



# **Avaya Voice Priority Processor**

Installation

555-301-102  
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#### Notice

Every effort was made to ensure that the information in this book was complete and accurate at the time of printing. However, information is subject to change.

#### Avaya Web Page

The world wide web home page for Avaya is: <http://www.avaya.com>

#### Preventing Toll Fraud

Toll Fraud is the unauthorized use of your telecommunications system by an unauthorized party (for example, a person who is not a corporate employee, agent, subcontractor, or working on your company's behalf). Be aware that there is a risk of toll fraud associated with your system and that, if toll fraud occurs, it can result in substantial additional charges for your telecommunications services.

#### Avaya Fraud Intervention

If you *suspect that you are being victimized* by toll fraud and you need technical assistance or support, call the Technical Service Center's Toll Fraud Intervention Hotline at 1.800.643.2353.

#### Providing Telecommunications Security

Telecommunications security of voice, data, and/or video communications is the prevention of any type of intrusion to, that is, either unauthorized or malicious access to or use of, your company's telecommunications equipment by some party.

Your company's "telecommunications equipment" includes both this Avaya product and any other voice/data/video equipment that could be accessed via this Avaya product (that is, "networked equipment").

An "outside party" is anyone who is not a corporate employee, agent, subcontractor, or a person working on your company's behalf. Whereas, a "malicious party" is Anyone, including someone who may be otherwise authorized, who accesses your telecommunications equipment with either malicious or mischievous intent.

Such intrusions may be either to/through synchronous (time-multiplexed and/or circuit-based) or asynchronous (character-, message-, or packet-based) equipment or interfaces for reasons of:

- Utilization (of capabilities special to the accessed equipment)
- Theft (such as, of intellectual property, financial assets, or toll-facility access)
- Eavesdropping (privacy invasions to humans)
- Mischief (troubling, but apparently innocuous, tampering)
- Harm (such as harmful tampering, data loss or alteration, regardless of motive or intent)

Be aware that there could be a risk of unauthorized intrusions associated with your system and/or its networked equipment. Also realize that, if such an intrusion should occur, it could result in a variety of losses to your company, including but not limited to, human/data privacy, intellectual property, material assets, financial resources, labor costs, and/or legal costs).

#### Your Responsibility for Your Company's Telecommunications Security

The final responsibility for securing both this system and its networked equipment rests with you – an Avaya customer's system administrator, your telecommunications peers, and your managers. Base the fulfillment of your responsibility on acquired knowledge and resources from a variety of sources including but not limited to:

- Installation documents
- System administration documents
- Security documents
- Hardware-/software-based security tools
- Shared information between you and your peers
- Telecommunications security experts

To prevent intrusions to your telecommunications equipment, you and your peers should carefully program and configure your:

- Avaya provided telecommunications systems and their interfaces
- Avaya provided software applications, as well as their underlying hardware/ software platforms and interfaces
- Any other equipment networked to your Avaya products

#### Federal Communications Commission Statement

**Part 15: Class A Statement.** This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio-frequency energy and, if not installed and used in accordance with the instructions, could cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case the user will be required to correct the interference at his own expense.

#### Industry Canada (IC) Interference Information

This digital apparatus does not exceed the Class A limits for radio noise emissions set out in the radio interference regulations of Industry Canada.

Le Présent Appareil Numérique n'émet pas de bruits radioélectriques dépassant les limites applicables aux appareils numériques de la class A prescrites dans le règlement sur le brouillage radioélectrique édicté par le Industrie Canada.

#### European Union Declaration of Conformity

The "CE" mark affixed to the equipment means that it conforms to the referenced European Union (EU) Directives listed below:

EMC Directive	89/336/EEC
Low-Voltage Directive	73/23/EEC

For more information on standards compliance, contact your local distributor.

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# 1. About This Document

This document explains how to configure and maintain the Avaya Voice Priority Processor within the vendor IP telephony system.

## 1.1 Questions?

If you have questions please contact **Avaya Technical Support at 1 800 242-2121** (USA only) or your local authorized Avaya dealer.

## 1.2 Icons and Conventions

This manual uses the following icons and conventions.



Caution! Follow these instructions carefully to avoid danger.



Note these instructions carefully.

**NORM**

This typeface indicates a key, label, or button on the Avaya Voice Priority Processor or Wireless Telephone.

## 2. Avaya Voice Priority Processor Overview

Avaya Voice Priority Processor utilizes Spectralink Voice Priority (SVP) as the Quality of Service (QoS) mechanism that is implemented in the Wireless Telephone and 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 delay. SVP is fully compliant with the IEEE 802.11 and 802.11b standards.

The Avaya Voice Priority Processor is an Ethernet LAN device that works with the AP to provide QoS on the wireless LAN. All voice packets to and from the NetLink Wireless Telephones are intercepted by the Avaya Voice Priority Processor and encapsulated for prioritization as they are routed to and from the an IP server or gateway.

SVP is required for QoS because the current IEEE 802.11b wireless LAN standard provides no mechanism for differentiating audio packets from data packets. This standard is undergoing revision to version 802.11e to provide all the functionality of SVP in an industry standard thus ensuring high-quality voice in a mixed client environment. Once 802.11e is ratified, SpectraLink and its 802.11 technology partners will adopt the new specification. When the 802.11e specification replaces SVP, the Wireless Telephones can be upgraded and the Avaya Voice Priority Processor can be removed from the system.

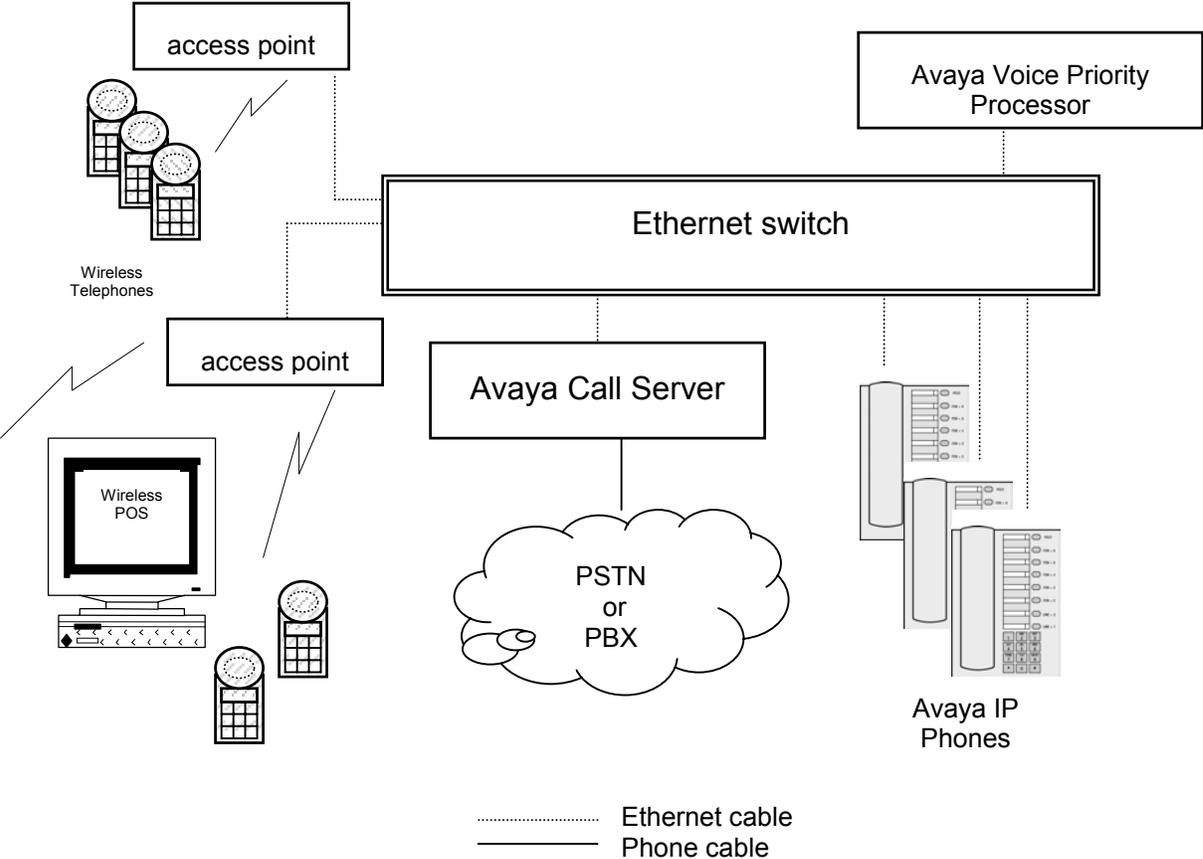
### 2.1 Avaya Voice Priority Processor Capacity

The Avaya Voice Priority Processor requires a CAT 5 cable connection between its Network port and the Ethernet switch. The Avaya Voice Priority Processor auto-negotiates to the type of port on the Ethernet switch and supports 10Base-T, 100Base-T, Full Duplex and Half Duplex port types. The maximum number of calls the Avaya Voice Priority Processor is able to handle depends on LAN factors per the following table:

	10Base-T	100Base-T
IP Gateway	10	80
NetLink Telephony Gateway	10	120

## 2.2 System Diagram

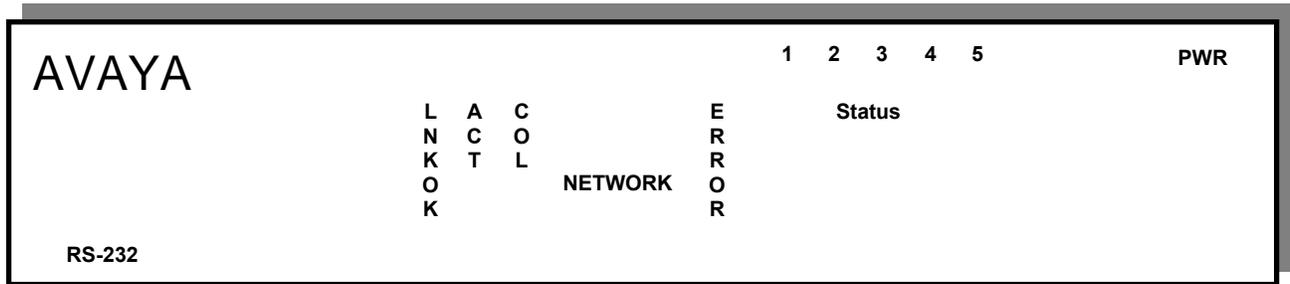
The following diagram shows the Avaya Voice Priority Processor residing on a network with an IP telephony server, wireless LAN access points, and Ethernet switch:



(example only)

## 2.3 The Front Panel of the Avaya Voice Priority Processor

The Avaya Voice Priority Processor's front panel contains ports to connect to power, the LAN, and an administrative computer via an RS-232 port. Status LEDs supply information about the Avaya Voice Priority Processor's functioning.



**RS-232** Port – male DB-9 connector (DTE) used for RS-232 connection to a terminal, terminal emulator, or modem for system administration.

Link LEDs –

**LNKOK** – lit when there is a network connection.

**ACT** – lit if there is system activity.

**COL** – lit if there are network collisions.

**NETWORK** – connects to wired (Ethernet) LAN.

**ERROR** LED – lit when the system has detected an error.

**STATUS** LEDs – indicate system error messages and status.

**1** – heartbeat indicates gateway is running.

**2** – if active calls.

**3, 4, 5** – currently unused

**PWR** (power jack) – connects to the AC adapter supplying power to the system.



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

## 3. Installing the Avaya Voice Priority Processor

As shown in the system diagram the Avaya Voice Priority Processor is connected to the Ethernet switch. The specifications covered here allow for great flexibility in physical placement of the components within stated guidelines.

### 3.1 Required Materials

The customer must provide the following equipment.

- Power Outlet** – must accept SpectraLink provided AC adapter.
- Backboard space** – the Avaya Voice Priority Processor is designed to be wall mounted to  $\frac{3}{4}$ " plywood securely screwed to the wall.
- Screws** – required to mount the Avaya Voice Priority Processor to the wall. Four #8 -  $\frac{3}{4}$ " panhead wood screws (or similar device) are required.
- CAT 5 Cable** – RJ-45 connector at the Avaya Voice Priority Processor. Connection to switched Ethernet hub.

### 3.2 Locate the Avaya Voice Priority Processor

The Avaya Voice Priority Processor measures approximately 4 x 12.5 x 7 inches, and weighs about five pounds. The unit is designed to be wall mounted, vertically or horizontally, over  $\frac{3}{4}$ " plywood.

Locate the Avaya Voice Priority Processor in a space with:

- Sufficient backboard mounting space and proximity to the LAN access device (switched Ethernet hub) and power source.
- Easy access to the front panel, which is used for cabling.
- A maximum distance of 325 feet (100 meters) from the switched Ethernet hubs.

### 3.3 Install the Avaya Voice Priority Processor

#### Mount the Avaya Voice Priority Processor to Wall

The Avaya Voice Priority Processor can be mounted either horizontally or vertically.

To mount the Avaya Voice Priority Processor:

1. Using a 1/8 inch drill bit, drill four pilot holes, on 1.84 by 12.1 inch centers (approximately equivalent to 1-13/16 inch by 12-1/8 inch).
2. Insert the #8 x 3/4 inch screws in the pilot holes and tighten, leaving a 1/8 to 1/4 inch gap from the wall.

#### Connect Avaya Voice Priority Processor to LAN

3. Using an RJ-45 cable, connect the **NETWORK** port on the Avaya Voice Priority Processor to the connecting port on the switched Ethernet hub.

## Connect Power

4. Connect the power plug from the AC adapter to the jack labeled PWR on the Avaya Voice Priority Processor.



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

5. Plug the AC adapter into an 110VAC outlet to apply power to the Avaya Voice Priority Processor.
6. The system will cycle through diagnostic testing and the LEDs will blink for about one minute. When the system is ready for use:
  - The **ERROR** LED should be off.
  - **Status 1** should be blinking.

After the Avaya Voice Priority Processor is installed, you must configure the Wireless IP Telephones. For Wireless IP Telephone configuration, see the *Avaya 3606 Wireless IP Telephone Installation and Configuration Guide* or the *Avaya 3616/3626 Wireless IP Telephone Installation and Configuration Guide*.

## 4. Configuring the Avaya Voice Priority Processor

During initial setup of the Avaya Voice Priority Processor the IP address is established and the maximum number of active calls per access point is set. Optionally, you may enter a hostname and a location for software updates via TFTP.

### 4.1 Connecting to the Avaya Voice Priority Processor

The initial connection to the Avaya Voice Priority Processor must be made via a serial connection to establish the Avaya Voice Priority Processor's IP address. After the IP address is established, connection to the Avaya Voice Priority Processor may be done via the network using Telnet. It is recommended that the basic setup actions occur while the serial connection is made.

#### Connect via the Serial Port

1. Using a DB-9 female, null-modem cable, connect the Avaya Voice Priority Processor 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 Avaya Voice Priority Processor login screen.
4. Enter the default login: **admin** and default password: **admin**. These are case sensitive.
5. The **NetLink SVP-II System** menu will display.

#### Connecting Via Telnet



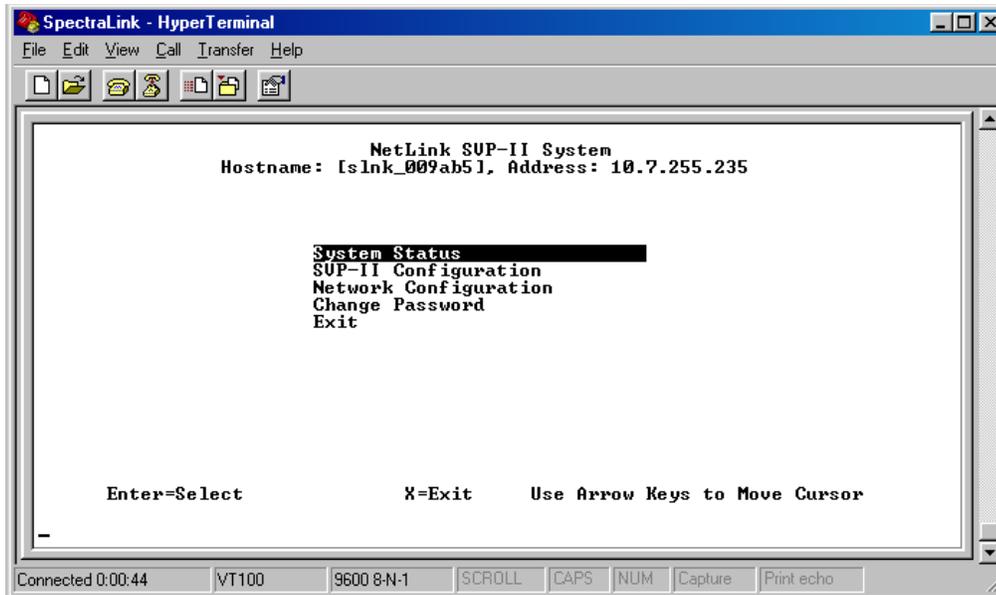
Telnet can only be used after the Avaya Voice Priority Processor's IP address is configured.

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

To connect via Telnet, run a Telnet session to the IP address of the Avaya Voice Priority Processor. Once you connect and log in, the **NetLink SVP-II System** menu displays.

## 4.2 The NetLink SVP-II System Menu

The main menu displays as shown here:



**System Status** – menu for viewing error messages, status of operation and software code version.

**SVP-II Configuration** – allows you to set the mode and reset the system.

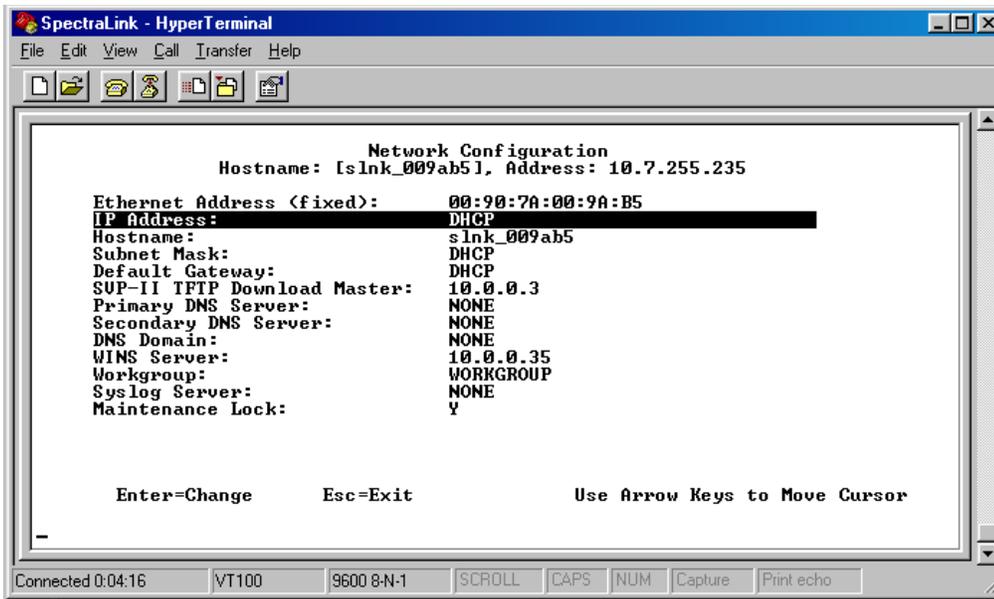
**Network Configuration** – allows you to set network configuration options, including IP address and hostname.

**Change Password** – allows you to change the password for Avaya Voice Priority Processor access.

## 4.3 Network Configuration

The IP address and other network settings are established via the **Network Configuration** screen. This is also where you may optionally establish a hostname and enter the IP address of the location of any software updates you may obtain from SpectraLink. See the Software Maintenance section of this document for more information about installing software updates via TFTP.

Scroll to **Network Configuration** and select by pressing Enter. A screen similar to the following appears:



- **IP Address** – enter the IP address of the Avaya Voice Priority Processor, defined by your network administrator. Enter the complete address including digits and periods. **DHCP** may be entered.
- **Hostname** -(optional) change the default host name, if desired. This is the name of the Avaya Voice Priority Processor to which you are connected, for identification purposes only. You cannot enter spaces in this field.
- **SVP-II TFTP Download Master** – this entry indicates the source of software updates for the Avaya Voice Priority Processor. See the *Software Maintenance* section for more information. Valid source location entries are:
  1. NONE – disables.
  2. IP Address – the IP address of a network TFTP server that will be used to transfer software updates to the Avaya Voice Priority Processor.
- **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 Avaya Voice Priority Processor 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 setting are used for Windows 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 Avaya Voice Priority Processor 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.



When the name services are set up correctly, the Avaya Voice Priority Processor can translate hostnames to IP addresses. Using Telnet, it is also possible to access the Avaya Voice Priority Processor using its hostname instead of the IP address.

- **Syslog Server** – Logging can be set to **Syslog** or **NONE**.

The Avaya Voice Priority Processor must be reset in order to set the configuration options. If the Avaya Voice Priority Processor is in **Maintenance Lock**, you will be prompted to reset the Avaya Voice Priority Processor upon pressing Esc. Respond with a **Y** to the reset prompt.

The Avaya Voice Priority Processor may be manually reset by selecting the **Reset** option in the **SVP-II Configuration** screen and then pressing Esc.

## 4.4 SVP-II Configuration

Whether you are using a gateway or not using a gateway will determine the mode of the Avaya Voice Priority Processor. The **SVP-II Configuration** screen is where you set the mode of the Avaya Voice Priority Processor. It is also where you can lock the Avaya Voice Priority Processor for maintenance and reset the Avaya Voice Priority Processor after maintenance.

The Avaya Voice Priority Processor will automatically lock for maintenance if the IP address is changed. When this Maintenance Lock occurs, the Avaya Voice Priority Processor must be reset upon exit. All active calls are terminated during a reset.

From the main menu, scroll to **SVP-II Configuration** and select by pressing Enter.

## 4.5 NetLink Telephony Gateway Configuration

The following screen displays the options for the NetLink Telephony Gateway system configuration:

```

SpectraLink - HyperTerminal
File Edit View Call Transfer Help
[Icons]
SUP-II Configuration
  Hostname: [slnk_009ab5], Address: 10.7.255.235
SUP-II Mode: Netlink
Ethernet link: auto-negotiate
System Locked: N
Maintenance Lock: N
Reset System

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

- **SVP-II Mode** – Set **NetLink** if using a NetLink Telephony Gateway or **NetLink IP** if using an IP telephony server from a third party vendor.
- **Ethernet link** – Select the link speed or permit the SVP Server to auto-negotiate.
- **System Locked** – This option is used to take the system down for maintenance. The default entry is **N** (No). Set it at **Y** (Yes) to prevent any new calls from starting. Return to **N** to restore normal operation.
- **Maintenance Lock** – The system automatically sets this option to **Y** (Yes) after certain maintenance activities that require reset, such as changing the IP address. 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.
- **Reset System** – if this option is selected, you will be prompted to reset the Avaya Voice Priority Processor upon exiting this screen.

Note that resetting the Avaya Voice Priority Processor will terminate any calls in progress.



The Avaya Voice Priority Processor should be reset at the end of any maintenance procedure that requires a reset either via **Maintenance Lock** or manually via **Reset System**.

## 4.6 NetLink IP System Configuration

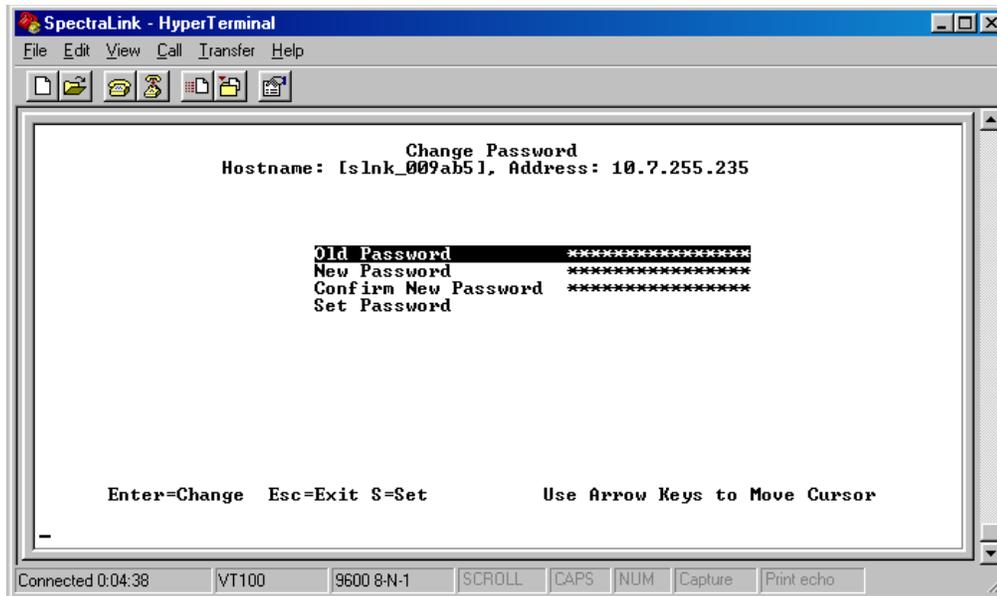
The following screen displays the additional options for the NetLink IP system configuration.



- **Phones per Access Point:** Access point specifications are detailed in the *Configuration Notes* for each brand and type. Refer to these notes when entering the number of simultaneous calls supported for your type.
- **802.11 Rate:** Select 1MB/2MB to limit the transmission rate between the Wireless Telephones and the Access Points. Select **Automatic** to allow the Wireless Telephone to determine its rate.
- **SVP-II Master:** Enter the static IP address of the SVP Server.

## 4.7 Change Password

If desired, the password to access the Avaya Voice Priority Processor may be changed. Select **Change Password** from the main menu. A screen similar to the following will appear:



Password parameters:

- More than 4 characters,
- First character must be a letter,
- Other characters may be numbers or letters,
- No dashes, spaces, or punctuation marks, etc. (alphanumeric only).

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

Enter the information and either select **Set Password** or press the **S** key to set the new password.

## 5. Software Maintenance

The Avaya Voice Priority Processor uses proprietary software programs written and maintained by SpectraLink Corporation. The software versions that are running on the system components can be displayed via the **System Status** screen.

SpectraLink or its authorized dealer will provide information about software updates and how to obtain the software (for example, downloading from a web site).

At startup the Avaya Voice Priority Processor uses TFTP to check the software version it is running against the version in the TFTP location. If there is a discrepancy, the Avaya Voice Priority Processor will download the version in the TFTP location.

### 5.1 Software Updates

After software updates are obtained from SpectraLink, they must be transferred to the TFTP location in the LAN to update the code used by the Avaya Voice Priority Processor.

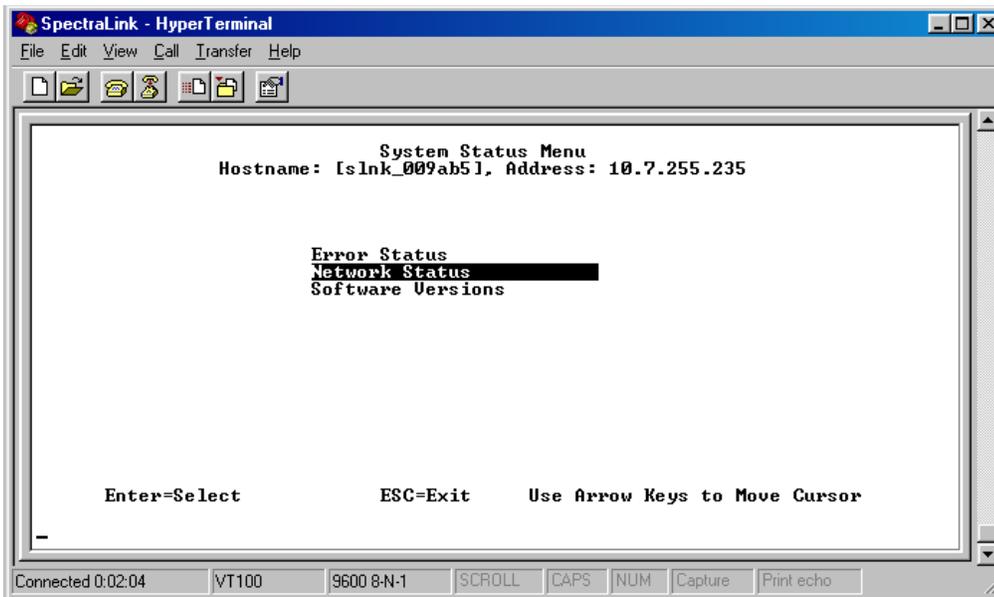
Lock the Avaya Voice Priority Processor in the **SVP-II Configuration** screen prior to updating the software. Reset the Avaya Voice Priority Processor after the update is complete.



Note that locking the Avaya Voice Priority Processor will prevent new calls from starting. All calls in progress will be terminated when the Avaya Voice Priority Processor is reset.

## 6. Troubleshooting via System Status Menu

Information about system alarms, and network status displays on various screens accessed through the **System Status Menu** screen, opened from the main menu of the Avaya Voice Priority Processor. See the previous sections for directions on how to connect to the Avaya Voice Priority Processor and navigate to the **System Status Menu**.



**Error Status** – displays alarm and error message information.

**Network Status** – displays information about the Ethernet network to which the Avaya Voice Priority Processor is connected.

**Software Versions** – lists the software version for each component.

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

## 6.1 Error Status

The **Error Status** screen displays any alarms that indicate some system malfunction.

From the **System Status Menu**, select **Error Status**. The screen displays active alarms on the Avaya Voice Priority Processor.

The following table displays the list of alarms and a description of the action to take to eliminate the alarm.

<b>6.2</b>	<b>Alarm Text</b>	<b>6.3</b>	<b>Action</b>
	Maximum payload usage reached		Reduce usage, clear alarm
	Maximum telephone usage reached		Reduce usage, clear alarm
	Maximum access point usage reached		Reduce usage, clear alarm
	Maximum call usage reached		Reduce usage, clear alarm
	SRP audio delayed		Reduce usage, clear alarm
	SRP audio lost		Reduce usage, clear alarm
	No IP address		Configure an IP address

Press **C** to clear all clearable alarms.

## 6.2 Network Status

The Avaya Voice Priority Processor 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.

```

Spectralink - HyperTerminal
File Edit View Call Transfer Help

Network Status
Hostname: [slnk_009ab5], Address: 10.7.255.235

Ethernet Address: 00:90:7A:00:9A:B5          net: 100/half
System Uptime:    0 days, 07:00             maximum calls: 80

RX:  bytes    packets  errors  drop  fifo  alignment  multicast
    80440818   617992    0      0     0      0          21516

TX:  bytes    packets  errors  drop  fifo  carrier  collisions
    61414510   569541    0      0     0      0          2449

SUP-II Access Points in Use  (Last / Max):    0 / 0
SUP-II Access Points in Calls (Last / Max):    0 / 6
SUP-II Telephones in Use    (Last / Max):    0 / 0
SUP-II Telephones in Calls  (Last / Max):    0 / 4
SUP-II SRP Audio            (Delay / Lost):  0 / 0

ESC to Exit

Connected 0:02:42  VT100  9600 8-N-1  SCROLL  CAPS  NUM  Capture  Print echo
  
```

**Ethernet Address** – MAC address of the Avaya Voice Priority Processor (hexadecimal).

**System Uptime** – the number of days, hours and minutes since the Avaya Voice Priority Processor was last reset.

**Net** – the type of connection to the Ethernet switch currently utilized.

**RX** – Ethernet statistics concerning the received signal during System Uptime.

**bytes** – bytes received

**packets** – packets received

**errors** – sum of all receive errors (long packet, short packet, CRC, overrun, alignment)

**drop** – packets dropped due to insufficient memory

**fifo** – overrun occurred during reception

**alignment** – nonoctet-aligned packets (number of bits NOT divisible by 8)

**multicast** – packets received with a broadcast or multicast destination address

**TX** – Ethernet statistics concerning the transmitted signal during System Uptime.

**bytes** – bytes transmitted

**packets** – packets transmitted

**errors** – sum of all transmit errors (heartbeat, late collision, repeated collision, underrun, carrier)

**drop** – packets dropped due to insufficient memory

**fifo** – underrun occurred during transmission

**carrier** – carrier lost during transmission

**collisions** – packets deferred (delayed) due to collision

**SVP-II Access Points in Use** – access points in use by Wireless IP Telephones, either in standby or in a call ‘Last’ is current, ‘Max’ is the maximum number in use at one time.

**SVP-II Access Points in Calls** – access points with Wireless IP Telephones in a call

**SVP-II Telephones in Use** – Wireless IP Telephones in standby or in a call

**SVP-II Telephones in Calls** – Wireless IP Telephones in a call

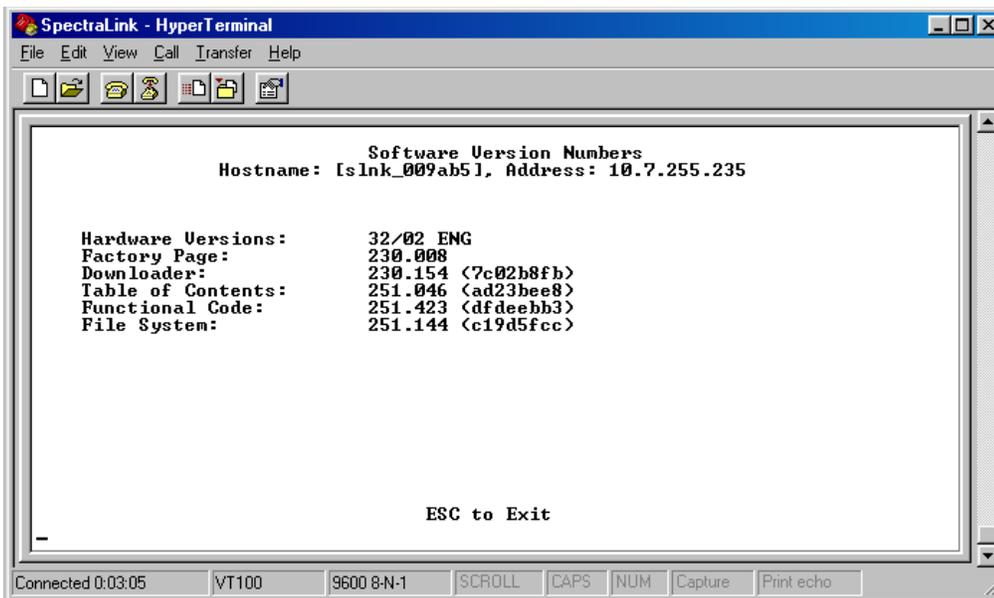
**SVP-II SRP Audio (Delay)** – SRP audio packets whose transmission was momentarily delayed

**SVP-II SRP Audio (Lost)** – SRP audio packets dropped due to insufficient memory resources

## 6.3 Software Version

The Avaya Voice Priority Processor and Wireless Telephones utilize proprietary software that is controlled and maintained through versioning. The **Software Version** screen provides information about the version currently running on the Avaya Voice Priority Processor. This information will help you determine if you are running the most recent version and will assist engineering and/or customer support in troubleshooting software problems.

From the **System Status Menu**, select **Software Version**. A sample screen is displayed here.

A screenshot of a SpectraLink HyperTerminal window. The window title is "SpectraLink - HyperTerminal". The menu bar includes "File", "Edit", "View", "Call", "Transfer", and "Help". Below the menu bar is a toolbar with icons for file operations and terminal functions. The main display area shows the following text:

```
Software Version Numbers
Hostname: [slnk_009ab51], Address: 10.7.255.235

Hardware Versions:      32/02 ENG
Factory Page:           230.008
Downloader:             230.154 <7c02b8fb>
Table of Contents:     251.046 <ad23bee8>
Functional Code:        251.423 <dfdeebb3>
File System:            251.144 <c19d5fcc>

ESC to Exit
```

The status bar at the bottom of the window shows "Connected 0:03:05", "VT100", "9600 8-N-1", and buttons for "SCROLL", "CAPS", "NUM", "Capture", and "Print echo".

Note that the software versions on your system may be different from the versions displayed in the above sample screen.

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