

RANGELAN2 Token Ring Access Point Models 7530 and 753x

User's Guide

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FCC WARNING

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

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

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1. Introduction

Congratulations on your purchase of the RangeLAN2 753x Token Ring Access Point, a member of the RangeLAN2 family. As with all members of the RangeLAN2 family, the Token Ring Access Point is a long range, high performance LAN product that allows networked computers to communicate wirelessly.

The Token Ring Access Point was designed to be a “plug-and-play” product. In many cases, you will not even need to run any software to configure it. If you need to use it, you will find it easy to use. In no time, you will have a wireless connection to your network's application software, printing, e-mail, and other network services!

This wireless access point allows for easy expandability of your wireless network, increasing range and facilitating mobility applications. It operates at the Data Link level (layer 2) of the OSI model as a bridge, providing protocol-independent access for RangeLAN2 computer users into an existing Token Ring network.

Today, Proxim is the leading supplier of spread spectrum radio networking technology for local area environments. Proxim's unmatched spread spectrum networking expertise, combined with the company's extensive experience serving the communications needs of the mobile computing user, have kept Proxim at the forefront of the emerging wireless LAN market.

Proxim also manufactures the RangeLAN802 product line, a family of 802.11-compatible wireless LAN products. If you like more information on RangeLAN802, please contact Proxim's Sales Department at 800-229-1630 or visit the Proxim web site at http://www.proxim.com.

The RangeLAN2 Family

The RangeLAN2 753x Token Ring Access Point is part of a family of high-performance products that provide a complete wireless networking solution.

- **RangeLAN2 7100** is a wireless LAN adapter that fits into a standard PC/AT ISA bus slot.
- **RangeLAN2 7400** is a wireless LAN adapter which fits into a PCMCIA Type II slot on a portable notebook, laptop, or pen-based computer.
- **RangeLAN2 7410** is a wireless LAN adapter designed specifically for operation in WIndows CE devices. It fits into a PCMCIA Type II slot on a Windows CE device.
- There are two Ethernet versions of the RangeLAN2 Access Point -- the **7510** and the **752x**.
- There are two models of the RangeLAN2 Token Ring Access Point -- the **7530** and the **7531**. The two units are identical except that the 7530 has an output power of 100 mW and the 7531 has an output power of 500 mW.
- **RangeLAN2 754x Extension Point** extends the coverage area of an existing RangeLAN2 network.
- **RangeLAN2 791x Serial Adapter** is a wireless serial device which acts as a replacement for an RS-232 cable.
- **RangeLAN2 792x Ethernet Adapter** converts any Ethernet-ready device into a wireless node on a RangeLAN2 network.

For more information on the RangeLAN2 family, please contact Proxim's Sales Department at 800-229-1630.

System Requirements

To begin using your Token Ring Access Point, you need the following minimum system requirements:

- ❑ A UTP or STP cable;
- ❑ A terminal or PC with a terminal emulation software package and a null modem cable

  OR

  a computer running a TCP/IP telnet client AND a BOOTP server; and
- ❑ At least one other RangeLAN2 LAN adapter product installed on the network.

The Product Package

Each Token Ring Access Point comes with:

- ❑ One RangeLAN2 753x Token Ring Access Point;
- ❑ One antenna;
- ❑ One RangeLAN2 753x Token Ring Access Point User's Guide; and
- ❑ One power adapter.

If any of these items are missing or damaged, please contact your reseller or Proxim Customer Service.



Figure 1
Token Ring Access Point components

2. Quick Installation

You may follow the quick installation steps if the following conditions are true:

- ❑ There will only be one Token Ring Access Point on this network;
- ❑ You will use all the software default values;
- ❑ You do not need to configure an IP address for the Token Ring Access Point and do not intend to manage it via telnet;
- ❑ You will not be setting a Security ID on your network;
- ❑ Your Token Ring network operates at 16 Mbps; and
- ❑ Your Token Ring network utilizes transparent bridging.

If your installation meets the preceding criteria, proceed with the following instructions:

1. Firmly screw the antenna clockwise onto the antenna connector on the back panel of the Token Ring Access Point.

Note:

Government regulatory agencies mandate that the antenna not be alterable. Therefore, Token Ring Access Point uses a custom antenna connector. Do not attempt to use a different antenna or you may damage the connector and the Token Ring Access Point unit.



Figure 2
Attachment of the Token Ring Access Point Antenna

2. Attach an adapter cable to the STP port or the UTP port on the back of the Token Ring Access Point. If the adapter cable is not attached to the Token Ring when the unit is powered on, you will need to perform the Open Token Ring Adapter function from the Token Ring Configuration Menu in order for the Token Ring Access Point to become operational.

3. Plug the power cable into the back of the Token Ring Access Point and into an AC power outlet. Since there is no On/Off switch on the Token Ring Access Point, the unit will turn on as soon as power is applied.

3. Installation

Token Ring Installation

The Token Ring Access Point is attached to the wired LAN backbone via an STP cable or UTP cable. If the adapter cable is not attached to the Token Ring when the unit is powered on, you will need to perform the Open Token Ring Adapter function from the Token Ring Configuration Menu in order for the Token Ring Access Point to become operational.

Unshielded Twisted Pair (UTP) Cabling

The Token Ring Access Point UTP cable is typically connected between the device and a MAU. If you are using a good cable and the Token Ring Access Point is in the ring, the green LED nearest the connector will illuminate.

Shielded Twisted Pair (STP) Cabling

The Token Ring Access Point STP cable is typically connected between the device and a MAU. If you are using a good cable and the Token Ring Access Point is in the ring, the green LED nearest the connector will illuminate.

Antenna Options

The Token Ring Access Point is shipped with a standard directly-connected antenna. To install the antenna, screw it clockwise onto the antenna connector. Proxim sells several antenna alternatives, including higher gain omnidirectional and directional antennas. Each of these antennas ships with installation and mounting instructions. For information on antenna options, please contact your Proxim Sales Representative.

Mounting Options

The RangeLAN2 Token Ring Access Point may be placed on a desktop or mounted to a wall. An optional mounting hardware bracket is available for purchase in order to attach the unit to a cubicle or a wall. Figure 3 and Figure 4, below, display these different mounting options.

The Access Point's rugged case has been developed to operate in harsh environments. Also, Proxim recommends that the Token Ring Access Point be mounted vertically in installations with extreme ambient temperatures.

In addition, Proxim offers an optional Outdoor Enclosure (shown without the lid attached in Figure 5, below) for installations which afford little or no protection against the elements and where the ambient temperature exceeds the operating temperature specification of the Access Point, as described in Appendix E.



Figure 3
Wall Mount



Figure 4
Cubicle Mount

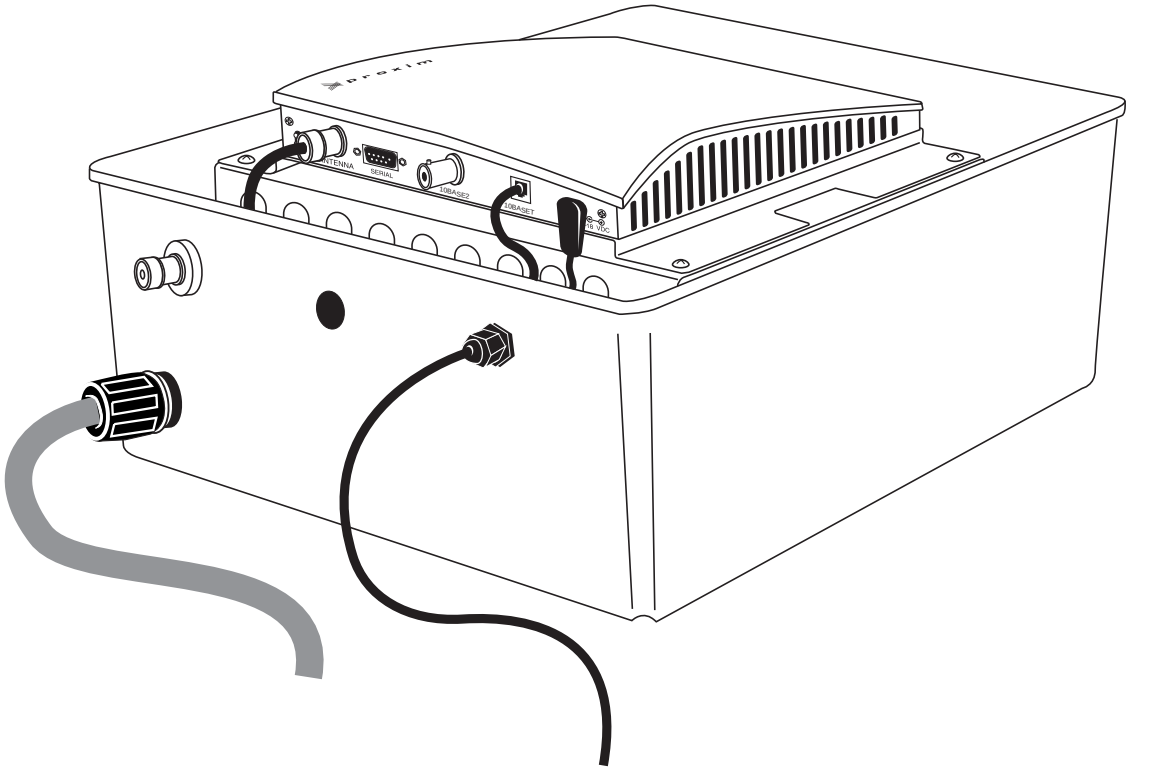


Figure 5
Outdoor Enclosure

4. Wireless Topologies

RangeLAN2 nodes look and operate like wired nodes on the network backbone. In general, a RangeLAN2 node will operate just like its wired counterparts on any network operating system (NOS) for which there is a RangeLAN2 client driver available. Wireless products are typically used in several network topologies described in this chapter.

Ad Hoc

With wireless LANs, one or more computers easily establish an ad hoc network when the units are in range of each other. Each computer can dynamically connect and reconnect to the others with no additional configuration, using off-the-shelf peer-to-peer network operating systems. With this capability, many companies are developing applications optimized for ad hoc networks.

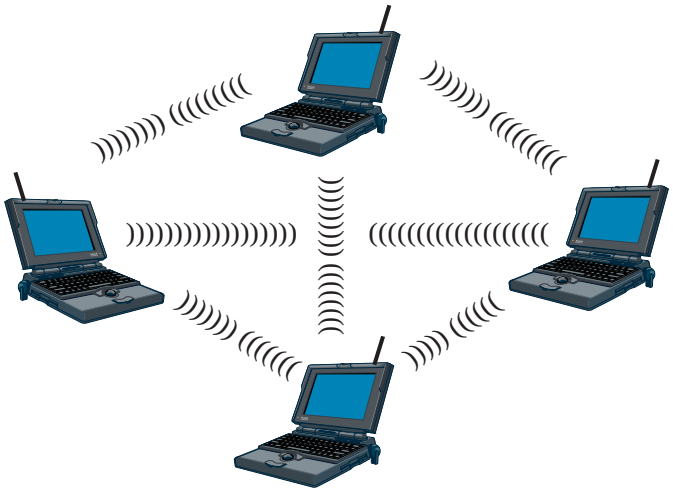


Figure 5
Ad Hoc

Infrastructure

Many companies have an existing Token Ring or wired LAN infrastructure and want to be able to extend that capability to wireless nodes. This is accomplished by attaching a Token Ring Access Point to the wired LAN. This gives wireless clients access to the network resources. Figures 6, 7, and 8, shown below, describe the configurations supported by the Token Ring Access Point.

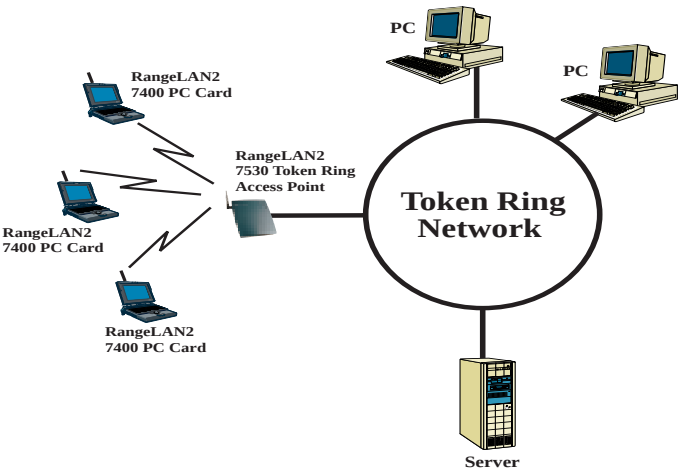


Figure 6
Single AP

For larger environments, RangeLAN2 products support the ability to roam from one wireless cell to another while maintaining the same network connection. The Token Ring Access Points establish coverage areas or cells similar in concept to those of a cellular phone network. The mobile clients connect to any Token Ring Access Point within range (*see Figure 7*).

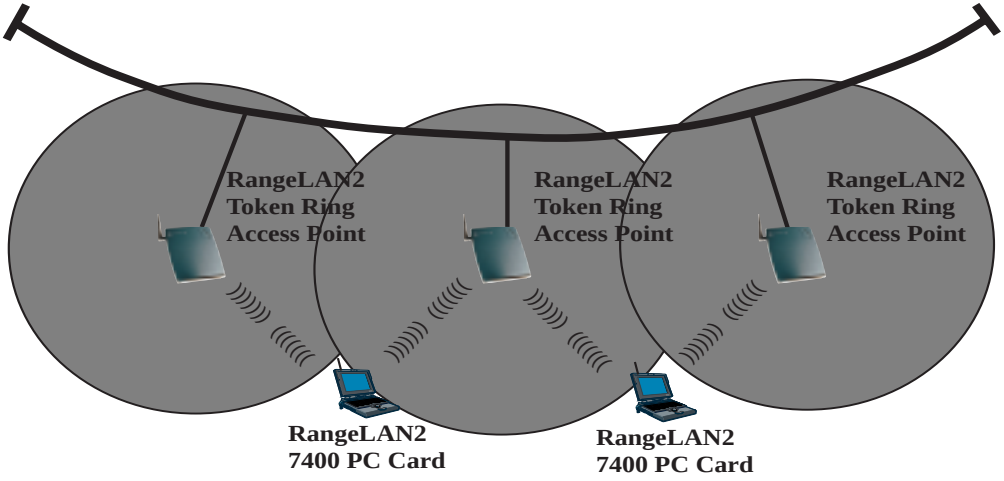


Figure 7
Roaming - Light Overlap

With RangeLAN2's multi-channel architecture, Token Ring Access Points can be placed within the same cell area to increase the aggregate throughput supported by the network (*see Figure 8*). In addition, the overlapping cells offer redundancy of coverage required in networks where downtime is not tolerated.

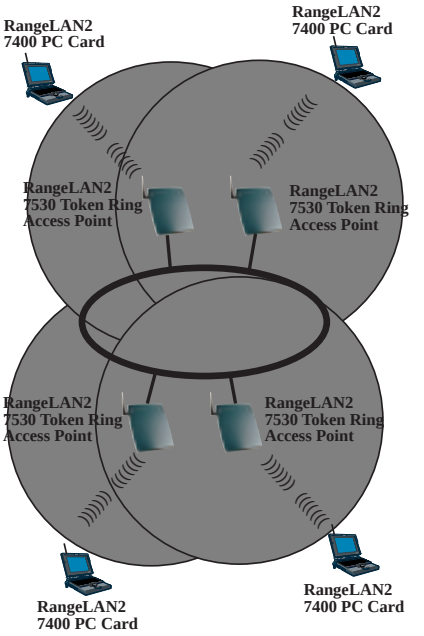


Figure 8
Roaming - Heavy Overlap

Each Token Ring Access Point within a roaming network must be configured with a unique Channel/Subchannel pair, but all must have the same Domain number and Security ID. The portable PCs are equipped with RangeLAN2 7400 cards configured to use the same Domain and Security ID. As the portable PC *seamlessly* switches from cell to cell, its network connectivity is preserved.

The user can move freely between the Token Ring Access Points on the network. When the roaming PC leaves the transmission range of one Token Ring Access Point, the software automatically polls another Token Ring Access Point in the same Domain to continue the network connection.

See the previous illustrations for examples of networks set up with RangeLAN2 roaming domains.

Note that if the cells must overlap with no gaps in coverage to ensure that the roaming PC will always have a network connection available.

Note:
Roaming stations will only roam among Token Ring Access Points with the same Domain and Security ID.

Roaming Scenarios

The following roaming scenarios are supported by the Token Ring Access Point:

- ❑ Roaming among Access Points located on the same ring (*see Figure 9*); and
- ❑ Roaming among Access Points located on different rings, separated by Source-Route Bridges or Transparent Bridges (*see Figure 10*).

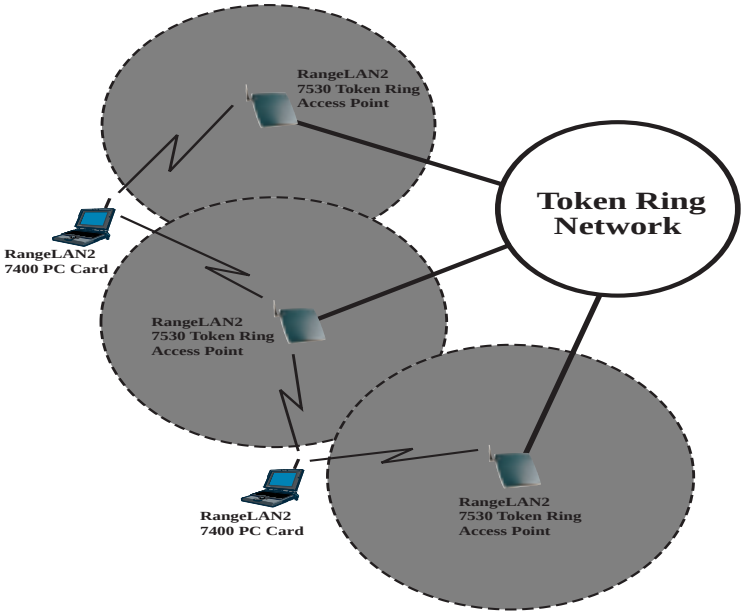


Figure 9
Roaming - Single Token Ring

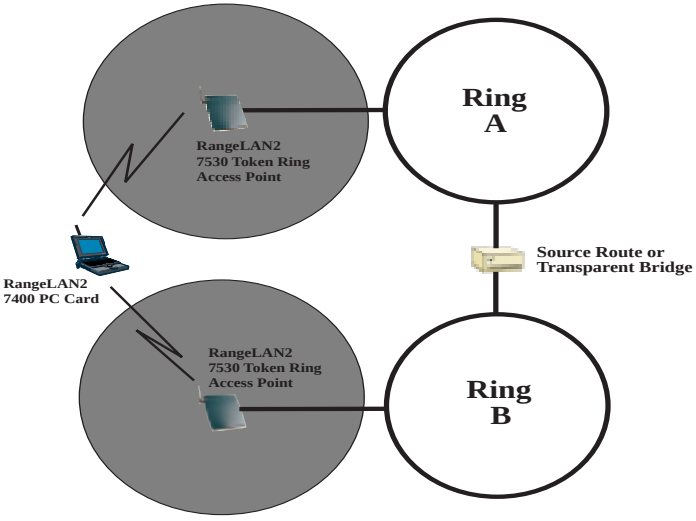


Figure 10
Roaming - Between Token Rings

The following roaming scenarios are ***not*** supported by the Token Ring Access Point:

- ❑ Roaming among Token Ring Access Points separated by IP or IPX routers; and
- ❑ Roaming between RangeLAN2 753x Token Ring Access Points and RangeLAN2 7510/752x Ethernet Access Points.

Guidelines for Roaming

- ❑ All RangeLAN2 Token Ring Access Points must have the same Domain and Security ID.
- ❑ All RangeLAN2 Access Points have a unique Channel/Subchannel pair. Preferably, they should have unique Channels. Use the Subchannel only when you have used all 15 Channels in the same coverage area.
- ❑ All workstations with RangeLAN2 7100 or RangeLAN2 7400 cards or with RangeLAN2 Ethernet Adapters are configured as Stations with Domain and Security ID matching the RangeLAN2 Access Points they will roam between.
- ❑ The cells created by RangeLAN2 Token Ring Access Points must overlap.
- ❑ Roaming will not occur across routers unless using a third party software utility like Mobile IP.

Repeating

You have the option to enable or disable repeating. When repeating is enabled, the Token Ring Access Point will repeat any signal coming from one Station and destined for another Station, when the two Stations are both within range of the Master but not within range of one another. The advantage of repeating is the ability to double the effective range of the RangeLAN2 network. However, be aware that by enabling the repeating feature, the network throughput will drop by as much as half while repeating occurs. When repeating is disabled, the Token Ring Access Point will not repeat the signals of Stations synchronized to it. By default, repeating is disabled.

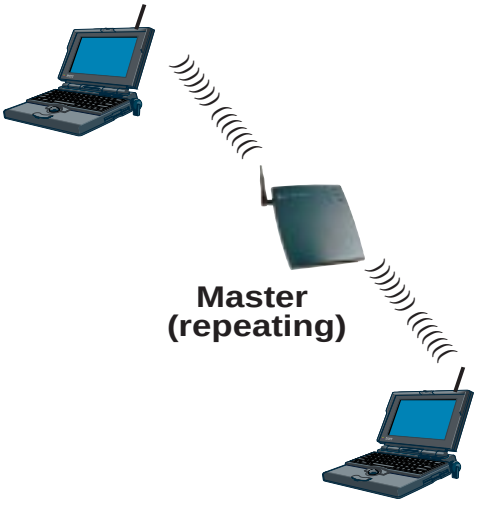


Figure 11
Repeating

5. RangeLAN2 Token Ring Bridging

Source Routing vs. Transparent Bridging

Source Routing was originally developed by IBM and is typically used in Token Ring environments. The Source Routing standard requires that the source station on a multi-ring LAN specify the route to reach the destination. In Transparent Bridging, bridges dynamically learn the topology of a network. They use this information to make forwarding decisions as opposed to requiring end stations to specify routes. RangeLAN2 wireless networks support Transparent Bridging.

The Token Ring Access Point operates in three different modes:

- ❑ Multi-Ring Source Route/Transparent Bridging (SR/TB);
- ❑ Single-Ring SR/TB; and
- ❑ Transparent Bridging (TB).

Multi-Ring SR/TB Mode

In the Multi-Ring SR/TB mode, the Token Ring Access Point must be configured with the following parameters: Ring Number, Bridge ID, and Virtual Ring Number (*see Figure 12*). The Ring Number identifies the number of the token ring to which the Token Ring Access Point is physically attached. The Bridge ID uniquely identifies the Token Ring Access Point as a bridge on the token ring to which it is connected and must be different from every other Bridge ID on the ring. The Virtual Ring Number is a ring number associated with the RangeLAN2 segment of the Token Ring Access Point. Wireless nodes appear to be on a different ring to hosts on the token ring network.

The Token Ring Access Point in this mode will look at the Route Information Field (RIF) in each packet coming from the token ring. From this field, the Token Ring Access Point will determine if the packet should be accepted and forwarded to the RangeLAN2 segment. Packets coming from the RangeLAN2 network will be forwarded to the token ring network if the destination node's physical address has not been learned to be on the RangeLAN2 side.

Since Multi-Ring SR/TB mode does not require the Token Ring Access Point to learn addresses or perform address lookups for nodes on the token ring side, it is the optimum method to use when network utilization is high on the token ring network.

Also, if you are using locally administered MAC addresses so that the wired and wireless nodes will have similar MAC address prefixes, then the Multi-Ring SR/TB mode will provide optimum performance under this circumstance as well.

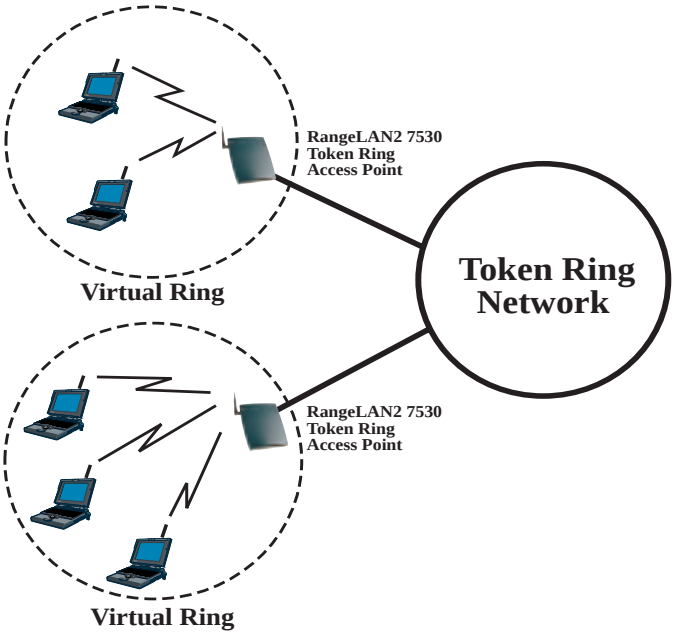


Figure 12
Virtual Rings

Single-Ring SR/TB Mode

The Single-Ring SR/TB mode is equivalent to the Multi-Ring SR/TB mode described above with one variation. The Token Ring Access Point is not assigned a Virtual Ring Number or Bridge ID. Therefore, wireless nodes appear to be on the main ring to which the Token Ring Access Point is physically attached. Because wireless stations appear to be on the ring, the Access Point cannot filter packets based on source route information. Learning occurs as in the Transparent Bridging mode, described below; therefore, performance under Single-Ring SR/TB mode is slower than performance under Multi-SR/TB mode.

TB Mode

TB (Transparent Bridging) is the default mode of the Token Ring Access Point. A Token Ring Access Point in this mode acts like a transparent bridge. It listens to all packets on both of its ports, Token Ring and RangeLAN2, and learns which physical addresses are on either side of the Token Ring Access Point. It uses this information to limit the forwarding of packets from Token Ring to RangeLAN2 and vice versa. Because the Token Ring Access Point is required to learn physical addresses and perform lookups for each packet on the token ring, its filtering performance on a heavily utilized token ring will be less than when operating in Multi-Ring SR/TB mode. This mode should only be used if the end stations on the token ring do not support source routing.

6. Configuration

You need to configure the Token Ring Access Point if:

- ❑ There is more than one Token Ring Access Point on this network, for example in a roaming environment;
- ❑ You need to change the software default values, including IP address;
- ❑ You want to set a Security ID on your network;
- ❑ You will not be using Transparent Bridging mode; or
- ❑ Your Token Ring network runs at 4 Mbps.

There are five ways to configure the Token Ring Access Point:

- ❑ Locally via a null modem cable and a terminal or terminal emulation package;
- ❑ Remotely across the network using a telnet session;
- ❑ Remotely across dial-up modems;
- ❑ Remotely across the network using an SNMP management package; and
- ❑ Remotely across the network via a Web browser.

Locally (Out-of-band)

You may use the DB-9 Local Management Port on the back of the Token Ring Access Point to configure the unit. To locally configure the Token Ring Access Point, you need a null modem RS-232 cable with a nine-pin female connector on the Token Ring Access Point side and a terminal or PC with an available serial port running a terminal application package.

Note:

If you use a terminal application that has the option to check for the CD signal before establishing a connection, configure the software to ignore CD. Alternatively, verify that your null modem cable is a full handshake cable and pulls CD high.

1. Connect the null modem RS-232 cable between the Token Ring Access Point's Local Management Port and a free serial port on your terminal or PC.

2. Configure the terminal or terminal emulation package to operate at 9600 bps, no parity, 8 data bits, and 1 stop bit. If you are using a terminal emulation package, choose TTY as the terminal type.

3. Apply power to the Token Ring Access Point. During the boot process, messages will be displayed on the terminal screen. When they are completed and you see the "Initialization Complete" message, press <Enter> to enter the software configuration menu. If the unit was already turned on prior to attaching the null modem cable, press <Enter> to display the menu.

Remotely (In-band)

The second configuration option is remote configuration across the wired network.

Note:

The Token Ring Access Point is not manufactured with a default IP address. In order to telnet to the Token Ring Access Point, you must first assign it a valid IP address for your network using the null modem cable configuration described above or a BOOTP server.

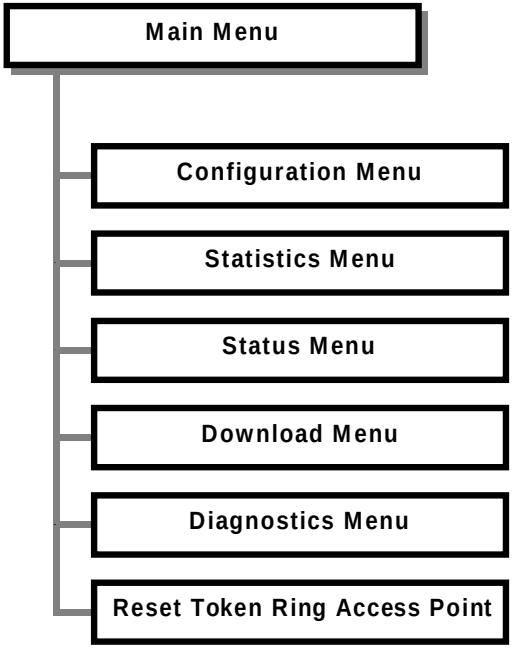
1. From a wired client on your network, open a telnet session to the Token Ring Access Point. For Windows 95/98 computers, type "telnet w.x.y.z" at a command prompt where "w.x.y.z" is the IP address assigned to the Access Point to open a telnet session.

2. You will be prompted for a password if you enabled this option through the TCP/IP Configuration Menu.

3. You will enter the configuration menu.

Main Menu

After using one of the above two methods, you will see the following software menu whose choices will be described in the next three chapters:



SNMP Management

You may configure and monitor the Token Ring Access Point using an SNMP management package. SNMP Management of the Token Ring Access Point is described in Chapter 10.

Remotely via a Web Browser

You may configure and monitor the Token Ring Access Point via a Web browser. Web browser management is described in Chapter 11.

Modem Support

The Token Ring Access Point may be remotely configured via a dial-up modem. To allow for this type of configuration:

1. Configure the modem from a terminal or terminal emulation program at 9600 bps.

2. Issue the following commands to the modem:

`ATS0=1`	(Auto-answer after 1 ring)
`AT&D0`	(Ignore DTR)
`ATE0`	(No local echo)
`ATQ1`	(Suppress result codes)
`AT&W0`	(Store configuration in nonvolatile memory)

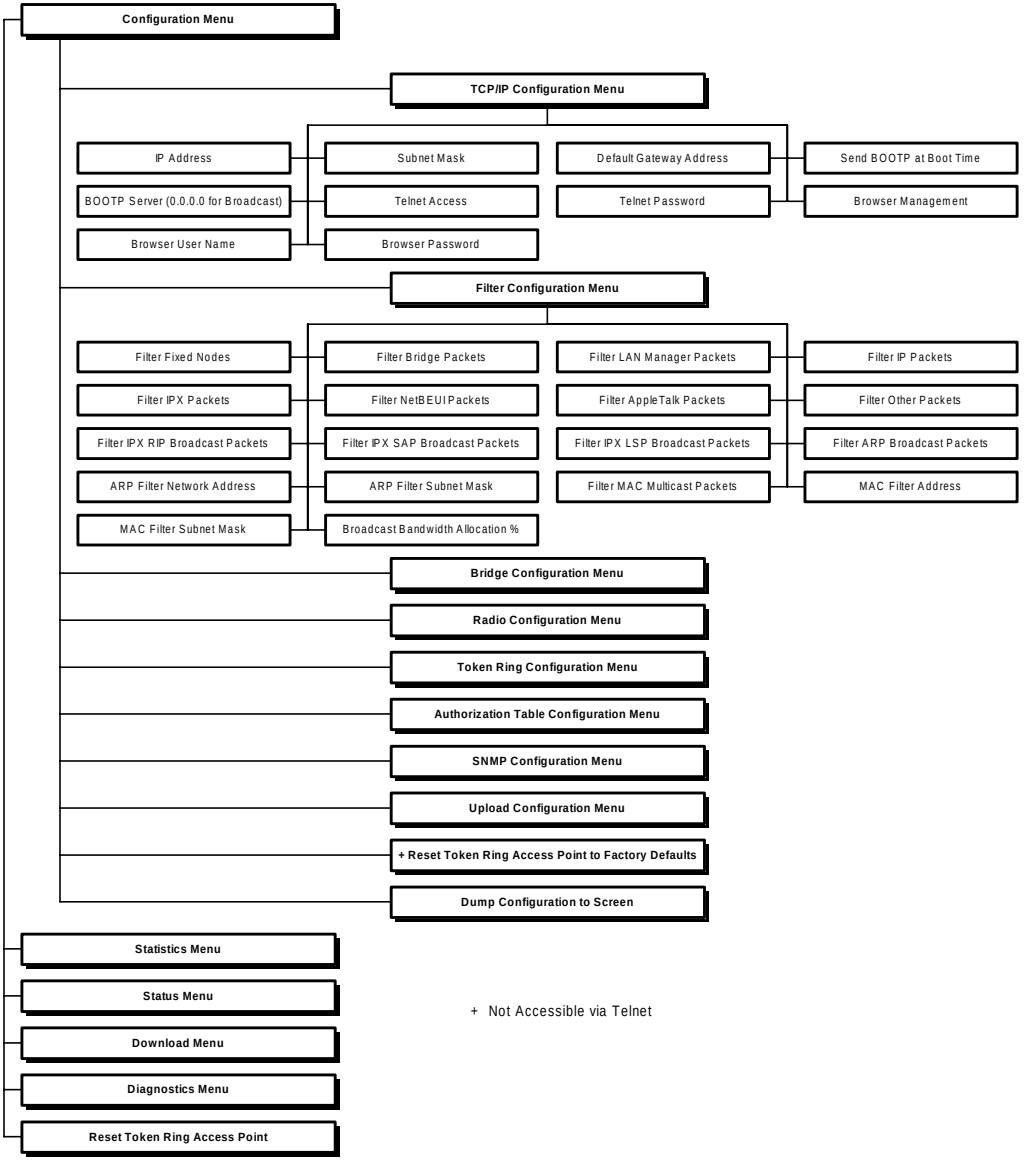
3. Attach a modem via a straight-through RS-232 serial cable to the Token Ring Access Point.

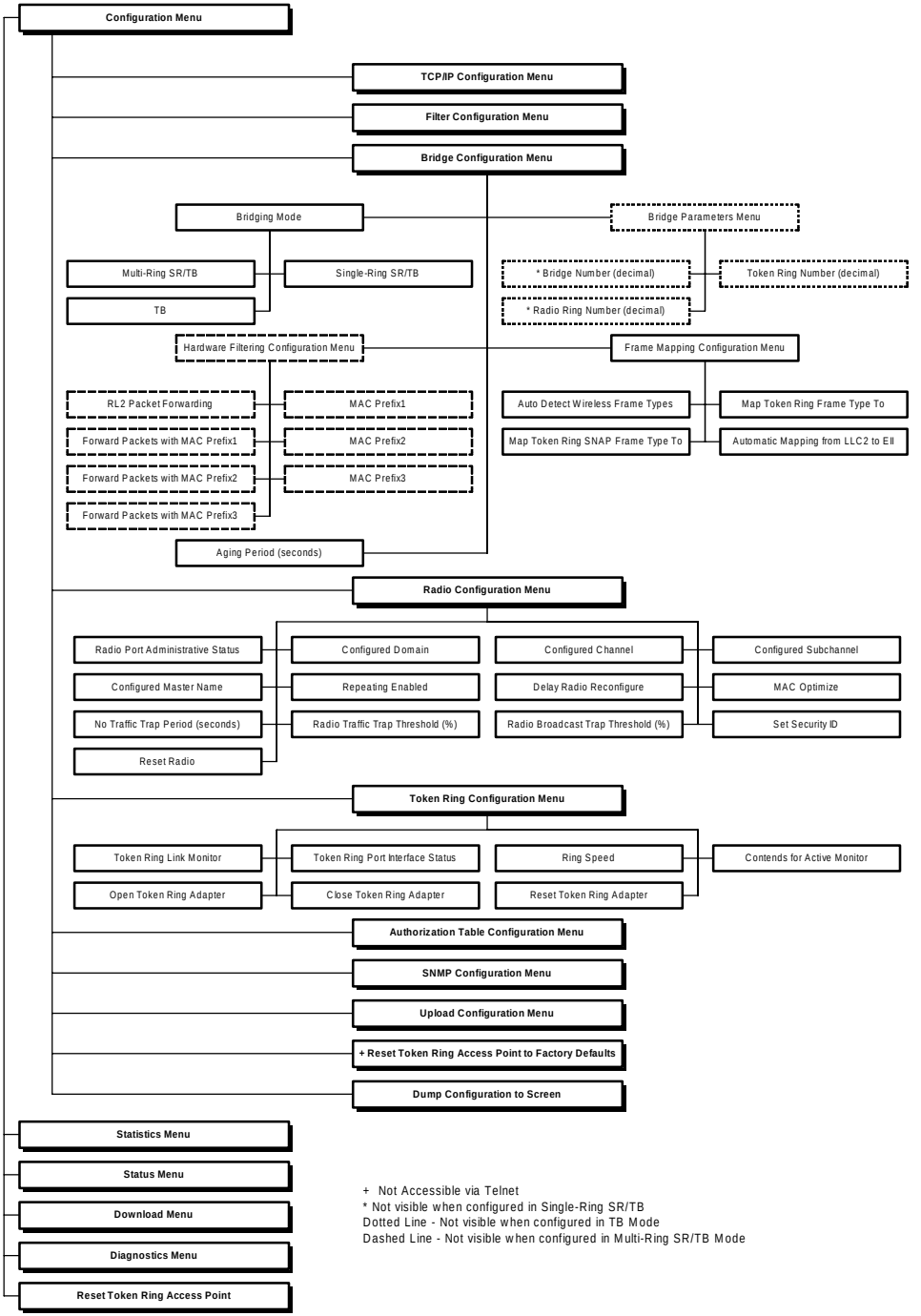
4. From a remote modem, dial the phone number of the modem connected to the Token Ring Access Point.

5. After the Access Point's modem has answered the phone, press <Enter> on the terminal connected to the remote modem until the configuration menu tree appears.

7. Configuration Parameters

To configure the Token Ring Access Point, pick the Configuration option from the Main Menu. The following diagram illustrates half of the software tree. The other half is illustrated on the following page:





\+ Not Accessible via Telnet
* Not visible when configured in Single-Ring SR/TB
Dotted Line - Not visible when configured in TB Mode
Dashed Line - Not visible when configured in Multi-Ring SR/TB Mode

TCP/IP Configuration Menu

Use this option to change the TCP/IP parameters of the Token Ring Access Point.

Parameter Name	Range	Default
IP Address	-	0.0.0.0
Subnet Mask	-	0.0.0.0
Default Gateway Address	-	0.0.0.0
Send BOOTP at Boot Time	True/False	True
BOOTP Server Address	-	0.0.0.0 *
Telnet Access	Enabled/Disabled	Enabled
Telnet Password	-	-
Browser Management	Enabled/Disabled	Enabled
Browser User Name	10 characters	-
Browser Password	10 characters	-

* 0.0.0.0 is used to send a broadcast

IP Address indicates the IP address that will be assigned to the Token Ring Access Point. It must be a unique number on the network. Changes to this parameter will not take effect until the Token Ring Access Point is reset.

Subnet Mask indicates the mask that will be used to determine what network the Token Ring Access Point is on. Changes to this parameter will not take effect until the Token Ring Access Point is reset.



Note:

The Token Ring Access Point must be successfully inserted in the Token Ring before it can ping or be pinged by a wireless client.

If a packet generated by the Access Point is destined for an IP host or node belongs to a different IP subnet, the Token Ring Access Point will send this IP packet to the **Default Gateway** (usually a router) so that the packet can be routed to the proper destination. Changes to this parameter will not take effect until the Token Ring Access Point is reset.

You can enable or disable the Token Ring Access Point's ability to request its IP address from a BOOTP server at boot time, and you can supply the IP address of that server.

You can enable or disable the ability to open a telnet session to the Token Ring Access Point and set a password to control telnet access.

You can enable or disable the ability to manage the Token Ring Access Point via a Web browser, and set a user name and password to control the Web browser access.

Filter Configuration Menu

The filter configuration allows you to customize the type of traffic which is forwarded from the Token Ring network to the RangeLAN2 network. None of these filters affect traffic flowing from the wireless clients to the wired backbone.

Parameter Name	Range	Default
Filter Fixed Nodes	Filtering/Not Filtering	Filtering
Filter Bridge Packets	Filtering/Not Filtering	Filtering
Filter LAN Manager Packets	Filtering/Not Filtering	Filtering
Filter IP Packets	Filtering/Not Filtering	Not Filtering
Filter IPX Packets	Filtering/Not Filtering	Not Filtering
Filter NetBEUI Packets	Filtering/Not Filtering	Not Filtering
Filter AppleTalk Packets	Filtering/Not Filtering	Filtering
Filter Other Packets	Filtering/Not Filtering	Not Filtering
Filter IPX RIP Broadcast Packets	Filtering/Not Filtering	Filtering
Filter IPX SAP Broadcast Packets	Filtering/Not Filtering	Filtering
Filter IPX LSP Broadcast Packets	Filtering/Not Filtering	Filtering
Filter ARP Broadcast Packets	Filtering/Not Filtering	Not Filtering
ARP Filter Network Address	-	0.0.0.0
ARP Filter Subnet Mask	-	0.0.0.0
Filter MAC Multicast Packets	Filtering/Not Filtering	Not Filtering
MAC Filter Address	-	80:00:00:00:00:00
MAC Filter Subnet Mask	-	00:00:00:00:00:00
Broadcast Bandwidth Allocation (%)	0-100	80

The **Fixed Nodes Filter** prevents traffic which is destined to a non-broadcast, non-multicast, non-RangeLAN2 address from being forwarded from Token Ring to wireless when the Access Point is configured in Transparent Bridging or Single-Ring SR/TB modes. Also, note that this filter does not apply to an Ethernet node connected to a RangeLAN2 Ethernet Adapter once the Token Ring Access Point has learned that the node is located on the wireless network.

When **Filter Bridge Packets** is enabled, the Token Ring Access Point will not forward traffic between bridges to the wireless network. Bridges exchange packets periodically to discover each other, but a wireless client does not need to receive these packets.

LAN Manager Packets are those destined to LAN Manager stations. In an IBM LAN Manager environment, all Token Ring stations send LAN Manager packets to the management station. You may **Filter LAN Manager Packets** so that they are not sent to the wireless nodes.

The **Protocol Type Filters** prevent traffic of a particular protocol type from being forwarded from Token Ring to RangeLAN2. When "Other Types" is enabled, all types other than those listed will be filtered out. *DO NOT* filter out the types of packets you know RangeLAN2 nodes will need to receive. For example, if you use TCP/IP as a protocol on your wireless nodes, do not filter IP traffic. The **Protocol Type Filters** include **IP, IPX, NetBEUI, AppleTalk,** and **Other** (none of the above).

The **IPX Broadcast Filters** prevent IPX broadcasts of the specified types from being forwarded from Token Ring to RangeLAN2. Since RIP, SAP, and LSP broadcasts are of interest to routers and not end stations, these filters can typically be turned on, saving valuable bandwidth.

The **ARP Filter Network Address** and **ARP Filter Subnet Mask** enable IP ARP broadcast filtering. When these filters are configured, ARP broadcasts will be forwarded from Token Ring to RangeLAN2 only if the destination IP address is on the IP network defined by the ARP Filter Network Address and ARP Filter Subnet Mask fields.

If you enable **Filter MAC Multicast Packets**, you must also configure the **MAC Filter Address** and **MAC Filter Subnet Mask** to specify the range of multicast packets which will be forwarded to the RangeLAN2 network. When these parameters are configured, the Access Point will forward from Token Ring to RangeLAN2 only those hardware

multicast packets whose multicast address is within the range of addresses defined by the MAC Filter Address and MAC Filter Subnet Mask.

Broadcast Bandwidth Allocation allows you to specify the maximum percentage of RangeLAN2 bandwidth that may be allocated for broadcast traffic. There may be cases when you want to limit broadcast traffic. As an example, to prioritize directed packets, you might want to reserve radio bandwidth for directed packets by setting this limit to less than 100%. By default, this parameter is set to 80%.

Bridge Configuration Menu

Parameter Name	Range	Default
Bridging Mode	Multi-Ring SR/TB, Single-Ring SR/TB, TB	TB
+Bridge Parameters ^Bridge Number Token Ring Number ^Radio Ring Number	 0-15 1-4095 1-4095	 0 0 0
***Hardware Filtering Configuration Menu** RL2 Packet Forwarding MAC Prefix1 Forward Packets with MACPrefix1 MAC Prefix2 Forward Packets with MACPrefix2 MAC Prefix3 Forward Packets with MAC Prefix3	 Enabled/Disabled 3 hex bytes Enabled/Disabled 3 hex bytes Enabled/Disabled 3 hex bytes Enabled/Disabled	 Disabled 00 00 00 Disabled 00 00 00 Disabled 00 00 00 Disabled
Frame Mapping Configuration Menu Auto Detect Wireless Frame Types Map Token Ring Frame Type to Map Token Ring SNAP Frame Type to Automatic Mapping From LLC2 to EII	 Enabled/Disabled Ethernet 802.2, 802.3 Ethernet II, SNAP Enabled/Disabled	 Enabled Ethernet 802.2 Ethernet II Enabled
Aging Period	10-1,000,000 (sec)	300 (sec)

+ Not visible in TB mode

^ Not visible in Single-Ring SR/TB mode

* Not visible in Multi-Ring SR/TB mode

The **Bridging Mode** parameter specifies the bridging mode in which the Token Ring Access Point will operate. When in Multi-Ring SR/TB mode, the **Bridge Parameters** allow the user to change the Bridge Number, Token Ring Number, and Radio Ring Number parameters. When in Single-Ring SR/TB mode, the **Bridge Parameters** allow the user to change the Token Ring Number parameter only.

The **Bridge Number** uniquely identifies the Token Ring Access Point as a bridge on a given token ring. The **Token Ring Number** identifies the ring number of the token ring to which the Token Ring Access Point is attached. The **Radio Ring Number** is a ring number unique to the Token Ring network which is associated with the RangeLAN2 side of the bridge. All wireless nodes attached to an Access Point will appear to hosts on the token ring as if they are located on the ring identified by the Radio Ring Number. Note that the Token Ring Number and Radio Ring Number are configured as decimal values. If your network uses hexadecimal values to identify ring numbers, you first need to convert the hexadecimal values to decimals before configuring the Access Point.

The **Hardware Filtering Configuration Menu** allows you to filter packets based on their destination MAC addresses. Packets not destined for a MAC address as defined by this parameter will not be sent from the Token Ring backbone through to the wireless clients. **RL2 Packet Forwarding** assumes the MAC addresses to be forwarded will have RangeLAN2 MAC addresses, i.e. those beginning with 00-20-a6. You may enable up to 3 additional MAC address prefixes by using the **MAC Prefix(n)** to set the MAC address bytes and the **Forward Packets with MAC Prefix(n)** to enable the filter. Note that this is an advanced configuration option and is recommended for advanced users only and is for use on networks that contain only one (1) Token Ring Access Point. Proxim Technical Support recommends that you do not change the settings of this menu unless directed to do so by a support representative or a Proxim systems engineer.

The **Frame Mapping Configuration Menu** contains parameters that allow you to configure how wireless stations' packet frame types will be converted. Wireless nodes send Ethernet packet frames that are converted into Token Ring packet frames at the Token Ring Access Point. When the **Auto Detect Wireless Frame Types** parameter is enabled, the Token Ring Access Point will learn the frame types as the stations are communicating. If you disable this parameter, you can specify the frame type to be used in the **Map Token Ring Frame Type To** and **Map Token Ring SNAP Frame Type To** parameters. On some OS/2 stations, you may need to enable **Automatic Mapping From LLC2 to EII.**

The **Aging Period** parameter specifies the time after which the learned physical address of the network node, which is stored in the Forwarding Database, is discarded. This data is dynamically acquired by the Token Ring Access Point so that it can forward packets properly.

Radio Configuration Menu

Parameter Name	Range	Default
Radio Port Administrative Status	Enabled/Disabled	Enabled
Domain	0-15	0
Channel	1-15	1
Subchannel	1-15	1
Master Name	11 characters	MASTER
Repeating Enabled	True/False	False
Delay Radio Reconfigure	True/False	False
MAC Optimize	Auto, Very Light, Light, Normal	Auto
No Traffic Trap Period (seconds)	0-10,000,000	0
Radio Traffic Trap Threshold (%)	10-100	100 *
Radio Broadcast Trap Threshold (%)	10-100	100 *
Set Security ID	0-20 characters	blank
Reset Radio	-	-

* a value of 100 disables this trap

This option allows you to change the various wireless parameters.

Radio Port Administrative Status, when disabled, temporarily prohibits the Access Point from sending or receiving any packets over its radio. This parameter is automatically returned to Enabled when either the radio or the Access Point is reset. This parameter is primarily included for customers who intend to manage the Access Point using SNMP. This parameter corresponds to the SNMP MIB-II Administrative status parameter and can be used to bring the radio interface back up after it has been disabled by an SNMP manager.

In order for RangeLAN2 radios to communicate, in each subnetwork there must be one unit that coordinates the frequency hops. This unit is known as a Master. It might help you to think of the Master as the conductor of a frequency hopping orchestra. The Master keeps time so all units know when to hop and to what frequency. The Token Ring Access Point always operates as a Master. Devices that have a RangeLAN2 card installed are classified as Stations which synchronize to the Master and follow its signal to learn what frequency in the pattern the Master is currently using.

Each Master can select one of 15 **Channels** to establish communications with Stations. Each Channel number sets a unique frequency hopping sequence allowing for multiple subnetworks with higher data rate transmission capability in the same air space. You may think of the Channel as a pipe. In order to communicate, radios must be on the same Channel and there must be one (and only one) Master that provides the timing for that Channel.

There are 15 independent Channels. This means that there are 15 different sequences of frequency hops. Each Channel is at a different frequency at a different time. For networks with multiple Masters (such as in a roaming environment), set each Master to a different Channel. All Stations will determine their Channel by the Master to which they are synchronized.

The **Subchannel** is just a software code that is appended to each radio packet. It does not affect the frequency hopping sequence like a Channel does. Use a Subchannel if you need more than 15 Masters in the same coverage area and, therefore, all the Channels are used.

For example, you can use Channel 1, Subchannel 1 for Network A and Channel 1, Subchannel 2 for Network B. The two networks will not communicate with one another. They are, however, still sharing the same 1.6 Mbps pipe since they are both using Channel 1.

In order to establish communications, all communicating stations must be configured with the same **Domain** number. Radios on different Domains cannot communicate with each other. The Domain is a software filter which does not affect the actual radio frequency or the frequency hop sequence.

You may want to set everyone on your network to the same Domain. For larger wireless networks, use the Domain to establish roaming subnetworks throughout your building. For example, the Engineering Department may use Domain 2 and the Sales Department may use Domain 5. Then engineers can only roam within the geographical area mapped out by Access Points with a Domain setting of 2.

The optional **Master Name** parameter specifies an alphanumeric name to simplify the identification of each Master in your network.

You may enable or disable the ability for the Token Ring Access Point to repeat signals coming from one Station and destined for another Station with the **Repeating Enabled** parameter. These two Stations must be out of range of one another but both in range of the Token Ring Access Point for repeating to occur.

The **Delay Radio Reconfigure** parameter allows you to delay radio parameter changes from taking effect. You might want to enable this feature if you intend to wirelessly configure the Token Ring Access Point so that you do not lose communication when a radio value changes. For example, suppose you decide to change a Token Ring Access Point's Domain from 0 to 1. If the **Delay Radio Reconfigure** parameter is configured to False, then as soon as you select a new Domain number, the Access Point's Domain will change and the wireless client will no longer be able to communicate with the Access Point. However, if the Delay Radio Reconfigure parameter is set to True, a change in the Domain number will not take effect until either the radio or Token Ring Access Point is reset.

The **MAC Optimize** parameter can help improve throughput for small networks. The default setting of Auto causes the Token Ring Access Point to determine the number of

units synchronized to it and adjust this parameter accordingly. Alternatively, you may force the Access Point to use one of three settings.

If you have 0 or 1 wireless node communicating with a Token Ring Access Point, set MAC Optimize to Very Light. If you have between 2 and 7 wireless nodes communicating with a Token Ring Access Point at the same time, set this parameter to Light. (You can have more than 7 nodes synchronized to a Token Ring Access Point but between 2 and 7 communicating at the same time for the Light parameter setting.) In networks with more than 7 concurrent wireless users, set the parameter to Normal.

To further improve the security of a wireless subnetwork, each unit requires the same **Security ID** to establish communication. The Security ID is used on all RangeLAN2 products and all Station Types (i.e., both Masters and Stations). This ID is encrypted and stored in the Token Ring Access Point itself, not in software. It cannot be accessed but you may change it. If you do change it, however, you will need to change the Security ID on all other radios with which this one was communicating. The Security ID parameter can be up to 20 characters and is an empty string by default.

The **No Traffic Trap Period** specifies the number of seconds of no radio activity which must elapse before a No Traffic trap is sent via SNMP.

The **Radio Traffic Trap Threshold** specifies a percentage of radio traffic after which a Radio High Usage trap is sent via SNMP.

The **Radio Broadcast Trap Threshold** specifies a percentage of radio broadcast traffic after which a Radio High Usage trap is sent via SNMP.

Reset Radio allows you to reset the radio contained in the Token Ring Access Point without resetting the entire unit. This will cause any changes to the radio parameters which have been delayed due to the **Delay Radio Reconfigure** parameter to take effect.

Token Ring Configuration Menu

Parameter Name	Range	Default
Token Ring Link Monitor	Enabled/Disabled	Disabled
Token Ring Port Administrative Status	Enabled/Disabled	Enabled
Ring Speed	4Mbps, 16 Mbps	16 Mbps
Contends for Active Monitor	Yes/No	No
Open Token Ring Adapter	N/A	N/A
Close Token Ring Adapter	N/A	N/A
Reset Token Ring Adapter	N/A	N/A

When enabled, the **Token Ring Link Monitor** will automatically detect whether or not the Access Point has an operational connection to the Token Ring network. A Token Ring link will be unavailable if no UTP or STP patch cable has been plugged into the Access Point, if a damaged patch cable is used, or if the Access Point is not properly inserted into the ring. When a link is not detected, the Access Point will switch from its current Domain to the Error Domain, which is Domain 13, and the Status LED will blink yellow. This Domain change will force all RangeLAN2 Stations to lose synchronization to the Access Point, allowing the Stations to seek out another Access Point still configured to the appropriate Domain and reestablish network connectivity. This parameter is set to disabled by default.

The **Token Ring Port Administrative Status** parameter, when disabled, temporarily prohibits the Access Point from sending or receiving any packets over the Token Ring. This parameter is automatically returned to Enabled when the Access Point is reset. This parameter is primarily included for customers who intend to manage the Access Point using SNMP. This parameter corresponds to the SNMP MIB-II Administrative status

parameter and can be used to bring the Token Ring interface back up after it has been disabled by an SNMP manager.

The **Ring Speed** parameter specifies the speed at which the Token Ring Access Point will communicate with the rest of the Token Ring network. Its Ring Speed must match the speed of the Token Ring network.

The **Contends for Active Monitor** parameter specifies whether the Token Ring Access Point will participate in the process to select the active monitor of the ring. Each ring needs one active monitor which ensures that the ring is operating normally. Among other things, the active monitor looks for token errors and begins the ring recovery process when required. All other stations in the ring act as standby monitors and monitor the ring to make sure the active monitor is doing its job. If they detect that it is not, they'll restart the contention process to select a new active monitor. Setting **Contends for Active Monitor** to No means that the Token Ring Access Point will never become the active monitor of the ring unless it is the only station in the ring.

The **Open Token Ring Adapte**r parameter allows you to begin the process of inserting the Access Point into the ring, which must be completed before the Token Ring Access Point can send or receive any data via Token Ring. The process includes testing the cable connection, physically connecting the receive and transmit pairs into the ring, discovering its neighbors, and notifying them that the ring configuration has changed. The Token Ring Access Point automatically attempts to open the adapter upon boot-up and continues to attempt to insert itself into the ring until either it is successful or a **Close Token Ring Adapter** command is issued. The Access Point will also attempt to insert itself into the ring if it is ever unexpectedly disconnected.

The **Close Token Ring Adapter** parameter removes the Token Ring Access Point from the ring and stops the Access Point from attempting to insert itself into the ring if not previously connected. The Token Ring Access Point cannot communicate on the ring until an **Open Token Ring Adapter** command is issued. You may be able to resolve some Token Ring errors by closing and opening the adapter.

The **Reset Token Ring Adapter** resets the Token Ring interface, proceeding through the steps that occur when the Token Ring Access Point initializes upon boot-up. Some Token Ring errors may be resolved by resetting the adapter.

Authorization Table

The Authorization Table is described in Chapter 12.

SNMP Management

SNMP Management is described in Chapter 10.

Upload Configuration Menu

This feature allows you to upload the current configuration of each Access Point on the network to a file on an FTP server. A member of the Proxim Technical Support Department may ask you to create this file for troubleshooting purposes.

When the **Upload AP Configuration Data using FTP** option is selected, you will be prompted to enter the name of the directory to which the file will be uploaded, the IP Address of the FTP server, the FTP User Name, and FTP Password. If the upload procedure fails, confirm that the FTP server's directory allows write access to users.

Once the configuration for the Access Point to which you are connected is uploaded to the FTP server, you will be prompted to decide if you would like the configuration for all of the other Token Ring Access Points on the network to be sent to the FTP server as well. Only Access Points configured to respond to remote upload requests will send their configuration information to the FTP server.

The Upload Configuration Menu also allows you to enable or disable an Access Point's ability to respond to an upload request from another Access Point. By default, the Access Point is configured to respond to upload requests.

Reset Token Ring Access Point to Factory Defaults

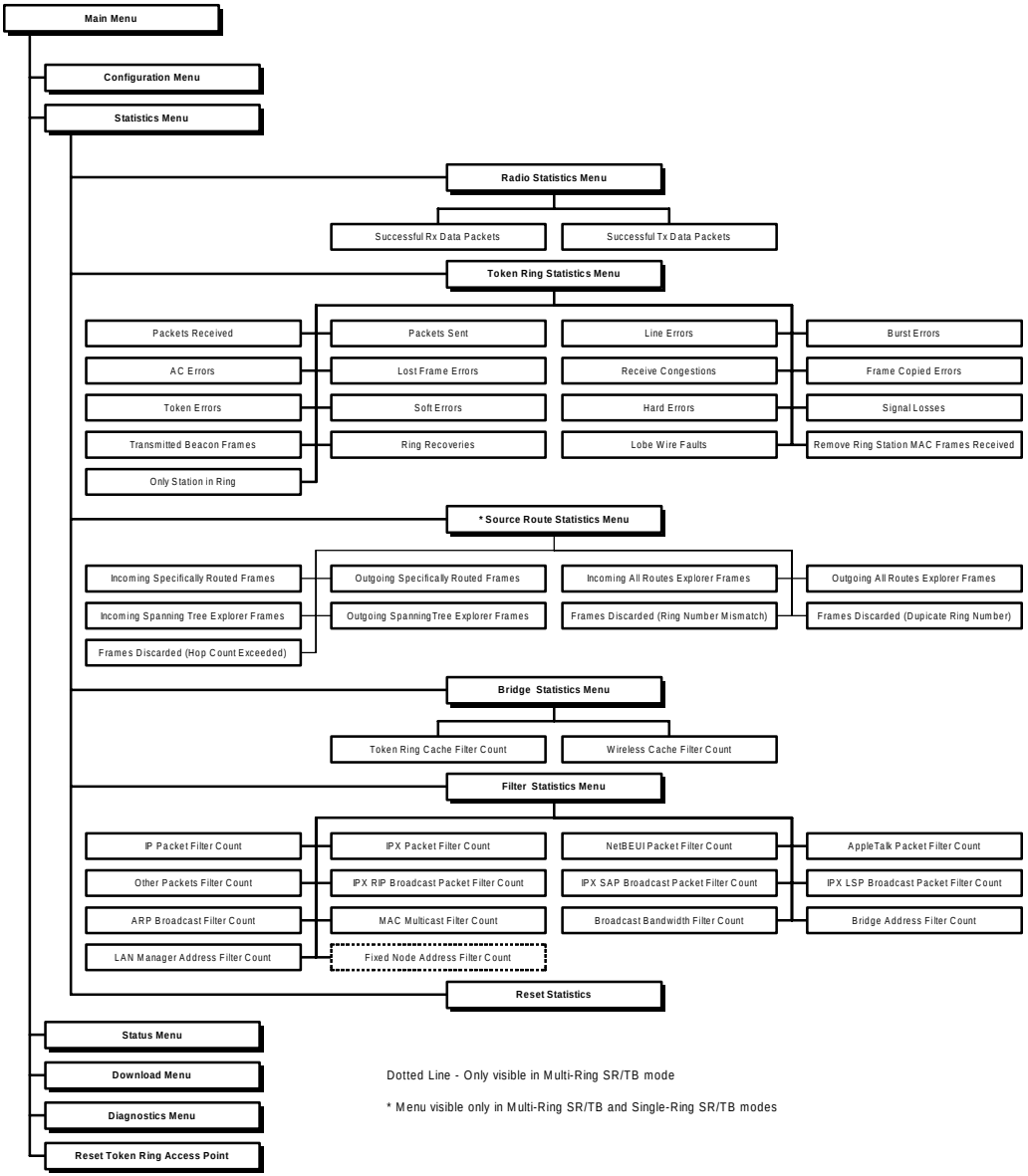
Use this option to reset all the parameters to default values. This option is only visible when configuring the Access Point via a terminal; it is not visible in a telnet session.

Dump Configuration to Screen

This parameter displays the current configuration of the Token Ring Access Point to the screen. Using a screen snapshot program you can save these settings. A member of the Proxim Technical Support Department may ask you to print out this snapshot for trouble-shooting purposes.

8. Statistics Menu

You can view statistics about the Token Ring Access Point from the Statistics Menu. The following diagram illustrates the software tree:



Radio Statistics Menu

This menu displays the number of successfully transmitted and received packets through the radio interface of the Token Ring Access Point.

Token Ring Statistics Menu

This menu displays various statistics about Token Ring traffic to and from the Token Ring Access Point.

Source Route Statistics Menu

This menu displays the number of incoming, outgoing, and discarded frames processed by the Token Ring Access Point.

Bridge Statistics Menu

This menu displays information regarding packets that were filtered based on what the Token Ring Access Point has learned about the location of nodes. This information is compiled within the Forwarding Database Table which may be viewed within the Status Menu, as described in Chapter 9.

Filter Statistics Menu

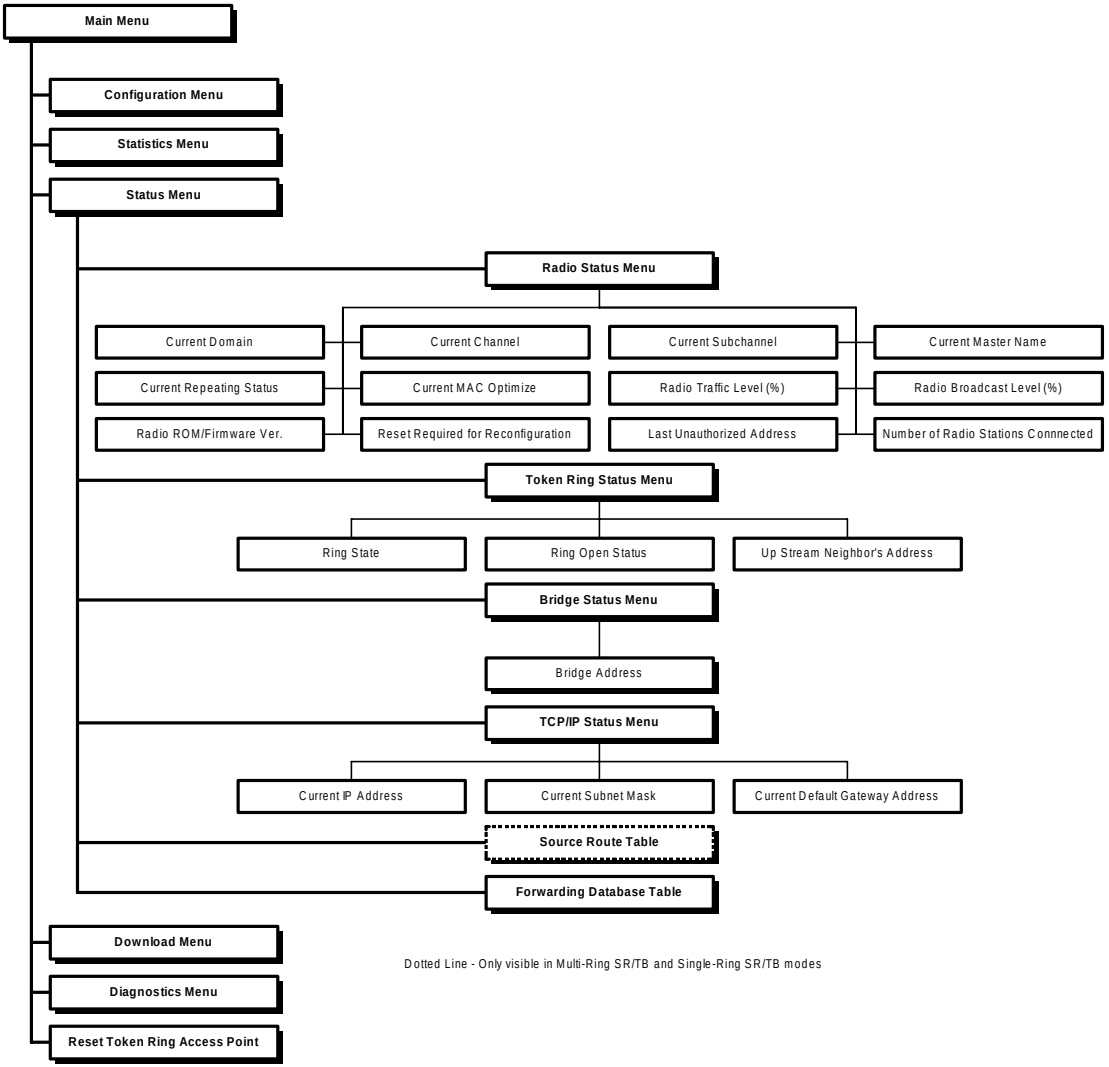
This menu displays the count of packets that were filtered out due to the various filter options.

Reset Statistics

You may reset the Token Ring Access Point statistics with this menu option.

9. Status Menu

The Status Menu shows you the current state of Token Ring Access Point parameters. The following diagram illustrates the software tree:



Radio Status Menu

This menu displays current Token Ring Access Point radio parameters. These will match those in the Configuration Menu with the exception of **MAC Optimize**. If **MAC Optimize** is set to Auto, this parameter will appear in the Status Menu as Very Light, Light, or Normal, depending on the current number of synchronized radios.

The **Radio Traffic Level** and **Radio Broadcast Level** parameters show the current percentage of radio traffic which may cause an SNMP trap. Similarly, the **Last Unauthorized Address** shows the MAC address of the last wireless client that was prohibited by the Authorization Table from communicating with the wired network via this Token Ring Access Point.

The **Radio ROM/Firmware version** of the radio contained inside the Token Ring Access Point is available for viewing.

If there is a pending parameter change that will not take effect until the Token Ring Access Point or radio is reset, the **Reset Required for Reconfiguration** parameter will be set to "true." For example, after changing the radio Channel through the Configuration Menu, this parameter would be set to "true." This assumes that the Delay Radio Reconfigure parameter in the Radio Configuration Menu is set to True.

The **Number of Radio Stations Connected** parameter displays a count of the current RangeLAN2 devices configured as Stations that are synchronized to this Token Ring Access Point and have communicated within a specified time period. This time period is defined by the **Aging Period** parameter, which can be configured under the Bridge Configuration Menu.

Token Ring Status Menu

This menu displays Token Ring status, including Ring State and the Up Stream Neighbor's MAC address.

Bridge Status Menu

The **Bridge Address** is the MAC address of this Token Ring Access Point.

TCP/IP Status Menu

This menu displays the current IP Address, Subnet Mask, and Default Gateway settings of the Token Ring Access Point.

Source Route Table

When the Token Ring Access Point is configured in Multi-Ring SR/TB mode or Single-Ring SR/TB mode, this table shows the source routes that it has learned from each token ring station. In Multi-Ring SR/TB mode, the source route includes the Radio Ring Number and Bridge Number as part of the RIF. The Source Route Table can hold up to 1048 entries. On large networks where more than 1048 nodes exist, the Token Ring Access Point will age old entries that have not recently been used to make room for new nodes.

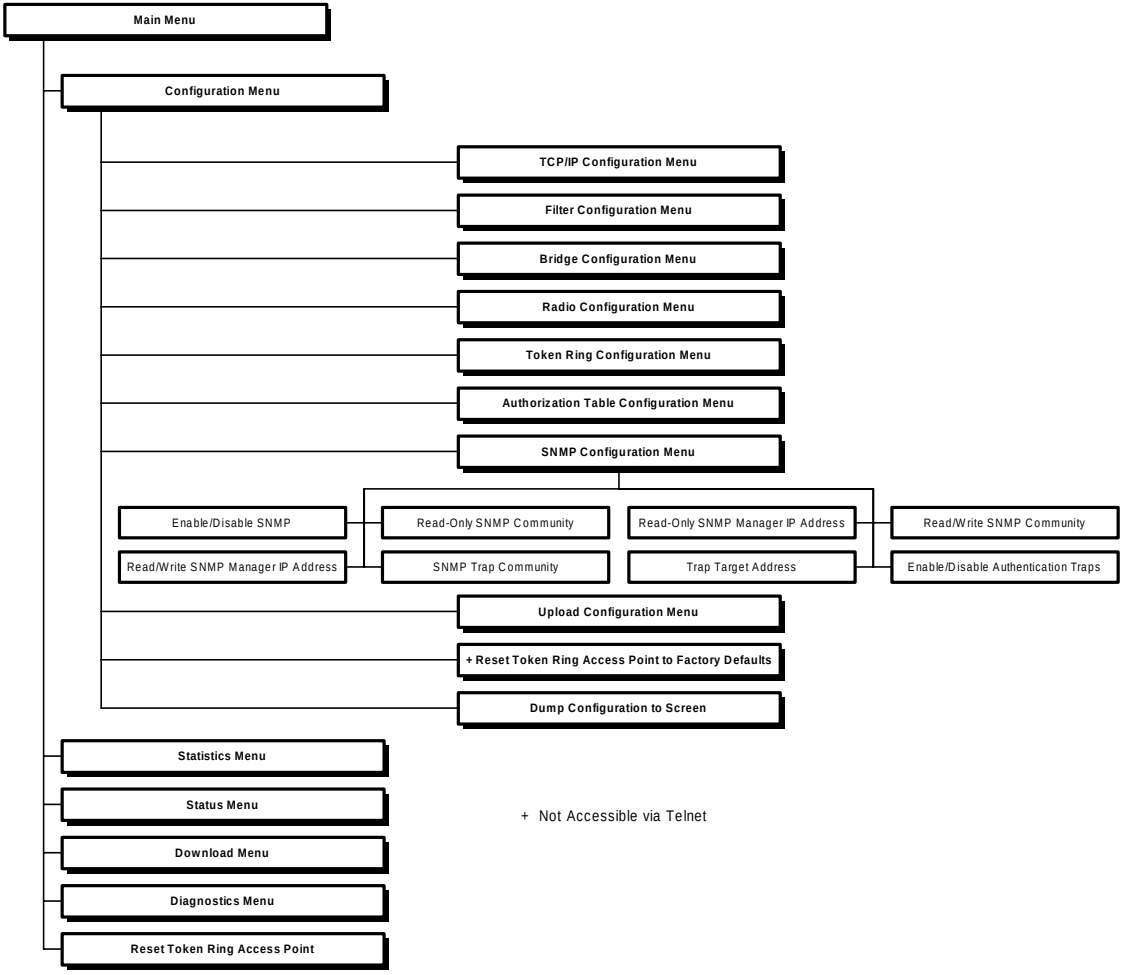
Forwarding Database Table

The RangeLAN2 Token Ring Access Point is a learning bridge. Over time from watching the packets on the network, the Access Point determines where the nodes on the network are -- on the wire or the wireless side of the Access Point. You can view the table of nodes known to the Token Ring Access Point. This table can hold a maximum of 1048 entries.

Most entries in the Forwarding Database Table are dynamic and will timeout after the period specified by the Aging Period parameter. However, some entries will appear as static radio nodes labeled as “self” under the Status heading within the table. These radio nodes correspond to Ethernet nodes connected to RangeLAN2 Ethernet Adapters. Once the Token Ring Access Point has learned that one of these nodes is located on the wireless network, it creates a static entry in the Forwarding Database Table for this node which will not timeout until the Access Point is reset. When this entry exists, the Access Point will forward packets to these wireless clients, which do not have the RangeLAN2 MAC address prefix, even if Fixed Node Filtering is enabled.

10. SNMP Management

You may configure and monitor the Token Ring Access Point using an SNMP management package. The following illustrates the software menu:



The Token Ring Access Point supports the following MIBs:

- ❑ MIB-II (RFC 1213)
- ❑ Bridge MIB (RFC 1493)
- ❑ Source Route Bridge MIB (RFC 1525)
- ❑ Token Ring 802.5 MIB (RFC 1231)
- ❑ Proxim Enterprise MIB

The Proxim Enterprise MIB is supplied in ASN.1 format. It is available on the Proxim Web site. The filename is AP7530.MIB. Follow the instructions in your SNMP management package for incorporating enterprise-specific MIBs.

Note:
The Token Ring Access Point is not manufactured with a default IP address. In order to SNMP manage the Token Ring Access Point, you must first assign it a valid IP address for your network using the null modem cable configuration or a BOOTP server.

You may choose to configure the Token Ring Access Point through the menu trees (in-band or out-of-band) to set SNMP parameters before using an SNMP manager.

Enable/Disable SNMP allows you to enable or disable SNMP management of the Token Ring Access Point.

The **Read-Only SNMP Community** parameter specifies a community supported by the Token Ring Access Point. Actions permitted by this community are "read-only" (GET and GET-NEXT). SET attempts using this community will result in rejection of the attempt with a general error response and the generation of an authentication trap (if so enabled).

The **Read-Only SNMP Manager IP Address** specifies the IP address of the SNMP manager which is permitted to use the Read-Only SNMP Community. An address of 0.0.0.0 indicates any manager may use this community.

The **Read/Write SNMP Community** parameter specifies the community supported by the Token Ring Access Point. Actions permitted by this community are "read-write" (GET, GET-NEXT, and SET).

The **Read/Write SNMP Manager IP Address** specifies the IP address of the SNMP manager which is permitted to use the Read/Write SNMP Community. An address of 0.0.0.0 indicates any manager may use the community.

The **SNMP Trap Community** parameter specifies the community that will be used by the Token Ring Access Point when generating TRAP PDUs to remote managers.

The **Trap Target Address** specifies the IP address of the device to which generated TRAP PDUs will be sent. A value of 0.0.0.0 disables trap generation.

Authentication Traps are sent to the Trap Target Address whenever anyone attempts to SNMP manage the Token Ring Access Point with an invalid community or from an invalid community. You may enable or disable the sending of these traps.

SNMP Supported Traps

The following traps are supported by the Token Ring Access Point and are sent to the SNMP manager defined by the Trap Target Address when they occur.

MIB II Traps

Cold Start - Sent when the Token Ring Access Point powers on or reboots.

Link Up - Sent by each interface at start-up or after coming back up.

Link Down - Sent when the Token Ring Access Point software cannot initialize or communicate with either interface.

Authorization - Sent to the network manager when someone tries to manage a Token Ring Access Point with an invalid community.

Enterprise Specific Traps

No Traffic - Sent when set to a non-zero value and when the Token Ring Access Point does not receive any traffic from other radios for the configured period of time. The time may be configured in the Radio Configuration Menu.

Broadcast Threshold - Sent if the radio broadcast traffic exceeds the limit set by the Radio Configuration parameter, Radio Broadcast Trap Threshold.

Radio High Usage - Sent if the radio traffic exceeds the limit set by the Radio Configuration parameter, Radio Traffic Threshold.

Serial Port Down - Sent when the serial port of the Token Ring Access Point is not working. The status of this port is checked only at boot time.

Unauthorized Usage Trap - Sent when an unauthorized wireless user tries to attach to the network through the Token Ring Access Point.

11. Web Browser Management

You may configure and monitor the Token Ring Access Point using a Web browser.

Supported Web Browsers

- ❑ Netscape Navigator 3.01 or above for Win95/98/NT;
- ❑ Netscape Navigator 3.01 or above for Macintosh;
- ❑ Netscape Navigator 3.01 or above for SUN; and
- ❑ Microsoft Internet Explorer 3.01 or above for Win95/98/NT.

Establishing a Connection

Note:
The Token Ring Access Point is not manufactured with a default IP address. In order to manage the Token Ring Access Point with a Web browser, you must first assign it a valid IP address for your network using the null modem cable configuration, described in Chapter 6, or a BOOTP server.

Start a supported Web browser on a computer connected to the network either via Token Ring or wireless. Highlight and replace the existing URL path with the IP address of the Token Ring Access Point. For example, the starting URL may be similar to "http:// www.proxim.com." Highlight and replace the "www.proxim.com" with the IP address of the Token Ring Access Point. A final result would appear similar in form to "http:// 100.25.200.1."

The browser will display the Token Ring Access Point Network Management screen. A password may be required at this point if the Token Ring has had the **Browser User Name** and **Browser Password** parameters set. After 5 minutes or more the user is re-prompted for the password.

Main Display

On the right side of the screen, there is a picture of the Token Ring Access Point along with the text “Web Manager for Wireless Networks,” as shown below. Proxim Technical Support contact information is listed underneath the picture.



The first half of the menu on the left side details the Web options. The second half lists the Token Ring Access Point device management functions available through the other access methods (i.e., telnet, terminal interface, and SNMP).

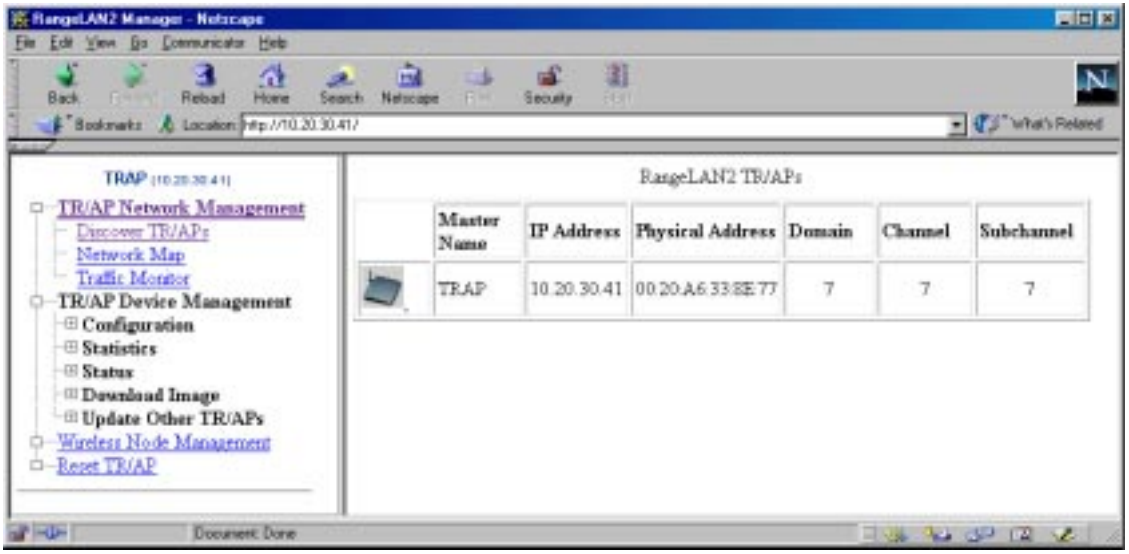
Next to each menu item is either a [+] or [-]. A [+] indicates that there are sub-menu items which are not being displayed. To display these hidden items left-click on the [+] symbol. Clicking on the [-] symbol shrinks the menu. Text without a [+] or [-] will take you to that function screen directly.

Token Ring Access Point Network Management

Discover TR/APs

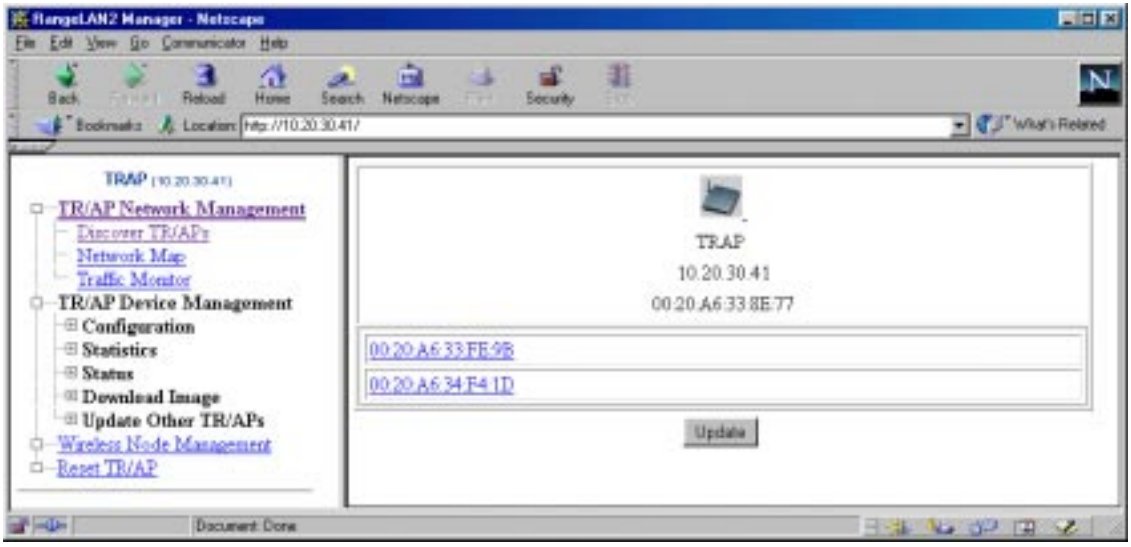
This screen displays all Token Ring Access Points detected on the network. When the mouse is positioned over the picture of the unit, the IP address appears on the status line. Click on the picture to configure the Token Ring Access Point.

The columns display the MAC address, the IP address, the Domain, the Channel, the Subchannel, and the Master Name of the Token Ring Access Point, as shown below.



Network Map

This display shows all Proxim network components which have been detected.



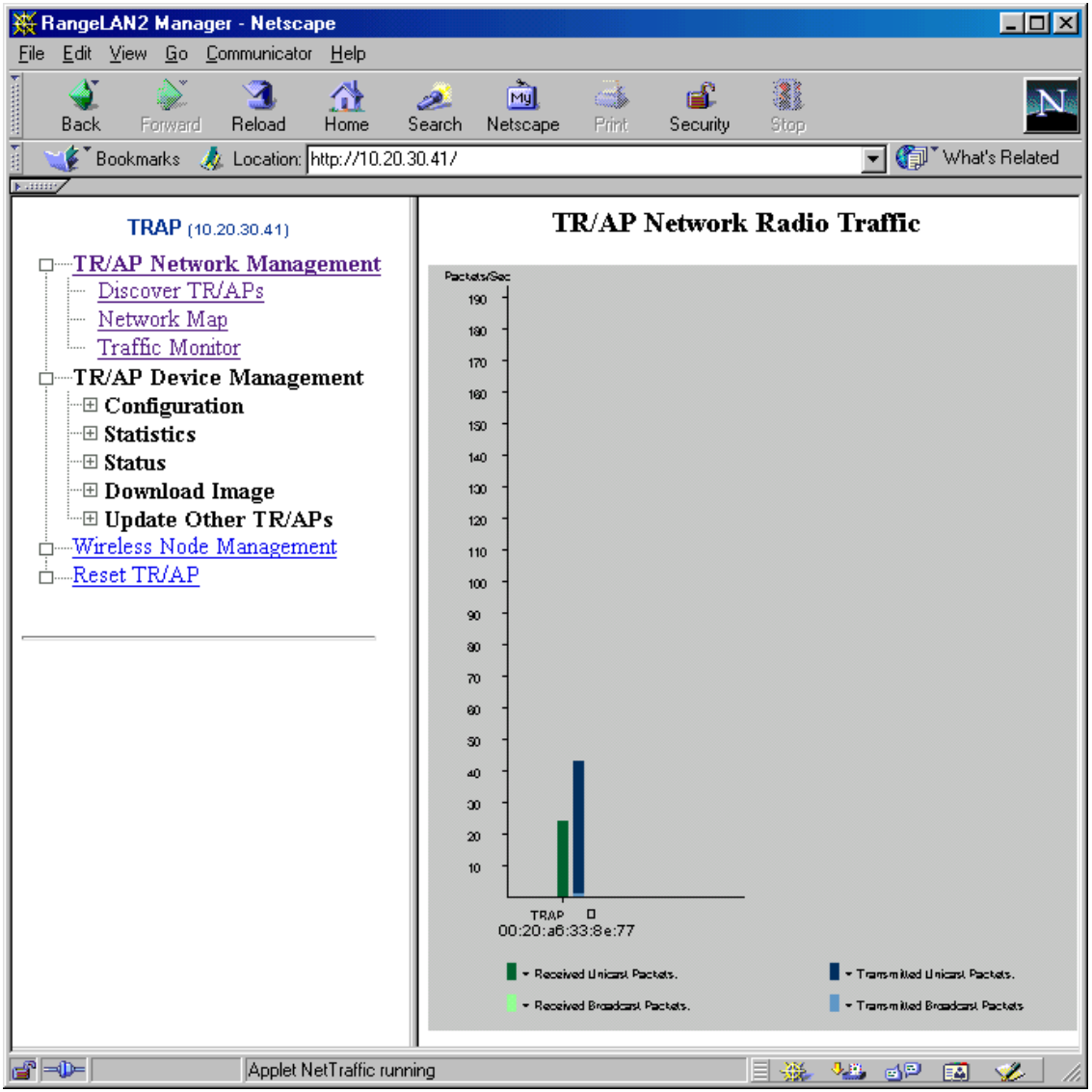
Clicking on the picture of an Access Point will redirect the browser to that Access Point's configuration page. The leftmost column is the unit being currently browsed.

Displayed under each Token Ring Access Point is a list of MAC addresses of the Proxim devices currently synchronized to that Access Point. Clicking on the MAC address of a Proxim device will redirect the browser to that unit's Wireless Node Management page (if one is available).

Press the Update button of your Web browser to see the latest view of the network map.

Traffic Monitor

This page displays a real-time graph of the traffic being processed by each Token Ring Access Point on the network.


RangeLAN2 Manager - Netscape
File Edit View Go Communicator Help
Back Forward Reload Home Search Netscape Print Security Stop
Bookmarks Location: http://10.20.30.41/ What's Related
TRAP (10.20.30.41)
TR/AP Network Management
Discover TR/APs
Network Map
Traffic Monitor
TR/AP Device Management
Configuration
Statistics
Status
Download Image
Update Other TR/APs
Wireless Node Management
Reset TR/AP
TR/AP Network Radio Traffic
Packets/Sec
190
180
170
160
150
140
130
120
110
100
90
80
70
60
50
40
30
20
10
TRAP
00:20:a6:33:8e:77
Received Unicast Packets.
Transmitted Unicast Packets.
Received Broadcast Packets.
Transmitted Broadcast Packets.
Applet NetTraffic running

Each Token Ring Access Point is displayed with its Master Name and MAC address. Each has a graph showing the following types and volume of traffic:

- Transmitted unicast packets;
- Transmitted broadcast packets;
- Received unicast packets; and
- Received broadcast packets.

Unicast packets are transmissions in which the destination is a single, known node and is specified in the packet.

The broadcast packets indicator also includes multicast packets. Multicast and broadcast packets are destined for two or more nodes.

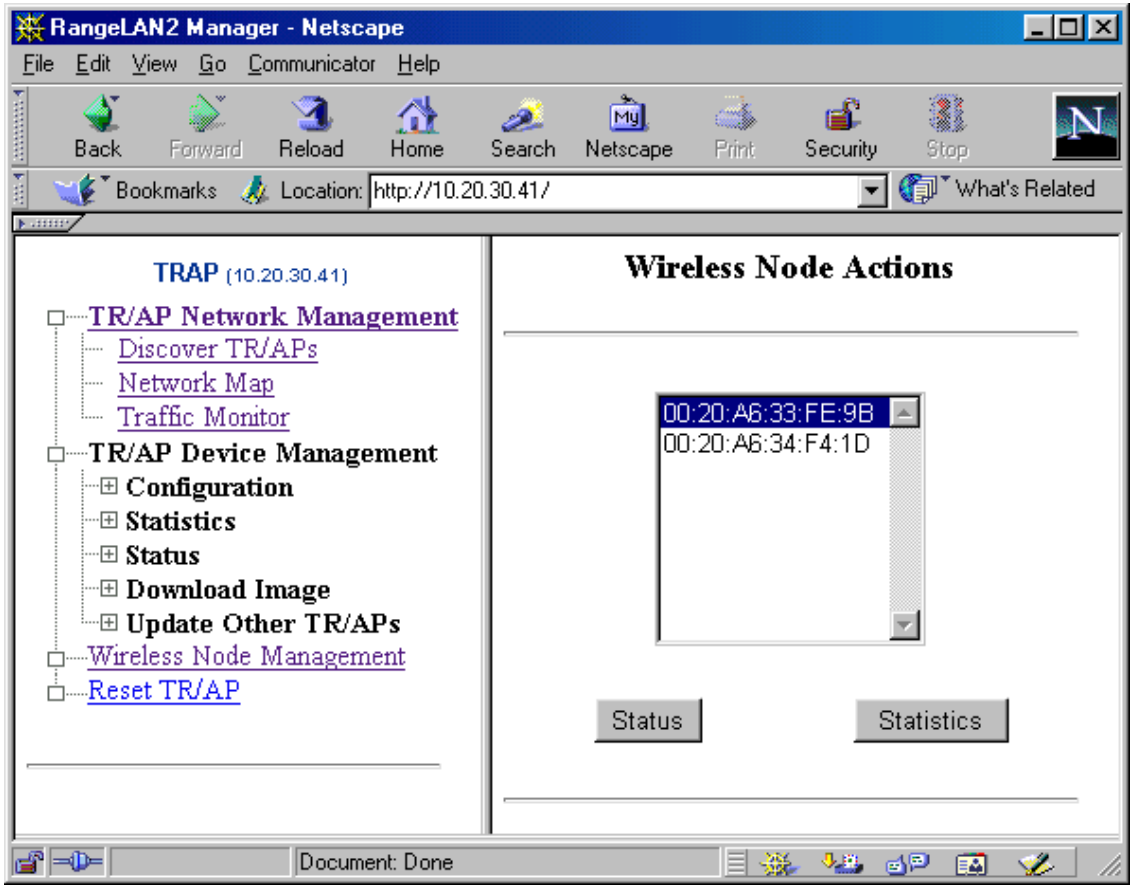
RangeLAN2 Token Ring Access Point Device Management

This menu offers configuration options for the Token Ring Access Point as described in Chapter 7.

Wireless Node Management

This page displays the MAC address of the RangeLAN2 devices currently synchronized to the RangeLAN2 Access Point, as shown below.

Management information is available only for nodes that have the Windows 95/98/NT driver, version 1.3 or greater, installed. Management information is not available for wireless clients running earlier versions of the Windows 95 or NT driver, running the DOS NDIS or ODI driver, or running Windows CE. Management information is also unavailable for nodes connected to a RangeLAN2 Ethernet Adapter.



Highlight a MAC address from the list and click <Status> to view the current configuration of the synchronized device. If the device has the appropriate driver version loaded, the following information will be displayed: the wireless node's MAC Address, ROM version, driver version, Domain number, network adapter type (ISA, One Piece PC Card, etc.), Peer-to-Peer setting, Inactivity Timeout setting, the name of the Master to which it is synchronized, information on roaming, and information on the number of driver resets. The configuration information will also display the device's computer name, if this parameter has been configured from within Window 95/98/NT's Network icon.

Highlight a MAC address from the list and click <Statistics> to view statistical information about the wireless node's radio activity over a specified period of time. These statistics provide additional information for advanced users who understand how data is exchanged between RangeLAN2 radios.

Displayed statistics include total number of packets transmitted, number of successful packets transmitted and received, number of BFSK and QFSK packets transmitted, number of fragmented packets transmitted and received, number of CTS errors, number of ACK errors, and number of duplicate packets received.

If you would like to learn more about the methods RangeLAN2 radios use to exchange data, you should consider signing up for a RangeLAN2 Technical Training class in your area. Go to Proxim's Web site at http://www.proxim.com/support for more information.

12. Authorization Table

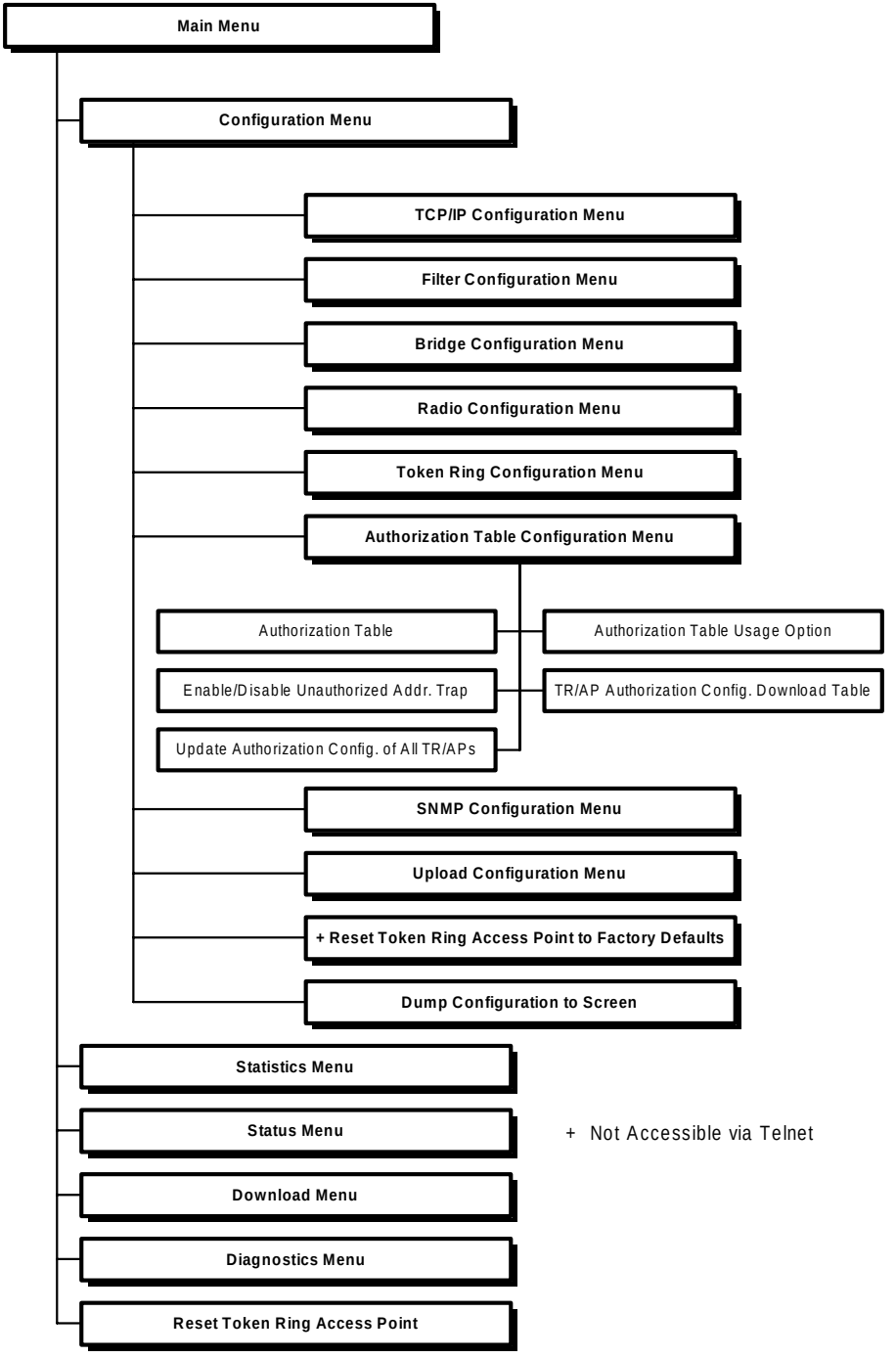
For added security, you can use the **Authorization Table** to hold the MAC addresses of the wireless nodes that will be allowed or disallowed to connect to the Token Ring backbone through the Token Ring Access Point. These addresses are manually added and deleted. This is in addition to the Security ID already supported by the RangeLAN2 hardware. For example, if a RangeLAN2 client card is missing, you can specifically disallow it access to the network.

The **Authorization Table Usage Option** determines if this table will include or exclude wireless users and if the table will be used at all. If you have not recently updated the table, you may want to disable usage until you can add all the proper entries. By default, it is disabled. The table can hold a maximum of 256 nodes.

You can also enable or disable an SNMP trap that will tell the SNMP manager an unauthorized user has tried to access the network through the Token Ring Access Point.

The **Update Authorization Config. of All TR/APs** parameter distributes the Authorization Table from this Token Ring Access Point to all other Token Ring Access Points on the network. This feature is useful in that you do not have to set the **Authorization Table** individually on all Token Ring Access Points in the same network. Choose the **TR/AP Authorization Config. Download Table** to watch progress of the distribution. In most cases, the distribution will take place so quickly that you will only see the final status of the distribution.

The Authorization Table configuration options can be found under the Configuration Menu and may be accessed via the terminal interface, a telnet session, or the RangeLAN2 Manager web browser tool.


Main Menu
Configuration Menu
TCP/IP Configuration Menu
Filter Configuration Menu
Bridge Configuration Menu
Radio Configuration Menu
Token Ring Configuration Menu
Authorization Table Configuration Menu
Authorization Table
Authorization Table Usage Option
Enable/Disable Unauthorized Addr. Trap
TR/AP Authorization Config. Download Table
Update Authorization Config. of All TR/APs
SNMP Configuration Menu
Upload Configuration Menu
+ Reset Token Ring Access Point to Factory Defaults
Dump Configuration to Screen
Statistics Menu
Status Menu
Download Menu
Diagnostics Menu
Reset Token Ring Access Point
+ Not Accessible via Telnet

13. Performance Hints

This section provides the user with ideas for how to increase performance and network satisfaction on a wireless network.

Microwave Ovens

Microwave ovens operate in the same frequency band as RangeLAN2. Therefore, if you use a microwave within range of RangeLAN2, you may notice network performance degradation. However, both your microwave and your RangeLAN2 network will continue to function.

Range

Every environment is unique with different obstacles, barriers, materials, etc. and therefore, it is difficult to determine the exact range that will be achieved without testing. The site survey tool was developed to aid in this process. Additionally, Proxim has developed some guidelines to estimate the range that users will see when the product is installed in their facility, but there are no hard and fast specifications. Note that the model 7531 Token Ring Access Point will have a longer range than the 7530.

Radio signals may reflect off of some obstacles or be absorbed by others depending on their construction. For example, with two 100 mW RangeLAN2 radios, using the standard antennas shipped with the units, you may achieve up to 1000' in open space outdoors where the two antennas are line of sight, meaning they see each other with no obstacles. However, the same two units will only achieve up to 500' of range when they have to travel through the cubicles usually used in modern offices. If there are office walls to penetrate, the signal range may decrease even further to up to 300'.

There are many antenna options available for the RangeLAN2 Token Ring Access Point. These optional antennas offer additional range and different radiating patterns in order to accommodate each user's wireless coverage needs. If you are interested in antenna options, contact your Proxim Sales Representative about antenna kits. Note that due to U.S. regulatory laws, antennas whose gain is rated higher than 9 dBi may not be used with the 500 mW Token Ring Access Point, model 7531, within the United States. Contact your Proxim Sales Representative to obtain regulatory information for regions outside of the United States.

Proper antenna placement can help improve range. Here are some guidelines:

- ❑ The antenna should be placed so that it emits its signal in the appropriate direction. For example, the standard antenna shipped with the unit should be mounted vertically. Higher gain omnidirectional antennas may be mounted upside down to the ceiling or a beam. The omnidirectional antenna emits its signal from all sides of the antenna, but not from the top or bottom. The directional antenna typically emits a beam only from a front face plate in a horizontal direction; this type of antenna should be mounted against a wall.

- ❑ Place the antenna as high as possible. In an office environment, try to place it above cubicle walls.

- ❑ Do not place a sheet of metal (like a filing cabinet) between two antennas.

- ❑ Two antennas that are communicating should be in the same plane. For example, do not lie one antenna on its side and have its partner standing upright.

14. Site Survey and Antenna Pointing Tool

The Token Ring Access Point includes a site survey tool to determine proper placement of radios and antennas. This tool displays the quality of the wireless link between a Token Ring Access Point and its wireless clients.

A network administrator might want to perform a site survey when diagnosing user performance problems. A network installer might perform a site survey to aid in determining placement of the Token Ring Access Point and wireless client antennas. However, if you are performing a site survey to determine the placement and number of Access Points to provide wireless coverage for mobile clients, Proxim recommends that you use the RangeLAN2 Windows 95/98/NT Site Survey & Configuration Tool which ships with RangeLAN2 adapter cards following the procedure outlined in the RangeLAN2 Technical Training Guide rather than use the Access Point's site survey tool. If you would like to learn more about the site survey procedure, you should consider signing up for a RangeLAN2 Technical Training class in your area. Refer to Proxim's web site at http://www.proxim.com/ for more information.

To perform a site survey from the Access Point, first choose the **Run Broadcast Site Survey** option from the **Radio Diagnostics Menu** and let the Token Ring Access Point sit for the period of time that you specify. Then, look at the list of MAC addresses found and the Link Quality and RSSI values associated with each node, as shown in Figure 13.

The results will show an average value for each parameter over the time period for which the site survey was run. If you check the data before the full time has elapsed, you will see values that are an average of the time thus far elapsed.

```
                    Radio Diagnostics Menu              TR/AP 1.2-B5


Selection   Description                                 Current Value
---------   -----------                                 -------------
1           Run Broadcast Site Survey
2           Run Directed Site Survey
3           Radio ROM Version                           V1.92E1


Enter a selection number or <ESC> for previous menu -> 1

Site Survey Duration (seconds)  [10]
Enter new value->

Warning -- Site survey results for power-managed wireless nodes may not
accurate.  Perform a directed site survey for these nodes.

Hit <ESC> to terminate and any other key for intermediate results
..........

Site Survey Completed




Site Survey Table

Address               Link Quality (1=poor, 5=strong)  RSSI
-------               -------------------------------  ----
00:20:a6:10:2a:f4     5                                156
00:20:a6:10:10:57     5                                130
```

Figure 13
Broadcast Site Survey

The Link Quality varies from 0 to 5. The higher the Link Quality number from a particular node, the better the link. A Link Quality number of 0 indicates that the node is no longer responding at all. Monitor the Link Quality value for a particular node in order to verify that you will be able to maintain a reliable wireless connection. **Note that the Link Quality number of RangeLAN2 7400 adapters may be low if those adapters are in their doze mode when being surveyed. As these adapters wake up, the Link Quality number may change, so this number may not always be accurate.**

Received signal strength (RSSI) indicates the signal strength from a particular node.

After using the Broadcast Site Survey, you can choose the **Run Directed Site Survey** to check the packets per second and bytes per second measurements between the Token Ring Access Point and the node you select, as shown in Figure 14.

Note that the Packets/sec and Bytes/sec values are intended to show the strength of a radio connection and are not indicative of the actual data throughput rate between the two devices. Remember, in an actual network environment, performance will likely not be as high due to the network protocols sitting on top of the radio layer. However, these values are extremely helpful when diagnosing a poor connection.

```
Selection   Description                              Current Value
---------   -----------                              -------------
1           Run Broadcast Site Survey
2           Run Directed Site Survey
3           Radio ROM Version                        V1.92E1


Enter a selection number or <ESC> for previous menu -> 2


Site Survey Table

Index   Address               Link Quality (1=poor, 5=strong)  RSSI
-----   -------               -------------------------------  ----
1       00:20:a6:10:2a:f4     5                                156
2       00:20:a6:10:10:57     5                                130

Index of the Node to Perform a Directed Site Survey on [1]
Enter new value-> 2

Packet Size (Bytes) [1500]
Enter new value->

Site Survey Duration (seconds) [10]
Enter new value->

Performing Site Survey
Hit <Esc> to terminate and any other key for intermediate results
..........

Site Survey Completed

Node Address                          00:20:a6:10:10:57
Packets Per Second                    46
Bytes Per Second                      69000
Average RSSI                          151
Average Latency (mS)                  42
Maximum Latency (mS)                  150
Standard Deviation of Latency (mS)    22
```

Figure 14
Directed Site Survey

15. Troubleshooting

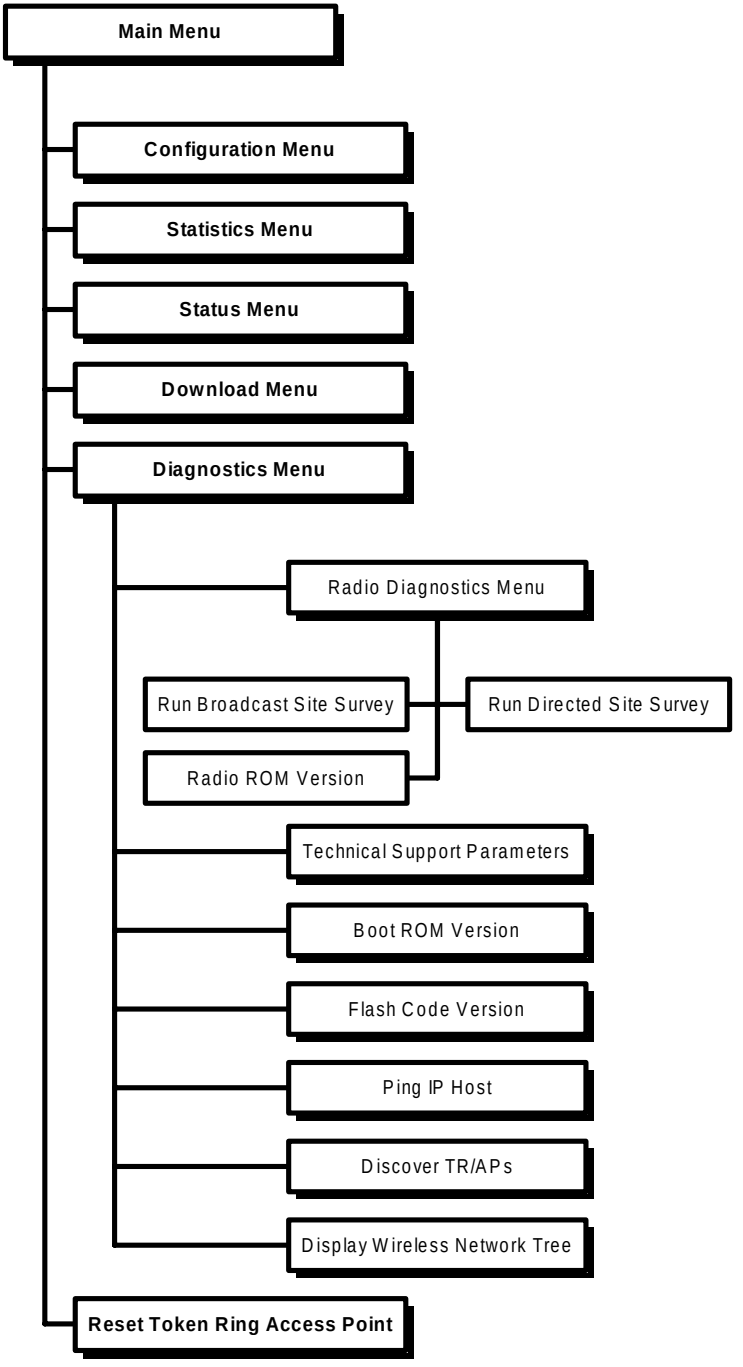
The Token Ring Access Point is designed to be very easy to install and operate. If you do experience difficulties, however, use the information in this chapter to help diagnose and solve the problem. If you cannot resolve the problem, contact Proxim, as described in Appendix F, "How to Reach Technical Support."

How to Obtain Help with Your LAN Installation

If you require assistance to install your LAN, Proxim can put you in touch with a RangeLAN2 Reseller in your area. The reseller is an expert in the design, installation, and maintenance of LANs and will be able to examine your needs and recommend the most cost-effective solution for your LAN whether you are installing a new LAN or adding on to an existing one. For the location of the RangeLAN2 reseller nearest you, contact Proxim at 800-229-1630 and ask for the Sales Department.

Diagnostics Menu

There are diagnostic tools built into the Token Ring Access Point that will assist you and your reseller or Proxim Technical Support in solving problems. The following diagram illustrates the software tree:


Main Menu
Configuration Menu
Statistics Menu
Status Menu
Download Menu
Diagnostics Menu
Radio Diagnostics Menu
Run Broadcast Site Survey
Run Directed Site Survey
Radio ROM Version
Technical Support Parameters
Boot ROM Version
Flash Code Version
Ping IP Host
Discover TR/APs
Display Wireless Network Tree
Reset Token Ring Access Point

Versions

You can view the **ROM version** of the radio in the Token Ring Access Point within this menu. You can also view the **Boot ROM version** and **Flash Code version**.

Technical Support Parameters

If you call Proxim Technical Support, they may ask you to enable the **Technical Support Parameters** to perform more detailed diagnostics on the unit.

Ping IP Host

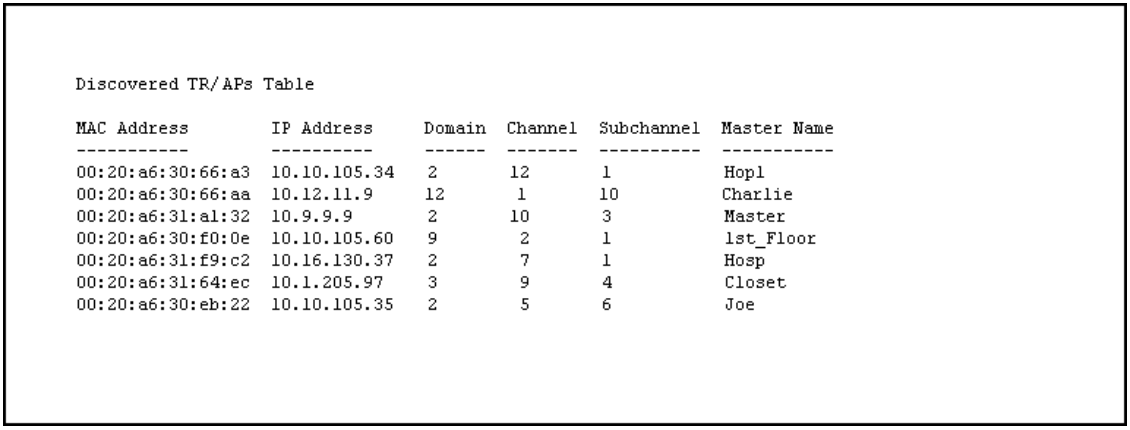
From the Diagnostics Menu, you can cause the Token Ring Access Point to **Ping any IP Host** on the network. This might be useful in isolating which side of the Token Ring Access Point is not working properly.



Note:
The Token Ring Access Point must be successfully inserted in the Token Ring before it can ping or be pinged by a wireless client.

Discover TR/APs

The RangeLAN2 Token Ring Access Point will display all of the Token Ring Access Points and 7510/752x Ethernet Access Points that it can discover on the network along with their configuration, as shown in Figure 15.



Discovered TR/APs Table

MAC Address	IP Address	Domain	Channel	Subchannel	Master Name
00:20:a6:30:66:a3	10.10.105.34	2	12	1	Hop1
00:20:a6:30:66:aa	10.12.11.9	12	1	10	Charlie
00:20:a6:31:a1:32	10.9.9.9	2	10	3	Master
00:20:a6:30:f0:0e	10.10.105.60	9	2	1	1st_Floor
00:20:a6:31:f9:c2	10.16.130.37	2	7	1	Hosp
00:20:a6:31:64:ec	10.1.205.97	3	9	4	Closet
00:20:a6:30:eb:22	10.10.105.35	2	5	6	Joe

Figure 15
Discover APs

Display Wireless Network Tree

The Token Ring Access Point will display the tree of all Token Ring Access Points and 7510/752x Ethernet Access Points that it is able to discover on the network along with the Access Points' relationship to one another, i.e. who is synchronized to whom, as shown in Figure 16.

The Token Ring Access Point from which the tree is being built will be listed with asterisks (***) next to its name.

```
Selection   Description                              Current Value
---------   -----------                              -------------
1           Radio Diagnostics Menu
2           Technical Support Parameters             disabled
3           Boot ROM Version                         1.1-B18
4           Flash Code Version                       TR/AP 1.2-B5
5           Ping IP Host
6           Discover APs
7           Display Wireless Network Tree

Enter a selection number or <ESC> for previous menu -> 7

Discovering..
Wireless Network Tree:
00:20:A6:31:6F:1B (Master AP - MASTER***)
00:20:A6:30:F0:61 (Master AP - proxim)

Hit any key to continue ...
```

Figure 16
Display Wireless Network Tree

Commonly Asked Technical Support Questions

Problem/Symptom/Question	Possible Solution/Answer	Chapter in User's Guide
Is the 7530 fully booted?	The status LED changes from steady yellow to steady green.	2
I can't connect to the network from wireless client.	1. Verify that a wireless connection exists by running a site survey from the Access Point or from the wireless client. 2 . Check the Token Ring Statistics to verify there is Token Ring traffic that the 753x can detect. 3. Verify you are not filtering out the kind of traffic you are trying to pass. 4. Verify that the "in the ring" LED is on and that the "ring speed" LED is as expected.	# 1 - 13 # 2 - 8 # 3 - 7 #4 - 2
Are the wrong filters set?	Turn on one of the filters through the Configuration Menu. Then check the Filter Statistics. If the count is increasing on the filter you set, that kind of traffic is on the network. If wireless clients cannot attach to the network after setting this filter, turn that filter off.	7, 8
I can't ping or telnet to my brand new 753x Token Ring Access Point.	There is no default IP address. The first time you use it, you should set an IP address using a terminal and null modem cable or a BOOTP server. Also, note that the 753x will not respond to pings or telnet requests unless it is successfully inserted in the Token Ring.	6
How can I tell which clients are synchronized to my 753x?	View the Forwarding Database in the Status Menu. Units on the wireless side of the 753x are synchronized to it. Or, view the Web browser's Network Map.	9
I can't configure the 753x locally via the serial port.	Verify you are using a null modem cable and that the terminal is set to 9600 N81.	6
I can't establish a wireless connection with the 753x.	Verify that the client is set to the same Domain and Security ID and that the client is configured as a Station.	7
The throughput seems slow.	1. To achieve maximum throughput, verify your antennas are well-placed, not behind metal, and there are not too many obstacles. If you move the antenna closer to the client and throughput increases, you may want to consider adding a second 753x and implementing roaming. 2. Also, you may be able to set filters to filter out Token Ring traffic from the wireless side of the network.	# 1- 12 # 2 - 7
I cannot open the Token Ring adapter.	Verify the ring speed set on the 753x matches that of your network.	7
After attaching the Token Ring Access Point to my Token Ring network, the entire network failed.	Verify the ring speed set on the 753x Token Ring Access Point matches that of your network.	7
In my network sniffer trace, the MAC addresses of the wireless cards appear incorrect.	The wireless cards emulate Ethernet nodes. The Token Ring Access Point performs bit-flipping of source destination addresses going from the Token Ring to the wireless cards and vice versa.	

Problem/Symptom/Question	Possible Solution/Answer	Chapter in User's Guide
What's the Token Ring adapter's MAC address?	There are two ways to determine this: 1) Select the Status->Forwarding Database Table menu item. Search for an entry marked "internal." There are two such entries. One of them starts with MAC address 00-20-A6. This one is the MAC address for the radio card. The other entry is for Token Ring adapter. 2) On the bottom side of the unit, there is a sticker with the MAC address of the radio card. Bit-reverse each byte to calculate the MAC address of the Token Ring adapter. For example: Radio card MAC address = 00-20-A6-01-02-03. Token Ring card MAC address = 00-04-65-80-40-C0.	9
I am unable to ping across a router in Multi-Ring SR/TB mode.	In Multi-Ring SR/TB mode, the Token Ring Access Point utilizes source routing to communicate with other Token Ring nodes. If the router is not configured to use source routing on the Token Ring interface, packets will be sent without source routing information. Most routers have commands to enable source routing per interface. Source routing can also be enabled per protocol. Refer to your router documentation for more information.	
I cannot login to my Novell server in Multi-Ring SR/TB mode.	Verify that ROUTE.NLM is loaded on the Novell servers. This NLM is required on Novell servers to process packets with source routing information. If your server is across a router from the Token Ring Access Point, also verify that source routing is enabled on the router interface.	
What are the default Bridge and Ring numbers in Multi-Ring SR/TB mode?	The default Bridge, Token Ring and Radio Ring numbers are 0. A Bridge number of 0 is valid, except that each Token Ring Access Point on the Token Ring segment must have a unique Bridge number. You must select a value between 1-4095 for the Radio and Token Ring numbers. Each Token Ring Access Point must have a unique Radio Ring number. The Token Ring number is the same for all Token Ring Access Points on the same Token Ring segment.	7
What MAC address should I use to assign an IP address via BOOTP?	You should use the Token Ring adapter's MAC address for assigning IP address, which is derived by bit-reversing each byte of the radio card's address.	
The status LED on the 753x is steady red.	Call Technical Support.	Appendix F
What is the default Bridging Mode and which Bridging Mode should I use?	The default Bridging Mode is Transparent Bridging. This mode will work if you do not use source routing in your network. If your network is configured to use source routing, then you should use either Multi-Ring SR/TB or Single-Ring SR/TB mode. In Multi-Ring SR/TB mode, each Token Ring Access Point needs to be configured with the Bridge number, Radio Ring number and Token Ring number. The Radio Ring number is unique for each Token Ring Access Point and the Bridge number is unique for each Token Ring Access Point on the same Token Ring segment. Alternatively, you may use the Single-Ring SR/TB mode. In this mode, only the Token Ring number is required for configuration.	5, 9

LED Indicators

There are three LEDs on the front of the Token Ring Access Point, as shown in Figure 17 below:

- The cornermost LED, called the **Status LED**, changes from yellow to green to indicate the Token Ring Access Point is functional. It changes from yellow to red if there is a hardware problem with the unit. If this LED turns red, contact Proxim Technical Support. If the Token Ring Link Monitor is enabled and the Access Point cannot detect a Token Ring network connection, this LED will blink yellow.

- The center LED, called the **Radio LED**, flashes yellow when the Token Ring Access Point transmits wirelessly.

- The third LED, called the **Backbone LED**, flashes green when the Token Ring Access Point transmits data over the Token Ring.



Figure 17
Front Panel LEDs

The following table illustrates the state of the LEDs during power-up:

State	Status LED	Radio LED	Backbone LED
Unit off	Off	Off	Off
Power-On Diagnostics	Yellow	Off	Off
Diagnostics Failed	Red	Off	Off
No Token Ring Link Detected	Blinking Yellow	Off	Off
Normal	Green	Blinking Yellow	Blinking Green

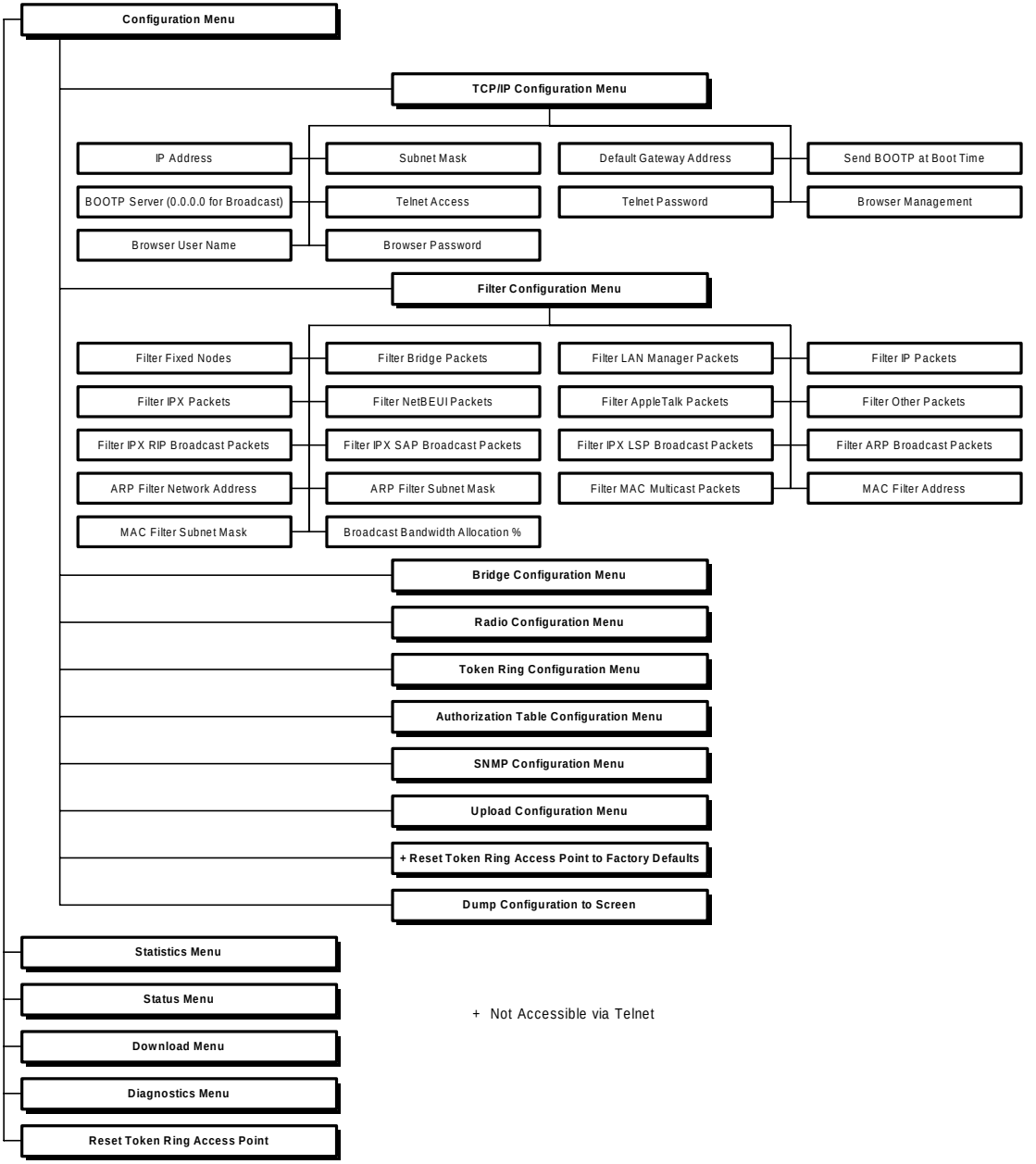
There are three functional LEDs on the back panel of the Token Ring Access Point, as shown in Figure 18 below:

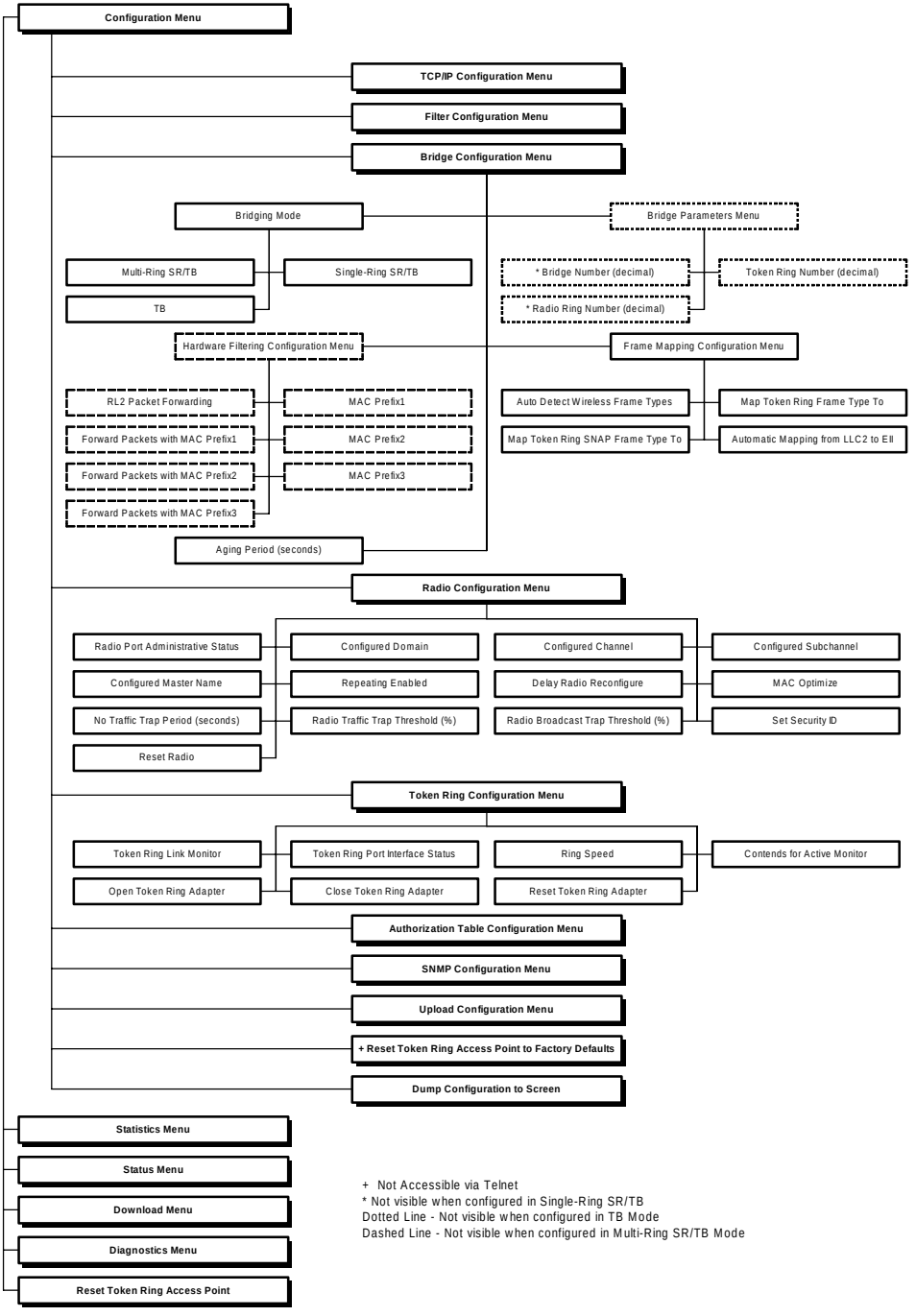
- ❑ The cornermost green LED should always be on steady indicating that the Token Ring Access Point is a Master.
- ❑ The upper green LED nearest the UTP connector is on steady when the ring speed is 4 Mbps.
- ❑ The lower yellow LED nearest the UTP connector is on steady when the ring speed is 16 Mbps.
- ❑ The fourth LED is reserved for future functionality.

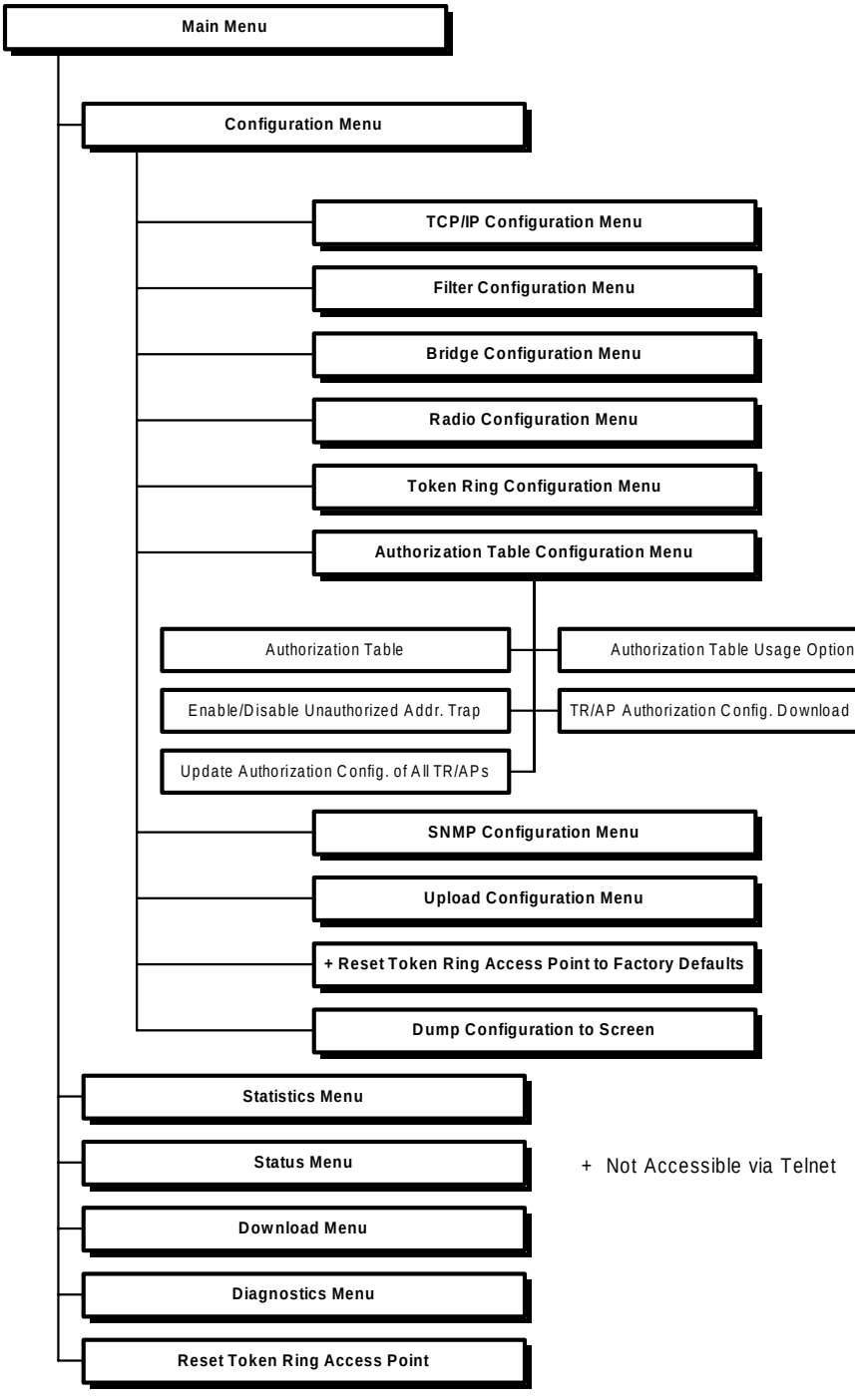


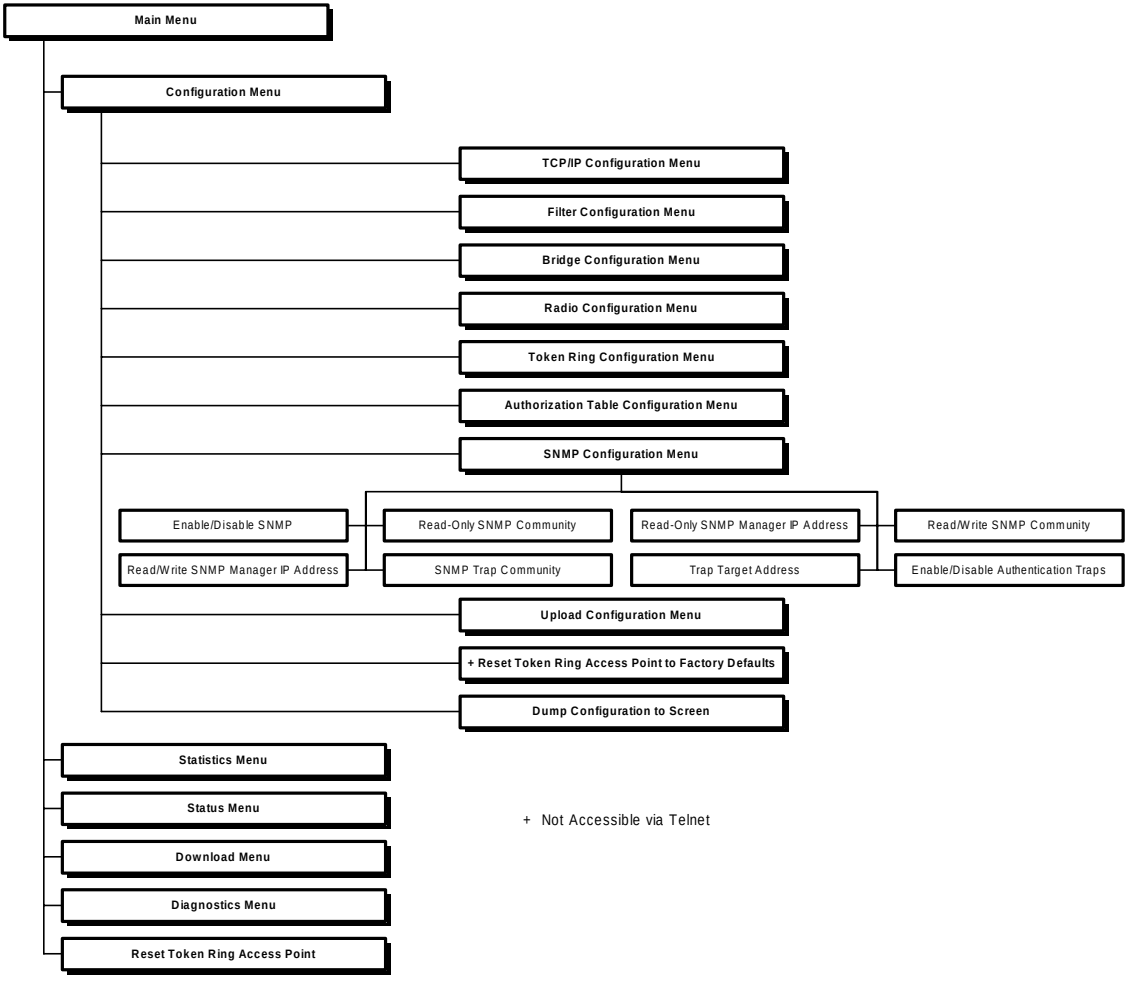
Figure 18
Back Panel LEDs

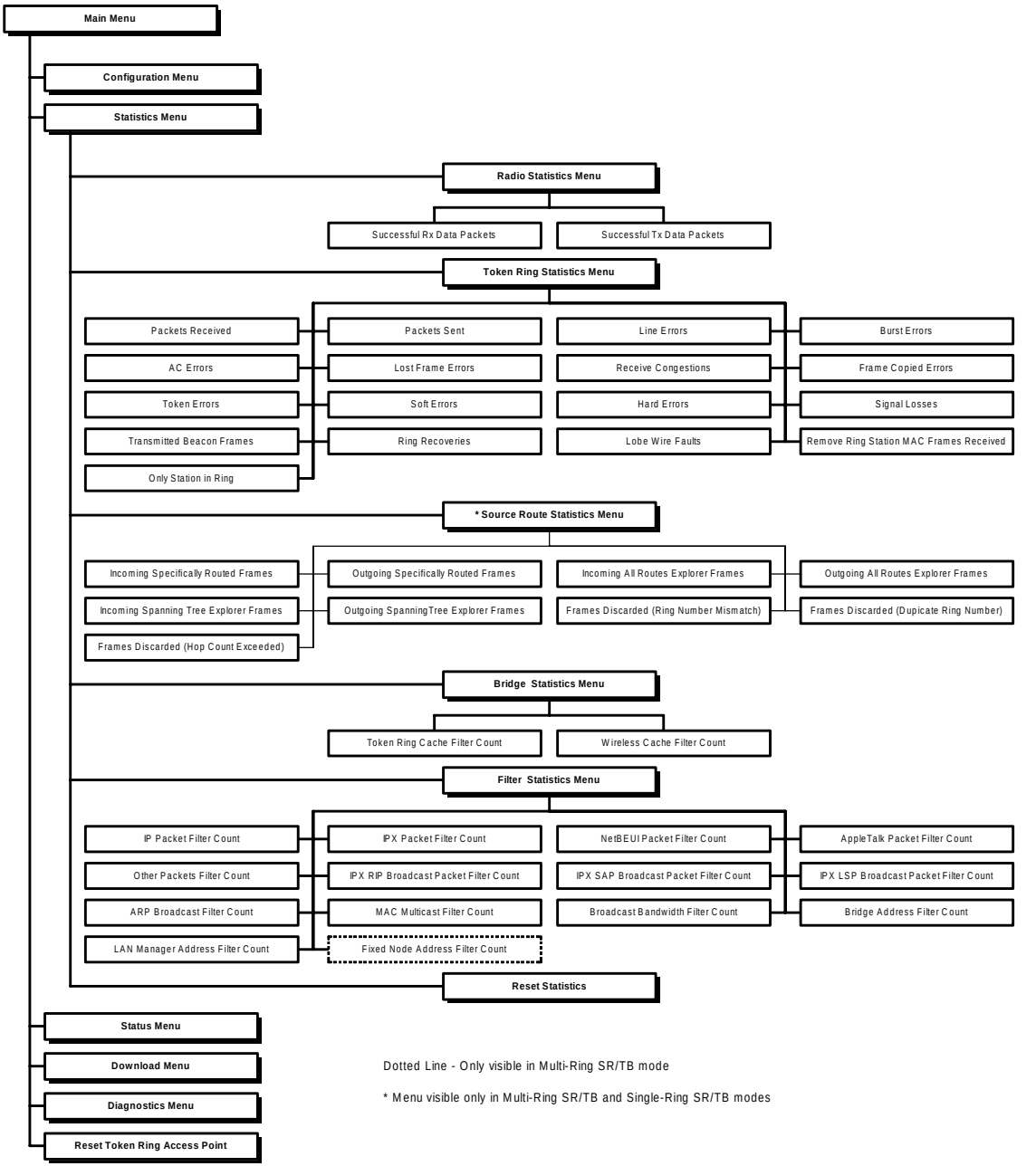
A. Menu Structure

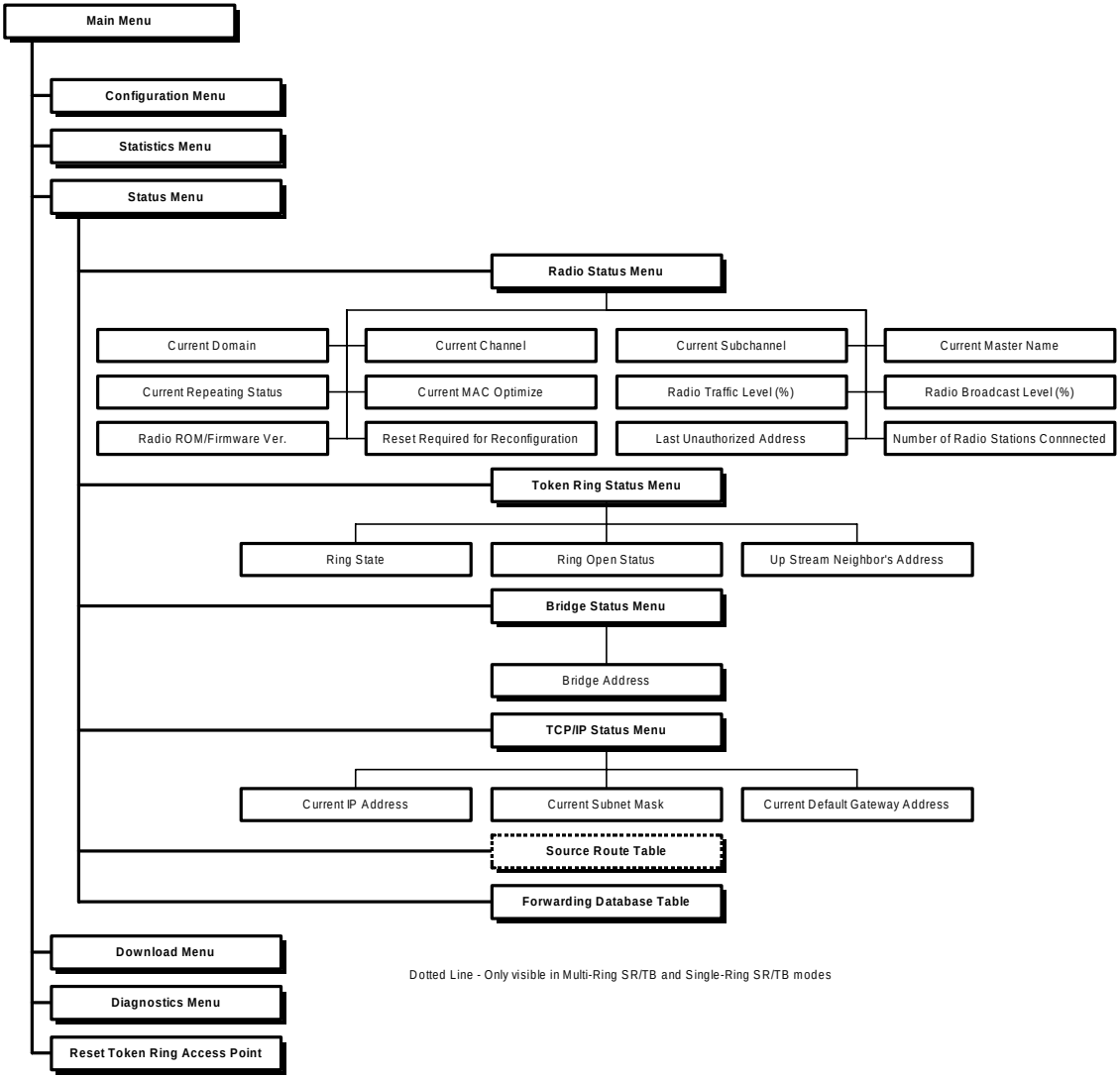


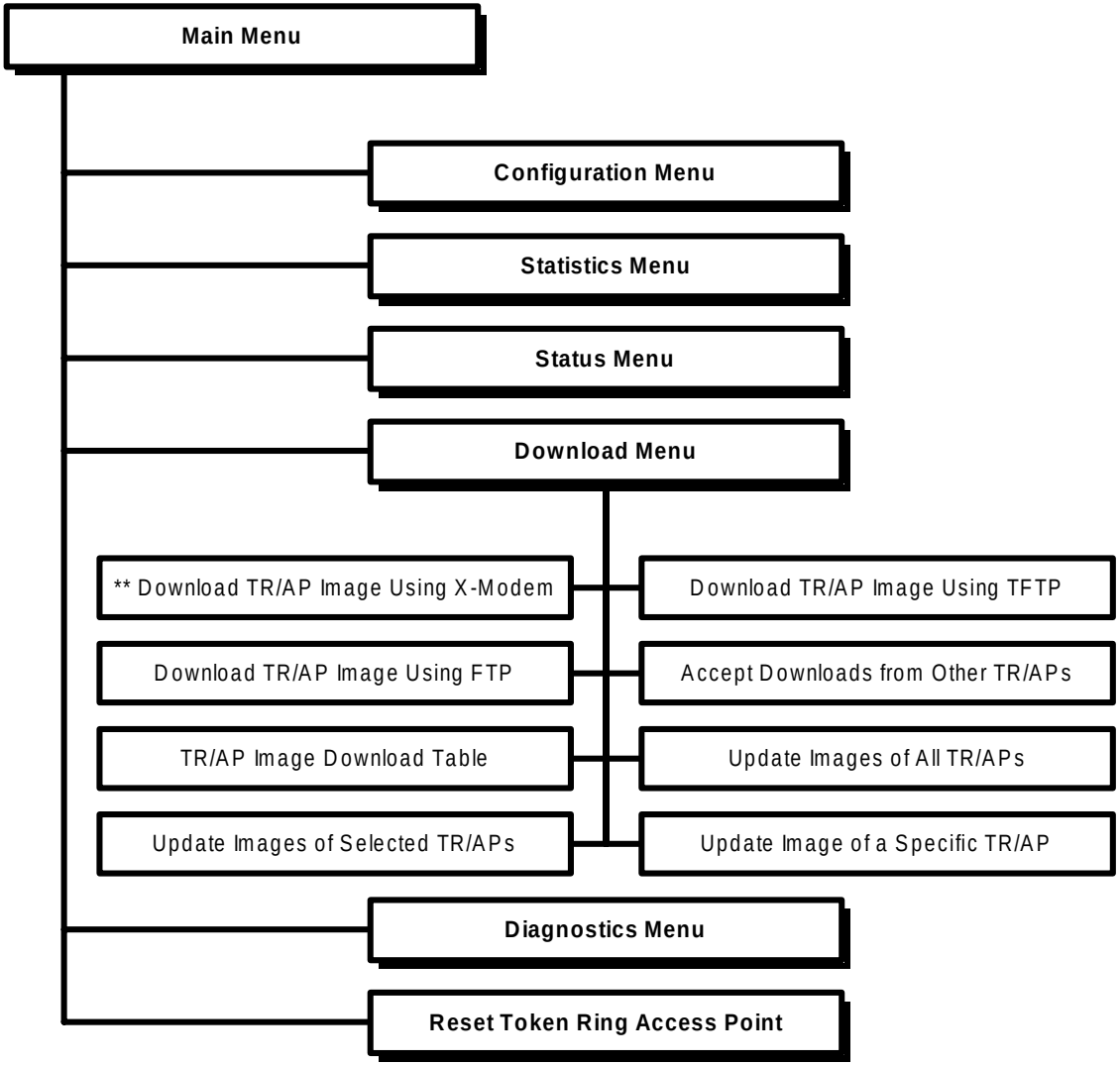

Configuration Menu
TCP/IP Configuration Menu
Filter Configuration Menu
Bridge Configuration Menu
Bridging Mode
Multi-Ring SR/TB
Single-Ring SR/TB
TB
Bridge Parameters Menu
* Bridge Number (decimal)
Token Ring Number (decimal)
* Radio Ring Number (decimal)
Hardware Filtering Configuration Menu
RL2 Packet Forwarding
MAC Prefix1
Forward Packets with MAC Prefix1
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* Not visible when configured in Single-Ring SR/TB
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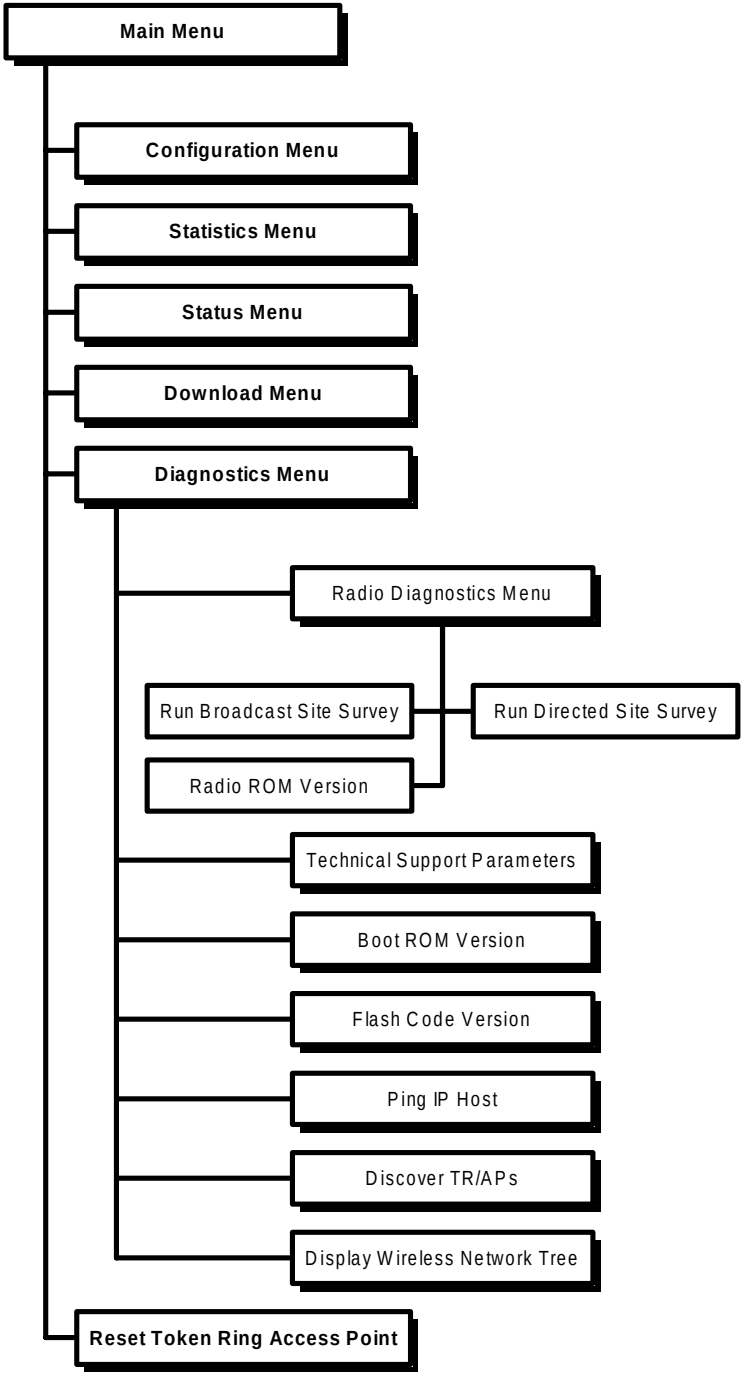

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* Menu visible only in Multi-Ring SR/TB and Single-Ring SR/TB modes


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Forwarding Database Table
Download Menu
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Reset Token Ring Access Point
Dotted Line - Only visible in Multi-Ring SR/TB and Single-Ring SR/TB modes

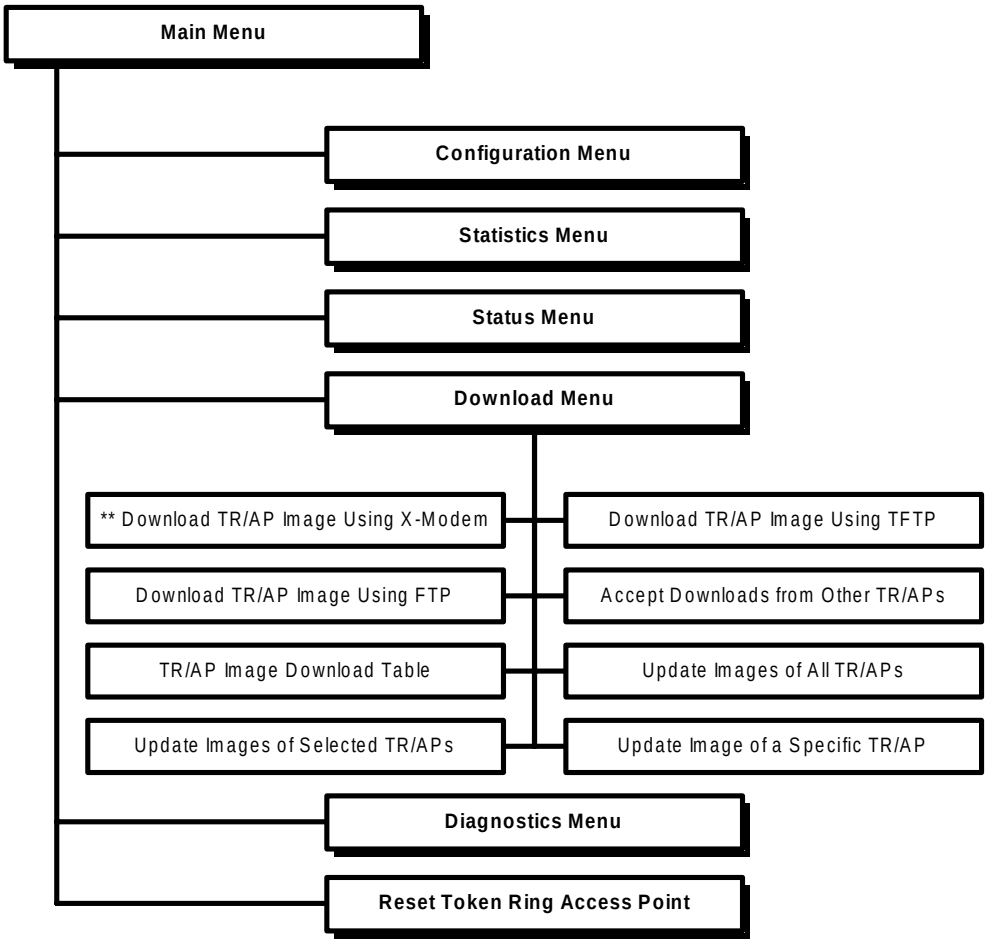


** Only visible when configuring via serial


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Discover TR/APs
Display Wireless Network Tree
Reset Token Ring Access Point

B. Download Menu

At some point in the future, you may need to upgrade the Token Ring Access Point's flash code image. To do this, choose the Download Menu option. Then you can choose to download a new image. When configuring the Token Ring Access Point through the serial port, you may download using Xmodem, TFTP, or FTP. When configuring through via telnet, you will not have the Xmodem option. The following diagram illustrates the software tree:



** Only visible when configuring via serial

The steps for downloading a new image are:

1. Choose a method of download (Xmodem, TFTP, FTP) and place the image file on that hard drive, floppy diskette, server, etc.

   When performing an Xmodem download, use the Xmodem or Xmodem CRC protocols.

2. Bring up the menu on the Access Point via a terminal with a null modem cable or a telnet session.
3. Choose the Download Menu off the Main Menu.
4. Choose the Download type, i.e. Download AP Image Using Xmodem, etc.
5. If you are downloading the image from an FTP or TFTP server, answer the on-screen prompts for server IP address, username, etc. If you are downloading the image via a terminal with a null modem cable, select the terminal program's Transfer Menu and send the new image file to the Access Point using the Xmodem or Xmodem CRC protocol when a series of "C"s begins to appear on the bottom of the session screen.
6. When download is successful, the Access Point will automatically reboot and load the new flash code image.

The Token Ring Access Point also has the ability to update other Token Ring Access Points' software on the Token Ring. You can choose to **Update Images of All TR/APs** or **Update Images of Selected TR/APs**. In these two cases, the Token Ring Access Point will first discover other Token Ring Access Points on the Token Ring. The difference between these two options is the ability to exclude certain units from receiving the new image. If you know the IP address of a specific Token Ring Access Point that you would like to update, choose the **Update Image of a Specific TR/AP** option and provide the IP address when prompted. If you do not want an Token Ring Access Point to receive an updated image, disable the **Accept Downloads from Other TR/APs** parameter.

To view the status of downloads to other Token Ring Access Points, select the **Access Point Download Table** option.

C. Glossary

Access Point — An internetworking device that seamlessly connects wired and wireless networks together.

Bandwidth — The size (in Hertz) of the frequency range that a signal transmission occupies. Typical narrow band signals occupy a 25 KHz bandwidth. The RangeLAN2 signal occupies a 1 MHz bandwidth.

BOOTP (Bootstrap Protocol) — A protocol used to assign IP addresses.

Channel — In RangeLAN2 networks, the Channel refers to the frequency hopping sequence the card follows.

CSMA/CA — (Carrier Sense Multiple Access/Collision Avoidance) — CSMA is a protocol in which each node senses whether or not a channel is in use before attempting to transmit information. CA is an optimization by which channel time is reserved to avoid collisions.

Download Image — A software file that is used to upgrade the software code running on the Token Ring Access Point.

Frequency Hopping — A spread spectrum technique by which the band is divided into a number of channels and the transmissions hop from channel to channel in a pre-specified sequence.

Interference — A situation that occurs when an unwanted RF signal occupies the same frequency band as a desired signal.

IP Address (Internet protocol address) — A 32-bit address assigned to TCP/IP hosts.

Narrow Band — A channel of about 25 KHz bandwidth in the RF spectrum. The FCC allocates Narrow Band channels and issues a license to the user. Each user of a specific narrow band frequency range must obtain a site license from the FCC.

Spread Spectrum — A radio data transmission modulation technique by which the transmitted signal is spread over a bandwidth wider than the information bandwidth. Spread Spectrum bands are designated by the FCC and require no user license.

SNMP (Simple Network Management Protocol) — A protocol used to manage network nodes.

TCP/IP — Transmission Control Protocol / Internet Protocol. A suite of protocols developed under DARPA sponsorship for internetworking.

D. Parameters

TCP/IP Parameters

Parameter Name	Range	Default
IP Address	-	0.0.0.0
Subnet Mask	-	0.0.0.0
Default Gateway Address	-	0.0.0.0
Send BOOTP at Boot Time	True/False	True
BOOTP Server Address	-	0.0.0.0 *
Telnet Access	Enabled/Disabled	Enabled
Telnet Password	-	-
Browser Management	Enabled/Disabled	Enabled
Browser User Name	10 characters	-
Browser Password	10 characters	-

* 0.0.0.0 is used to send a broadcast

Filter Parameters

Parameter Name	Range	Default
Filter Fixed Nodes	Filtering/Not Filtering	Filtering
Filter Bridge Packets	Filtering/Not Filtering	Filtering
Filter LAN Manager Packets	Filtering/Not Filtering	Filtering
Filter IP Packets	Filtering/Not Filtering	Not Filtering
Filter IPX Packets	Filtering/Not Filtering	Not Filtering
Filter NetBEUI Packets	Filtering/Not Filtering	Not Filtering
Filter AppleTalk Packets	Filtering/Not Filtering	Filtering
Filter Other Packets	Filtering/Not Filtering	Not Filtering
Filter IPX RIP Broadcast Packets	Filtering/Not Filtering	Filtering
Filter IPX SAP Broadcast Packets	Filtering/Not Filtering	Filtering
Filter IPX LSP Broadcast Packets	Filtering/Not Filtering	Filtering
Filter ARP Broadcast Packets	Filtering/Not Filtering	Not Filtering
ARP Filter Network Address	-	0.0.0.0
ARP Filter Subnet Mask	-	0.0.0.0
Filter MAC Multicast Packets	Filtering/Not Filtering	Not Filtering
MAC Filter Address	-	80:00:00:00:00:00
MAC Filter Subnet Mask	-	00:00:00:00:00:00
Broadcast Bandwidth Allocation (%)	0-100	80

Bridge Parameters

Parameter Name	Range	Default
Bridging Mode	Multi-Ring SR/TB, Single-Ring SR/TB, TB	TB
+Bridge Parameters ^Bridge Number Token Ring Number ^Radio Ring Number	 0-15 1-4095 1-4095	 0 0 0
***Hardware Filtering Configuration Menu** RL2 Packet Forwarding MAC Prefix1 Forward Packets with MACPrefix1 MAC Prefix2 Forward Packets with MACPrefix2 MAC Prefix3 Forward Packets with MAC Prefix3	 Enabled/Disabled 3 hex bytes Enabled/Disabled 3 hex bytes Enabled/Disabled 3 hex bytes Enabled/Disabled	 Disabled 00 00 00 Disabled 00 00 00 Disabled 00 00 00 Disabled
Frame Mapping Configuration Menu Auto Detect Wireless Frame Types Map Token Ring Frame Type to Map Token Ring SNAP Frame Type to Automatic Mapping From LLC2 to EII	 Enabled/Disabled Ethernet 802.2, 802.3 Ethernet II, SNAP Enabled/Disabled	 Enabled Ethernet 802.2 Ethernet II Enabled
Aging Period	10-1,000,000 (sec)	300 (sec)

+ Not visible in TB mode

^ Not visible in Single-Ring SR/TB mode

* Not visible in Multi-Ring SR/TB mode

Token Ring Parameters

Parameter Name	Range	Default
Token Ring Link Monitor	Enabled/Disabled	Disabled
Token Ring Port Administrative Status	Enabled/Disabled	Enabled
Ring Speed	4Mbps, 16 Mbps	16 Mbps
Contends for Active Monitor	Yes/No	No
Open Token Ring Adapter	N/A	N/A
Close Token Ring Adapter	N/A	N/A
Reset Token Ring Adapter	N/A	N/A

Radio Parameters

Parameter Name	Range	Default
Radio Port Administrative Status	Enabled/Disabled	Enabled
Domain	0-15	0
Channel	1-15	1
Subchannel	1-15	1
Master Name	11 characters	MASTER
Repeating Enabled	True/False	False
Delay Radio Reconfigure	True/False	False
MAC Optimize	Auto, Very Light, Light, Normal	Auto
No Traffic Trap Period (seconds)	0-10,000,000	0
Radio Traffic Trap Threshold (%)	10-100	100 *
Radio Broadcast Trap Threshold (%)	10-100	100 *
Set Security ID	0-20 characters	blank
Reset Radio	-	-

* a value of 100 disables this trap

E. U.S. Specifications

The following technical specification is for reference purposes only. Actual product's performance and compliance with local telecommunications regulations may vary from country to country. Proxim, Inc. will only ship products that are type approved in the destination country.

Network Interfaces	STP (Shielded Twisted Pair) UTP (Unshielded Twisted Pair)
Data Rate	1.6 Mbps —RangeLAN2 4 or 16 Mbps — Token Ring
Media Access Protocol	RangeLAN2 CSMA/CA
Ethernet compatibility	IEEE 802.3 on the wireless side
Token Ring compatibility	IEEE 802.5 on the wired side
Frequency Band	2.4-2.5 GHz Worldwide (Depends on country) (spread spectrum frequency hopping)
Independent Channels	15
Output Power	100 mW or 500 mW (Depends on country)
Operating Temperature	-20 C to +60 C
UL Listed Power Supply	The 753x Access Point requires an external power supply. If you have elected not to purchase the external supply from Proxim or need a replacement, you must use only a UL listed, Class 2 power supply, rated min. 1A at 12VDC.
FCC Notice	Warning! It is the responsibility of the installer of the antenna, as well as the user of this product, that this antenna be placed at least 15 cm (6 inches) from any person. This is necessary to ensure that the product is operated in accordance with the RF Guidelines for Human Exposure which have been adopted by the Federal Communications Commission.

F. How to Reach Technical Support

If you're having a problem using a Token Ring Access Point and can't resolve it with the information in Chapter 15, gather the following information and contact Proxim Technical Support:

- ❑ What kind of network are you using?
- ❑ What were you doing when the error occurred?
- ❑ What error message did you see?
- ❑ Can you reproduce the problem?
- ❑ What version of the Token Ring Access Point firmware and software are you using?

You can reach Proxim Technical Support by voice, fax, email, or mail:

Tel: 800-477-6946 or 408-731-2640
Fax: 408-731-3676
Web: http://www.proxim.com
Email: support@proxim.com

Proxim, Inc.
Attn: Technical Support
510 DeGuigne Drive
Sunnyvale, CA 94086

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