# Avaya one-X™ Deskphone H.323 Installation and Maintenance Guide Release 6.0 for 9608, 9611G, 9621G, and 9641G Deskphones

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**Interference**

Using a cell, mobile, or GSM telephone, or a two-way radio in close proximity to an Avaya IP Telephone might cause interference.

**Warning**

The handset receiver on 9600 Series IP Deskphones contains magnetic devices that can attract small metallic objects. Care should be taken to avoid personal injury.

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# Chapter 1: Introduction

## About This Guide

This guide describes how to install and maintain Avaya one-X™ 9608, 9611G, 9621G, and 9641G IP Deskphones in an H.323 environment and troubleshoot telephone problems.

The IP Deskphones this guide describes support the H.323 signaling protocol and must be aliased as certain 9600 Series IP Telephone sets, as described in the *Avaya one-X™ Deskphone H.323 Administrator Guide.*

The 9600 Series IP Deskphones can alternately be configured to use Session Initiation Protocol (SIP). For more information about SIP configuration, installation, and maintenance for 9600 Series IP Deskphones, see the *Avaya one-X™ Deskphone SIP Installation and Maintenance Guide*.

**Note:**

Unless otherwise indicated, generic references in this document to a call server can apply to DEFINITY® servers, MultiVantage servers, or Avaya Communication Manager media servers.

**Note:**

Unless otherwise specified, any reference to HTTP in this guide applies equally to HTTPS.

**Note:**

The "G" designation indicates a phone model with Gigabit Ethernet (GigE) capabilities.

## Intended Audience

This document is intended for personnel who install and administer 9600 Series IP Deskphones for an H.323 environment.

**CAUTION:**

Avaya does not provide product support for many of the products mentioned in this document. Take care to ensure that there is adequate technical support available for the servers involved, including, but not necessarily limited to HTTP, HTTPS, and DHCP servers. If the servers are not functioning correctly, the IP telephones might not be able to operate correctly.

# Document Organization

The guide contains the following sections:

| | |
|---|---|
| Chapter 1: Introduction | Provides an overview of this guide. |
| Chapter 2: 9600 Series IP Deskphone Installation | Describes the equipment and resources required to properly install and operate the 9600 Series H.323 Deskphones. Provides instructions on installing the telephones out of the box. |
| Chapter 3: Local Administrative (Craft) Options | Describes how to set local administrative options, if requested by the system or LAN administrator. |
| Chapter 4: Maintaining 9600 Series IP Deskphones | Describes maintenance actions like downloading telephone software from the Avaya support Web site and customizing system values. |
| Chapter 5: Troubleshooting Guidelines | Describes error conditions and messages that might occur during the installation of 9600 Series IP Deskphones. |
| Appendix A: Glossary of Terms | Provides a glossary of terms used in this document or which are generally applicable to 9600 Series IP Deskphones. |

# Change History

**Issue 1** This is the first release of this document, issued in August, 2010 to support 9600 Series IP Deskphone Software Release 6.0 and the addition of four new deskphone models: 9608, 9611G, 9621G, and 9641G. Release 6.0 was numbered to be compatible with Release 6.0 of Avaya Aura™ Communication Manager. What's New in This Release describes Release 6.0 in more detail.

9600 Series IP Deskphone software Release 6.0 is only supported on the 9608, 9611G, 9621G, and 9641G deskphones. Note that for 9600 Series IP Deskphones other than the new 9608, 9611G, 9621G, and 9641G, Software Release 3.1, issued in November, 2009 still applies.

# What's New in This Release

New material in this issue to support Release 6.0 software includes the following features and functionality that apply only to the new 9608, 9611G, 9621G, and 9641G IP Deskphones:

- The following new system parameters have been added to the list of Customizeable System Parameters in Chapter 7 of the *Avaya one-X™ Deskphone H.323 Administrator Guide:*
  - CALCSTAT - turns the touchscreen Calculator application on or off.
  - WMLHELPSTAT - sets or suppresses a touchscreen icon on the Home screen if no WML applications are administered.
  - CLDISPCONTENT - sets the call History list to show name only or name and number.
  - PHNSCRALL - consolidates call appearances and feature buttons into one scrollable list instead of separate views.
- Up to three button modules can be attached to a 9608, 9611G, or 9641G deskphone. When multiple button modules are attached, all such modules must be of the same model type, for example, either all BM12 Button Modules or all SBM24 Button Modules. Do not mix button module models on a single deskphone running software Release 6.0.
- The new BM12 Button Module contains an edit button which automatically displays the Personalize Labels screen on the deskphone to allow the user to change BM12 labels.
- The Management Information Base (MIB), available on the Avaya support site at http://www.avaya.com/support has been updated for several new parameters and three parameters have been renamed to accommodate the BM12 Button Module.
- The SIG parameter is now settable via DHCP using SSON Option 242 and via the 46xx settings file. Previously, the signaling protocol could only be set using the SIG local administrative procedure.
- A new power supply module, the IP Phone Single Port PoE Injector (SPPOE-xx, where *xx* represents the model number), has been introduced to coincide with Release 6.0. The SP-POE-xx is the only supported telephone power module for the new 9608, 9611G, 9621G and the 9641G IP Deskphones. See Powering the IP Deskphone on page 14 for connection information.
- IPv6 is supported.

  **Important:**
  IPv6 operation is limited to a specific customer set and not for general use.

  IPv6 is supported for either IPv6-only or for simultaneous IPv4/IPv6 dual-stack operationt. Network addresses, for example, for the deskphone IP Address, file server IP addresses, and call server IP addresses can be in either format and lists allow mixed IPv4/IPv6 formats, as described in the *Avaya one-X™ Deskphone H.323 Administrator Guide.* IPv6 related features include:

- Local administrative (Craft) procedures allow manual entry of both IPv4 and IPv6 addresses.
- System parameters that require IP Addresses in dotted-decimal or DNS Name format have been updated to also allow entry in colon-hex format, to accommodate IPv6.
- New system parameters support IPv6 versus IPv4 options and have been added to the list of Customizeable System Parameters in Chapter 7 of the *Avaya one-X™ Deskphone H.323 Administrator Guide*: NDREDV6, IPV6STAT, DHCPSTAT, DHCPPREF, IPPREF, PINGREPLYV6, and GRATNAV6.

# Online Documentation

See the Avaya support site at http://www.avaya.com/support for 9600 Series IP Deskphone technical and end user documentation.

Web sites that list related, non-Avaya documents, such as those published by the Internet Engineering Task Force (IETF) and the International Telecommunication Union (ITU) are provided in the sections that follow.

## IETF Documents

IETF documents provide standards relevant to IP Telephony and are available for free from the IETF Web site: http://www.ietf.org/rfc.html.

## ITU Documents

Access the ITU Web site for more information about ITU guidelines and documents, available for a fee from the ITU Web site: http://www.itu.int.

## ISO/IEC, ANSI/IEEE Documents

Access the ISO/IEC standards Web site for more information about IP Telephony standards, guidelines, and published documents: http://www.iec.ch.

# Customer Support

For 9600 Series IP Deskphone support, call the Avaya support number provided to you by your Avaya representative or Avaya reseller.

Information about Avaya products can be obtained at the following URL:

http://www.avaya.com/support

# Chapter 2: 9600 Series IP Deskphone Installation

## Introduction

The 9600 Series IP Deskphone product line uses Internet Protocol (IP) technology with Ethernet interfaces. The 9608, 9611G, 9621G, and 9641G Deskphones introduced in Release 6.0 supplement the existing Avaya IP Solutions platform.

The 9600 Series IP Deskphones introduced in Release 6.0 support DHCP and HTTP/HTTPS over IPv4/UDP and IPv6/UDP (including Internet Control Message Protocol (ICMP) and Internet Group Management Protocol (IGMP); both protocols enhance deskphone administration and servicing. These deskphones use DHCP to obtain dynamic IP Addresses and HTTP or HTTPS to download new software versions or customized settings for the deskphones.

All 9600 Series IP Deskphones provide the ability to have one IP connection on the desktop for both a deskphone set and a PC using an Ethernet switch.

In compliance with Australian law, the following information is provided:

> This equipment shall be installed and maintained by trained service personnel. All the input/output ports are classified as Safety Extra Low Voltage (SELV, in the meaning of IEC 60950). To maintain safety compliance when connecting the equipment electrically to other equipment, the interconnecting circuits shall be selected to provide continued conformance of clause 2.3 for SELV circuits (generally, double/reinforced insulation to 240Vac rms to any primary/mains circuitry and 120Vac rms to any telecommunications network circuitry). To ensure that these conditions are adhered to, interconnect the equipment only with the already approved/certified equipment.

## IP Deskphone Models

There are fifteen telephone set models currently defined in the Avaya one-X™ 9600 Series IP Deskphone family, as shown below. Only the four models shown in bold text are covered in this guide; the remaining models are described in the *Avaya one-X™ Deskphone H.323 Administrator Guide* (Document Number 16-300694):

- **9608**
- 9610
- **9611G**
- 9620
- 9620C
- 9620L
- **9621G**
- 9630
- 9630G
- 9640
- 9640G
- **9641G**
- 9650
- 9650C
- 9670G

The deskphones have an Ethernet switch that allows the telephone and a PC to share the same LAN connection, if appropriate. Thus, these models do not need, or work with, the 30A switched hub interface. The 9611G, 9621G, and 9641G models have a gigabit Ethernet (GigE) interface,

which speeds data transmission. The 9641 also has an integrated Bluetooth™ interface; setup of a Bluetooth device is described in the *Avaya one-X™ Deskphone H.323 for 9621/9641 IP Telephone User Guide* (Document Number 16-602638).

This document describes the installation of the four Release 6.0 deskphones (9608, 9611G, 9621G, and 9641G) and post-installation maintenance issues. For details about using deskphone features, see the user documentation for each deskphone. For information about desk or wall mounting, see the instructions boxed with the telephone. Wall or desk mount instructions are also available on the Avaya support Web site http://www.avaya.com/support.

## Software

As shipped from the factory, a deskphone may not contain the most up-to-date software for registration and operation. When the deskphone is first plugged in, a software download from an HTTP server might be initiated. The software download gives the deskphone upgraded functionality.

For subsequent downloads of software upgrades, the media server provides the capability for a remote restart of the IP telephone. As a consequence of restarting, the deskphone automatically starts reboot procedures which result in a download if new software is available. Chapter 4: Maintaining 9600 Series IP Deskphones covers downloading new software releases.

# Pre-Installation Checklist

Before plugging in a 9608, 9611G, 9621G, or 9641G Deskphone, verify that all the following requirements are met. Failure to do so prevents the deskphone from working properly and can have a negative impact on the network. Print copies of this checklist for each server and deskphone.

### Verify These Network Requirements

- ❑ **1.** Ensure that the LAN uses Ethernet Category 5e cabling running the IPv4 or IPv6 version of Internet Protocol.
- ❑ **2.** Avaya supports 9608, 9611G, 9621G, and 9641G Deskphones running Software Release 6.0 and later on Avaya Communication Manager (CM) 3.1.4 and later switches.

**Verify These Network Requirements (continued)**

❑ **3.** The following circuit packs are installed on the switch:

- TN2602 or TN2302IP Media Processor circuit pack. Sites with a TN2302 IP Media Processor circuit pack are strongly encouraged to install a TN2602 circuit pack to benefit from increased capacity.
- TN799C, or D Control-LAN (C-LAN) circuit pack.

**Important:**

Release 6.0 or greater requires TN799C V3 or greater C-LAN circuit pack(s). For more information, see the *Communication Manager Software and Firmware Compatibility Matrix* on the Avaya support Web site http://www.avaya.com/support.

❑ **4.** The Avaya Media Server is configured correctly, as described in the *Avaya one-X™ Deskphone H.323 Administrator Guide* and Avaya Communication Manager documentation. Both documents are available at: http://www.avaya.com/support.

❑ **5.** The DHCP server and application are administered as described in the *Avaya one-X™ Deskphone H.323 Administrator Guide*.

❑ **6.** The HTTP/HTTPS server and application are administered as described in the *Avaya one-X™ H.323 Administrator Guide*.

❑ **7.** The upgrade script and application files from the Avaya Support Web site, http://www.avaya.com/support, are loaded correctly on the HTTP/HTTPS server.

❑ **8.** If applicable, the DNS server is administered as described in the *Avaya one-X™ Deskphone H.323 Administrator Guide*.

❑ **9.** If applicable, the WML server is administered as described in the *Avaya one-X™ Deskphone H.323 Administrator Guide*.

**Notes:**

- Any or all of the server applications mentioned in items *5.-9.* can be co-resident on the same hardware, subject to the specific restrictions of each individual application.
- See the *Avaya one-X™ Deskphone H.323 Administrator Guide* for more information about:
  - administering other network equipment,
  - administering applications like firewalls, and
  - information about topics like port utilization.

**Requirements to Verify for Each IP Telephone**

❑ **10.** You have an extension number and an Avaya Communication Manager security code (password) for each applicable IP telephone. If your call server supports unnamed registration, and the telephone settings file allows unnamed registration, you do not need to provide an extension or password for the telephone. However, if you do not provide an extension or password, the telephone will have very limited telephone functionality. (For information, see Unnamed Registration on page 26.)

❑ **11.** A Category 5e LAN jack is available at each telephone site and a Category 5 modular line cable is available for connecting the deskphone to the Ethernet wall jack.

❑ **12.** Electrical power may be provided to each telephone by a Telephone Power Module (which must be ordered separately). For PoE Input connection, use only with UL listed I.T.E. equipment with PoE output. If the LAN will supply IEEE-standard power (Power over Ethernet) to the telephone, no power module is required.

❑ **13.** 1 Category 5e modular line cord is available for the connection between the IP deskphone and the PC, if applicable.

❑ **14.** Verify that the deskphone set package includes the following components:

- 1 telephone set with dual position flip- or clip-stand.
- 1 wideband handset capable of transmitting and receiving 7KHz audio.
- 1 H4DU 9-foot long (when extended) 4-conductor coiled handset cord, plugged into the telephone and the handset.
- An "Important Notice and Warning" page which provides the URL for the Avaya support site to download all other documentation.

❑ **15.** If applicable, verify that the phone has been staged and administered with applicable VPN settings as specified in the *VPN Setup Guide for 9600 Series IP Telephones* (Document 16-602968).

**Note:**

For sites using headsets, the 9600 Series IP Deskphones support only the HIS headset cords. See your Avaya representative for information.

# Assembling the Deskphone

**CAUTION:**

Be careful to use the correct jack when plugging in the deskphone. The jacks are located on the back of the telephone housing and are flanked by icons to represent their correct use.

## Powering the IP Deskphone

The 9608, 9611G, 9621G, and 9641G deskphones can be locally powered only with the new Telephone Power Module (DC power jack), the IP Phone Single Port PoE Injector (SPPOE-xx), which is available separately. In addition, all deskphones support IEEE 802.3af-standard LAN-based power. Before installing a 9608, 9611G, 9621G, or 9641G Deskphone, verify with the LAN administrator whether the LAN supports IEEE 802.3af, and if so, whether the deskphone should be powered locally or by means of the LAN.

When you add devices like multiple button modules (all of which must be the same model type) or a USB drive to applicable IP Deskphones, the power class might change. Table 1 shows the effect of button module additions on the power class and indicates how to set the IEEE power switch on the back of the deskphone to accommodate different power needs. For USB devices, the telephone displays instructions for any additional power needs upon registering the device.

**Note:**

The 9621G is a PoE Class 2 device with a 10/100/1000 switch and does not have an IEEE power switch.

**Table 1: Impact of Additional Button Modules on Telephone Power over Ethernet Power**

| Phone Model | Default PoE (Class "L" on IEEE switch) | One BM12 (IEEE switch setting) | Two BM12's (IEEE switch setting) | Three BM12's (IEEE switch setting) | One SBM24 (IEEE switch setting) | Two SBM24's (IEEE switch setting) | Three SBM24's (IEEE switch setting) |
|---|---|---|---|---|---|---|---|
| 9608 | Class 1 | L | L | H | L | H | H |
| 9611G | Class 1 | H | H | H | H | H | H |
| **9621G** | Class 2 | Not Applicable; the 9621G does not support Button Modules or USB devices. | | | | | |
| **9641G** | Class 2 | L | L | L | L | L | H |

**Note:**

For the 9608, 9611G, and 9641G, the USB interface supports USB Login, using digital pictures from a USB device as a screensaver, and importing/exporting contact lists via a Flash drive. The only exception is the 9621G model, which does not have a USB jack. Since the power consumption of the drive will vary from product to product, it is not possible to state what its impact on PoE power class will be. When the drive attempts to register with the telephone, the telephone will determine if its current power class setting is adequate to support the drive. If power is adequate, the telephone will let the drive register. If it is not adequate, the telephone will alert the user to change the power class by changing the IEEE power switch setting from "L" to "H." In extreme situations, the total power consumption with the addition of a USB device may be greater than what the Class 3 power source can provide. In that case, the telephone detects this and instructs the user to use an Auxiliary power supply or to temporarily disconnect one or more of the modules while the USB device is in use.

The system parameter USBPOWER determines for which power class(es) to enable power to the USB interface; see Chapter 7 in the *Avaya one-X™ Deskphone H.323 Administrator Guide* for information.

**Important:**

The last step in assembling the 9600 Series IP Deskphone **must** be applying power with any modules and/or adapters (and excluding USB devices, headsets, etc.). Apply power either by plugging the power cord into the power source (local powering) or plugging the modular line cord into the Ethernet wall jack (IEEE powering).

**CAUTION:**

Failure to connect the proper cables with the proper jacks might result in an outage in part of your network.

Figures 1and 2 provide illustrations to connect cords to jacks on the deskphones covered in this guide. Use the illustrations and associated procedures as appropriate for telephone assembly.

| Telephone Model: | See: |
|---|---|
| 9608 or 9611G | Figure 1 |
| 9621G or 9641G | Figure 2 |

**Note:**

Some deskphone models, for example the 9641G, accommodate an external GigE (Gigabit Ethernet) adapter. Installation options for those devices are not shown in the illustrations that follow, but are available on the Avaya support Web site.

**Figure 1: Connection Jacks on a 9608 or 9611G Deskphone**

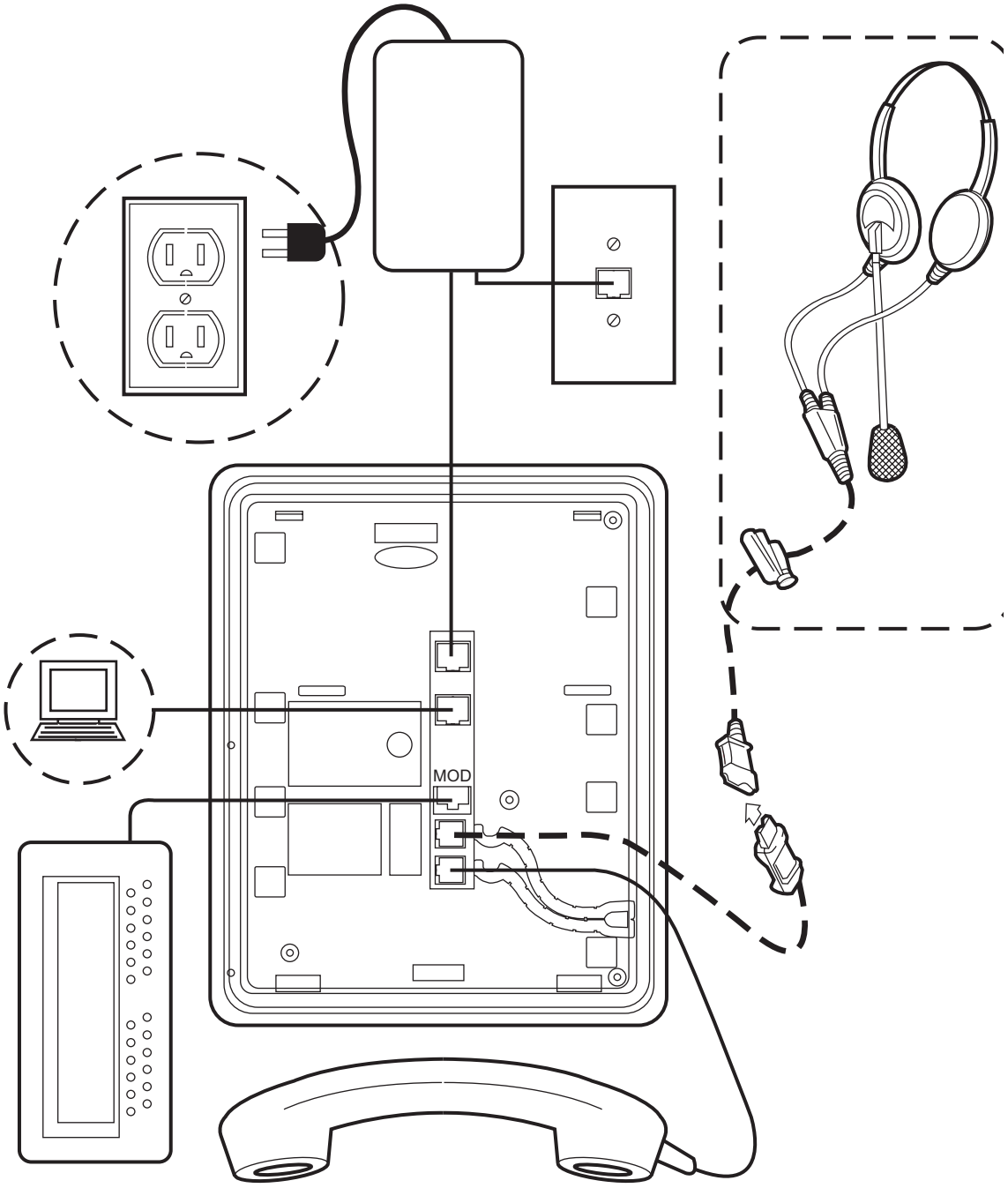
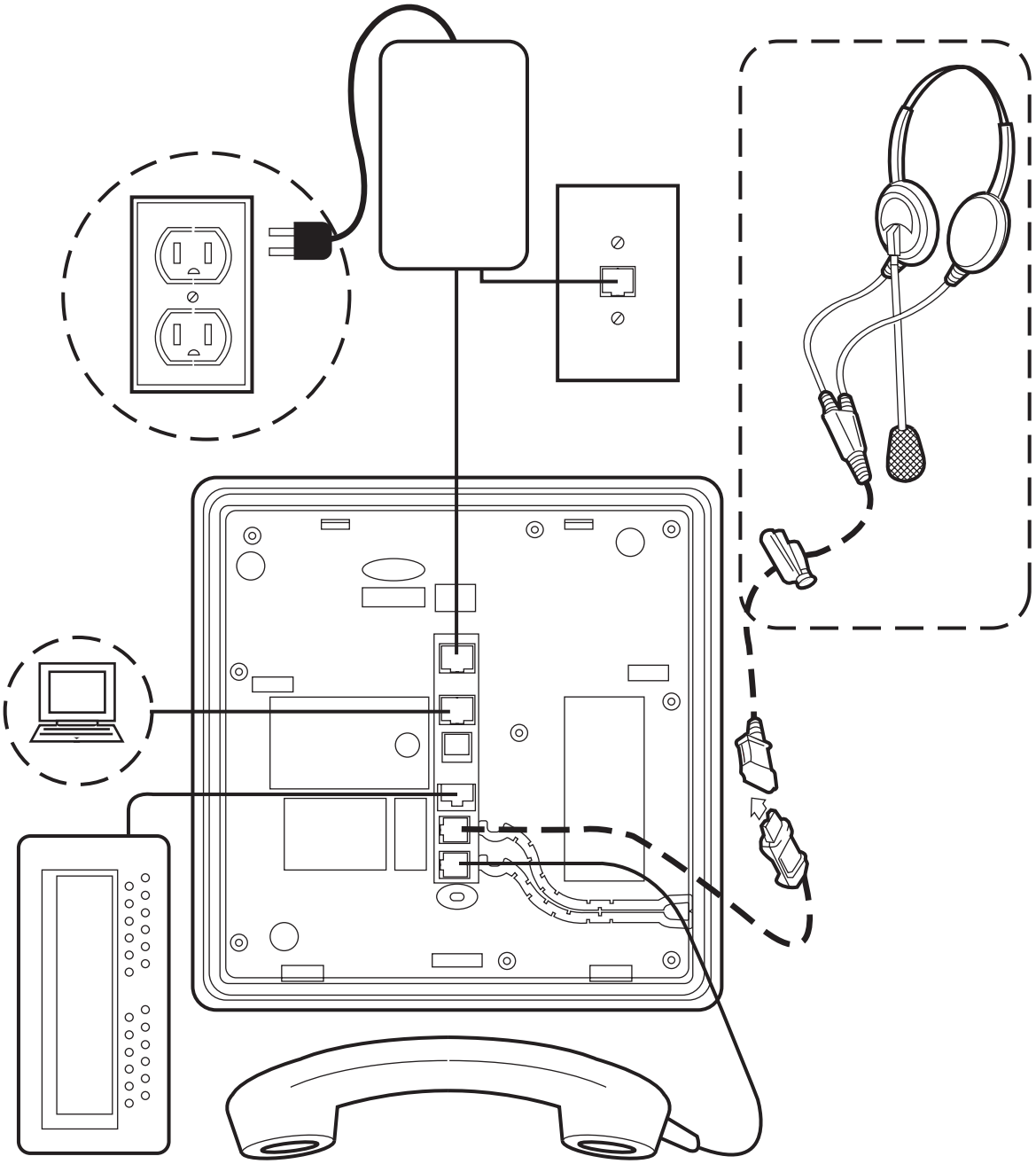


**Figure 2: Connection Jacks on a 9621G or 9641G Deskphone**



Note that the 9621G does not support a button module.

1. Plug one end of the H4DU 4-conductor coiled handset cord into the phone and the other end into the handset.
2. Plug one end of the first Category 5 modular line cord into the Ethernet jack of the PC and the other end into the secondary Ethernet jack on the phone, if appropriate.
3. **If the telephone is to be IEEE-powered,** plug one end of the second Category 5 modular line cord into the Ethernet jack on the phone. Plug the other end of this cord into the Ethernet wall jack. You are now finished. Do not proceed to Step 4.
4. **If the telephone is to be powered locally,** connect the Category 5 modular line cord provided with the IP Phone Single Port PoE Injector (SPPOE-xx, where *xx* represents the model number) into the Ethernet jack on the phone. Plug the femite end of this cord into the deskphone. Plug the other end of this cord into the SPPOE-xx power injector jack labeled **DATA & POWER OUT**. Plug another Category 5 cord into the SPPOE-xx power injector jack labeled **DATA IN**. Plug the other end of this cord into the Ethernet wall jack. Finally, connect the SPPOE-xx to an AC power source.

# Power-Up and Reset Operation (Dynamic Addressing Process)

**Note:**

Before starting this process you must have an extension number for the IP telephone and the Avaya Communication Manager security code (password) for that extension, unless the deskphone will use unnamed registration. For more information, see Unnamed Registration on page 26.

Any reference to the HTTP server applies equally to an HTTPS server.

The following description of the process of IP deskphone power-up or reset assumes that the process is executed successfully. For errors that might be encountered during the process and the messages displayed, see Chapter 5: Troubleshooting Guidelines.

The initial display messages, some of which are part of DHCP give a "power on" indication and dynamic feedback as the telephone initializes. The intent of these messages is to reassure the

user that the phone is active and has not "locked up," and to provide useful information about the status of network, server or downloading operations before the availability of dial tone.

## Initialization

The following description describes the software architecture upon which the requirements are based, as well as providing a high-level overview of how the telephone is expected to operate during startup and software upgrades. This is by no means a comprehensive description of all of the internal tasks performed during startup.

Files are stored in five areas of reprogrammable non-volatile (flash) memory in the deskphones:

- a boot program area,
- two Kernel/Root File Systems,
- one Application File System, and
- one Temporary Storage area.

Two Kernel/Root File Systems are supported in case one becomes corrupted, but only one is activated when the telephone powers up or resets. Temporary Storage is used to store a new Signed Application/Library Software Package that has been downloaded by the current application until it can be installed by a process in the active Kernel/Root File System after the next reset.

When a telephone starts up, the boot programs check the Kernel/Root File System that has previously been marked as the one to be activated to ensure that it has not become corrupted, and if it has not, it transfers control to a process in that file system. If that file system is corrupted, the boot program checks the other Kernel/Root File System. If that file system is not corrupted, it is marked as the one to be activated, the value of RFSINUSE is set to the name of the Signed Kernel/Root Software Package that was used to install that file system, and control is transferred to a process in it. If both Kernel/Root File Systems are corrupted, the telephone will not operate and must be returned for repair.

A process in the active Kernel/Root File System first checks whether a Signed Application/ Library Software Package is stored in Temporary Storage, and if it finds one, it installs the Application Software Package and/or the Library Software Package if either has a different file name than the currently installed version, replacing the existing corresponding files in the Application File System. The copy of the Signed Application/Library Software Package stored in Temporary Storage is then deleted. If a Signed Application/Library Software Package is not found in Temporary Storage, the process checks the integrity of the application files, and if they are corrupted, the process installs files from the Backup Package, replacing the corrupted application files in the Application File System. Any time an Application Software Package or a Library Software Package is installed, the value of the persistent parameter APPINUSE is set to the file name of the Signed Application/Library Software Package from which it was installed. If the application files are not corrupted, or after the Backup Package has been installed, control is

transferred to the application installed in the Application File System. Note that the processes in the Kernel/Root File System do not connect to the network or download files.

The application then connects to the network, obtains any necessary IP address information, and download files, starting with the upgrade and settings configuration files, and including Signed Software Packages and other separately downloaded files such as Language Files and Certificate Files. When a Signed Software Package (which can contain either Kernel and Root Software Packages or Application and Library Software Packages) is downloaded, it is initially stored in volatile memory (RAM). Other downloaded files (such as Language Files and Certificate Files) are installed directly in the Application File System.

When either type of Signed Software Package is downloaded, the Signing Authority Certificate is extracted from the package and is validated using a copy of the Avaya Product Root Certificate Authority Certificate that is contained in the existing application software files. If the Signing Authority Certificate is invalid, the package is deleted. If the Signing Authority Certificate is valid, the Hardware Version File in the package is validated using the corresponding Signature File in the package and the Signing Authority Certificate. If the signature is invalid, the package is deleted. If the signature is valid, the Hardware Version File is used to validate whether the package is valid for the model and hardware version of the telephone. If it is invalid, the package is deleted. If it is valid, the signature of the Software Packages is validated using the corresponding Signature Files in the package and the Signing Authority Certificate. If either signature is invalid, the package is deleted.

If the signatures are valid and the Signed Software Package is a Signed Application/Library Software Package, the package is stored in Temporary Storage. If the Backup Flag is set in the Hardware Version File, a copy of the Signed Application / Library Software Package is also stored as the Backup Package, replacing the previous Backup Package.

If the signatures are valid and the Signed Software Package is a Signed Kernel/Root Software Package, the Kernel Software Package and/or the Root File System Software Package is installed if either has a different file name than the currently installed version, replacing the existing corresponding files in the Kernel/Root File System that was not active during startup (a Root File System Software Package may also install new boot programs in the boot program area), that Kernel/Root File System is marked as the one to be activated after the next power-up or reset, and the value of the persistent parameter RFSINUSE is set to the file name of the Signed Kernel/Root Software Package that was installed.

Finally, if a new Signed Kernel/Root Software Package was installed, the telephone will reset to activate the new Kernel/Root File System, which will install a new Signed Application/Library Software Package as described above if one has been stored in Temporary Storage. If a new

Signed Kernel/Root Software Package was not installed, the telephone application attempts to register with a call server.

## Power-Up and Reset Process

When you plug the IP deskphone set into the Ethernet wall jack and apply power, if applicable, the following process takes place.

**Note:**

If the application has already been downloaded, the whole process takes approximately 1 to 2 minutes after the phone is plugged in. For software upgrades, including the boot file and application file download, the process might take 5 to 10 minutes. The duration is based on LAN loading, how many telephones are being installed at once, and similar factors.

Do not unplug the power cord during the download process.

During hardware initialization, the system initialization values NVCONTRAST and NVBRIGHTNESS are checked for non-null values, and set accordingly. The Avaya one-X™ name and logo display on sets with bit-mapped displays.

1. The system initialization value for the language file in use (NVLANGFILE) is checked for a non-null value, in which case the text strings in that language file are used for text display. Otherwise, English text strings are displayed.
2. The boot programs check the Kernel/Root File System that has previously been marked as the one to be activated to ensure that it has not become corrupted, and if it has not, transfers control to a process in that file system. If that file system is corrupted, the boot program checks the other Kernel/Root File System. If that file system is not corrupted, it is marked as the one to be activated, the value of RFSINUSE is set to the name of the Signed Kernel/Root Software Package that was used to install that file system, and control is transferred to it. If both Kernel/Root File Systems are corrupted, processing halts. The software checks whether a Signed Application/Library Software Package has been previously downloaded, and if one is found, the Application Software Package and/or the Library Software Package is installed if either has a different file name than the currently installed version, replacing the existing corresponding files in the Application File System. The downloaded Signed Application/Library Software Package is then deleted. If a new Signed Application/Library Software Package is not found, the integrity of the application files is checked. If they are corrupted, files from the Backup Package are installed, replacing the corrupted files in the Application File System. Any time an Application Software Package or a Library Software Package is installed, the value of the persistent parameter APPINUSE is set to the file name of the Application Software Package that was installed. If the application files are not corrupted, or after the Backup Package has been installed, control is transferred to the application installed in the Application File System. While loading the application files into volatile memory and as control is transferred to them, the value of the APPINUSE parameter is displayed on the bottom text line.

3. The internal clock/calendar is set to 0:00:00 Saturday, January 1, 2000 and started.
4. The telephone activates the Ethernet line interface, the PC Ethernet jack, and dial pad input to allow the invocation of procedures. The activation occurs as soon as possible after power-up or a reset.

   The telephone displays the speed of the Ethernet interface in Mbps, that is, 10, 100, or 1000. The message `No Ethernet * to program` displays until the software determines whether the interface is 10 Mbps, 100 Mbps, or 1000Mbps.

   **Note:**

   The Ethernet speed indicated is the LAN interface speed for both the telephone and any attached PC, assuming the administrator has not disabled the latter interface by a PHY2STAT setting.

   **Important:**

   Pressing * (asterisk) whenever a "`* to program`" message displays or whenever the initialization process can support an interrupt invokes the Craft Access entry procedure to allow manual settings, but only if the PROCSTAT (local dialpad procedure status) system value is "0." The zero PROCSTAT value provides full access to local procedures. If PROCSTAT is "1" the Craft Access entry procedure can be invoked only when a "`* to program`" message displays but only the VIEW procedure is available. For information, see Chapter 3: Local Administrative (Craft) Options.
5. The IP telephone sends a request to the DHCP server and invokes the DHCP process.

   One of the following messages display:

   | | | |
   |---|---|---|
   | **DHCP: *s* secs**<br>*** to program** | **DHCP: *s* secs**<br>**VLAN ID = *n*** | **DHCP: *s* secs** |

   where ***s*** is the number of seconds that have elapsed since DHCP was invoked. The message on the left appears if 802.1Q tagging is off and access to local programming procedures is not disabled or restricted. (See Chapter 3: Local Administrative (Craft) Options for specifics.) The middle message appears if 802.1Q tagging is on and access to local programming procedures is disabled or restricted. If the left and middle messages alternate every two seconds, 802.1Q tagging is on. When both messages alternate, access to local programming procedures is not disabled or restricted. Finally, the message on the right appears if 802.1Q tagging is off and access to local programming procedures is disabled or restricted.
6. Determination of the DHCP protocol (IPv4 or IPv6) is done, and the applicable parameters enabled.

   **Important:**

   IPv6 operation is limited to a specific customer set and not for general use.

**Note:**

The IPV6STAT parameter overrides both the DHCPSTAT parameter setting and manual programming, therefore if DHCPSTAT is set to enable DHVPv6, it will be disabled if IPV6STAT is "0" (disabled). Manual programming overrides DHCPSTAT, therefore even if DHCPSTAT is set to enable DHCPv4 or DHCPv6, the DoDHCPV4 or DoDHCPV6 will be set to "0" (disabled) if an IP Address of the corresponding type has been manually programmed.

The DHCP server provides IP Addresses for the following hardware:

- The IP telephone
- The HTTP/HTTPS server
- The TN799C or D Control-LAN (C-LAN) circuit pack on the media server

7. Using the list of gateway IP Addresses provided by the DHCP server, the telephone performs a router check. The telephone cycles through the gateway IP Addresses with ARPs or pings until it receives a response. When the router is located, received LLDP TLVs are processed. Then the HTTP process starts.
8. While the IP telephone connects to the HTTP server, the telephone displays one of the following messages:

| | | |
|---|---|---|
| **HTTP:*n ipadd*** | | **HTTP:*n ipadd*<br>* to program** |

where ***n*** is the number of the IP Address obtained from the HTTP server and ***ipadd*** is the IP Address.

**Important:**

Pressing ***** at this time invokes the Craft Access entry procedure to allow manual settings. For information, see Chapter 3: Local Administrative (Craft) Options.

9. When connected, the telephone looks for an upgrade script file.
10. The HTTP server sends and identifies an upgrade script.

    The GET message might have to be sent several times. Each time the GET message is sent, all IP telephones display the following message:

| |
|---|
| **HTTP: *n* uri** |

For HTTP, ***n*** is the number of HTTP requests made by the telephone and **uri** is the URI for the current HTTP request.

**Note:**

The SIG parameter value determines the signaling protocol (H.323, SIP, both) and is used to determine the proper upgrade file that is downloaded. If the SIG parameter was manually set using the local administrative (Craft) SIG procedure, that value has precedence over a SIG setting in a configuration file. A change in the SIG value may require a reset so that a new or different upgrade file can be downloaded to the phone.

11. While the upgrade script file is being downloaded, all IP telephones display the following message:

    | **HTTP:*n sc* etag** |
    |---|

    where ***n*** is the number of the IP Address obtained from the HTTP server, ***sc*** is the status code of the HTTP response and ***etag*** is the value of the ETag header.

12. When the telephone determines that the application file received is valid, the following message displays:

    | **File Obtained;please wait...**<br>***s* secs** |
    |---|

    where ***s*** is the number of seconds that elapse while non-volatile memory is erased.

13. While the application file is saved in flash memory, all IP telephones display the following message:

    | **Saving to flash**<br>**1% 1 secs** |
    |---|

    with the percentage of the file and the number of elapsed seconds incremented as the application file is stored in flash memory.

14. The telephone contacts the Avaya Media Server and attempts to log in.

    All IP telephones display a version of the following prompts for an extension:

    | **Login** |
    |---|
    | **Enter Extension** |
    | **Enter Extension and press Enter or OK** |

15. Enter a new extension and press **OK**. To register the telephone without the extension or password (unnamed), press only **OK** or make no entry and wait 60 seconds.

**Note:**

Unnamed registration is the capability to register a telephone with the call server without entry of an extension or password. The UNNAMEDSTAT parameter must be set to enable unnamed registration. Telephones registered unnamed have limited functionality. For more information, see Unnamed Registration.

All IP telephones display a version of the following prompts for a password:

| |
|---|
| **Login** |
| **Enter Password** |
| **Enter Password and press Enter or OK** |

16. Enter the password and press **OK**. To register the telephone without the extension or password (unnamed), press **OK** or make no entry and wait 60 seconds.
17. The extension is visible as you enter it but the password displays as asterisks. The system determines whether the extension is in use.
18. Successful completion of this process produces a dial tone when the **Speaker** button is pressed or the handset is lifted.

    The IP telephone was installed successfully.

# Unnamed Registration

Unnamed registration is a capability an IP telephone can have to register with a call server, and receive limited service, without requiring an extension and password entry. Typical environments where this functionality is useful include:

- “Hot-desking” environments where there is a period of time between one user logging out and another user logging in on the same telephone.
- Using the Avaya Softphone application in “road warrior” mode, which allows a traveller to invoke the telephony features and functionality by taking over the office telephone extension. This takeover unregisters the office telephone.

In both examples, the user unregisters the telephone by logging off or by taking the office telephone extension over to another telephone. Without unnamed registration, the telephone in the first example will just wait for an extension and password entry and the telephone in the second example will continue attempting to register at regular intervals. The downside of a telephone being unregistered is that no one can use the telephone, for example, to report a building emergency like a fire.

Unnamed registration allows the telephone to register without an extension and password. Because there is no extension, telephony functionality is limited, specifically:

- The user has only one call appearance, and hence, cannot transfer or conference calls.
- The user has no administered feature buttons, and cannot invoke on-hook dialing.
- Extension-based information, like a given user's Contacts data or Option settings are not available.
- The user is limited to the calling capability administered for PSA (Personal Station Access) on the call server, for example, access to an emergency number.
- The telephone cannot receive any outside calls.

Unless otherwise disabled, the telephone automatically attempts to register unnamed if no action is taken on the telephone Extension entry screen within 60 seconds. Initiating any ID or password entry disables and prevents unnamed registration from occurring. Unnamed registration is ignored after any dialpad entry.

Administrators can disable unnamed registration by appropriately administering the system parameter UNNAMEDSTAT, as indicated in Chapter 7 of the *Avaya one-X™ Deskphone H.323 Administrator Guide*. Unnamed registration appears to the end user like Avaya Communication Manager TTI Mode, and is similar from an administration perspective. For more information about TTI, see your Avaya Communication Manager documentation.

# Chapter 3: Local Administrative (Craft) Options

## Introduction

During installation or after you have successfully installed an IP deskphone, you might be instructed to administer one of the manual procedures described in this chapter. These local administrative procedures are also referred to as Craft Procedures.

There are two forms of Local Administrative Options. One allows access to all the capabilities and functionality described in this chapter while the other allows access only to an administrable level of VPN capabilities and functionality. The VPN-specific option allows the administrator to grant VPN users access to the VPN procedure itself, while preventing these users from accessing any other Local Administrative Procedure. The administrator may grant the VPN user permission to change VPN settings or only to view them. For more information on access to VPN-only Local Administrative Options, see the *VPN Setup Guide for 9600 Series IP Telephones* (Document 16-602968).

**Note:**

You can modify the settings file to set parameters for any IP deskphones that download their upgrade script and application files from the same HTTP server. See Chapter 4: Maintaining 9600 Series IP Deskphones and “9600 Series IP Telephone Scripts and Application Files” in Chapter 4 of the *Avaya one-X™ Deskphone H.323 Administrator Guide*.

**CAUTION:**

Only trained installers or technicians should perform local (craft) procedures. Perform these procedures **only** if instructed to do so by the system or LAN administrator.

Static administration of these options causes upgrades to work differently than if they are administered dynamically. Values assigned to options in static administration are not changed by upgrade scripts. These values remain stored in the telephone until either:

- a new boot file is downloaded, or
- the IP telephone is reset, as indicated in Reset System Values on page 48.

Use these option-setting procedures **only** with static addressing and, as always, only if instructed by the system or LAN administrator. Do **not** use these option-setting procedures if you are using DHCP. DHCP is the Dynamic Addressing Process, as indicated in Power-Up and Reset Operation (Dynamic Addressing Process) on page 19.

# Accessing Local (Craft) Procedures

**Note:**

In addition to the procedures listed here, the administrator may allow access to only the VPN procedure, by setting the VPNPSWD parameter in the settings file. For more information on access to VPN-only Local Administrative Options, see the *VPN Setup Guide for 9600 Series IP Telephones* (Document 16-602968).

As of Release 1.5, when PROCSTAT is "0" (full access to local Craft procedures) you can invoke local craft procedures during initialization whenever this message displays:

**`* to program`**

or at any other time the initialization process can support a processing interrupt. If PROCSTAT is set to "1" (access allowed only to the VIEW craft procedure for debugging purposes), you can invoke local Craft procedures only when the "`* to program`" message displays during initialization.

**Note:**

The "`* to program`" message is supported even if the value of PROCSTAT is "1" when the messages "`Address conflict`," "`Subnet conflict`," "`Bad router?`" and "`Bad FileSv address`" display. Allowing Craft procedure access in response to these messages prevents situations in which input is required but not allowed.

For earlier software releases, PROCSTAT must be zero to invoke craft access (Release 1.2). For Releases 1.0 and 1.1, PROCSTAT must be equal to "0" plus PROCPSWD must be null.

**Note:**

The factory-set default Craft Access Code (PROCPSWD) is **27238**.

### During Telephone Startup:

1. During startup, invoke local procedures by pressing ***** to display the Craft Access Code Entry screen:

   ```
   Enter code:__
   #=OK
   ```

2. Enter the local dialpad procedure password (0 to 7 numeric digits), as specified by the system administrator in the system value PROCPSWD. For security purposes, the telephone displays an asterisk for each numeric dialpad press. If you are using a touchscreen deskphone, and need to backspace during password entry, use the Contacts button; for non-touchscreen phones, use the left arrow button or the designated softkey.

3. Press # when password entry is complete.

   *The entry is compared to the PROCPSWD value. If they match, the telephone displays the Craft Local Procedure screen, "Select procedure and press Start."*

4. For all non-touchscreen phones, use the navigation arrows to scroll to and highlight the local procedure you want, then press **Start** or **OK**. Or scroll to the procedure you want and press the corresponding line button. For touchscreen phones, scroll to the local procedure you want if it not already displayed then touch the line on which the local procedure you want appears.

### During Normal Telephone Operation:

1. Invoke all local procedures by pressing the **Mute** button, entering the local (dialpad) procedure password (0 to 7 numeric digits), then pressing the # button. If you are using a touchscreen phone and need to backspace during password entry, use the Contacts button; for non-touchscreen phones, use the left arrow button or the designated softkey.

   A 6-second timeout is in effect between button presses after pressing the **Mute** button. If you do not press a valid button within 6 seconds of pressing the previous button, the collected digits are discarded. In this case, no administrative option is invoked.

   *The entry is compared to the PROCPSWD value. If they match, the telephone displays the Craft Local Procedure screen, and prompts "Select procedure and press Start."*

2. For non-touchscreen phones, use the navigation arrows to scroll to and highlight the local procedure you want, then press **Start** or **OK**. Or scroll to the procedure you want and press the corresponding line button. For touchscreen phones, scroll to the local procedure you want if it not already displayed then touch the line on which the local procedure you want appears.

# Entering Data for Administrative Options

This section applies to all 9600 Series IP Deskphones and describes how to enter data for administrative options.

1. With the exception of a touchscreen deskphone, the first application line on any screen is automatically highlighted (selected) when the phone displays the screen. To select the item on that line, press the appropriate softkey at the bottom of the screen, for example, **Change** or **Save**, or the **OK** button. To select a different line, use the down or up navigation arrows to change the line focus. When the desired line is highlighted, then press a softkey or **OK** to select that line. For a touchscreen deskphone, touching the desired line produces the same result.

2. Attempts to enter invalid data are rejected and the telephone emits an error beep.

3. If you enter a numeric digit that causes the IP Address or subnet mask value to exceed 255, or any value to exceed its maximum field value, an error beep tone sounds, the digit is ignored, and the cursor does not move forward.
4. If you enter a numeric digit for a value or for an IP Address or subnet mask field after entering only a zero, the new digit replaces the zero. If the asterisk dialpad button is pressed and the user is entering an IPv4 address, a decimal point is inserted into the input buffer and the cursor is moved to the next character location. If the asterisk dialpad button is pressed and the user is entering an IPv6 address, a colon is inserted into the input buffer and the cursor is moved to the next character location. See Data Entry and Validation of IPv4 and IPv6 Addresses for additional information on entering data in IPv4 and IPv6 format.
5. To backspace on non-touchscreen phones, press the leftmost softkey; for a touchscreen deskphone, use the **Bksp** softkey instead. When you press the applicable button or key to backspace, the most recently entered digit or period is erased from the display. The cursor remains in the erased character's former position.
6. Pressing **Exit** (or touching that softkey for a touchscreen deskphone) exits the local procedures.

**Important:**

If any changes were made using the 802.1X procedure or the ADDR procedure, if the value of SIG was changed to 2 (SIP) or if the Crafts Entry screen was invoked during startup, the telephone immediately resets upon pressing/touching **Exit**. If no 802.1X, SIG, or ADDR changes were made, or if the local procedures were invoked post-startup, the telephone redisplays the screen (or other display) that was effective when the craft options was invoked.

**Note:**

If **PROCSTAT** has been administered to **1**, you will not be able to invoke any administrative options other than **V I E W**.

**Note:**

Some touchscreen deskphones present an onscreen keyboard that allows you to "type" the data you want to enter on the display. See the applicable user guide for information about using the onscreen keyboard.

## Data Entry and Validation of IPv4 and IPv6 Addresses

When entering an IPv4 address or the subnet mask the dialpad uses numeric-only entry (single-tap for touchscreen telephones), except for entry of an asterisk to place a period within the address being entered. While the cursor is in any of the leftmost three fields, pressing the "*" button on the dial pad causes the value for the field being entered to be terminated (a zero is displayed if nothing else is), a period to be displayed in the space after the field, and the cursor to move to the next space. Pressing the "*" button while the cursor is in the last (right most) field results in an error beep and the cursor being left where it is. An IPv4 address or subnet mask is considered to be complete only if all three 'dots' that separate the fields are entered and if the

value of each field is valid. The following actions cause the value of a given field to be considered invalid:

- Entering a digit that would cause the value of the first field of an IPv4 address to exceed 223.
- Entering a digit that would cause the value of the last three fields of an IPv4 address to exceed 255.
- Entering a digit that would cause the value of any field of a subnet mask to exceed 255.

When entering an IPv6 address the dialpad uses numeric-only entry (single-tap for touchscreen telephones, except for "2" and "3" which are alphanumeric (multi-tap for touchscreen telephones). Pressing dialpad button "2" initially enters a "2", followed by "A", "B", "C", and back to "2". Pressing dialpad button "3" initially enters a "3", followed by "D", "E", "F", and back to "3". While the cursor is in any of the leftmost seven fields, pressing the "*" (asterisk) dialpad button causes the value for the field being entered to be terminated (a zero is displayed if nothing else is), a colon to be displayed in the space after the field, and the cursor to move to the next space. Pressing "*" while the cursor is in the last (right most) field results in an error beep and the cursor being left where it is. An IPv6 address is considered to be complete only if all the following conditions are met:

- All seven colons that separate the fields are entered OR the text input field contains at most one pair of consecutive colons
- If one pair of consecutive colons is present, the final field is not "1" or "01".
- If one pair of consecutive colons is present, the address format is not "::FFFF:hhhh;hhhh".
- The value of each field is valid. The following actions cause the value of a given field to be considered invalid:
  - Entering a digit that would cause the value of the first field of an IPv6 address to exceed FD.
  - Entering a third consecutive colon.
  - Entering a second pair of consecutive colons.

In a given text entry field, if the either an IPv4 or an IPv6 address can be specified, the initial field can be ambiguous with respect to whether the entry is an IPv4 or IPV6 address (for example, "123" might be an IPv4 "123 decimal" or an IPv6 "0123 hex"). In such cases, text entry follows the IPv6 rules that hexadecimal characters are allowed and the "*" key inserts a colon character. If the entry is a hex character (A-F) or a fourth character is entered in the field, the telephone assumes the input is IPv6 format. Otherwise, the telephone makes the initial validity check when a field boundary (colon or decimal point) is entered. This initial typographic character determines whether the overall address should be in IPv4 format (a decimal point is entered) or in IPv6 format (a colon is entered). Once this character is entered, the telephone examines the contents of the first field to ensure it is consistent with the field boundary (no hex characters, and at most three characters of value 255 or less, in the first field if the field boundary is a decimal point). If the first field contains any content inappropriate for the entered field boundary, an error beep is generated and more content cannot be entered until the contradiction in the text string is deleted, meaning either the field boundary is deleted or the

cursor is moved back and the field contents edited). Once content is entered that unambiguously identifies the format of the IP address (a decimal point for IPv4, or a colon for IPv6), the rest of the address entry is set according to that format, as specified in the bullet lists above.

# About Local Administrative Procedures

Craft procedures allow you to customize the IP Deskphone installation for your specific operating environment. This section provides a description of each local administrative option covered in this guide, with references to the pages on which the option appears.

**Note:**

For touch screen-based deskphones, simply "touching" a line or a softkey produces the same result as selecting a line or a softkey on non-touchscreen (button-based) IP Deskphones.

Unless otherwise prohibited using administration, an end user can view but not change most of the parameters associated with Craft procedures. For more information, see the applicable users guide(s).

| Shown As (this value always displays in English) | Craft Procedure Purpose | See |
|---|---|---|
| 8021X | Set 802.1X operational mode | Set the 802.1X Operational Mode on page 36. |
| ADDR | Address information programming | Static Addressing Installation on page 37. |
| AGC | Enable/disable Automatic Gain Control | Disable/Enable Automatic Gain Control on page 41. |
| CALIBRATE SCREEN | Calibrate the touch screen | Calibrating the Touch Screen on page 40. |
| CLEAR | Clear all values to factory defaults | Clear Procedure on page 41. |
| CONT | Adjust the contrast of any Button Modules and any non-color deskphones | Adjusting Contrast on Button Modules and Non-Color IP Telephones on page 43. |

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| Shown As (this value always displays in English) | Craft Procedure Purpose | See |
|---|---|---|
| DEBUG | Enable/disable Debug Mode | Disable/Enable Debug Mode on page 43. |
| GROUP | Set the Group Identifier | Group Identifier on page 44. |
| INT | Interface Control | Interface Control on page 45. |
| LOG | Enable/disable Event Logging | Disable/Enable Event Logging on page 46. |
| LOGOUT | Log off the telephone | Logoff on page 47. |
| MLS | View Multi-Language text Strings | View Multi-Language Strings on page 47. |
| RESET VALUES | Reset system initialization values to defaults | Reset System Values on page 48. |
| RESTART PHONE | Restart the telephone | Restart the Telephone on page 49. |
| SIG | Set the signaling protocol download flag | Signaling Protocol Identifier on page 49. |
| SSON | Set the Site-Specific Option Number | Site-Specific Option Number Setting on page 50. |
| TEST | Initiate a self-test | Self-Test Procedure on page 51. |
| VIEW | View current parameter values and file names | The View Administrative Option on page 60. |
| VPN | Administer and/or view Virtual Private Network (VPN) settings | *VPN Setup Guide for 9600 Series IP Telephones* (Document 16-602968). |

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# Set the 802.1X Operational Mode

Use the following procedure to set or change the operational mode.

**Note:**

When updating local (Craft) procedures from a touchscreen deskphone, touching the line you want to change or the applicable softkey produces the same result as selecting a line and pressing the applicable softkey on a non-touchscreen IP Deskphone.

1. When you select 802.1X from the Craft Local Procedure Screen, the following text displays:

```
Supplicant:
Pass-thru:
```

   where the Supplicant line is the text string associated with the current system value of DOTIXSTAT (802.1X Supplicant Mode operation control), defined as:

   - "Disabled" if DOT1XSTAT = 0
   - "Unicast-only" if DOT1XSTAT = 1
   - "Unicast/multicast" if DOT1XSTAT = 2

   and the Pass-thru line is a text string associated with the current system value of DOT1X (802.1X Supplicant Mode)

   - "Enabled mode" if DOT1X = 0
   - "Enabled w/Logoff" if DOT1X = 1
   - "Disabled" if DOT1X = 2

2. Select (highlight) the line you want to change, then press **Change**.
3. Depending on which line you selected to change, the following text displays:

```
Current setting:
New Setting:
```

   where, if you selected the Supplicant line, the ***setting*** is the text string associated with the current system value of DOTIXSTAT, or if you selected the Pass-thru line, the ***setting*** is the text string associated with the current system value of DOTIX.

4. To change the setting, press the Right (or Left) navigation arrow to cycle through the applicable settings.

   Depending on the current value, the next sequential text string is selected and displayed as the New setting. For example when changing the Pass-thru mode, if the current value is Pass-thru mode, pressing the Choice Selector displays P-t w/Logoff. If the current setting is disabled, pressing the Choice Indicator changes the new setting to Pass-thru mode.

5. Press/touch **Save** to store the new setting and redisplay the Craft Local Procedure screen.

# Pre-Installation Checklist for Static Addressing

Before performing static programming of address information, verify that all the requirements listed in the Verify These Network Requirements section of the Pre-Installation Checklist are met. You do not have to consider item 4. on page 13, as it refers to the DHCP server. In addition, you must have the values for the following parameters. Failure to do so can cause data entry errors that prevent the telephone from working. Such errors can also have a negative impact on your network. Print copies of this checklist for each subnet.

- ❑ **1.** The IP Address of the media server.
- ❑ **2.** The IP Address of the gateway/router.
- ❑ **3.** The IP netmask.
- ❑ **4.** The IP Address of the HTTP server.

# Static Addressing Installation

The usual way to assign IP Addresses to IP telephones is the automatic method described in Power-Up and Reset Operation (Dynamic Addressing Process) on page 19. There might be times, however, when manual assignment of IP Addresses is desired.

**CAUTION:**

Static addressing is necessary when a DHCP server is unavailable.

Because of the increased opportunities for text entry errors associated with static addressing, Avaya strongly recommends that a DHCP server be installed and static addressing avoided.

**Important:**

IPv6 operation is limited to a specific customer set and is not for general use.

**Note:**

When updating local (Craft) procedures from a touchscreen deskphone, touching the line you want to change or the applicable softkey produces the same result as selecting a line and pressing the applicable softkey on a non-touchscreen IP Deskphone.

Use the following procedure to invoke manual address information programming.

1. When you select ADDR from the Craft Local Procedure Screen, the Static Addressing Local Procedure screen displays as follows with the prompt "`Select address to change.`":

| **Static Addressing screen** | | **Line Description and (System Value)** |
|---|---|---|
| **Phone (IPv4)** | ***nnn.nnn.nnn.nnn*** | Deskphone IP Address (IPADD) |
| **Phone (IPv6)** | ***hhhh:hhhh::hhhh:hhhh:hhhh*** | Deskphone IP Address (NVIPADDV6) |
| **Call Server** | ***nnn.nnn.nnn.nnn or hhhh:hhhh::hhhh:hhhh:hhhh*** | Call Server in use; media server IP Address |
| **Router (IPv4)** | ***nnn.nnn.nnn.nnn*** | Router in use; gateway/router IP Address |
| **Mask (IPv4)** | ***nnn.nnn.nnn.nnn*** | IP network mask (NETMASK) |
| **HTTP Server** | ***nnn.nnn.nnn.nnn or hhhh:hhhh::hhhh:hhhh:hhhh*** | IP Address of HTTP File Server in use |
| **HTTPS Server** | ***nnn.nnn.nnn.nnn or hhhh:hhhh::hhhh:hhhh:hhhh*** | IP Address of HTTPS (TLS) File Server in use |
| **802.1Q** | ***L2Q text string*** | L2Q setting text description |
| **VLAN ID** | ***dddd*** | NVL2QVLAN |
| **VLAN Test** | ***ddd*** | VLANTEST |

where:

- ***nnn.nnn.nnn.nnn*** is the current IP Address in IPv4 format associated with the specific address information to its left, which could be either a value previously set by a technician, or the original value of NVIPADD if no previous change was made,
- ***hhhh:hhhh::hhhh:hhhh:hhhh*** is the current IP Address in IPv6 format associated with the specific address information to its left, which could be either a value previously set by a technician, or the original value of NVIPADD if no previous change was made,
- ***L2Q text string*** is the text string associated with the current system value of L2Q where "Auto" = an L2Q value of "0", "On" = an L2Q value of "1", and "Off" = an L2Q value of "2", and
- ***dddd*** is the current value of NVL2QVLAN and ***ddd*** is the current value of NVVLANTEST, respectively.

2. Use the navigation arrows to scroll to and highlight the address you want to change, then press **Change** to display the change screen for that specific address value.

3. Depending on the item you selected, choose one of the following:

| If you want to | Then |
|---|---|
| Change any of the IP Address values (Phone, Call Server, Router, Mask, &/or File Server) | Use the dialpad to enter the new IP Address. IP Addresses have three sets of three digits followed by a period. Pressing ***** (asterisk) following entry of three digits causes a period to be placed in the next position, and the cursor to advance one position to the right. If the asterisk dialpad button is pressed and the user is entering an IPv6 address, a colon is inserted into the input buffer and the cursor is moved to the next character location; the exceptions are entry of a Router or Mask address, which follows the IPv4 method of inserting a period rather than a colon. In addition to the examples that follow, entry and validation of addresses in either format is described in Data Entry and Validation of IPv4 and IPv6 Addresses on page 32.<br><br>For example, to enter the IP Address 111.222.333.444 in IPv4 format, press the 1 on the dialpad three times then press *****, press the **2** on the dialpad three times then press *****, press the 3 on the dialpad three times then press *****, then press the 4 on the dialpad three times.<br>To enter an IP Address in IPv6 format the dialpad uses numeric-only entry (single-tap the desired dialpad key for touchscreen telephones), except for "2" and "3" which are alphanumeric (multi-tap for touchscreen telephones). For example, pressing button "2" initially enters a "2", followed by "A", "B", "C", and back to "2". Pressing button "3" initially enters a "3", followed by "D", "E", "F", and back to "3".<br>Proceed to the next step. |
| Change the 802.1Q value | Use the Right navigation arrow to cycle through the text strings corresponding to the L2Q values defined as “Auto” if L2Q=0, “On” if L2Q=1, and “Off” if L2Q= 2 until the text string of the value you want to change to displays. Proceed to the next step. |
| Change the VLAN ID value | Use the dialpad to enter the new static VLAN ID of from 0 to 4094, inclusive. Proceed to the next step. |
| Change the VLANTEST value | Use the dialpad to enter the new value of the **DHCPOFFER** wait period of from 0 to 999, inclusive. Proceed to the next step. |

4. Press **Save** to store the new setting and redisplay the Craft Local Procedure screen or **Cancel** to return to the Craft Local Procedure screen without saving the value entered.

   Once the new values are stored, the telephone is reset.

# Calibrating the Touch Screen

Screen calibration properly aligns the touch screen but should only be used for a significant problem with the touch screen.

**Important:**

Use a stylus rather than your finger to touch the calibration points precisely.

**Note:**

The CLEAR Craft procedure clears any calibration data set using the CALIBRATE SCREEN Craft procedure, but does not affect factory-set calibration data. Use the **Default** softkey to restore factory-set calibration. Calibration results are not saved as part of a backup.

To calibrate the touch screen, use the following procedure:

1. When you select CALIBRATE SCREEN from the Craft Local Procedure Screen, the telephone displays three softkeys - **Start**, **Default**, and **Cancel**.
2. Take one of the following actions:

- Touch **Cancel** to return to the Craft Local Procedure screen without calibrating the screen.
- Touch **Default** to reset the calibration parameters to the factory-set values, as evidenced by a confirmation tone and redisplay of the Craft Local Procedure screen.
- Touch **Start** to calibrate the screen. A calibration target (+) appears at a particular point on the screen. Proceed to the next step.

3. Touch the center of the target with the stylus as soon as it appears.

   The target disappears, and a new target appears in a different part of the screen.

4. Touch the center of each target with the stylus within 10 seconds of its appearance.

   After all four targets have been touched, a confirmation tone sounds and a "Calibration successful" message displays.

5. Touch **Save** to return to the Craft Local Procedure screen. Calibration results are stored in the telephone’s non-volatile memory.
6. Touch **Cancel** at any time to return to the Craft Local Procedure screen without completing the touch screen calibration.

# Disable/Enable Automatic Gain Control

Use the following procedure to turn automatic gain control for the handset, headset, and/or the Speaker on or off.

**Note:**

When updating local (Craft) procedures from a touchscreen deskphone, touching the line you want to change or the applicable softkey produces the same result as selecting a line and pressing the applicable softkey on a non-touchscreen IP Deskphone.

**Note:**

The user can potentially override the AGC local procedure settings, as described in the telephone user guide. If overridden, the backup file stores the AGC value(s) set by the user and ignores any setting established using this local procedure.

1. When you select AGC from the Craft Local Procedure Screen, the following text displays:

| | |
|---|---|
| **Handset Auto Gain Control** | ***On*** |
| **Headset Auto Gain Control** | ***On*** |
| **Speaker Auto Gain Control** | ***On*** |

   where the ***setting*** is the text string associated with the current system value of NVAGCHAND, NVAGCHEAD, or NVAGCSPKR, defined as:

   - "On" if the respective NVAGC*XXXX* system value is "1".
   - Off if the respective NVAGC*XXXX* system value is "0".

2. To change the setting, select (highlight) the appropriate line. Press **Change** to toggle the selected setting from On to Off or vice versa.
3. Press **Save** to store the new setting, update the associated system value, and redisplay the Craft Local Procedure screen.

# Clear Procedure

Sometimes, you might want to remove *all* administered values, user-specified data, and option settings. Essentially, you want to return a telephone to its initial “clean slate” or out of the box condition. This is usually done when passing a telephone to a new, dedicated user when the **LOGOFF** option is not sufficient. For example, a new user is assigned the same extension, but requires different permissions than the previous user.

The **CLEAR** option erases all administered data—static programming, HTTP and HTTPS server programming, and user settings including Contact button labels and locally programmed Feature button labels, and restores all such data to default values. The **CLEAR** option does not affect the software load itself. If you have upgraded the telephone, the telephone retains the latest software. Once you have cleared a telephone, you can administer it normally.

**CAUTION:**

This procedure erases all administered data, without any possibility of recovering the data. Neither the boot code nor the application code is affected by this procedure.

**Note:**

When updating local (Craft) procedures from a touchscreen deskphone, touching the line you want to change or the applicable softkey produces the same result as selecting a line and pressing the applicable softkey on a non-touchscreen IP Deskphone.

Use the following procedure to clear the telephone of its administrative, user-assigned and options values.

1. When you select CLEAR from the Craft Local Procedure Screen, the telephone displays the prompt "`Press Clear again to confirm.`"
2. If you do not want to clear all values, press **Cancel** to terminate the procedure and retain the current values. Press **Clear** to clear all values to their initial default values.

   The telephone displays the following text:

   ```
   Clearing values...
   ```

   The telephone is cleared to its “out of the box” state, resetting the following values to their factory defaults:

   - All system values and system initialization values.
   - 802.1X identity and password.
   - User options, parameter settings, identifiers and password.
   - Any user data like Contact Lists or Call Logs are deleted.

   After clearing the values, the telephone resets.

# Adjusting Contrast on Button Modules and Non-Color IP Telephones

**Note:**

When updating local (Craft) procedures from a touchscreen deskphone, touching the line you want to change or the applicable softkey produces the same result as selecting a line and pressing the applicable softkey on a non-touchscreen IP Deskphone.

Use the following procedure to adjust the contrast of any Button Module when attached to any 9600 Series IP Deskphone or any non-color IP Deskphone. (The 9611G, 9621G, and 9641G each have a color display, and contrast adjustment is not applicable.) Fifteen contrast levels are available.

1. When you select CONT from the Craft Local Procedure Screen, the telephone prompts you to use the Right and Left navigation arrows to change the (shown as Module: 1) or the telephone (shown as Phone:) contrast.
2. To change the setting, press the Right (or Left) navigation arrow to cycle through the settings. The factory default setting is the middle setting.

   As you press the navigation arrow the next higher or lower contrast level is selected and displayed as the setting.
3. If more than one button module is attached, scroll down to that line, for example, to Module: 2 and repeat Step 2 to change the contrast.
4. Press **Save** to store the new contrast setting(s) and redisplay the Craft Local Procedure screen.

# Disable/Enable Debug Mode

**Note:**

When updating local (Craft) procedures from a touchscreen deskphone, touching the line you want to change or the applicable softkey produces the same result as selecting a line and pressing the applicable softkey on a non-touchscreen IP Deskphone.

Use the following procedure to turn the debug mode for the button module serial port on or off.

**CAUTION:**

The default DEBUG setting is "Off" which enables button module operation. A DEBUG setting of “On” disables any button module connected to the module interface or any adapter plugged into Slot 2.

1. When you select DEBUG from the Craft Local Procedure Screen, the following text displays:

| | |
|---|---|
| **Debug Mode** | ***On*** |

   where the ***setting*** is the text string associated with the current system value of NVDEBUG, defined as:

   - "On" if the NVDEBUG system value is "1".
   - "Off" if the NVDEBUG system value is "0".

2. Press **Change** to toggle the selected setting from On to Off or vice versa.
3. Press **Save** to store the new setting.

   The telephone saves the new value and the telephone initiates a reset.

# Group Identifier

**Note:**

When updating local (Craft) procedures from a touchscreen deskphone, touching the line you want to change or the applicable softkey produces the same result as selecting a line and pressing the applicable softkey on a non-touchscreen IP Deskphone.

Use the following procedure to set or change the Group Identifier.

**Note:**

Perform this procedure only if the LAN Administrator instructs you to do so. For more information about groups, see The GROUP Parameter on page 57.

1. When you select GROUP from the Craft Local Procedure Screen, the following text displays:

```
Current setting:
New Setting:
```

   where the ***setting*** is the current system value of NVGROUP.

2. Enter a valid **Group** value (0-999).
3. Press **Save** to store the new setting and redisplay the Craft Local Procedure screen.

# Interface Control

**Note:**

When updating local (Craft) procedures from a touchscreen deskphone, touching the line you want to change or the applicable softkey produces the same result as selecting a line and pressing the applicable softkey on a non-touchscreen IP Deskphone.

Use the following procedure to set or change the interface control value.

1. When you select INT from the Craft Local Procedure Screen, the following text displays with a prompt to use the Right and Left navigation arrows to select a setting:

```
Ethernet:                    Choice Selector
PC Ethernet:                 Choice Selector
```

   The values shown are the text strings associated with the current PHY1STAT on the Ethernet line and the current PHY2STAT system value on the PC Ethernet line.

   The PHY1STAT text strings are:

   - "Auto" when PHY1STAT = 1
   - "10Mbps half" when PHY1STAT = 2
   - "10Mbps full" when PHY1STAT = 3
   - "100Mbps half" when PHY1STAT = 4
   - "100Mbps full" when PHY1STAT = 5
   - "1000 Mbps full" when PHY1STAT = 6

   The PHY2STAT text strings are:

   - "Disabled" when PHY2STAT = 0
   - "Auto" when PHY2STAT = 1
   - "10Mbps half" when PHY2STAT = 2
   - "10Mbps full" when PHY2STAT = 3
   - "100Mbps half" when PHY2STAT = 4
   - "100Mbps full" when PHY2STAT = 5
   - "1000 Mbps full" when PHY2STAT = 6

2. To change the Ethernet setting, press the Right navigation arrow to cycle through the possible settings.

   Depending on the current value, the next sequential text string is selected and displayed as the setting. For example, if the current value is 10Mbps half (2), pressing the Right

navigation arrow changes the value to 10Mbps full (3). If the current value is 1000Mbps full (6), pressing the Right navigation arrow changes the value to Auto (1).

3. To change the PC Ethernet setting, select that line and press the Right navigation arrow to cycle through the possible settings.
4. Press **Save** to store the new setting(s) and redisplay the Craft Local Procedure screen.

# Disable/Enable Event Logging

**Note:**

When updating local (Craft) procedures from a touchscreen deskphone, touching the line you want to change or the applicable softkey produces the same result as selecting a line and pressing the applicable softkey on a non-touchscreen IP Deskphone.

Use the following procedure to enable or disable logging of system events.

1. When you select LOG from the Craft Local Procedure Screen, the telephone prompts you to use the Right and Left navigation arrows to select a setting and displays the following text:

| **Log: *text string*** **Choice Selector** |
|---|

where the ***text string*** is the wording associated with the current system value of NVLOGSTAT, defined as:

- "Disabled" when NVLOGSTAT = 0
- "Emergencies" when NVLOGSTAT = 1
- "Alerts" when NVLOGSTAT = 2
- "Critical" when NVLOGSTAT = 3
- "Errors" when NVLOGSTAT = 4
- "Warnings" when NVLOGSTAT = 5
- "Notices" when NVLOGSTAT = 6
- "Information" when NVLOGSTAT = 7
- "Debug" when NVLOGSTAT = 8

2. To change the setting, press the Right (or Left) navigation arrow to cycle through the settings.

   Depending on the current value, the next sequential text string is selected and displayed as the setting. For example, if the current value is Alerts (2), pressing the Right navigation arrow changes the value to Critical (3). If the current value is Debug (8), pressing the Right navigation arrow changes the value to Disabled (0).

3. Press **Save** to store the new setting and redisplay the Craft Local Procedure screen.

# Logoff

Use the following procedure to log off a telephone.

**Note:**

If a user registered (logged in) via a USB device, this procedure is not applicable. The only way to log off a telephone registered with a USB device is by removing the device.

**Note:**

When updating local (Craft) procedures from a touchscreen deskphone, touching the line you want to change or the applicable softkey produces the same result as selecting a line and pressing the applicable softkey on a non-touchscreen IP Deskphone.

**CAUTION:**

Once a telephone is logged off, a password and extension might be needed to log back on.

1. When you select LOGOUT from the Craft Local Procedure Screen, the telephone displays the following text:

```
Press Log Out again to confirm
```

2. Press **Cancel** to return to the Craft Local Procedure screen without logging off the telephone. Press **Log Out** to unregister the telephone from the call server.

# View Multi-Language Strings

**Note:**

When updating local (Craft) procedures from a touchscreen deskphone, touching the line you want to change or the applicable softkey produces the same result as selecting a line and pressing the applicable softkey on a non-touchscreen IP Deskphone.

Use this procedure to look at the language strings available on the telephone. A language string is any set of words or phrases on the IP Telephone user interface, in the currently active language.

1. When you select MLS from the Craft Local Procedure Screen, the following text displays:

```
Tag # N
Text string for tag #N        text string
```

   where ***N*** is the label associated with a specific language in the downloaded language file and ***text string*** is the wording associated with that Tag number.

2. Use the Up and Down navigation arrows to scroll through the list of text strings. Use the Right and Left navigation arrows to scroll right or left one character at a time to view the entire text string, if it exceeds the available display line space.
3. Press **Back** to return to the Craft Local Procedure screen.

# Reset System Values

**Note:**

When updating local (Craft) procedures from a touchscreen deskphone, touching the line you want to change or the applicable softkey produces the same result as selecting a line and pressing the applicable softkey on a non-touchscreen IP Deskphone.

Use the following procedure to reset all system initialization values to the application software default values.

**CAUTION:**

This procedure erases all static information, without any possibility of recovering the data.

1. When you select RESET VALUES from the Craft Local Procedure Screen, the telephone displays the following text:

```
Press Reset to confirm.
```

2. Press **Cancel** to return to the Craft Local Procedure screen without resetting the telephone. Press **Reset** to start the telephone reset.

   The telephone resets from the beginning of registration, which might take a few minutes. A reset:

   - Resets all system values and system initialization values except AUTH and NVAUTH to default values.

- Resets the 802.1X ID and Password to their default values.
- Resets call server values to their defaults.
- Deletes any entries in the Redial buffer.
- Does not affect user-specified data and settings like Contacts data or the telephone login and password. To remove this type of data, see the Clear Procedure on page 41.

# Restart the Telephone

**Note:**

When updating local (Craft) procedures from a touchscreen deskphone, touching the line you want to change or the applicable softkey produces the same result as selecting a line and pressing the applicable softkey on a non-touchscreen IP Deskphone.

Use the following procedure to restart the telephone.

1. When you select RESTART PHONE from the Craft Local Procedure Screen, the telephone displays the following text:

   ```
   Press Restart to confirm.
   ```

2. Press **Cancel** to return to the Craft Local Procedure screen without restarting the telephone. Press **Restart** to proceed with the registration steps covered in the Power-Up and Reset Operation (Dynamic Addressing Process) on page 19.

   A restart does not affect user-specified data and settings like Contacts data or the telephone login and password.

   The remainder of the restart procedure depends on the status of the boot and application files.

# Signaling Protocol Identifier

**Note:**

When updating local (Craft) procedures from a touchscreen deskphone, touching the line you want to change or the applicable softkey produces the same result as selecting a line and pressing the applicable softkey on a non-touchscreen IP Deskphone.

Use the following procedure to set or change the Signaling Protocol Identifier. A valid SIG Protocol Identifier is either **0** (default), **1** (H.323), or **2** (SIP).

**Note:**

Perform this procedure only if the LAN Administrator instructs you to do so.

1. When you select SIG from the Craft Local Procedure Screen, the telephone prompts you to use the Right and Left navigation arrows to select a setting and displays the following text:

   | Sig: *text string* Choice Selector |
   |---|

   where the ***text string*** is the wording associated with the current system value of NVSIG, defined as:

   - "Default" when NVSIG = 0
   - "H.323" when NVSIG = 1
   - "SIP" when NVSIG = 2

2. To change the setting, press the Right (or Left) navigation arrow to cycle through the settings.

   Depending on the current value, the next sequential text string is selected and displayed as the setting. For example, if the current value is SIP (2), pressing the Right arrow changes the value to 0 (default). If the current value is H.323 (1), pressing Right arrow changes the value to 2 (SIP).

3. Press **Save** to store the new setting and redisplay the Craft Local Procedure screen.

   The remainder of this procedure depends on the status of the boot and application files.

# Site-Specific Option Number Setting

**CAUTION:**

Do **not** perform this procedure if you are using static addressing. Perform this procedure **only** if you are using DHCP **and** the LAN administrator instructs you to do this.

**Note:**

When updating local (Craft) procedures from a touchscreen deskphone, touching the line you want to change or the applicable softkey produces the same result as selecting a line and pressing the applicable softkey on a non-touchscreen IP Deskphone.

Use the following procedure to set the Site-Specific Option Number (SSON).

1. When you select SSON from the Craft Local Procedure Screen, the following text displays:

```
Current setting:
New Setting:
```

   where the ***setting*** is the current system value of NVSSON.

2. To change the setting, use the dialpad to enter a valid SSON value between 128 and 255.
3. Press **Save** to store the new setting and redisplay the Craft Local Procedure screen.

# Self-Test Procedure

**Note:**

9600 Series IP Deskphones store two software code images in reprogrammable non-volatile memory. The primary image, called the “big app” must be running to perform a self-test. The backup image, called the “little app” does not support the self-test.

**Note:**

When updating local (Craft) procedures from a touchscreen deskphone, touching the line you want to change or the applicable softkey produces the same result as selecting a line and pressing the applicable softkey on a non-touchscreen IP Deskphone.

For self-testing, use the following procedure:

1. When you select TEST from the Craft Local Procedure Screen, the telephone displays the following text:

```
Press Test to confirm.
```

2. Press **Cancel** to return to the Craft Local Procedure screen without testing the telephone. Press **Test** to start telephone testing.

   The test performs the following actions:

   - All softkeys are unlabeled.
   - Groups of no more than 13 LEDs at a time on the telephone and any attached button modules illuminate sequentially for about a half second. Illumination starts with the upper half of the telephone and continues through the lower half of any attached button module in a repeating cycle.

- Pixels on the display are shown at their highest intensity.

After approximately 5 seconds, the top Application line displays either "Self-test passed" or "Self-test failed."

3. Press **Back** to return to the Craft Local Procedure screen.

# Chapter 4: Maintaining 9600 Series IP Deskphones

## Introduction

This chapter covers the maintaining the 9600 Series IP Deskphones, for example, downloading a new telephone software version from the Avaya support Web site. Note that the recommended configuration is the latest call server software and the latest IP telephone firmware.

## Downloading Software Upgrades

As of H.323 software Release 6.0 Software Distribution Packages containing the files needed to operate the 9600 Series IP Deskphones are packaged together in either Zip format or RPM/Tar format distribution package. You download the package appropriate to your operating environment to your file server from the Avaya support Web site at: http://www.avaya.com/support based on the protocol you are using (H.323 or SIP) for all or the majority of your deskphones.

H.323 software distribution packages contain:

- one or more software files;
- one upgrade file (96x1Hupgrade.txt);
- all of the display text language files;
- a file named "av_prca_pem_2033.txt" that contains a copy of the Avaya Product Root Certificate Authority certificate in PEM format that may be downloaded to telephones based on the value of the TRUSTCERTS parameter;
- file named "release.xml" that is used by the Avaya Software Update Manager application..

Release 6.0 software distribution packages in Zip format also contain a signatures directory containing signature files and a certificate file to be used by the Avaya file server application on the Utility server. Customers using their own (non-Avaya) HTTP server can ignore or delete this directory.

**Note:**

The H.323 software Release 6.0 upgrade script file is not the same upgrade script file used for the 9600 Series IP Deskphones running software Release 3.1.

**Note:**

Settings files are not included in the software distribution packages because they would overwrite your existing file and settings.

Two configuration files are important to understand. They are:

- The upgrade file, which tells the deskphone whether the telephone needs to upgrade software. The deskphones attempt to read this file whenever they reset. The upgrade file is also used to point to the settings file.
- The settings file contains the option settings that enable, disable, or otherwise customize the settings you might need to tailor the Avaya IP Deskphones for your enterprise.

**Note:**

You can use one settings file for all your Avaya IP Telephones including the 9600 Series IP Deskphones covered in this document and in the *Avaya one-X™ Deskphone H.323 Administrator Guide*, and 4600 Series IP Telephones, as covered in the *4600 Series IP Telephone LAN Administrator Guide* (Document 555-233-507).

## Download Procedure

The Avaya-provided upgrade file and the application files included in the Software Distribution Package upgrade the deskphones. You should not need to modify them. It is essential that all the files be together on your file server. When downloading a new release onto a file server with an existing release already on it, we recommend that you:

1. Stop the file server.
2. If you want to specify a port the telephones should use to communicate with the file server, administer the desired port setting in HTTPPORT or TLSPORT, for HTTP or TLS, respectively.
3. Back up all the current file server directories as applicable.
4. Copy your ***46xxsettings.txt*** file to a backup location.
5. Remove all the files in the download directory. This ensures that you do not have an inappropriate binary or configuration file on the server. The only system values that can be used in the Conditional statement are: BOOTNAME, GROUP, MACADDR, MODEL, and SIG.
6. Download the self-extracting executable file, or the corresponding zip file.
7. Extract all the files.
8. Copy your ***46xxsettings.txt*** file back into the download directory.
9. Check the Readme file for release-specific information.
10. Modify the ***46xxsettings.txt*** file as desired.

11. Restart the HTTP/HTTPS server.
12. Reset your Avaya IP Telephones.

You can download a default upgrade file from http://www.avaya.com/support. This file allows the telephone to use default settings for customer-definable options. Of course, these settings can also be changed with DHCP or in some cases, from the telephone's dialpad itself. However, you might want to open the default file and administer the options to add useful functionality to your Avaya IP Telephones. This file must reside in the same directory as the upgrade file, and must be called ***46xxsettings.scr*** or ***46xxsettings.txt***. The Avaya IP Telephones can operate without this file.

**Note:**

Most Windows systems interpret the file extension ***.scr** as a screen saver. The 4600 IP Telephones originally used *.scr to indicate a script file. We highly recommend that the settings file have the extension ***.txt**.

## Contents of the settings file

The settings file can include any of six types of statements, one per line:

- Tags, which are lines that begin with a single "#" character, followed by a single space character, followed by a text string with no spaces.
- `Goto` commands, of the form **GOTO *tag.*** `Goto` commands cause the telephone to continue interpreting the settings file at the next line after a **# *tag*** statement. If no such statement exists, the rest of the settings file is ignored.
- Conditionals, of the form form **IF *$parameter_name* SEQ *string* GOTO *tag***. Conditionals cause the `Goto` command to be processed if the value of the parameter named ***parameter_name*** exactly matches ***string***. If no such parameter named ***parameter_name*** exists, the entire conditional is ignored. The only parameters that can be used in a conditional statement are: GROUP, MACADDR, MODEL and MODEL4. In pre-6.0 software releases, BOOTNAME and SIG could also be used. In software release 3.1 and later, VPNACTIVE can also be used. In software release 6.0 and later, SIG_IN_USE can also be used.
- `SET` commands, of the form **SET *parameter_name value***. Invalid values cause the specified value to be ignored for the associated ***parameter_name*** so the default or previously administered value is retained. All values must be text strings, even if the value itself is numeric, a dotted decimal IP Address, etc.
- Comments, which are statements with a "#" character in the first column.

**Note:**

Enclose all data in quotation marks for proper interpretation.

- GET commands, of the form ***GET filename.*** The telephone will attempt to download the file named by ***filename***, and if it is successfully obtained, it will be interpreted as an

additional settings file, and no additional lines will be interpreted in the original file. If the file cannot be obtained, the telephone will continue to interpret the original file.

The Avaya-provided upgrade file includes lines that tell the telephone to **GET *46xxsettings.scr*** and ***46xxsettings.txt***. These lines cause the telephone to use HTTP/HTTPS to attempt to download the file specified in the **GET** command. If the file is obtained, its contents are interpreted as an additional script file. That is how your settings are changed from the default settings. If the file cannot be obtained, the telephone continues processing the upgrade script file. The upgrade script file is processed so that if there is no 46xxsettings.scr file, the telephone looks for a 46xxsettings.txt file. If the settings file is successfully obtained but does not include any setting changes the telephone stops using HTTP. This happens when you initially download the script file template from the Avaya support Web site, before you make any changes. When the settings file contains no setting changes, the telephone does not go back to the upgrade script file.

The settings file is under your control and is where you can identify non-default option settings, application-specific parameters, etc. You can download a template for this file from the Avaya support Web site. See Chapter 7 in the *Avaya one-X™ Deskphone H.323 Administrator Guide* for details about specific parameter values. You need only specify settings that vary from defaults, although specifying defaults is harmless.

## Downloading Text Language Files

Language files that will be used for text entry and display purposes must be stored in the same location as the 46xxsettings file or under the HTTP Server directory, defined using the **SET HTTPDIR_*HTTP server directory path*** command.

You can download a new language file version only if the filename differs from the language file previously downloaded. Alternately, you can remove the old language file using an empty **SET LANGxFILE** command in the 46xxsettings file before downloading a language file with the same filename.

## Changing the Signaling Protocol

For enterprises requiring both H.323- and SIP-based protocols, there are two ways to specify the protocol to be used by all or specific deskphones:

1. As of Release 6.0, the SIG parameter can be set in DHCP Option 242 (Site-Specific Option Number) or in the 46xxsettings.txt file. This setting will apply to all telephones except those for which SIG has been manually configured to a value of H.323 or SIP using the SIG Craft procedure.
2. The SIG parameter can be set on a per-phone basis using the SIG Craft procedure as described in the *Avaya one-X™ Deskphone H.323 Installation and Maintenance Guide*.

# The GROUP Parameter

You might have different communities of end users, all of which have the same model telephone, but which require different administered settings. For example, you might want to restrict Call Center agents from being able to Logoff, which might be an essential capability for “hot-desking” associates. We provide examples of the group settings for each of these situations later in this section.

The simplest way to separate groups of users is to associate each of them with a number. Use the GROUP parameter for this purpose. The GROUP system value **cannot** be set in the 46xxsettings file. The GROUP parameter can only be set on a telephone-by-telephone basis. To do so, first identify which telephones are associated with which group, and designate a number for each group. The number can be any integer from 0 to 999, with 0 as the default, meaning your largest group would be assigned as Group 0.

Then, at each non-default telephone, instruct the installer or end-user to invoke the GROUP Local Administrative (Craft) procedure as specified in Chapter 3: Local Administrative (Craft) Options and specify which GROUP number to use. Once the GROUP assignments are in place, edit the configuration file to allow each telephone of the appropriate group to download its proper settings.

Here is an illustration of a possible settings file for the example of a Call Center with hot-desking associates at the same location:

```
IF $GROUP SEQ 1 goto CALLCENTER
IF $GROUP SEQ 2 goto HOTDESK
{specify settings unique to Group 0}
goto END

# CALLCENTER
{specify settings unique to Group 1}
goto END

# HOTDESK
{specify settings unique to Group 2}

# END
{specify settings common to all Groups}
```

# Chapter 5: Troubleshooting Guidelines

## Introduction

This chapter describes problems that might occur during both installation and normal operation of the 9600 Series IP Deskphones and possible ways of resolving these problems.

This chapter contains the following sections:

- Descriptions of error conditions and methods for resolving them.
- The use of the **VIEW** option to view system values.
- Error and status messages, and methods for resolving them.
- LLDP troubleshooting.

## Error Conditions

There are three areas where installers can troubleshoot problems before seeking assistance from the system or LAN administrator:

1. Check both the power and Ethernet wiring for the following conditions:
   - Whether all components are plugged in correctly.
   - Check LAN connectivity in both directions to all servers - DHCP, HTTP, HTTPS, DEFINITY®/MultiVantage™.
   - If the telephone is supposed to be powered from the LAN, ensure that the LAN is properly administered and is compliant with IEEE 802.3af.
2. If you are using static addressing:
   - Use the **VIEW** option to find the names of the files being used and verify that these filenames match those on the HTTP/HTTPS server. See The View Administrative Option on page 60 for more information. Check the Avaya Web site to verify whether the correct files are being used.
   - Use the **ADDR** option to verify IP Addresses. See Static Addressing Installation on page 37 for information.
3. If the deskphone is not communicating with the system (DHCP, HTTP, or Avaya Media Server), make a note of the last message displayed, as described in Table 3 and/or Table 4. Consult the system administrator. Sometimes problems with CM - HTTP communications can be corrected by setting the HTTPPORT value to 81.
4. If you expect the telephone to be IEEE-powered, verify with the LAN administrator that IEEE power is indeed supported on the LAN.

## DTMF Tones

H.323 telephones do not send DTMF tones to non-H.323 telephones. The failure to hear DTMF tones sent by a far-end 9600 Series IP Deskphone does not require any action on the user's part. The TN2302AP board does not pass in-band DTMF tones.

## Power Interruption

If power to a 9600 Series IP Deskphone is interrupted while the telephone is saving the application file, the HTTP/HTTPS application can stop responding. If this occurs, restart the HTTP/HTTPS server.

# The View Administrative Option

Use the following procedure to verify the current values of system parameters and file versions.

**Note:**

If so administered through OPSTAT, end users can access the Network Information option from the Avaya Menu's Phone Settings option to view (but not change) most of the parameters associated with Craft Local Procedures. For more information about this option, see the applicable user guide(s).

**Important:**

IPv6 operation is limited to a specific customer set and is not available for general use.

**Note:**

You can use the **ADDR** option to view IP Addresses if needed. See Static Addressing Installation in Chapter 3: Local Administrative (Craft) Options. The IP Addresses might have been entered incorrectly. Verify whether you were provided with correct IP Addresses.

1. When you select VIEW from the Craft Local Procedure Screen, the following system parameters display, as shown in Table 2.

   **Note:**

   Use the Right navigation arrow to scroll through the viewable information where indicated in Table 2.

**Table 2: Parameter Values**

| Name | System Value | Format |
|---|---|---|
| Phone (IPv4) | ***nnn.nnn.nnn.nnn*** | Deskphone IP Address; IPADD value. |
| Phone (IPv6) | ***hhhh:hhhh::hhhh:hhhh:hhhh*** | Deskphone IP Address; NVIPADDV6 value. |
| Phone (IPv6LL) | ***hhhh:hhhh::hhhh:hhhh:hhhh*** | Deskphone IP Address; IPADDV6LL value. |
| Call Server | ***nnn.nnn.nnn.nnn*** | IP Address of the call server currently in use, otherwise “0.0.0.0.” |
| Supplicant | ***cccccccccccccccc*** | Text equivalent of DOT1XSTAT: if 0, Disabled; if 1, Unicast-only; if 2, Unicast/ multicast. |
| Pass-thru | ***cccccccccccccccc*** | Text equivalent of DOT1X; if 0, Enabled; if 1, Enabled w/Logoff; if 2, Disabled. |
| Router (IPv4) | ***nnn.nnn.nnn.nnn*** | Up to 15 ASCII characters: the IP Address of the router in use. |
| Mask (IPv4) | ***nnn.nnn.nnn.nnn*** | Up to 15 ASCII characters: NETMASK value. |
| HTTP server | ***nnn.nnn.nnn.nnn*** | IP Address of last HTTP server used successfully during initialization or “0.0.0.0” if no file server was used successfully. |
| HTTPS server | ***nnn.nnn.nnn.nnn*** | IP Address of last HTTPS server used successfully during initialization or “0.0.0.0” if no file server was used successfully. |
| 802.1Q | ***cccc*** | Text string corresponding to the L2Q value. |
| VLAN ID | ***cccc*** | Up to 4 ASCII characters. Value is L2QVLAN text "Auto" if 802.1Q tagging is 0 or "On" if 802.1Q tagging is 1. If 802.1Q tagging is off (2), this line is not displayed. |
| VLAN Test | ***ccc*** | Up to 3 ASCII characters. Value is VLANTEST value if 802.1Q tagging is 0 or 1. If 802.1Q tagging is off (2), this line is not displayed. |
| Scroll **Right** to see the following additional parameters/values: | | |
| L2 Audio | ***n*** | L2QAUD; layer 2 audio priority value. |
| L2 Signaling | ***n*** | L2QSIG; layer 2 signaling priority value. |

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**Table 2: Parameter Values (continued)**

| Name | System Value | Format |
|---|---|---|
| L3 Audio | ***nn*** | DSCPAUD; Differentiated Services Code Point for audio. |
| L3 Signaling | ***nn*** | DSCPSIG; Differentiated Services Code Point for signaling. |
| Scroll **Right** to see the following additional parameters/values: | | |
| Ethernet | | Text string corresponding to PHY1STAT value, for example, “auto,” “100Mbps HDX,” 1000Mbps FDX.” |
| PC Ethernet | | Test string corresponding to PHY2STAT value, for example, “disabled,” “100Mbps HDX,” 1000Mbps FDX.”. |
| Scroll **Right** to see the following additional parameters/values: | | |
| Model | ***96ccDccc*** | Up to 8 ASCII characters: MODEL serial number. |
| Phone SN | ***cccccccccccccccc*** | Telephone Serial Number, up to 18 ASCII characters. |
| PWB SN | ***cccccccccccccccc*** | Printed Wiring Board (circuit board) Serial Number, up to 18 ASCII characters. Applies only to 96xx IP Deskphones that have a software-readable PWB serial number and comcode. |
| PWB comcode | ***nnnnnnnn*** | 9 ASCII numeric characters. Applies only to 96xx IP Deskphones that have a software-readable PWB serial number and comcode. |
| MAC address | ***hh:hh:hh:hh:hh:hh*** | Each octet of the MAC address displays as a pair of hexadecimal numbers. |
| Group | ***nnn*** | Up to 3 ASCII numeric characters: GROUP value. |
| Protocol: | ***cccccccc*** | Up to 8 ASCII characters, currently only “H.323.” |
| Application File | ***filename.ext*** | 4 to 32 ASCII characters (primary application). |

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**Table 2: Parameter Values (continued)**

| Name | System Value | Format |
|---|---|---|
| Ethernet | ***cccccccc* Etherne**t | 2 to 8 ASCII characters, either "1000Mbps", “100Mbps”, “10Mbps”, or “No.” |
| Kernel/RFS file | ***bootcodename*** | 1 to 32 ASCII characters (backup image name). |
| Backup App File | ***filename.ext*** | 4 to 32 ASCII characters (backup application). |
| Button Module 1 | ***cccccccccccccc*** | 14 ASCII characters. Version identifier of the software in the first attached Button Module, if applicable. |
| Button Module 2 | ***cccccccccccccc*** | 14 ASCII characters. Version identifier of the software in the second attached Button Module, if applicable. |
| Button Module 3 | ***cccccccccccccc*** | 14 ASCII characters. Version identifier of the software in the third attached Button Module, if applicable. |
| Proxy Server | ***WMLPROXY*** | Proxy server used for WML functions. |
| Voice Language File | ***NVVOXFILE*** | Language file (NVVOXFILE) designated for voice-initiated dialing. Not applicable for software Release 6.0. |
| | | ***3 of 3*** |

2. Use the Right navigation arrow to scroll through the viewable information shown in Table 2.
3. Press **Back** at any time to return to the Craft Local Procedure screen.

# Installation Error and Status Messages

The 9600 Series IP Deskphones issue messages in English only. The deskphones also display messages from the switch, which can issue messages in the local language outside the United States. The 9600 Series IP Deskphones issue messages in the currently selected language, or if the telephone is logged off, in the language specified by the LANGSYS parameter value. If English is not the selected language, the telephone displays messages in English only when they are associated with local procedures, for example, MUTE V I E W.

Most of the messages in Table 3 display only for about 30 seconds, and then the telephone resets. The most common exception is `Extension in Use`, which requires manual intervention.

**Note:**

For VPN-related error and status messages, see the *VPN Setup Guide for 9600 Series IP Telephones* (Document 16-602968).

**Table 3: Possible Error and Status Messages During Installation of 9600 Series IP Deskphones**

| Message | Cause/Resolution |
|---|---|
| `802.1X Failure` | **CAUSE:** Incorrect credentials provided for authentication or not provided at all.<br>**RESOLUTION:** Follow the display prompts and reenter the 802.1X ID and password. |
| `IPv4 or IPv6 Address Conflict` | **CAUSE:** The telephone has detected an IP Address conflict.<br>**RESOLUTION:** Verify administration to identify duplicate IP Address(es). |
| `Authentication Error` | **CAUSE:** The call server does not recognize the extension entered.<br>**RESOLUTION:** Confirm the extension is correct and is correctly administered on the switch. Then try registration again, taking particular care to enter the extension accurately. |
| `Bad FileSv Address` | **CAUSE:** The HTTP/HTTPS server IP Address in the IP telephone's memory is all zeroes.<br>**RESOLUTION:** Depending on the specific requirements of your network, this may not be an error. If appropriate, either administer the DHCP server with the proper address of the HTTP/HTTPS server, or administer the telephone locally using the ADDR option. The ADDR option is explained in Chapter 3: Local Administrative (Craft) Options. |
| `Bad Router?` | **CAUSE:** The telephone cannot find a router based on the information in the DHCP file for GIPADD.<br>**RESOLUTION:** Use static addressing to specify a router address, or change administration on DHCP, as indicated in the *Avaya one-X™ Deskphone H.323 Administrator Guide*. |

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**Table 3: Possible Error and Status Messages During Installation of 9600 Series IP Deskphones (continued)**

| Message | Cause/Resolution |
|---|---|
| `Call Error` | **CAUSE:** The user was on a call when the connection to the gatekeeper went down, perhaps due to a network outage or a gatekeeper problem. The telephone attempted to automatically register with the same, or another, gatekeeper, but the responding gatekeeper had no record of the call.<br>**RESOLUTION:** Wait for the call to end, and if the telephone does not automatically register, restart the telephone. |
| `Connecting...` | **CAUSE:** The telephone is attempting to establish a TCP connection with the call server. A resource needed to establish the connection might not be available or the 10 second buffer on switch-related actions might have expired.<br>**RESOLUTION:** Allow the telephone to continue TCP connect attempts. |
| `Contacting call server...` | **CAUSE:** The telephone has rebooted successfully and is moving on to attempt to register with the call server.<br>**RESOLUTION:** Allow the telephone to continue. |
| `DHCP: CONFLICT * to program` | **CAUSE:** At least one of the IP Address offered by the DHCP server conflicts with another address.<br>**RESOLUTION:** Review DHCP server administration to identify duplicate IP Address(es). |
| `DHCPv6 Failure: (with message)` | **CAUSE:** A Reply message was received with a Status Code option that contains a status-code of 1 (UnspecFail) or a Reply message was received in response to a Renew or Rebind message with a Status Code option containing a status-code value other than 0 (Success) or 5 (UseMulticast).<br>**RESOLUTION:** In the first case, DHCPv6 will be restarted. If this message is the result of a status-code value other than 1 or 5, IPADDV6 will be set to null; if dual-stack operation is enabled the phone will also cease use of its IPv4 address and IPADD will be set to null, and DHCP operation will proceed. |
| `Discover` *aaa.bbb.ccc.ddd* | **CAUSE:** The telephone is attempting to find a DHCP server, and the user is allowed to view IP Addresses.<br>**RESOLUTION:** If this message appears for more than a few seconds, verify with the LAN Administrator that a DHCP server is appropriately administered on the network. If there is not supposed to be a DHCP server, you must “break into” the Discovering process and use static addressing. See Static Addressing Installation on page 37. To break into the Discovering process, press the # button, and when you see the “`100Mbs`” or “`10Mbs`” message, quickly press the ***** (asterisk) button. |

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**Table 3: Possible Error and Status Messages During Installation of 9600 Series IP Deskphones (continued)**

| Message | Cause/Resolution |
|---|---|
| `Discovering...` | **CAUSE:** The 96xx deskphone is attempting to find a DHCP server and the user is *not* allowed to view IP Addresses.<br>**RESOLUTION:** If this message appears for more than a few seconds, verify with the LAN Administrator that a DHCP server is appropriately administered on the network. If there is not supposed to be a DHCP server, you must "break into" the Discovering process and use static addressing. See Static Addressing Installation on page 37. To break into the Discovering process, press the # button, and when you see the "`1000Mbps`", "`100Mbps`" or "`10Mbps`" message, quickly press the ***** (asterisk) button. |
| `EEPROM error, repair required` | **CAUSE:** Downloaded application file was not downloaded or saved correctly.<br>**RESOLUTION:** The telephone automatically resets and attempts to re-initialize. |
| `Emergency Option` | **CAUSE:** Incompatible emergency option.<br>**RESOLUTION:** This should never happen. Contact Avaya. |
| `Extension in Use`<br>`Extension in use: <NNNN> Press continue to take over this extension`<br>`Login\|Continue` | **CAUSE:** The call server detects an extension conflict with an existing set or Softphone.<br>**RESOLUTION:** You can force the current telephone to register and thereby disconnect the other user by pressing **Continue**. When **Login** is selected instead, the deskphone re-prompts for entry of (a different) extension and password. |
| `Finding router...` | **CAUSE:** The telephone is proceeding through boot-up.<br>**RESOLUTION:** Allow the telephone to continue. |
| `Gatekeeper Error` | **CAUSE:** The gatekeeper rejects the registration attempt for an unspecified reason.<br>**RESOLUTION:** Review gatekeeper/call server administrations, including IP network parameters. |
| `Gateway Error` | **CAUSE:** DEFINITY Release 8.4 does not have an H.323 station extension for this telephone.<br>**RESOLUTION:** On the station administration screen, ensure the DCP set being aliased for this IP deskphone has an H.323 station extension administered, in accordance with switch administration instructions. Since the 9600 Series IP Deskphones are not supported on DEFINITY Release 8.4, you must upgrade to a release that does support these telephones. |
| `Incompatible` | **CAUSE:** This release of the call server does not support the current version of the IP telephone.<br>**RESOLUTION:** Upgrade to the current version of Avaya Communication Manager (3.0 or greater) software. |

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**Table 3: Possible Error and Status Messages During Installation of 9600 Series IP Deskphones (continued)**

| Message | Cause/Resolution |
|---|---|
| `Invalid file` | **CAUSE:** The telephone does not have sufficient room to store the downloaded file.<br>**RESOLUTION:** Verify the proper filename is administered in the script file, and that the proper application file is located in the appropriate location on the HTTP/HTTPS server. |
| `IP Address Error` | **CAUSE:** The gatekeeper reports an invalid IP Address.<br>**RESOLUTION:** This should never happen. Contact Avaya. |
| `License Error` | **CAUSE:** The call server does not support IP telephony.<br>**RESOLUTION:** Contact Avaya to upgrade your license. |
| `Limit Error` | **CAUSE:** The call server has reached its limit of IP stations.<br>**RESOLUTION:** Unregister telephones not in use, or contact Avaya to upgrade your license. |
| `NAPT Error` | **CAUSE:** A device between the telephone and the call server is invoking Network Address Port Translation, which the 9600 Series IP Deskphones do not support.<br>**RESOLUTION:** Contact the System Administrator to remove or re-administer the device. |
| `No Ethernet` | **CAUSE:** When first plugged in, the IP telephone is unable to communicate with the Ethernet.<br>**RESOLUTION:** Verify the connection to the Ethernet jack, verify the jack is Category 5, verify power is applied on the LAN to that jack, etc. |
| `Packet Error` | **CAUSE:** Protocol timeout error.<br>**RESOLUTION:** Reenter the correct extension and password. If the condition persists, contact the System Administrator. |
| `Password Error` | **CAUSE:** The call server does not recognize the password entered and displays the Login Error screen.<br>**RESOLUTION:** Confirm the password is correct, then try registration again, taking particular care to enter the password accurately. |
| `Request Error` | **CAUSE:** The gatekeeper believes the telephone's registration request is improperly formatted.<br>**RESOLUTION:** The telephone will automatically attempt to register with the next gatekeeper on its list. If the problem persists, reboot the telephone. |
| `Restarting...` | **CAUSE:** The telephone is in the initial stage of rebooting.<br>**RESOLUTION:** Allow the telephone to continue. |
| `Subnet conflict * to program` | **CAUSE:** The telephone is not on the same VLAN subnet as the router.<br>**RESOLUTION:** Press ***** to administer an IP Address on the telephone using Static Addressing Installation, or administer network equipment to administer the telephone appropriately. |

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**Table 3: Possible Error and Status Messages During Installation of 9600 Series IP Deskphones (continued)**

| Message | Cause/Resolution |
|---|---|
| `System busy` | **CAUSE:** Most likely, the number of IP endpoints on the call server is already at maximum, Less likely, network resource is unavailable.<br>**RESOLUTION:** The telephone was attempting to access a network resource (DHCP server, HTTP server, or the call server) and was not successful. Check the resource being called upon for its availability. If the resource appears operational and properly linked to the network, verify that addressing is accurate and that a communication path exists in both directions between the telephone and the resource. |
| `System Error` | **CAUSE:** The call server has an unspecified problem.<br>**RESOLUTION:** Consult your Avaya Media Server administration and troubleshooting documentation. |
| `Undefined Error` | **CAUSE:** The call server has rejected registration for an unspecified reason.<br>**RESOLUTION:** Consult your Avaya Media Server administration and troubleshooting documentation. |
| `Updating: DO NOT UNPLUG THE TELEPHONE` | **CAUSE:** The telephone is updating its software image.<br>**RESOLUTION:** Allow the telephone to continue. |
| `Waiting for LLDP` | **CAUSE:** No File Server and/or Call Server has been administered, so the telephone is expecting to get the missing data via LLDP.<br>**RESOLUTION:** Administer the missing data by one of the following methods: statically, dynamically in DHCP, in the 46xxsettings file (for Call Server addresses), or by LLDP. For more information, see LLDP Troubleshooting. |
| `Wrong Set Type` | **CAUSE:** The call server does not recognize the set type.<br>**RESOLUTION:** Ensure the call server is properly administered to expect the appropriate telephone for the IP Address and extension. |

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# Operational Errors and Status Messages

Table 4 identifies some of the possible operational problems that might be encountered after successful 9600 Series IP Deskphone installation. The user guide for a specific telephone model also contains troubleshooting for users having problems with specific IP telephone applications. Most of the problems reported by deskphone users are not likely to be problems

with the telephone itself. Problems are more likely LAN-based, where Quality of Service, server administration, and other issues can impact end-user perception of IP telephone performance.

**Table 4: Operational Error Conditions for 9600 Series IP Deskphones**

| Condition | | Cause/Resolution |
|---|---|---|
| The telephone continually reboots, or reboots continuously about every 15 minutes. | | **CAUSE:** The telephone cannot find the HTTP/ HTTPS server and/or call server.<br>**RESOLUTION:** Ensure that MCIPADD is administered either manually or through DHCP or HTTP, as appropriate.<br><br>**CAUSE:** This might be a firmware fault because the MAC address in memory is corrupted.<br>**RESOLUTION:** Return the telephone to Avaya for repair. |
| The message light on the telephone turns on and off intermittently, but the telephone never registers. | | **CAUSE:** This is a hardware fault.<br>**RESOLUTION:** The telephone must be returned to Avaya for repair. |
| The telephone stops working in the middle of a call, | **AND** no lights are lit on the telephone and the display is not lit. | **CAUSE:** Loss of power.<br>**RESOLUTION:** Check the connections between the telephone, the power supply, and the power jack. For example, verify that either static addressing was not used or that any changes to static addresses were entered correctly. |
| | **AND** power to the telephone is fine (and the telephone might have gone through the restarting sequence). | **CAUSE:** Loss of path to Avaya Media Server, DHCP Lease expired, or DHCP server not available when telephone attempts to renegotiate DHCP lease.<br>**RESOLUTION:** As above. |

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**Table 4: Operational Error Conditions for 9600 Series IP Deskphones (continued)**

| Condition | | Cause/Resolution |
|---|---|---|
| The telephone was working, but does not work now, | **AND** no lights are lit on the telephone and the display is not lit. | **CAUSE:** Loss of power.<br>**RESOLUTION:** Check the connections between the telephone, the power supply, and the power jack. |
| | **AND** power to the telephone is fine, but there is no dial tone. The display might show “System Busy.” | **CAUSE:** Loss of communication with the call server.<br>**RESOLUTION:** Check LAN continuity from the call server to the telephone using ARP or trace-route and from the telephone to the call server by invoking a Feature button. Verify that LAN administration has not changed for the Gatekeeper, TN 2302AP boards, or the LAN equipment (routers, servers, etc.) between the switch and the telephone. Verify no one changed the telephone settings locally using the **VIEW** and **ADDR** codes, as described earlier in this guide. Verify the telephone volume is set high enough. Finally, conduct a self-test. |
| | **AND** the telephone was recently moved. | **CAUSE:** Loss of communication with the call server.<br>**RESOLUTION:** As above, but pay particular attention to the possibility that the telephone is being routed to a different DHCP server, or even a different call server switch. If so, the new server or switch might need to be administered to support the telephone. |
| | **AND** the network was recently changed to upgrade or replace servers, re-administer the Avaya Media Server, add or change NAT, etc. | **CAUSE:** Loss of communication with the call server.<br>**RESOLUTION:** As above. |

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**Table 4: Operational Error Conditions for 9600 Series IP Deskphones (continued)**

| Condition | | Cause/Resolution |
|---|---|---|
| The telephone works, but the audio quality is poor, specifically: | | |
| | the user hears echo when speaking on a handset. | **CAUSE:** Echo from digital-to-analog conversion on your Avaya Media Server trunk.<br>**RESOLUTION:** Verify which trunk is causing the echo, and swap the trunk's Trunk Termination parameter on the call server. |
| | the user hears echo on a headset, but not on a handset. | **CAUSE:** Improper headset cord.<br>**RESOLUTION:** Ensure that an HIS cord is being used. |
| | the user is on Speaker and hears no echo, but the far-end hears echo. | **CAUSE:** Room acoustics.<br>**RESOLUTION:** Ensure that there are six inches or so of blank space to the right of the telephone. If that is insufficient, use the handset. |
| | the user experiences sudden silences such as gaps in speech, or static, clipped or garbled speech, etc. | **CAUSE:** Jitter, delay, dropped packets, etc.<br>**RESOLUTION:** You can have the user provide diagnostic data by invoking the Network Information feature under the **A** (Avaya) button on the telephone. One or more Quality of Service (QoS) features should be implemented in the network as covered in Chapter 3: Local Administrative (Craft) Options.<br>**CAUSE:** Improper non-Category 5 wiring.<br>**RESOLUTION:** Replace non-Category 5 wiring with Category 5 wiring. |
| | the user hears fluctuations in the volume level which are worse when the Speaker is on, or at the beginning of a call, or when a call goes from no one talking abruptly to a loud voice. | **CAUSE:** The user has changed the Automatic Gain Control (AGC) or environmental acoustics are not consistent with the current audio settings.<br>**RESOLUTION:** Try different on/off settings for the AGCHAND, AGCHEAD, and AGCSPKR parameters. |
| The telephone works properly except for the Speaker. | | **CAUSE:** The Speaker was turned off at the call server.<br>**RESOLUTION:** Administer the call server to allow that station's Speaker to operate. If that does not work, do a self-test on the telephone, as explained in the Self-Test Procedure on page 51. |
| The telephone works properly, except incoming DTMF tones are not received. | | **CAUSE:** The TN2302AP board does not pass in-band DTMF tones.<br>**RESOLUTION:** None; the board is operating as designed. |

**Table 4: Operational Error Conditions for 9600 Series IP Deskphones (continued)**

| Condition | | Cause/Resolution |
|---|---|---|
| The telephone works properly, except sidetone DTMF is not heard. | | **CAUSE:** Call server suppresses sidetone DTMF.<br>**RESOLUTION:** On call server administration, on the Change-System-Parameters screen, enable On-Hook Dialing. If the user has Hands-Free Answer (HFA), answers a call using the Speaker and switches to the handset, pressing dialpad buttons does not send DTMF tones. This is a known bug, and the only current resolution is to disable HFA. |
| Hands-Free Answer (HFA) is administered but the telephone did not automatically answer a call. | | **CAUSE:** HFA only works if the telephone is idle. A second call is ignored if it comes in while a call is in progress, including ringing before the first call is answered.<br>**RESOLUTION:** None. |
| The HTTP/HTTPS script file and settings file are ignored (not being used by the telephone). | | **CAUSE:** The system value AUTH is set to 1 (HTTPS required) but no valid address is specified in TLSSRVR.<br>**RESOLUTION:** Change AUTH to 0 (zero), or enter a valid address for TLSSRVR. |
| The HTTP/HTTPS script file is ignored or not used by the telephone, | **AND** the HTTP/ HTTPS server is a LINUX or UNIX system. | **CAUSE:** The telephone expects lines of the script file to terminate with a **`<Carriage Return> <Line Feed>`**. Some UNIX applications only terminate lines with **`<Line Feed>`**. Editing the script file with a UNIX-based editor can strip **`<Carriage Return>`**s from the file. Doing so causes the entire file to be treated as a comment, and thus be ignored.<br>**RESOLUTION:** Edit the script file with a Windows®-based editor, or another editor that does not strip out the **`<Carriage Return>`**.<br>**CAUSE:** UNIX and LINUX systems use case-sensitive addressing and file labels.<br>**RESOLUTION:** Verify the file names and path in the script file are accurately specified. |
| | **AND** telephone administration recently changed. | **CAUSE:** The ***96xxupgrade.txt*** file was edited incorrectly, renamed, etc.<br>**RESOLUTION:** Download a clean copy of the ***96xxupgrade.txt*** file from the Avaya support Web site at http://www.avaya.com/support, and do not edit or rename it. Customize or change *only* the ***46xxsettings*** file, as discussed in Chapter 4: Maintaining 9600 Series IP Deskphones. |
| Some settings in the settings file are being ignored while other settings are being used properly. | | **CAUSE:** Improper settings file administration.<br>**RESOLUTION:** Verify that customized settings are correctly spelled and formatted. |

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**Table 4: Operational Error Conditions for 9600 Series IP Deskphones (continued)**

| Condition | | Cause/Resolution |
|---|---|---|
| Some settings in the settings file are being ignored while other settings are being used properly, | **AND** the setting being ignored is one or more of the AGC settings. | **CAUSE:** The user changed the AGC setting(s), which were placed in the backup/restore file of the user.<br>**RESOLUTION:** The user can reset the AGC value(s) back to the desired setting(s), or the backup file can be edited to delete the custom AGC settings. |
| Telephone power is interrupted while the telephone is saving the application file **and** the HTTP/HTTPS application stops responding. | | **CAUSE:** The HTTP/HTTPS server stops responding if power is interrupted while a telephone is saving the application file.<br>**RESOLUTION:** Restart the HTTP/HTTPS server, as applicable. |
| The user indicates an application or option is not available. | | **CAUSE:** The ***46xxsettings*** script file is not pointed to accurately, or is not properly administered to allow the application.<br>**RESOLUTION:** Assuming the user is meant to have that application, verify the 46xxsettings script file is properly specified for your system, including case if your file server is UNIX or LINUX, and extension. Then, verify all the relevant parameters indicated in Table 7 of the *Avaya one-X™ Deskphone H.323 Administrator Guide*, are accurately specified in the 46xxsettings file. |
| User data disappeared when the user logged off one telephone and logged into another telephone. | | **CAUSE:** The second telephone is unable to access the backup file.<br>**RESOLUTION:** Verify that the first telephone created a backup file by checking that the appropriate administration was done in accordance with Chapter 7 of the *Avaya one-X™ Deskphone H.323 Administrator Guide*. Then verify that the second telephone is administered to retrieve data from the same location as the first telephone. Again, check that the appropriate administration was done in accordance with Chapter 7 of the *Avaya one-X™ Deskphone H.323 Administrator Guide.* Finally, verify that the HTTP/HTTPS server on which the backup file is located is operational and accessible from the second telephone. |

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**Table 4: Operational Error Conditions for 9600 Series IP Deskphones (continued)**

| Condition | | Cause/Resolution |
|---|---|---|
| The user reports button module buttons are not labeled when they should be. | | **CAUSE:** Improper administration on the call server.<br>**RESOLUTION:** Verify correct administration. |
| The user reports personalized labels cannot be placed on the button module's buttons, | **AND** the user has tried using the Program AD button feature. | **CAUSE:** Improper administration on the call server.<br>**RESOLUTION:** Verify correct administration. |
| | **AND** the user has tried using the Personalize Labels option on the telephone. | **CAUSE:** The user has been pressing the button module button to indicate which button to relabel.<br>**RESOLUTION:** The user should use the list displayed on the telephone, scroll to highlight the desired button label, and press either **OK** or the corresponding line button. |
| The user reports inability to access Contacts or backed-up Call Log entries, or user options. | **AND** the user is registered via a USB login. | **CAUSE:** The telephone is working as designed.<br>**RESOLUTION:** Remove the USB device and log in locally. |
| The user reports that pressing "My Pictures" causes the default (Avaya) or administered (custom) screensaver to appear, | **AND** the user is registered via a USB login. | **CAUSE:** One or more files in the USB pictures directory are not in proper .jpg format or are too large for the given telephone to display.<br>**RESOLUTION:** Check the file format and verify that height/width limits as specified in the User Guide are followed. |
| Touchscreen Deskphones Only. User gets "Could Not Access Internet Service" message from the World Clock or Weather application. | | **CAUSE:** Most likely, WMLPROXY and/or WMLPORT have not been properly administered.<br>**RESOLUTION:** Administer the missing data in the 46xxsettings file, as indicated in the *Avaya one-X™ Deskphone H.323 Administrator Guide*. |

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# LLDP Troubleshooting

If the “Waiting for LLDP” message appears for more than a few seconds, it generally indicates a problem with getting a value for the Call Server IP Address. This can occur due to incorrect settings in script files or in the way the network has been configured.

When the telephone boots, it expects to find a valid IP Address for the Call Server. This value, known as MCIPADD, can come from several sources:

- A static or manually programmed address on the phone.
- The 46xxsettings.txt file MCIPADD setting.
- A DHCP offer using option 242 that includes the MCIPADD setting.
- Link Layer Discovery Protocol or “LLDP.”

If the telephone cannot find MCIPADD through any of these means, it will fail to register with the Call Server and will display the “`Waiting for LLDP`” message several times before rebooting. For example, if the MCIPADD value was specified in the 46xxssetting file and the network file server fails, the telephone will not be able to read the MCIPADD value or any of the 46xxsettings file parameters. Therefore, this method of providing MCIPADD is not recommended.

A more robust way to provide this value is to use DHCP. The DHCP server can be administered to provide MCIPADD using DHCP Option 242. (Note that TLSSRVR, HTTPSRVR and L2QVLAN can also be administered using this option). Telephones using non-static addressing automatically do a DHCP request (Option 242 is the 96xx default DHCP offer) and may get MCIPADD (and other addresses) this way.

Another reason for receiving the “Waiting for LLDP” message is that both the HTTP and HTTPS Server IP Address is not administered. To administer the HTTP and/or HTTPS server, use the Craft ADDR procedure and enter the correct HTTP and/or HTTPS File Server IP Address in the File Server field.

An alternative protocol known as LLDP can also supply call server and file server (HTTP and/or HTTPS) IP Addresses. This IETF standard protocol requires the network to be equipped and configured to support LLDP. With LLDP in the network, HTTP and/or HTTPS Server and Call Server IP Addresses can be provided using proprietary TLVs (Transport Layer Values) to pass information to the telephones. See the *Avaya one-X™ Deskphone H.323 Administrator Guide* for detailed information about LLDP processing.

## LLDP Setup/Troubleshooting Steps

For manually (statically) programmed telephones use the Craft ADDR procedure to set the Call Server to a valid IP Address. Static Addressing Installation covers the ADDR procedure in detail.

**Note:**

If system value “STATIC” is set to “0” (the default), static addresses may be overwritten by DHCP or the 46xxsettings file.

**Note:**

See the *Avaya one-X™ Deskphone H.323 Administrator Guide* for details on how to set “STATIC” to use manually programmed IP Addresses.

**For DHCP configured telephones:**

1. Using the local (Craft) ADDR procedure, set “Phone” to **0.0.0.0**.
2. Verify or set SSON to 242 (this is the default).
3. Administer the DHCP server option 242 to contain “**MCIPADD=*xxx.xxx.xxx.xxx***”, where ***xxx.xxx.xxx*** is the Call Server IP Address.
4. Verify that the DHCP server and the telephone are on the same VLAN.
5. Verify the “DHCP server” port (67) or/and “DHCP client” port (68) are NOT blocked on the switch.
6. Verify the configuration of the DHCP Relay Agent (on the switch or on a separate PC, e.g. MS Windows Server 2000/2003) if the telephones and DHCP Server are placed on different networks (subnets). DHCP broadcast messages do not, by default, cross the router interface. See http://technet2.microsoft.com/WindowsServer/en/library/929704d8-0e1c-4b8d-b424-16c312ad1edf1033.mspx for more details about configuration of a DHCP Relay Agent on Windows Server 2003.

   **Note:**

   Do not embed spaces in DHCP Option 242 strings. For more information, see “DHCP Server Administration” in Chapter 5 of the *Avaya one-X™ Deskphone H.323 Administrator Guide*.

**For Script Configured telephones:**

1. Edit the 46xxsettings.txt file to contain a valid Call Server IP Address with the line “**SET MCIPADD *xxx.xxx.xxx.xxx***” where ***xxx.xxx.xxx*** is the Call Server IP Address.
2. Verify that the 96xxupgrade.txt file contains the line “GET 46xxsettings.txt” as the last command line of the upgrade file.
3. Verify that the HTTP server is activated and reachable by the telephone.
4. Verify the 96xxupgrade.txt and 46xxsettings.txt files are placed in the proper directory of the HTTP server to access these files. For more information, see “HTTP Generic Setup” in Chapter 5 of the *Avaya one-X™ Deskphone H.323 Administrator Guide*.

**For LLDP Configured telephones:**

Activate the switch the telephone is connected to for LLDP. This is currently only possible with Extreme switches. Activating the switch for LLDP enables the switch to send appropriate IP Addresses using Avaya/Extreme Proprietary HTTP and/or HTTPS Server and/or Call Server TLVs.

**Note:**

The telephone gets HTTP and/or HTTPS Server and Call Server IP Addresses from LLDP only if they were not configured via other means (DHCP Server, Script File, statically).

Set the switch LLDP repeat timer to less than 30 seconds.

For more information, see “Link Layer Discovery Protocol (LLDP)” in Chapter 7 of the *Avaya one-X™ Deskphone H.323 Administrator Guide*.

# Appendix A: Glossary of Terms

## Terms Used in This Guide

| | |
|---|---|
| **802.1D**<br>**802.1Q** | 802.1Q defines a layer 2 frame structure that supports VLAN identification and a QoS mechanism usually referred to as 802.1D. |
| **802.1X** | Authentication method for a protocol requiring a network device to authenticate with a back-end Authentication Server before gaining network access. Applicable 9600 Series IP deskphones support IEEE 802.1X for pass-through and for Supplicant operation with the EAP-MD5 authentication method. |
| **Application-specific** | Specific to a particular “application” running inside the telephone. For example, configuration file downloading, backup and restore of user data, HTTP push, and the Web browser are all internal applications that use the HTTP protocol. Similarly, the RTCP and CNA clients are internal applications that can invoke traceroute. This term does not include Web-page-based “applications” rendered in the Web browser. |
| **ARP** | Address Resolution Protocol, used, for example, to verify that the IP Address provided by the DHCP server is not in use by another IP telephone. |
| **CLAN** | Control LAN, type of Gatekeeper circuit pack. |
| **CNA** | Converged Network Analyzer. |
| **DHCP** | Dynamic Host Configuration Protocol, an IETF protocol used to automate IP Address allocation and management. |
| **DiffServ** | Differentiated Services, an IP-based QoS mechanism. |
| **DNS** | Domain Name System, an IETF standard for ASCII strings to represent IP Addresses. The Domain Name System (DNS) is a distributed Internet directory service. DNS is used mostly to translate between domain names and IP Addresses. 9600 Series IP Deskphones can use DNS to resolve names into IP Addresses. In DHCP, TFTP, and HTTP files, DNS names can be used wherever IP Addresses were available as long as a valid DNS server is identified first. |
| **Gatekeeper** | H.323 application that performs essential control, administrative, and managerial functions in the media server. Sometimes called CLAN in Avaya documents. |
| **H.323** | A TCP/IP-based protocol for VoIP signaling. |
| **HTTP** | Hypertext Transfer Protocol, used to request and transmit pages on the World Wide Web. |

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| | |
|---|---|
| **HTTPS** | A secure version of HTTP. |
| **IETF** | Internet Engineering Task Force, the organization that produces standards for communications on the internet. |
| **LAN** | Local Area Network. |
| **MAC** | Media Access Control, ID of an endpoint. |
| **QoS** | Quality of Service, used to refer to several mechanisms intended to improve audio quality over packet-based networks. |
| **RTCP** | Real-time Transport Control Protocol. |
| **RTP** | Real-time Transport Protocol. |
| **SRTCP** | Secure Real-time Transport Control Protocol. |
| **SRTP** | Secure Real-time Transport Protocol. |
| **System - specific** | Specific to a particular type of call server, for example, Avaya Communication Manager (CM). “System-specific signaling” refers to messages specific to the signaling protocol used by the system, for example, H.323 and/or CCMS messages used by CM and IP Office. “System-specific procedures” refers to telephone software procedures that are specific to the call server with which the software is intended to be used. |
| **TCP** | Transmission Control Protocol, a connection-oriented transport-layer protocol. |
| **TLS** | Transport Layer Security, an enhancement of Secure Sockets Layer (SSL). TLS is compatible with SSL 3.0 and allows for privacy and data integrity between two communicating applications. |
| **UDP** | User Datagram Protocol, a connectionless transport-layer protocol. |
| **Unnamed Registration** | Registration with Avaya Communication Manager by an IP telephone with no extension. Allows limited outgoing calling. |
| **URI & URL** | Uniform Resource Identifier and Uniform Resource Locator. Names for the strings used to reference resources on the Internet (for example, HTTP://....). URI is the newer term. |
| **VLAN** | Virtual LAN. |
| **VoIP** | Voice over IP, a class of technology for sending audio data and signaling over LANs. |

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