Security' tab with the 'Radius Auth' sub-tab selected. The 'RADIUS MAC Access Control Status' is set to 'Disable' and the 'Authorization Lifetime (seconds)' is set to '900'. A red note states: 'Note: Changes to the fields below take effect immediately after clicking OK button.' Below this, there are two columns for 'RADIUS Server' configuration: 'Primary' and 'Backup'. Each column has fields for 'Server Status' (set to 'Disable'), 'Shared Secret' (masked with asterisks), 'Confirm Shared Secret' (masked with asterisks), 'IP Address', 'Destination Port' (set to '1812'), 'Response Time (sec)' (set to '3'), and 'Maximum Retransmissions' (set to '3'). At the bottom are 'OK' and 'Cancel' buttons.

	Primary	Backup
Server Status	Disable	Disable
Shared Secret	*****	*****
Confirm Shared Secret	*****	*****
IP Address		
Destination Port	1812	1812
Response Time (sec)	3	3
Maximum Retransmissions	3	3

In large networks with multiple MP.11/a devices, you can maintain a list of MAC addresses on a centralized location using a RADIUS authentication server that grants or denies access. If you use this kind of authentication, you must specify at least the primary RADIUS server. The backup RADIUS server is optional.

Encryption

You can protect the wireless data link by using encryption. Encryption keys can be 5 (64-bit), 13 (WEP 128-bit), or 16 (AES 128-bit) characters in length. Both ends of the wireless data link must use the same parameter values.

Note: Advanced Encryption Standard (AES) encryption is supported on the MP.11a only.

Click the **Configure** button, the **Security** tab, and the **Encryption** sub-tab to set encryption keys for the data transmitted and received by the MP.11/a. Note that all devices in one network must use the same encryption parameters to communicate to each other.

The screenshot shows the web interface for configuring the MP.11/a. The top navigation bar includes tabs for System, Network, Interfaces, SNMP, and RiP. Below this, a secondary bar shows Management, Security (highlighted), Filtering, Intra-Cell Blocking, and Temperature Log. Under the Security tab, there are three sub-tabs: MAC Auth, Encryption (highlighted), and Radius Auth. The main content area is titled 'Wireless Interface' and 'Slot A'. It contains the following fields and options:

- Encryption Option:** A dropdown menu currently set to 'None'. Below it, a note states: 'Encryption Keys may be 5, 13, or 16 characters (64, WEP-128 bit, or AES-128 bit encryption). Hex keys may be entered, 0x then 10, 26, or 32 hex digits. Examples: silly, 0x1122334455, hellofishfood, 0x112233445566778899aabbccdd'.
- Encryption Key 1:** A text input field with a masked value (*****).
- Encryption Key 2:** A text input field with a masked value (*****).
- Encryption Key 3:** A text input field with a masked value (*****).
- Encryption Key 4:** A text input field with a masked value (*****).
- Encrypt Data Transmissions Using:** A dropdown menu currently set to 'Key 1'.

At the bottom of the configuration area are two buttons: 'OK' and 'Cancel'.

8) Filtering

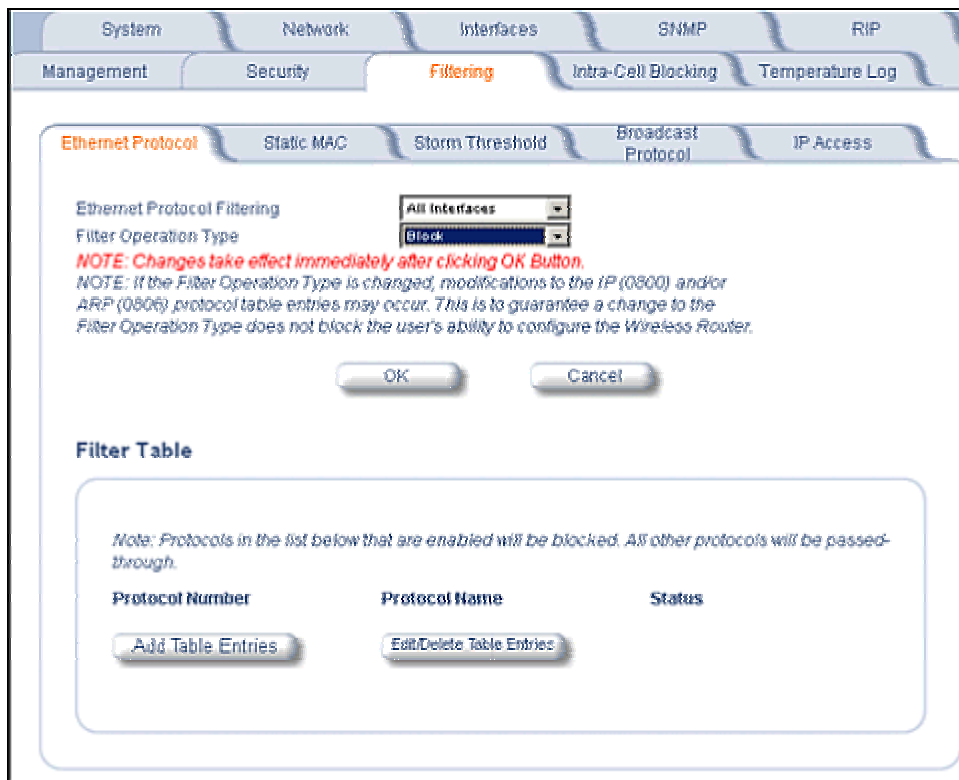
Click the **Configure** button and the **Filtering** tab to configure packet filtering. Packet filtering can be used to control and optimize network performance. Filtering sub-tabs are as follows:



Ethernet Protocol

The Ethernet Protocol filter blocks or forwards packets based upon the Ethernet protocols they support. Click the **Configure** button, the **Filtering** tab, and the **Ethernet Protocol** sub-tab to enable or disable certain protocols in the table. Entries can be selected from a drop-down box.

- To add an entry to the table, click **Add Table Entries**, select the protocol name from the drop-down box and click the **Add** button.
- To edit or delete table entries, click **Edit/Delete Table Entries**, make your changes or deletions, and click **OK**.



Ethernet Protocol Filtering

Blocks or forwards packets based upon the Ethernet protocols they support:

Ethernet: Packets are examined at the Ethernet interface.

Wireless: Packets are examined at the Wireless interface.

All Interfaces: Packets are examined at both interfaces.

Disabled: The filter is not used.

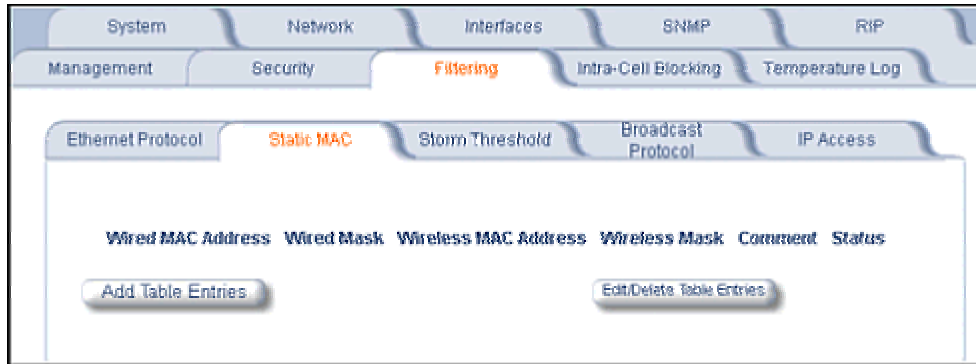
Filter Operation Type

Passthru: Only the enabled Ethernet protocols listed in the Filter table pass through the bridge.

Block: the Bridge blocks enabled Ethernet protocols listed in the Filter table.

Static MAC Pair Filtering

The Static MAC Address filter optimizes the performance of a wireless (and wired) network. Click the **Configure** button, the **Filtering** tab, and the **Static MAC** sub-tab to access the Static MAC Address filter.



The filter is an advanced feature that lets you limit the data traffic between two specific devices (or between groups of devices based upon MAC addresses) through the wireless interface of the MP.11/a. For example, if you have a server on your network with which you do not want wireless clients to communicate, you can set up a static MAC filter to block traffic between these devices. The Static MAC Filter Table performs bi-directional filtering. However, note that this is an advanced filter and it may be easier to control wireless traffic through other filter options, such as **Protocol Filtering**.

To add the entries to Filter table, click the **Add Table Entries** button.

After entering the data, click the **Add** button.

The entry is enabled automatically when saved.

To edit an entry, click **Edit**. To disable or remove an entry, click **Edit** and change the **Status** field from **Enable** to **Disable** or **Delete**.

Wired MAC Address

Enter the MAC address of the device on the Ethernet network that you want to prevent from communicating with a device on the wireless network.

Wired Mask

Enter the appropriate bit mask to specify the range of MAC addresses to which this filter is to apply. To specify only the single MAC address you entered in the Wired MAC Address field, enter 00:00:00:00:00:00 (all zeroes).

Wireless MAC Address

Enter the MAC address of the wireless device that you want to prevent from communicating with a device on the wired network.

Wireless Mask

Enter the appropriate bit mask to specify the range of MAC addresses to which this filter is to apply. To specify only the single MAC address you entered in the Wireless MAC Address field, enter 00:00:00:00:00:00 (all zeroes).

Comment

Enter related information.

Status

The Status field can show **Enable**, **Disable**, or **Delete**.

Storm Threshold

Click the **Configure** button, the **Filtering** tab, and the **Storm Threshold** sub-tab to use threshold limits to prevent broadcast/multicast overload.

	Broadcast	Multicast
Per Address Threshold	0	0
Ethernet interface Threshold	0	0
Wireless - Slot A Threshold	0	0

Note: Threshold values are in packets per second.
0=Protection disabled.

OK Cancel

Storm Threshold is an advanced **Bridge** setup option that you can use to protect the network against data overload by specifying:

- A maximum number of frames per second as received from a single network device (identified by its MAC address).
- An absolute maximum number of messages per port.

The **Storm Threshold** parameters let you specify a set of thresholds for each port of the MP.11/a, identifying separate values for the number of broadcast messages per second and multicast messages per second.

When the number of frames for a port or identified station exceeds the maximum value per second, the MP.11/a ignores all subsequent messages issued by the particular network device, or ignores all messages of that type.

Per Address Threshold

Enter the maximum allowed number of packets per second.

Ethernet Threshold

Enter the maximum allowed number of packets per second.

Wireless Threshold

Enter the maximum allowed number of packets per second.

Broadcast Protocol Filtering

Click the **Configure** button, the **Filtering** tab, and the **Broadcast Protocol** sub-tab to deny specific IP broadcast, IPX broadcast, and multicast traffic.

Protocol Name	Direction	Status
Deny IPX RIP	Both	Disable
Deny IPX SAP	Both	Disable
Deny IPX LSP	Both	Disable
Deny IP Broadcasts	Both	Disable
Deny IP Multicasts	Both	Disable

Edit Table Entries

Click the **Edit Table Entries** button to display an editable window such as the following. You can configure whether this traffic must be blocked for Ethernet to wireless, wireless to Ethernet, or both.

Protocol Name	Direction	Status
Deny IPX RIP	Both	Disable
Deny IPX SAP	Both	Disable
Deny IPX LSP	Both	Disable
Deny IP Broadcasts	Both	Disable
Deny IP Multicasts	Both	Disable

OK Cancel Back

IP Access Table

Entries in this table show which wireless stations are allowed to use SNMP, HTTP, and telnet management interfaces.

To add an entry, click the **Add Table Entries** button, specify the IP address and mask of the wireless stations to which you want to grant access, and click **Add**. To edit or delete table entries, click the **Edit/Delete Table Entries** button, make your changes, and click **OK**.

For example, **172.17.23.0/255.255.255.0** allows access from all wireless stations with an IP address in the 172.17.23.xxx range.

Ensure that the wireless station you use is the first entry in the table.

9) Intra-Cell Blocking (Base Station only)

The Intra-Cell Blocking feature lets traffic be blocked between two SUs registered to the same Base Station. There are two potential reasons to isolate traffic among wireless subscribers:

- To provide better security to the subscribers by isolating the traffic from one subscriber to another in a public space.
- To block unwanted traffic between subscribers to prevent this traffic from using bandwidth.

You can form groups of SUs at the Base Station, which define the filtering criteria. All data to or from SUs belonging to the same group are bridged. All other data from SUs that do not belong to a particular group are automatically forwarded through the Ethernet interface of the Base Station. If an SU does not belong to any group, the Base Station discards the data.

You can also configure a *Security Gateway* to block traffic between SUs connected to different BSUs. All packets destined for SUs not connected to the same Base Station are forwarded to the Security Gateway MAC address (configured in the *Security Gateway* tab).

When you change the device from **Bridge** to **Routing** mode, Intra-Cell Blocking stops working with or without a reboot. When you change the device from **Routing** to **Bridge** mode, Intra-Cell Blocking starts working with or without a reboot.

Group Table Tab

The Group Table tab lets you enable the Intra-Cell Blocking feature and to configure Intra-Cell Blocking Groups.

Intra-Cell Blocking Status

Enables or disables the Intra-Cell Blocking feature.

Group Table

Entries in this table show the Intra-Cell Blocking filter groups that have been configured. When Intra-Cell Blocking is enabled, the Base Station Unit discards all packets coming from one SU to another SU, if both SUs do not belong to the same filter group.

Click the **Add Table Entries** button to add groups.

The screenshot shows a web interface for configuring Intra-Cell Blocking. The main navigation bar includes tabs for System, Network, Interfaces, SNMP, Management, Security, Filtering, Intra-Cell Blocking, and Temperature. The Intra-Cell Blocking tab is selected, and within it, the Group Table sub-tab is active. The Group Table sub-tab contains a form with the following fields:

- Group Name:** A text input field.
- Group Status:** A dropdown menu currently set to "Enable".

Below the form, there are three buttons: **Add**, **Cancel**, and **Back**. A note in red text states:

- Additions to this table take effect immediately after clicking Add Button.
- Maximum 16 groups can be added.

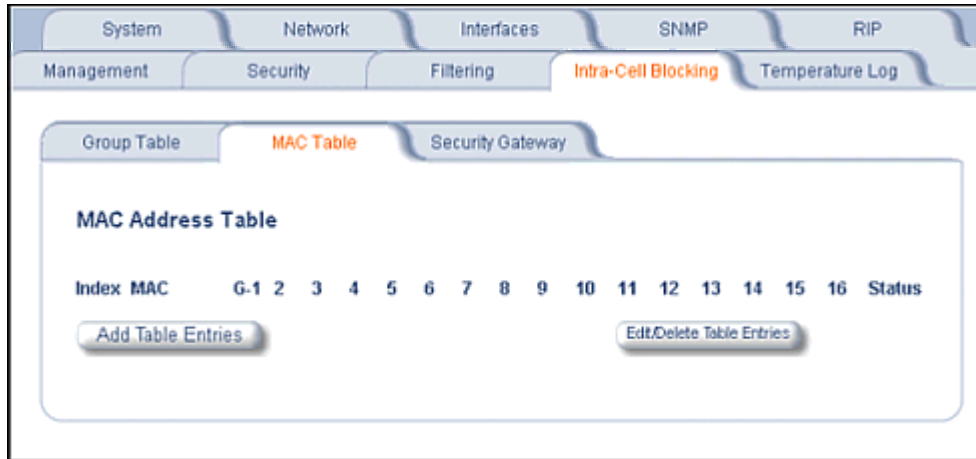
Enter the group name, and click **Add**. The group is assigned an Index and appears in the Group Table. Up to 16 groups can be configured per Base Station.

You can enable, disable or delete an existing filter group by using the **Edit/Delete Table Entries** button.

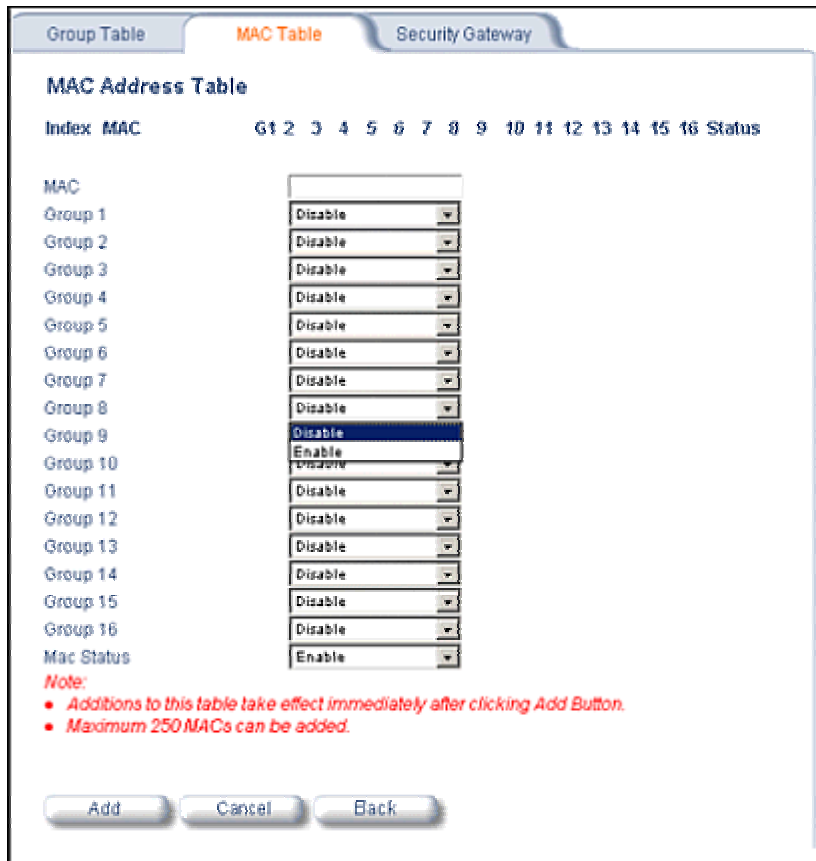
After you have configured the groups, click the **MAC Table** tab to assign specific MAC addresses to an Intra-Cell Blocking Group.

MAC Table Tab

After configuring the Intra-Cell Blocking Groups on the **Group Table** tab, use the **MAC Table** tab to assign specific MAC addresses to an Intra-Cell Blocking Group.



Click the **Add Table Entries** button.



Enter the MAC address of the SU. Select **Enable** from the drop-down menu for the Group Index

Click **Add**. The MAC address is assigned to the groups. Additions to the MAC Table take effect immediately after clicking the **Add** button. You can **enable**, **disable**, **delete**, or **reassign** the groups for a MAC address by using the **Edit/Delete Table Entries** button.

Note: A maximum of 250 MAC addresses can be added among all filter groups.

Security Gateway Tab

You can configure a Security Gateway to block traffic between SUs connected to different Base Stations. Verify that Intra-Cell Blocking has been enabled on the **Group Table** tab before configuring the Security Gateway.

Security Gateway Status

Enables or disables packet forwarding to the external Security Gateway.

Security Gateway MAC Address

Lets you configure the MAC address of the external Security Gateway.

Group Rules

The following rules apply to Intra-Cell Blocking Groups:

- One SU can be assigned to more than one group.
- An SU that has not been assigned to any group cannot communicate to any other SU connected to the same or different Base Station Unit.

Example of Intra-Cell Blocking Groups

Four Intra-Cell Blocking Groups have been configured on one Base Station Unit. SUs 1 through 6 are registered to Base Station Unit 1. SUs 7 through 9 are registered to Base Station Unit 2.

Intra-Cell Blocking Group Example			
Group 1	Group 2	Group 3	Group 4
SU 1	SU 2	SU 6	SU 8
SU 4	SU 3	SU 1	SU 9
SU 5	SU 8	SU 3	SU 2

In this example, SU 1 belongs to two groups, Group 1 and Group 3. Therefore, packets from SU 1 destined to SU 4, SU 5, SU 6, and SU 3 are not blocked. However, SU 9 belongs to group 4 only and packets from SU 9 are blocked unless sent to SU 8 or SU 2.

10) NAT (Network Address Translation)

The NAT (Network Address Translation) feature lets hosts on the Ethernet side of the SU transparently access the public network through the Base Station. All hosts in the private network can have simultaneous access to the public network.

Note: The NAT tab is available for SUs in **Routing** mode only. The SU supports NAPT (Network Address Port Translation) where all private IP addresses are mapped to a single public IP address, and does not support Basic NAT (where private IP addresses are mapped to a pool of public IP addresses).

Both **dynamic mapping** (allowing private hosts to access hosts in the public network) and **static mapping** (allowing public hosts to access hosts in the private network) are supported.

- In dynamic mapping, the SU maps the private IP addresses and its transport identifiers to transport identifiers of a single Public IP address as they originate sessions to the public network. This is used only for outbound access.
- Static mapping is used to provide inbound access. The SU maps a private IP address and its local port to a fixed public port of the global IP address. This is used to provide inbound access to a local server for hosts in the public network. Static port mapping allows only one server of a particular type. Up to 1000 ports (500 UDP and 500 TCP) are supported.

This tab is used to configure NAT related parameters including Static Port Table mapping for Port Forwarding.

NOTE: NAT can be enabled when the SU/RSU is configured to work in Router Mode. All changes to NAT configuration require a reboot to take effect.

NAT Status:

NAT Static Bind Status:

Public IP Address: 0.0.0.0

NAT Static Port Mapping Table

Local IP Address	Port Type	Start Port	End Port	Status
Add Table Entries Edit/Delete Table Entries				

NAT Status

Enables or disables the NAT feature. NAT can be enabled only for SUs in Routing mode. The default is disabled.

Note: Changes to NAT parameters including the NAT Static Port Mapping Table require a reboot to take effect.

NAT Static Bind Status

Enables or disables the NAT Static Bind status (static mapping) to allow public hosts to access hosts in a private network. The default is disabled.

Public IP Address

The NAT Public IP address is the wireless interface IP address.

NAT Feature Interactions

When NAT is enabled, the DHCP Relay Agent feature is not supported (DHCP Relay Agent must be disabled before NAT is enabled) and RIP updates are not sent or received.

DHCP Server Interaction

You can configure a DHCP server to allocate IP addresses to hosts on the Ethernet side of the SU/Base Station (see **DHCP Server**).

NAT Static Port Mapping Table

Adding entries to the NAT Static Mapping Table lets the configured hosts in a private address realm on the Ethernet side of the SU access hosts in the public network using Network Address Port Translation (NAPT). Up to 1000 entries can be configured (500 UDP ports and 500 TCP ports).

To add an entry:

1. Click the **Add Table Entries** button.
2. Enter the **Local IP Address** of the host on the Ethernet side of the SU.
3. Select the **Port Type**: TCP, UDP, or Both.
4. Enter the **Start Port** and **End Port**

Local IP Address	Port Type	Start Port	End Port	Status
	TCP			

Supported Session Protocols

The NAT feature supports the following session protocols for both inbound and outbound access with the required support, applications, and limitations given in the following table.

Certain Internet applications require an Application Level Gateway (ALG) to provide the required transparency for an application running on a host in a private network to connect to its counterpart running on a host in the public network. An ALG may interact with NAT to set up state information, use NAT state information, modify application specific payload and perform the tasks necessary to get the application running across address realms.

No more than one server of a particular type is supported within the private network behind the SU.

Supported Session Protocols			
Protocol	Support	Applications	Limitations
ICMP	ICMP ALG	Ping	
FTP	FTP ALG	File transfer	
H.323	H.323 ALG	Multimedia conferencing	
HTTP	Port mapping for inbound connection.	Web browser	
TFTP	Port mapping for inbound connection.	File transfer	
Telnet	Port mapping for inbound connection.	Remote login	
CUSEEMe	Port mapping for inbound and outbound connection.	Video conferencing	One user is allowed for video conferencing
IMAP	Port mapping for inbound connection.	Mail	
PNM	Port mapping for inbound connection.	Streaming media with Real Player	
POP3	Port mapping for inbound connection.	E-mail	
SMTP	Port mapping for inbound connection.	E-mail	Mails with IP addresses of MTAs or using IP addresses in place of FQDN are not supported (requires SMTP ALG).
RTSP	Port mapping for inbound connection.	Streaming audio/video with Quick Time and Real Player	
ICQ	Port mapping for inbound connection.	Chat and file transfer	Each host using ICQ needs to be mapped for different ports.
IRC	Port mapping for inbound connection.	Chat and file transfer	Each host using IRC needs to be mapped for different ports.
MSN Messenger	Port mapping for inbound and outbound connection.	Conference and Share files with Net meeting	Only one user is allowed for net meeting.
Net2Phone	Port mapping for inbound and outbound connection.	Voice communication	
IP Multicast	Pass Through	Multicasting	
Stream works	Port mapping for inbound connection.	Streaming video	
Quake	Port mapping for inbound connection.	Games	When a Quake server is configured within the private network behind a SU, the SU cannot provide information about that server on the public network. Also, certain Quake servers do not let multiple users log in using the same IP address, in which case only one Quake user is allowed.

These VPN protocols are supported with their corresponding ALGs: IPsec, PPTP, L2TP.

ADDITIONAL INTERFACE INFORMATION

Dynamic Frequency Selection (Tsunami MP.11a only)

With Tsunami MP.11a units, Dynamic Frequency Selection (DFS) is enabled automatically based upon the country you select. You can tell DFS is in use because the frequency selection drop-down box on the **Interfaces** page is grayed out (click the **Configure** button and the **Interfaces** tab); it displays only the DFS-selected frequency. You cannot select a preferred frequency or band in which to operate. DFS scans all available frequencies in all available bands to select the operating frequency automatically.

To comply with your country's regulations, change the DFS selection to specify your country. You can do this by logging into the unit, clicking the **Configure** button and selecting the **System** tab. There is a drop-down box labeled "Country" with all available countries from which to select. Choose your country, configure the unit as required, and reboot for the settings to take effect.

Note: Because DFS must scan for radar and interference on multiple channels, you must allow a sufficient amount of time for the units to start up. This is considerably longer than when the unit is not using DFS. Startup time is usually within two to three minutes if no radar is detected. If radar is detected, the unit may reboot multiple times before it becomes fully operational and can take much longer to start. This is expected behavior.

DFS Requirement

Dynamic Frequency Selection (DFS) is required in FCC and ETSI countries; it is enabled automatically when you select a country with a regulatory domain that requires DFS. DFS is required for two purposes.

1. *Radar avoidance both at startup and while operational.* To meet these requirements, the Tsunami MP.11a BSU scans available frequencies at startup for the presence of a radar signal on all available frequencies; it does not use any frequency in which radar signals are detected. Once fully operational on a frequency, the BSU actively monitors the occupied frequency for radar interference. If radar interference is detected, the BSU logs a message and reboots to find a new frequency free of interference.

Understand that radar detection is performed only by the BSU and not by the SU. When an SU is set to a country in which DFS is used, it scans all available channels upon startup looking for a BSU that best matches its connection criteria (such as **Base Station System Name**, **Network Name**, and **Shared Secret**). The SU connects to the BSU automatically on whatever frequency the BSU has selected. Because of this procedure, it is best to set up the BSU and have it fully operational before installing the SU, although this is not required. If a BSU reboots because of radar interference, the SU loses its WOPR link. The SU waits 30 seconds, and if it finds that the WOPR link is down, it rescans the available frequencies for an active BSU.

2. *Guarantee the efficient use of available frequencies by all devices in a certain area.* To meet this requirement, the BSU scans each available frequency upon startup and selects a frequency based upon the least amount of noise and interference detected. This lets multiple devices operate in the same area with limited interference. This procedure is done only at startup; if another non-radar device comes up on the same frequency, the BSU does not detect this or reboot because of it. It is expected that other devices using these frequencies also are in compliance with country regulations, so this should not happen.

Wireless Outdoor Router Protocol

The Wireless Outdoor Router Protocol (WORP) is a polling algorithm designed for wireless outdoor networks. WORP takes care of the performance degradation incurred by the so-called “hidden-node” problem, which can occur when standards-based 802.11b wireless LAN technology is used for outdoor building-to-building connectivity. In this situation, when multiple radios send an RTS, if another radio is transmitting, it corrupts all data being sent, degrading overall performance. The WORP polling algorithm ensures that these collisions cannot occur, which increases the performance of the overall network significantly.

WORP dynamically adapts to the number of SUs that are active on the network and the amount of data they have queued to send.

Satellite Density

The **Satellite Density** setting is a valuable feature for achieving maximum bandwidth in a wireless network. It influences the receive sensitivity of the radio interface. This feature improves operation in environments with a high noise level. Reducing the sensitivity of the radio enables unwanted “noise” to be filtered out. (It disappears under the threshold.)

You can configure the **Satellite Density** to be **Large**, **Medium**, **Small**, **Mini**, or **Micro**. The default value for this setting is **Large**. The smaller settings are appropriate for high noise environments; a setting of **Large** would be for a low noise environment.

A long distance link may have difficulty maintaining a connection with a small density setting because the wanted signal can disappear under the threshold. Consider both noise level and distance between the peers in a link when configuring this setting. The threshold should be chosen higher than the noise level, but sufficiently below the signal level. A safe value is 10 dB below the present signal strength.

If the Signal-to-Noise Ratio (SNR) is not sufficient, you may need to set a lower data rate or use antennas with higher gain to increase the margin between wanted and unwanted signals. In a point-to-multipoint configuration, the Base Station should have a density setting suitable for all of its registered SUs, especially the ones with the lowest signal levels (longest links).

Take care when configuring a remote interface; check the available signal level first, using Remote Link Test.

Warning!

When the remote interface accidentally is set at too small a value and communication is lost, it cannot be reconfigured remotely and a local action is required to bring the communication back. Therefore, the best place to experiment with the level is at the unit that can be managed without going through the link; if the link is lost, the setting can be adjusted to the correct level to bring the link back.

To set the **Satellite Density**, click the **Configure** button, then the **Interfaces** tab and the **Wireless** sub-tab. Make your density selection from the drop-down menu. This setting requires a reboot of the unit.

Sensitivity threshold settings related to the density settings for the MP.11a (802.11a) are:

Satellite Density	Large	Medium	Small	Mini	Micro
Receive Sensitivity Threshold	-95 dBm	-86 dBm	-78 dBm	-70 dBm	-62 dBm
Defer Threshold	-62 dBm	-62 dBm	-52 dBm	-42 dBm	-36 dBm

Sensitivity threshold settings related to the density settings for the MP.11 (802.11b) are:

Satellite Density	Large	Medium	Small	Mini	Micro
Receive Sensitivity Threshold	-99 dBm	-90 dBm	-85 dBm	-72 dBm	-66 dBm

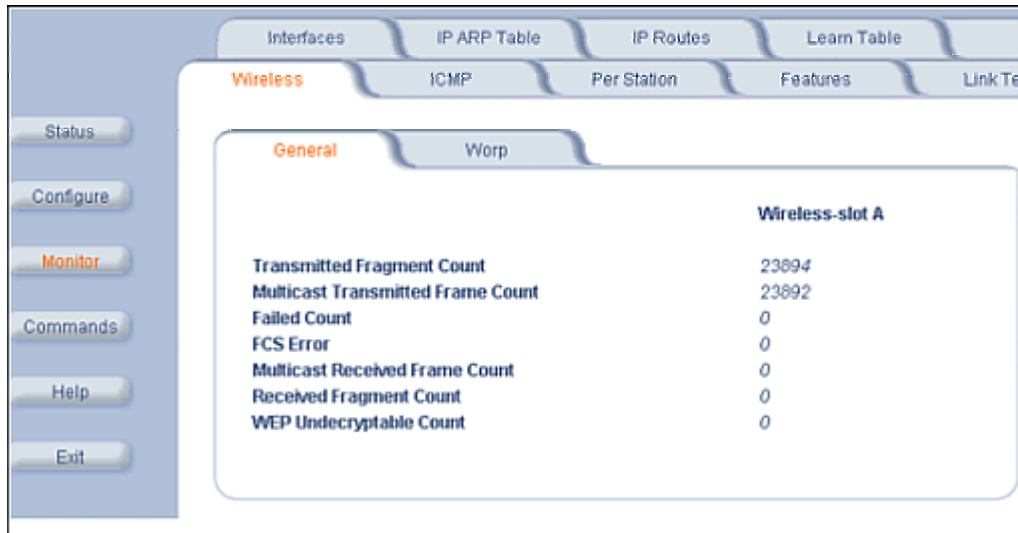
MONITOR

Use this section of the interface to obtain detailed information about the settings and performance of the MP.11/a. There are 12 tabs in the **Monitor** section. The **Radius** tab is available on Base Stations only.

1) Wireless

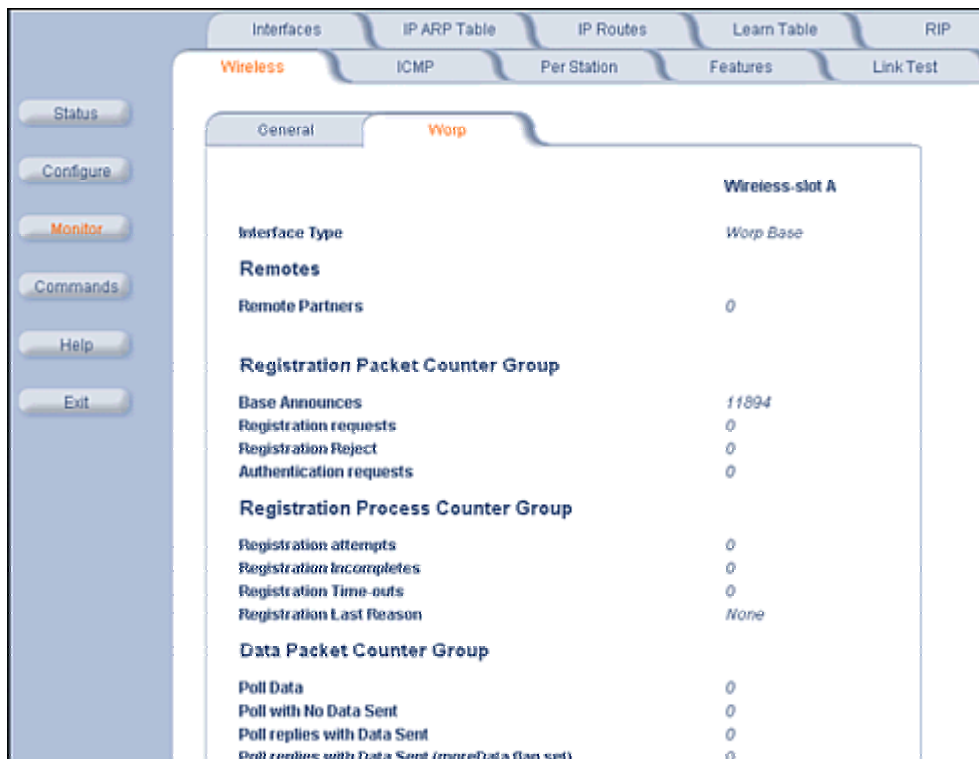
General

Click the **Monitor** button and the **General** tab to monitor the general performance of the wireless interface.



WORP

Click the **Monitor** button, the **Wireless** tab, and the **WORP** tab to monitor the performance of the WORP Base or WORP SU interfaces.



The **Registration Last Reason** field indicates either a successful registration (a value of 1) or it indicates the reason why the last registration failed.

Possible values for the **Registration Last Reason** field are as follows:

- 1 = Successful registration
- 2 = Maximum number of SUs reached
- 3 = Authentication failure
- 4 = Roaming
- 5 = No response from SU within the Registration Timeout Period
- 6 = Low Signal Quality

2) ICMP

Click the **Monitor** button and the **ICMP** tab to view the number of ICMP messages send and received by the MP.11/a. It includes **ping**, **route**, and **host unreachable** messages.

Wireless		ICMP		Per Station		Features		Link Test	
Messages Received		Messages Sent							
Total Messages	2	Total Messages	2						
Errors	0	Errors	0						
Destination Unreachable	0	Destination Unreachable	0						
Time Exceeded	0	Time Exceeded	0						
Parameter Problems	0	Parameter Problems	0						
Source Quench	0	Source Quench	0						
Redirects	0	Redirects	0						
Echos	2	Echos	0						
Echo Reply	0	Echo Reply	2						
Time Stamps	0	Time Stamps	0						
Time Stamp Reply	0	Time Stamp Reply	0						
Address Mask	0	Address Mask	0						
Address Mask Reply	0	Address Mask Reply	0						

3) Per Station

Click the **Monitor** button and the **Per Station** tab to view Station Statistics. On the SU, the “Per Station” page shows statistics of the BSU to which the SU is registered. On the BSU, it shows statistics of all the SU's connected to the BSU.

The page's statistics refresh every 4 seconds.

Interfaces

IP ARP Table

IP Routes

Learn Table

RI

Wireless

ICMP

Per Station

Features

Link Test

This tab is used to monitor Station Statistics of registered SRSUs.

SU Station Statistics

SU MAC Address	Local Tx Rate	Remote Tx Rate	Local Signal	Local Noise	Remote Signal	Remote Noise
----------------	---------------	----------------	--------------	-------------	---------------	--------------

4) Features

Click the **Monitor** button and the **Features** tab to view the following information:

Features		
Feature	Supported	Licensed
Upstream Bandwidth WORP (in kbits/s)	100032	100032
Downstream Bandwidth WORP (in kbits/s)	100032	100032
Max. WORP Satellites	250	250
Max. Users On Satellite	65535	65535

Note: A Base Station shows how many WORP SUs it can support; the Subscriber Unit and Residential Subscriber Unit shows how many Ethernet hosts they support on their Ethernet port as the “Max Users on Satellite” parameter.

5) Link Test

Click the **Monitor** button and the **Link Test** tab to find out which wireless stations are in range and to check their link quality.

Note: Link Test requires Internet Explorer version 6.0 or later. Earlier versions do not support Link Test.

Link Test for the MP.11a reports a single Receive Signal Strength Indicator (RSSI) value; the higher the number, the better the signal.

- **Explore** from a BSU displays all its registered SUs.
- **Explore** from an SU or RSU displays only the BSU with which it is registered.

All stations displayed after “Explore” come up “Disabled.” Select a station by changing **Disabled** to **Start** and click the **Link Test** button. You can change multiple stations to **Start**, but only the last station in the list is displayed as the remote partner when you click the **Link Test** button. See the following figure:

Name	Wireless Router	Description	Wireless Router v0.0.0(0) SN-04UT23530013 v3.0.4												
Location	Contact Location	Up Time	00:00:31:14												
Explore Link Test <table border="1"> <thead> <tr> <th>Station Name</th> <th>MAC Address</th> <th>Link Status</th> <th>Interface</th> <th>Radio Type</th> </tr> </thead> <tbody> <tr> <td>Wireless Router</td> <td>00:30:F1:8A:18:0D</td> <td>Start</td> <td></td> <td></td> </tr> </tbody> </table>						Station Name	MAC Address	Link Status	Interface	Radio Type	Wireless Router	00:30:F1:8A:18:0D	Start		
Station Name	MAC Address	Link Status	Interface	Radio Type											
Wireless Router	00:30:F1:8A:18:0D	Start													

For the MP.11a (802.11a), the Link Test provides the following information. The MP.11 (802.11b) Link Test also displays information about noise.)

Link Test

	Initiator Station Info	Remote Station Info
Station Name	Wireless Router	Wireless Router
MAC Address	00:10:C6:3D:44:A7	00:20:A6:52:60:04
SNR(dB)	27	23
Signal (dBm)	-70	-70
Noise (dBm)	-97	-93

Close

Link Test stops when you close the **Link Test** page.

6) Interfaces

Click the **Monitor** button and the **Interfaces** tab to view detailed information about the IP-layer performance of the MP.11/a interfaces. There are two sub-tabs: **Wireless** and **Ethernet**.

The following figure shows the **Wireless** interface; the same information is provided for the Ethernet interface on the **Ethernet** sub-tab.

Wireless		ICMP	Per Station	Features	Link Test
Interfaces		IP ARP Table	IP Routes	Learn Table	RIP
Ethernet		Wireless			
Type	802.11a				
Description	WORP Interface				
MIB Specific Definition	0.0				
Physical Address	00:20:A6:52:60:10				
Time Since Last Change(DD:HH:MM:SS)	00:00:31:43				
Operational Status	down				
Admin Status	Up				
Speed	36000000				
Maximum Packet Size	1504				
In Octets (bytes)	0				
In Unicast Packets	0				
In Non-unicast Packets	0				
In Discards	0				
In Errors	6				
Unknown Protocols	0				
Out Octets (bytes)	3045662				
Out Unicast Packets	0				
Out Non-unicast Packets	25318				
Out Discards	0				
Out Errors	0				
Output Queue Length	0				

7) IP ARP Table

Click the **Monitor** button and the **IP ARP Table** tab to view the mapping of the IP and MAC addresses of all radios registered at the MP.11/a. This information is based upon the Address Resolution Protocol (ARP).

Physical Address	IP Address	Media Type
00:20:A6:10:12:00	10.0.0.1	Static
00:01:03:1A:15:07	10.0.0.10	Dynamic

8) IP Routes

Click the **Monitor** button and the **IP Routes** tab to view all active IP routes of the MP.11/a. These can be either **static** or **dynamic** (obtained through RIP). This tab is available only in **Routing** mode, and you can add routes only when in **Routing** mode.

Destination	Subnet Mask	Next Hop	Interface	Metric
0.0.0.0	0.0.0.0	10.0.0.1	1	0
10.0.0.0	255.255.255.0	10.0.0.1	1	0
127.0.0.1	255.255.255.255	127.0.0.1	0	0

9) Learn Table

Click the **Monitor** button and the **Learn Table** tab to view all MAC addresses the MP.11/a has detected on an interface. The **Learn Table** displays information relating to network bridging. It reports the MAC address for each node that the device has learned is on the network and the interface on which the node was detected. There can be up to 10,000 entries in the **Learn Table**. This tab is only available in **Bridge** mode.

Physical Address	Port	Status
00:06:5B:91:59:36	1	Learned

10) RIP

Click the **Monitor** button and the **RIP** tab to view Routing Internet Protocol data for the Ethernet and Wireless interfaces.

Wireless	ICMP	Per Station	Features	Link Test
Interfaces	IP ARP Table	IP Routes	Learn Table	RIP
Routes Changed			0	
Responses to Route Requests			0	
		Ethernet	Wireless-slot A	
Address	10.0.0.1		10.0.0.1	
Network Mask	255.255.255.0		255.255.255.0	
Triggered Advertisements				
Bad Routes				
Bad Packets				

11) Radius

Click the **Monitor** button and the **Radius** tab to view information about the traffic exchanged with a RADIUS server.

Wireless	ICMP	Per Station	Features	Link Test
Interfaces	IP ARP Table	IP Routes	Learn Table	RIP
Invalid Server Replies				0
Primary		Backup		
Access Requests	0	Access Requests	0	
Access Accepts	0	Access Accepts	0	
Access Retransmissions	0	Access Retransmissions	0	
Access Rejects	0	Access Rejects	0	
Access Challenges	0	Access Challenges	0	
Malformed Access Responses	0	Malformed Access Responses	0	
Authentication Bad Authenticators	0	Authentication Bad Authenticators	0	
Timeouts	0	Timeouts	0	

12) Temperature Log (BSU Only)

The feature for reporting and logging internal unit temperature observes and reports the internal temperature of the unit. Temperature is logged and an SNMP trap sent when the temperature crosses the limit of -30°C to 60°C.

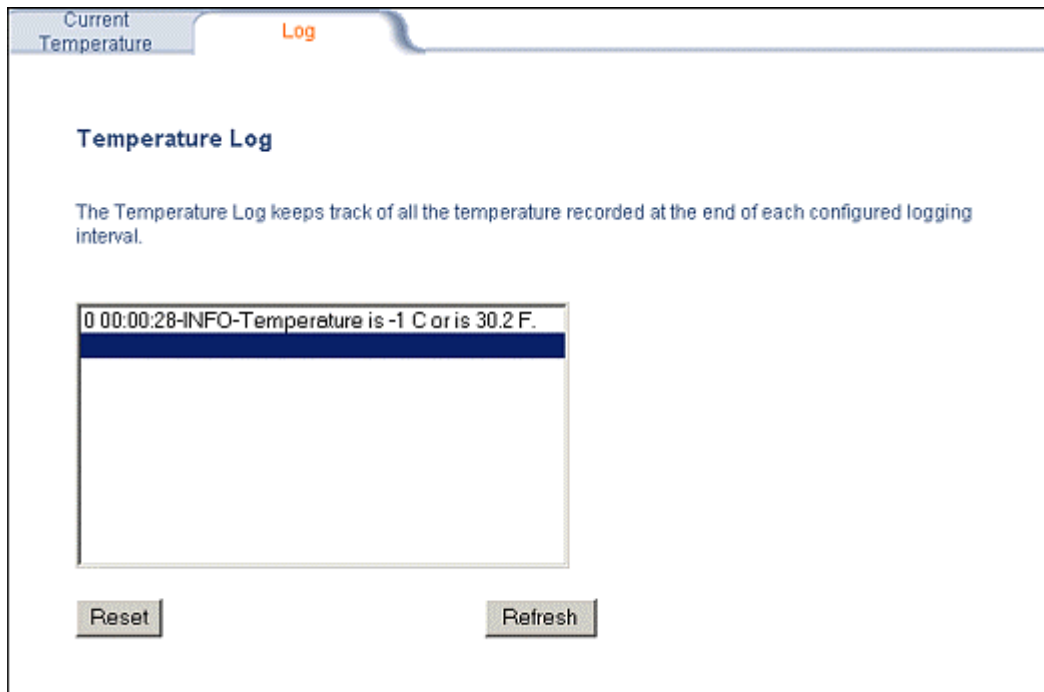
You can select a recording interval from one to sixty minutes, in 5-minute increments on the **Configure: System** tab. A log file holds the recorded data. The log can hold at least 576 entries (two days with the refresh time of 5 minutes). For further analysis, the log can be exported to a text file with a new line feed as a line separator.

The Temperature Log contains two sub-tabs.

- The **Current Temperature** tab indicates the unit's current temperature. The current temperature value is refreshed every 4 seconds.

Current Temperature	Log
Current Temperature of the Unit(*C)	
Current Temperature of the Unit(*F)	

- The **Log** tab keeps track of the temperature recorded at the end of each configured logging interval. You can reset or refresh the log using the **Reset** and **Refresh** buttons.



COMMANDS

This section describes the commands that you can perform with the Web Interface. The following tabs are in the **Commands** section: **Download**, **Upload**, **Downgrade**, **Reboot**, **Reset**, and **Help Link**.

1) Download

Click the **Commands** button and the **Download** tab to download image, configuration, and license files to the MP.11/a.

Download

System Information

Software Version	2.1.0
Boot Loader Version	3.0.4

TFTP Information

Server IP Address	10.0.0.2
File Name	FILENAME
File Type	Image
File Operation	Download

Note: Download copies files from the tftp server to the Wireless Router.

Note: Downloaded files take effect when the Wireless Router is rebooted.

OK Cancel

Server IP address

Enter the TFTP **Server IP address**. (Double-click the TFTP server icon on your desktop and locate the IP address assigned to the TFTP server.)

File Name

Enter the name of the file to be downloaded.

File Type

Config, **image**, **BspBI**, or **license**.

File Operation

Download or **Download and Reboot**.

2) Upload

Click the **Commands** button and the **Upload** tab to upload a configuration file from the MP.11/a. Enter **Server IP Address**, **File Name**, select a **Filetype**, and click **OK**.

The screenshot shows the 'Upload' tab selected in a web interface. At the top, there are five tabs: 'Download', 'Upload' (highlighted in orange), 'Downgrade', 'Reboot', and 'Reset'. Below the tabs, the 'System Information' section displays 'Software Version' as 2.10.0 and 'Boot Loader Version' as 3.0.3. The 'TFTP Information' section contains three input fields: 'Server IP Address' with the value '10.0.0.2', 'File Name' with the placeholder 'FILENAME', and 'Filetype' with a dropdown menu showing 'Config'. A note at the bottom states: 'Note: Upload copies files from the Wireless Router to the tftp server.' At the bottom of the window are 'OK' and 'Cancel' buttons.

Filetype can be configured as **Templog**, **Eventlog**, or **Config**.

3) Downgrade

Click the **Commands** button and the **Downgrade** tab to downgrade to a previous MP.11/a release. Downgrade currently is supported only to release 2.0.1.

Once you enter this command, the device is downgraded to release version 2.0.1 and is automatically rebooted.

Note: The **Downgrade** command applies only to the outdoor MP.11/a.

4) Reboot

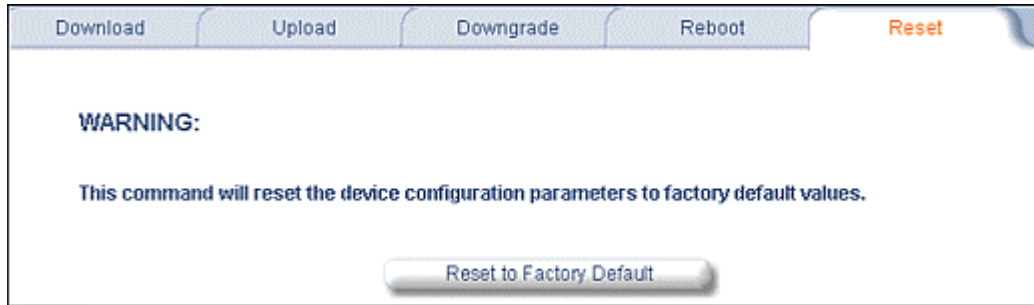
Click the **Commands** button and the **Reboot** tab to restart the embedded software of the MP.11/a. Configuration changes are saved and the MP.11/a is reset.

The screenshot shows the 'Reboot' tab selected in the web interface. The top tabs are 'Download', 'Upload', 'Downgrade', 'Reboot' (highlighted in orange), and 'Reset'. The main area of the window contains the text 'This Command will reboot the device' and a single 'Reboot' button at the bottom.

CAUTION: *Rebooting the unit causes all users currently connected to lose their connection to the network until the MP.11/a has completed the restart process and resumed operation.*

5) Reset

Click the **Commands** button and the **Reset** tab to restore the configuration of the MP.11/a to the factory default values.



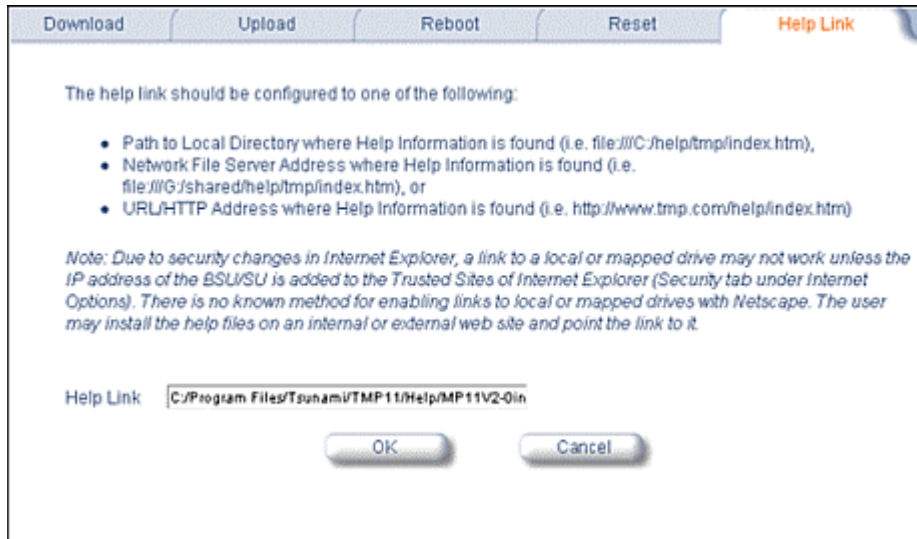
You can also reset the MP.11/a from the RESET button located on the side of the unit. Because this resets the MP.11/a's current IP address, a new IP address must be assigned.

CAUTION: *Resetting the MP.11/a to its factory default configuration permanently overwrites all changes made to the unit. The MP.11/a reboots automatically after this command has been issued.*

6) Help Link

Click the **Commands** button and the **Help Link** tab to set the location of the help files of the Web Interface. Upon installation, the help files are installed in the **C:\Program Files\Proxim\Tsunami MP11\Help** folder.

If you want to place these files on a shared drive, copy the **Help** folder to the new location and specify the new path in the **Help Link** box.



Chapter 6. Command Line Interface

The Command Line Interface (CLI) provides a text-based interface with which you can configure and manage the MP.11/a using commands. You can enter these commands or submit them in the form of a script to allow batch processing. Accessing the CLI is discussed in “Command Line Interface Overview” on page 29.

Administrators use the CLI to control MP.11/a operation and monitor network statistics. The MP.11/a supports two types of CLI—the Boot Loader CLI and the normal CLI. The Boot Loader CLI provides a limited command set and is used when the current Image is bad or missing.

BOOT LOADER CLI

The Boot Loader CLI is a minimal subset of the normal CLI used to perform initial configuration of the MP.11/a. The Boot Loader is started when the MP.11/a is switched on or reset, and is responsible for starting the embedded software. The Boot Loader CLI is available when the MP.11/a embedded software is not running.

This interface is accessible only through the serial interface if the MP.11/a does not contain a software image or a download image command over TFTP has failed.

The Boot Loader CLI lets you configure the initial setup parameters as well as download a software image to the device.

The following commands are supported by the Boot Loader CLI:

- **Set** for configuration of initial device parameters
- **Show** to view the device's configuration parameters
- **Help** to provide additional information about all commands supported by the Boot Loader CLI
- **Reboot** to reboot the device

The parameters supported by the Boot Loader CLI for viewing and modifying are:

- System name
- IP address assignment type
- IP address
- IP mask
- Gateway IP address
- TFTP Server IP address
- Image Filename (including the file extension)

CLI TERMINOLOGY

Configuration Files

Database files containing the current configuration information. Configuration items include the IP address and other network-specific values. Configuration files can be downloaded to the MP.11/a or uploaded for backup or troubleshooting.

Download versus Upload

Downloads transfer files to the MP.11/a; uploads transfer files from the MP.11/a. The TFTP server performs file transfers in both directions.

Group

A logical collection of network parameter information. For example, the System Group is comprised of several related parameters. Groups also can contain tables. All items for a given group can be displayed with a **show <Group>** CLI command.

Image File

The MP.11/a software executed from RAM. To update an MP.11/a, you typically download a new image file.

Parameter

A fundamental network value that can be displayed and may be changeable. For example, the MP.11/a must have a unique IP address and the wireless interface must be assigned an SSID. Change parameters with the CLI set command and view them with the CLI show command.

Table

Tables hold parameters for several related items. For example, you can add several potential managers to the SNMP table. All items for a given table can be displayed with a **show <table>** CLI command.

TFTP

Refers to the TFTP Server, used for file transfers.

NAVIGATION AND SPECIAL KEYS

The CLI supports these navigation and special key functions to move the cursor along the prompt line:

Key Combination	Description
Delete or Backspace	Delete previous character
Ctrl-A	Move cursor to beginning of line
Ctrl-E	Move cursor to end of line
Ctrl-F	Move cursor forward one character
Ctrl-B	Move cursor back one character
Ctrl-D	Delete the character the cursor is on
Ctrl-U	Delete all text to the left of the cursor
Ctrl-P	Go to the previous line in the history buffer
Ctrl-N	Go to the next line in the history buffer
Tab	Complete the command line
?	List available commands

COMMANDS

The commands listed in the following table are described in more detail in the following subsections.

Command	Action
?	Lists commands
done	Disconnects and closes the current CLI session
download	Transfer files from the TFTP server to the MP.11/a
downgrade	Downgrade to a previous MP.11/a release
exit	Disconnects and closes the current CLI session
help	View command specifics or control-key sequences you can use to navigate
history	Lists commands previously entered
log	Manage the event log file maintained by the MP.11a
passwd	Change the password used to access the CLI
quit	Disconnects and closes the current CLI session
reboot	Signal the MP.11/a to reboot after a specified number of seconds
save	Save the current MP.11/a configuration to flash memory
search	Display the parameter entries in a specified table
set	Change parameter values
show	View parameter and statistical values
templog	View the temperature log
upload	Transfer files from the MP.11/a to the TFTP server

Also see “Show and Set Parameters” on page 103 and “Table Parameters” on page 114.

? (Question Mark)

You can show CLI help by entering **help** at the command prompt. The CLI also provides context-specific help. For help in a specific situation, enter **?**.

You can get help as follows:

display the command list	?
display commands that start with specified letters	s? The more letters you enter, the fewer the results returned. Enter one or more letters, then ? with no space between letters and ?
display parameters for set and show commands	download ? Lets you see every possible parameter for the set or show commands Enter the command, a space, then ?
display prompts for successive parameters	download ? download 169.254.128.133 ? download 169.254.128.133 image.bin ? download 169.254.128.133 image.bin image Enter the command, a space, and then ? . Then, when the parameter prompt appears, enter the parameter value. The parameter is changed and a new CLI line is echoed with the new value. After entering one parameter you can add another ? to the new CLI line to see the next parameter prompt, and so on until you have entered all the required parameters.

Note that the Boot Loader CLI does not have command help.

Done Command

The **quit**, **done**, and **exit** commands are used to disconnect and close the current CLI session.

Downgrade Command

The **downgrade** command lets you downgrade to a previous MP.11/a release. Downgrade currently is supported only to release 2.0.1 (rel201). Enter **Rel201** or **rel201** as the **Release Number**.

Once you enter this command, the device is downgraded to release version 2.0.1 and is automatically rebooted.

Note: The **Downgrade** command applies only to the outdoor MP.11/a.

downgrade <TFTPIPAAddress> <TFTP filename> <filetype (image)> <Release Number>

The **filetype** must be **image**.

Download Command

The **download** command is used to transfer files from the TFTP server to the MP.11/a. Executing download in combination with the asterisk character (*) makes use of the previously set TFTP parameters. Executing download without parameters displays command help and usage information.

To transfer a file from the TFTP server to the MP.11/a:

download <tftpserveraddress> <path and filename> <filetype>

where **<filetype>** can be one of these four values:

config - Configuration file, the current settings of the MP.11/a
image - Image file, embedded software for the MP.11/a
bootloader - Boot software
license - License file

To issue repeated operations, use the asterisk (*) character in place of the options: **download ***

Previously used optional values for the **download** command is stored in TFTP parameters that you can view and change. See the TFTP parameter table for details.

Exit Command

The **quit**, **done**, and **exit** commands are used to disconnect and close the current CLI session.

Help Command

Use the **help** command to view the specifics of certain commands or to view control-key sequences you can use to navigate the command line.

To display how to navigate the command line using special keys:

help

The following represents part of the displayed output:

Special keys supported:

Arrow Keys

DEL, BS	 delete previous character
Ctrl-A	 go to beginning of line
Ctrl-E	 go to end of line
Ctrl-F	 go forward one character
Ctrl-B	 go backward one character
Ctrl-D	 delete current character
Ctrl-U, X	. .. delete to beginning of line
Ctrl-K	 delete to end of line
Ctrl-W	 delete previous word
Ctrl-T	 transpose previous character
Ctrl-P	 go to previous line in history buffer
Ctrl-N	 go to next line in history buffer
Tab	 will attempt command completion
?	 will provide command listing

For a description and example of the specified command, enter:

help <command name> or <command name> help

History Command

Use the **history** command to show this list of commands. Commands entered in the current session are stored in a Command History Buffer. To avoid re-entering long command statements, use the keyboard up arrow (↑) and down arrow (↓) keys to recall previous statements from the Command History Buffer. When the desired statement reappears, press the **Enter** key to execute, or you can edit the statement before executing it.

history

Log Command

Use the **log** command to manage the event log file maintained by the MP.11/a.

To append a user-specified string to the event log, enter:

log addstring <anyString>

To append a user-specified string multiple times to the event log, enter:

log addmany <numMsgs> <anyString>

To reset the event log, enter the following. Note that this generates an event log message stating that the log has been reset intentionally.

log reset

To display the contents of the entire event log, enter:

log dump

To display the current number of log entries:

log count

To display the log entry corresponding to the specified number, enter:

log display <msgNum>

The first log entry is numbered 0. If no parameter is supplied, the entire event log is displayed.

Passwd Command

Use the **passwd** command to change the password used to access the CLI.

passwd <old password> <new password> <new password>

Enter the new password twice to ensure no mistake was made when specifying the new password. If you forget the CLI password, there is no way to retrieve it from the MP.11/a and the CLI cannot be accessed. In this case, the MP.11/a must be reset to factory defaults. The default password for the CLI is **public**.

Quit Command

The **quit**, **done**, and **exit** commands are used to disconnect and close the current CLI session.

Reboot Command

Use the **reboot** command to signal the MP.11/a to reboot after a specified number of seconds.

reboot <number of seconds>

The **<number of seconds>** parameter must be positive. Specify a value of 0 (zero) for an immediate reboot.

Save Command

Use the **save** command to save the current configuration of the MP.11/a to flash memory.

```
save config
```

Search Command

Use the **search** command to list the parameters supported by the specified table. This list corresponds to the table information displayed in the HTTP interface.

```
search <table name>
```

See “Table Parameters” on page 114 for details.

Set Command

The **set** command lets you change parameter values. You can set a single parameter value, or you can set a group of parameters or a table with parameters. If a parameter requires more than one value, the values must be separated by spaces.

For example, to set the MP.11/a IP address parameter:

```
set ipaddrtype static  
set ipaddr 1 ipaddress 10.0.0.12
```

Some parameter values change only when the MP.11/a is rebooted. In these cases, the CLI warns you that a reboot is required for the change to take effect.

See “Show and Set Parameters” on page 103 for a list of parameters that can be used with the **set** command.

Show Command

The **show** command lets you view parameter and statistical values. You can view a single parameter, a group of parameters, or a table with parameters. (A table consists of rows with similar parameters.)

To see a definition and syntax example, enter only **show**. To see a list of available parameters, enter a question mark after show (example **show ?**).

To view the current values of all system parameters: **show system**

See “Show and Set Parameters” on page 103 for a list of parameters that can be used with the **show** command.

Templog Command

The **templog** command is used to display the temperature log for the radio. The temperature log is a file in flash memory that holds the temperature data.

templog dump	Displays the temperature log
templog reset	Resets the temperature log
upload <target ip> <filename> templog	Export the log to a text file for further analysis

- Maximum number of entries in the log is 576 (2 days with the refresh time of 5 minutes).
- The log is exportable to a text file for further analysis.
- The range of the internal unit temperature (IUT) is from -30° C to 60° C
- The range of the recording interval of IUT is from 1 to 60 minutes, configurable in 5-minute increments (1, 5, 10, 15, 20, 25, 30, 35, 40, 45, 50, 55, 60)

Note: For the outdoor MP.11/a, if a **walk** operation is performed on the MIB variable **oriTempLogTableEntry** using SNMP V2 default settings, log entries are repeated about 10 times (as the maximum repetitions in SNMP V2 is 10). Set the maximum repetitions value to **1** or uncheck the **Use Get Bulk** option for all entries to be displayed without any repetitions in the MIB browser.

Upload Command

The **upload** command is used to transfer files from the MP.11/a to the TFTP server.

To upload a file from the MP.11/a to the TFTP server:

upload <tftpserveraddress> <path and filename> <filetype>

where **<filetype>** can be one of these four values:

config - Configuration file, the current settings of the MP.11/a

templog - Temperature log

eventlog - Event log

To issue repeated operations, use the asterisk (*) character in place of the options:

upload *

Previously used optional values for the **upload** command is stored in TFTP parameters that you can view and change. See the TFTP parameter table for details.

CLI BASIC MANAGEMENT COMMANDS

You may want to set up the following basic configuration parameters immediately when you receive the MP.11/a.

Task	Commands
Set System Name, Location, and Contact information	<pre>show system set sysname <name> set sysloc <location> set sysctname <contact name> set sysctemail <contact email> set sysctphone <contact phone> set syscountrycode <country code></pre>
Shows the type of hardware being used	<pre>show syshwtype hardwaretype</pre>
Set IP address for the MP.11/a	<pre>set ipaddrtype <static dynamic> set ipaddr 1 ipaddress <ip address> set ipaddr 1 ipsubmask <subnet mask></pre> For example: <pre>set ipaddr 1 ipaddress <ip address> ipsubmask <subnet mask></pre>
Set default gateway	<pre>set ipgw <gateway address></pre>
Configure Wireless Interface	<pre>set wif 3 channel 10 set wif 3 netname <network name></pre> For more Wireless Interface parameters, see “Wireless Interface Parameters” on page 112
Configure Ethernet Interface	<pre>show ethernet set Ethernet 1 etherspeed <autospeedauto autospeedhalf 100auto 100full 100 half 10full 10half></pre>
Set Encryption for the Wireless interface	<pre>show wifsec set wifsec 3 encryptoption <wep aes none> set wifsec 3 encryptkey1 <key 1> set wifsec 3 encryptallowdeny <enable disable></pre>
Set Telnet Password	<pre>show telnet set telifbitmask <0-15> set tellogintout <login timeout> set telport <port number> set telsessiontout <inactivity timeout></pre>
Set Web Interface Password	<pre>show http set httpifbitmask <0-15> set httppasswd <password> set httpport <port number></pre>
Set SNMP Password	<pre>show snmp (displays the read password, read/write password, IP Access Table entries, and SNMP Interface Bitmask) set snmprpasswd <read password> set snmprpasswd <read/write password> set snmpifbitmask <0-15></pre>
Download an MP.11/a configuration file from your TFTP server	<pre>Download <ipaddr> <tftpfilename> <tftpfiletype> show tftp (to ensure the entries are correct) download * reboot 0</pre>
Backup your MP.11/a configuration file	<pre>upload <ipaddr> <tftpfilename> <tftpfilename> show tftp (to ensure the entries are correct) upload *</pre>
Reboot	<pre>reboot [<number of seconds>]</pre>
Reset to Factory Defaults	<pre>set sysresettodefaults 1</pre>

SHOW AND SET PARAMETERS

The following table details the non-table parameters available to be viewed and set within the MP.11/a CLI.

R = Read-only W = Write-only RW = Read-Write

Antenna Alignment Display Parameters

Antenna Alignment Display (AAD) provides a measurement of signal quality in an easy-to-interpret manner (a numeric printed signal value at the CLI and serial ports). The SNR is displayed numerically on the CLI or serial port by two decimal characters representing a number from 00 to 99. On the serial port, AAD is enabled by default after booting.

To start the display, you must enable AAD and a WOPR link must be established between the Base Station and SU.

aad	RW	set aad enable local Enables display of the local SNR. Local SNR is the SNR measured by the receiver at the near end. set aad enable remote Enables display of the remote SNR. Remote SNR is the SNR as measured by the receiver at the far end. set aad enable average Enables display of the average SNR. The average SNR is the average of the local and remote SNR. set aad disable Disables Antenna Alignment Display. Also, ctrl-c disables AAD. AAD is automatically disabled 30 minutes after it is enabled to remove the load of extra messages on the wireless interface. The default telnet timeout is 900 seconds (15 minutes). In this case, AAD auto stops in 15 minutes. If AAD is required to run for the full 30 minutes, change the default telnet timeout to a value greater than 30 minutes (greater than 1800 seconds). This restriction is for telnet connections only and not for the serial interface. The serial interface never times out.
-----	----	---

Broadcast Filtering Parameters

broadcastflttbl	RW	Broadcast Filter Table
index	R	Index
protoname	R	Protocol name
direction	RW	Filtering Direction [1=ethernet to wireless, 2=wireless to ethernet, 3=both]
status	RW	Status of table entry [1=enable, 2=disable]

DHCP Relay Parameters

dhcprelay	R	DHCP Relay Group
dhcprelaystatus	RW	DHCP Relay Status [1=enable, 2=disable]
dhcprelayipaddr	RW	DHCP Server IP address
dhcprelaycmt	RW	Comment

DHCP Server Parameters

dhcp	R	DHCP Server Group
dhcpstatus	RW	DHCP Server Status. [1=enable, 2=disable].
dhcpgw	RW	DHCP Server Gateway IP address.
dhcpsubnetmask	R	DHCP Server Gateway Subnet Mask.
dhcppridnsipaddr	RW	DHCP Server Primary DNS IP address.
dhcpcdnnsipaddr	RW	DHCP Server Secondary DNS IP address.
dhcpiptooltbl	RW	DHCP Server IP Pool Table
index	R	Index
startipaddr	RW	Start IP address in the form xxx.xxx.xxx.xxx.
endipaddr	RW	End IP address in the form xxx.xxx.xxx.xxx.
defaultlease	RW	Default lease time. 3600-86400.
maxlease	RW	Maximum lease time. 3600-86400.
comment	RW	Comment. 1-255 characters.
status	RW	Status of table entry. [1=enable, 2=disable, 3 = delete, 4 = create]

Ethernet Parameters

ethernet	RW	Ethernet Configuration Table
index	R	Index
etherspeed	RW	Speed [1=10M Half Duplex 2=10M Full Duplex 3=10M Auto Duplex 4=100M Half Duplex, 5=100M Full Duplex 6=Auto Speed Half Duplex 7=Auto Speed Auto Duplex]

Ethernet Filtering Parameters

etherflt	R	Ethernet Filtering Group
etherflttbl	RW	Ethernet Filter Table
index	R	Index
proto	RW	Ethernet Filtering Protocol
cmt	RW	Comment {1-255 characters}
status	RW	Status of table entry {1=enable, 2=disable}
etherfltoptype	RW	Operation type [1=allow, 2=deny]
etherfltifbitmask	RW	Interface bitmask

Feature Parameter

featuretbl	R	Table of supported features on current image file
------------	---	---

HTTP (WEB BROWSER) Parameters

http	R	HTTP Group
httpport	RW	HTTP port
httppasswd	W	HTTP password
httpifbitmask	RW	HTTP interface bitmask
httphelpink	RW	Help link

Internal Unit Temperature Parameters

internalunittemp	R	Internal unit temperature
iutlogginginterval	RW	IUT logging interval

Intra-Cell Blocking Parameters

Limitations:

- Telnet Server supports only 32 arguments; therefore, any command comprising greater than 32 arguments results in an error.
- When “sh intra” is used to show commands relating to Intra-cell blocking, some of the commands displayed are too long to be shown with clear boundaries when all the commands are shown on the CLI.

intracellblockingstatus	RW	Enable or disable Intra-Cell blocking.
intracellgrptbl	RW	Intra-Cell Group Table. Defines the filter groups.
index	R	Index
grpname	RW	Name of the Intra-Cell group, 1-255 characters.
grpstatus	RW	Status of table entry [1=enable, 2=disable, 3=delete].
intracellmactbl	RW	Intra-Cell MAC Address Table. Enables or disables a MAC address and assigns it to a specific filter group.
index	R	Index
mac	RW	MAC Address of the SU.
grp1d1 (to grp1d16)	RW	Status of group entry [1=active, 2=inactive, 3=delete].
macstatus	RW	Status of table entry [1=enable, 2=disable, 3=delete] Default is enable.
intracellsecuritygwstatus	RW	Enable or disable packet forwarding to an external Security Gateway.
intracellsecuritygwmac	RW	MAC address of the Security Gateway.

Inventory Management Parameters

sysinvmgmt	R	Inventory Management Group
sysinvmgmtcmpiftbl	R	Inventory Interface Table
sysinvmgmtcmptbl	R	Inventory Component Table

IP ARP Parameters

parp	R	Proxy ARP Group
parpstatus	RW	Proxy ARP status [1=enable, 2=disable]

IP ARP Filtering Parameters

IPARP	R	IP ARP Group
iparpfltaddr	RW	IP address
iparpfltstatus	RW	Status [1=enable, 2=disable]
iparpfltsubmask	RW	Subnet mask

MAC Access Control Table Parameters

macacl	R	MAC Access Control Group
macacltbl	RW	MAC Access Control Table
index	R	Index
macaddr	RW	MAC address
cmt	RW	Comment of 1-255 characters.
status	RW	Status of table entry [1=enable, 2=disable, 3=delete]
macaclstatus	RW	Status [1=enable, 2=disable]
macacloptype	RW	Operation type [1=allow, 2=deny]

Miscellaneous Parameters

queries	R	RIP v2 Global Queries
routechg	R	RIP v2 Global Route Changes

Network Address Translation Parameters

nat	R	NAT Group
natstatus	RW	Status of NAT [1=enable, 2=disable]. Default is disable.
natstaticbindstatus	RW	Status of NAT Static [1=enable, 2=disable]. Default is disable.
natstaticporttbl	RW	NAT Static Port Bind Table
index	R	Index
localipaddr	RW	Local IP address in the form xxx.xxx.xxx.xxx.
porttype	RW	Port type. [1=TCP, 2=UDP, 3 = both]
startport	RW	Local port number. 1-65535.
endport	RW	Public port number. 1-65535.
status	RW	Status of table entry [1=enable, 2=disable, 3 = delete, 4 = create]

Network Parameters

network	R	Network Group
ip	R	IP Group (same as Network Group)
ipaddr	RW	IP Address Table
index	R	Index [1=Ethernet, 2=loopback, 3=wireless]
ipaddress	RW	IP address
ipsubmask	RW	Subnet mask
ipaddrtype	RW	Address type [1=static, 2=dynamic]
ipgw	RW	Default Router IP address
ipttl	RW	Default time-to-live
iproutes	RW	IP Route Table (Routing mode only)
ipaddr	R	IP address
metric	RW	Routing metric
routtype	RW	Route Type
ipsubmask	RW	Subnet Mask
ipgw	RW	Gateway IP address

Example: This command changes the first entry in the IP Address table:
 set ipaddr 1 ipaddress 150.80.0.1 ipsubmask 255.255.255.0

Radius Parameters

radius	R	RADIUS Group
radiustbl	RW	RADIUS Authentication Server Table
index	R	Index
status	RW	RADIUS Server Status [1=enable, 2=disable]
ipaddr	RW	IP address
port	RW	Authentication port
ssecret	W	Shared Secret
responsetm	RW	Response Time [1-4 seconds]
maxretr	RW	Maximum retransmissions [1-10]
type	R	Server type
radcliinvsvraddr	R	Client Invalid Server Address
radauthlifetm	RW	Authentication Lifetime
radmacacctrl	RW	MAC Access Control

RIP Interface Parameters

ripifcfg	RW	RIP Interface Configuration Table
authtype	RW	Authentication Type [1 = No Authentication, 2 = Simple Password]
authkey	RW	Authentication Key
txmode	RW	Transmission Mode [1 = Do Not Send, 2 = RIP v1, 3 = RIP1 compatible, 4 = RIP v2]
rxmode	RW	Receiving Mode [1 = RIP v1, 2 = RIP v2, 3 = RIP v1 or v2]
defmetric	RW	Default Metric

Roaming Parameters

roaming	R	Roaming Group
roamstatus	RW	Status of Roaming [1=enable, 2=disable]. Default value is disable.
slowscanthreshold	RW	Slow Scan Threshold. 0-50 dB in 1dB increments. Default value is 12dB. This parameter is configurable only on the SU and RSU.
fastscanthreshold	RW	Fast Scan Threshold. 0-50 dB in 1dB increments. Default value is 6 dB. This parameter is configurable only on the SU and RSU.
roamthreshold	RW	Roaming Threshold. 0-50 dB in 1dB increments. Default value is 3 dB. This parameter is configurable only on the SU and RSU.
slowscanpercentthreshold	RW	Slow Scan Percent Threshold. Used to manage retransmission calculation. Default is 2 percent.
fastscanpercentthreshold	RW	Fast Scan Percent Threshold. Used to manage retransmission calculation. Default is 10 percent.

Roaming with DDRS Enabled

There are two multicast rates to be configured when DDRS is enabled:

Default DDRS Data Rate (*ddrsdefdatarate*): The data rate at which the Base Station starts communication. This parameter is configurable; the factory default is 6 Mbps.

Maximum DDRS Data Rate (*ddrsmaxdata rate*): The maximum data rate at which the device can operate (the default is 36 Mbps)

When an SU roams from Base Station 1 to Base Station 2, the data rate at which it connects to Base Station 2 is the default data rate. If this remains at the factory default of 6Mbps, there can be issues with the application if it requires more than 6 Mbps (for example multiple video streams).

Applications requiring a higher data rate could experience a slight data loss during the roaming process while DDRS selects a higher rate (based upon link conditions).

When the applications re-transmit at a possibly slower rate, the WOPR protocol initially services the data at 6 Mbps and increases the data rate to the "Maximum DDRS Data Rate" one step at a time. Because the applications are not being serviced at the best possible rate, they further slow down the rate of data send.

The DDRS algorithm requires data traffic (a minimum of 128 frames) to raise the rate to a higher value. Although roaming occurs successfully, the previous scenario causes applications to drop their sessions; hence session persistence is not maintained.

Note: You must know the data rate required for the applications running and you must ensure (during network deployment) that the ranges and RF links can support the necessary data rate. You also must set the default DDRS rate at the capacity necessary for the application so that it connects to the next base station at the required capacity if roaming occurs. Set the **Default DDRS Data Rate** to a greater value (24 or 36 Mbps, for example) for applications requiring session persistence when roaming occurs.

Security Parameters

security	R	Security Configuration Group
secconfig	RW	Security configuration
secenckeylentbl	RW	Encryption Key Length Table
index	R	Index
enckeylen	RW	Encryption Key Length

Serial Parameters

serial	R	Serial Group
serbaudrate	RW	Baud rate [1=2400, 2=4800, 3=9600, 4=19200, 5=38400, 6=57600]
serdatabits	RW	Data bits
serparity	RW	Parity
serstopbits	RW	Stop bits
serflowctrl	RW	Flow control [1=xonxoff, 2=none]

SNMP Parameters

snmp	R	SNMP Group
snmpipsccestbl	RW	SNMP IP Access Table
index	R	Index
ipaddr	RW	IP address
submask	RW	Subnet mask
if	RW	Interface [1=Ethernet, 2=PC Card A]
cmt	RW	Comment of 1-255 characters.
status	RW	Status of table entry [1=enable, 2=disable, 3=delete]
snmptraphosttbl	RW	SNMP Trap Host Table
index	R	Index
ipaddr	RW	IP address
passwd	W	Password
cmt	RW	Comment of 1-255 characters.
status	RW	Status of table entry [1=enable, 2=disable, 3=delete]
snmprpasswd	W	Read password
snmprwpasswd	W	Read/write password
snmpifbitmask	RW	SNMP Interface Bitmask (0-15)
SNMP Example: This command adds and enables a new entry to the SNMP IP Access Table with IP address 10.0.0.2, subnet mask 255.255.255.0 on an Ethernet interface. set snmpipaccestbl 0 ipaddr 10.0.0.2 submask 255.255.255.0 if 1 status 1		

Spanning Tree Parameters

stp	R	Spanning Tree Group
stptbl	RW	Spanning Tree Table
index	R	Index
priority	RW	Bridge priority
pathcost	RW	Path cost
status	RW	Status of table entry [1=enable, 2=disable]
stpstatus	RW	Spanning Tree status [1=enable, 2=disable]
stppriority	RW	Bridge priority
stpmaxage	RW	Maximum age
stpbridgehellotime	W	Hello time
stpfwddelay	RW	Forward delay

Static Mac Address Filter Parameters

staticmactbl	RW	Static MAC Address Filter Table
index	R	Index
wiredmacaddr	RW	Static MAC address on wired network
wiredmask	RW	Static MAC address mask on wired network
wirelessmacaddr	RW	Static MAC address on wireless network
wirelessmask	RW	Static MAC address on wireless network
cmt	RW	Comment [1-255 characters]
status	RW	Status of table entry [1=enable, 2=disable]

Statistic Parameters

statarptbl	R	ARP Table
statbridgetbl	R	Bridge Learn Table
statif	R	Interface Statistics
statradius	R	RADIUS Authentication Statistics
statripglobal	R	RIP Global Statistics
statripif	R	RIP Interface Statistics
staticmp	R	ICMP Statistics

Storm Threshold Parameters

stmthres	R	Storm Threshold Group
stmbdrdthres	RW	Broadcast Address Threshold [4-250]
stmmultithres	RW	Multicast Address Threshold [4-250]
stmthrestbl	RW	Storm Threshold Table
index	R	Index
bcast	RW	Broadcast Address Threshold [4-250]
multrate	RW	Multicast address threshold [4-250]

System Parameters

system	R	System group
sysname	RW	Name
sysmode	RW	Mode [1=bridge, 2=router]
sysloc	RW	Location
syscountrycode	RW	System country code [US]
sysctname	RW	Contact name
sysctemail	RW	Contact email
sysctphone	RW	Contact phone
sysdescr	R	Description
sysoid	R	OID
syservices	R	Services
sysuptime	R	Up time
sysflashbckint	RW	Flash backup interval (seconds)
sysflashupdate	RW	Flash update [1=write flash]
sysresettodefaults	RW	Resets to factory defaults. [1=reset and immediate reboot] Example: This command sets the MP.11/a to Routing mode: set sysmode 2

Telnet Parameters

telnet	R	Telnet Group
telifbitmask	RW	Telnet interface bitmap
telport	RW	Telnet port
tellogintout	RW	Telnet login timeout (seconds)
telsessiontout	RW	Telnet session timeout (seconds)
Example: To change the login timeout and the session timeout: set tellogintout 200 telsessiontout 1800		

TFTP Parameters

tftp	R	TFTP Group
tftpfilename	RW	TFTP file name
tftpfiletype	RW	TFTP file type
tftpipaddr	RW	TFTP Server IP address

Wireless Interface Security Parameters

wifsec	RW	Wireless Interface Security Table
index	R	Index
encryptoption	RW	Encryption option [1=none, 2=wep, 3=rcFour128, 4=aes]
encryptkey1	W	Encryption key 1
encryptkey2	W	Encryption key 2
encryptkey3	W	Encryption key 3
encryptkey4	W	Encryption key 4
encryptkeytx	RW	Currently used key [0-3=Keys 1-4, respectively]
While setting the key to encrypt data, the index to key name mapping is: (0-key1), (1-key2), (2-key3), and (3-key4). Example: To set the encryption option to aes, set a new string for key2, and set it as the key used for encryption: set wifsec 3 encryptoption 4 encryptkey2 abcdefghi encryptkeytx 1		

WORP Parameters

worpcfg	RW	WORP Interface Configuration
index	R	Index
mode	RW	Mode [1=disabled, 2=ap, 3=base, 4=satellite]
netname	RW	Network Name
basename	RW	Base Station Name
maxsatellites	RW	Maximum number of satellites allowed
multrate	RW	Multicast rate
regtimeout	RW	Registration Time Out (seconds) [1-10]
retries	RW	Number of times data is retransmitted [1-10]
ssecret	W	Shared Secret

Wireless Interface Parameters

wif	RW	Wireless Interface Group
index	R	Index [3]
autochannel	RW	Auto channel select status [1=enable, 2=disable]
channel	RW	Frequency channel: US [149, 153, 157, 161, 165] Example: set wif 3 channel 149
closedsys	RW	Closed system [1=enable, 2=disable]
dtimperiod	RW	DTIM period
interrobust	RW	Interference Robustness [1=enable, 2=disable]
ldbalance	R	Load balancing [1=enable, 2=disable]
macaddr	R	MAC address
mcast	RW	Multicast rate (megabits per second)
medres	RW	RTS/CTS Medium Reservation
meddendistrib	R	Medium Density Distribution [1=enable, 2=disable]
multrate	RW	Multicast rate (megabits per second) [1=1, 2=2, 3=5.5, 4=11, 5=6, 6=9, 7=12, 8=18, 9=24, 10=36, 11=48, 12=54, 13=72, 14=96, 15=108]. For Turbo mode, 96 and 108 are not supported; for Normal mode, 48 and 54 are not supported.
netname	RW	Network name
opermode	R	Operational mode
phytype	R	Physical layer type
preambletype	R	Preamble type
protmech	R	Protection mechanism status
regdomain	R	Regulatory Domain List
satdensity	RW	Satellite density (1=large, 2= medium, 3=small, 4=mini, 5=micro]
suppchannels	R	Supported channels
suppdatarates	R	Supported data rates
tpcmode	RW	TPC mode [1=half, 2=quarter, 3=eighth, 4=min, 5=full]
turbomode	RW	Turbo mode [1=enable, 2=disable] (Turbo mode can be enabled only for "US".)
txrate	RW	Transmit rate [0=auto fallback, 1-255=(<value>/2) megabits per second]
wifrxbwlimit	RW	Incoming bandwidth limit
wiftxbwlimit	RW	Outgoing bandwidth limit
Example: To disable closed system and enable turbo mode: set wif 3 closedsys 2 turbomode 1		

WORP DDRS Parameters

ddrs	R	WORP DDRS Group
ddrsstatus	RW	Status of WORP DDRS [1=enable, 2=disable]. This variable is only used on the Base Station; the SU ignores this variable. Default value is disabled.
ddrsdefdatarate	RW	The default data rate. This value can be configured only on the Base Station and not the SU. Possible values are: 802.11a, normal mode: 6 Mbps, 9 Mbps, 12 Mbps, 18 Mbps, 24 Mbps, 36 Mbps.
ddrsmaxdatarate	RW	The maximum data rate that can be dynamically set by DDRS. Possible values are: 802.11a, normal mode: 6 Mbps, 9 Mbps, 12 Mbps, 18 Mbps, 24 Mbps, 36 Mbps.
ddrsrateupavgsnrthr	RW	The average SNR threshold in the calculation for data rate increase. Default value is 4 dB.
ddrsrateupreqsnrthr	RW	The required SNR threshold in the calculation for data rate increase. Default value is 6 dB.
ddrsratedownreqsnrthr	RW	The required SNR threshold in the calculation for data rate reduction. Default value is 3 dB.
ddrsminreqsnr11an	RW	Minimum SNR Required for 802.11a in Normal Mode 6 Mbps – 6 dB, 9 Mbps – 7 dB, 12 Mbps – 9 dB 18 Mbps – 11 dB, 24 Mbps – 14 dB, 36 Mbps – 18 dB
ddrsminreqsnr11an6mbps	RW	Minimum required SNR for data rate of 6 Mbps on 802.11a radio, normal mode. Configurable limits: 1-50.
ddrsminreqsnr11an9mbps	RW	Minimum required SNR for data rate of 9 Mbps on 802.11a radio, normal mode. Configurable limits: 1-50.
ddrsminreqsnr11an12mbps	RW	Minimum required SNR for data rate of 12 Mbps on 802.11a radio, normal mode. Configurable limits: 1-50.
ddrsminreqsnr11an18mbps	RW	Minimum required SNR for data rate of 18 Mbps on 802.11a radio, normal mode. Configurable limits: 1-50.
ddrsminreqsnr11an24mbps	RW	Minimum required SNR for data rate of 24 Mbps on 802.11a radio, normal mode. Configurable limits: 1-50.
ddrsminreqsnr11an36mbps	RW	Minimum required SNR for data rate of 36 Mbps on 802.11a radio, normal mode. Configurable limits: 1-50.

SHOW AND SET PARAMETER EXAMPLES

<i>Show and Set Parameter Examples</i>	
Set the IP address parameter	Syntax: set <parameter name> <parameter value> Example: set ipaddr 10.0.0.12
Create a table row or entry	Syntax: set <table name> <table index> <element 1> <value 1> ... <element n> <value n> Example: set mgmtipaccesstbl 0 ipaddr 10.0.0.10 ipmask 255.255.0.0
Modify a table entry or row	Examples: set mgmtipaccesstbl 1 ipaddr 10.0.0.11 set mgmtipaccesstbl 1 ipaddr 10.0.0.12 ipmask 255.255.255.248 cmt "First Row"
Show the group parameters	Syntax: show <group name> Example: show network
Show individual and table parameters	Syntax: show <parameter name> show <table name> Examples: show ipaddr show mgmtipaccesstbl
Enable, disable, or delete a table entry or row	Syntax: set <Table> index status <enable, disable, delete> set <Table> index status <1=enable, 2=disable, 3=delete> Examples: set mgmtipaccesstbl 2 status enable set mgmtipaccesstbl 2 status disable set mgmtipaccesstbl 2 status delete set mgmtipaccesstbl 2 status 2

TABLES

In some cases, parameters are stored in tables whose rows contain similar parameters. Command arguments involving tables have the following syntax:

<table name> <row> <parameter 1 name> <value 1> ... <parameter n name> <value n>

Every table parameter supported in the MP.11/a CLI and an example of a row entry for that table are listed in the following table.

Table Parameters

broadcastflttbl		
index	R	Index
protoname	R	Protocol Name
direction	RW	Filtering direction [1=Ethernet-to-wireless, 2=wireless, 3=both]
status	RW	Status of table entry [1=enable, 2=disable]
dhcprelaytbl		
index	R	Index
dhcprlyipaddr	RW	DHCP Server Address
dhcprlycmt	RW	Comment
dhcprelaystatus	RW	Status of table entry [1=enable, 2=disable, 3=delete]
dhcpserverippooltable		
index	R	Index
startipaddr	RW	Start IP address in the form xxx.xxx.xxx.xxx.
endipaddr	RW	End IP address in the form xxx.xxx.xxx.xxx.
defaultleasetime	RW	Default lease time. 3600-86400.
maxleasetime	RW	Maximum lease time. 3600-86400.
comment	RW	Comment. 1-255 characters.
status	RW	Status of table entry. [1=enable, 2=disable, 3=delete, 4=create]
etherflttbl		
index	R	Index
proto	RW	Ethernet filtering protocol
cmt	RW	Comment [1-255 characters]
status	RW	Status of table entry [1=enable, 2=disable, 3=delete]
macac1tbl		
index	R	Index
macaddr	RW	MAC Address
cmt	RW	Comment [1-255 characters]
status	RW	Status of table entry [1=enable, 2=disable, 3=delete]
intracellgrptbl		
index	R	Index
grpname	RW	Name of the Intra-Cell group, 1-255 characters.
grpid1 (to grpid16)	RW	Status of table entry [1=enable, 2=disable, 3=delete]
intracellmactbl		
index	R	Index
mac	RW	MAC Address of the SU.
grptbl status	RW	Status of group entry [1=active, 2=inactive, 3=delete].
macstatus	RW	Status of table entry [1=enable, 2=disable, 3=delete]. Default is enable.
natstaticportbindtable		
index	R	Index
localipaddr	RW	Local IP address in the form xxx.xxx.xxx.xxx.
porttype	RW	Port type. [1=TCP, 2=UDP, 3 = both]
startport	RW	Local port number. 1-65535.
endport	RW	Public port number. 1-65535.

status	RW	Status of table entry [1=enable, 2=disable, 3 = delete, 4 = create]
radiustbl		
index	R	Index
status	RW	Status of table entry [1=enable, 2=disable]
ipaddr	RW	Server IP address
port	RW	Authentication Port
secret	W	Shared Secret
responsetm	RW	Response time [1-4 seconds]
maxretx	RW	Maximum retransmissions [1-10]
type	R	Service type
secenckeylentbl		
index	R	Index
enckeylen	RW	Encryption Key Length
snmpipaccesstbl		
index	R	Index
ipaddr	RW	IP address
submask	RW	Subnet mask
if	RW	Interface [1=Ethernet, 2=PC card A]
cmt	RW	Comment [1-255 characters]
status	RW	Status of table entry [1=enable, 2=disable, 3=delete]
snmptraphosttbl		
index	R	Index
ipaddr	RW	IP address
passwd	W	Password
cmt	RW	Comment [1-255 characters]
status	RW	Status of table entry [1=enable, 2=disable, 3=delete]
staticmactbl		
index	R	Index
wiredmacaddr	RW	Static MAC address on Ethernet (wired) network
wiredmask	RW	Static MAC address mask on wired network
wirelessmacaddr	RW	Static MAC address on wireless network
wirelessmask	RW	Static MAC address mask on wireless network
cmt	RW	Comment [1-255 characters]
status	RW	Status of table entry [1=enable, 2=disable]
stmthrestbl		
index	R	Index
bcast	RW	Broadcast address threshold [4-250]
mcast	RW	Multicast address threshold [4-250]
sptbl		
index	R	Index
priority	RW	Priority
pathcost	RW	Path cost
status	RW	Status of table entry [1=enable, 2=disable]

Entering Strings

To enter a string with spaces, use single or double quotes. For example, there is no need for quotes in the following command because the string contains no spaces:

```
set sysname Lobby
```

The following string, however, requires quotes because of the space between the words **Front** and **Lobby**.

```
set sysname "Front Lobby"
```

Viewing Table Contents

You can view the contents of a table as follows:

```
show <table name>
```

Example: This command displays all parameter values of the SNMP IP access table (**snmpipaccesstbl**).

```
show snmpipaccesstbl
```

Creating a Table Row

You can create a table row as follows:

```
set <table name> 0 <parameter 1 name> <value 1> ... <parameter n name> <value n>
```

When you create a table row, you must use 0 as row index. Only the mandatory parameters are required. Optional parameters automatically receive the default value unless a value is given.

Example:

```
set snmpipaccesstbl 0 ipaddr 10.0.0.10 submask 255.255.0.0
```

This command adds a row to the SNMP IP access table (**snmpipaccesstbl**) with the IP address (**ipaddr**) and subnet mask (**submask**) parameters, which are respectively assigned **10.0.0.10** and **255.255.0.0**.

Modifying a Table Entry

If you want to change a table entry, you must indicate the index of the table row and the parameter that must be modified.

Example:

```
set snmpipaccesstbl 1 ipaddr 10.0.0.11
```

This command changes the IP address (**ipaddr**) at row index 1 of the SNMP IP access table (**snmpipaccesstbl**) into **10.0.0.11**.

Modifying Several Table Entries

You can also modify several table entries at once by indicating the index of the table row and the parameters that must be modified. With the **search** command, you can see which parameters are in the table.

Example:

```
set snmpipaccessstbl 1 ipaddr 10.0.0.12 submask 255.255.255.248 cmt "First Row"
```

Enabling, Disabling, or Deleting a Table Row

You can also enable, disable, or delete a row in a table. The syntax of this command is:

```
<table name> <row> <enable/disable/delete>, or  
<table name> <row> status <1/2/3>
```

Example 1: The following command enables the row at index 2 of the SNMP IP access table (**snmpipaccessstbl**).

```
set snmpipaccessstbl 2 enable
```

Example 2: The following command disables the row at index 2 of the SNMP IP access table (**snmpipaccessstbl**). The status codes have the following meaning: 1 is enable, 2 is disable, 3 is delete.

```
set snmpipaccessstbl 2 status 2
```

COUNTRY CODE TABLE

From the CLI and MIB browser, the country code must be set using the string code, not the numeric code.

Example: To set Taiwan as the country:

set syscountrycode tw

Country	Index	Code
No Country	0	na
Albania (not supported for 11a)		al
Argentina	32	ar
Armenia		am
Australia	36	au
Austria (not supported for 11a)	40	at
Azerbaijan		az
Bahrain (not supported for 11a)		bh
Belarus (not supported for 11a)		by
Belgium (not supported for 11a)	56	be
Belize	84	bz
Bolivia	68	bo
Brazil (not supported for 11a)		br
Brunei Darussalam	96	bn
Bulgaria	100	bg
Canada	124	ca
Chile (not supported for 11a)		cl
China	156	cn
Colombia	170	co
Costa Rica (not supported for 11a)		cr
Croatia (not supported for 11a)	191	hr
Cyprus	196	cy
Czech Republic (not supported for 11a)	203	cz
Denmark	208	dk
Dominican Republic	214	do
Ecuador (not supported for 11a)		ec
Egypt (not supported for 11a)		eg
Estonia	233	ee
Finland	246	fi
France (not supported for 11a)	250	fr
Georgia	268	ge

Country	Index	Code
Germany	276	de
Greece (not supported for 11a)		gr
Guatemala	320	gt
Hong Kong	344	hk
Hungary (not supported for 11a)	348	hu
Iceland	352	is
India		ln
Indonesia		id
Iran	364	ir
Ireland	372	ie
Ireland 5.8 GHz		i1
Israel		IL
Italy	380	it
Japan	392	jp
Japan2	393	jr
Jordan (not supported for 11a)		j0
North Korea	408	kp
Korea Republic	410	kr
Korea Republic 2	411	kR
Kuwait (not supported for 11a)		kw
Latvia (not supported for 11a)		lv
Lebanon (not supported for 11a)		lb
Liechtenstein		li
Lithuania	440	lt
Luxembourg	442	lu
Macau		mo
Macedonia (not supported for 11a)		mk
Malaysia (not supported for 11a)		my
Mexico	484	mx
Monacco	492	mc
Morocco (not supported for 11a)		ma
Netherlands	528	nl
New Zealand	554	nz
Norway	578	no
Oman (not supported for 11a)		om

Country	Index	Code
Pakistan (not supported for 11a)		pk
Panama	591	pa
Peru (not supported for 11a)		pe
Philippines	608	ph
Poland	616	pl
Portugal	620	pt
Puerto Rico	630	pr
Qatar (not supported for 11a)		qa
Romania (not supported for 11a)		ro
Russia (not supported for 11a)		ru
Saudi Arabia (not supported for 11a)		sa
Singapore	702	sg
Slovak Republic (not supported for 11a)	703	sk
Slovenia	705	si
South Africa	710	za
Spain		es
Sweden	752	se
Switzerland (not supported for 11a)	756	ch
Syria (not supported for 11a)		sy
Taiwan	158	tw
Thailand	764	th
Turkey (not supported for 11a)	792	tr
United Kingdom	826	gb
United Kingdom 5.8 GHz		g1
United States	840	us
Uruguay	858	uy
Venezuela	862	ve
Vietnam (not supported for 11a)		vn

Chapter 7. Procedures

This chapter contains a set of procedures, as described in the following table:

Procedure	Description
TFTP Server Setup	Prepares the TFTP server for transferring files to and from the MP.11/a. This procedure is used by the other procedures that transfer files.
Image File Download	Upgrades the embedded software.
Configuration Backup	Saves the configuration of the MP.11/a.
Configuration Restore	Restores a previous configuration through configuration file download.
Soft Reset to Factory Default	Resets the MP.11/a to the factory default settings through the Web or Command Line Interface.
Hard Reset to Factory Default	In some cases, it may be necessary to revert to the factory default settings (for example, if you cannot access the MP.11/a or you lost the password for the Web Interface.
Force Reload	Completely resets the MP.11/a and erases the embedded software. Use this procedure only as a last resort if the MP.11/a does not boot and the “Hard Reset to Factory Default” procedure did not help. If you perform a “Forced Reload,” you must download a new image file as described in “Image File Download with the Boot Loader.”
Image File Download with the Boot Loader	If the MP.11/a does not contain embedded software, or the embedded software is corrupt, you can use this procedure to download a new image file.

TFTP SERVER SETUP

To download or upload a file, you must connect to the computer with the TFTP server through the MP.11/a’s Ethernet port. This can be any computer in the network or a computer connected to the MP.11/a with a cross-over Ethernet cable. For information about installing the TFTP server, see “Installing Documentation and Software” on [page 19](#).

Ensure that the upload or download directory is correctly set, the required file is present in the directory, and the TFTP server is running. **The TFTP server must be running only during file upload and download.** You can check the connectivity between the MP.11/a and the TFTP server by pinging the MP.11/a from the computer that hosts the TFTP server. The ping program should show replies from the MP.11/a.

WEB INTERFACE IMAGE FILE DOWNLOAD

In some cases, it may be necessary to upgrade the embedded software of the MP.11/a by downloading an image file. To download an image file through the Web Interface:

1. Set up the TFTP server as described in “TFTP Server Setup” on page 122.
2. Access the MP.11/a as described in “Web Interface Overview” on page 25.
3. Click the **Commands** button and the **Download** tab.
4. Fill in the following details:

Server IP Address <IP address TFTP server>

File Name <image file name>

File Type Image

File Operation Download

5. Click **OK** to start the file transfer.

The MP.11/a downloads the image file. The TFTP server program should show download activity after a few seconds. When the download is complete, the MP.11/a is ready to start the embedded software upon reboot.

CONFIGURATION BACKUP

You can back up the MP.11/a configuration by uploading the configuration file. You can use this file to restore the configuration or to configure another MP.11/a (see “Configuration Restore” on page 124).

To upload a configuration file through the Web Interface:

1. Set up the TFTP server as described in “TFTP Server Setup” on page 122.
2. Access the MP.11/a as described in “Web Interface Overview” on page 25.
3. Click the **Commands** button and the **Upload** tab.
4. Fill in the following details:

Server IP Address <IP address TFTP server>

File Name <configuration file name>

File Type Config

File Operation Upload

5. Click **OK** to start the file transfer.

The MP.11/a uploads the configuration file. The TFTP server program should show upload activity after a few seconds. When the upload is complete, the configuration is backed up.

CONFIGURATION RESTORE

You can restore the configuration of the MP.11/a by downloading a configuration file. The configuration file contains the configuration information of an MP.11/a.

To download a configuration file through the Web Interface:

1. Set up the TFTP server as described in “TFTP Server Setup” on page 122.
2. Access the MP.11/a as described in “Web Interface Overview” on page 25.
3. Click the **Commands** button and the **Download** tab.
4. Fill in the following details:
Server IP Address <IP address TFTP server>
File Name <configuration file name>
File Type Config
File Operation Download
5. Click **OK** to start the file transfer.

The MP.11/a downloads the configuration file. The TFTP server program should show download activity after a few seconds. When the download is complete and the system rebooted, the configuration is restored.

SOFT RESET TO FACTORY DEFAULT

If necessary, you can reset the MP.11/a to the factory default settings. Resetting to default settings means that you must configure the MP.11/a anew.

To reset to factory default settings using the Web Interface:

1. Click the **Commands** button and the **Reset** tab.
2. Click the **Reset to Factory Default** button.

The device configuration parameter values are reset to their factory default values.

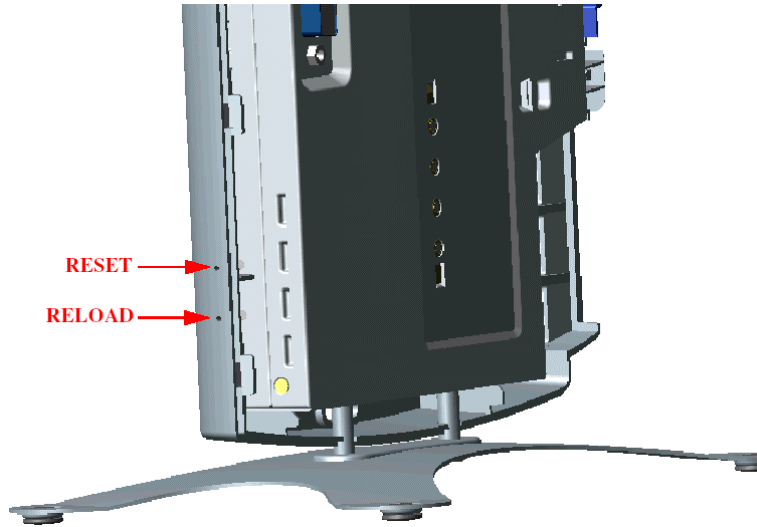
If you do not have access to the MP.11/a, you can use the procedure described in “Hard Reset to Factory Default” on page 125 as an alternative.

HARD RESET TO FACTORY DEFAULT

Indoor MP.11/a

If you cannot access the unit or you have lost its password, you can reset the MP.11/a to the factory default settings. Resetting to default settings means you must configure the MP.11/a anew.

To reset to factory default settings, press and hold the **RELOAD** button on the MP.11/a unit for about 10 seconds. The MP.11/a reboots and restores the factory default settings.



To access the MP.11/a see “Chapter 3. Management Overview” on page 23.

Outdoor MP.11/a

To reset to factory default settings, use an object such as a paper clip to press and hold the **Reset** button located on the side of the power brick.

FORCED RELOAD

With Forced Reload, you reset the MP.11/a to the factory default settings and erase the embedded software. Use this procedure only as last resort if the MP.11/a does not boot and the “Reset to Factory Defaults” procedure did not help. If you perform a Forced Reload, you must download a new image file with the Boot Loader (see “Image File Download with the Boot Loader” below).

Caution! *The following procedure erases the embedded software of the MP.11/a. This software image must be reloaded through an Ethernet connection with a TFTP server. The image filename to be downloaded can be configured with either ScanTool through the Ethernet interface or with the Boot Loader CLI through the serial port to make the MP.11/a functional again.*

To do a forced reload:

1. Press the RESET button on the MP.11/a unit; the MP.11/a resets and the LEDs flash.
2. Immediately press and hold the RELOAD button on the MP.11/a unit for about 20 seconds. Now image and configuration are deleted from the unit.
3. Follow the procedure “Image File Download with the Boot Loader” to download an image file.

IMAGE FILE DOWNLOAD WITH THE BOOTLOADER

The following procedures download an image file to the MP.11/a after the embedded software has been erased with **Forced Reload** or when the embedded software cannot be started by the Boot Loader.

A new image file can be downloaded to the MP.11/a with ScanTool or the Command Line Interface through the MP.11/a serial port. In both cases, the file is transferred through Ethernet with TFTP. Because the CLI serial port option requires a serial RS-232C cable, Proxim recommends the ScanTool option.

Download with ScanTool

To download an image file with the ScanTool:

1. Set up the TFTP server as described in “TFTP Server Setup” [on page 122](#).
2. Run ScanTool on a computer that is connected to the same LAN subnet as the MP.11/a. ScanTool scans the subnet for MP.11/a units and displays the found units in the main window. If in **Forced Reload**, ScanTool does not find the device until the MP.11/a bootloader times out, and the Power LED turns RED and the Ethernet LED goes OFF. Click **Rescan** to re-scan the subnet and update the display.
3. Select the MP.11/a to which you want to download an image file and click **Change**.
4. Ensure that **IP Address Type Static** is selected and fill in the following details:
 - **Password**
 - **IP Address** and **Subnet Mask** of the MP.11/a.
 - **TFTP Server IP Address** and, if necessary, the **Gateway IP Address** of the TFTP server.
 - **Image File Name** of the file with the new image.

5. Click **OK** to start the file transfer.

The MP.11/a downloads the image file. The TFTP server program should show download activity after a few seconds. When the download is complete, the LED pattern should return to **Forced Reload** state. the MP.11/a is ready to start the embedded software.

6. Press and release the **Reset** button. It may take several seconds to cycle through the Forced Reload LED pattern and through the initialization LED sequence.

After a Forced Reload procedure, the MP.11/a returns to factory default settings and must be reconfigured. ScanTool can be used to set the system name and IP address.

To access the MP.11/a see “Chapter 3. Management Overview” [on page 23](#).

Download with CLI

To use the CLI through the serial port of the MP.11/a you need a serial RS-232C cable with a male and a female DB-9 connector, and an ASCII terminal program such as HyperTerminal. Proxim recommends you switch off the MP.11/a and the computer before connecting or disconnecting the serial RS-232C cable.

To download an image file:

1. Set up the TFTP server as described in “TFTP Server Setup” on page 122.
2. Start the terminal program (such as HyperTerminal), set the following connection properties, and then connect:

COM port	(for example COM1 or COM2, to which the MP.11 serial port is connected)
Bits per second	9600
Data bits	8
Stop bits	1
Flow control	None
Parity	None
3. Press the **RESET** button on the MP.11/a unit; the terminal program displays Power On Self Test (POST) messages.
4. When the **Sending Traps to SNMP manager periodically** message is displayed after about 30 seconds, press the **ENTER** key.
5. The command prompt is displayed; enter the following commands:

```
set ipaddr <IP address MP.11>
set ipsubmask <subnet mask>
set ipaddrtype static
set tftpipaddr <IP address TFTP server>
set tftpfilename <image file name>
set ipgw <gateway IP address>
reboot
```

For example:

```
set ipaddr 10.0.0.12
set ipsubmask 255.255.255.0
set ipaddrtype static
set tftpipaddr 10.0.0.20
set tftpfilename image.bin
set ipgw 10.0.0.30
reboot
```

The MP.11/a reboots and downloads the image file. The TFTP server program should show download activity after a few seconds. When the download is complete, the MP.11/a is ready for configuration.

To access the MP.11/a see “Chapter 3. Management Overview” on page 23. Note that the IP configuration in normal operation differs from the IP configuration of the Boot Loader.

Appendix A. Specifications

MP.11/A HARDWARE

Physical Specifications (without metal base)	
Dimensions (h x w x l)	3.5 x 17 x 21.5 cm (1.5 x 6.75 x 8.5 in.)
Weight	0.68 kg (1.5 lb.)
Electrical Specifications	
Using the Power Adapter	
Voltage (Input)	100 to 240 VAC (50-60 Hz) @ 0.4 A
Voltage (Output)	12 VDC
Power Consumption	10 Watts (maximum)
Using Active Ethernet	
Input Voltage	42 to 60 VDC
Output Current	200mA at 48V
Power Consumption	10 Watts
Environmental Specifications	
Operating Temperature	0° to 55° C ambient temperature (without plastic cabinet)
Operating Humidity	95% maximum (non-condensing)
Storage Temperature	-20° to +75° C ambient temperature
Storage Humidity	95% maximum (non-condensing)
Interfaces	
Ethernet	10/100 Base-TX, RJ-45 female socket
Serial port	Standard RS-232C interface with DB-9, female connector
Active Ethernet	Category 5, foiled, twisted pair cables must be used to ensure compliance with FCC Part 15, subpart B, Class B requirements. Standard 802.3af pin assignments.
Wireless	Mini PC Card

RUGGEDIZED MP.11/A

Operating Temperature	-30° to +60° C
Wind and Water	125 mph winds, watertight (ETSI IP 64)
Weight	Under 29 lbs
External Interfaces	N-connector for external antenna PoE or power and Ethernet cable Serial port for antenna alignment, diagnostics, and management
Integrated Antenna on SU products, 23 dBi (5 GHz) or 16 dBi (2.4 GHz)	
Audio antenna alignment	

BROADBAND SUBSCRIBER ANTENNA

Mars 5 GHz Broadband Antenna provides a cost-effective solution for large-scale WLL, WLAN, H-LAN, ISM, UNII, and Point-to-Multipoint applications.

Additional features include:

- Minimum gain of 23 dBi over the entire frequency range
- Lightweight and durable construction
- DC grounded for lightning protection to meet local electrical building codes.

Specifications

Electrical	
Frequency range	5.15 – 5.875 GHz
GAIN, min.	23 dBi
VSWR, max.	1.5:1
Polarization	Linear Vertical
3 dB Beamwidth – Az./El. typ.	10.5°
Cross Polarization, min.	24 dB
Power Handling	10 Watts
Input Impedance	50 Ohms
Front-to-back ratio, min.	35 dB
Mechanical and Environmental	
Dimensions (LxWxD)	305 x 305 x 15mm (DIAMOND shape)
Base Plate	Aluminum
Radome	Polypropylene, UV-protected
Temperature	-40° C up to +75° C
Input/RF Interface	N-Type
Standard Compliance	
ETSI EN 302 085 V1.1.2 (2001-2002) Range 1, TS 1, 2, 3, 4, 5	

RADIO SPECIFICATIONS

802.11b Channel Allocations

The following table shows MP.11 (802.11b) channel allocations that vary from country to country. Values listed in bold indicate default channels and frequencies.

Channel ID	FCC/World (GHz)	ETSI (GHz)	France (GHz)	Japan (GHz)
1	2.412	2.412	--	2.412
2	2.417	2.417	--	2.417
3 (default in most countries)	2.422	2.422	--	2.422
4	2.427	2.427	--	2.427
5	2.432	2.432	--	2.432
6	2.437	2.437	--	2.437
7	2.442	2.442	--	2.442
8	2.447	2.447	--	2.447
9	2.452	2.452	--	2.452
10	2.457	2.457	2.457	2.457
11 (default in France)	2.462	2.462	2.462	2.462
12	--	2.467	2.467	2.467
13	--	2.472	2.472	2.472
14				2.484

802.11a Channel Allocations

The following table shows MP.11a (802.11a) channel allocations that vary from country to country. Values listed in bold indicate default channels and frequencies.

Channel ID	FCC	ETSI
56	5.280	—
60	5.300	—
64	5.320	—
100	5.500	5.500
104	5.520	5.520
108	5.540	5.540
112	5.560	5.560
116	5.580	5.580
120	5.600	5.600
124	5.620	5.620
128	5.640	5.640
132	5.660	5.660
136	5.680	5.680
140	5.700	5.700
149	5.745	—
153	5.765	—
157	5.785	—
161	5.805	—
165	5.825	—

Turbo channel ID 1, 5.290 – The MP.11a firmware limits the upper limit of this channel to be below 12.13 dBm for release in the United States and Canada.

Turbo Mode Channels	
Channel ID	FCC
1	5.290*
2	5.300
3	5.760
4	5.800

Frequency Bands in the FCC Regulatory Domain

20 MHz Channelization

The set of valid operating channels, channel center frequencies, and DFS requirement for different bands in the FCC regulatory domain is provided in the following table.

20 MHz Channelization				
Regulatory Domain	Band (GHz)	Operating Channel Numbers	Center Frequencies (MHz)	DFS Capability
FCC	U-NII Middle Band 5.25 – 5.35 GHz	56 60 64	5280 5300 5320	Required
	U-NII Upper Band 5.725 – 5.825 GHz	149 153 157 161 165	5745 5765 5785 5805 5825	Not Required

Appendix B. Troubleshooting

This chapter helps you to isolate and solve problems with your MP.11/a. In the event this chapter does not provide a solution, or the solution does not solve your problem, check our support website at <http://support.proxim.com/>

Before you start troubleshooting, it is important that you have checked the details in the product documentation. For details about RADIUS, TFTP, terminal and telnet programs, and Web browsers, refer to their appropriate documentation.

The following sections can help to solve your problem:

- LED Indicators below
- MP.11/a Connectivity Issues below
- Setup and Configuration Issues on page 134

In some cases, rebooting the MP.11/a clears the problem. If nothing else helps, consider a “Soft Reset to Factory Defaults” (on page 34) or a “Forced Reload” (on page 125). The Forced Reload option requires you to download a new image file to the MP.11/a.

MP.11/a CONNECTIVITY ISSUES

The issues described in this section relate to the connections of the MP.11/a.

MP.11/a Does Not Boot

The MP.11/a shows no activity (the power LED is off).

1. Ensure that the power supply is properly working and correctly connected.
2. Ensure that all cables are correctly connected.
3. Check the power source.
4. If you are using an Active Ethernet splitter, ensure that the voltage is correct.

Serial Link Does Not Work

The MP.11/a cannot be reached through the serial port.

1. Check the cable connection between the MP.11/a and the computer.
2. Ensure that the correct COM port is used.
3. Start the terminal program; set the following connection properties (also see “HyperTerminal Connection Properties” on page 31), and then connect.

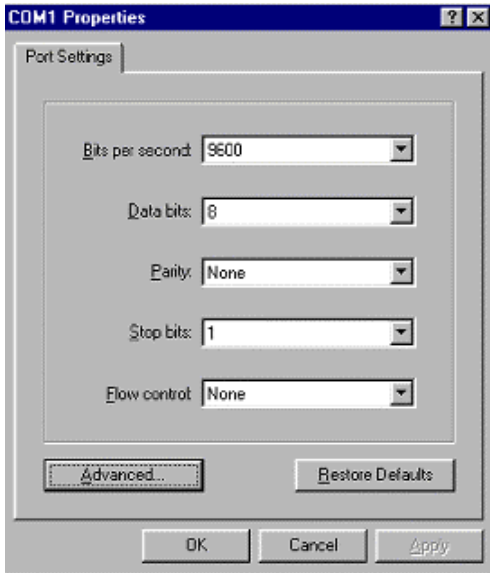
COM port	For example, COM1 or COM2, to which the MP.11 serial port is connected
Bits per second	9600
Data bits	0
Stop bits	1
Flow control	None
Parity	None
Line ends	Carriage return with line feed

4. Ensure that the MP.11/a and the computer use the same serial port configuration parameters.
5. Press the RESET button on the MP.11/a unit. The terminal program displays Power On Self Tests (POST) messages and displays the following after approximately 90 seconds:
Please enter password:

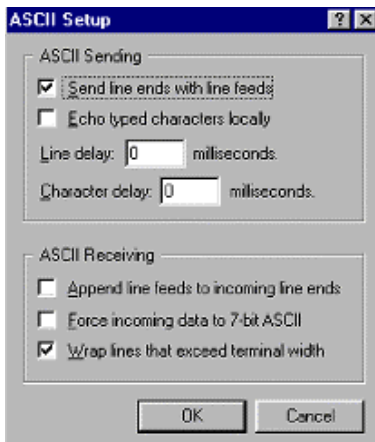
HyperTerminal Connection Problems

The serial connection properties can be found in HyperTerminal as follows:

1. Start HyperTerminal and select **Properties** from the **File** menu.
2. Select **Direct to Com 1** in the **Connect using:** drop-down list (depending upon the COM port you use); then click **Configure**. A window such as the following is displayed:



3. Make the necessary changes and click **OK**.
4. Click the **Settings** tab and then **ASCII Setup....** A window similar to the following is displayed:



5. Ensure that **Send line ends with line feeds** is selected and click **OK** twice. HyperTerminal is now correctly configured.

Ethernet Link does not work

First check the Ethernet LED;

GREEN	Power is on, the radio is up, and the Ethernet link is also up..
BLINKING GREEN	Power is on, the radio is coming up and the Ethernet is down.

Verify pass-through versus cross-over cable.

Cannot use the Web Interface:

1. Open a command prompt window and enter **ping** <ip address MP.11> (for example **ping 10.0.0.1**). If the MP.11/a does not respond, make sure that you have the correct IP address. If the MP.11/a responds, the Ethernet connection is working properly, continue with this procedure.
2. Ensure that you are using one of the following Web browsers:
 - Microsoft Internet Explorer version 5.0 or later (Version 6.0 or later recommended)
 - Netscape version 6.0 or later.
3. Ensure that you are not using a proxy server for the connection with your Web browser.
4. Ensure that you have not exceeded the maximum number of Web Interface or CLI sessions.
5. Double-check the physical network connections. Use a well-known unit to ensure the network connection is properly functioning.
6. Perform network infrastructure troubleshooting (check switches, routers, and so on).

SETUP AND CONFIGURATION ISSUES

The following issues relate to setup and configuration problems.

Lost the MP.11/a Password

If you lost your password, you must reset the MP.11/a to the default settings. See “Hard Reset to Factory Default” on page 125. The default password is **public**.

If you record your password, keep it in a safe place.

The MP.11/a Responds Slowly

If the MP.11/a takes a long time to become available, it could mean that:

- No DHCP server is available.
- The IP address of the MP.11/a is already in use.

Verify that the IP address is assigned only to the MP.11/a. Do this by switching off the MP.11/a and then pinging the IP address. If there is a response to the ping, another device in the network is using the same IP address. If the MP.11/a uses a static IP address, switching to DHCP mode could remedy this problem. Also see “Setting the IP Address” on page 24.

- There is too much network traffic.

Web Interface Does Not Work

If you cannot connect to the MP.11/a Web server through the network:

1. Connect a computer to the serial port of the MP.11/a and check the HTTP status. The HTTP status can restrict HTTP access at different interfaces. For more information, see “Serial Port” on page 30.

2. Open a command prompt window and enter:

ping <ip address MP.11> (for example **ping 10.0.0.1**)

If the MP.11/a does not respond, ensure that you have the correct IP address. If the MP.11/a responds, the Ethernet connection is working properly, continue with this procedure.

3. Ensure that you are using one of the following Web browsers:
 - Microsoft Internet Explorer version 5.0 or later (Version 6.0 or later recommended)
 - Netscape version 6.0 or later
4. Ensure that you are not using a proxy server for the connection with your Web browser.
5. Ensure that you have not exceeded the maximum number of Web Interface sessions.

Command Line Interface Does Not Work

If you cannot connect to the MP.11/a through the network:

1. Connect a computer to the serial port of the MP.11/a and check the SNMP table. The SNMP table can restrict telnet or HTTP access. For more information, see “Serial Port” on page 30.
2. Open a command prompt window and enter: **ping** <ip address MP.11>
(for example **ping 10.0.0.1**).
 - If the MP.11/a does not respond, ensure that you have the correct IP address.
 - If the MP.11/a responds, the Ethernet connection is working properly; continue with this procedure.
3. Ensure that you have not exceeded the maximum number of CLI sessions.

TFTP Server Does Not Work

With TFTP, you can transfer files to and from the MP.11/a. Also see “TFTP Server Setup” on page 122. If a TFTP server is not properly configured and running, you cannot upload and download files. The TFTP server:

- Can be situated either local or remote
- Must have a valid IP address
- Must be set for send and receive without time-out
- Must be running only during file upload and download

If the TFTP server does not upload or download files, it could mean:

- The TFTP server is not running
- The IP address of the TFTP server is invalid
- The upload or download directory is not correctly set
- The file name is not correct

Online Help Is Not Available

Online help is not available

1. Make sure that the Help files are installed on your computer or server. Also see “Installing Documentation and Software” on page 21.
2. Verify whether the path of the help files in the Web Interface refers to the correct directory. See “Help” on page 93.

Changes Do Not Take Effect

Changes made in the Web Interface do not take effect:

1. Restart your Web browser. Log into the MP.11/a again and make changes. Reboot the MP.11/a when prompted to do so.
2. Wait until the reboot is completed before accessing the MP.11/a again.

Appendix C. Support and Contacts

If you are having a problem using a Proxim WAN product and cannot resolve it with the information in the product documentation, gather the following information and contact Proxim Technical Support:

- What kind of network are you using?
- What were you doing when the error occurred?
- What error message did you see?
- Can you reproduce the problem?

Be sure to obtain an RMA number before sending any equipment to Proxim for repair.

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Glossary

Address Realm

An address realm is a network domain in which the network addresses are uniquely assigned to entities such that datagrams can be routed to them.

Application Level Gateway (ALG)

An Application Level Gateway is an application-specific translation agent that provides the required transparency for an application running on a host in a private network to connect to its counterpart running on a host in the public network. The NAT feature requires an ALG to support certain applications.

ARP

The Address Resolution Protocol (ARP) is intended to find the MAC address belonging to an IP address.

Authentication method

The process the MP.11/a uses to decide whether a station that wants to register is allowed or not. IEEE 802.11 specifies two forms of authentication: open system and shared key; WOPR only supports shared key because of security constraints.

Authentication server “Shared Secret”

This is a kind of password shared between the MP.11/a and the RADIUS authentication server. This password is used to encrypt important data exchanged between the MP.11/a and the RADIUS server

Authentication server authentication port

This is a UDP port number (default is 1812), which is used to connect to the authentication server for obtaining authentication information.

Auto-Negotiation

A signaling method that lets each node define its operational mode and detect the operational mode of the adjacent node. Auto-negotiation can be used in dual-function 10/100 Mbps Ethernet adapters. The process happens out-of-band with no loss of network throughput.

Backbone

The central part of a network; the backbone network connects all remote and sub networks to each other and to the central infrastructure (such as the mail server, Internet gateway, and so on).

Base

If an interface is running in Outdoor mode (WOPR), it is either a base or a subscriber interface. A base interface controls the communication on the channel and is located in the central part of the network cell. Multiple SUs can connect to one base; two bases cannot communicate with each other.

Broadcast Storm

A broadcast storm is a large series of broadcast packets (most often caused by wrong network configuration) that severely impact the network performance.

Client IP Address Pool

This is a pool of IP addresses from which the MP.11/a can assign IP addresses to clients, which perform a DHCP Request.

Configuration Files

A configuration file contains the MP.11/a configuration details. Configuration items include among others the IP address and other network-specific values. Configuration files may be uploaded to a TFTP server for backup and downloaded into the MP.11/a for restoring the configuration.

DHCP Relay Agent

A feature of the MP.11/a that intercepts DHCP requests from clients and forwards them to a DHCP server. For the client, the DHCP Relay Agent of the MP.11/a functions like a DHCP server. This enables DHCP requests to pass router boundaries; for example, it is not required to have a DHCP server on every IP subnet.

Domain Name Server (DNS)

A domain name server is an Internet service that translates domain names into IP addresses. For example, www.ietf.org is translated into 4.17.168.6.

Download

Downloading a file means copying a file from a remote server to a device or host. In case of the MP.11/a downloading means transferring a file from a TFTP server to the MP.11/a.

Downstream

Downstream means a data stream from the central part of the network to the end user. See also **upstream**.

Dynamic Host Configuration Protocol

Dynamic Host Configuration Protocol (DHCP) is a method to dynamically assign IP addresses. If DHCP is enabled, the device or computer broadcasts a request that is answered by a DHCP Server.

Encryption

Encryption is a means of coding data with a key before sending it across a network. The same key must be used to decode the information at the receiver. This way prevents unauthorized access to the data that is sent across the network.

Ethernet

Ethernet is the most widely installed Local Area Network (LAN) technology. The MP.11/a supports both 10 and 100 Mbps and half and full duplex.

Gateway

A gateway is a network device that connects multiple (IP) networks to each other. A gateway can perform protocol conversion.

Group

A group is logical collection of network parameters. For example, the System Group is composed of several parameters and tables giving system information of the MP.11/a. All items for a group are grouped under one tab of the Web Interface and start with the same prefix for the command line interface.

HTTP

Hypertext Transfer Protocol (HTTP) is the protocol to transport Web pages. When you access the Internet with your browser, the HTTP protocol is used for data transport (<http://www.Tsunamiwireless.com>). When you access the MP.11/a using the Web Interface, HTTP is used to transport the information.

ICMP

Internet Control Message Protocol (ICMP) is used by computers and devices to report errors encountered during processing packets, and to perform other IP-layer functions, such as diagnostics ('ping').

Image

The image is the binary executable of the embedded MP.11/a software. To update the MP.11/a you must download a new image file.

IP Address

A unique numerical address of a computer attached to the Internet or Intranet. An IP (Internet Protocol) address consists of a network part and part for a host (computer) number. An IP address is represented by four numbers in the range 0 - 255 separated by dots: for example 10.0.10.1 and 172.21.43.214. See also **subnet mask**.

LAN

A Local Area Network (LAN) is a network of limited size to which computers and devices can connect so that they can communicate with each other.

License file

A license file is used to enable certain features of the MP.11/a. The MP.11/a already has a license file when it is shipped. When more features become available, you can purchase a license file and download it to the MP.11/a to enable these additional features.

MAC

Media Access Control.

MAC Address

A MAC (Media Access Control) address is a globally unique network device address, which is hardware bound. It used to identify a network device in a LAN. A MAC address is represented by six two-digit hexadecimal numbers (0 - 9 and A - F) separated by colons: for example 00:02:2D:47:1F:71 and 00:D0:AB:00:01:AC.

Management Information Block (MIB)

A Management Information Block (MIB) is a formal description of a set of network objects that can be managed with the Simple Network Management Protocol (SNMP). A MIB can be loaded by a management application so that it knows the MP.11/a specific objects.

Media Independent Interface (MII)

A standard interface between the MAC layer and any of the three physical layers (100 Base-TX, 100 Base-T4, and 100 Base-FX) for Fast Ethernet, similar to the AUI interface for traditional Ethernet.

Network Address Translation

Network Address Translation is a method by which IP addresses are mapped from one address realm to another, providing transparent routing to end hosts.

Network Mask

See **subnet mask**.

Parameter

A parameter is fundamental value that can be displayed and changed. For example, the MP.11/a must have a unique IP address and the PC Cards must know which channels to use. You can view and change parameters with the Web Interface, command line interface and SNMP.

Password

The MP.11/a is password protected. To access the MP.11/a you need to enter a password before you can view or change its settings. The default password is 'public'.

Ping

Ping is a basic Internet program that lets you verify if a particular computer or device with a certain IP address is reachable. If the computer or device receives the ping packet, it responds which gives the ping program the opportunity to display the round-trip time.

Remote

A remote is a base or a subscriber interface. For a base interface, the number of remotes is the number of SUs registered; for a subscriber interface, there is only one remote, which is the base.

RIP

Routing Information Protocol (RIP) is used between routers to update routing information so that a router automatically 'knows' which port to use for a certain destination IP address.

Router

Routers forward packets from one network to another based on routing information. A router uses a dynamic routing protocol like RIP or static routes to base its forwarding decision on.

ScanTool

A computer program that can be used to retrieve or set the IP address of a locally connected MP.11/a.

Simple Network Management Protocol (SNMP)

A protocol used for the communication between a network management application and the devices it is managing. The network management application is called the SNMP manager; the devices it manages have implemented SNMP agents. Not only the MP.11/a but also almost every network device contains a SNMP agent. The manageable objects of a device are arranged in a Management Information Base, also called MIB. The Simple Network Management Protocol (SNMP) allows managers and agents to communicate for accessing these objects.

Spanning Tree Protocol (STP)

The Spanning Tree Protocol (STP) can be used to create redundant networks ("hot standby") and to prevent loops. If enabled, spanning tree prevents loops by disabling redundant links; if a link fails, it can automatically enable a backup link.

STP

Shielded Twisted Pair

Subnet Mask

A subnet mask is a bit mask that defines which part of an IP address is used for the network part and which part for a host (computer) number. A subnet mask is like an IP address represented by four numbers in the range 0 - 255 separated by dots. When the IP address 172.17.23.14 has a subnet mask of 255.255.255.0, the network part is 172.17.23 of the host number is 14. See also **IP address**.

Subscriber Unit

If an interface is running in outdoor mode (WORP), it is either a base or a subscriber interface. Subscriber interface behavior is controlled by the base to which it is registered. SUs are located in the remote locations of a network cell. Multiple SUs can connect to one base; two SUs cannot communicate with each other. See also WORP and base.

Table

Tables hold parameters for several related items. For example, you can add several potential managers to the SNMP IP access table. Tables can be displayed using with the Web Interface, command line interface and SNMP.

Topology

Topology is the physical layout of network components (cable, stations, gateways, hubs, and so on).

Transparent Routing

Transparent routing refers to routing a datagram between disparate address realms, by modifying address contents in the IP header to be valid in the address realm into which the datagram is routed.

Trap

A trap is used within SNMP to report an unexpected or unallowable condition.

Trivial File Transfer Protocol (TFTP)

Trivial File Transfer Protocol (TFTP) is a lightweight protocol for transferring files that is like a simple form of File Transfer Protocol (FTP). A TFTP client is implemented on the MP.11/a; using the upload and download commands, the MP.11/a can respectively copy a file to or from a TFTP server. TFTP server software is provided on the MP.11/a CD-ROM.

Upload

Uploading a file means copying a file from a network device to a remote server. In case of the MP.11/a uploading means transferring a file from the MP.11/a to a TFTP server. See also **download**.

Upstream

Upstream means a data stream from the end users to the central part of the network. See also **downstream**.

UTP

Unshielded Twisted Pair

WEP

The Wired Equivalent Privacy (WEP) algorithm is the standard encryption method used to protect wireless communication from eavesdropping.

WORP

The Wireless Outdoor Router Protocol (WORP) was designed to optimize long distance links and multipoint networks with Hidden Node effect to eliminate collisions and loss of bandwidth.