



SpectraLink 8000 Telephony Gateway

Administration Guide

Utilizing SpectraLink Radio Protocol (SRP)

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Version T



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About This Guide

This document explains how to install, configure, administer, and troubleshoot the SpectraLink 8000 Telephony Gateway.

Polycom Model Numbers

This document covers the following registered model numbers:
TGA108, TGA116, TGU108, TGU116

Referenced Documents

SpectraLink 8000 SVP Server Administration Guide for SRP
(1725-36032-001)

SpectraLink e340/h340/i640 Wireless Telephone: Configuration and Administration Guide (SRP) (72-1065-09)

SpectraLink 8020/8030 Wireless Telephone Administration Guide for SRP
(1725-36030-001)

Available at

<http://www.polycom.com/usa/en/support/voice/wi-fi/wi-fi.html>

Polycom WLAN Compatibility Table (1725-36040-001)

Access Point Configuration Guide (1725-36xxx-001 where xxx indicates a number corresponding to the type of access point)

Available at

http://www.polycom.com/usa/en/support/voice/wi-fi/wi-fi_interoperability.html

LinkPlus Interface Guide (1725-361xx-001 where xx indicates a number corresponding to the type of PBX)

Available at

http://www.polycom.com/usa/en/support/voice/wi-fi/pbx_integration.html

Deploying Enterprise-Grade Wi-Fi Telephony

Available at

http://www.polycom.com/common/documents/products/voice/mobile/bestpractices_SLNK_032708.pdf

Best Practices Guide for Deploying SpectraLink 8020/8030 Wireless Telephones

Available at

http://www.polycom.com/common/documents/products/voice/mobile/deployment_guide_SLNK_03-08.pdf

Customer Support

Polycom wants you to have a successful installation. If you have questions please contact the Customer Support Hotline at (800) 775-5330. The hotline is open Monday through Friday, 6 a.m. to 6 p.m. Mountain time.

For Technical Support: technicalsupport@polycom.com

For Knowledge Base:

<http://www.polycom.com/usa/en/support/voice/voice.html>

For Return Material Authorization: rmaordinator@polycom.com

Icons and Conventions

This manual uses the following icons and conventions.



Caution! Follow these instructions carefully to avoid danger.



Note these instructions carefully.

Label

This typeface indicates a key, label, or button on SpectraLink hardware.

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SpectraLink Overview

The SpectraLink 8000 Telephony Gateway provides telephone functionality to SpectraLink Wireless Telephones over a wireless local area network (LAN). The installation process connects the Gateway to an existing host telephone system and LAN. The configuration process covers downloading current software, setting network parameters, setting Gateway parameters, assigning wireless telephones to the lines controlled by the Gateway, and establishing feature programming. Maintenance covers adding and deleting handsets, upgrading software, etc. The *Troubleshooting* chapter provides directions for analyzing system functioning via the **System Status** menu.

System Architecture

The SpectraLink 8000 Telephony Gateway and SpectraLink Wireless Telephone are Polycom's wireless LAN-based telephony products. SpectraLink products operate in the 2.400-2.483 GHz unlicensed band, using either the frequency hopping (FH) or direct sequence (DS) spread spectrum technology which is compatible with the IEEE 802.11 wireless LAN standard. There are two models of the SpectraLink 8000 Telephony Gateway: an 8-line model and a 16-line model.

Note that the 16-port Gateway and the 8-port Gateway are installed and configured identically. Both support eight simultaneous calls. However, the 8-port Gateway will be limited to eight line interfaces.

SpectraLink Wireless Telephones operate as clients on the wireless LAN, alongside other mobile 802.11 devices. Wireless LAN fixed radios, called access points (APs), receive IP voice packets from handsets and forward them to the SpectraLink 8000 Telephony Gateway over the Ethernet LAN. The Telephony Gateway connects to the host telephone switch using digital or analog line interfaces. Using Polycom's exclusive LinkPlus digital interface technology, handsets are able to emulate proprietary digital telephone sets, making advanced switch features such as multiple line appearances and display features available to mobile users.

Up to forty SpectraLink 8000 Telephony Gateways may be connected to the LAN for a maximum capacity of 640 SpectraLink Wireless Telephones. When five or more SpectraLink 8000 Telephony Gateways are installed, the SpectraLink 8000 SVP Server must also be installed to manage the increased load.

SpectraLink Voice Priority (SVP) and Quality of Service

SVP is the SpectraLink quality of service (QoS) mechanism that is implemented in the handset and an access point (AP) to enhance voice quality over the wireless network. SVP gives preference to voice packets over data packets on the wireless medium, increasing the probability that all voice packets are transmitted efficiently and with minimum or no delay. SVP is fully compatible with the IEEE 802.11 standards.

The SpectraLink 8000 SVP Server is an Ethernet LAN device that works with the APs to provide QoS on the wireless LAN. Voice packets to and from the handsets are intercepted by the SpectraLink 8000 SVP Server and encapsulated for prioritization as they are routed to and from the SpectraLink 8000 Telephony Gateway. See *SpectraLink 8000 SVP Server Administration Guide for SRP* for detailed information about this device.

System Timing

The SpectraLink 8000 Telephony Gateways provide SVP when there are four or fewer Gateways in the system. In this configuration, system timing is done through the IPC cables between each Gateway. If a SpectraLink 8000 SVP Server is installed in a system with four or fewer Gateways, the IPC cables are not required. If there are five or more Gateways in the system, then one or more SpectraLink 8000 SVP Server must be installed to handle the increased load and additional timing requirements. See *SpectraLink 8000 SVP Server Administration Guide for SRP*.

System Speed

SpectraLink Wireless Telephones can operate up to 54 Mb/s in 802.11a and 802.11g modes, and up to 11 Mb/s in 802.11b and b/g-mixed modes. In the b and b/g-mixed modes, if certain versions of legacy SpectraLink Wireless Telephones are used in the system, all handsets running in that mode will operate at the lowest common capability.

System Components

SpectraLink Wireless Telephones

Employees can carry handsets to place and receive calls as they move throughout the building. The handsets are to be used on-premises; they are not cellular or satellite phones. They are connected to the facility's existing telephone system and to the SpectraLink 8000 Telephony Gateway. Just like wired telephones, they can receive calls directly, receive transferred calls, transfer calls to other extensions, and make outside and long distance calls (subject to the restrictions applied in your facility.)

SpectraLink 8000 Telephony Gateway

The SpectraLink 8000 Telephony Gateway serves as the connecting point, or gateway, between the LAN and the existing telephone system. One or more SpectraLink 8000 Telephony Gateways are typically installed in the telephone equipment room. The eight port model supports up to eight telephone lines and handsets and the 16 port model supports up to 16 telephone lines and handsets. Up to 40 SpectraLink 8000 Telephony Gateways can be connected to the LAN to support additional telephone lines. If five or more SpectraLink 8000 Telephony Gateways are connected to the LAN, a SpectraLink 8000 SVP Server must be installed to handle the increased call volume.

Polycom offers digital SpectraLink 8000 Telephony Gateways that work with the digital ports on most common brands of telephone systems (PBX or key systems). We also offer an analog SpectraLink

8000 Telephony Gateway that works with telephone systems (CO, PBX, or Key Systems) with analog (loop start) ports.

Access points

Access points (APs) are supplied by third party vendors, APs provide the connection between the wired Ethernet LAN and the wireless (802.11) LAN. APs must be positioned in all areas where SpectraLink Wireless Telephones will be used. The number and placement of APs will affect the coverage area and capacity of the wireless system. Typically, the requirements for use of SpectraLink Wireless Telephones are similar to that of wireless data devices. Contact Polycom, or a certified Polycom distributor, for specific information about your facility's needs.

The SpectraLink 8000 System must connect to APs that utilize SVP. Refer to the *SpectraLink Wireless Telephone WLAN Compatibility List* for a list of APs that support SVP.

Ethernet switch

The Ethernet switch is a component in the wired Ethernet LAN infrastructure. Switches interconnect multiple network devices, including APs and SpectraLink 8000 Telephony Gateways. Ethernet switches are required to provide the higher performance network connections needed to handle combined voice and data traffic.

Router

A router is an optional component in the wired Ethernet LAN infrastructure that separates a wired LAN into segments so that network traffic is restricted to those segments that are directly involved in the communication. Installation of a network router is recommended in larger networks, where there may be significant network traffic not related to the wireless LAN. A router will isolate the wireless LAN from the associated wired LAN so that they are not impacted by each other's traffic. The SpectraLink 8000 Telephony Gateways, the APs, and their associated Ethernet switch must all be on the same subnet because certain network traffic, such as required multicast events, will not be passed through a router.

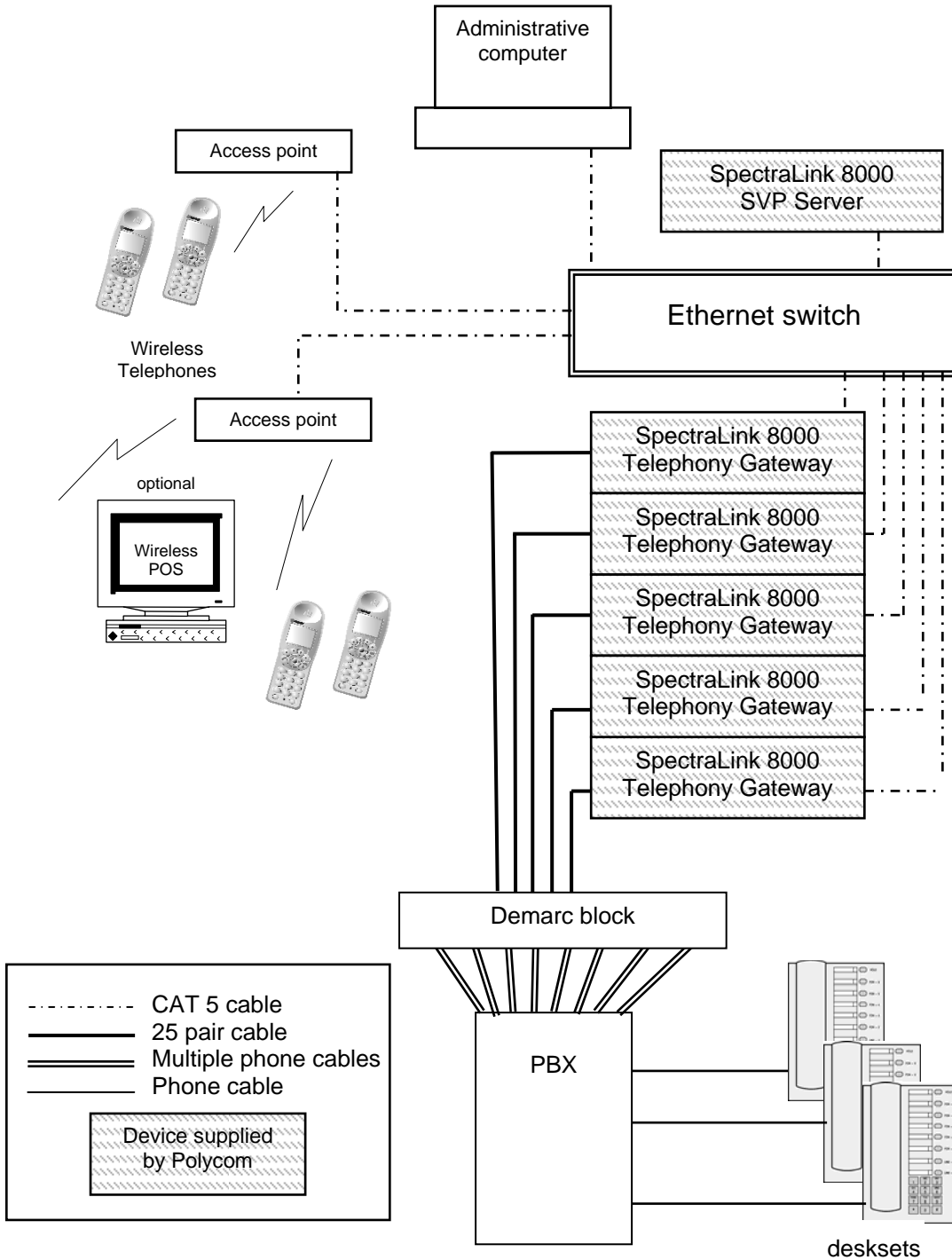
SpectraLink 8000 SVP Server

The SpectraLink 8000 SVP Server manages call volume and speed. It is required in any system when five or more SpectraLink 8000 Telephony Gateways are connected to the LAN. With 40 SpectraLink 8000 Telephony Gateways cabled together, a single SpectraLink 8000 SVP Server supports 120 simultaneous handset calls. Multiple SVP Servers can be installed to maximize system capacity.

Administrative computer

An administrative computer is required for setup and maintenance of the SpectraLink 8000 Telephony Gateway and the SpectraLink 8000 SVP Server. This computer may be only temporarily connected to the Ethernet switch; a dedicated computer is not required. Some installations use a laptop to configure and maintain system components. The administrative computer can also be used to periodically upgrade the SpectraLink 8000 Telephony Gateway software via FTP and the handset and SVP Server software via TFTP.

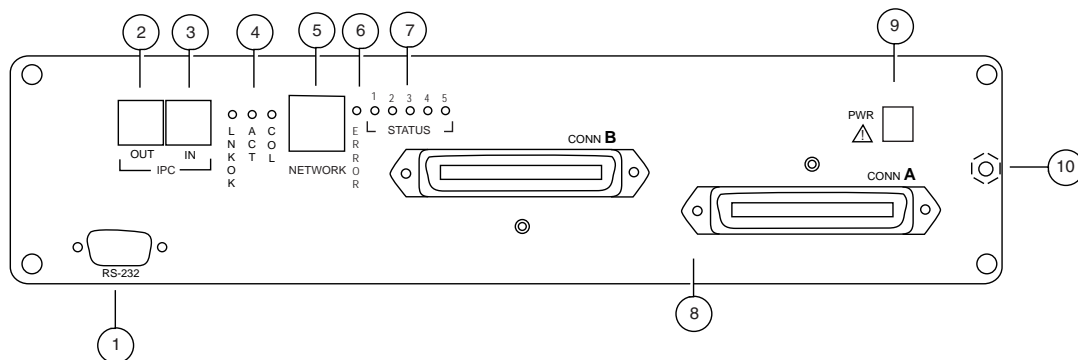
System Diagram



Five SpectraLink 8000 Telephony Gateways with SpectraLink 8000 SVP Server example

The Front Panel of the SpectraLink 8000 Telephony Gateway

The SpectraLink 8000 Telephony Gateway's front panel contains the connections to other SpectraLink 8000 Telephony Gateways, the telephone system and LAN, as well as status LEDs.



1 = RS-232 Port: Male DB-9 connector (DTE) used for RS-232 connection to a terminal, terminal emulator, or modem for system administration.

2 = IPC Out: Connects one SpectraLink 8000 Telephony Gateway to another.

3 = IPC In: Connects one SpectraLink 8000 Telephony Gateway to another.

4 = Link LEDs:

LNKOK: Lit when there is a network connection.

ACT: Lit if there is system activity.

COL: Lit if there are network collisions.

5 = Network: Connects to wired (Ethernet) LAN using a 10Base-T RJ-45 connector.

6 = Error LED: Lit when the system has detected an error.

7 = Status LEDs: Indicate system error messages and status.

1: Heartbeat that indicates gateway is running

2: Lit if line(s) in use

3: Currently unused

4: Timing Master

5: Lit if this gateway is the master gateway, used for timing only

8 = Conn A, Conn B: RJ-21 connector to the telephone cross-connect demarc block. Connector B is used only with four-wire interface Digital SpectraLink 8000 Telephony Gateways that work with the most common brands of telephone systems' (PBX or key systems) digital ports.

9 = PWR: Power jack that connects to the AC adapter supplying power to the system.



Use only the Polycom-provided Class II AC Adapter with output 24V DC, 1A.

10 = Grounding Terminal: (on back panel) Used for grounding when installing TGA116.

Installation and Configuration Steps

Installation and configuration has several phases. In some cases, a separate person is responsible for each phase. It is important to coordinate the activities among the persons involved.

The customer or vendor installs the APs per the *Configuration Guide* for the AP being used. This is normally done before the SpectraLink 8000 Telephony Gateway installation, but should be done before step 3 below.

The first two steps are usually done by the customer up to the point of installing and connecting the SpectraLink 8000 Telephony Gateway(s) to the telephone demarc blocks and LAN access device. At that point, a qualified Polycom installer assists the customer in completing the remaining steps.

1. Site Preparation: Done by the customer or a wire technician/contractor.
2. SpectraLink 8000 Telephony Gateway Installation: Done by the customer or Polycom.
If five or more SpectraLink 8000 Telephony Gateways are to be installed, a SpectraLink 8000 SVP Server is required and would also be installed in this step.
3. SpectraLink 8000 Telephony Gateway Configuration: Done by the customer or Polycom.
Conditional:
SpectraLink 8000 SVP Server Configuration: If a SpectraLink 8000 SVP Server has been installed, its configuration would also be done in this step per *SpectraLink 8000 SVP Server Administration Guide for SRP*.
4. SpectraLink Wireless Telephone Configuration: Done by the customer or Polycom specialist per *SpectraLink [model] Wireless Telephone Administration Guide*.
5. System Certification: Done after installation to confirm the system is working properly per *SpectraLink [model] Wireless Telephone Administration Guide*.

Site Preparation

As shown in the system diagram in the previous section, the SpectraLink 8000 Telephony Gateway is connected to both the Ethernet switch and the wired telephone system; the SpectraLink 8000 SVP Server is connected to the Ethernet switch only. The specifications covered here allow for great flexibility in physical placement of the components within stated guidelines.

This unit must be installed by a service person familiar with the installation of electronic equipment.

Do not power up the unit before it has been properly grounded to a protective earth. See Chapter 6 *Install SpectraLink 8000 Telephony Gateway - Grounding instructions*.

Required Materials

The customer must provide the following equipment.

- Power Outlet(s): Must accept Polycom provided AC adapter, one for each SpectraLink 8000 Telephony Gateway and one for the SpectraLink 8000 SVP Server (if required). For multiple SpectraLink 8000 Telephony Gateway installations, provide power strips with sufficient outlets and built-in power switches to enable the Telephony Gateways to be powered on and off at the same time.
- Cross-Connect Block: Required to connect the PBX ports to the SpectraLink 8000 Telephony Gateway(s).
- 25 Pair Cables: RJ-21 male at SpectraLink 8000 Telephony Gateway end, required to connect each SpectraLink 8000 Telephony Gateway to the cross-connect blocks.
- Backboard space: The SpectraLink 8000 Telephony Gateway and the SpectraLink 8000 SVP Server are designed to be wall mounted to 3/4" plywood securely screwed to the wall.
- Screws: Required to mount the SpectraLink 8000 Telephony Gateway and the SpectraLink 8000 SVP Server (if required) to the

wall. Four #8 x 3/4" panhead wood screws (or similar device) are required for each component.

- 10BaseT Cables: RJ-45 connector at each SpectraLink 8000 Telephony Gateway. Connection to Ethernet switch.
- CAT 5 Cable: RJ-45 connector at the SpectraLink 8000 SVP Server. Connection to Ethernet switch.
- Modem Cable: DB-9 female, null-modem cable. Required for initial setup of the SpectraLink 8000 Telephony Gateway and SVP Server.
- Outlet Strip: For installations with more than one SpectraLink 8000 Telephony Gateway, use an outlet strip with a built in power switch to allow SpectraLink 8000 Telephony Gateways to be turned on and off together.
- Grounding materials per section below *Grounding Instructions*.

LAN Requirements

Network infrastructure

The SpectraLink 8000 Telephony Gateway connects to your local area network (LAN). To provide adequate bandwidth and limit collisions, an Ethernet switch is required. The traffic between the SpectraLink 8000 Telephony Gateway and wireless LAN APs should be isolated as much as possible to avoid additional latency. The SpectraLink 8000 Telephony Gateway and APs must be on the same logical IP subnet. Inter-subnet roaming is not permitted for wireless devices.

Each SpectraLink 8000 Telephony Gateway to be installed requires a 10 Mb/s switched Ethernet connection.

The SpectraLink 8000 Telephony Gateway and wireless telephones rely on wireless LAN APs to transmit and receive packets from wireless telephone devices. The APs must be compatible with the IEEE 802.11 standard for wireless LANs, either frequency hopping or direct sequence spread spectrum radios. To configure a wireless LAN to support SpectraLink 8000 Telephony Gateways and wireless telephones refer to *Best Practices for Deploying Enterprise-Grade Wi-Fi Telephony*.

IP addressing

The SpectraLink 8000 Telephony Gateway, along with each of the handsets associated with it, requires an IP address. The system administrator must determine what IP addresses are to be used by the SpectraLink 8000 Telephony Gateway and APs. Handsets can be configured to use DHCP or Static IP addressing. Record IP address assignments on the *Wireless Device Planning Worksheets* – one for each SpectraLink 8000 Telephony Gateway. These worksheets may be started when the system is installed. The information recorded on them is used in the configuration and continuing administration of the system.



IP multicast addresses are used by the SpectraLink i640 and 8030 Wireless Telephone. This requires that multicasting be enabled on the subnet used for the SpectraLink Wireless Telephones, SVP Server, and Telephony Gateways.

Routers are typically configured with filters to prevent multicast traffic from flowing outside of specific domains. The wireless LAN can be placed on a separate VLAN or subnet to reduce the effects of broadcast and multicast traffic from devices in other network segments.

Location of SpectraLink 8000 Telephony Gateway and SVP Server

The specifications covered here allow for great flexibility in physical placement of the components within stated guidelines.

Each SpectraLink 8000 Telephony Gateway and SpectraLink 8000 SVP Server measures approximately 4 x 12.5 x 7 inches, and weighs about five pounds. The units are designed to be wall mounted – vertically or horizontally – over 3/4" plywood or mounted in a standard 19-inch rack mount cabinet with a Rack Mount Kit.

Locate the SpectraLink 8000 Telephony Gateway and SpectraLink 8000 SVP Server in a space with:

- Sufficient backboard mounting space and proximity to the LAN access device (switched Ethernet switch), telephone switch, and power source.
- Easy access to the front panel, which is used for cabling.
- For the SpectraLink 8000 Telephony Gateway, a maximum distance of 250 feet from the host telephone switch for a digital interface, and 325 feet (100 meters) from the Ethernet switch.
- For the SpectraLink 8000 SVP Server, a maximum distance of 325 feet (100 meters) from the Ethernet switch.

Telephone Interface Configuration



The customer or the customer's wire contractor is responsible for adhering to all local codes for wiring.

Prepare Demarcation (Demarc) Blocks

The SpectraLink 8000 Telephony Gateway is connected to the existing telephone system using RJ-21 connections. A SpectraLink 8000 Telephony Gateway is designed to operate with a specific interface to the telephone system: two-wire digital, two-wire analog, or four-wire digital. A four-wire system may require two demarc blocks.

Based on the number and type of interfaces in the system, determine the number of 25-pair cables required to connect telephone line ports to the demarcation blocks.



If the wiring between the SpectraLink 8000 Telephony Gateway and the telephone system leaves the building, consult your telephone system manual for instructions on providing adequate lightning and other over-current protection.

All SpectraLink 8000 Telephony Gateways (except the TGA116) are intended only for connection to the isolated side of an on-premises PBX or key system.

The interfaces are intended to connect to digital PBX ports that provide signals of 5Vp-p (max) AC components. Some PBXs provide a 48 V DC offset.

Modem administration

The SpectraLink 8000 Telephony Gateway can also be accessed remotely using its internal modem and a dedicated telephone line. If

your site will use administration by modem, this connection should be included in the wiring installation.

Install Telephone Demarc Blocks

The demarcation blocks used to connect the telephone system to the Telephony Gateway should be installed on 3/4" telephone facility backboard. Although this manual uses 66-blocks as examples, any standard cross-connect blocks are acceptable.

Assign and Program Telephone Ports

The wire contractor should inform the system administrator which telephone line numbers have been designated for the wireless devices and the remote diagnostics modem line.

The system administrator must assign extension numbers associated with the wireless devices and plan the functions (trunk access, toll restrictions, system features, ringing options, etc.) to be programmed. This programming will be done after the wireless devices are assigned to the SpectraLink 8000 Telephony Gateway, but will be faster if planned in advance by verifying the parameters and features on the current telephone system and wired phones.

For more detail, consult the Polycom *LinkPlus Digital Interface* document for the type of telephone system in use at your location.

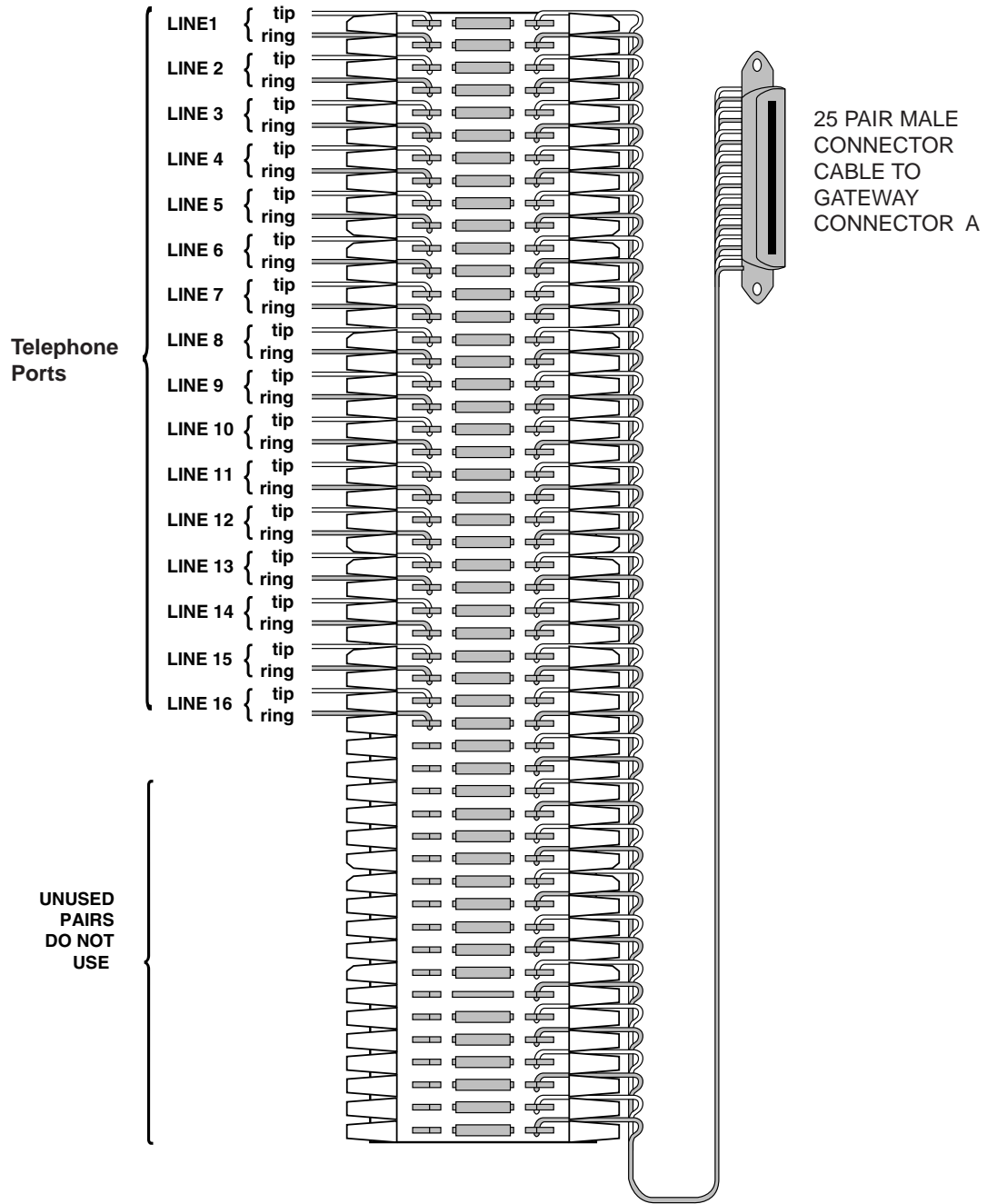
Connect Telephone Lines to Demarc Blocks

Telephone cables are punched down onto the cross-connect blocks as shown in the following demarc block diagrams.

Photocopy the *Wireless Device Planning Worksheets* as needed. Use the forms to track the telephone line assignments connected to each SpectraLink 8000 Telephony Gateway. As the installer punches down each telephone connection, record the information on the form to identify the user and extension assigned. A copy of this form should be posted near the cross-connect block.

Two-wire analog or digital demarc block

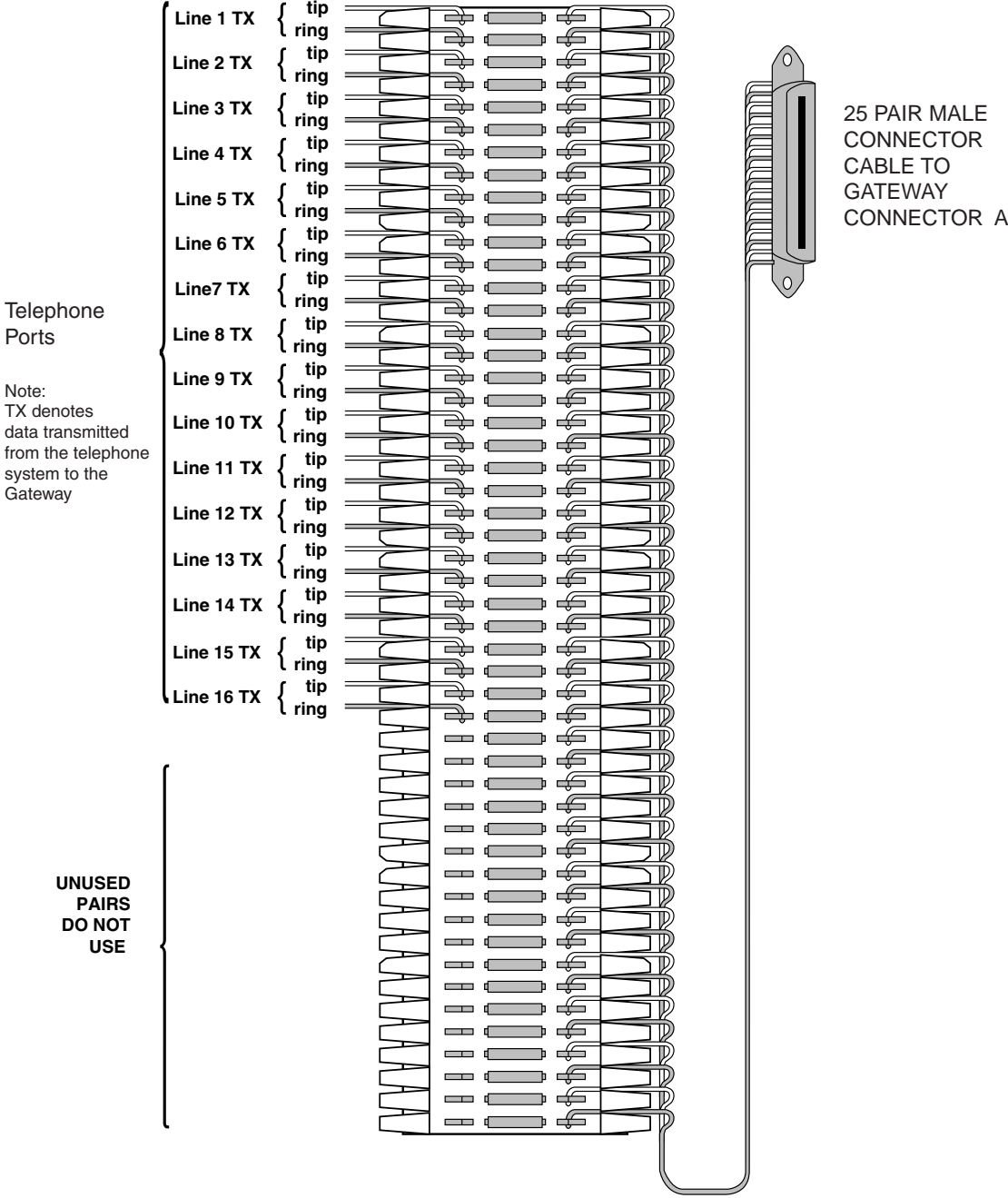
The demarc block for the two-wire analog or digital interface should be wired as follows.



Two-Wire Connector

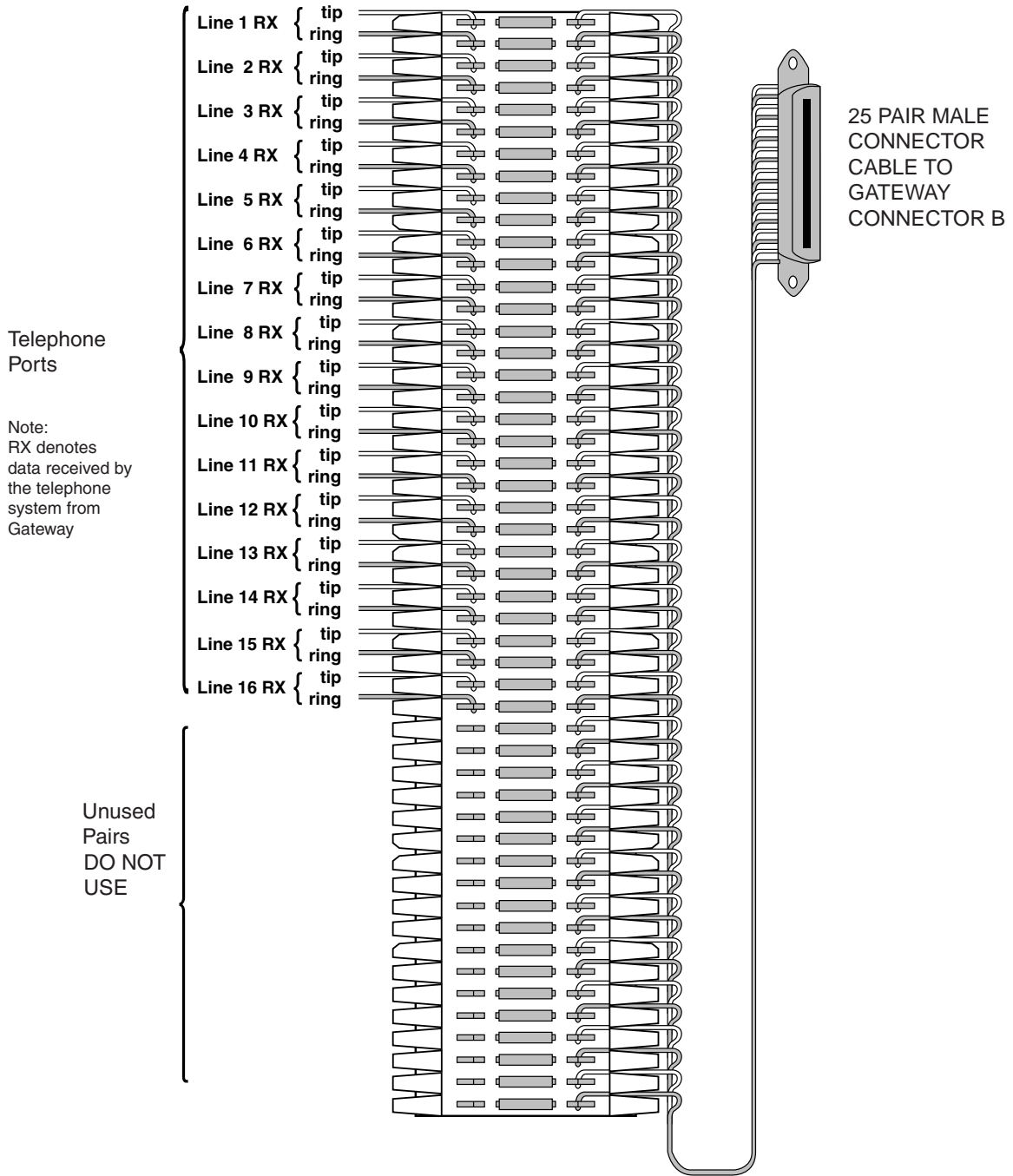
Four-wire digital demarc block (Connector A)

The four-wire digital interface requires two demarc blocks, one to Connector A and one to Connector B on the SpectraLink 8000 Telephony Gateway. They should be wired as follows.



Four-Wire Connector A

Four-wire digital demarc block (Connector B)



Four-Wire Connector B

Pre-Installation Verification

Verify Pre-Installation Requirements

Check the site to be sure pre-installation work has been completed correctly. This includes:

- Location chosen for the SpectraLink 8000 Telephony Gateway is adequate and power is available.
- APs are interoperable with SVP and coverage is adequate.
- Telephone lines for the wireless devices are installed and properly terminated.
- When installing a TGA116, the grounding terminal in the rear panel of each unit must be electrically connected to earth ground. See Chapter 6 *Install SpectraLink 8000 Telephony Gateway - Grounding instructions*.
- Dedicated line is available for remote access to diagnostic modem.
- Telephone system administrator is on-site to program the existing telephone system.

Check Components

The following items should be at the installation site.

- SpectraLink 8000 Telephony Gateway: Depending on the size of your system there may be four or more SpectraLink 8000 Telephony Gateways which will be linked together to support additional users.
- AC Adapter: Supplies power to the SpectraLink 8000 Telephony Gateway.



Use only the provided Class II AC Adapter with output 24V DC, 1A.

- Screws: Four, 3/4", #8 panhead screws for each SpectraLink 8000 Telephony Gateway to be wall mounted.
- Star Washers: When installing multiple SpectraLink 8000 Telephony Gateways, two per SpectraLink 8000 Telephony Gateway, to provide static protection.
- ESD Bonding Straps: When installing multiple SpectraLink 8000 Telephony Gateways, one per SpectraLink 8000 Telephony Gateway, to provide static protection.
- IPC Cable: Each SpectraLink 8000 Telephony Gateway is shipped with one IPC cable to carry signals between SpectraLink 8000 Telephony Gateways. It is used only when four or fewer SpectraLink 8000 Telephony Gateways are linked together and no SpectraLink 8000 SVP Server is installed.



You MUST use the IPC cable provided by Polycom when connecting four or fewer SpectraLink 8000 Telephony Gateways without a SpectraLink 8000 SVP Server.

- SpectraLink 8000 SVP Server: If required, see next section.
- Modem Cable: DB-9 female, null-modem cable. Required for initial setup of the SpectraLink 8000 Telephony Gateway and SVP Server.
- Documentation: Provided on compact disk (CD): Polycom Installation Manuals, User Documentation.

Install SpectraLink 8000 Telephony Gateway

Mount to Rack or Wall

The SpectraLink 8000 Telephony Gateways can be wall mounted either horizontally or vertically. Gateways may also be rack mounted in a standard 19-inch rack. A Rack Mount Kit must be purchased separately for a rack mount installation.

To Mount Gateways...	Connector A is...	Mount the Units...	Clearance Between Gateways
Horizontally	To the right side of the SpectraLink 8000 Telephony Gateway, with labels in correct position.	On top of one another	<p>Leave a little more than 1/4" between adjacent units, allowing easy removal of units via the keyhole openings on the rear panel.</p> <p>Do not leave more than 1/2" spacing or the ESD bonding strap will not fit correctly.</p> <p>To set the desired unit spacing, leave (0.9" + desired gap) between adjacent mounting holes.</p>
Vertically	At the top of the SpectraLink 8000 Telephony Gateway	Side by side	Adjacent units should be physically touching.

Mount the SpectraLink 8000 Telephony Gateway to rack

The Rack Mount Kit is designed for mounting equipment in a standard 19-inch rack and should contain the following equipment:

- Mounting plates: Two for each Gateway to be mounted.
- Screws: Four rack mount screws for each Gateway to be mounted.

Follow these steps to mount the Gateway to a rack:

1. Remove the corner screws from the Gateway.
2. Screw the U-shaped end (round screw holes) of the two mounting plates to the Gateway.
3. Screw the other end of the two mounting plates (oblong screw holes) to the rack. Connector A should be to the right.

Mount the SpectraLink 8000 Telephony Gateway to wall

Follow these steps to mount one SpectraLink 8000 Telephony Gateway to a wall:

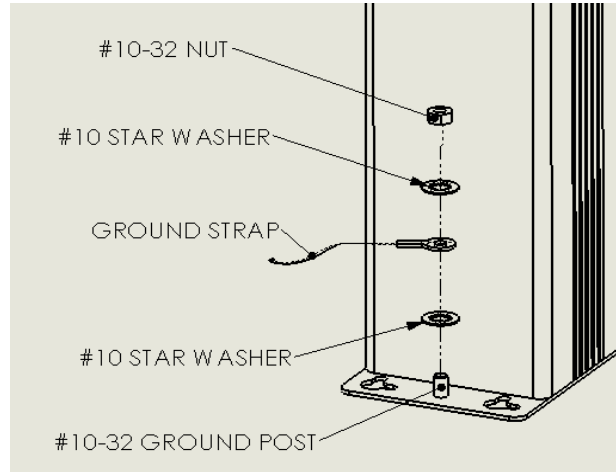
1. Using a 1/8" drill bit, drill four pilot holes, on 1.84" by 12.1" centers (approximately equivalent to 1-13/16" by 12-1/8").
2. If installing only one SpectraLink 8000 Telephony Gateway, insert the #8 x 3/4" screws in the pilot holes and tighten, leaving a 1/8" to 1/4" gap from the wall. Position the SpectraLink 8000 Telephony Gateway with Connector A to the right (horizontal) or bottom (vertical).
3. Slide the SpectraLink 8000 Telephony Gateway over the screws until the unit drops into place in the keyhole opening.

Grounding instructions



The metal chassis of this unit may contain leakage currents (i.e., "touch" current) which is cumulative when multiple units are connected together to form a system. To prevent the summation of leakage currents from being present on exposed metal surfaces, the following installation procedure must be followed.

All system units must be grounded to a protective earth by means of the grounding stud located on the rear panel. Refer to the illustration below for recommended continuity connection.



No more than 15 units may be grounded through one connection to the protective earth ground. Systems involving more than 15 units must be broken up into groups of 15 or fewer units with each group provided with an independent protective earthing conductor.

Installing Multiple SpectraLink 8000 Telephony Gateways

If installing more than one SpectraLink 8000 Telephony Gateway, the ESD bonding strap(s) must be installed between adjacent Gateways.

Mount Gateway

1. See directions for installing a single Gateway in previous section. Measure carefully to allow no more than 1/2" between Gateways. Drill holes and place screws.
2. Position each SpectraLink 8000 Telephony Gateway with Connector A to the right (horizontal) or bottom (vertical). Slide the SpectraLink 8000 Telephony Gateway over the screws until the unit drops into place in the keyhole opening.
3. Tighten screws fully.
4. Ground the unit per *Grounding instructions* above.

Install bonding straps

1. Remove the screws from the bottom (vertical mount) or left (horizontal mount) of adjacent units.
2. Place the ESD strap over the pilot holes that span two units and hold it against the plywood backboard or rack.
3. Place the star washer on top of the ESD strap.
4. Insert the #8 x 3/4" screw and tighten to leave a 1/8" to 1/4" gap from the wall.
5. Repeat for all ESD straps.



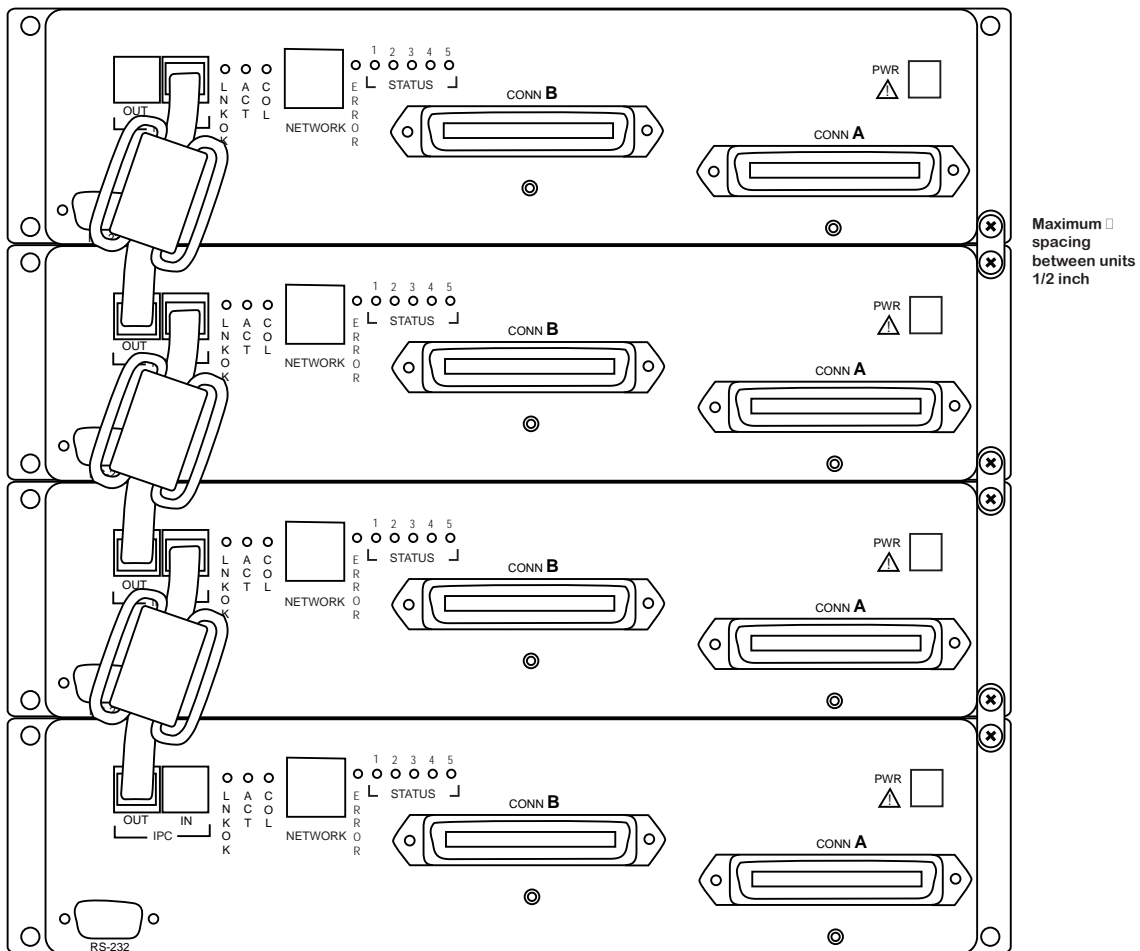
When installing a TGA116, the grounding terminal in the rear panel of each unit must be electrically connected to earth ground. See *Grounding instructions* above.

Install IPC cables

To connect IPC cables on four or fewer SpectraLink 8000 Telephony Gateways (without a SpectraLink 8000 SVP Server):

1. Mount the SpectraLink 8000 Telephony Gateways.
2. Connect the IPC cable from the **IPC OUT** Port of the first unit to the **IPC IN** Port of the adjacent unit.
3. Repeat step 2 until all units are connected.

The following illustration shows a horizontally mounted system, with SpectraLink 8000 Telephony Gateway number one at the bottom.



Four-Unit SpectraLink 8000 Telephony Gateway

(Rack mount or horizontal wall mount formation, unit one is at the bottom)



No IPC cable is connected to the **IN** port of the first unit or to the **OUT** port of the last unit.



When installing a system with four or fewer SpectraLink 8000 Telephony Gateways and a SpectraLink 8000 SVP Server, no IPC cables are required. For this configuration, follow the directions for connecting five or more SpectraLink 8000 Telephony Gateways.

Connect five or more SpectraLink 8000 Telephony Gateways

To mount five or more SpectraLink 8000 Telephony Gateways:

1. Mount the SpectraLink 8000 Telephony Gateways on the backboard or rack.
2. No IPC cable connection is required for five or more SpectraLink 8000 Telephony Gateways. Simply connect each SpectraLink 8000 Telephony Gateway to the local area network via an Ethernet Switch per *Connect SpectraLink 8000 Telephony Gateway to LAN* below.
3. This system configuration requires a SpectraLink 8000 SVP Server. See the document *SpectraLink 8000 SVP Server Administration Guide for SRP*.

Connect SpectraLink 8000 Telephony Gateway to Demarc Blocks

Connect the male RJ-21 connector from the appropriate demarcation block to the designated RJ-21 connector (A or B) on each SpectraLink 8000 Telephony Gateway. Secure the cables using the keeper.

Connect SpectraLink 8000 Telephony Gateway to LAN

Each Gateway requires a separate Ethernet connection on an Ethernet switch. Using an RJ-45 cable, connect the **NETWORK** port on each SpectraLink 8000 Telephony Gateway to the connecting port on the same Ethernet switch.

Connect power

1. Once the units have been properly grounded, connect the power plug from the AC adapter to the jack labeled **PWR** on the SpectraLink 8000 Telephony Gateway.



Use only the provided Class II AC Adapter with output 24V DC, 1A.



For proper operation, all SpectraLink 8000 Telephony Gateways must be powered on and off at the same time. For installations with more than one SpectraLink 8000 Telephony Gateway, use an outlet strip with a built in power switch to allow SpectraLink 8000 Telephony Gateways to be turned on and off together.

2. Plug the AC adapter into an 110V AC outlet or switch on the outlet strip to apply power to the SpectraLink 8000 Telephony Gateway.
3. Verify that leakage current ("touch" current) is below 250 μ A rms on exposed metal surfaces.
4. If leakage is excessive, power off the system and re-verify ground path continuity.
5. The system will cycle through diagnostic testing and the LEDs will blink for about one minute. When the system is ready for use:
 - The **E** (error) LED should be off on each SpectraLink 8000 Telephony Gateway
 - **Status 1** should be blinking on each SpectraLink 8000 Telephony Gateway
 - **Status 5** should be lit on one and only one SpectraLink 8000 Telephony Gateway. If **Status 5** is lit on more than one SpectraLink 8000 Telephony Gateway, the SpectraLink 8000 Telephony Gateways are not correctly connected to one another.

SpectraLink 8000 Telephony Gateway Administration Overview

The SpectraLink 8000 Telephony Gateway(s) and wireless telephones are administered and maintained through a series of menu options for each SpectraLink 8000 Telephony Gateway in the system. The SpectraLink 8000 SVP Server has a separate set of menus that are covered in a separate document: *SpectraLink 8000 SVP Server Administration Guide for SRP*.

System menus are usually viewed via an administrative computer that is connected to a SpectraLink 8000 Telephony Gateway via the serial port or through a Telnet session on the LAN. Alternately, an external modem may be used for viewing system menus. The series of screens containing menus and options for configuring and maintaining the SpectraLink 8000 components is called the Administration Console. Maintenance functions include:

- Configuring the SpectraLink 8000 Telephony Gateway's network parameters and its interface to the host telephone system.
- Configuring each SpectraLink 8000 Telephony Gateway's handsets, including adding and deleting handsets.
- Programming the handset's menu and features associated with PBX functions.
- Reviewing system status to check usage and diagnose system problems.

Wireless telephones have a separate administration document that is used in conjunction with this one for complete system configuration and administration. See *SpectraLink e340/h340/i640 Wireless Telephone: Administration Guide* or *SpectraLink 8020/8030 Wireless Telephone Administration Guide*.

APs move information between the wireless local area network (LAN) and the wired LAN. They are NOT configured from the

Administration Console. They are administered independently as covered in the *Configuration Guide* for the specific type of AP in use.

SpectraLink 8000 Telephony Gateway Configuration Sequence

This section covers the steps that must be taken to configure the SpectraLink 8000 Telephony Gateway for operation. The usual course of setup procedures will follow these general steps in the following order:

1. Configure the APs per the *Configuration Guide* for the type of APs in use at the site. Ensure the data rates are correctly set for your system design.
2. Download and install updates to the SpectraLink 8000 Telephony Gateway software per Chapter 18 *Software Maintenance*. Note that you may also download code for the SpectraLink Wireless Telephone software and the SVP Server software (if used) at this time. For the SpectraLink 8000 SVP Server code refer to the *SpectraLink 8000 SVP Server Administration Guide for SRP* document, section on *Software Maintenance*. For SpectraLink Wireless Telephone updates, refer to the *SpectraLink e340/h340/i640 Wireless Telephone Administration Guide* or *SpectraLink 8020/8030 Wireless Telephone Administration Guide*.
3. Connect to the SpectraLink 8000 Telephony Gateway(s) per the instructions located in Chapter 8, *Connecting to the SpectraLink 8000 Telephony Gateway*, and select a SpectraLink 8000 Telephony Gateway to administer. Initial configuring of the SpectraLink 8000 Telephony Gateway(s) is done via a serial connection if a DHCP server is not available.
4. Set the network configuration options per Chapter 10, *Network Configuration*.
5. Configure additional SpectraLink 8000 Telephony Gateways: Connect to each additional SpectraLink 8000 Telephony Gateway in your system and use the **Network Configuration and Change Password** (if desired) screens to configure them. Reset each Gateway as the last configuration step.
6. Reset all SpectraLink 8000 Telephony Gateways: After you have configured and reset the last SpectraLink 8000 Telephony Gateway, do not unplug the serial cable. Log in again and navigate to the **Gateway Configuration** screen. Use the arrow keys

- to highlight **Reset All Systems** and press Enter. Respond with a Y to the reset prompt.
7. For each Gateway, assign handsets to telephone lines controlled by each SpectraLink 8000 Telephony Gateway per Chapter 13, *Telephone Line Configuration*.
 8. For each Gateway (using Send All as indicated): Establish feature programming per Chapter 14 *Features Programming Menu* and the *LinkPlus Interface Guide* for your telephone system.
 9. At this point, the SpectraLink 8000 Telephony Gateway is configured. The remaining steps are done on the handsets. These steps are detailed in the handset administration document: *SpectraLink e340/h340/i640 Wireless Telephone Administration Guide* or *SpectraLink 8020/8030 Wireless Telephone Administration Guide*.
 10. Configure, test and verify each handset.
 11. Perform AP coverage test per *Certifying the Wireless Telephones*.
 12. Call Customer Support at Polycom for Site Certification clearance.

Send All

Depending on your system configuration, each SpectraLink 8000 Telephony Gateway may have identical settings. Relevant selections, such as DNS and WINS options, have an **S=Send All** option allowing you to send that configuration parameter to every SpectraLink 8000 Telephony Gateway on the LAN. Send All can only be used after the IP address is established on EACH SpectraLink 8000 Telephony Gateway via the serial connection. If you anticipate identical settings across the LAN, set just the IP address and custom hostname (if desired) for each SpectraLink 8000 Telephony Gateway using the initial serial connection. Then connect via the LAN and use Send All to set identical configuration options for all SpectraLink 8000 Telephony Gateways.

If Send All is to be utilized in your system, all passwords must be identical. **DO NOT CHANGE THE PASSWORD AT THE INITIAL CONFIGURATION IF THE SEND ALL OPTION IS DESIRED.** Use the default password and change it globally if desired after a LAN connection is established for all SpectraLink 8000 Telephony Gateways.

If independent administration of each SpectraLink 8000 Telephony Gateway is desired, the passwords may be set at initial configuration.

Navigating through the Administration Console Screens

Use the following keys to move around the Administration Console screens.

To Perform this Function:	Press:
Select function from menu	Use arrow keys to highlight selection, press Enter
Display menu associated with highlighted field	Enter: the Enter key will either display the options associated with an item or allow you to type an entry into the field.
Exit Screen	Esc: the Esc key will take you to the previous screen.
Move one line up	Corresponding arrow key
Move one line down	
Move one field to the left	
Move one field to the right	
Scroll	If a screen has more lines of information than can be displayed at once, the scroll feature uses the arrow keys and wraps. Pressing the down arrow key at the last line will move the cursor to the top line. Pressing the up arrow key at the top line will move the cursor to the last line.

The top line of each administration screen displays the hostname and IP address of the current SpectraLink 8000 Telephony Gateway connection.

Connecting to the SpectraLink 8000 Telephony Gateway

For the initial configuration of each SpectraLink 8000 Telephony Gateway, you should have the *Wireless Device Planning Worksheet(s)* that was filled out during the installation of the system. There should be one for each SpectraLink 8000 Telephony Gateway. The following items included in the *Worksheets* must be known before proceeding with the setup:

- SpectraLink 8000 Telephony Gateway hostname (usually the default name is replaced with a locally-designated identifier)
- PBX (Private Branch Exchange) type
- Active calls per AP (see the *Configuration Note* for the system's APs for this data)
- IP address (if static IP addresses are established by the LAN administrator)



If you have a DHCP Server, it will assign an IP address to the SpectraLink 8000 Telephony Gateway. In this case, you can use Telnet to configure and administer the Gateway and do not need an initial serial connection to assign the IP address.

Connect via the Serial Port

The serial connection is used in lieu of DHCP in systems that choose not to assign SpectraLink 8000 Telephony Gateway IP addresses via a DHCP Server, in which case a static IP address is required.

1. Using a DB-9 female, null-modem cable, connect any SpectraLink 8000 Telephony Gateway to the serial port of a terminal or PC.

2. Run a terminal emulation program (such as HyperTerminal™) or use a VT-100 terminal with the following configuration:
 - Bits per second: 9600
 - Data bits: 8
 - Parity: None
 - Stop bits: 1
 - Flow control: None
3. Press Enter to display the SpectraLink 8000 Telephony Gateway login screen.
4. Enter the default login: **admin** and default password: **admin**. These are case sensitive.

Select a SpectraLink 8000 Telephony Gateway to Administer

After connecting to the SpectraLink 8000 Telephony Gateway, the first Administrative Console screen is the **Gateway Connection Selection** screen. It allows you to select the SpectraLink 8000 Telephony Gateway to be administered. Once they are configured, this screen lists all SpectraLink 8000 Telephony Gateways by hostname and IP address. The hostname may either be the default name or a custom name established from the **Network Configuration** screen. The following example shows just one SpectraLink 8000 Telephony Gateway in a system:

```

Gateway Connection Selection
Hostname: slnk_00011a, IP Address: 10.13.0.50

Name                               IP Address
slnk_00011a                         10.13.0.50
Exit

Enter=Select      X=Exit
Use Arrow Keys to Move Cursor

```

If using a serial connection, only the SpectraLink 8000 Telephony Gateway that is connected via the serial cable is shown.

1. From the **NetLink 8000 System** menu, navigate to the **Network Configuration** screen and set the IP address.

Note that the **Allow Telnet Connections** option must remain at the default **Yes** in order to access this SpectraLink 8000 Telephony Gateway via the LAN.

2. You may optionally change the default host name, if desired. This is the name of the SpectraLink 8000 Telephony Gateway to which you are connected, for identification purposes only. This is the identifier that comes up on the initial connection screen as shown above. You cannot enter spaces in this field.
3. After entering the static IP address, navigate to the **Gateway Configuration** screen and reset the Gateway.



Once you have established the IP address via the **Network Configuration** menu and reset the Gateway, you may use Telnet to continue the configuration of the Gateway.

4. If you have multiple SpectraLink 8000 Telephony Gateways to configure with static IP addresses, ensure each one is connected to the Ethernet Switch as shown in the *Installation* sections of this document. Use the serial connection to set the IP address for each one, resetting each before moving on to the next. After you have configured and reset the last SpectraLink 8000 Telephony Gateway, do not unplug the serial cable. Synchronize the Gateways by logging in again and navigating to the **Gateway**

Configuration screen. Use the arrow keys to highlight **Reset All Systems** and press Enter. Respond with a **Y** to the reset prompt.

Note that after IP addresses are established and the SpectraLink 8000 Telephony Gateways are functioning on the LAN, the **S=Send All** command can be used to send configuration information to every SpectraLink 8000 Telephony Gateway in your LAN.

5. Unplug the serial cable.

Connecting via Telnet

In addition to the serial connection described in the previous section, connection to the SpectraLink 8000 Telephony Gateway may be done via the network using Telnet. Once the IP addresses are configured, every SpectraLink 8000 Telephony Gateway is accessible through a connection to any SpectraLink 8000 Telephony Gateway.



If you do not have a DHCP Server, Telnet can only be used after the SpectraLink 8000 Telephony Gateway's IP address is configured. See the previous section.

The Telnet method of connection is used for routine maintenance of the system for both local and remote administration, depending on your network.

To connect via Telnet, run a Telnet session to the IP address of any SpectraLink 8000 Telephony Gateway. Once you connect to any SpectraLink 8000 Telephony Gateway and log in, the **Gateway Connection Selection** screen displays.

Select the SpectraLink 8000 Telephony Gateway you wish to administer and press Enter.

The top line of each administration screen displays the hostname and IP address of the SpectraLink 8000 Telephony Gateway on which you are currently operating.

Connecting via External Modem

The external modem method of connection is most frequently used for routine maintenance of the system when administration of the system is remotely done, and the network itself is not remotely accessible.



You will need a standard analog phone line for the modem. (A digital line from a digital PBX will not work.) Consult with your telephone system vendor or the Telephone Company for more information about dialing into a modem.

If needed, the external modem generally should maintain its default settings, except Hardware Flow Control must be disabled.

The following settings use the US Robotics® Sportster® modem. Other modem models may be used, but the particular model's settings will have to be adapted to conform to those listed in the following table.

Configure modem internal settings (US Robotics Sportster)

1. Connect the modem to a PC using a standard modem cable. Plug the 9-pin connector into the RS-232 port on the PC, and the 25-pin connector into the modem's port.
2. Using a standard communications package such as ProComm Plus or HyperTerminal™, bring up the modem and type the following commands. Press Enter after typing each command.

Command	Description
AT&F1	Loads factory default settings
AT&H0	Sets Transmit Data Flow control to disabled
AT&R1	Sets modem to ignore Request to Send (RTS)
AT&W0	Saves the configuration

3. Power off the modem, and then turn it back on.
4. Type: ATi4 and press Enter. The settings should match those shown in the following figure, which was taken from ProComm Plus.

```

Procomm Plus
OK
at&w0
OK
ati4
U.S. Robotics Sportster 33600 Fax Settings...

  B0 E1 F1 M1 Q0 U1 X4 Y0
BAUD=19200 PARITY=N WORDLEN=8
DIAL=TONE ON HOOK

&A3 &B1 &C1 &D2 &G0 &H0 &I0 &K1
&M4 &N0 &P0 &R1 &S0 &T5 &U0 &Y1

S00=000 S01=000 S02=043 S03=013 S04=010 S05=008 S06=002
S07=060 S08=002 S09=006 S10=014 S11=070 S12=050 S13=000
S15=000 S16=000 S18=000 S19=000 S21=010 S22=017 S23=019
S25=005 S27=000 S28=008 S29=020 S30=000 S31=128 S32=002
S33=000 S34=000 S35=000 S36=014 S38=000 S39=000 S41=000
S42=000

LAST DIALED #:

OK
Alt-Z FOR HELP | ANSI | FDX | 19200 N81 | LOG CLOSED | PRINT OFF | OFF-LINE

```

Connect the modem

Unplug the modem from the PC's serial port and plug it into the SpectraLink 8000 Telephony Gateway.

Connecting via Internal Modem

An internal 2400-baud modem is built into the SpectraLink 8000 Telephony Gateway. Line one can be configured to connect via this modem. The modem is only used by Polycom Customer Service to assist in troubleshooting problems by remotely accessing the Gateway. If this is required, Customer Service personnel will give instructions on how to configure the modem.

Main Menu

The NetLink 8000 System menu provides a list of options for the maintenance of the SpectraLink 8000 Telephony Gateway and the handsets it supports.

```

NetLink Wireless Telephone System
Hostname: slnk_00011a, IP Address: 10.13.0.50

System Status Menu
Telephone Line Configuration
Gateway Configuration
Network Configuration
Features Programming Menu
Change Password

Enter=Select   Esc=Exit
Use Arrow Keys to Move Cursor

```

Menu Option	Function
System Status	Provides status of SpectraLink 8000 Telephony Gateway and its communications links. Used to view the system operation and troubleshoot problem areas.
Telephone Line Configuration	Used to add, delete, and maintain handsets
Gateway Configuration	Used to enter and maintain configuration information for the operation of the SpectraLink 8000 Telephony Gateway.
Network Configuration	Used to enter and maintain configuration information for the SpectraLink 8000 Telephony Gateway as a component on the LAN.
Features Programming Menu	Features Programming associates telephone system features with FCN keys and/or softkeys on the handset.
Change Password	Used to change the administration password.

Network Configuration

IP address and additional LAN settings are set and changed in the **Network Configuration** screen, available from the **NetLink Wireless Telephone System** menu.

```

Network Configuration
Hostname: Alabama, IP Address: 10.13.0.140

Ethernet Address:      00:90:7a:02:8e:1c
IP Address             DHCP
Hostname              Alabama
Subnet Mask:          255.0.0.0
Default Gateway:      DHCP
Gateway TFTP server IP: 10.0.0.3
Allow Telnet Connections: Yes
Allow FTP Connections: Yes
Primary DNS Server:   DHCP
Secondary DNS Server: DHCP
DNS Domain:          alpha3
Primary WINS Server:  DHCP
Secondary WINS Server: DHCP
Logging:             Engineering Log:
Log server:           logger4nt
SNTP server:          logger4nt
GMT Offset            -7

S=Send All      Enter=Edit      Esc=Exit
Use Arrow Keys to Move Cursor  Up=Wrap around to bottom  Down=More

```

Scroll to remaining options:

```

GMT Offset            -7
SNMP Console server: NONE
SNMP read community: NONE
SNMP write community: NONE
SNMP trap community: NONE
IGMP Enabled:        Yes
Maintenance Lock:    No

S=Send All      Enter=Edit      Esc=Exit
Use Arrow Keys to Move Cursor  Up=More      Down=Wrap around to top

```

The options listed below with the arrow bullet ➤ are minimal settings required for SpectraLink 8000 Telephony Gateway functioning. Additional settings may be required by your system. Do not change

settings until you have studied this section and are familiar with the consequences any change will produce.



When the settings marked with an arrow bullet ➤ are changed, the SpectraLink 8000 Telephony Gateway automatically goes into Maintenance Lock and prevents any new calls from starting. Resetting terminates any active calls and clears the Maintenance Lock.

Ethernet Address: The MAC address of the SpectraLink 8000 Telephony Gateway, set at the factory and not user configurable.

➤ **IP Address:** Established in the initial serial connection and may be changed as needed. This is the IP address of the SpectraLink 8000 Telephony Gateway as defined by your network administrator. Enter the complete address including digits and periods. DHCP may be entered and if so, the **S=Send All** option allows you to configure all SpectraLink 8000 Telephony Gateways with DHCP.

➤ **Hostname:** The hostname identifies this particular SpectraLink 8000 Telephony Gateway and is for identification purposes only. The default name may be changed to something locally suitable. You cannot enter spaces in this field.

Subnet Mask: The network administrator must define the subnet mask.

Default Gateway: IP address of a router on the local subnet.

Allow Telnet Connections: Enter **Yes** to allow connection to the SpectraLink 8000 Telephony Gateway via Telnet; enter **No** if you do not want to allow Telnet connection.

Allow FTP Connections: Enter **Yes** to allow the SpectraLink 8000 Telephony Gateway to communicate via FTP; enter **No** if you do not want to allow this. FTP is used for software updates as well as to backup and restore software configuration. See the *Software Maintenance* section for more information about FTP.



The **Allow Telnet** and **Allow FTP Connections** options are security points. If both of these are disabled, the only method for accessing the SpectraLink 8000 Telephony Gateway will be via serial connection.

DNS server and DNS domain: These settings are used to configure Domain Name services. Consult your system administrator for the correct settings. These can also be set to DHCP. This will cause the DHCP client in the gateway to attempt to automatically get the

correct setting from the DHCP server. The DHCP setting is only valid when the IP address is also acquired using DHCP.

WINS servers: These settings are used for Windows Internet Name Services. Consult your system administrator for the correct settings. These can also be set to DHCP. This will cause the DHCP client in the gateway to attempt to automatically get the correct setting from the DHCP server. The DHCP setting is only valid when the IP address is also acquired DHCP.



When the name services are set up correctly, the SpectraLink 8000 Telephony Gateway can translate hostnames to IP addresses. Using Telnet, it is also possible to access the SpectraLink 8000 Telephony Gateways using their hostname instead of the IP address.

Logging and Log server: Logging can be set to **Syslog** or **NONE**. The log server is the IP address or hostname of the Syslog server on the network. The gateway will output syslog format diagnostic messages. This is usually not needed.

SNTP: The SNTP (Simple Network Time Protocol) server provides a time stamp for syslog messages. See the *Configuration and Administration* document for the SpectraLink Wireless Telephone for detailed information about syslog messages. If syslog is being used, then SNTP server should be set to the hostname or IP address of an SNTP server.

GMT Offset: Difference in hours from Greenwich Mean Time, used for time stamping by SNTP. There is no automatic adjustment for Daylight Savings Time. Enter -0 to -12 for zones that are earlier than GMT and +0 to +12 for zones that are later than GMT. Example: Mountain Standard Time is -7, or -6 during DST.

SNMP: Simple Network Management Protocol: Enter the IP address of the SNMP server to allow alarms and other simple events to be sent from the SpectraLink 8000 Gateway to the SNMP server. More specific configuration information is not sent.

IGMP: Internet Group Management Protocol: **Yes** enables, **No** disables. This is used for managing multicast traffic. It should typically be set to **Yes**.

Maintenance Lock: The system automatically sets this option to **Yes** after certain maintenance activities that require reset. These are indicated in this list with an arrow bullet. Maintenance Lock prevents any new calls from starting. Note that the administrator cannot change this option. It is automatically set by the system. Reset the system at exit to clear Maintenance Lock.

Press Esc to return to the **SpectraLink 8000 System** menu.



Note that resetting the SpectraLink 8000 Telephony Gateway(s) will terminate any calls in progress on the SpectraLink 8000 Telephony Gateway(s) being reset.



All SpectraLink 8000 Telephony Gateways should be reset at the end of any maintenance procedure that requires any one SpectraLink 8000 Telephony Gateway to be reset either via **Maintenance Lock** or manually via **Reset System**. Resetting them all keeps the SpectraLink 8000 Telephony Gateways synchronized, which is important for proper system function.

Set or Change Password

Passwords may be set uniquely for each SpectraLink 8000 Telephony Gateway. If this is done, each must be administered independently and the Send All command will not work.

If Send All is to be utilized in your system, all passwords must be identical. Once all SpectraLink 8000 Telephony Gateways are on the LAN, a global password may be set.

If independent administration of each SpectraLink 8000 Telephony Gateway is desired, the passwords must be set in each SpectraLink 8000 Telephony Gateway.

A password must meet the following requirements:

- It must be more than four characters, but cannot exceed 16 characters,
- The first character must be a letter,
- Numbers or letters are allowed,
- No dashes, spaces, or punctuation marks, etc. are allowed.

Select the **Change Password** option from the **NetLink Wireless Telephone System** menu.

```
Change Password
Hostname: slnk_00011a, IP Address: 10.13.0.50

Old Password          *****
New Password          *****
Confirm New Password *****
Set Password on all gateways
Set Password on this gateway only

Enter=Edit   Esc=Exit
Use Arrow Keys to Move Cursor
```

If you forget a password, call Polycom Customer Service for assistance.



In order for Send All to function across all SpectraLink 8000 Telephony Gateways, all passwords must be identical. If one or more SpectraLink 8000 Telephony Gateways are configured with different passwords, the Send All command will not configure them and they must be administered independently.

SpectraLink 8000 Telephony Gateway Configuration

Select **Gateway Configuration** from the **NetLink Wireless Telephone System** menu.

```

Gateway Configuration
Hostname: Alabama, IP Address: 10.13.0.140

Telephone Switch Type:      Hicom 300
Use SVP100 for QOS:        Yes
Gateway ID Number:         -1
Flash Delay Time:          1.50
Flash Disconnect Time:     0.50
Calls Per Access Point:    12
Companding Type:           Mu-Law
OAI Hostname:              10.2.0.57
TFTP Download Master:      1alphant
System id:                  25742
DSCP tag not in call:      16
DSCP tag in call:          48
Inactivity timeout (min):  20
System Locked:             No
Maintenance Lock:          No
Checkout all phones
Reset System

S=Send All   Enter=Edit   Esc=Exit
Use Arrow Keys to Move Cursor   Up=Wrap around to bottom   Down=More

```

Scroll to remaining option:

```

Reset System
Reset All Systems

Enter=Select   Esc=Exit
Use Arrow Keys to Move Cursor   Up=More   Down=Wrap around to top

```

The options listed below with the arrow bullet ➤ are minimal settings required for SpectraLink 8000 Telephony Gateway functioning. Do not change settings until you have studied this section and are familiar with the consequences any change will produce.

Where available, **S=Send All** may be used to send identical configuration settings to every other SpectraLink 8000 Telephony Gateway in the system.

➤ **Telephone Switch Type:** Press Enter to change this field. From the sub-menu of PBX types, select the telephone switch type you are using.

➤ **Use SVP100 for QOS:** This must be set to **No** when using four or fewer gateways with the IPC cables and no SpectraLink 8000 SVP Server. It must be set to **Yes** when using a SpectraLink 8000 SVP Server.

Gateway ID Number: For a Norstar PBX, this should be set to a unique number for each Gateway. Every other system should retain the default.

Flash Delay Time: (analog interface only) The time the system should wait after the “on-hook” flash signal ends before allowing other keys to be transmitted to the host telephone system. The allowed range is from .01 to 2 seconds. The value depends on the requirements of the host telephone system.

Flash Disconnect Time: (analog interface only) The length of time the system should be “on-hook” when the user presses the **Start** key during a call, or uses a macro that includes a Flash code. The allowed range is from .01 to 2 seconds. The value depends on the requirements of the host telephone system.

➤ **Calls Per Access Point:** Maximum number of active handset calls per AP. Refer to the *Configuration Notes* for your APs for this information or consult your wireless LAN system administrator. This number should be the same on all SpectraLink 8000 Telephony Gateways in the system.

➤ **Companding Type:** Signal compression type. Mu-law is standard format in most host telephone systems in North America. A-law is typically used in Mexico. If the companding type of the SpectraLink 8000 Telephony Gateway does not match that of the host telephone system the handsets will have distorted dial tone and unintelligible voice quality.

OAI hostname: Valid entries:

Local: If the OAI Gateway is on the same subnet.

IP Address: If the OAI Gateway is on another subnet.

NONE: If no OAI Gateway is on the system.

TFTP Download Master: This entry indicates the source of software updates for the handsets associated with this SpectraLink 8000

Telephony Gateway. Software updates received from Polycom must be placed in this location. See section 18, *Software Maintenance*, for more information. When the handset is turned on, it checks this source for confirmation that it is running the correct software version. If there is any discrepancy, the handset will download the software that resides in this source location.

Valid source location entries are:

Gateway: (SpectraLink 8000 Telephony Gateway default)

Indicates that the handsets will get software from this Gateway.

IP Address: The IP address of a network TFTP server that will be used to transfer software updates to the handsets.

Hostname: The hostname of the network TFTP server that will be used to transfer software updates to the handsets. DNS or WINS must be configured correctly to use a hostname.

NONE: Disables the TFTP download of handsets.

DSCP tag not in call/in call: DSCP (Differentiated Services Code Point) is a QoS mechanism for setting relative priorities. Packets are tagged with a DSCP field in the IP header for type of service. The value may be set as a number from 0-255 and may be different for in call/not in call modes. The default values are as shown in the above screen - not in call = 16, in call = 48.

Inactivity Timeout (min): Set the number of minutes the administrative module can be left unattended before the system closes it. This number can be from 1 to 100. If it is set to zero (0), the administrative module will not close due to inactivity.

System Locked: This option is used to take the system down for maintenance. The default entry is **No**. Set it at **Yes** to prevent any new calls from starting. Return to **No** to restore normal operation.

Maintenance Lock: The system automatically sets this option to **Yes** after certain maintenance activities that require reset, and certain alarms that cause the system to be inoperable. Such maintenance activities are indicated in this list with an arrow bullet. Maintenance Lock prevents any new calls from starting. Note that the administrator cannot change this option. It is automatically set by the system. Reset the system at exit to clear Maintenance Lock.



The SpectraLink 8000 Telephony Gateway monitors the condition of any SpectraLink 8000 SVP Server(s) on the system. In a single SpectraLink 8000 SVP Server system, when the SVP Server goes into Maintenance Lock, the Telephony Gateway will also lock and set an alarm. No new calls will be allowed but calls in progress will not be affected.

In multiple SVP Server systems, when one SVP Server goes into Maintenance Lock, it sends a message to the Telephony Gateway(s) which will stop using the locked SVP Server. It may take up to 30 seconds for the message to reach the Telephony Gateway. If all SVP Servers lock, then the Telephony Gateway will also lock and set an alarm. No new calls will be allowed but calls in progress will not be affected.

Checkout all phones: If the TFTP server is on a PC, this command is used to upgrade each handset without having to reset the Gateway. This command forces all the handsets on the system to check in with the Gateway. They will check their current software version vs. the version stored on the TFTP server and download if needed. Any handsets in a call will perform their checkout after the call is complete.

Reset System: If this option is selected, you will be prompted to reset this SpectraLink 8000 Telephony Gateway.

Reset All Systems: If this option is selected, you will be prompted to reset all SpectraLink 8000 Telephony Gateways.

Press Esc to return to the **NetLink Wireless Telephone System** menu.

Reset the SpectraLink 8000 Telephony Gateway

Note that resetting the SpectraLink 8000 Telephony Gateway(s) will terminate any calls in progress on the SpectraLink 8000 Telephony Gateway(s) being reset.



All SpectraLink 8000 Telephony Gateways should be reset at the end of any maintenance procedure that requires any one SpectraLink 8000 Telephony Gateway to be reset either via **Maintenance Lock** or manually via **Reset System**. Resetting them all keeps the SpectraLink 8000 Telephony Gateways synchronized, which is important for proper system functioning.

The SpectraLink 8000 Telephony Gateways are ready to operate. The next step is to configure the lines used by the handsets. See the next section: *Telephone Line Configuration*.

Note that after the handsets are added and the system is running, additional configuration options may be chosen to adjust the system for your usage situation.

Telephone Line Configuration

Telephone line configuration is performed after the initial SpectraLink 8000 Telephony Gateway installation is complete and the Gateway is configured. The configuration procedure associates a handset with its telephone port in the SpectraLink 8000 Telephony Gateway.

For the line configuration of handsets, please have the handsets to be configured and the *Wireless Device Planning Worksheet(s)*. There should be one worksheet per SpectraLink 8000 Telephony Gateway that lists the port assignment, extension, and user name for each handset. The steps to add a handset will need to be done for each handset on each SpectraLink 8000 Telephony Gateway.

Note that an 8-port Gateway will only show eight line interfaces on the configuration screen.

Adding or Changing a Handset

When adding or changing a handset, a MAC address must be entered. Handset registration may be accomplished over the air by simply selecting the appropriate line MAC address field with the arrow keys, typing **R** for **On Air Register** and powering on the handset. The MAC address is automatically captured. Optionally, the party's name and extension number may be recorded. Use the arrow keys to navigate to the name and extension fields and manually enter the associated data.

The system will not allow you to register the same handset to two different lines. Use Esc to cancel out of any unwanted transaction.

Telephone Line Configuration				
Hostname: slnk_00011a, IP Address: 10.13.0.50				
Line	MAC Address	Name	Extension	
01:	00:90:7a:00:f4:16	Sue Smith	100	
02:	00:90:7a:00:02:36	John Smith	110	
03:	Not Configured	NONE	NONE	
04:	Not Configured	NONE	NONE	
05:	Not Configured	NONE	NONE	
06:	Not Configured	NONE	NONE	
07:	Not Configured	NONE	NONE	
08:	Not Configured	NONE	NONE	
09:	Not Configured	NONE	NONE	
10:	Not Configured	NONE	NONE	
11:	Not Configured	NONE	NONE	
12:	Not Configured	NONE	NONE	
13:	Not Configured	NONE	NONE	
14:	Not Configured	NONE	NONE	
15:	Not Configured	NONE	NONE	
16:	Not Configured	NONE	NONE	

R=On Air Register D=Delete Enter=Edit Esc=Exit
Use Arrow Keys to Move Cursor

1. Navigate to the NetLink Wireless Telephone System menu for the SpectraLink 8000 Telephony Gateway that serves the port to be configured. Select Telephone Line Configuration.
2. Enter the following information for each assigned line. Use the arrow keys to navigate through the fields.

MAC Address: The MAC address is printed on the sticker underneath the battery on the handset. It can also be displayed on the handset by turning off the handset, and then pressing and holding the Power On button. The MAC address appears on the first line of the display (12 characters).

The MAC address can be manually entered by typing the entire address including digits and colons.

The MAC address can be automatically entered by typing R and following the prompts to turn on the handset.

Name: Enter the user name assigned to the telephone. This is for record keeping only; it does not communicate the name to the PBX or the handset.

Extension: Enter the extension assigned to this telephone. This is for record keeping only; it does not communicate the extension to the PBX or the handset.

3. Write the MAC address on the Wireless Planning Device Worksheet.
4. Repeat steps 2, 3, and 4 for each handset to be added or changed.
5. Press Esc to return to the NetLink Wireless Telephone System menu.



A handset may be associated with one and only one telephone line. The same MAC address may not be assigned to two or more telephone lines.

Deleting a Handset

To delete a handset from the SpectraLink 8000 Telephony Gateway configuration:

1. Navigate to the **NetLink Wireless Telephone System** menu of the SpectraLink 8000 Telephony Gateway that serves the port for the line being used by the handset. Select **Telephone Line Configuration**.
2. Use the arrow keys to highlight the line to be deleted.
3. Press D to delete the handset information.
4. Press Y to accept changes.
5. Press Esc to return to the **NetLink Wireless Telephone System** menu.



If the SpectraLink 8000 Telephony Gateway has been programmed in the Feature Programming menu for the **ADMIN** function, a handset may be added or deleted via another handset. See the later section on *Feature Programming* for information about programming and using this feature.

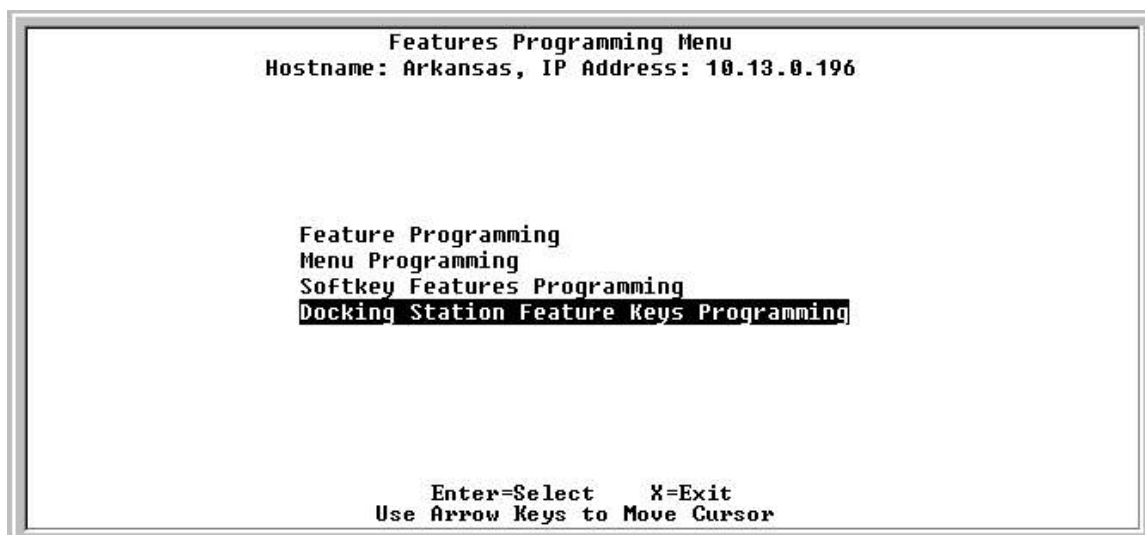
Features Programming Menu

Two basic types of wired telephone systems exist – analog and digital. Both types offer special features such as hold, transfer, conference, camp on, and speed dial. In both types of systems, these features are activated in a telephone by pressing a series of keys or a single programmed button on a deskset.

The **Feature Programming** option is used in systems that either do not have SpectraLink Wireless Telephones that use softkeys, or in systems that have a combination of SpectraLink Wireless Telephones: some models with softkeys and some without.

In systems that only use SpectraLink Wireless Telephones with softkeys – the SpectraLink e340/h340/i640 and 8020/8030 Wireless Telephones – all feature programming is done via the **Softkey Feature Programming** option.

The **Docking Station Feature Keys Programming** option is not used.

A screenshot of a terminal window titled "Features Programming Menu". The window shows the hostname "Arkansas" and IP address "10.13.0.196". Below this, there is a list of menu options: "Feature Programming", "Menu Programming", "Softkey Features Programming", and "Docking Station Feature Keys Programming". The "Docking Station Feature Keys Programming" option is highlighted with a black background. At the bottom of the window, there are instructions: "Enter=Select", "X=Exit", and "Use Arrow Keys to Move Cursor".

```
Features Programming Menu
Hostname: Arkansas, IP Address: 10.13.0.196

Feature Programming
Menu Programming
Softkey Features Programming
Docking Station Feature Keys Programming

Enter=Select    X=Exit
Use Arrow Keys to Move Cursor
```

Feature Programming (no Softkeys)

If your system is utilizing any SpectraLink Wireless Telephones that do not have softkeys (PT800 series or earlier), **Feature Programming** is used to allow these handsets to access system features.

Mute and optional OAI (Open Application Interface) must be programmed in the **Feature Programming** screen for both analog and digital systems.

In digital systems, feature programming is done in the PBX. These features are also programmed into the handsets according to the directions outlined in the *LinkPlus Interface Guide* for your PBX.

In analog systems, the **Feature Programming** screen is used to program special features. With Feature Programming you can access special features by pressing the **FCN** key on the handset followed by another key. This shortcut is called a “macro”. You may define macros for the digits **1-9**, *****, **0**, and **#**. After programming, when you press **FCN** followed by a digit or character, you will have access to the associated feature.

The feature programming settings are usually the same for every SpectraLink 8000 Telephony Gateway. Note that the settings done on one SpectraLink 8000 Telephony Gateway as described below should be done on the rest of the SpectraLink 8000 Telephony Gateways sharing the same PBX so that all handsets have access to the same special features.



You must use this screen to program all analog features and to program the MUTE function to FCN 1 in all analog and digital systems.

Navigate to the **NetLink Wireless Telephone System** menu for the SpectraLink 8000 Telephony Gateway and select **Feature Programming**. A screen similar to the following displays:

```

Feature Programming
Hostname: slnk_00011a, IP Address: 10.13.0.50

1      : ██████████
2      :
3      :
4      :
5      :
6      :
7      :
8      :
9      :
*      :
0      :
#      :
Set Features in all gateways

S=Send All   D=Delete   Enter=Edit   Esc=Exit
Use Arrow Keys to Move Cursor

```

Programming Digital PBX Features

The numbers and symbols along the left side of the screen indicate which number or digit key is being pressed after the FCN key to activate the feature.

1. Navigate to **key 1** and type MUTE.
2. If a SpectraLink 8000 OAI Gateway is part of the system, navigate to the key the OAI function is to be assigned to and type OAI.
3. See below for programming the ADMIN feature.

All other digital features are programmed in the PBX per the *LinkPlus Interface Guide* for your system.

Programming Analog PBX Features

For analog systems, follow the above steps for digital programming, then proceed with the steps below:

1. The table below displays the default menu options that are programmed into the handsets for an analog system. You may set these same functions here or change them to something else. If

you change them, be sure to enter the corresponding changes in the **Menu Programming** screen in the next section.

Function Key	Feature	Key Sequence
FCN+1	Mute	MUTE
FCN+2	Xfer	
FCN+3	Conn	
FCN+4	Conf	
FCN+5	Fwd	
FCN+6	Redial	
FCN+7	Pick	
FCN+8	Camp	
FCN+9	Exit Menus	(Leave Blank)
FCN+0		
FCN+*		
FCN+#		

Consult your wired telephone system documents for the key sequence that matches the feature in the above table. Blank cells are provided for your data.

Note that the zero (0), star (*), and pound (#) keys are not assigned by default, but may be programmed here and in the default menus on the handsets.

2. Navigate to the function key, press Enter, and type the key sequence that corresponds to the feature you want to activate for that function. Press Enter after each entry.
3. Type F to assign the FLASH function.

Example: If the Transfer feature key sequence is "Flash Star 7" and you wish to keep the default at FCN+2, navigate to key 2, press Enter, type F*7 and press Enter.

4. Repeat for each feature you wish to program to a function key macro.

Remember to note the features and macros so that they can be edited in the handset menu, if necessary, and programmed into any other SpectraLink 8000 Telephony Gateways on the same PBX if Send All is not being used.

When you have finished programming the macros, press Esc to return to the **NetLink Wireless Telephone System** menu.

Programming the ADMIN Feature

The **ADMIN** option allows the system administrator to add and delete handsets via another handset, rather than via the SpectraLink 8000 Telephony Gateway. Any function key sequence may be programmed to **ADMIN** by typing ADMIN next to the desired key. The ADMIN feature may be programmed on only one SpectraLink 8000 Telephony Gateway (the one that contains the line used by the system administrator) in order to limit its accessibility system-wide.

When the ADMIN function is active, pressing the function key sequence on the handset will open the ADMIN function. The following steps allow the administrator to add or delete a handset:

1. Press **FCN** plus the assigned key. Once in the ADMIN function, pressing the **FCN** key will cancel the action and return to the previous menu level.
2. Enter the SpectraLink 8000 Telephony Gateway password using the handset keypad. Note that the password is case sensitive. The key steps through each letter and number as it is repetitively pressed.
3. Once the password is accepted, the SpectraLink 8000 Telephony Gateways are listed. Use the arrow keys to scroll through the list. Press **0** (the zero key) to select the correct SpectraLink 8000 Telephony Gateway.
4. The handsets assigned to the selected SpectraLink 8000 Telephony Gateway are listed by the last three byte numbers in the MAC address. If a line is not assigned to a handset, not used will display. Use the arrow keys to scroll through the lines.
5. Display the line to add or delete a handset and follow the prompts displayed on the handset.
6. If a name or extension must be associated with an added handset for record keeping purposes, it must be entered on the SpectraLink 8000 Telephony Gateway **Telephone Line Configuration** screen.

Menu Programming (no softkeys)

If your system is utilizing any SpectraLink Wireless Telephones that do not have softkeys (PTB800 series or earlier), **Menu Programming** is used to enable these handsets to display a list of system features that have been programmed for end user access.

The handset displays a menu of functions when the **FCN** key is pressed. The menu should match the feature programming established in the **Feature Programming** screen for analog systems or in the PBX for digital systems per the *LinkPlus Interface Guide* for your PBX.

The handset displays four menus as the **FCN** key is pressed repeatedly. Each menu has two display lines that are programmed in the **Menu Programming** screen, which displays all four menus at once. The default factory settings are for features most commonly accessed by users of the type of PBX installed with the SpectraLink 8000 System. The sample screen shows default menus:

```

Menu Programming
Hostname: slnk_00011a, IP Address: 10.13.0.50

Menu 1 Line 1: 1=Mute 2=U Mail
          Line 2: 9=Exit Menu
Menu 2 Line 1: *=Prev #=Next
          Line 2: 0=Select
Menu 3 Line 1: Start=Toggle
          Line 2:   Hook On/Off
Menu 4 Line 1:
          Line 2:

Delay 1 Function key press: Yes
Restore Factory Defaults
Set Menus in all gateways

S=Send All   D=Delete   Enter=Edit   Esc=Exit
Use Arrow Keys to Move Cursor

```

All of the settings can be customized to conform to the feature programming established at the site. Each SpectraLink 8000 Telephony Gateway should be programmed with identical menus.

- For analog interfaces, the features defined for the custom menus should match the features programmed in the **Feature Programming** screen. For example, if you have defined **FCN 2** on **Feature Programming** as **Xfer**, then you should also define **FCN 2** on **Menu Programming** as **Xfer**.
- For digital interfaces, the features defined for the custom menus should match the programming assigned through the PBX. For example, if you have assigned **Xfer** to the key that corresponds to **FCN 2** on the digital telephone that is being emulated by the handset, you should define **FCN 2** on **Menu Programming** as **Xfer**. See the *Link Plus Interface Guide* for your PBX for information on key assignments for your type of telephone system. Note that some key assignments cannot be customized on certain types of telephone systems.

Navigate to the **NetLink Wireless Telephone System** menu for the SpectraLink 8000 Telephony Gateway and select **Menu Programming**. The screen will display the defaults for your system.

Each of the four menus displays two lines. The numbers followed by the equal sign indicate which key to press on the handset to activate the feature, such as 2=Xfer (Transfer). These lines will display on the handset exactly as programmed here. All SpectraLink 8000 Telephony Gateways should be programmed identically.

If any of the factory defaults have been changed via **Feature Programming** or in the steps outlined in the *LinkPlus Interface Guide* for your PBX, the menu items here should be changed so that they correspond to what has been programmed elsewhere.

The **Delay** function is utilized when the PBX uses softkeys. With **Delay**, when the **FCN** key is pressed, the handset displays the features that are associated with the softkeys so that one of these features can be selected first. If **Delay** is programmed, pressing **FCN** twice will bring up the programmed menu immediately.

Restore Factory Defaults allows you to reset the menus. See the *LinkPlus Interface Guide* for your PBX for the default menus programmed by Polycom.

To change the menu settings:

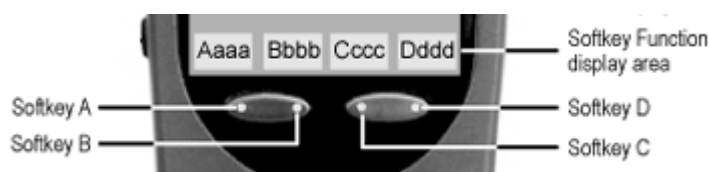
1. Navigate to the menu display screen number (1-4) to be edited.
2. Press Enter to change the information, then enter the information to be displayed on each line of the menu.
3. Press Enter to save the entries.

4. Repeat for each menu as needed.

Softkey and Shortcut Key Programming

The softkeys on the SpectraLink e340/h340/i640 and 8020/8030 Wireless Telephones enable quick access to system features. The softkey programming screen establishes the correspondence between the PBX features, the softkeys, and the shortcut keys.

There are 16 possible features displayed in the four levels of the softkey function display area. The default softkeys are at level 0 (zero). The end user scrolls through the softkey display levels by pressing the FCN key to move to the next level. The softkeys are labeled A, B, C, and D and their corresponding display areas on the handset are shown below.



The handset emulates a specific deskset in your vendor's PBX system. See the *LinkPlus Interface Guide* for your system for emulation information.

The shortcut keys are 1-9, 0, #, and *. Any shortcut key may be pressed by the user while scrolling through the softkeys or while in the shortcut menu to activate a feature. The feature will activate whether or not that feature is currently displayed or highlighted.

The sample screens on the next page illustrate the programming required. The levels are on the left side of the screen and are labeled Level 0, 1, 2, and 3. The softkeys are labeled A, B, C, and D.



The Softkey Function display area displays level 0 features by default. Therefore Level 0 softkey features are sometimes not assigned a shortcut key, as they are readily available.

Use the following screen and the table to construct your correspondences.

Sample screen:

Softkey Features Programming					
Hostname: slnk_00011a, IP Address: 10.13.0.50					
Level	Soft Key	Short Cut	Menu Label	Softkey Label	Action
0	A		Mute	Mute	MUTE
	B		Hold	Hold	HOLD
	C	8	Transfer	Xfer	F8
	D	3	Flash	Flsh	F3
1	A	6	New Call	NwCl	F6
	B	7	Park	Park	F7
	C	2	Camp On	Camp	F2
	D		MesagWaitng	MsgW	L9
2	A		FAB00	FB00	L1
	B		FAB01	FB01	L2
	C		FAB02	FB02	L3
	D	4	FAB10	FB10	F4
3	A	5	FAB11	FB11	F5
	B	9	FAB12	FB12	F9

\$=Send All D=Delete Enter=Edit Esc=Exit
 Use Arrow Keys to Move Cursor Up=Wrap around to bottom Down=More

Scroll to remaining options:

3	A	5	FAB11	FB11	F5
	B	9	FAB12	FB12	F9
	C		ReleaseLine	RelS	L0
	D				
Restore Factory Defaults					
Set Features in all gateways					

Enter=Select Esc=Exit
 Use Arrow Keys to Move Cursor Up=More Down=Wrap around to top

The **Action** column indicates that the handset will perform the corresponding function of the emulated desk set. Action field entries are described in the table on the next page.

The **Menu Label** is a description of the feature. The **Softkey Label** is the up to four-letter feature abbreviation that is displayed on the handset.

Example: To assign FCN + 8 to the Transfer feature, Level 0, softkey C, displayed as Xfer and with the #8 shortcut:

Level	Softkey	Shortcut	Menu Label	Softkey Label	Action
0	C	8	Transfer	Xfer	F8

With the above programming, Xfer will appear in the Cccc display area at Level 0 and the end user can use the FCN+8 shortcut or press the C softkey to transfer a call.

Use the *LinkPlus Interface Guide* for your system to determine what features to assign to softkeys.

Speakerphone softkey programming (SpectraLink 8020/8030 only)

The SpectraLink 8020/8030 Wireless Telephones have an internal speakerphone which is activated through a softkey. Polycom recommends programming Level 0, softkey A for the speakerphone as that position matches the standby position the handset automatically assigns to the speakerphone.

The speakerphone softkey will be blank on the e340/h340/i640 handsets. If the speakerphone is disabled in the Admin menu, the **Spkr** softkey will not appear during standby. However, if it has been programmed in the SpectraLink 8000 Telephony Gateway, the **Spkr** softkey will appear during active mode but it will be non-functional.

Level	Softkey	Shortcut	Menu Label	Softkey Label	Action
0	A		Speakerphone	Spkr	SPKR

Action Entry	Description	Example
(blank)	No action is assigned to softkey.	
F	Used with 0-9, #, *. Sends a message to the PBX to activate the feature programmed to this sequence.	Label: Mail Action: F2 Activates message retrieval.
L	Used with 0-9, #, *. Sends a message to the PBX to activate the feature associated with this sequence.	Label: ReleaseLine Action: L0 Releases the current line appearance.
MUTE	Mutes handset	Label: Mute Action: MUTE Activates Mute function in handset.
ADMIN	Initiates Admin sequence	Label: Admin Action: ADMIN Activates an administrative function in the PBX.
OAI	Used with 0-9, #, *. Initiates assigned application	Label: Phone Book Action: OAI7 Activates application that opens the OAI application assigned to F7 in the OAI configuration.
FLASH	Initiates hookflash The FLASH action may have keys following for feature activation	Label: Redial Action: FLASH##4 Activates the redial feature.
HOLD	Places active call on hold	Label: HOLD Action: HOLD Hold message to PBX.
SPKR	Activates the speakerphone in the SpectraLink 8020/8030 handsets	Label: Spkr Action: SPKR Activates the speakerphone

Use this table to develop your own programming correspondence:

Level	Softkey	Shortcut	Menu Label	Softkey Label	Action
0	A				
	B				
	C				
	D				
1	A				
	B				
	C				
	D				
2	A				
	B				
	C				
	D				
3	A				
	B				
	C				
	D				

Software Maintenance

The SpectraLink 8000 Telephony Gateways and the wireless telephones use proprietary software programs written and maintained by Polycom Corporation. The software versions that are running on the system components can be displayed via the **System Status** screen.

Downloads for the SpectraLink 8000 Telephony Gateway are available from

http://www.polycom.com/usa/en/support/voice/wi-fi/spectralink_8000_telephony.html.

Software Updates

After software updates are obtained from Polycom, they must be transferred to the appropriate location in the LAN to update the component code. Three methods of transfer are used: automatic; FTP (File Transfer Protocol); or TFTP (Trivial File Transfer Protocol).

The following table shows which method is used by which SpectraLink 8000 System component:

Device/update method	File name
SpectraLink 150 Telephony Gateway FTP file name to SpectraLink 8000 Telephony Gateway	fnctla.bin, auxlry.bin
OAI Telephony Gateway Automatic from SpectraLink 8000 Telephony Gateway * * as set in the TFTP Code Update screen for OAI See SpectraLink Wireless Telephone: OAI Gateway Installation	mog600.bin
SpectraLink Wireless Telephones Automatic from SpectraLink 8000 Telephony Gateway or TFTP Server ** ** as set in the Gateway Configuration screen, WT TFTP Download Master, IP address.	pdt02c.bin, pft02c.bin, phintl.bin pdt06c.bin
SpectraLink e340/ h340/ i640 Wireless Telephones (w/softkeys) Automatic from SpectraLink 8000 Telephony Gateway or TFTP Server*** *** as set in the Gateway Configuration screen, WT TFTP Download Master, IP address.	pd11spc.bin phintl24.bin pd11gl3.bin pd11spc3.bin

SpectraLink 8020/8030 Wireless Telephones Automatic from SpectraLink 8000 Telephony Gateway or TFTP Server*** *** as set in the Gateway Configuration screen, WT TFTP Download Master, IP address.	pd14udsp.bin pd14csp.bin pi1400sp.bin pd14odsp.bin slnk_cfg.cfg
SpectraLink 8000 SVP Server Load the updates onto the TFTP server and reboot the SpectraLink 8000 SVP Server.	SVP100.toc Flashfs Zvmlinux

Updating Larger Systems

A network TFTP server will simultaneously update the handsets while the SpectraLink 8000 Telephony Gateway updates handsets one at a time. Therefore, in a larger system, it is best to install and specify a system TFTP server for the **TFTP Download Master** (see section 12 *SpectraLink 8000 Telephony Gateway Configuration*) rather than using the SpectraLink 8000 Telephony Gateway as the TFTP server.

When using Telephony Gateways as the TFTP Download Master in a multiple Gateway system, configure each Gateway to be the TFTP Download Master for the handsets registered to it. An update only takes about a minute and a half, but when that is multiplied by 16 handsets per Gateway, the entire process can take up to half an hour. Do not specify one Gateway to be the TFTP Download Master for all handsets. If there are hundreds of handsets queued for updating by one Gateway, the wait will be very long. Note that if a handset is updated and then powered off and then back on during this updating process, it will be placed at the end of the queue and will not be able to check in with the Gateway until the rest of the handsets have been updated.

Using FTP

FTP procedure



Navigate to the Gateway Configuration screen and place the system in System Lock before proceeding with the FTP procedure. Note that this will prevent new calls from starting. No calls may be in progress during the FTP procedure.

When using FTP, use a host system to connect to a remote system. In this example, the host is the client and the server is the Telephony Gateway. The “put” command means to copy the files from the host to the remote system. The “get” command means to copy the files from the remote system to the host.



Note that FTP commands vary with the program being used. Use the following steps as a general guide but be aware that your FTP program may use different terms to describe the procedure.



Note: You **MUST** delete unneeded handset image files on the SpectraLink 8000 Telephony Gateway to create needed space for newer software. FTP programs differ in how this is done but generally allow you to delete files in the host and client location.

To transfer the software using FTP:

1. Connect to the Telephony Gateway using the command: FTP <hostname> or FTP <IP address>.
2. Log in using the administrator login (“admin”) and password (default is “admin”). A login confirmation message will display, followed by the FTP> prompt.
3. At the FTP prompt, type binary. A confirmation message will display.
At the FTP prompt, type Hash. File transfer progress will be displayed during the transfer.
4. At the FTP prompt, use the Put command to transfer the required files to the client server or Telephony Gateway.
5. After files are transferred, use the Quit command to quit FTP.
6. Navigate to the main menu for the Telephony Gateway and select System Status. Then select Software Versions to verify that software versions for the Telephony Gateway are correct.
7. Reset the system via the Gateway Configuration screen in order to restore Maintenance Lock to No.



Note: For all systems with multiple SpectraLink 8000 Telephony Gateways, ALL upgradeable software files must match exactly (be the same version).



Note: A graphical user interface FTP client may be utilized in lieu of the aforementioned command line FTP procedure.

Updating Wireless Telephone Software

SpectraLink handsets allow over-the-air transfer of software updates from the SpectraLink 8000 Telephony Gateway or designated TFTP server to the handsets.

The downloader function in the handset checks its software version every time the handset is turned on. If there is any discrepancy in the functional code (pdt02c.bin or pft02c.bin or pd11spc.bin or pdt06c.bin) or the image (phintl.bin or phintl24.bin) the handset immediately begins to download the update.

You may use the **Checkout all phones** option in the **Gateway Configuration** menu to update all handsets. If the TFTP server is on a PC, this command may be used to upgrade each handset without having to reset the Gateway. This command forces all the handsets on the system to check in with the Gateway. They will check their current software version against the version stored on the TFTP server and download if needed. Any handset in a call will perform their checkout after the call has been completed.

Normal download messages

When the handset is powered on, it displays a series of messages indicating that it is searching for new software, checking the versions, and downloading. The normal message progression is:

Message	Description
Checking Code	Handset is contacting the Download Master to determine if it has a newer version of software that should be downloaded.
Erasing Memory	Handset has determined that a download should occur and is erasing the current software from memory. This message also displays a progress bar. When the progress bar fills the display line the erase operation is complete.
Updating Code	Handset is downloading new software into memory. The number icons at the bottom of the display indicate which file number is currently being downloaded. This message also displays a progress bar. When the progress bar fills the display line the update operation is complete on that file.

While the handset is updating, the **NO SVC** message displays, and the handset should NOT be powered off.

When the update is complete, the handset displays the extension number, and is ready for use.

Download failure or recovery messages

The following display messages indicate a failure or recovery situation during the download process.

Message	Description
Server Busy	Handset is attempting to download from a Download Master that is busy downloading other phones and refusing additional downloads. The handset will automatically retry the download every few seconds.
TFTP ERROR(x):yy	A failure has occurred during the TFTP download of one of the files. (x) = The file number which was being downloaded; yy is an error code describing the particular failure. Possible error codes are: 01 = TFTP server did not find the requested file. 02 = Access violation (reported from TFTP server). 07 = TFTP server reported "No such user" error. Check the TFTP server configuration. 81 = File put into memory did not CRC. The handset will attempt to download the file again. FF = Timeout error. TFTP server did not respond within a specified period of time.
Erase Failed	Download process failed to erase the memory in the handset. This operation will retry.
Waiting	Handset has attempted some operation several times and failed, and is now waiting for a period of time before attempting that operation again.
(Internal Errors)	OE = Error while writing the Flash (return handset to factory) OF = No functional code (return handset to factory)

Backup and Restore SpectraLink 8000 Telephony Gateway Configuration

Proper software maintenance activities include backing up the system to safeguard the configuration of the SpectraLink 8000 Telephony Gateway. FTP is used to copy the Gateway configuration (filename **config.bin**) from the SpectraLink 8000 Telephony Gateway for backup purposes. The files can then be restored to the system as needed, also using FTP.



The following is an example of software transfer using FTP. FTP commands may vary depending on your FTP program.

To copy the configuration from/to the SpectraLink 8000 Telephony Gateway:

1. Connect to the SpectraLink 8000 Telephony Gateway.
2. Log in using the administrator login and password. A login confirm message will display, followed by the FTP> prompt.

3. At the FTP prompt, type **binary**. A confirm message will display.

4. Use **Get** to backup the files and **Put** to restore files.

Backup: At the FTP prompt, use the **get** command to transfer the required files from the SpectraLink 8000 Telephony Gateway to the server: **get config.bin**.

Restore: At the FTP prompt, use the **put** command to transfer the required files from the server to the SpectraLink 8000 Telephony Gateway: **put config.bin**.



The **get** and **put** commands will copy files. If you have multiple SpectraLink 8000 Telephony Gateways, be careful not to overwrite the **config.bin** files. To avoid this, you can:

- Change directories before you connect and copy each Gateway's **config.bin** file to its own directory.
- Use the local file name form of the **get** (or **put**) command to rename the file when it is copied. For example,
get config.bin gateway1.bin
copies **config.bin** as **gateway1.bin** to the host.
- Remember to copy the correct files when restoring configuration files. For example
put gateway1.bin config.bin
copies **gateway1.bin** as **config.bin** to the Telephony Gateway that you have designated as **gateway1**.

5. After files are transferred, use the **Quit** command to quit FTP.

6. Reset the system via the **Gateway Configuration** screen in order to restore **Maintenance Lock** to **No**.

7. Navigate to the **Gateway Configuration** and **Telephone Line Configuration** screens to ensure all configuration information has been restored.

Troubleshooting via the System Status Menu

Troubleshooting requires full information about the components of the SpectraLink 8000 System and the larger system, which includes both the host telephone system and the LAN. SpectraLink 8000 Telephony Gateways provide a “window” into the functioning of the various wireless components via the **System Status Menu**.

Additional essential information should be provided by a map, blueprint, or diagram of the facility that clearly shows hardware components including AP position and handset assignment. *Wireless Telephone Assignment Worksheets* should be maintained and accessible to the wireless telephone system administrator.

A thorough understanding of the configuration of the system and the information contained in this document is necessary for anyone who wishes to handle system malfunction.

Information about telephone line status, system alarms, and network status displays on various screens accessed through the **System Status Menu** screen, opened from the **NetLink Wireless Telephone System** menu of each Telephony Gateway.

```
System Status Menu
Hostname: slnk_00011a, IP Address: 10.13.0.50

Access Point Status
Error Status
Network Status
Telephone Line Status
Wireless Telephone Status
Software Versions

Enter=Select   Esc=Exit
Use Arrow Keys to Move Cursor
```

Access Point Status: Shows information about the APs that have been utilized by the handsets.

Error Status: Displays alarm and error message information.

Network Status: Displays information about the Ethernet network to which the SpectraLink 8000 Telephony Gateway is connected.

Telephone Line Status: Displays information about the PBX lines to which the SpectraLink 8000 Telephony Gateway is attached and the handsets associated with these lines.

Wireless Telephone Status: Contains network communications statistics for each handset.

Software Versions: Lists the software version for each component in the SpectraLink 8000 System.

Options on the **System Status Menu** provide a window into the real time operation of the components of the SpectraLink 8000 System. Use this data to determine system function and to troubleshoot areas that may be experiencing trouble.

Access Point Status

During a call, handsets send information about their APs to the SpectraLink 8000 Telephony Gateway. The SpectraLink 8000 Telephony Gateway maintains information on the last 16 APs on which it has received reports and displays this information on the **Access Point Status** screen. Your wireless LAN vendor, and/or Polycom Customer Support will use the data on this screen to troubleshoot AP problems.

From the **System Status Menu**, select **Access Point Status**. The screen displays a maximum of 16 APs, one per row. If the list is full and a different AP is used by a handset, the AP that has not been heard from for the longest time is replaced. A sample screen is displayed here.

```

Access Point Status
Hostname: slnk_00011a, IP Address: 10.13.0.50

Access Point MAC      NumWTs      MaxWTs      NotBest      Last Heard
00:40:96:46:73:29    0           0           0           0-00:51:57
00:40:96:46:68:a0    0           1           0           0-00:51:57
00:40:96:46:2e:5e    0           1           0           0-01:07:12
00:40:96:58:67:ed    0           0           0           0-00:51:57

System Uptime:0-01:10:04      Num Calls:1      Max Simul Calls:1

C=Clear      Esc=Exit
    
```

Access Point MAC: The MAC address of the AP.

NumWTs: The number of handsets currently in communication with this AP.

MaxWTs: The maximum number of handsets that have simultaneously used the AP since last reset.

NotBest: The number of times a handset indicates that it is not using the best AP.

Last Heard: The time a report from a handset was received that included information about the AP. A significant difference between

Last Heard and **System Uptime** indicates that the AP has not been used recently which might indicate that there has been a break in communications.

System Uptime: Is the time elapsed since the SpectraLink 8000 Telephony Gateway was last reset or power cycled. This indicator allows you to check AP activity against SpectraLink 8000 Telephony Gateway functionality.

If the SpectraLink 8000 Telephony Gateway should be hearing from an AP due to an active handset that should be using it, but isn't, there will be a significant variation in the APs **Last Heard** time and the **System Uptime**.

Clear: Clearing the statistics sets **Num WTS**, **Max WTS**, and **Not Best** to zero. It does not remove any APs from the displayed array. The **Clear** function allows you start over and view AP activity from that point in time.



Unless noted otherwise, times are displayed using the format:
D - HH : MM : SS
D is day, HH is hours, MM is minutes, and SS is seconds.

Error Status

The **Error Status** screen displays any alarms that indicate some system malfunction. Some of these alarms are easily remedied and others require a call to Polycom's Customer Support Department.

From the **System Status Menu**, select **Error Status**. The screen displays active alarms on the SpectraLink 8000 Telephony Gateway. The following sample screen displays two Line Sync alarms.

```

Error Status
Hostname: slnk_00011a, IP Address: 10.13.0.50

* Line sync alarm - Line 1 out of sync
* Line sync alarm - Line 2 out of sync

NOTE: Asterisked items may not be cleared

C=Clear    A=Clear all gateways    Esc=Exit
    
```

The tables on the following pages display the list of alarm types, display messages, and description of the error.

Alarm	Message	Error Description	Action
Config	GW software version difference	Conflicting software versions on two SpectraLink 8000 Telephony Gateways	Upgrade the down rev.
Config	No IP address	No IP address set in configuration	Set IP address for SpectraLink 8000 Telephony Gateway.
Config	No Ethernet address	Bad software or bad flash memory	Call Polycom Customer Service.
Config	No Flash1 data	Bad software or bad flash memory	
Config	Too many wireless gateways	More than five SpectraLink 8000 Telephony Gateways on the network without correct SpectraLink 8000 SVP Server setup	Check the SpectraLink 8000 SVP Server for QOS setting in SpectraLink 8000 Telephony Gateway setup menu, or remove SpectraLink 8000 Telephony Gateways from the network.
Config	Unexpected SVPII box found on net	A SpectraLink 8000 SVP Server is on the network, but the gateway is not configured to use it.	Check the SpectraLink 8000 SVP Server for QOS setting in SpectraLink 8000 Telephony Gateway setup menu.
Config	No SVPII box available on net	System is setup to use a SpectraLink 8000 SVP Server, but none is available.	Check the status of the SpectraLink 8000 SVP Server.

Alarm	Message	Error Description	Action
DAA	PBX table unavailable	Bad software load on SpectraLink 8000 Telephony Gateway	Call Polycom Customer Service.
DAA	PBX type unavailable	Bad software load on SpectraLink 8000 Telephony Gateway	
DAA	DAA type Mismatch	Installed PBX interface cannot be used to attach to the specified PBX.	Change the specified PBX or replace the SpectraLink 8000 Telephony Gateway with a model that supports the desired PBX.
DAA	Spoonfeed unavailable	Bad software load on SpectraLink 8000 Telephony Gateway	Call Polycom Customer Service.
DAA	Bootload unavailable	Bad software load on SpectraLink 8000 Telephony Gateway	
DAA	DSP code unavailable	Bad software load on SpectraLink 8000 Telephony Gateway	
DAA	DSP 1 keepalive	Hardware problem on SpectraLink 8000 Telephony Gateway	Reset. If problem persists, call Polycom Customer Service.
DAA	DSP 2 keepalive	Hardware problem on SpectraLink 8000 Telephony Gateway	
DAA	DSP 1 download	Hardware problem on SpectraLink 8000 Telephony Gateway	
DAA	DSP 2 download	Hardware problem on SpectraLink 8000 Telephony Gateway	
DAA	AUX DAA Unknown	Hardware problem on SpectraLink 8000 Telephony Gateway. Auxiliary DAA was detected but type is unknown.	Call Polycom Customer Service.
DAA	FPGA Download	Bad software load on SpectraLink 8000 Telephony Gateway	
DAA	FPGA Code Unavailable	Bad software load on SpectraLink 8000 Telephony Gateway	

Reset = reset SpectraLink 8000 Telephony Gateway

Alarm	Message	Error Description	Action
Line Sync	Line [XX] out of sync (where XX is 1-16)	The line from the host telephone system is not communicating with the SpectraLink 8000 Telephony Gateway.	Check cabling from telephone system to SpectraLink 8000 Telephony Gateway. Check PBX type to be sure it is correctly configured.
CT	Bootload unavailable	Bad software load on SpectraLink 8000 Telephony Gateway	Call Polycom Customer Service.
CT	DSP code unavailable	Bad software load on SpectraLink 8000 Telephony Gateway	
CT	DSP 1 keepalive	Hardware problem on SpectraLink 8000 Telephony Gateway	Reset If problem persists, call Polycom Customer Service.
CT	DSP 2 keepalive	Hardware problem on SpectraLink 8000 Telephony Gateway	
CT	DSP 1 download	Hardware problem on SpectraLink 8000 Telephony Gateway	
CT	DSP 2 download	Hardware problem on SpectraLink 8000 Telephony Gateway.	

Alarm	Message	Error Description	Action
<i>Note: Module alarms listed below should only occur in conjunction with CT/DAA alarms, shown above.</i>			
Module	Init data failed	Internal software error, usually seen in conjunction with other errors.	Correct the CT/DAA alarms first and if the Module alarm persists, contact Polycom Customer Support.
Module	Verify SpectraLink 8000 Telephony Gateway failed	Internal software error, usually seen in conjunction with other errors.	
Module	Config hardware data failed	Internal software error, usually seen in conjunction with other errors.	
Module	Start hardware failed	Internal software error, usually seen in conjunction with other errors.	
Module	Init data failed	Internal software error, usually seen in conjunction with other errors.	

Reset = reset SpectraLink 8000 Telephony Gateway

Alarm	Message	Error Description	Action
<i>Note: Radio alarms usually indicate internal software errors. Usually there will be no external indication of a problem.</i>			
Radio	Invalid Free Level	Internal software error	Call Polycom Customer Service.
Radio	No IP Address	Internal software error	
Radio	No IP Packet	Internal software error	
Radio	IP Packet Error	An IP packet with insufficient IP header length	Possible network problem, contact network vendor.
Radio	SRP ¹ Packet Error	Incompatible software between handset and SpectraLink 8000 Telephony Gateway	Call Polycom Customer Service. Provide software version information.
Radio	SRP Invalid AID	Incompatible software between handset and SpectraLink 8000 Telephony Gateway. Possible network error.	Call Polycom Customer Service. Provide software version information. If versions are compatible, contact network administrator.
Radio	SRP Invalid Hook State	Incompatible software between handset and SpectraLink 8000 Telephony Gateway	Call Polycom Customer Service. Provide software version information.
Radio	Key Buffer Full	Key presses are too fast to process.	Slower key presses
Radio	SRP Opcode Error	Incompatible software between handset and SpectraLink 8000 Telephony Gateway	Call Polycom Customer Service. Provide software version information.
Radio	Unknown Timeout State	Internal software error	Call Polycom Customer Service.
Radio	Unknown line event	Internal software error	
Radio	Unknown SRP event	Internal software error	
Radio	SRP event alloc failed	Too many network events queued for handset. Possible network problem or interference.	Contact network administrator.
Radio	Audio TX queue not empty	Unable to process all transmissions within 10 ms. Indicates high traffic on network	Contact Polycom Customer Service to diagnose traffic problem.

¹ SpectraLink Radio Protocol: See *Network Status* section.

Network Status

The SpectraLink 8000 Telephony Gateway is connected to the Ethernet network, referred to as the LAN or Local Area Network. The information about that connection is provided through the **Network Status** screen.

From the **System Status Menu**, select **Network Status**. The screen displays information about the Ethernet network. This information can help troubleshoot network problems. A sample screen is displayed here.

```

Network Status
  Hostname: slnk_00011a, IP Address: 10.13.0.50
  Ethernet Address: 00:90:7a:00:01:1a
  Stats Time Period: 0-01:11:57   User Time Period: 30

  Pkts      Bytes      User Pkts
RX SRP:    28945    3081478    936
RX Not SRP: 626      44470      8
RX Broadcast: 10932    1559093    54
RX Multicast: 15972    1501832    229
RX Not For Us: 0         0          0
TX SRP:    29486    3126134    941
TX Not SRP: 1106     121116     8

Interrupts: 116109   Frame Align: 0
Collisions: 10      Missed Slots: 1
Collision Drops: 0    Buffer Overflow: 0
CRCErrors: 0

Enter=Edit User Time Period   C=Clear   Esc=Exit
  
```

Three items display at the top of the screen:

Ethernet Address: MAC address of the SpectraLink 8000 Telephony Gateway (hexadecimal).

Stats Time Period: The length of time the statistics have been accumulating in the **Pkts** and **Bytes** columns. This is either the system uptime, or the time since a user pressed **C=Clear** while viewing this display.

User Time Period: The length of time (in seconds) statistics will accumulate in the **Userpkts** column before resetting to zero. When troubleshooting a problem, use this setting to isolate statistics for a given time period (for example, one hour). This is the only field in this screen that can be changed by the user.

The rest of the display is a table of Ethernet statistics. The **Pkts** and **UserPkts** columns list the count of Ethernet packets received or transmitted. The **Bytes** column is the count of bytes received or transmitted during the amount of time indicated by **Stats Time**.



Data is transmitted over the SpectraLink 8000 System by proprietary technology developed by Polycom Corporation. The SpectraLink Radio Protocol (SRP) packets and bytes can be differentiated from other types of transmissions and are used to evaluate system functioning by Polycom customer support and engineering personnel.

RX SRP: Indicates the number of SRP (SpectraLink Radio Protocol) packets and bytes received. (RX="received")

RX Not SRP: Number of packets and bytes received addressed to the SpectraLink 8000 Telephony Gateway that are not SRP packets.

RX Broadcast: The number of broadcast packets and bytes received.

RX Multicast: The number of packets and bytes received with the multicast address. (A "multicast" message is sent to more than one destination on the network.)

RX Not For Us: The number of multicast packets and bytes received that were not for the SpectraLink 8000 Telephony Gateway.

TX SRP: The number of SRP packets and bytes transmitted. (TX="transmitted")

TX Not SRP: The total number of packets and bytes transmitted that are not SRP packets.

Interrupts: The number of times the Ethernet controller has signaled the microprocessor that it has received or sent a packet.

Collisions: The number of times the Ethernet controller has attempted to send a packet, but another device on the network transmitted at the same time, corrupting the transmission.

Collision Drops: The number of packets the Ethernet controller has discarded because there were over sixteen collisions. After sixteen collisions the Ethernet controller hardware discards the current packet and attempts to send the next packet in its buffer.

CRC Errors: The number of packets discarded by the Ethernet controller because of a CRC (Cyclic Redundancy Check) error.

Frame Align: The number of packets the Ethernet controller discarded because of an error in their frame alignment.

Missed Slots: Occurs when the SpectraLink 8000 Telephony Gateway does not have sufficient time to process audio. This number should always be 0 or 1.

Buffer Overflow: Number of times Ethernet controller received more packets than it had buffers to store them. Indicates extreme traffic.

Telephone Line Status

Each SpectraLink 8000 Telephony Gateway associates handsets with lines from the host telephone system (PBX) as configured in the system setup. Operational information about each handset connection is provided through the **Telephone Line Status** screen. This information corresponds with the configuration information set up from **Telephone Line Configuration** option on the **NetLink Wireless Telephone System** menu.

When the SpectraLink 8000 Telephony Gateway needs to be maintained, current call activity can be checked on this screen to determine the level of service interruption a shut down will involve.

From the **System Status Menu**, select **Telephone Line Status**. The SpectraLink 8000 Telephony Gateway supports up to 16 lines.

A sample SpectraLink 8000 Telephony Gateway screen is displayed below.

Telephone Line Status						
Hostname: slnk_00011a, IP Address: 10.13.0.50						
Line	Name	Extension	Status	Phone	#Calls/Duration	
01:	Sue Smith	100	No Sync	In Call SM	0/00:00	
02:	John Smith	110	No Sync	ChkdIn PH	0/00:00	
03:	NONE	NONE	Unconf		0/00:00	
04:	NONE	NONE	Unconf		0/00:00	
05:	NONE	NONE	Unconf		0/00:00	
06:	NONE	NONE	Unconf		0/00:00	
07:	NONE	NONE	Unconf		0/00:00	
08:	NONE	NONE	Unconf		0/00:00	
09:	NONE	NONE	Unconf		0/00:00	
10:	NONE	NONE	Unconf		0/00:00	
11:	NONE	NONE	Unconf		0/00:00	
12:	NONE	NONE	Unconf		0/00:00	
13:	NONE	NONE	Unconf		0/00:00	
14:	NONE	NONE	Unconf		0/00:00	
15:	NONE	NONE	Unconf		0/00:00	
16:	NONE	NONE	Unconf		0/00:00	
System Uptime:0-01:12:44			Num Calls:1		Max Simul Calls:1	
Esc=Exit						

Line: Telephone line number (1-16).

Name: Person or name associated with the line for identification purposes.

Extension: Extension number associated with the line for identification purposes.

Status: Status of the lines from the host telephone system (PBX) to the SpectraLink 8000 Telephony Gateway.

In Sync: Indicates there is communication between the SpectraLink 8000 Telephony Gateway and the PBX.

NoSync: Indicates there is no communication between the SpectraLink 8000 Telephony Gateway and the PBX. Check to see if PBX ports are correctly configured. Check connections between the PBX and the SpectraLink 8000 Telephony Gateway.

Unconf: The line is not configured.

Phone: Status or activity of the handset.

NoChkIn: The handset has not checked in with an AP. It is out of range or powered off.

ChkIn: The handset has checked in and is in communication with an AP.

In Call: The handset is in use.

Calls / Duration: The total number of calls made on this line since the system was brought up, and the total duration of the calls.

System Uptime: Length of time the SpectraLink 8000 Telephony Gateway has been powered on.

Wireless Telephone Status

Each SpectraLink 8000 Telephony Gateway tracks its handsets' activity and provides this information through the **Wireless Telephone Status** screen.

These stats are used to help determine the source of audio quality problems.

From the **System Status Menu**, select **Wireless Telephone Status**. The SpectraLink 8000 Telephony Gateway displays up to 16 lines. A sample SpectraLink 8000 Telephony Gateway screen is displayed here.

```

Wireless Telephone Status
Hostname: slnk_00011a, IP Address: 10.13.0.50

Line   WT MAC           Current AP      TXRetry%  RXRetry%  TXMiss%  RXMiss%
01: 00:90:7a:00:f4:16 00:40:96:46:c5 11         30        56        0
02: 00:90:7a:00:02:36 00:40:96:25:7d:55 0          0         0         0
03: Not Configured  NONE          0          0         0         0
04: Not Configured  NONE          0          0         0         0
05: Not Configured  NONE          0          0         0         0
06: Not Configured  NONE          0          0         0         0
07: Not Configured  NONE          0          0         0         0
08: Not Configured  NONE          0          0         0         0
09: Not Configured  NONE          0          0         0         0
10: Not Configured  NONE          0          0         0         0
11: Not Configured  NONE          0          0         0         0
12: Not Configured  NONE          0          0         0         0
13: Not Configured  NONE          0          0         0         0
14: Not Configured  NONE          0          0         0         0
15: Not Configured  NONE          0          0         0         0
16: Not Configured  NONE          0          0         0         0

System Uptime:0-01:13:29      Num Calls:1      Max Simul Calls:1
C=Clear      Esc=Exit
    
```

WT MAC: The MAC address of the handset.

Current AP: The MAC address of the AP the handset is using or last used. If the handset is not checked in, the SpectraLink 8000 Telephony Gateway will display 'none'.



The handset computes the “rate” for the following statistics by calculating the number to increase quickly when retries begin. As retries lessen to zero and the transmissions become more reliable, the number peaks and decreases slowly.

Viewing speed of increase/decrease as well as total count reached will give you an accurate picture of the Retry and Missed characteristics.

TX Retry: The rate at which packets the handset sent to the AP had to be retried. See below for an extended explanation of TX and RX Retry.

RX Retry: The rate at which packets the handset sent to the AP had to be retried.

TX Miss: The rate at which audio packets were successfully transmitted by the handset. There is usually a burst of missed packets at the start of a call; the number should quickly drop to less than 100.

RX Miss: The rate at which audio packets were never received by the handset.

The three statistics across the bottom of the screen give the following information:

System Uptime: The time since the SpectraLink 8000 Telephony Gateway was power cycled or reset.

Num Calls: The number of currently active calls on the SpectraLink 8000 Telephony Gateway.

Max Simul Calls: The maximum number of simultaneous active calls on the SpectraLink 8000 Telephony Gateway.

Software Version

Each SpectraLink 8000 Telephony Gateway and wireless telephone runs Polycom's proprietary software that is controlled and maintained through versioning. The **Software Version** screen provides information about the version currently running on the components. This information will help you determine if you are running the most recent version and will assist Polycom Customer Support in troubleshooting software problems.

From the **System Status Menu**, select **Software Version**. A sample SpectraLink 8000 Telephony Gateway screen is displayed below:

```

Software Versions
Hostname: slnk_00011a, IP Address: 10.13.0.50

Hardware Versions:      05/81/00
Boot Code:              001.007 <0415>
Factory Page:          234.015 <0a34>
Flash1 Downloader:    031.007 <0233>
Functional Code:      227.053 <019f>
fnct1a.bin             227.053 <019f>
auxlry.bin             253.053 <074d>

pft02c.bin             048.056 <0806>
pdt06c.bin             074.030 <0c8d>
phint1.bin             057.004 <09ee>

Gateway SVP Mode:      <1> 2Mb-Timed Release
Radio Speed:           Slow Phone: - 00:90:7a:00:02:36

Esc=Exit

```



If obsolete versions are listed here, use your FTP program to delete them to make room for newer code. See the list of software filenames in section 18 *Software Maintenance*.

The **Gateway SVP Mode** and **Radio Speed** items display information about the 801.11 rate in the SVP Server.

Wireless Device Planning Worksheet

Copy and complete this worksheet to track parameters for each SpectraLink 8000 Telephony Gateway.

SpectraLink 8000 Telephony Gateway Hostname:

MAC: _____ IP Address: _____

Subnet Mask: _____ Host Switch Type:

Wireless Telephones per AP: _____ Telnet Port ID:

Gateway Port	Dialing Ext.	MAC Address	Switch Port ID	IP Address	User Name
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					

14					
15					
16					

Safety Notices



Important Safety Information

Follow these general precautions while installing telephone equipment:

- Never install telephone wiring during a lightning storm.
- Never install telephone jacks in wet locations unless the jack is specifically designed for wet locations.
- Never touch uninsulated telephone wires or terminals unless the telephone line has been disconnected at the network interface.
- Use caution when installing or modifying telephone lines.

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