4600 Series IP Telephone Installation Guide - Addendum for the 4601 IP Telephone

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Introduction

This document covers the impact on installation due to the issue of the 4601 IP Telephone. It serves to bridge the gap between the 4601's release and its incorporation into the next general release of 4600 Series IP Telephone documentation.

The 4601 IP Telephone became available in March, 2004 as Release 1.8 (referred to as R1.8 in this document). The most recent version of the *4600 Series IP Telephone Installation Guide* (555-233-128) was issued in December, 2003 as Issue 2.0, Release 2.0. The next release of this document will include installation information for the 4601 IP Telephone.

This document covers only those areas where 4601-related information or procedures differ from those for other 4600 Series IP Telephones. For general reference regarding installation issues, see the *4600 Series IP Telephone Installation Guide*.

Intended Audience

This document is intended to be a technical reference guide for System Administrators, LAN Administrators, and/or phone technicians.

Issue Date

This document was issued for the first time in March, 2004 as Release 1.8.

Related Documents

This document and other related documentation is available online at the following URL: http://www.avaya.com/support

For information related to installing an IP Telephone, see the *4600 Series IP Telephone Installation Guide* (Document Number 555-233-128).

For information on desk/wall mounting the 4601, see the *4601/4602/4602SW IP Telephone Stand Instructions* (Document Number 555-233-147).

For information related to administering a 4601 IP Telephone on a Local Area Network, see the *4600 Series LAN Administrator's Guide Addendum for the 4601 IP Telephone* (Document Number 555-233-507ADD).

For information related to maintaining an IP Telephone System on a Local Area Network, see the *4600 Series IP Telephone LAN Administrator's Guide* (Document Number 555-233-507).

Standard telephone features are described in Chapter 17, "Telephony" of the *Overview for Avaya Communication Manager* (Document Number 555-233-767).

For information about operating the 4601 IP Telephone, see *4601 IP Telephone User's Guide* (16-300043).

For a concise, easy to use reference for 4601 phone users, see *4601 IP Telephone Quick Reference* (16-300044).

4601 IP Telephone Overview

The 4601 IP Telephone is designed for use in environments requiring minimal call appearances, minimal telephony features, and no interactive display.

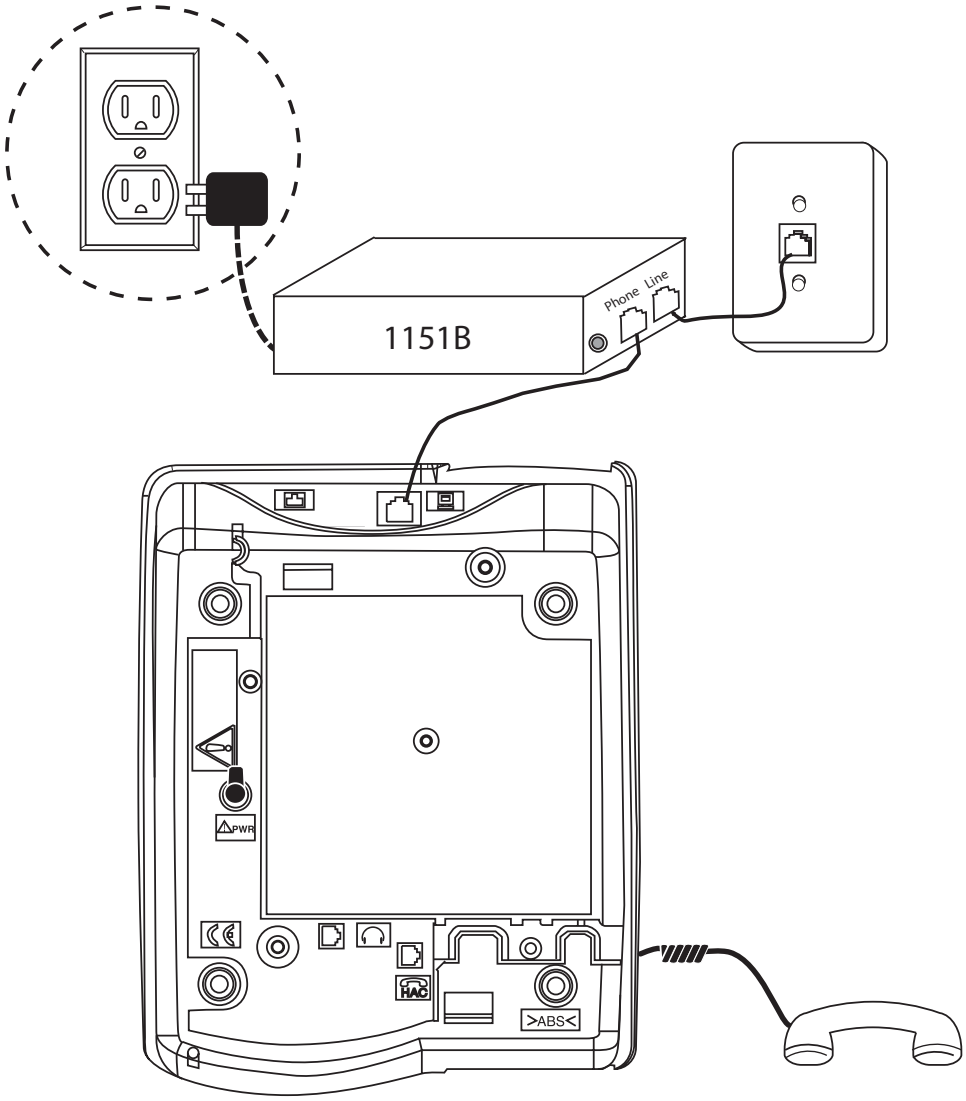
The 4601 is not natively supported on an Avaya Call Server at the present time. You can administer or alias any 4601 as a 4602 without problems. The 4601 supports Release 1.8 of the 4600 Series IP Telephones.

4601 Installation Notes

Installation Diagram

General installation and power-up procedures are the same as for the 4602 IP Telephone. (See “Assembling the 4600 Series IP Telephone” in the *4600 Series IP Telephone Installation Guide*.) The 4601’s connection jacks are illustrated below.

Figure 1. Connection Jacks on a 4601 IP Telephone (Local Power only)



1. Plug one end of the H4DU 4-conductor coiled handset cord into the telephone and the other end into the handset.
2. **For IEEE powering only:** Plug one end of the second Category 5 modular line cord into the Ethernet jack on the 4601 IP Telephone and the other end into the Ethernet wall jack.

   For local power only (1151B power supply): Plug one end of the Category 5 modular line cord into the Ethernet jack and the other end into the 1151B's Line jack. Plug one end of the second Category 5 modular line cord into the 1151B's Phone jack and the other end into the 4601 IP Telephone. Plug the power cord into the 1151B power brick and the other end into the wall outlet.

Dynamic Addressing

Dynamic addressing is the *only* way to establish addressing parameters on the 4601 IP Telephone. Static addressing is not applicable. The dynamic addressing process is described below.

NOTE Before beginning this process, you must have an extension number for the IP Telephone and the Avaya Communication Manager security code (password) for that extension.

The following description of the process of installing the IP telephones assumes that the process is executed successfully. For errors that may be encountered during the process and the messages displayed, see Error Messages on page 12.

When you plug the IP Telephone set into the Ethernet wall jack (and apply power as applicable), the following process takes place.

NOTES
- If the application has already been downloaded, the whole process takes approximately 1 to 2 minutes after the phone is plugged in. For an initial installation (including download of the application) the process may take 5 - 10 minutes. The duration is based on LAN loading, how many phones are being installed at once, and similar factors.
- Do not unplug the power cord while an upgrade is in progress.

1. The telephone activates the Ethernet line interface and dial pad input (to allow the invocation of procedures) as soon as possible after power-up or a reset.

   The telephone detects the speed of the Ethernet interface in Mbps (that is, 10 or 100).

   All of the 4601's LED indicators illuminate to indicate system value initialization. When complete, the 4601's Call Appearance Line a. flashes (500 milliseconds on, 500 milliseconds off) continuously while all other LEDs remain lit.
2. The IP telephone sends a request to the DHCP server and invokes the DHCP process. The DHCP process checks to determine whether 802.1Q tagging is on or off and if access to local programming procedures has or has not been disabled or restricted.

3. The DHCP server provides IP addresses for the following:
   - The IP Telephone
   - The TFTP server
   - The TN799B, C, or D Control-LAN (CLAN) circuit pack on the call server

   If the DHCP process locates the required information, the 4601's Call Appearance Line b indicator flashes (500 milliseconds on, 500 milliseconds off) continuously while all other LEDs remain lit. If the appropriate information cannot be discerned or is found to be missing, the 4601's Call Appearance Line a. indicator flutters (50 milliseconds on, 50 milliseconds off) three times while all other LEDs remain lit, and a reset occurs.
4. Using the list of gateway IP Addresses provided by the DHCP server, the phone performs a router check. The phone cycles through the gateway IP Addresses with ARPs or pings until it receives a response. During the search, the 4601's Call Appearance Line b indicator flashes (500 milliseconds on, 500 milliseconds off) continuously while all other LEDs remain lit.

   When the router is located, the TFTP process begins. If no router is found, Call Appearance Line b flutters (50 milliseconds on, 50 milliseconds off) three times while all other LEDs remain lit, and a reset occurs.
5. The IP Telephone connects to the TFTP server and looks for an upgrade script file.

   During TFTP processing, both Call Appearance Line indicators flash (500 milliseconds on, 500 milliseconds off) continuously while all other LEDs remain lit. If the appropriate information cannot be discerned or is found to be missing, both of the 4601's Call Appearance Line indicators flutter (50 milliseconds on, 50 milliseconds off) three times while all other LEDs remain lit, and a reset occurs.
6. The TFTP server sends an upgrade script that provides the phone with instructions regarding which versions of the boot file and application file images to run. The upgrade script file can also provide configuration information for the phone.

   The phone checks the upgrade script's boot and application image versions against its internal versions. If necessary, the phone downloads updated (boot and application image) versions from the TFTP server and stores them in local flash memory. The phone resets automatically after a download.
7. The phone contacts the Avaya Media Server and attempts to log in.

   To indicate the server is waiting for entry of an extension, the Message Waiting Indicator at the top of the phone and the Message button LED on the left middle of the faceplate flash (500 milliseconds on, 500 milliseconds off).
8. Enter a new extension, ending with the # button.
9. Enter the password, ending with the # button.

   The 4601 provides LED and button-click feedback for each digit as you enter it.
10. The system determines whether the extension is in use.
11. Successful completion of the process produces a dial tone.

    The 4601 IP Telephone has been installed successfully.

Entering Data for Local Administrative Options

Because the 4601 IP Telephone has no display, its LEDs indicate:

- when data entry is required,
- whether processing is taking place, prohibiting data entry, and
- confirmation that a process or procedure is complete.

1. All local procedures are invoked by pressing the **Hold** button, up to 7 numeric dial pad buttons, and the # button.

   A 6-second timeout is in effect between button presses after the **Hold** button is pressed. If a valid button is not pressed within 6 seconds of the previous button, the collected digits are discarded, and no administrative option is invoked.

2. Attempts to enter invalid data are rejected, and the phone emits an error beep.
3. Press the # button to go to the next step.
4. To backspace within a field, press Call Appearance **a**'s Line button.
5. The following chart provides specific 4601 data entry/phone interaction information.

If	Then
User input is expected/ required	Both the Message Waiting indicator at the top of the phone and the Message button LED on the left middle of the faceplate flash (500 milliseconds on, 500 milliseconds off).
The telephone is providing feedback after an entry of one or more numeric digits from 1 to 9	Call Appearance Line a's indicator winks (200 milliseconds on, 50 milliseconds off) *n* times for digit *n*. For example, if you press 4 as the first digit of a value (i.e., the SSON), Call Appearance Line a's indicator winks four times. For values having more than one digit with a second numeric digit from 1 to 9, Call Appearance Line b's indicator winks (200 milliseconds on, 50 milliseconds off) *n* times for digit *n*. For example, if you press 2 as the second digit of the SSON, Call Appearance Line b's indicator then winks two times. Each subsequent digit of a specific value causes Call Appearance Lines a and b to alternate winks.
The telephone is providing feedback after an entry of 0 (zero)	Pressing 0 (zero) for a value causes the appropriate Call Appearance Line indicator to flutter three times (50 milliseconds on, 50 milliseconds off).

If	Then
In certain local procedures (for example, SSON or to display the extension number), a value already exists and you press the # button to indicate you either want to enter a new value or have the current value displayed	Both the Message Waiting indicator at the top of the phone and the Message button's LED on the left middle of the faceplate are lit but not flashing. Call Appearance Line a (alternating with line b after an 1800 millisecond pause, if the value has more than one digit) winks (600 milliseconds on, 200 milliseconds off) *n* times for digit *n* to indicate the current value. The appropriate Call Appearance Line indicator flutters five times to indicate the digit zero. After feedback of the current value, both the Message Waiting indicator at the top of the phone and the Message button's LED flash (500 milliseconds on, 500 milliseconds off) to indicate user input is expected/required.
User input is not allowed (for example, during processing)	Both the Message Waiting indicator at the top of the phone and the Message button LED on the left middle of the faceplate are steadily lit.
The telephone's boot image is in the process of being upgraded	All LEDs (Call Appearance Lines a and b, and both Message indicators) are steadily lit during the download process.
An error beep tone sounds	An invalid button was pressed. Try again.

Telephone Prompts and Messages

The 4601 uses its LEDs to indicate error, wait, data entry, and other conditions. Many of the prompts and messages are covered above; however, the following table may be useful in interpreting LED signals.

If This LED	Is Doing This	For This Amount of Time	Then
Message Waiting indicator at the top of the phone *and* the Message button LED on the left middle of the faceplate	Flashing on and off	500 milliseconds on, 500 milliseconds off, continuously	The phone is waiting for you to enter data.
Message Waiting indicator at the top of the phone *and* the Message button LED on the left middle of the faceplate	Illuminated, but not flashing, winking, or fluttering	Steadily	User input is not allowed (i.e., processing is occurring) or a voice message is waiting.

If This LED	Is Doing This	For This Amount of Time	Then
Call Appearance Line a's indicator	Winking one or more times	200 milliseconds on, 50 milliseconds off	The telephone is providing feedback after you enter (press) a numeric digit from 1 to 9. Basically, the indicator "winks out" the digit you pressed (for example, if you press 4, Call Appearance Line a's indicator winks four times). Each subsequent entry of a specific digit in a value causes Call Appearance Lines a and b to alternate winks.
Call Appearance Line b's indicator	Winking one or more times	200 milliseconds on, 50 milliseconds off	The telephone is "displaying" the next numeric digit of a value (from 1 to 9), depending on how many times the indicator winks. Each subsequent digit of a specific value causes Call Appearance Lines a and b to alternate winks.
Call Appearance Line a or b's indicator	Fluttering three times	50 milliseconds on, 50 milliseconds off	You pressed 0 (zero) and the telephone is "displaying" that digit.

If This LED	Is Doing This	For This Amount of Time	Then
Call Appearance Line a and/or b's indicator and both Message Waiting LEDs	Winking or fluttering Illuminated but not flashing, winking, or fluttering	600 milliseconds on, 200 milliseconds off 50 milliseconds on, 50 milliseconds off	The phone is providing numerical feedback of an *existing* value (for example, the SSON or the phone's extension). Call Appearance Lines a and b alternate winking out digits 1-9. For zero (0), the appropriate indicator flutters five times. Data entry is not allowed.
Call Appearance Line a and b's indicators and both Message Waiting LEDs	Steadily lit	Approximately 4 minutes or longer	The telephone's boot image is being upgraded via call server download.

Local Administrative Procedures

Local administrative procedures allow you to customize the 4600 Series IP Telephone installation for your specific operating environment. “Chapter 3" in the *4600 Series IP Telephone Installation Guide* covers the local procedures for all 4600 IP Telephones. However, only three local procedures currently apply to 4601 IP Telephones. They are:

- RESET
- SSON
- TEST

Each of these procedures is covered in this section, as applicable (only) to the 4601.

Reset System Values and/or the Telephone

Use the following procedure to reset all system initialization values to the application software default values, or to reset the phone without changing values.

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

1. While the phone is on-hook and idle, press the following sequence of keys on the faceplate of the telephone:

   Hold 7 3 7 3 8 # (**Hold R E S E T #**)

   NOTE Press the **Hold** button momentarily. Do not press this button while pressing other keys/buttons.

   Both Message Waiting indicators flash (500 milliseconds on, 500 milliseconds off) to indicate user input is required.

2. If you do not want to reset the system values, press ***** (No) and proceed to Step 4 to restart the phone. To reset the system values, press the pound sign (#).

   NOTE As soon as you press the # button, all static information will be erased, without any possibility of recovering the data.

   If you pressed the # button, a confirmation tone sounds. The Message Waiting indicators illuminate but do not flash to indicate no entry is allowed while the system values are being reset. The telephone resets the system values to defaults from the beginning of registration, which takes a few minutes, during which the Message Waiting indicators are steadily illuminated.

3. If you indicated “No” in Step 2, press the # button to restart the phone. To terminate the restart and restore the user interface to its previous state, press ***** instead.

Site-Specific Option Number (SSON) Setting

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

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

1. While the phone is on-hook and idle, press the following sequence of keys on the faceplate of the telephone:

   Hold 7 7 6 6 # (**Hold S S O N #**)

   NOTE Press the **Hold** button momentarily. Do not press this button while pressing other keys/buttons.

   The 4601 provides feedback for the current value using both Call Appearance Line indicators. The first digit of the SSON is represented by Call Appearance line a, the second digit of the SSON by Call Appearance line b, and the third digit of the SSON by Call Appearance line a. For each digit, the applicable indicator winks the number of times represented by the current SSON value (600 milliseconds on, 200 milliseconds off). An 1800 millisecond pause occurs before changing indicators. If the current value is zero, the appropriate Call Appearance line indicator flutters five times (50 milliseconds on, 50 milliseconds off) instead of winking.

   After “displaying” the current SSON in this manner, the Message Waiting indicator at the top of the phone and the Message button LED on the left middle of the faceplate flash (500 milliseconds on, 500 milliseconds off) to indicate an entry is expected.

2. Using the dial pad, enter a valid SSON value (between 128 and 255).

   The 4601 provides feedback for each digit as you enter it using both Call Appearance line indicators. The indicators alternate winking the number of times represented by the digit you press (200 milliseconds on, 50 milliseconds off). For example, if the first digit of the SSON is “**2**,” pressing the number **2** on the dial pad causes Call Appearance line a’s indicator to wink two times. If the second digit you press is “**4**,” after an 1800 millisecond pause, Call Appearance line b’s indicator winks four times. Pressing “**0**” (zero) on the dial pad causes the appropriate indicator to flutter three times (50 milliseconds on, 50 milliseconds off).

   Then both Message Waiting indicators flash (500 milliseconds on, 500 milliseconds off) to indicate an entry is expected.

3. Press the ***** button to terminate the procedure and restore the current SSON.
   Press the # button to save the new value.

   If you pressed # the new value is saved. If you pressed ***** the user interface is restored to its previous state.

Self Test Procedure

1. To invoke the 4601's self test procedures, press the following sequence of keys on the faceplate of the telephone:

   Hold 8 3 7 8 # (**Hold T E S T #)**

   NOTE Press the **Hold** button momentarily. Do not press this button while pressing other keys/buttons.

   The self test begins immediately. If the self test passes, all LEDs flash (500 milliseconds on, 500 milliseconds off) continuously. If the self test fails, all LEDs flutter (50 milliseconds on, 50 milliseconds off) continuously.

2. To end the self test at any time, press #.

Error Messages

This section describes specific problems that may occur during installation of the 4601 IP Telephone and possible ways of resolving these problems. For general installation problems, see "Chapter 4" of the *4600 Series IP Telephone Installation Guide*. For problems that occur during normal operation, see "Troubleshooting Guidelines" in the *4600 Series IP Telephone LAN Administration Guide*.

NOTE In Table 1, the Error Messages shown in the first column correspond to the equivalent conditions described in "Chapter 4" of the *4600 Series IP Telephone Installation Guide.* However, rather than seeing messages on a display, the 4601 turns its LEDs on and off to indicate an error condition, as described in the second column of Table 1. In addition, not all error conditions will result in unique LED indications.

Table 1. Possible Error Messages During 4601 IP Telephone Installation

Error Message	4601 Visual Indication/Cause/Resolution
`Extension Error`	**VISUAL INDICATION:** Message Waiting indicators at top of phone and the left middle of the faceplate display a broken flutter for a total of 5 cycles (with one cycle being alternating 50 milliseconds on, 50 milliseconds off for 500 milliseconds followed by 500 milliseconds off). **CAUSE:** The PBX does not recognize the extension entered or cannot find a valid gatekeeper. **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.

Table 1. Possible Error Messages During 4601 IP Telephone Installation—*Continued*

Error Message	4601 Visual Indication/Cause/Resolution
`Extension in Use`	**VISUAL INDICATION:** If the extension is currently being used and a first registration attempt is made, the Message Waiting indicators at the top of phone and left middle of the faceplate display a broken flutter (alternating 50 milliseconds on, 50 milliseconds off for 500 milliseconds followed by 500 milliseconds off) five times, then flash continuously, awaiting user entry. If a second registration attempt is made using the *same* extension, the Message Waiting indicators at the top of phone and left middle of the faceplate display a continuous broken flutter (alternating 50 milliseconds on, 50 milliseconds off for 500 milliseconds followed by 500 milliseconds off). In addition, Call Appearance Line b's LED flashes continuously until either the "*" or "#" button is pressed. **CAUSE:** The PBX detects an extension conflict with an existing set or Softphone. **RESOLUTION:** You can force the current telephone to register, and thereby disconnect the other user, by pressing #. The 4600 Series IP Telephone prompts you again for the Extension and Password. If you enter the same Extension and Password, you must confirm that you want to unregister the original user. Press # to unregister the original user and register the current phone; then press ***** to reset the phone and enter a different Extension and Password. If no action is taken within 20 minutes, the phone attempts re-registration and repeats the process until you intervene (or power is lost).
`IP Address in use by another`	**VISUAL INDICATION:** All LEDs are steadily lit, except Call Appearance Line A, which is flashing. **CAUSE:** The telephone has detected an IP address conflict. **RESOLUTION:** DHCP restart is automatically initiated. No user action required.
`No Ethernet`	**VISUAL INDICATION:** No LEDs flash when phone is plugged in. **CAUSE:** Telephone is not receiving power or when first plugged in, the IP Telephone is unable to communicate with the Ethernet. **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.
`Password Error`	**VISUAL INDICATION:** Message Waiting indicators at top of phone and left middle of faceplate display a broken flutter for a total of 5 cycles (with one cycle being alternating 50 milliseconds on, 50 milliseconds off for 500 milliseconds followed by 500 milliseconds off), then flash continuously, awaiting user entry. **CAUSE:** The PBX does not recognize the password entered. **RESOLUTION:** Confirm the password is correct, then try registration again, taking particular care to enter the password accurately.

Table 1. Possible Error Messages During 4601 IP Telephone Installation—*Continued*

Error Message	4601 Visual Indication/Cause/Resolution
`System busy`	**VISUAL INDICATION:** Message Waiting indicators at top of phone and left middle of faceplate display a broken flutter continuously (alternating 50 milliseconds on, 50 milliseconds off for 500 milliseconds followed by 500 milliseconds off) until either the "*****" or "**#**" button is pressed. **CAUSE:** Most likely, the number of IP endpoints on the PBX is already at maximum, Less likely, network resource is unavailable. **RESOLUTION:** The telephone was attempting to access the PBX and was not successful. The resource being called upon should be checked for its availability. If it appears operational and properly linked to the network, verify addressing is accurate and a communication path exists in both directions between the telephone and the resource. Press ***** to retry the process using the same values or **#** to restart and re-enter the Extension and Password.
`System Error`	**VISUAL INDICATION:** Message Waiting indicators at top of phone and left middle of faceplate display a broken flutter continuously (alternating 50 milliseconds on, 50 milliseconds off for 500 milliseconds followed by 500 milliseconds off) until either the "*****" or "**#**" button is pressed. **CAUSE:** The PBX has an unspecified problem. **RESOLUTION:** Press ***** to retry the process using the same values or **#** to restart and re-enter the Extension and Password. Consult your Avaya Media Server administration and troubleshooting documentation.
`Undefined Error`	**VISUAL INDICATION:** Message Waiting indicators at top of phone and left middle of faceplate display a broken flutter continuously (alternating 50 milliseconds on, 50 milliseconds off for 500 milliseconds followed by 500 milliseconds off) until either the "*****" or "**#**" button is pressed. **CAUSE:** The PBX has rejected registration for an unspecified reason. **RESOLUTION:** Press ***** to retry the process using the same values or **#** to restart and re-enter the Extension and Password. Consult your Avaya Media Server administration and troubleshooting documentation.
`Wrong Set Type`	**VISUAL INDICATION:** Message Waiting indicators at top of phone and left middle of faceplate display a broken flutter continuously (alternating 50 milliseconds on, 50 milliseconds off for 500 milliseconds followed by 500 milliseconds off) until either the "*****" or "**#**" button is pressed. **CAUSE:** The PBX does not recognize the set type. **RESOLUTION:** Ensure the PBX is properly administered to expect the appropriate telephone for the IP address and extension. Press ***** to retry the process using the same values or **#** to restart and re-enter the Extension and Password.

Restart Scenarios

Appendix A, “Restart Scenarios,” in the *4600 Series IP Telephone Installation Guide* does not apply to the 4601 IP Telephone.