



Tsunami MP.11-R Installation and Management Guide

Model 2454-R

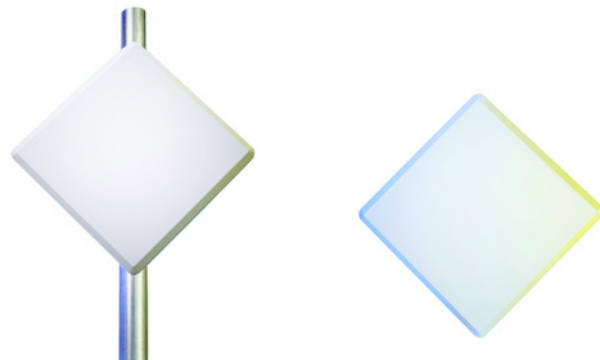
Model 5054-R

Model 5054-R-LR

Model 4954-R

Model 954-R

Version 4.0.0



proxim
wireless

IMPORTANT!

Before installing and using this product, see the
Safety and Regulatory Compliance Guide located on the product CD.

Copyright

©2007 Proxim Wireless Corporation, San Jose, CA. All rights reserved. Covered by one or more of the following U.S. patents: 5,231,634; 5,875,179; 6,006,090; 5,809,060; 6,075,812; 5,077,753. This manual and the software described herein are copyrighted with all rights reserved. No part of this publication may be reproduced, transmitted, transcribed, stored in a retrieval system, or translated into any language in any form by any means without the written permission of Proxim Wireless Corporation.

Trademarks

Tsunami, Proxim, and the Proxim logo are trademarks of Proxim Wireless Corporation. All other trademarks mentioned herein are the property of their respective owners.

Contents

1	Introduction	10
	Products Covered in this Guide	10
	About This Book	10
	Reference Manual	11
	Wireless Network Topologies	12
	Point-to-Point Link	12
	Point-to-Multipoint Network	12
	Management and Monitoring Capabilities	13
	Web Interface	13
	Command Line Interface	13
	SNMP Management	13
2	Installation and Initialization	15
	Hardware Overview	16
	Power-over-Ethernet	16
	Serial Connection	16
	External Antenna Connection	17
	Product Package	18
	Hardware Installation	20
	Step 1: Choose a Location	22
	Step 2: Unpack Shipping Box	22
	Step 3: Assemble the Cable	23
	Step 4: Determine Proper Mounting Orientation	24
	Step 5: Assemble Mounting Hardware	25
	Step 6: Mount the Unit	26
	Step 7: Plug in the Cables	27
	Step 8: Power on the Unit	28
	Step 9: View LEDs	28
	Step 10: Align the Antenna	29
	Step 11: Tighten the Cables	31
	Step 12: Weatherproof the Connectors	32
	Step 13: Install Documentation and Software	33
	Initialization	34
	ScanTool	34
	Setting the IP Address with ScanTool	34
	Logging in to the Web Interface	36
3	System Overview	37
	Changing Basic Configuration Information	37
	Country and Related Settings	37

Dynamic Frequency Selection (DFS)	38
Transmit Power Control	39
SU Registration	41
Dynamic Data Rate Selection (DDRS)	42
Virtual Local Area Networks (VLANs)	43
Quality of Service (QoS)	44
Concepts and Definitions	44
4 Basic Management	48
Navigation	48
Rebooting and Resetting	49
Rebooting	49
Resetting Hardware	49
Soft Reset to Factory Default	49
General Configuration Settings	51
Monitoring Settings	52
Security Settings	53
Encryption	53
Passwords	53
Default Settings	54
Upgrading the Unit	56
5 System Status	57
Status	57
System Status	57
Systems Traps	57
Event Log	58
6 Configuration	59
System Parameters	59
Bridge and Routing Modes	61
Network Parameters	64
IP Configuration	64
Roaming	65
DHCP Server	68
Spanning Tree (Bridge Mode Only)	70
IP Routes (Routing Mode only)	71
DHCP Relay Agent (Routing Mode Only)	73
Interface Parameters	75
Wireless Interface	75
Ethernet	86

SNMP Parameters	87
Trap Host Table	87
RIP Parameters (Routing Mode Only)	89
RIP Example	90
RIP Notes	90
Management Parameters	91
Passwords	91
Services	91
Security Parameters	94
MAC Authentication (BSU Only)	94
Encryption	95
RADIUS Authentication (BSU Only)	95
Filtering Parameters	97
Overview	97
Ethernet Protocol	98
Static MAC Address Filtering	99
Storm Threshold	102
Broadcast Protocol Filtering	102
IP Access Table Filtering	103
Intra-Cell Blocking (BSU Only; Bridge Mode Only)	105
Overview	105
Intra-Cell Blocking Group Table	105
MAC Table	107
Security Gateway	108
VLAN Parameters (BSU Only; Bridge Mode Only)	109
Overview	109
BSU VLAN Configuration	111
SU VLAN Configuration	113
QoS (Quality of Service) Parameters (BSU Only)	115
QoS PIR Configuration	115
QoS SFC Configuration	116
QoS Class Configuration	118
QoS SU Configuration	122
NAT (SU Only; Routing Mode Only)	124
NAT Static Port Mapping Table	124
Supported Session Protocols	125
7 Monitoring	127
Wireless	128
General Performance	128
WORP Interface Performance	128

ICMP	130
Per Station	131
Features	132
Link Test	133
Interfaces	134
IP ARP Table	135
IP Routes	136
Learn Table	137
RIP	138
RADIUS	139
QoS	140
Temperature	141
8 Commands	142
Download	142
Upload	143
Reboot	144
Reset	145
Help Link	146
9 Procedures	147
TFTP Server Setup	148
Web Interface Image File Download	149
Configuration Backup	150
Configuration Restore	151
Soft Reset to Factory Default	152
Hard Reset to Factory Default	153
Forced Reload	154
Image File Download with the Bootloader	155
Download with ScanTool	155
Download with CLI	155
10 Troubleshooting	157
Connectivity Issues	157
Unit Does Not Boot	157
Serial Link Does Not Work	157
HyperTerminal Connection Problems	158
Ethernet Link Does Not Work	158
Cannot Use the Web Interface	158

Communication Issues	159
Two Units Are Unable to Communicate Wirelessly	159
Setup and Configuration Issues	160
Lost Password	160
The Unit Responds Slowly	160
Web Interface Does Not Work	160
Command Line Interface Does Not Work	160
TFTP Server Does Not Work	160
Online Help Is Not Available	161
Changes Do Not Take Effect	161
VLAN Operation Issues	162
Link Problems	163
General Check	163
Statistics Check	163
Analyzing the Spectrum	164
A Country Codes and Channels	165
2.4 GHz Channels/Frequencies by Country	165
5 GHz Channels/Frequencies by Country	170
4.9 GHz Channels/Frequencies	187
B Technical Specifications	188
Part Numbers	189
Radio Units	189
Accessories	193
	194
Regulatory Approvals and Frequency Ranges	195
Model 2454-R Regulatory Approval and Frequency Ranges	195
Model 5054-R Regulatory Approval and Frequency Ranges	197
Model 5054-R-LR Regulatory Approval and Frequency Ranges	198
Model 4954-R Regulatory Approval and Frequency Ranges	198
Integrated Antenna Specifications	198
Model 2454-R Subscriber Unit with Integrated 16-dBi Antenna	198
Model 5054-R/5054-R-LR Subscriber Unit with Integrated 23-dBi Antenna	199
4954-R Subscriber Unit with Integrated 21-dBi Antenna	199
OFDM Modulation Rates	200
Wireless Protocol	200
Interfaces	200
Receive Sensitivity	200
Model 2454-R	200
Model 5054-R	200

Model 5054-R-LR	201
Model 4954-R.	201
Maximum Throughput	201
Model 2454-R.	201
Model 5054-R/5054-R-LR	202
Model 4954-R.	202
Latency	203
Transmit Power Settings	203
Model 2454-R.	203
Model 5054-R.	203
Model 5054-R-LR.	203
Model 4954-R.	204
Range Information	204
Model 2454-R.	204
Model 5054-R.	204
Model 5054-R-LR.	204
Model 4954-R.	204
Hardware Specifications	204
Software Features	205
Management	205
LEDs	206
Power Requirements	206
Physical and Environmental Specifications	206
MTBF and Warranty	207
C Lightning Protection	208
D Technical Services and Support	209
Obtaining Technical Services and Support	209
Support Options	210
Proxim eService Web Site Support	210
Telephone Support	210
ServPak Support	210
E Statement of Warranty	211
Warranty Coverage	211
Repair or Replacement	211
Limitations of Warranty.	211
Support Procedures	211
Other Information	212
Search Knowledgebase	212

Ask a Question or Open an Issue 212
Other Adapter Cards 212

Introduction

The Tsunami MP.11 Model 2454-R, 5054-R, and 4954-R Base Station and Subscriber Units (BSUs and SUs) are flexible wireless outdoor routers that let you design solutions for point-to-point links and point-to-multipoint networks.

The 2454-R, 5054-R, and 4954-R are part of the Tsunami MP.11 product family, which is comprised of several additional products, including:

- The 5054 Base Station (BSU), the 5054 Subscriber Unit (SU), and the 5012-SUI Subscriber Unit for indoor installation.
- 5012-SUR Subscriber Unit for outdoor installation

Some of the key features of the MP.11 product family are:

- The use of a highly optimized protocol for outdoor applications
- Routing and bridging capability
- Asymmetric bandwidth management
- Management through a Web Interface, a Command Line Interface (CLI), or Simple Network Management Protocol (SNMP)
- Software and configuration upgrade through file transfer (TFTP)
- Outdoor placement, close to the antenna, for significantly improved range and ease of installation
- Optional integrated antenna
- VLAN support

Products Covered in this Guide

This User Guide details functionality of the following products. Collectively, these products are referenced as “MP.11-R”.

Product	Description
Tsunami MP.11 2454-R	Wireless outdoor Base Station and/or subscriber unit operating in the 2.4 GHz band.
Tsunami MP.11 5054-R	Wireless outdoor Base Station and/or subscriber unit operating in the 5 GHz band.
Tsunami MP.11 4954-R	Wireless outdoor Base Station and/or subscriber unit operating in the 4.9 GHz Public Safety band.
Tsunami MP.11 954-R	Wireless outdoor Base Station and/or subscriber unit operating in the 900 MHz band.

NOTE: Unless otherwise noted, screen captures in this User Guide are from the 5054-R.

About This Book

Before installing and using the unit, Proxim recommends you review the following chapters of this manual:

- **Chapter 1 “Introduction” (this chapter):** Provides an overview of the content of this manual as well as wireless network topologies and combinations that can be built with the unit.
- **Chapter 2 “Installation and Initialization”:** Provides detailed installation instructions and explains how to access the unit for configuration and maintenance.
- **Chapter 3 “System Overview”:** Provides a high-level overview of configuration processes and features.
- **Chapter 4 “Basic Management”:** Explains the most common settings used to manage the unit.
- **Chapter 5 “System Status”:** Depicts the Web Interface’s “Status” options, including System Status and Event Logs.

- **Chapter 6 “Configuration”**: Depicts the Web Interface’s “Configure” options in a hierarchical manner, so you can easily find details about each item.
- **Chapter 7 “Monitoring”**: Depicts the Web Interface’s “Monitor” options in a hierarchical manner, so you can easily find details about each item
- **Chapter 8 “Commands”**: Depicts the Web Interface’s “Commands” options in a hierarchical manner, so you can easily find details about each item
- **Chapter 9 “Procedures”**: Provides a set of procedures, including TFTP Server Setup, Configuration Backup, Restore, and Download, Forced Reload, and Reset to Factory Defaults.
- **Chapter 10 “Troubleshooting”**: Helps you to isolate and solve problems with your radio unit.

The appendixes contain supplementary information you may not need immediately, including Country Code Tables and Technical Support information.

NOTE: *If you are already familiar with this type of product, you can use the Quick Install Guide to install the unit.*

Reference Manual

As a companion to the *Installation and Management* manual, the *Tsunami MP.11/QB.11 Reference Manual* provides the following supplemental information:

- **Command Line Interface**: Documents the text-based configuration utility’s keyboard commands and parameters.
- **Event Log Error Messages**: Documents the error messages that you may see in your Event Log.
- **Alarm Traps**: Documents the alarm traps that can be set.
- **Microsoft Windows IAS Radius Server Configuration**: Provides information to assist you in setting up the IAS Radius Server.
- **Addition of Units to a Routed Network**: Describes how to add more units to your routed network.
- **Glossary**: Describes terms used in the Tsunami MP.11 documentation and in the wireless industry.

Wireless Network Topologies

The unit can be used in various network topologies and combinations. The required equipment depends upon the wireless network topology you want to build. Make sure all required equipment is available before installing the unit.

The unit is designed for outdoor placement. One model of the SU is equipped with an integrated antenna. For all other models, you can connect the unit to an outdoor antenna. See the *Tsunami MP.11 Antenna Installation Guide* for details.

WARNING: *To connect the unit to an outdoor antenna, consult the appropriate manufacturers' documentation for additional regulatory information, safety instructions, and installation requirements.*

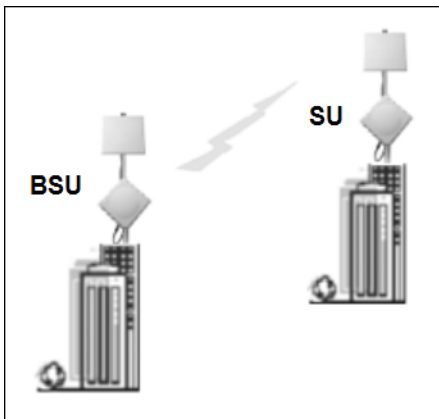
You can set up the following types of topologies:

- Point-to-Point Link
- Point-to-Multipoint Network

Each unit is set up as either a Base Station Unit (BSU) or a Subscriber Unit (SU). A link between two locations always consists of a BSU and an SU. A BSU can, depending upon its configuration, connect to one or more SUs. An SU, however, can connect only to one BSU.

Point-to-Point Link

With a BSU and an SU, it is easy to set up a wireless point-to-point link as depicted in the following figure.

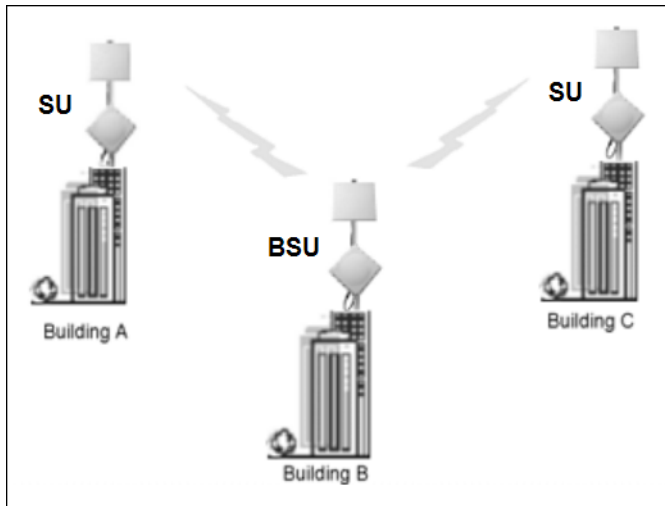


A point-to-point link lets you set up a connection between two locations as an alternative to:

- Leased lines in building-to-building connections
- Wired Ethernet backbones between wireless access points in difficult-to-wire environments

Point-to-Multipoint Network

If you want to connect more than two buildings, you can set up a single point-to-multipoint network with a single BSU and multiple SUs, as depicted in the following figure.



Up to 250 SUs can be connected to a BSU. If a BSU already has 250 SU, a new SU cannot be connected to the BSU. In this figure, the system is designed as follows:

- The central building **B** is equipped with a BSU, connected to either an omni-directional, or a wide angle antenna.
- The two other buildings **A** and **C** are both equipped with an SU connected to a directional antenna.

Management and Monitoring Capabilities

There are several management and monitoring interfaces available to the network administrator to configure and manage the unit:

- [Web Interface](#)
- [Command Line Interface](#)
- [SNMP Management](#)

Web Interface

The Web interface (HTTP) provides easy access to configuration settings and network statistics from any computer on the network. You can access the Web interface over your network, over the Internet, or with a crossover Ethernet cable connected directly to your computer's Ethernet port. See [Logging in to the Web Interface](#).

Command Line Interface

The Command Line Interface (CLI) is a text-based configuration utility that supports a set of keyboard commands and parameters to configure and manage the unit. You enter command statements, composed of CLI commands and their associated parameters. You can issue commands from the keyboard for real-time control or from scripts that automate configuration. See the *Tsunami MP.11/QB.11 Reference Manual* for more information about the Command Line Interface.

SNMP Management

In addition to the Web interface and the CLI, you also can manage and configure your unit using the Simple Network Management Protocol (SNMP). Note that this requires an SNMP manager program (sometimes called MIB browser) or a Network Manager program using SNMP, such as HP OpenView or Castlerock's SNMPc. The units support several Management Information Base (MIB) files that describe the parameters that can be viewed and configured using SNMP:

- mib802.mib
- orinoco.mib

- rfc1213.mib
- rfc1493.mib
- rfc1643.mib

Proxim provides these MIB files on the CD included with your unit. You must compile one or more of these MIB files into your SNMP program's database before you can manage your unit using SNMP. See the documentation that came with your SNMP manager for instructions about how to compile MIBs.

NOTE: *When you update the software in the unit, you must also update the MIBs to the same release. Because the parameters in the MIB may have changed, you will not otherwise have full control over the features in the new release.*

The enterprise MIB (orinoco.mib) defines the read and read/write objects you can view or configure using SNMP. These objects correspond to most of the settings and statistics that are available with the other management interfaces. See the enterprise MIB for more information; the MIB can be opened with any text editor, such as Microsoft Word, Notepad, and WordPad. See [SNMP Parameters](#).

IMPORTANT!

Using a serial connection, you can access the unit through a terminal emulation program such as HyperTerminal. (See "HyperTerminal Connection Properties" in the *Tsunami MP.11/QB.11 Reference Manual*.) For all other modes of connection, you will need the IP address of the unit in order to use the Web Interface, SNMP, or the CLI. See [Setting the IP Address with ScanTool](#) for more information.

IMPORTANT!

The remainder of this User Guide discusses installing the unit and managing it using the Web interface only. For information on managing the unit via the CLI, see the *Tsunami MP.11/QB.11 Reference Manual*.

Installation and Initialization

This chapter describes the steps required to install and mount the unit, and to align the antenna. An antenna cable is required only when you use the external antenna option. Note that the unit must have either the integrated antenna or must be connected to an external antenna for its operation. The installation procedure does not include the mounting and connection of antennas. See the *Tsunami MP.11 Antenna Installation Guide* for this information.

If you are already familiar with this type of product, you can use the *Quick Install Guide* for streamlined installation procedures.

See the following sections:

- [Hardware Overview](#)
- [Product Package](#)
- [Hardware Installation](#)
 - [Step 1: Choose a Location](#)
 - [Step 2: Unpack Shipping Box](#)
 - [Step 3: Assemble the Cable](#)
 - [Step 4: Determine Proper Mounting Orientation](#)
 - [Step 5: Assemble Mounting Hardware](#)
 - [Step 6: Mount the Unit](#)
 - [Step 7: Plug in the Cables](#)
 - [Step 8: Power on the Unit](#)
 - [Step 9: View LEDs](#)
 - [Step 10: Align the Antenna](#)
 - [Step 11: Tighten the Cables](#)
 - [Step 12: Weatherproof the Connectors](#)
 - [Step 13: Install Documentation and Software](#)
- [Initialization](#)
 - [ScanTool](#)
 - [Setting the IP Address with ScanTool](#)
- [Logging in to the Web Interface](#)

Hardware Overview

The unit contains a state-of-the-art wireless radio, an optional high-gain performance flat-panel antenna, and Power-over-Ethernet (the sole means of power for the unit). For further protection, the unit has internal, built-in surge protection.

Power-over-Ethernet

The unit is equipped with a Power-over-Ethernet (PoE) module. Using PoE, you can provide electricity and wired connectivity to the unit over a single Category 5 cable. Although the power injector that is supplied with the unit is 802.3af-compatible, standard 802.3af-compliant power modules will not properly power the units. Always use the supplied power injector.

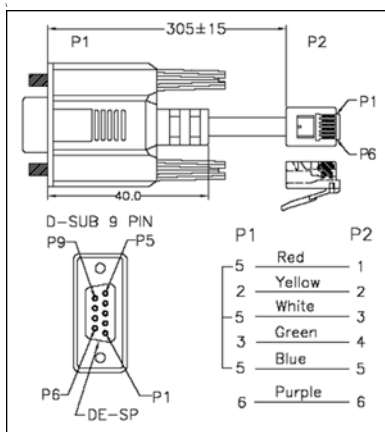
- The PoE integrated module provides –48 VDC over a standard Cat5 Ethernet cable.
- Maximum power supplied to the unit is 20 Watts (when the unit is heating or cooling); the units typically draw less than 7.5 Watts.
- The unit only accepts power on the “extra pairs”, not on the data pairs according the configuration for “midshipman” power injection, see the IEEE 802.3af standard.

Between 0 and 55° Celsius internal temperature, the unit does not need to regulate its temperature, so the power draw is generally lower in this temperature range. When the internal temperature gets close to the limits, the unit starts to heat/cool itself and the power draw increases. Powering while cold triggers a special self-heat mode where the unit is inoperable until the temperature is above 0° deg Celsius. This is signaled by a solid red LED on the Ethernet connector. Once the internal temperature is above 0 degrees Celsius, the unit boots normally.

Recommended Cable	
Function	Power (DC) and Ethernet connection
Type	Cat5, UV-shielded and outdoor-rated
Impedance	100 ohms
Recommended cables	4 UTP, 24 AWG, UL rated
Maximum Distance	330 feet / 100 meters
Connector type, unit end	RJ45 female, weatherized using weatherproof connector
Connector type, power & Ethernet adapter end	RJ45

Serial Connection

The serial connection is made with an RJ11 to DB9 connector (also referred to as a “dongle”). Connect the RJ11 end to the unit and connect the serial (DB9) end to your PC to assist you in aligning the antenna and to issue CLI commands. See the following figure:



The connections are as follows:

D-Shell	RJ11
1	NC
2	2
3	4
4	NC
5	1 + 3 + 5
6	6
7	NC
8	NC
9	NC






External Antenna Connection



























One model of the SU has an integrated antenna; all other models have an external antenna connector (N-type) and no integrated antenna. For more information about external antennas, see the *Antenna Installation Guide*.

Product Package

Each shipment includes the items in the following table. Verify that you have received all parts of the shipment.

NOTE: Unless noted in this table, cables are not supplied with the unit.

<p>BS / SS with external antenna connector</p>	
<p>RJ45 to DB9 serial connector (supplied with BS only) (1 ea.)</p>	
<p>Installation CD and Quick Installation Guide</p>	
<p>Power Injector and Cord</p>	
<p>Cable Termination Kit</p>	<p>Kit includes the following:</p>  <p>a. RJ45 connectors (2) b. Sealing caps (2) c. Sealing nut d. Lock nut e. Grounding screws</p>

<p>Mounting Kit</p>	<p>Kit includes the following:</p> <div style="display: flex; justify-content: space-around; align-items: center;">     </div> <p style="text-align: center;"> a b c d </p> <p> a. Mounting clamp for wall/pole b. Extension arm c. Mounting plate to enclosure d. Mounting clamp for pole mounting </p>																								
<p>Mounting Hardware</p>	<p>The following mounting hardware, included with the mounting kit:</p> <table border="0"> <thead> <tr> <th style="text-align: left;"><u>Quantity</u></th> <th style="text-align: left;"><u>Description</u></th> <th></th> </tr> </thead> <tbody> <tr> <td>6 ea.</td> <td>Plain washer #5/16</td> <td></td> </tr> <tr> <td>2 ea.</td> <td>Hex Cap Screw NC 5/16-18 x 35</td> <td></td> </tr> <tr> <td>2 ea.</td> <td>Nut NC 5/16-18</td> <td></td> </tr> <tr> <td>4 ea.</td> <td>Helical Spring Lock Washer #1/4</td> <td></td> </tr> <tr> <td>4 ea.</td> <td>Helical Spring Lock Washer #1/16</td> <td></td> </tr> <tr> <td>2 ea.</td> <td>Hex Cap Screw NC 5/16-18 x 80</td> <td></td> </tr> <tr> <td>4 ea.</td> <td>68764, Screw, Machine, Pan, Philips, 1/4"-20, 5/8"L</td> <td></td> </tr> </tbody> </table>	<u>Quantity</u>	<u>Description</u>		6 ea.	Plain washer #5/16		2 ea.	Hex Cap Screw NC 5/16-18 x 35		2 ea.	Nut NC 5/16-18		4 ea.	Helical Spring Lock Washer #1/4		4 ea.	Helical Spring Lock Washer #1/16		2 ea.	Hex Cap Screw NC 5/16-18 x 80		4 ea.	68764, Screw, Machine, Pan, Philips, 1/4"-20, 5/8"L	
<u>Quantity</u>	<u>Description</u>																								
6 ea.	Plain washer #5/16																								
2 ea.	Hex Cap Screw NC 5/16-18 x 35																								
2 ea.	Nut NC 5/16-18																								
4 ea.	Helical Spring Lock Washer #1/4																								
4 ea.	Helical Spring Lock Washer #1/16																								
2 ea.	Hex Cap Screw NC 5/16-18 x 80																								
4 ea.	68764, Screw, Machine, Pan, Philips, 1/4"-20, 5/8"L																								
<p>Rubber Tape Strip</p>																									

Hardware Installation

This section describes the steps required to install and mount the unit, and to align the antenna. The installation procedure does not include the mounting and connection of antennas. See the documentation that accompanies the antenna and the *Tsunami MP.11 Antenna Installation Guide* for this information.

IMPORTANT:

Before installing and using this product, see Safety and Regulatory Compliance Information on the product CD.

IMPORTANT:

All units must be installed by a suitably trained professional installation technician or by a qualified installation service.

WARNING:

To ensure proper grounding, use the hole at the bottom point on the back of each unit and the provided grounding screws to attach a ground wire of at least 10 AWG stranded to each unit. Use proper wire grounding techniques in accordance with local electric codes.

NOTE:

- The **Configure System** window provides a selectable **Country** field that automatically provides the allowed bandwidth and frequencies for the selected country as well as, where applicable, Dynamic Frequency Selection (DFS) and Transmit Power Control (TPC).
- Non-US installers should not add an antenna system until the **Country** is selected, the unit is rebooted, and the proper power level is configured. The output power level of the final channel selected by DFS scan can be found in the Event Log.
- Be sure to read the **Release Notes** file on the product CD as it contains software version and driver information that may not have been available when this document was produced.
- Equipment is to be used with, and powered by, the power injector provided or by a power injector that meets these requirements:
 - UL-Listed/ITE (NWGQ)
 - Limited Power Source Output per UL/IEC 60950
 - CE-marked
 - Approved for Power-over-Ethernet
 - Rated output, 48 Vdc/0.42 A
 - Pinout follows 802.3af standard for mid-span devices

See the following sections for installation instructions:

- [Step 1: Choose a Location](#)
- [Step 2: Unpack Shipping Box](#)
- [Step 3: Assemble the Cable](#)

- [Step 4: Determine Proper Mounting Orientation](#)
- [Step 5: Assemble Mounting Hardware](#)
- [Step 6: Mount the Unit](#)
- [Step 7: Plug in the Cables](#)
- [Step 8: Power on the Unit](#)
- [Step 9: View LEDs](#)
- [Step 10: Align the Antenna](#)
- [Step 11: Tighten the Cables](#)
- [Step 12: Weatherproof the Connectors](#)
- [Step 13: Install Documentation and Software](#)

Step 1: Choose a Location

To make optimal use of the unit, you must find a suitable location for the hardware. The range of the radio unit largely depends upon the position of the antenna. Proxim recommends you do a site survey, observing the following requirements, before mounting the hardware.

- The location must allow easy disconnection of power to the radio if necessary.
- Air must be able to flow freely around the hardware.
- The radio unit must be kept away from vibration and excessive heat.
- The installation must conform to local regulations at all times.

The units are designed to directly mount to a pole. Using the supplied brackets and hardware, you can mount them to a 1.25 inch to 4.5-inch pole (outside diameter). Using just one of the pole mounting brackets, you can mount the units to a wall or other flat surface.

CAUTION: *Proxim recommends the use of a lightning arrestor at the building ingress point. You can purchase the Proxim Lightning Protector; see the documentation that comes with the unit for more information and installation instructions.*

Step 2: Unpack Shipping Box

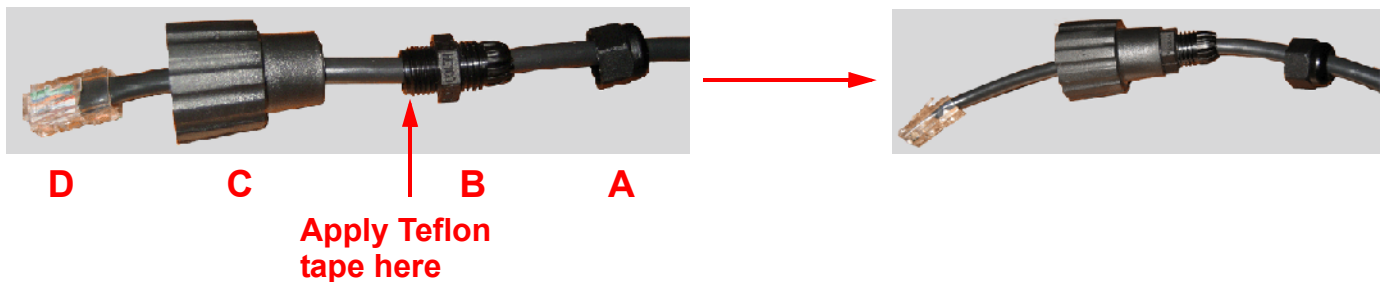
1. Unpack the unit and accessories from the shipping box.
2. Note the Ethernet and MAC addresses of the unit, as well as the serial number; these addresses may be used when configuring the unit.

NOTE: *The serial number is required to obtain support from Proxim. Keep this information in a safe place.*

Step 3: Assemble the Cable

You will be attaching an outdoor-rated 24 AWG CAT5 cable (diameter .114 to .250 inches/2.9 to 6.4 mm) (not provided) to the Power-over-Ethernet port on the back of the unit and waterproofing the assembly later in the installation procedure. First, you must construct the cable and assemble the waterproofing cable covers as described in the following steps. Proxim greatly simplifies this assembly process by offering pre-assembled CAT5 cable kits in 25m, 50m, and 75m lengths (part numbers 69819, 69820, and 69821, respectively).

1. Slide the sealing nut (A) over the bare end of the CAT5 cable.
2. Slide the lock nut (B) over the bare end of the CAT5 cable.
3. Slide the sealing cap (C) over the bare end of the CAT5 cable. Make sure the red rubber gasket is inside the cap.
4. Apply two wraps of 0.5" wide Teflon tape (not supplied with unit) around the threads of the lock nut (B) that will go inside the sealing cap.
5. Thread the lock nut (B) onto the sealing cap (C), and hand tighten.
6. Terminate the RJ45 connectors (D) to both ends of the CAT5 cable; test for proper wiring (cable should be a straight-through cable).

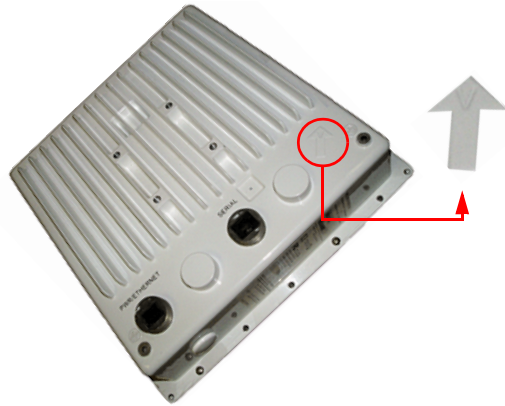


NOTE:

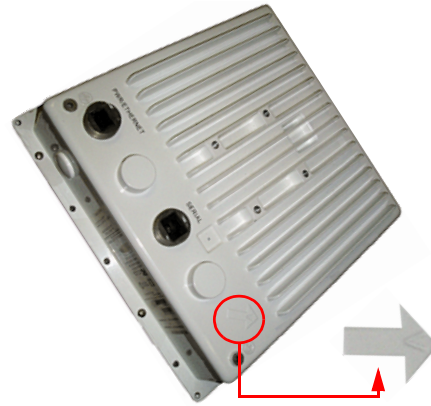
- The cable must feed through all parts of the weatherproof cap before the RJ45 is crimped on the outdoor Ethernet cable.
- The cable between the power injector and the unit must be a straight-through Ethernet cable (without crossover).
- Due to variance in CAT5 cable diameter, termination techniques of the installer, and the application of proper tightness of the connectors, it is strongly recommended that all cable connectors are secured by external weatherproofing. This process will be described in [Step 12: Weatherproof the Connectors](#).

Step 4: Determine Proper Mounting Orientation

1. Locate the arrow on the back of the unit and determine your desired mounting orientation. For *vertical polarization* using the integrated antenna, the arrow should be pointing up (perpendicular to the ground). For *horizontal polarization* using the integrated antenna, the arrow should be horizontal (parallel to the ground).



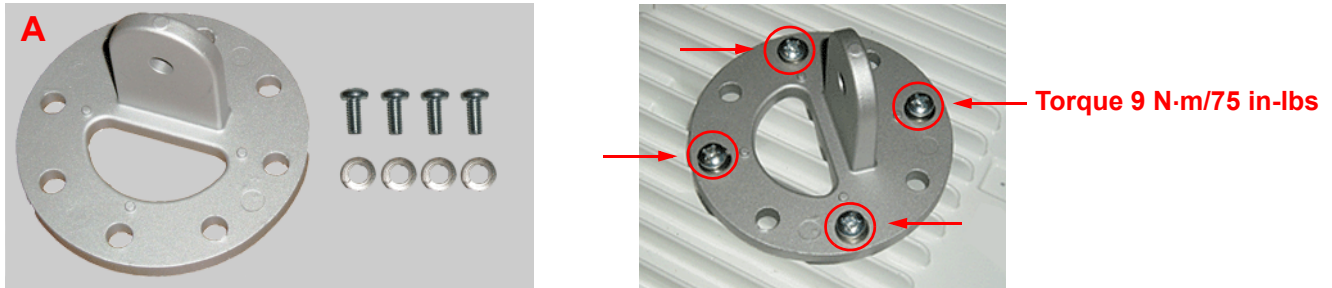
Vertical Polarization



Horizontal Polarization

Step 5: Assemble Mounting Hardware

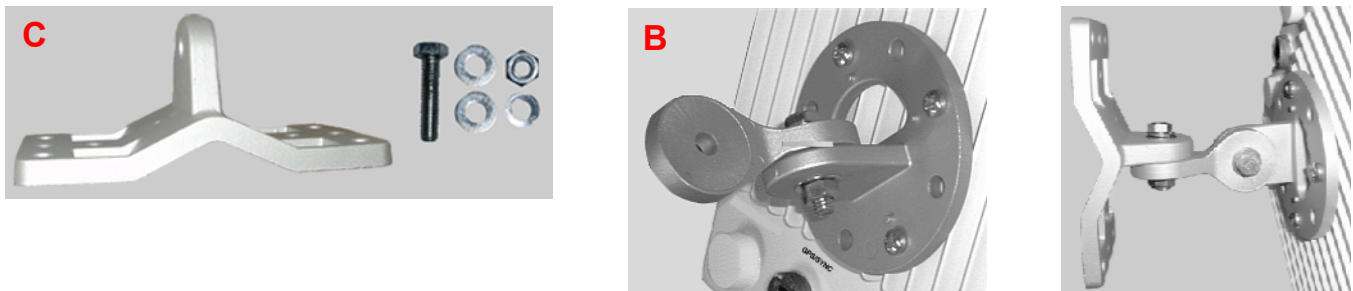
1. Attach the mounting plate (A) using the provided screws and washers (Torque 9 N-m/75 in-lbs), such that the unit's antenna will be vertically or horizontally polarized when mounted.



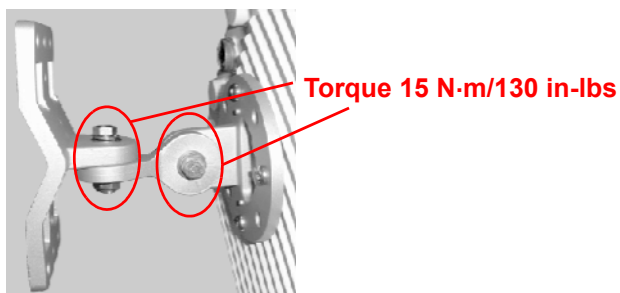
2. Attach the extension arm (B) to mounting piece (A) with the screw, nut, and washers provided, as shown below. The extension arm gives the unit more possible tilt, letting you adjust for azimuth or elevation over a larger angle.



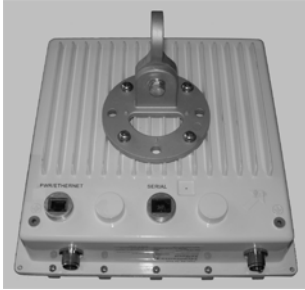
3. Attach the mounting bracket (C) to extension arm (B) with the screw, nut, and washers provided.



4. Tighten assembly (Torque 15 N-m/130 in-lbs).

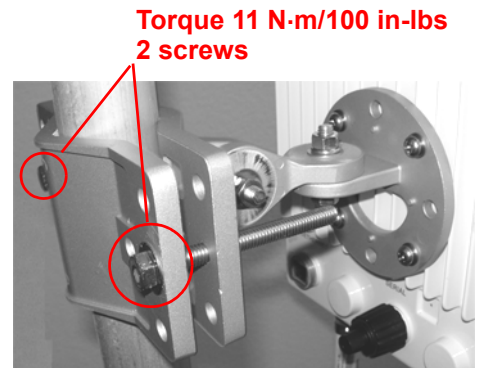
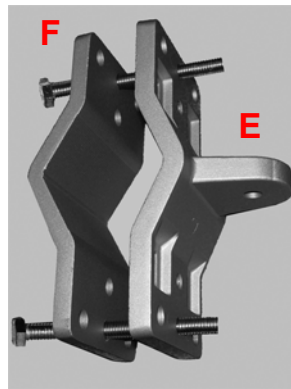
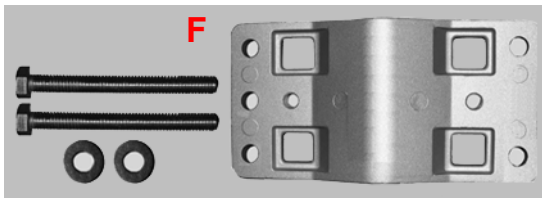


The following figure shows the full assembly attached to the unit:

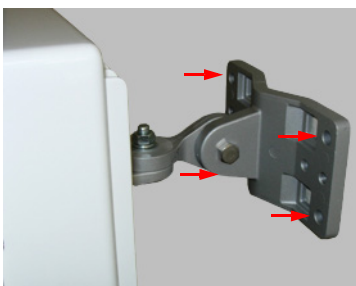


Step 6: Mount the Unit

1. To pole-mount, insert screws through bracket F and fasten around the pole to bracket E and secure (Torque 11 N·m/ 100 in-lbs).

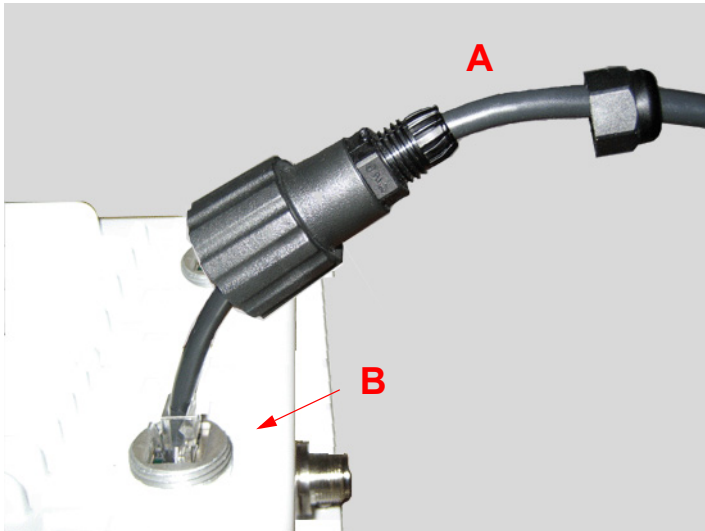


2. To wall-mount the unit, mount bracket E to a wall using 4 screws (not provided), as shown:



Step 7: Plug in the Cables

1. Plug one end of the CAT5 cable (A) into the RJ45 jack of the unit (B).



2. Connect the free end of the CAT5 cable to the “Data and Power Out” port on the power injector.



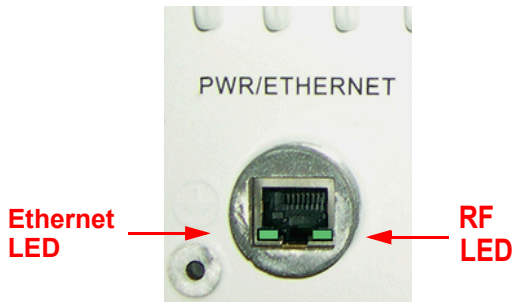
3. To connect the unit through a hub or a switch to a PC, connect a **straight-through Ethernet cable** between the network interface card in the PC and the hub, and between the hub and the RJ45 “Data In” port on the PoE adapter. To connect the unit directly to a PC, connect a **cross-over Ethernet cable** between the network interface card in the PC and the RJ45 “Data In” port on the power injector.

Step 8: Power on the Unit

Once you have connected the power injector to the Ethernet cabling and plugged the power injector cord into an AC outlet, the unit is powered on. There is no ON/OFF switch on the unit. To remove power, unplug the AC cord from the AC outlet or disconnect the RJ45 connector from the “Data and Power Out” port on the power injector.

Step 9: View LEDs

When the unit is powered on, it performs startup diagnostics. When startup is complete, the LEDs show the unit’s operational state. The LEDs are present at the unit’s Ethernet connector.



LEDs exhibit the following behavior:

LED State	Radio LED	Power/Ethernet LED
Red	Power is on; unit is self-heating.	—
Flashing Green	Wireless link is being established.	Power is on, Ethernet link is down.
Solid Green	Wireless link has been established.	Power is on, Ethernet link is up.

Step 10: Align the Antenna

Antenna alignment is the process of physically aligning the antenna of the radio receiver and transmitter to have the best possible link established between them. The antenna alignment process is usually performed during installation and after major repairs.

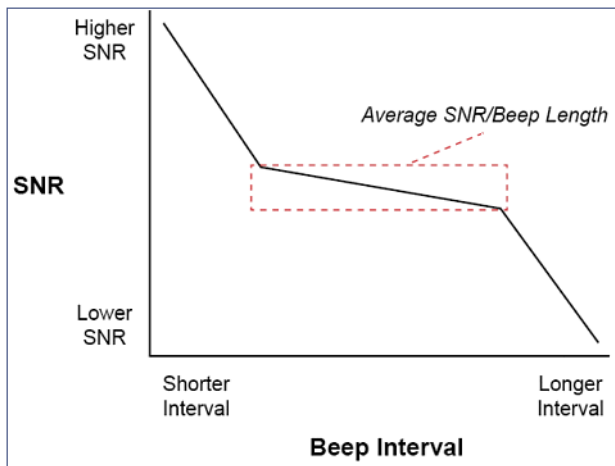
If you are installing external antennas, consult the documentation that accompanies the antenna for installation instructions. Note that you must weatherproof the antenna connectors as described in [Step 12: Weatherproof the Connectors](#).

The unit has an audible antenna alignment tool that can be activated by plugging in the supplied serial dongle (supplied with the BSU) or by issuing the CLI command for antenna alignment. The CLI command causes both audible and numerical feedback as the CLI shows the running Signal-to-Noise Ratio (SNR) values twice a second.

The output from the beeper for antenna alignment consists of short beeps with a variable interval. The interval changes with the SNR level to assist in correctly aligning the antenna. An increase in signal level is indicated by a shorter interval between beeps; a reduction in signal level results in beeps longer apart.

To allow for precise antenna alignment, small changes in SNR result in large changes in the beep period. The alignment process averages the SNR, which is represented by an average length beep. When a higher SNR is received, the beep period is made shorter, dependent upon the difference to the average. A lower SNR results in a longer period between beeps.

The first five steps around the average are represented by a large change and all following steps are a small change. This acts as if a magnifying glass is centered around the average SNR and the values next to the average are significantly different.



When the antenna is aimed, the beep intuitively represents whether the SNR is rising or falling: the higher the SNR rises, the shorter the period the beep is heard and the higher the frequency of the beep.

After the position of the antenna has been changed, SNR averaging settles at the new value and the beeping returns to the average length so the antenna can again be aimed for rising SNR.

Aiming is complete if moving in any direction results in a falling SNR value (which can be heard as longer periods between beeps).

NOTES:

- *Antenna alignment for the Base Station is useful only for a point-to-point link.*
- *The range of the average SNR has been limited to values from 5 to 43; therefore, anything over 43 always results in a short period between beeps and values below 5 always have a long period.*

- *The Antenna Alignment Display (AAD) CLI command is disabled automatically 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). If AAD must run for the entire 30 minutes, change the default telnet timeout value 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; however, the AAD command does still time out.*

Antenna Alignment Commands

- **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 (Ctrl-C also disables AAD).

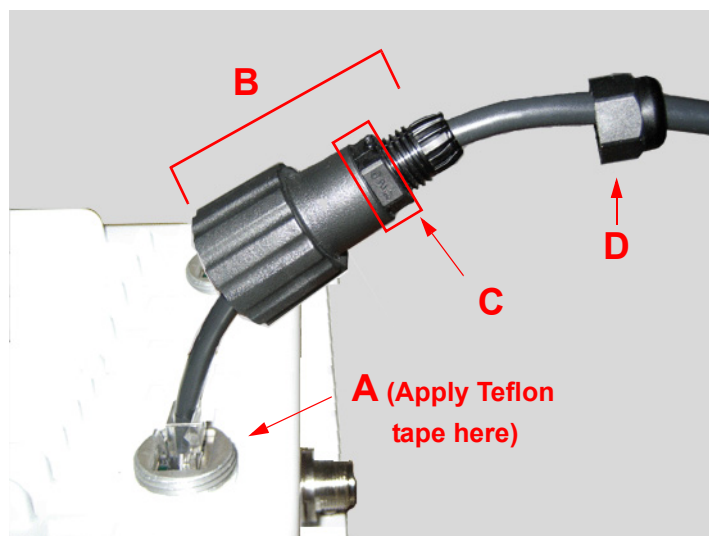
Step 11: Tighten the Cables

1. Apply two wraps of Teflon tape around the threads of the unit's RJ45 jack (A) in a clockwise direction.
2. Make sure that the red rubber gasket is still seated in the sealing cap of the sealing cap/lock nut assembly (B);
3. Slide the sealing cap/lock nut assembly (B) over the RJ45 jack (A) and thread onto enclosure. Hand tighten first, then use a pipe wrench or similar tool to tighten one more quarter turn.

CAUTION: Do not over-tighten!

4. Tighten the lock nut (C) (Torque 4 N·m/35 in-lbs).
5. Thread the sealing nut (D) onto the sealing cap/lock nut assembly (B) and tighten (Torque 3 N·m/25 in-lbs).

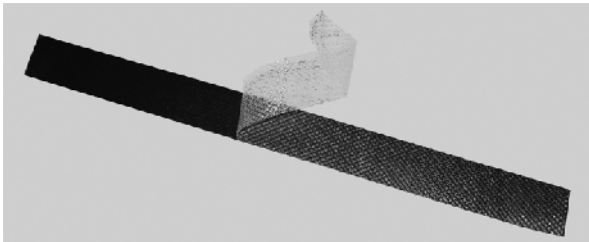
CAUTION: The lock nut (C) on the sealing cap/lock nut assembly (B) must be fully tightened over the RJ45 connector before the sealing nut (D) is fully tightened. Otherwise, the Ethernet cable may twist and damage.



Step 12: Weatherproof the Connectors

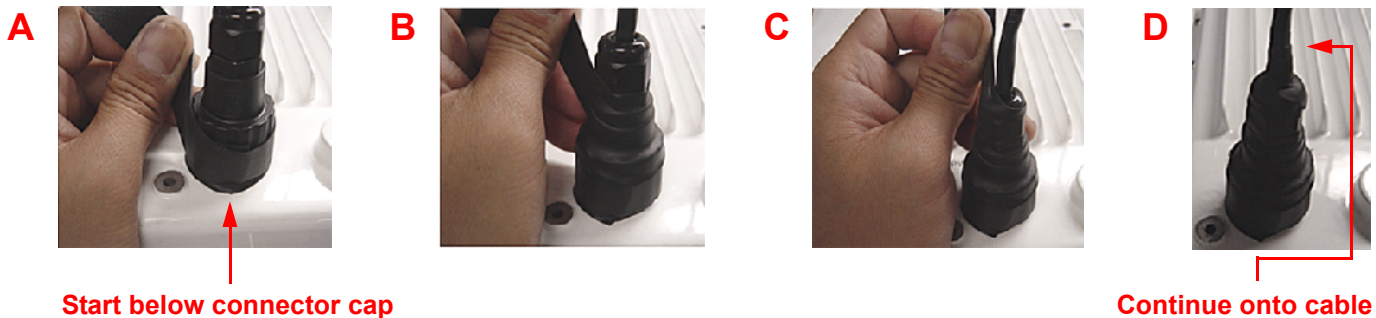
After you have fully assembled and tightened the cable, use the provided self-fusing, rubber-based tape strip and electrical tape (not provided; Proxim recommends Scotch™ Super 33+ Vinyl Electrical Tape) to seal the connection, as follows.

1. Remove the film liner from the rubber-based tape strip, and stretch the tape until it is approximately half of its original width. This activates the self-fusing action of the tape, which will set up over time to create a single, waterproof mass.



2. Stretch and wrap the tape around the connector tightly, starting below the connector cap and against the unit and wrapping in a clockwise direction. Wrap the tape once around the base of the connector cap (A). Continue to wrap the tape spirally around the connector in a clockwise direction, maintaining a 50% width overlap (B). Continue wrapping the tape spirally upward (C) until the tape extends onto the cable and you have used the entire length of tape. Seal the tape tightly against the connector and the cable (D).

NOTE: Be sure to wrap the tape in a clockwise direction; wrapping the tape in a counterclockwise direction may loosen up the connector.



3. In the same manner as described in Step 2 above, apply a layer of black electrical tape (not provided) over the rubber-based tape for further protection. Make sure the electrical tape also extends beyond the rubber-based tape to seal it.



4. Repeat the weatherproofing procedure for other connectors as appropriate.

Step 13: Install Documentation and Software

To install the documentation and software on a computer or network:

1. Place the CD in a CD-ROM drive. The installer normally starts automatically. (If the installation program does not start automatically, click **setup.exe** on the installation CD.)
2. Click the Install Software and Documentation button and follow the instructions displayed on the installer windows. The following documentation and software products are installed:

- Available from **Start > All Programs > Tsunami > MP.11 [Model Name]**:
 - Documentation (in **Docs** subdirectory):
 - Installation and Management Guide
 - Quick Installation Guide
 - Reference Manual
 - Safety and Regulatory Guide
 - Recommended Antenna Guide
 - Antenna Installation Guide
 - Online Help
 - Scan Tool (in **Scan Tool** subdirectory)
 - TFTP Server (in **TFTP Server** subdirectory)

NOTE: All of these items are also available from **C:\Program Files\Tsunami\MP.11 [Model Name]**.

- Available from **C:\Program Files\Tsunami\MP.11 [Model Name]**:
 - Documentation (in **Docs** folder): See list above
 - Help files (in **Help** folder; click on index.htm to access)
 - TFTP Server and Scan Tool program (in **Extras** folder)
 - MIBs (in **MIBs** folder)

Initialization

Connecting to the unit requires either:

- A direct physical connection with an Ethernet cross-over cable or with a serial RS232C cable
- A network connection

Connecting with a serial connection, allows you to configure and manage the unit with the CLI. Connecting with the other connections allows you to use of the Web Interface and SNMP in addition to the CLI.

Using a serial connection, you can access the unit through a terminal emulation program such as HyperTerminal. (See "HyperTerminal Connection Properties" in the *Tsunami MP.11/QB.11 Reference Manual*.)

For all other modes of connection, you will need the IP address of the unit in order to use the Web Interface, SNMP, or the CLI. Because each network is different, an IP address suitable for your network must be assigned to the unit. You must know this IP address to configure and manage the unit through its Web Interface, SNMP, or the CLI. The unit can use either a **static** or **dynamic** IP address. The unit either obtains its IP address automatically through DHCP (dynamic IP address) or it must be set manually (static IP address).

ScanTool

With ScanTool (a software utility that is included on the product installation CD), you can find out the current IP address of the unit and, if necessary, change it so that is appropriate for your network. The units are shipped with the static IP address 10.0.0.1 configured.

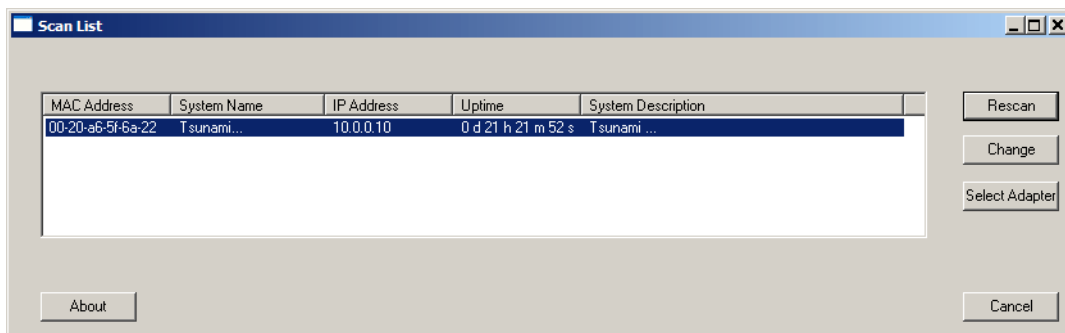
ScanTool lets you find the IP address of a Tsunami MP.11-R product by referencing the MAC address in a Scan List, or to assign an IP address if the correct one has not been assigned. The tool automatically detects the units installed on your network segment, regardless of IP address, and lets you configure each unit's IP settings. In addition, you can use ScanTool to download new software to a unit that does not have a valid software image installed.

Setting the IP Address with ScanTool

To discover and set/change the IP address of the unit:

1. Run ScanTool on a computer connected to the same LAN subnet as the unit, or a computer directly connected to the unit with a cross-over Ethernet cable. Double-click the **ScanTool** icon on the Windows desktop to launch the program. If the icon is not on your desktop, click **Start > All Programs > Tsunami > MP.11 [Model Name] > Scan Tool**.

ScanTool scans the subnet for MP.11-R units and displays a list of the units it finds in the Scan List window (shown below). If necessary, click **Rescan** to re-scan the subnet and update the display.



You can assign a new IP address to one unit, even if more than one unit has the same (default) IP address 10.0.0.1, but the new IP address must be unique to allow use of the management interfaces.

2. Select the unit for which you want to set the IP address and click **Change**. The **Change** dialog window is displayed, as shown below.

The screenshot shows a 'Change' dialog box with the following fields and values:

Field	Value
MAC Address	00-20-a6-5f-6a-22
Name	Tsunami
IP Address Type	Static (selected)
IP Address	10.0.0.10
Subnet Mask	255.255.255.0
Gateway IP Address	10.20.6.10
TFTP Server IP Address	10.20.6.140
Image File Name	SignedBuild_000212.bin
Read/Write Password	

3. To set the IP address **manually**, ensure that **Static** is selected as the **IP Address Type** and fill in the **IP Address** and **Subnet Mask** suitable for the LAN subnet to which the unit is connected.
To set the IP address **dynamically**, ensure that **Dynamic** is selected as the **IP Address Type**. The unit will request its IP address from a DHCP server on your network.
4. Enter the **Read/Write Password** (the default value is **public**) and click **OK** to confirm your changes. The respective unit reboots to make the changes effective.

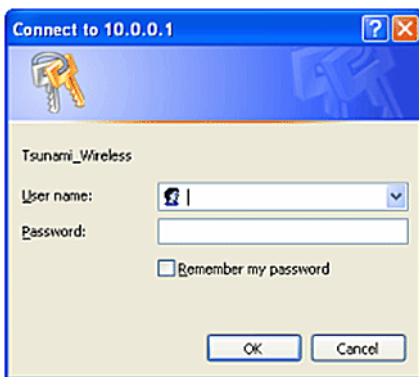
Logging in to the Web Interface

The Web Interface provides a graphical user interface through which you can easily configure and manage the unit. This section describes only how to access the Web Interface.

To use the Web Interface, you need only the IP address of the unit. (See [Setting the IP Address with ScanTool](#) for details).

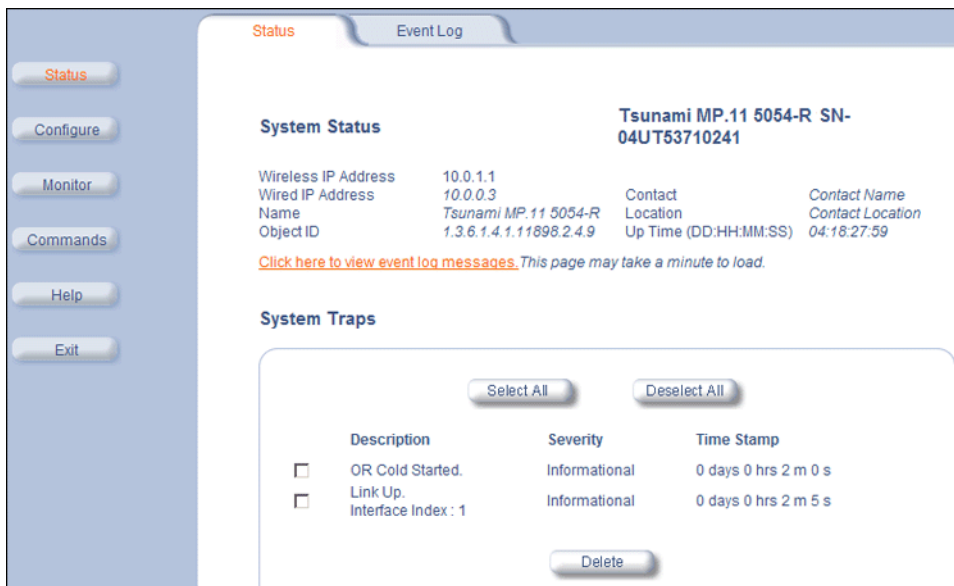
NOTE: *If the connection is slow or you are not able to connect, use the Internet Explorer Tools option to ensure you are not using a proxy server for the connection with your Web browser.*

To access the unit with a Web browser, start your Web browser and enter the IP address of the unit. The Web address must appear as **http://<ip address>** (for example, **http://10.0.0.1**). A window such as the following is displayed.



Do not fill in the **User Name**, enter only the password and click **OK**. The default password is **public**.

The **System Status** window is displayed. To find out more about the information presented in this window, see the [Status](#) chapter.



You now have access to the unit's Web Interface. The remainder of this manual describes configuring and monitoring the unit using this interface.

System Overview

This chapter provides an overview of the system. See the following sections:

- [Changing Basic Configuration Information](#)
 - [Country and Related Settings](#)
 - [Dynamic Frequency Selection \(DFS\)](#)
 - [Transmit Power Control](#)
- [SU Registration](#)
- [Dynamic Data Rate Selection \(DDRS\)](#)
- [Virtual Local Area Networks \(VLANs\)](#)
- [Quality of Service \(QoS\)](#)
 - [Concepts and Definitions](#)

Changing Basic Configuration Information

To view or change basic system information, click the **Configure** button on the left side of the Web interface window, then click the **System** tab. See [System Parameters](#) for detailed information about the fields and selections in this window.

NOTE: *System Name by default contains the actual model number. The following screenshot is for information only.*

The screenshot shows the 'System' configuration window with the following fields and values:

Field	Value
System Name	Tsunami MP.11 5054-R
Country	UNITED STATES (US)
Location	Contact Location
Contact Name	Contact Name
Contact Email	name@organization.com
Contact Phone	Contact Phone Number
Object ID	1.3.6.1.4.1.11898.2.4.9
Ethernet MAC Address	00:20:A6:56:58:5D
Descriptor	Tsunami MP.11 5054-R 04UT33710241
Up Time (DD:HH:MM:SS)	04:18:31:11
Mode of Operation	Bridge

Notes from the screenshot:

- Note: Configure Satellite to use this Base Station System Name if you want Satellite to register only with this Base Station. Otherwise, leave the Base Station System Name blank on the Satellite.
- Note: Change in Mode of Operation requires a device reboot and appropriate changes to IP Configuration.

Country and Related Settings

The unit's **Configure System** window provides a selectable **Country** field that automatically provides the allowed bandwidth and frequencies for the selected country.

Units sold only in the United States are pre-configured to scan and display only the outdoor frequencies permitted by the FCC. No other **Country** can be configured. Units sold outside of the United States support the selection of a **Country** by the professional installer.

NOTE: *Non-US installers should not add an antenna system until the **Country** is selected, the unit is rebooted, and the proper power level is configured. The output power level of the final channel selected by DFS scan can be found in the Event Log.*

The Dynamic Frequency Selection (DFS) feature is enabled automatically when you choose a country with a regulatory domain that requires it. The Transmit Power Control (TPC) feature is always available.

Click **Configure > System**; then select the appropriate country for your regulatory domain from the **Country** drop-down box.

Continue configuring settings as desired; then click **Commands > Reboot** to save and activate the settings. Alternatively, if you want to save the configuration settings to the flash memory but not activate the settings, use the **save config CLI** command.

Dynamic Frequency Selection (DFS)

NOTE: *Dynamic Frequency Selection (DFS) only applies to the Tsunami MP.11 5054-R.*

The Tsunami MP.11-R supports Dynamic Frequency Selection (DFS) for FCC, IC, and ETSI regulatory domains per FCC Part 15 Rules for U-NII devices, IC RSS-210, and ETSI EN 301-893 and 302-502 regulations, respectively. These rules and regulations require that 802.11a devices use DFS to prevent interference with radar systems and other devices that already occupy the 5 GHz band.

During boot-up, the unit scans the available frequency and selects a channel that is quiet and free of radar interference. If the unit subsequently detects radar interference on its channel, it rescans to find a better channel. Upon finding a new channel, the unit waits 60 seconds to detect radar interference; if it finds no interference, it commences normal operation. (In Canada, if radar was previously detected on the selected channel, the unit waits 600 seconds before commencing normal operation if the selected channel frequency is in the 5600 - 5650 MHz range)

If you are using the unit in a country and band that require DFS, keep in mind the following:

- DFS is not a configurable parameter; it is always enabled and cannot be disabled.
- You cannot manually select the device's operating channel; you must let the unit select the channel. You may make channels unavailable by manually "blacklisting" them and preventing those channels being selected, in accordance with local regulations or interference. You can also display the Channel Blacklist Table to view the channels that have been blacklisted by the AP due to radar detection.
- In compliance with FCC regulations, the unit uses ATPC (Automatic Transmit Power Control) to automatically adapt transmit power when the quality of the link is more than sufficient to maintain a good communication with reduced transmit power. See [Transmit Power Control](#) for more information.

Dynamic Frequency Selection (DFS) is enabled automatically based upon the country and band you select. You can tell DFS is in use because the frequency selection field displays only the DFS-selected frequency. DFS scans all available frequencies, starting with the DFS preferred channel (when configured) and skipping blacklisted channels, to select the operating frequency automatically.

A country selection with DFS enabled causes the Base Station to come up in scan mode. It scans the available frequencies and channels to avoid radar and selects a channel with the least interference.

NOTE: *Scanning is performed only on the frequencies allowed in the regulatory domain of the country selected when it is required for radar detection and avoidance.*

The SU also comes up in scan mode to scan all available frequencies to find a BSU with which it can register. Scanning may take several minutes. After establishing a wireless link, the wireless LED stops flashing and continues to shine green.

NOTE: *Because DFS may need to scan for radar 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. This is expected behavior. Startup time is within four minutes if no radar is detected, but up to one minute is added for every selected channel that results in radar detection.*

DFS is required for three purposes:

1. *Radar avoidance both at startup and while operational.* To meet these requirements, the BSU scans available frequencies at startup for the presence of a radar signal on all available frequencies. If a radar signal is detected on any DFS enabled channel, the system will blacklist the channel for a period of 30 minutes in accordance with FCC, IC, and ETSI regulations. Once fully operational on a frequency, the BSU actively monitors the occupied frequency for radar interference. If radar interference is detected, the BSU blacklists the channel, logs a message and rescans to find a new frequency free of radar interference.
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 rescans because of radar interference, the SU loses its wireless link. The SU waits 30 seconds (when the Mobility feature is enabled, the SU starts scanning for a BSU instantly rather than waiting 30 seconds); if it finds that it could not receive the BSU in this amount of time, 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 rescan because of it. It is expected that other devices using these frequencies also are in compliance with country regulations, so this should not happen.
3. *Uniform Channel Spreading.* To meet this requirement, the MP.11-R randomly selects operating channel from the channels with least interference. If the DFS Preferred Channel is configured, the unit begins by scanning that channel for radar. If no radar is detected, the unit makes this channel operational. If radar is detected, the unit blacklists that channel and scans other available channels for the one with least interference. This implements the Uniform Channel Spreading requirement by either automatically selecting the channel with least interference or allowing the installer to manually select a channel with least interference from a channel plan.

Transmit Power Control

Transmit Power Control is a manual configuration selection to reduce the unit's output power. The maximum output power level for the operating frequency can be found in the event log of the unit's embedded software.

ATPC (Automatic Transmit Power Control) is a feature to automatically adapt transmit power when the quality of the link is more than sufficient to maintain a good communication with reduced transmit power. This feature is required for FCC DFS. It works by monitoring the quality of the link and reducing the output power of the radio by up to 6 dB when good link quality can still be achieved. When link quality reduces, the output power is automatically increased up to the original power level to maintain a good link. For a full discussion of DFS, see [Dynamic Frequency Selection \(DFS\)](#) above.

By default, the unit lets you transmit at the maximum output power that the radio can sustain for data rate and frequency selected. However, with Transmit Power Control (TPC), you can adjust the output power of the unit to a lower level in order to reduce interference to neighboring devices or to use a higher gain antenna without violating the maximum radiated output power allowed for your country. Also, some countries that require DFS also require the transmit power to be set to a 6 dB lower value than the maximum allowed EIRP when link quality permits, as part of the DFS requirements.

NOTE: *When the system is set to transmit at the maximum power, professional installers must ensure that the maximum EIRP limit is not exceeded. To achieve this, they may have to add attenuation between the device and the antenna when a high gain antenna is used.*

For 4954-R models: to comply with FCC Part 90 regulations when using an external antenna, a TPC value of -3 dB is required regardless of antenna size, and a larger TPC value may be required to limit the total EIRP to 29 dBm or less. For 4954-R models that have an integrated flat-panel antenna, a TPC of -9 dB must be used to comply with FCC Part 90 regulations.

CAUTION: *To insure proper operation on 4954-R models, TPC values greater than -9 dB should be avoided.*

You can see your unit's current output power for the selected frequency in the event log. The event log shows the selected power for all data rates, so you must look up the relevant data rate to determine the actual power level.

NOTE: *This feature only lets you decrease your output power; you cannot increase your output power beyond the maximum the radio allows for your frequency and data rate.*

See [System Parameters](#) to configure **Country**. See [Interface Parameters](#) to configure Transmit Power Control.

SU Registration

The list of parameters you must configure for registration of the SU on a BSU are:

- Network Name
- Base Station System Name (when used; otherwise, leave blank)
- Network Secret
- Encryption (when used)
- Frequency Channel (when available)

See [System Parameters](#) to see the description of these fields and to configure them.

NOTES:

- *The frequency channel must be the same for the BSU and the SU in order to register the SU when roaming is not enabled and DFS is not required.*
- *Channel Bandwidth and Turbo mode (when available) must be the same for the BSU and SU in order to register the SU.*
- *Roaming will automatically select a channel on the SU corresponding to the BSU channel. Roaming is the procedure in which an SU terminates the session with the current BSU and starts the registration procedure with another BSU when it finds the quality of the other BSU to be better.*

Dynamic Data Rate Selection (DDRS)

The WORP Dynamic Data Rate Selection (DDRS) lets the BSU and SUs monitor and calculate the remote average signal-to-noise ratio (SNR) and adjust the transmission data rate to an optimal value to provide the best possible throughput according to the current communication conditions and link quality during run-time.

Each frame received in the WORP protocol reports the signal and noise level in dBm at which the sender received the previous frame from the receiver, and provides the values to calculate the SNR in dB. SNR is calculated according to this formula then averaged:

$$\text{SNR [dB]} = \text{signal level [dBm]} - \text{noise level [dBm]}$$

Both the BSU and the SUs monitor the remote SNR. The BSU monitors and calculates the average remote SNR for each SU that is registered. An SU monitors and calculates the average remote SNR for the BSU.

DDRS is enabled or disabled on the BSU only. This operation requires the BSU to be rebooted. After rebooting, the BSU sends a multicast announcement to all SUs to begin the registration process. During registration, an SU is informed by the BSU whether DDRS is enabled or disabled and it sets its DDRS status accordingly.

There are two DDRS data rates that need to be configured when DDRS is enabled:

- **Default DDRS Data Rate** (*ddrsdefdatarate*): The data rate at which the BSU starts communication with all SUs to begin the registration process (the default is 6 Mbps).
- **Maximum DDRS Data Rate** (*ddrsmaxdatarate*): The maximum data rate at which the device (BSU or SU) can operate (the default is 54 Mbps).

NOTE: The default (BSU only) and maximum (BSU and SU) DDRS data rate values must be configured in the BSU and SUs separately through the CLI or the SNMP interface.

See [Interface Parameters](#) to configure DDRS.

Virtual Local Area Networks (VLANs)

Virtual Local Area Networks (VLANs) are logical groupings of network hosts. Defined by software settings, other VLAN members or resources appear (to connected hosts) to be on the same physical segment, no matter where they are attached on the logical LAN or WAN segment. They simplify allowing traffic to flow between hosts and their frequently-used or restricted resources according to the VLAN configuration.

Tsunami MP.11-R units are fully VLAN-ready; however, by default, VLAN support is disabled. Before enabling VLAN support (by assigning a VLAN Management ID), certain network settings should be configured and network resources such as VLAN-aware switches should be available, dependent upon the type of configuration.

VLANs are used to conveniently, efficiently, and easily manage your network in the following ways:

- Manage VLAN configuration from a single window
- Define groups
- Reduce broadcast and multicast traffic to unnecessary destinations
 - Improve network performance and reduce latency
- Increase security
 - Secure network restricts members to resources on their own VLAN

VLAN tagged data is collected and distributed through a unit's Ethernet interface. The units can communicate across a VLAN-capable switch that analyzes VLAN-tagged packet headers and directs traffic to the appropriate ports when the units are working in their Transparent mode.

VLAN features can be managed via:

- The BSU's Web interface
- The Command Line Interface (see "Command Line Interface" in the *Tsunami MP.11/QB.11 Reference Manual*)
- SNMP (see the MIBs provided on the product CD)

For more information about VLAN configuration, see [VLAN Parameters \(BSU Only; Bridge Mode Only\)](#).

Quality of Service (QoS)

The Quality of Service (QoS) feature is based on the 802.16 standard and defines the classes, service flows, and packet identification rules for specific types of traffic. QoS main priority is to guarantee a reliable and adequate transmission quality for all types of traffic under conditions of high congestion and bandwidth over-subscription.

Concepts and Definitions

The software supports QoS provisioning from the BSU only. You may define different classes of service on a BSU that can then be assigned to the SUs that are associated, or that may get associated, with that BSU.

The software provides the ability to create, edit, and delete classes of service that are specified by the following hierarchy of parameters:

- Packet Identification Rule (PIR) – up to 64 rules, including 17 predefined rules
- Service Flow class (SFC) – up to 32 SFs, including 7 predefined SFCs; up to 8 PIRs may be associated per SFC
- Priority for each rule within each SF class – 0 to 255, with 0 being lowest priority
- QoS class – up to 8 QoS classes, including 4 predefined classes; up to 4 SFCs may be associated per QoS class

Packet Identification Rule (PIR)

A Packet Identification Rule is a combination of parameters that specifies what type of traffic is allowed or disallowed. The software allows to create up to 64 different PIRs, including 17 predefined PIRs. It provides the ability to create, edit, and delete PIRs that contain none, one, or more of the following classification fields:

- Rule Name
- IP ToS (Layer 3 QoS identification)
- IP Protocol List containing up to 4 IP protocols
- 802.1p tag (layer 2 QoS identification)
- Up to 4 pairs of Source IP address + Mask
- Up to 4 pairs of Destination IP address + Mask
- Up to 4 source TCP/UDP port ranges
- Up to 4 destination TCP/UDP port ranges
- Up to 4 source MAC addresses
- Up to 4 destination MAC addresses
- VLAN ID
- Ether type (Ethernet protocol identification)

A good example is provided by the 17 predefined PIRs. Note that these rules help to identify specific traffic types:

1. All – No classification fields, all traffic matches
2. Cisco VoIP UL
 - a. Protocol Source Port Range (16,000-32,000)
 - b. IP Protocol List (17 = UDP)
3. Vonage VoIP UL
 - a. Protocol Source Port Range (8000-8001, 10000-20000)
 - b. IP Protocol List (17 = UDP)
4. Cisco VoIP DL
 - a. Protocol Destination Port Range (16,000-32,000)
 - b. IP Protocol List (17 = UDP)
5. Vonage VoIP DL

Quality of Service (QoS)

- a. Protocol Destination Port Range (8000-8001, 10000-20000)
- b. IP Protocol List (17 = UDP)
6. TCP
 - a. IP Protocol List (6)
7. UDP
 - a. IP Protocol List (17)
8. PPPoE Control
 - a. Ethertype (type 1, 0x8863)
9. PPPoE Data
 - a. Ethertype (type 1, 0x8864)
10. IP
 - a. Ethertype (type 1, 0x800)
11. ARP
 - a. Ethertype (type 1, 0x806)
12. Expedited Forwarding
 - a. IP TOS/DSCP (low=0x2D, high=0x2D, mask = 0x3F)
13. Streaming Video (IP/TV)
 - a. IP TOS/DSCP (low=0x0D, high=0x0D, mask = 0x3F)
14. 802.1p BE
 - a. Ethernet Priority (low=0, high=0) (this is the equivalent of the User Priority value in the TCI (Tag Control Information) field of a VLAN tag)
15. 802.1p Voice
 - a. Ethernet Priority (low=6, high=6) (this is the equivalent of the User Priority value in the TCI (Tag Control Information) field of a VLAN tag)
16. 802.1p Video
 - a. Ethernet Priority (low=5, high=5) (this is the equivalent of the User Priority value in the TCI (Tag Control Information) field of a VLAN tag)
17. L2 Broadcast/Multicast
 - a. Ethernet Destination (dest = 0x80000000, mask = 0x80000000)

Note that two different VoIP rule names have been defined for each direction of traffic, Uplink (UL) and Downlink (DL), (index numbers 2 to 5). This has been done to distinguish the proprietary nature of the Cisco VoIP implementation as opposed to the more standard Session Initiation Protocol (SIP) signaling found, for example, in the Vonage-type VoIP service.

Service Flow Class (SFC)

A Service Flow class defines a set of parameters that determines how a stream of application data that matches a certain classification profile will be handled. The software allows to create up to 32 different SFs, including seven predefined SFs. The software provides the ability to create, edit, and delete SFs that contain the following parameters and values:

- Service flow name
- Scheduling type – Best Effort (BE); Real-Time Polling Service (RtPS)
- Service Flow Direction – Downlink (DL: traffic from BSU to SU); Uplink (UL: traffic from SU to BSU)
- Maximum sustained data rate (or Maximum Information Rate, MIR) – specified in units of 1 Kbps from 8 Kbps up to the maximum rate of 108000 Kbps per SU
- Minimum reserved traffic rate (or Committed Information Rate, CIR) – specified in units of 1 Kbps from 0 Kbps up to the maximum rate of 10000 Kbps per SU

Quality of Service (QoS)

- Maximum Latency – specified in increments of 5 ms steps from a minimum of 5 ms up to a maximum of 100 ms
- Tolerable Jitter – specified in increments of 5 ms steps from a minimum of 0 ms up to the Maximum Latency (in ms)
- Traffic priority – zero (0) to seven (7), 0 being the lowest, 7 being the highest
- Maximum number of data messages in a burst – one (1) to four (4), which affects the percentage of the maximum throughput of the system
- Activation state – Active; Inactive

Note that traffic priority refers to the prioritization of this specific Service Flow.

The software tries to deliver the packets within the specified latency and jitter requirements, relative to the moment of receiving the packets in the unit. For delay-sensitive traffic the jitter must be equal to or less than the latency. A packet is buffered until an interval of time equal to the difference between Latency and Jitter (Latency – Jitter) has elapsed. The software will attempt to deliver the packet within a time window starting at (Latency – Jitter) until the maximum Latency time is reached. If the SFC's scheduling type is real-time polling (rtPS), and the packet is not delivered by that time, it will be discarded. This can lead to loss of packets without reaching the maximum throughput of the wireless link. For example, when the packets arrive in bursts on the Ethernet interface and the wireless interface is momentarily maxed out, then the packets at the "end" of the burst may be timed out before they can be sent.

Users are able to set up their own traffic characteristics (MIR, CIR, latency, jitter, etc.) per service flow class to meet their unique requirements. A good example is provided by the seven predefined SFCs:

1. UL-Unlimited BE
 - a. Scheduling Type = Best Effort
 - b. Service Flow Direction = Uplink
 - c. Initialization State = Active
 - d. Maximum Sustained Data Rate = 20 Mbps
 - e. Traffic Priority = 0
2. DL-Unlimited BE (same as UL-Unlimited BE, except Service Flow Direction = Downlink)
3. UL-G711 20 ms VoIP rtPS
 - a. Schedule type = Real time Polling
 - b. Service Flow Direction = Uplink
 - c. Initialization State = Active
 - d. Maximum Sustained Data Rate = 88 Kbps
 - e. Minimum Reserved Traffic Rate = 88 Kbps
 - f. Maximum Latency = 20 milliseconds
 - g. Traffic Priority = 1
4. DL-G711 20 ms VoIP rtPS (same as UL-G711 20ms VoIP rtPS, except Service Flow Direction = Downlink)
5. UL-G729 20 ms VoIP rtPS (same as UL-G711 20ms VoIP rtPS, except Maximum Sustained Data Rate and Maximum Reserved Traffic Rate = 64 Kbps)
6. DL-G729 20 ms VoIP rtPS (same as UL-G729 20ms VoIP rtPS, except Service Flow Direction = Downlink)
7. DL-2Mbps Video
 - a. Schedule type = Real time Polling
 - b. Service Flow Direction = Downlink
 - c. Initialization State = Active
 - d. Maximum Sustained Data Rate = 2 Mbps
 - e. Minimum Reserved Traffic Rate = 2 Mbps
 - f. Maximum Latency = 20 milliseconds
 - g. Traffic Priority = 1

Note that two different VoIP Service Flow classes for each direction of traffic have been defined (index numbers 3 to 6) which follow the ITU-T standard nomenclatures: G.711 refers to a type of audio companding and encoding that produces a 64 Kbps bitstream, suitable for all types of audio signals. G.729 is appropriate for voice and VoIP applications, but cannot transport music or fax tones reliably. This type of companding and encoding produces a bitstream between 6.4 and 11.8 Kbps (typically 8 Kbps) according to the quality of voice transport that is desired.

QoS Class

A QoS class is defined by a set of parameters that includes the PIRs and SFCs that were previously configured. The software allows creating up to eight different QoS classes, including four predefined QoS classes. Up to four SF classes can be associated to each QoS class, and up to eight PIRs can be associated to each SF class. For example, a QoS class called "G711 VoIP" may include the following SFCs: "UL-G711 20 ms VoIP rtPS" and "DL-G711 20 ms VoIP rtPS". In turn, the SFC named "UL-G711 20 ms VoIP rtPS" may include the following rules: "Cisco VoIP UL" and "Vonage VoIP UL".

The software provides the ability to create, edit, and delete QoS classes that contain the following parameters:

- QoS class name
- Service Flow (SF) class name list per QoS class (up to four SF classes can be associated to each QoS class)
- Packet Identification Rule (PIR) list per SF class (up to eight PIRs can be associated to each SF class)
- Priority per rule which defines the order of execution of PIRs during packet identification process. The PIR priority is a number in the range 0-63, with priority 63 being executed first, and priority 0 being executed last. The PIR priority is defined within a QoS class, and can be different for the same PIR in some other QoS class. If all PIRs within one QoS class have the same priority, the order of execution of PIR rules will be defined by the order of definition of SFCs, and by the order of definition of PIRs in each SFC, within that QoS class.

A good example of this hierarchy is provided by the four predefined QoS classes:

1. Unlimited Best Effort
 - a. SF class: UL-Unlimited BE
PIR: All; PIR Priority: 0
 - b. SF class: DL-Unlimited BE
PIR: All; PIR Priority: 0
2. G711 VoIP
 - a. SF class: UL-G711 20 ms VoIP rtPS
PIR: Vonage VoIP UL; PIR Priority: 1
PIR: Cisco VoIP UL; PIR Priority: 1
 - b. SF class: DL-G711 20 ms VoIP rtPS
PIR: Vonage VoIP DL; PIR Priority: 1
PIR: Cisco VoIP DL; PIR Priority: 1
3. G729 VoIP
 - a. SF class: UL-G729 20 ms VoIP rtPS
PIR: Vonage VoIP UL; PIR Priority: 1
PIR: Cisco VoIP UL; PIR Priority: 1
 - b. SF class: DL-G729 20 ms VoIP rtPS
PIR: Vonage VoIP DL; PIR Priority: 1
PIR: Cisco VoIP DL; PIR Priority: 1
4. 2Mbps Video
 - a. SF class: DL-2Mbps Video
PIR: Streaming Video (IP/TV); PIR Priority: 1

Basic Management

This chapter describes basic features and functionality of the unit. In most cases, configuring these basic features is sufficient. The “Glossary” in the *Tsunami MP.11/QB.11 Reference Manual* provides a brief explanation of the terms used. For CLI commands you can use for basic management, see “Command Line Interface” in the *Tsunami MP.11/QB.11 Reference Manual*.

The following topics are discussed in this chapter:

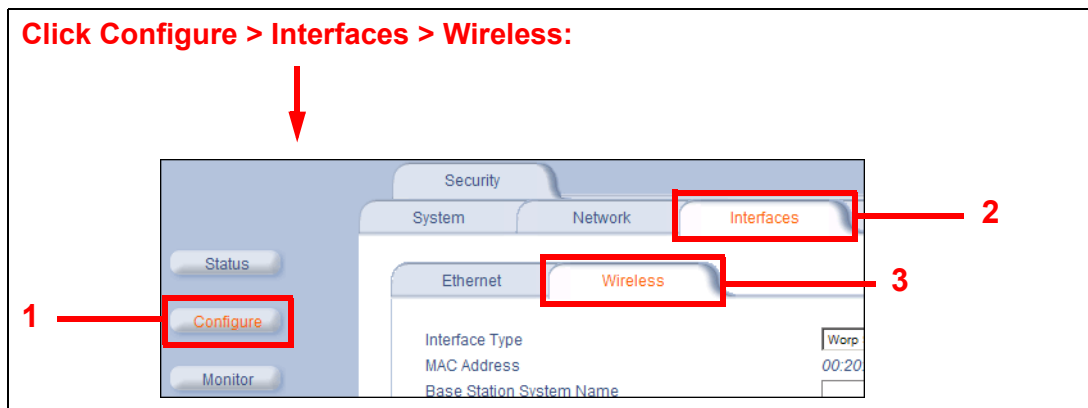
- [Navigation](#)
- [Rebooting and Resetting](#)
- [General Configuration Settings](#)
- [Monitoring Settings](#)
- [Security Settings](#)
- [Default Settings](#)
- [Upgrading the Unit](#)

Navigation

To use the Web Interface for configuration and management, you must access the unit. With ScanTool you can determine the unit’s current IP address. Then enter **http://<ip address>** in your Web browser (for example **http://10.0.0.1**). See [Setting the IP Address with ScanTool](#) for details.

NOTE: If you have your Security Internet Options set to **High**, you may not be able to access the Web interface successfully; a high security setting disables JavaScript, which is required for running Proxim’s Web browser interface. Adding the radio’s IP address as a Trusted site should fix this problem.

The Web Interface consists of Web page buttons and tabs. A tab can also contain sub-tabs. The following figure shows the convention used to guide you to the correct tab or sub-tab.



The Web Interface also provides online help, which is stored on your computer (see [Step 13: Install Documentation and Software](#) for details).

Rebooting and Resetting

All configuration changes require a restart unless otherwise stated. You can restart the unit with the **Reboot** command; see [Rebooting](#), below).

Most changes you make become effective only when the unit is rebooted. A reboot stores configuration information in non-volatile memory and then restarts the unit with the new values (see [Soft Reset to Factory Default](#)).

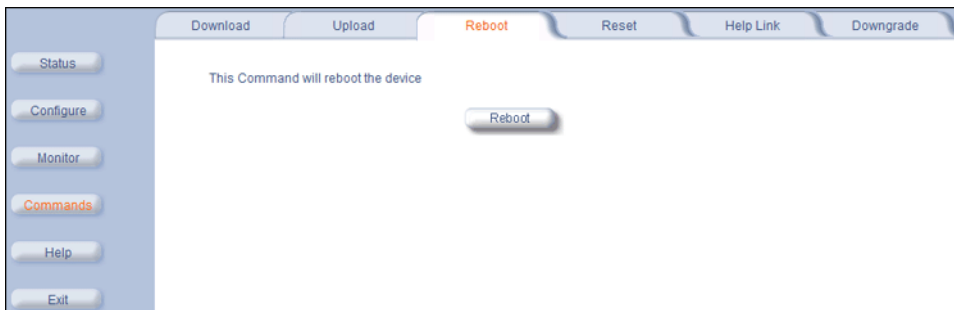
In some cases, the unit reminds you that a reboot is required for a change to take effect. You need not reboot immediately; you can reboot after you have made all your changes.

NOTE: *Saving of the unit's configuration occurs only during a controlled reboot or by specifically issuing the CLI **Save** command. If you make changes to settings without a controlled reboot (command) and you have not issued the **Save** command, a power outage would wipe out all changes since the last reboot. For example, entering static routes takes effect immediately; however, the routes are not saved until the unit has gone through a controlled reboot. Proxim strongly recommends saving your settings immediately when you finish making changes.*

Rebooting

When you reboot, the changes you have made become effective and the unit is restarted. The changes are saved automatically in non-volatile memory before the actual reboot takes place.

To reboot, click **Commands > Reboot > Reboot**. The unit restarts the embedded software. During reboot, you are redirected to a page showing a countdown timer, and you are redirected to the **Status** page after the timer counts down to 0 (zero). The CLI is disconnected during reboot. This means that a new telnet session must be started.



Resetting Hardware

If the unit does not respond for some reason and you are not able to reboot, you can restart by means of a hardware reset. This restarts the hardware and embedded software. The last saved configuration is used. Any changes that you have made since then are lost.

To reset the hardware, unplug the unit's power supply and then reconnect power to the unit.

Soft Reset to Factory Default

If necessary, you can reset the unit to the factory default settings. *This should be done only when you are experiencing problems.* Resetting to the default settings requires you to reconfigure the unit.

To reset to factory default settings:

1. Click **Commands > Reset**.
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 unit, you can use the procedure described in [Hard Reset to Factory Default](#) as an alternative.

General Configuration Settings

- **System Status:** The Status tab showing the system status is displayed automatically when you log into the Web interface. It is also the default window displayed when you click the **Status** button on the left side of the window. See [System Status](#).
- **System Configuration:** The System Configuration window lets you change the unit's *country*, *system name*, *location name*, and so on (see the window to the right). The Country selection is required to enable the correct radio parameters. The other details help distinguish this unit from other routers, and let you know whom to contact in case of problems. See [System Parameters](#) for more information.
- **IP Configuration:** The **IP Configuration** window lets you change the unit's IP parameters. These settings differ between **Routing** and **Bridge** mode. See [Network Parameters](#) for more information.
- **Interface Configuration:** The **Interface** configuration pages let you change the Ethernet and Wireless parameters. The **Wireless** tab is displayed by default when you click the **Interfaces** tab.
 - **Ethernet:** To configure the **Ethernet** interface, click **Configure > Interfaces > Ethernet**. You can set the **Configuration** parameter from this tab for the type of Ethernet transmission. The recommended setting is **auto-speed auto-duplex**. See [Interface Parameters](#) for more information.
 - **Wireless:** To configure the **wireless** interface, click **Configure > Interfaces > Wireless**. For BSUs, the wireless interface can be placed in either **WORP Base** or **WORP Satellite** mode (selected from the **Interface Type** drop-down box). SUs can be placed only in **WORP Satellite** mode. (See [Interface Parameters](#) for more information.)
- **VLAN Configuration:** To configure BSU VLAN parameters, click the **Configure** button followed by the **VLAN** tab; the **BSU Table** tab is displayed. Click the **SUs' Table** tab to configure SU VLAN parameters. Virtual LAN (VLAN) implementation in the Tsunami MP.11 products lets the BSU and SU be used in a VLAN-aware network and processes IEEE 802.1Q VLAN-tagged packets. Network resources behind the BSU and SU can be assigned to logical groups. See [VLAN Parameters \(BSU Only; Bridge Mode Only\)](#) for more information.

Monitoring Settings

The unit offers various facilities to monitor its operation and interfaces. Only the most significant monitoring categories are mentioned here.

- **Wireless:** To monitor the wireless interfaces, click **Monitor > Wireless**. This tab lets you monitor the general performance of the radio and the performance of the **WORP Base** or **WORP Satellite** interfaces.
- **Interfaces:** To monitor transmission details, click **Monitor > Interfaces**. The **Interfaces** tab provides detailed information about the MAC-layer performance of the wireless network and Ethernet interfaces.
- **Per Station:** Click **Monitor > Per Station** 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.

Security Settings

To prevent misuse, the units provide wireless data encryption and password-protected access. *Be sure to set the encryption parameters and change the default passwords.*

In addition to Wired Equivalent Privacy (WEP), the units support Advanced Encryption Standard (AES) 128-bit encryption. Two types of the AES encryption are available. Previous releases supported only the AEC-OCB; the AES CCM protocol is now also supported.

Proxim highly recommends you change the **Network Name**, **Encryption Key**, and **Shared Secret** as soon as possible. To do so, click **Configure > Interfaces > Wireless**. The encryption key is set using the **Security** tab. For systems that will use roaming features, the **Network Name**, **Encryption Key**, and the **Shared Secret** should each be the same for all SUs that are allowed to roam as well as for all BSUs to which these SUs are allowed to roam.

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. In addition to Wired Equivalent Privacy (WEP), the unit supports Advanced Encryption Standard (AES) 128-bit encryption.

To set the encryption parameters, click **Configure > Security > Encryption**. See [Encryption](#).

Passwords

Access to the units are protected with passwords. The default password is **public**. For better security it is recommended to change the default passwords to a value (6-32 characters) known only to you.

To change the unit's HTTP, Telnet, or SNMP passwords, click **Configure > Management > Password**. See [Passwords](#).

Default Settings

Feature	Model		
	5054-R	2454-R	4954-R
System Name	Tsunami MP.11 5054-R	Tsunami MP.11 2454-R	Tsunami MP.11 4954-R
Mode of Operation	Bridge	Bridge	Bridge
Routing	Disabled	Disabled	Disabled
IP Address Assignment Type	Static	Static	Static
IP Address	10.0.0.1	10.0.0.1	10.0.0.1
Subnet Mask	255.255.255.0	255.255.255.0	255.255.255.0
Default Router IP Address	10.0.0.1	10.0.0.1	10.0.0.1
Default TTL	64	64	64
RIPv2	Enabled when in Routing Mode	Enabled when in Routing Mode	Enabled when in Routing Mode
Base Station System Name	<blank>	<blank>	<blank>
Network Name	OR_WORP	OR_WORP	OR_WORP
Frequency Channel	Channel 149, Frequency 5.745 GHz (FCC Only devices) DFS Enabled (World Mode devices)	Channel 10 (2.412 – 2.462 GHz)	Channel 20, Frequency 4.900 GHz (FCC Only devices)
Transmit Power Control	0 dB	0 dB	0 dB
Data Rate	36 Mbps	36 Mbps	36 Mbps
Registration Timeout	5	5	5
Network Secret	public	public	public
Turbo Mode	Disabled	Not applicable	Not applicable
Channel Bandwidth	20 MHz	20 MHz	20 MHz
Input bandwidth limit (in Kbps)	36032	36032	36032
Output bandwidth limit (in Kbps)	36032	36032	36032
Ethernet Configuration	Auto-Speed Auto-Duplex	Auto-Speed Auto-Duplex	Auto-Speed Auto-Duplex
Serial port Baud Rate	9600	9600	9600
SNMP Management Interface	Enabled	Enabled	Enabled
Telnet Management Interface	Enabled	Enabled	Enabled
HTTP Management Interface	Enabled	Enabled	Enabled
HTTP Port	80	80	80
Telnet Port	23	23	23
Telnet Login Timeout	30	30	30
Telnet Session Timeout	900	900	900
Password	public	public	public
Maximum Satellites (per BSU)	250	250	250
MAC Authentication	Disabled	Disabled	Disabled
Radius Authentication	Disabled	Disabled	Disabled
Encryption	Disabled	Disabled	Disabled
Static MAC Address Filter	Disabled / No Entries	Disabled / No Entries	Disabled / No Entries
Ethernet Protocol Filtering	All Filters Disabled	All Filters Disabled	All Filters Disabled

Feature	Model		
	5054-R	2454-R	4954-R
DFS Priority Frequency Channel	Disabled	N/A	N/A
Announcement Period (when roaming enabled)	100 ms	100 ms	100 ms
Multi-Frame Bursting	Enabled	Enabled	Enabled
Storm Threshold	Broadcast/Multicast Unlimited	Broadcast/Multicast Unlimited	Broadcast/Multicast Unlimited
Broadcast Protocol Filtering	All Protocols Allowed	All Protocols Allowed	All Protocols Allowed
Dynamic Data Rate Selection	Disabled	Disabled	Disabled
Roaming	Disabled	Disabled	Disabled
NAT	Disabled	Disabled	Disabled
Intra-Cell Blocking	Disabled	Disabled	Disabled
Antenna Alignment	Disabled	Disabled	Disabled
Country Selection	US-only device – US World device – GB	US-only device – US World device – GB	United States (Public Safety)
DHCP Server	Disabled	Disabled	Disabled
DHCP Relay	Disabled	Disabled	Disabled
Spanning Tree Protocol	Disabled	Disabled	Disabled
Antenna Gain (For DFS Threshold compensation)	0	0	Not applicable
Satellite Density	Large	Large	Large
Temperature Logging	Enabled	Enabled	Enabled
Temperature Logging Interval	60 minutes	60 minutes	60 minutes
VLAN Mode	BSU: Transparent Mode SU: Transparent mode when BSU in transparent mode; Trunk mode when BSU in Trunk mode		
Access VLAN ID	BSU: N/A; SU: 1		
Access VLAN Priority	BSU: N/A; SU: 0		
Management VLAN ID	BSU: -1; SU: -1		
Management VLAN Priority	BSU: 0; SU: 0		
VLAN ID in Trunk VLAN Table	BSU: N/A; SU: 1		

Upgrading the Unit

The units are equipped with embedded software that can be updated when new versions are released. Updating the embedded software is described in [Web Interface Image File Download](#). A TFTP server is provided on the Documentation and Software CD; the server is required to transfer the downloaded file to the unit. See [TFTP Server Setup](#).

To access all resolved problems in our solution database, or to search by product, category, keywords, or phrases, go to <http://support.proxim.com>. You can also find links to drivers, documentation, and downloads at this link.

System Status

This chapter describes viewing system status and event log information from the unit's Web Interface.

Click on the **Status** button to access system and event log information. See the following sections:

- [Status](#)
- [Event Log](#)

Help and Exit buttons also appear on each page of the Web interface; click the **Help** button to access online help; click the **Exit** button to exit the application.

For an introduction to the basics of management, see [Basic Management](#).

Status

The **Status** tab showing the system status is displayed automatically when you log into the Web Interface. It also is the default window displayed when you click the **Status** button on the left side of the window.

The **Status** tab shows the **System Status** and the **System Traps**.

The screenshot displays the 'Status' tab of the web interface. On the left sidebar, there are buttons for 'Status', 'Configure', 'Monitor', 'Commands', 'Help', and 'Exit'. The main content area is divided into two tabs: 'Status' (active) and 'Event Log'. Under the 'Status' tab, the 'System Status' section shows the following information:

System Status				Tsunami MP.11 5054-R SN-04UT53710241	
Wireless IP Address	10.0.1.1	Contact		Contact Name	
Wired IP Address	10.0.0.3	Location		Contact Location	
Name	Tsunami MP.11 5054-R	Up Time (DD:HH:MM:SS)			04:18:27:59
Object ID	1.3.6.1.4.1.11898.2.4.9				

Below the system status, there is a link: [Click here to view event log messages.](#) This page may take a minute to load.

The 'System Traps' section contains a table with the following data:

Description	Severity	Time Stamp
<input type="checkbox"/> OR Cold Started.	Informational	0 days 0 hrs 2 m 0 s
<input type="checkbox"/> Link Up. Interface Index : 1	Informational	0 days 0 hrs 2 m 5 s

Buttons for 'Select All', 'Deselect All', and 'Delete' are located above and below the traps table.

System Status

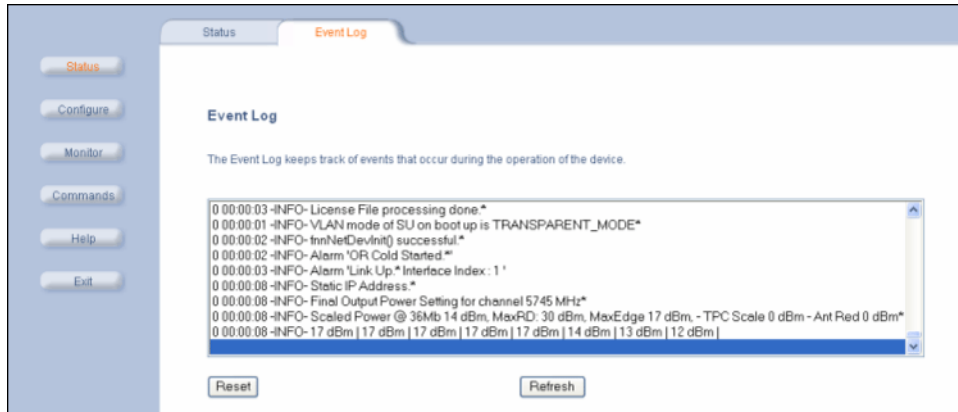
The basic system status is shown in this section, including the version number of the embedded software.

Systems Traps

The status of system traps is shown in this section. System traps occur when the unit encounters irregularities. Deleting system traps has no effect on the operation of the unit. System traps also are sent to an SNMP manager station (if so configured). See "Alarm Traps" in the *Tsunami MP.11/QB.11 Reference Manual* for a list and description of the traps.

Event Log

Click **Status > Event Log** to view the contents of your Event Log. The **Event Log** keeps track of events that occur during the operation of the unit. The **Event Log** displays messages that may not be captured by System Traps, such as the **Transmit Power** for the **Frequency Channel** selected.



See “Event Log Error Messages” in the *Tsunami MP.11/QB.11 Reference Manual* for an explanation of messages that can appear in the Event Log.