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Tsunami Multipoint Firmware Version 2.0
Tsunami Multipoint Configuration Software Version 2.0

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Introduction

These Release Notes detail the changes that have been implemented in the Tsunami Multipoint firmware since Version 1.3B. These release notes address firmware Version 2.0 and configuration software Version 2.0.

Four major pieces of software are required to install the SU and BSU:

- Tsunami Multipoint Base Station Configuration Software Version 2.0 (BSU 2.0 Console)
- Tsunami Subscriber Utility 2.0 (packaged with BSU Configuration Software Version 2.0)
- BSU firmware Version 2.0 binary code, identified as PMP_BSU_release2-0.mot
- SU firmware Version 2.0 binary code, identified as PMP_SU_release2-0.mot

If the BSU and SU are new from the factory they are preloaded with BSU Firmware Version 2.0 and SU Firmware Version 2.0, respectively.

Methods for upgrading SU equipment from previous versions to Version 2.0 follow, including remote over-the-air download and local download instructions.

Upgrade Procedure

Proxim recommends you perform the updates in the following order:

1. Install Version 2.0 Configuration Software. (This step is optional, but recommended.)
2. Install Version 2.0 SU Utility. (This step is optional, but recommended.)
3. Download Firmware
   A. SU Firmware Version 2.0 (PMP_SU_release2-0.mot)
   B. BSU Firmware Version 2.0 (PMP_BSU_release2-0.mot)

Proxim recommends an upgrade of all equipment to Firmware Version 2.0.

- Two methods to upgrade SU equipment from releases 1.0, 1.1, 1.1A, 1.1B, 1.2, or 1.2B, 1.3, or 1.3B to Version 2.0 are provided in Remote Over-the-Air Download to SU and Local Download to SU.
- Steps to upgrade BSU hardware are provided in Local Download to BSU.

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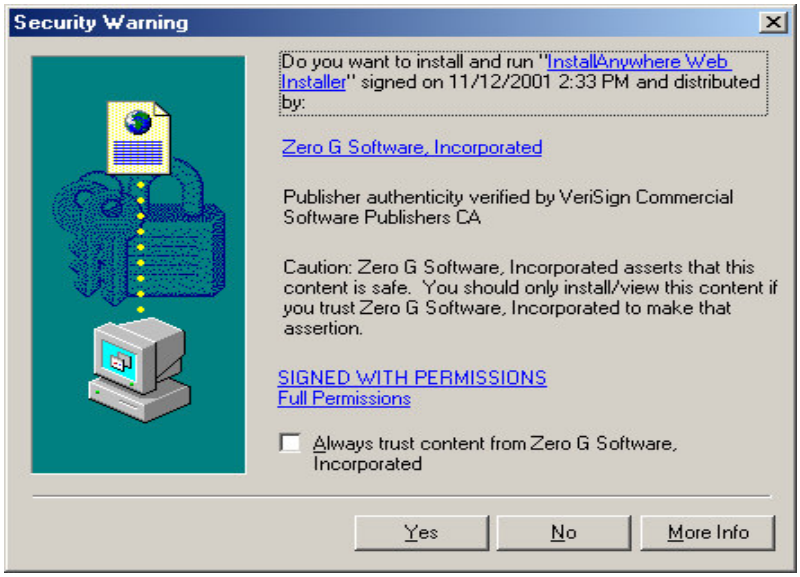
INSTALL THE BASE STATION CONFIGURATION SOFTWARE

To install the BSU/SU Configuration Software:

1. From your server's Windows Explorer root directory, double-click on the BSU folder, then double-click on the Install icon (or **install.exe**).

   Or, if installing from Proxim's Internet site Tsunami Multipoint Download page (http://www.proxim.com/support/all/tsunami_pmp/software/tmp13b/dl2003_tmp13b.html), double-click on the **BSU Configuration Software** link.

2. Two windows open simultaneously: **InstallAnywhere Web Installer** — **Microsoft Internet Explorer** (in disabled mode) superimposed by **Security Warning** (in enabled mode).

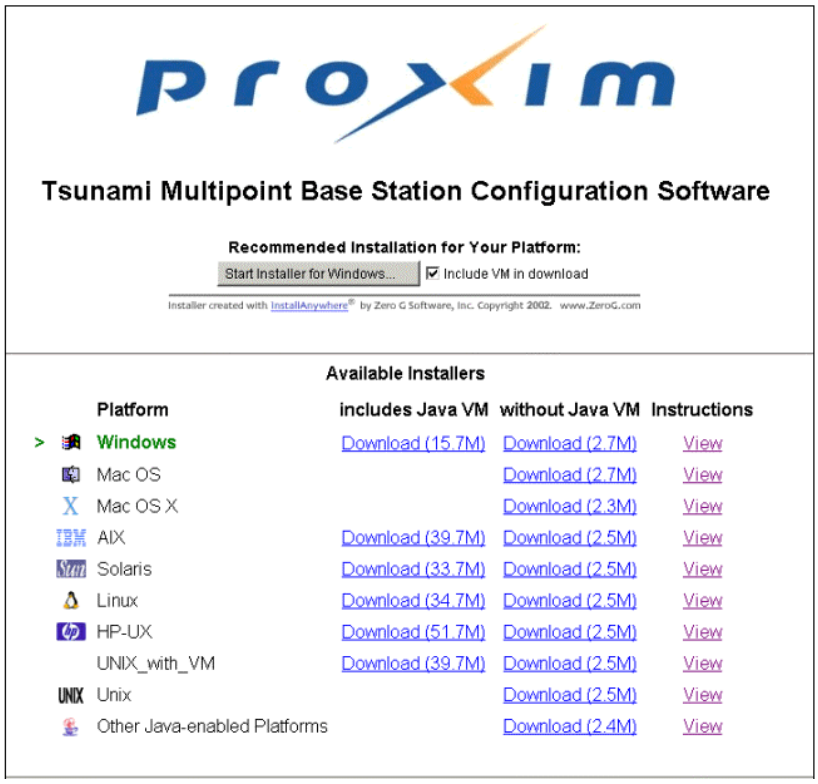


   Click the **Yes** button on the Security Warning window to close this window and view the Base Station Configuration Software window.

   For the remainder of this procedure, only default settings are used.

3. Select the applicable installer for your network environment when performing these steps. For example, for Windows installation, click **Download 15.7M** to download the Tsunami Multipoint Base Station configuration software and Java VM; click **Download 2.7M** to download the Tsunami Multipoint Base Station configuration software without Java VM.

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4. After the download completes, double-click on **BSsetup.exe** to begin installation.

5. When the Tsunami Multipoint Base Station Configuration Software **Introduction** window is displayed; click **Next**.

6. Click **Next** on the Important Information window once you have completed reading the text. When the License Agreement window is displayed, accept the terms of the License Agreement and click **Next** to proceed with the installation.

7. Click the **Next** button after making your choices on the following windows:

   - **Choose Install Folder** (you can select the default folder or specify another folder)
   - **Choose Java Virtual Machine** (you can select the default machine or specify another machine)
   - **Pre-Installation Summary** (summarizes the installation choices you have made)

8. When the **Install Complete** window is displayed, click on **Done** to return to the Web Installer window; then close the Web Installer window.

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INSTALL THE SUBSCRIBER UTILITY SOFTWARE

To install the Subscriber Utility software:

1. Identify the computer on which you plan to run the Subscriber Utility.

   Note: See "BSU and SU System Requirements" for operating system and hardware requirements.

2. Insert the Tsunami MP CD (provided with the product) into the computer's CD-ROM drive and open the CD's **config software** folder.

   Note: If the computer has Microsoft IIS (Internet Information Services) running, disable it before running the Subscriber Utility.

3. Double-click SUSETUP.HTM or use a Web browser to open the file.

   Note: If you are downloading from the Proxim Internet Tsunami Multipoint Download page, double-click on **SU Utility**.

4. Place a checkmark next to the **Include VM in download** option to install Java Virtual Machine (VM).

   Note: You need not add VM if your computer already has a version of VM installed.

5. Click the **Start Installer for Windows** button to begin the software installation.
6. Follow the on-screen instructions to install the software.
7. Click **Done** when the installation is finished to close the installer.
8. Launch the Subscriber Utility.

DOWNLOAD FIRMWARE

Firmware can be downloaded to the BSU using the local PC. Firmware can be downloaded to the SU either over-the-air or from a local PC (by attaching a PC with the Base Station Configuration Software to the SU).

Proxim recommends you download new code as follows:

1. Download the new code to the SUs and verify that they re-enter the network
2. Download new code to the BSU

Remote Over-the-Air Download to SU

You can upgrade your SUs to Version 2.0 from the Base Station Configuration Software console of the BSU. Normally, all SUs in the network are upgraded at the same time. However, if one or more SUs fail to receive the download code correctly, the upgrade is aborted and a second attempt must be made. SUs that have been upgraded successfully ignore reprogramming of the same codes.

To download remotely to SUs:

1. From the BSU Console, confirm that SUs have established a link with the BSU by issuing a **dspActiveSU** command. Make note of the SUs in the network.
2. Select the **Download** menu.
3. Select **Remote Firmware**; a **Download — File Selection** window is displayed.
4. From the **Look In** search field, select the binary file to be downloaded (**PMP_SU_release2-0.mot**) from the appropriate directory. The BSU Console automatically processes the selected binary codes and, once finished, displays an output of "Elapsed [time]" in seconds.

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5. Let the SUs re-enter the network. It usually takes no more than five minutes for the SUs to enter the network from the start of the download. The following messages are displayed at the BSU Console for each SU as it enters the network:

   118 Received NetEntry Request from Eth<*SUs Ethernet address*>

   119 NetEntry completed: Assigned terminal ID <*ID#*>, IP<*SUs IP address*>, and VLAN ID <SU VLAN ID#> in VLAN mode.

6. Issue **dspActiveSU** to verify that the SUs have entered the network successfully. If an SU fails to enter the network, use the local download procedure in the following section.

   - If the SU was correctly upgraded, the display reads **ver 20032000**.
   - If the SU failed to upgrade and the link was restored, the display most likely reads **ver 20021400** or **20021500**.

7. If any SU that re-entered the network failed to upgrade to Version 2.0, repeat steps 2 through 6, or upgrade the failing SUs using the "Local Download to SUs" method.

Local Download to SU

You can use this method to upgrade SUs that have not been deployed or have failed to successfully download using the remote over-the-air procedure. Using this procedure, individual SUs are upgraded through their Ethernet/Power cable.

This procedure requires the Tsunami Multipoint Base Station Configuration Software application be loaded on the PC attached to the SU. The window label appears as "Tsunami Multipoint Subscriber Configuration Software."

To download locally to an SU:

1. From the SU 1.4 or 1.5 console, select the **Download** menu.
2. Select **Local Firmware**.
3. From the **Look In** search field, choose the binary file to be downloaded (**PMP_SU_release2-0.mot**) from the appropriate directory and click **Select**. The download requires about 2 minutes. Once the download is complete, the banner indicating **Version 2.0** is displayed.

If the download does not complete successfully, as indicated by a checksum mismatch or a failure to reboot, cycle power to the SU and repeat, starting at step 1.

Local Download to the BSU

Use this download method to upgrade BSUs after the SUs have been upgraded to Version 2.0. The BSU is upgraded through its Ethernet/Power cable using the BSU Console.

To locally download to the BSU:

1. From the BSU console, select the **Download** menu.
2. Select **Local Firmware**.
3. From the **Look In** search field, choose the binary file to be downloaded (**PMP_BSU_release2-0.mot**) from the appropriate directory and click **Select**.
4. Once the upgrade is successful, if there were SUs connected to the BSU, they re-acquire net entry. For each SU connection, two messages are displayed:

   120 Received NetEntry Request from Eth<SU's Ethernet address>
   121 NetEntry completed: Assigned terminal ID<ID#>, VLAN ID 1, IP<SU's IP address>

   It normally takes less than a minute and a half for the SUs to re-acquire NetEntry with the BSU from the time the local download started.

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5. If there were no SUs connected to the BSU, after the upgrade succeeds, the version banner is displayed with version 20021300, following by three messages:

   114 Completed flash sector verification
   103 DB check completed
   107 Save NV configuration Parameters

Once the SUs are re-connected to the BSU, expect the same behavior as specified in step 4.

BSU and SU System Requirements

Hardware	Multimedia PC with a Pentium 200 MHz or higher processor (300 MHz recommended).
Operating System	Microsoft Windows® 98, NT 4.0, Me, 2000, XP.
Java 2 Virtual Machine	SDK or runtime (1.2.2_12 or later, 1.3.1_03 is provided).
Memory	64 MB for Windows® 95/98 or Windows® Me; 128 MB for Windows® NT 4.0 workstation, Windows® 2000 Professional, or Windows® XP Professional (256 MB RAM is recommended).
Hard Drive	2 GB hard disk with up to 250 MB of available hard-disk space.
ROM Drive	Double speed (2x) or faster CD-ROM/DVD-ROM.
Network Interface Card	10/100 Mbps NIC with RJ-45 input.
Input Devices	Standard IBM-PC compatible 101-key style keyboard, PS2 or USB compatible mouse, or a compatible pointing device.
Monitor	Super VGA 16-bit or higher monitor supporting 800 x 600 screen resolution; coordinated video driver for installed video card; VGA not supported.
Graphics Card	PCI, AGP, or on-board graphics card supporting 16-bit 640 x 480 video resolution or higher.
Video Driver	Must support 16-bit color.
Browser	Microsoft Internet Explorer 5.0 software or later (6.0 recommended); other browsers also supported.
Optional Hardware	16-bit sound card with speakers or headphones for audible alarm; 6-foot power strip with power surge protection.
Optional Software	Microsoft Personal Web Server, Internet Information Server (IIS), or Apache 1.3.x for over-the-Internet console installation.

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Issues Fixed

SU Acquires Another BSU after Upgrade

Firmware version 1.3 reduced the time that an SU waits before searching all frequency channels (when set to "Auto") after loss of outbound synchronization to 20 seconds. This change was made in response to customer requests to reduce the time required to switch frequencies. However, this change also creates a problem in multi-BSU operations; when the BSU firmware is upgraded, the outage is greater than 20 seconds and its SUs may acquire an adjacent BSU.

Consequently, the duration after a loss-of-BSU-signal that an SU waits before searching other frequency channels has been increased back to 10 minutes.

Recommendation
Disable the "auto search" capability and use manually assigned frequency channels unless the auto search flexibility is required for your application.

RIP Broadcast Overwrites Static Routes

The processing of RIP2 route updates no longer overwrite static routes.

Current Frequency and Ethernet Configuration not displayed by SU Utility

When SU Utility Version 1.3 or earlier is started, it does not show the current SU frequency and Ethernet interface configuration. SU Utility 2.0 now reads and displays the Ethernet, frequency, and audible signal strength indicator configuration states upon startup and each time the **Settings** tab is selected. If the SU is not connected, all displays are grayed out.

Allowing Focus on Inactive Window (BSU Console v1.5)

In previous versions of the Configuration Software, when the Configuration Software window was open as the Active window, you could not change focus to an Inactive window while any type of short-time monitoring was taking place. Version 2.0 removes this restriction.

DHCP IP address lease renew supported for IP restricted mode

In previous versions, the full DHCP sequence for acquiring an IP address (DHCP_DISCOVER, DHCP_OFFER, DHCP_REQUEST, DHCP_ACK) was necessary for the SU to mark the leased IP address as unrestricted. Consequently, when an SU had lost the ARP entry for a host (through timeout or due to reset), if the host performed only the lease renew sequence (DHCP_REQUEST, DHCP_ACK), the leased IP address was still considered restricted. In the current version, the leased IP address is marked as unrestricted.

DHCP IP address lease sequence broadcast option supported

The DHCP RFC 2131 describes the operation of the DHCP relay agent when processing the DHCP IP address lease sequence with the broadcast option set by the client. In this case, the DHCP relay agent must forward the DHCP messages to the DHCP client with both the destination Ethernet address and IP address set to the broadcast address. Version 2.0 implements this procedure in the SU correctly.

BERLOG display of Es/No was incorrect for some SUs

The Es/No values on the BERLOG report for some SUs were zero because the statistics being kept for Es/No were not properly handling SUs with IDs greater than 255. Now the full range of SU IDs is being supported and the Es/No values are being reported correctly.

Uplink BER test now properly counting bit errors

The BER test checks the uplink packets for the BER test pattern in 32-bit words. Each byte of the 32-bit word must be checked. The previous code was double-checking the 3rd byte rather than checking the 4th byte. In the current version, each of the four bytes is checked properly.

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New Features

SU Notification when SU Cannot Enter the Network

Output a notification message on the BSU console when an SU has achieved outbound synchronization to a BSU but within a period of approximately 30 seconds has not yet been polled (authenticated) by that BSU. The message displayed on the BSU console connected to the SU is “998 SU authentication fails, please check Base Station database !”.

BSU Notification when SU Drops Link

A notification message is displayed on the BSU console when an SU becomes inactive (that is, does not respond to 3 polls). The message is “999 SU *x* not responding to poll” where *x* is the SU ID.

Optional TDD Frame Duration

Enterprise and WISP applications require ever-increasing range requirements. The transmission range of Tsunami Multipoint (TMP) is limited by two fundamental factors: radiated power over the link, and the time interval between the downlink and uplink segments of the TDD frame. In previous versions of Tsunami Multipoint, the time interval limited the range to 10 km (6 miles), which is roughly the maximum range allowed by the radiated power when using internal antennas. However, the introduction of the Connectorized BSU and SU will increase the effective radiated power, thus permitting greater ranges if the timing limitation can be removed. Removing the timing limitation requires a change to the TDD frame structure; thus making the new TDD frame incompatible with the operation of previous versions of Tsunami Multipoint.

Note: The BSU and all SUs must be at Firmware Version 2.0 in order for the Optional TDD Frame Duration to work correctly. When using remote firmware download, upgrade all SUs before upgrading the BSU. All units must be upgraded before changing the TDD frame duration. In a muti-sector environment, all units of all sectors must be upgraded before changing the TDD frame duration and the TDD frame duration must be changed to the same value for all sectors.

The resulting range performance that is achievable with integral and external antennas is shown in the following table. These calculations assume a 12 dB fade margin and less than 1 dB of pointing error.

Extended Transmission Range Performance		
Burst Rate	**With Integral Antenna**	**With External Antennas***
20 Mbps	9 mi	15 mi
30	6	15
40	4	15
60	3	10

* Assumes BSU and SU antenna gains of 18dBi and 33dBi.

The extended range feature in v2.0 adds an optional mode of operation with the following characteristics:

a) Using the BSU configuration software, the optional frame structure is enabled when the command **setFrameDuration 1** is entered. Similarly, the command **setFrameDuration 0** disables the optional frame structure.

b) The optional TDD frame structure enables a maximum range of 24 km (15 mi) in all modulation modes.

c) SUs automatically detect the correct frame structure.

d) Switching between the two frame structures resets the link timing, thus causing a momentary loss of communication.

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e) Active Interference Rejection (A.I.R.) is not compatible with the optional frame structure; therefore, console commands to enable the optional frame structure are ignored when the BSU is configured for interference rejection. The BSU notifies the operator with the console message, "Optional Frame Mode is not supported when in Active Interference Rejection mode." Console commands to enable interference rejection while in the optional frame structure are similarly ignored and result in the console message "Active Interference Rejection is not supported when in the Optional Frame Mode."

f) The BSU, with internal GPS receivers, is capable of synchronizing the optional frame structure to GPS time. However, when using GPS to minimize self-interference, all equipment within the geophysical area should use the same burst rate when using the optional frame structure.

Higher FTP Throughput with Optional Frame Structure

Enterprise LAN applications typically require high communication throughput for each IP flow. The fundamental limitation to minimizing latency is the TDD frame duration. The Tsunami Multipoint frame consists of multiple downlink slots and multiple uplink slots. To reliably assign uplink bandwidth, the number of downlink slots cannot be reduced below four. In addition, the frame length must divide into fewer seconds so that GPS synchronization can be achieved. The following table shows the frame parameters for the standard and optional frame structures. The first inbound slot for the four burst rates with the optional frame is always fixed to be 4, 4, 4, and 6.

Standard and Optional Frame Structure				
Burst Rate	**Standard**		**Optional**	
	Slots/Frame	**Length, ms**	**Slots/Frame**	**Length, ms**
20 Mbps	8	7.5	8	8
30	12	7.5	8	6
40	16	7.5	8	4
60	24	7.5	12	4

The resulting FTP rates are shown in the following table, with **gets** using the downlink and **puts** the uplink.

Setup:

FTP Server: Win2K SP4
FTP-Client: Win2K SP4
File Size: 60 MB
Application: WSFTP
Standard Settings: 7.5 ms frame, Enhanced Ethernet Mode OFF, Bridging Mode
Optional Settings: 4 ms frame, Enhanced Ethernet Mode OFF, Bridging Mode

Expected Standard and Optional Frame Structure (OFS) FTP Performance				
Burst Rate	**Standard**		**Optional Frame Structure**	
	Get, Mbps	**Put, Mbps**	**Get, Mbps**	**Put, Mbps**
20 Mbps	9.541	8.375	8.945	7.850
30	14.3	10.0	11.8	12.3
40	19.0	10.0	17.8	14.5
60	28.4	9.975	26.8	15.1

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Note: FTP performance is highly dependent on many factors beyond layer 2 protocols; for example, TCP window size, operating system, server/client application, and packet error rate can impact the results. This table is based upon the most common FTP usage by Pentium III class PC, MS WIN 2000, Serv-U server, and WSFTP client with default TCP window (140kbit). Results may be different if any of the above conditions vary.

Optional Ethernet Bridging Mode

In previous versions, Tsunami Multipoint could not handle certain Ethernet packets whose length could not easily be extracted. IPX and 3COM MBX type-8868 packets are examples of Ethernet packets whose length information were difficult to decode. An optional Ethernet bridging mode in Version 2.0 eliminates this difficulty. However, because certain traffic patterns in this mode can slightly reduce the throughput capability of the Tsunami Multipoint, it is offered as an option. This feature is available only in Bridging and VLAN modes, and not in IP Routing mode.

Using the BSU console, the optional Ethernet mode is enabled by entering the command **setEtherMode 1**. Similarly, **setEtherMode 0** disables the optional mode. The command is not case-sensitive.

Note: The BSU and SU both must be at Firmware Version 2.0 for Ethernet Bridging Mode to operate correctly.

Setting Configuration Parameters to Factory Defaults

Tsunami Multipoint Firmware Version 2.0 provides a capability to reset the configuration data in the BSU or SU non-volatile FLASH memory to the default factory values. Entering **setDefaults factory** command resets the configuration data, including resetting the password values to 'null', the RF and operating configuration parameters, and erasing all SU Configuration parameters (that is, those defined for each SU ID).

See the **SU Set Defaults Parameters** and **BSU Set Defaults Parameters** for a list of the parameters reset by this command.

Changes in Function

Control-C Command has been removed

To avoid confusion, the **Control-C** command to restart the BSU or SU is being removed; the equivalent **restart** command is still functional.

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Known Issues

Invalid User commands using input as question mark (?)

There are a number of known user commands that product incorrect output when used with ? as a parameter. They are:

[aloha ?]
[firstInboundSlot ?]
[IPC ?]
[modulation ?]
[rangeSecurity ?]
[routingMode ?]
[setFrameSync ?]
[setID ?]
[setSubnet ?]
[setVLANTag ?]
[txPower ?]
[txPowerAutoEnable ?]

CAUTION: Tsunami Multipoint Firmware Version 2.0 treats the input of ? as a 0 (zero) value in these cases. DO NOT use the aforementioned commands as stated.

Packet Filtering Problem in Restricted Mode after SU Power Outage

If an SU is operating in restricted mode (IP routing) and it loses power, it loses all ARP table entries. In restricted mode the SU allows ARP table entries only for hosts that receive their IP address through the DHCP server. If the PCs do not renew their leases or request new IP addresses, the SU cannot learn any of the PC IP addresses and no data passes. The only current solution to this problem is to force the PCs to renew their IP addresses if this situation occurs.

Software and Firmware Compatibility Matrix

Units with the following software and firmware combinations operate with each other; for example:

- A unit with SU Firmware v1.3B can communicate with units with BSU Firmware V2.0 or V1.3B installed, and with units with either Subscriber Utility V2.0 or V1.2 installed.
- A unit with BSU Configuration Software V2.0 can communicate with units having BSU Firmware V2.0 or V1.3B installed

	BSU FIRMWARE V2.0	BSU FIRMWARE V1.3B	SUBSCRIBER UTILITY 2.0	SUBSCRIBER UTILITY 1.2
SU Firmware v2.0	√	√	√	√
SU Firmware v1.3B	√	√	√	√
BSU Configuration Software v2.0	√	√	N/A	N/A
BSU Configuration Software v1.5	√	√	N/A	N/A

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