



Product Bulletin

Bulletin Number: P-2009-0075-Global
Date: 30 June 2009

UNISlim Firmware Release 3.3 for IP Phones, including:

- **0604DCL** for Phase II IP Phones (2001, 2002 & 2004),
- **0621C6P** for IP Phone 2007,
- **0623C6R, 0624C6R, 0625C6R and 0627C6R** for IP Phone 1110, 1120E, 1140E and 1150E respectively and
- **062AC6R** for IP Phone 1210, 1220, and 1230

REVISION HISTORY

Date	Revision #	Summary of Changes
30-Jun-09	Original bulletin	This is the original publication

Introduction

Nortel* is pleased to announce the availability of UNISlim firmware release 3.3 for IP Phones. UNISlim firmware release 3.3 makes available firmware version **0604DCL** for the Phase II IP Phone 2001, Phase II IP Phone 2002, and Phase II IP Phone 2004. UNISlim firmware release 3.3 also makes available firmware version **0621C6P** for the IP Phone 2007. In addition, UNISlim firmware release 3.3 makes available firmware version **0623C6R, 0624C6R, 0625C6R and 0627C6R** for the IP Phone 1110, IP Phone 1120E, IP Phone 1140E and IP Phone 1150E respectively. Finally, UNISlim firmware release 3.3 makes available firmware version **062AC6R** for the IP Phone 1210, IP Phone 1220 and IP Phone 1230.

Nortel recommends an upgrade to these releases of firmware for all applicable IP Phones and Call Servers at the earliest convenience. These releases are being provided as a no charge update to all customers.

UNISlim firmware release 3.3 for IP Phones is available for download from the “Software Download” link under “Support and Training” on the Nortel website located at: <http://support.nortel.com>. The firmware is available by phone model under “Phones, Clients and Accessories”. **These firmware loads have not been introduced as the default loads for the IP Phones shipped from Nortel.**

UNISlim firmware release 3.3 for IP Phones delivers enhancements to Nortel’s IP Telephony Solution and delivers general quality improvements. The enhancements available include:

- HTTP transport for provisioning and configuration files
- DSCP provisioning precedence override
- DSCP tagging (QoS) for duplicate media stream
- DHCP provisioning information window
- New icons and colors on the IP Phone 2007
- Double-line edit boxes and drop-down boxes on selected menu items
- GXAS inactivity timer lower limit restricted to 10 seconds
- GEM firmware included in IP Phone 1100 series firmware image
- Default for LLDP changed to “Enabled”
- OS Diagnostics support on the IP Phone 2007

Enhancements

1. *HTTP transport for provisioning and configuration files (applies to the IP Phone 2007, 1110, 1120E, 1140E, 1150E, 1210, 1220 and 1230)*

UNISlim firmware commencing in release 3.0 on the IP Phone 2007, 1110, 1120E, 1140E, 1150E, 1210, 1220 and 1230, delivered the capability to provision the IP phones via provisioning files. The provisioning files can be retrieved from a TFTP server.

Now with UNISlim firmware release 3.3, in addition to retrieving the provisioning files from a TFTP server the IP Phones can also retrieve the provisioning files and configuration files from a HTTP server (web server).

To tell the IP phone that the files are to be retrieved from a HTTP server, the “Provision:” parameter in the Network Configuration menu must be configured in a certain manner. The parameter must be defined as a URL that starts with “http://” . As examples, the parameter could be an IP address prefixed with http:// such as:

http://192.168.0.1

or a URL such as:

http://enterprise.com/webserver

When the phone sees the server address or URL prefixed with “http://” it knows to connect to an HTTP server and retrieve the files using HTTP as opposed to TFTP.

Likewise, if the Info Block “prov” parameter is prefixed with “http://” the IP Phone will connect to an HTTP server and retrieve the files using HTTP as opposed to TFTP. For example: prov=http://192.168.0.1 or prov=http://enterprise.com/webserver

In addition, if the phone receives DHCP Option 66 (TFTP server name) and the string is prefixed with “http://” the IP Phone will connect to an HTTP server and retrieve the files using HTTP as opposed to TFTP.

2. *DSCP provisioning precedence override (applies to the IP Phone 2007, 1110, 1120E, 1140E, 1150E, 1210, 1220 and 1230)*

Since the IP Phone can obtain Differentiated Services Code Point (DSCP) provisioning values from multiple sources, a precedence order of provisioning source for the DSCP values (or any phone parameters for that matter) was established back in UNISTim firmware release 3.0. The precedence order for source selection of provisioning DSCP, from highest priority to lowest priority, is: manual entry, LLDP MED Network Policy TLV, Info Block via provisioning file, Info Block via DHCP, then Call Server (i.e. the Telephony Manager and/or Element Manager).

Because of the precedence order, in auto-provisioning mode (i.e. the value has not been overridden manually) if the IP Phone receives a LLDP MED Network Policy TLV from the network infrastructure, the phone will provision its DSCP from the LLDP MED Network Policy TLV and not from the Call Server or a received Info Block. When the phone receives a Network Policy TLV from the network infrastructure, it sets its voice VLAN, L2 Priority and DSCP to the value specified in the VLAN ID field, L2 Priority field and DSCP Value field respectively.

But, the precedence rule created a limitation that has now been removed with UNISTim firmware release 3.3 for IP Phones. Prior to UNISTim release 3.3, if the customer wished to use the Network Policy TLV to provision the VLAN ID in the phone, the precedence rule forced the customer to also provision the DSCP value in the same Network Policy TLV. This unfortunately meant extra effort to those customers who had already established a provisioning scheme for DSCP from the Call Server (i.e. Telephony Manager and/or Element Manager) or prevented those customers who wished to provision the DSCP value from the Call Server from doing so. In addition, not all network access switches allowed one to provision the DSCP value into the Network Policy TLV. In such cases, if the Network Policy TLV was used to provision the phone’s VLAN ID, the phone would incorrectly assume it was reading a valid DSCP value from the Network Policy TLV when in fact the value was invalid.

UNISTim release 3.3 introduces a DSCP precedence rule override capability. Enabling this feature allows a user to obtain their DSCP values from the call server or from the Provisioning Info Block and ignore any DSCP value provided by a LLDP Network Policy

TLV. If this feature is enabled then the phone will ignore any DSCP value received from the Network Policy TLV and the precedence order for source selection of provisioning DSCP, from highest priority to lowest priority becomes: manual entry, Info Block via provisioning file, Info Block via DHCP, then Call Server (i.e. the Telephony Manager and/or Element Manager). If this feature is not enabled then the default precedence order for provisioning DSCP is still used. This feature can be configured manually or via Auto provisioning mechanism

UNiStim firmware release 3.3 introduces a new parameter to the Info Block to allow the DSCP precedence order to be overridden. The new Info-Block parameter to allow the DSCP override precedence order to be auto-provisioned is provided in the table below. Please refer to Appendix B for the complete list of parameters supported within the Info block

dscpovr	'n' do not override precedence order 'y' override precedence order	DSCP Precedence Override
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The new DSCP Precedence Override auto-provisioning menu check box for text-display phones is as follows:

Uncheck =Man DSCP Override ✓ Man Cfg AllAut Cancel

The new DSCP Precedence Override auto-provisioning menu check box for graphic-display phones is as follows:

08 . Voice 802.1Q	<input type="checkbox"/>
Voice VLAN Source	<input type="checkbox"/>
Voice VLAN Filter	<input type="checkbox"/>
Voice Control pBits	<input type="checkbox"/>
Voice Media pBits	<input type="checkbox"/>
Nortel Auto QoS	<input type="checkbox"/>
DSCP Override	<input checked="" type="checkbox"/>
Voice Control DSCP	<input checked="" type="checkbox"/>
Voice Media DSCP	<input checked="" type="checkbox"/>

In addition, a new DSCP Precedence Override option has been added to the Network Configuration menu to allow manually provisioning the DSCP precedence override feature. This option is available to change only if “Enable 802.1ab (LLDP)” option is enabled, “Enable Nortel Auto QoS” option is disabled and Auto Provisioning is configured for Control or Media DSCP Option.

In addition, when the DSCP Precedence Override auto-provisioning menu item is checked, the user cannot manually provision the DSCP Override setting on the Network Configuration page.

The new DSCP Precedence Override configuration menu for text-display phones is as follows:

Manual Cfg
DSCP Ovride[0-N,1-Y]:0
OK Auto BkSpC Clear

A user can enter one of the two pre-defined values (0, 1) corresponding to the configured DSCP Override setting:

Value Entered	DSCP Override
0	DSCP Precedence Order Override disabled (No Override)
1	DSCP Precedence Order Override enabled

The new DSCP Precedence Override configuration menu for graphic-display phones is as follows:

Enable Nortel Auto QoS:

DSCP Override:

Control DSCP: 180

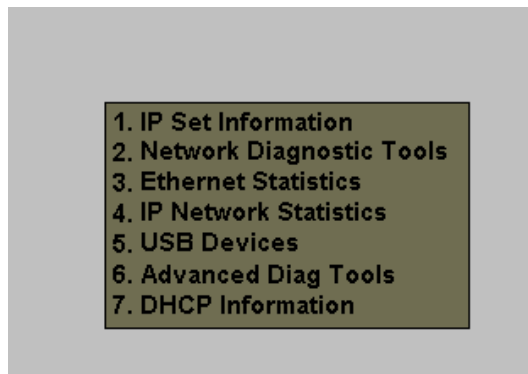
Media DSCP: 180

3. ***DSCP tagging (QoS) for duplicate media stream (applies to the IP Phone 2001, 2002, 2004, 2007, 1110, 1120E, 1140E and 1150E)***

Prior to UNISlim firmware release 3.3, when the duplicate media stream was opened to an associated call recorder, the packets of the duplicate media stream were not tagged with any Differentiated Services Code Point (DSCP) value. Now with UNISlim firmware release 3.3, when call recording is enabled and a duplicate media stream is opened, the IP phone will tag the packets of the duplicate media stream with the same DSCP values as the outgoing RTP packets of the primary media stream.

4. ***DHCP provisioning information window (applies to the IP Phone 2007, 1110, 1120E, 1140E, 1150E, 1210, 1220 and 1230)***

UNiStim firmware release 3.3 introduces a new Local Diagnostics screen called “DHCP Information” as depicted in the figure below.



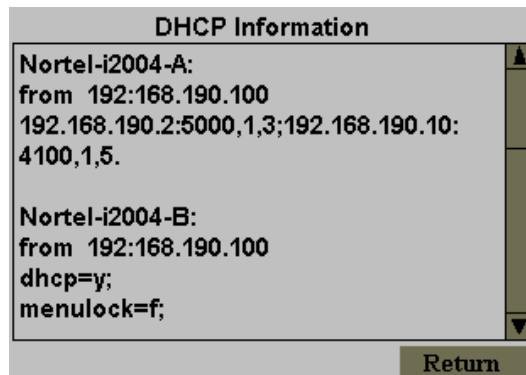
The new “DHCP information” screen has been added to allow the user to view the Nortel DHCP option strings, if any, which are sent to the phone. If DHCP is enabled on the phone, the “DHCP Information” window displays the “Nortel-i2004-A”, the “Nortel-i2004-B” and the “VLAN-A” options strings received by the phone from the DHCP server. If no option string is provided, “Not Provided” is displayed. This window also lists the IP address of the DHCP server from which the options were provided.

The “Nortel-i2004-A” and “VLAN-A” options are displayed as raw strings¹. If the “Nortel-i2004-A” or “VLAN-A” option strings contains any errors (either a mis-typed entry or as an invalid value), “INVALID” is displayed after this option. Below is an example of an invalid string (the S1 IP address is in error).

Nortel-i2004-A:
from 192.168.190.100
192.168.1900.2:5000,1,3;192.168.190.10:4100,1,5. INVALID

¹ Due to screen size limitations, wrapping of the string will occur on the display. The wrapping may occur in the middle of a parameter, so care should be taken when reading the string.

For the “Nortel-i2004-B” option, unlike the “Nortel-i2004-A” and “VLAN-A” options, each parameter is displayed on a new line. The figure below depicts an example window display of both a “Nortel-i2004-A” raw string and the Nortel-i2004-B” line by line display.



For the “Nortel-i2004-B” option display, if the name of a parameter is wrong, “ERROR” is displayed after this parameter. If the value of a parameter is wrong “INVALID” is displayed after this parameter. Below is an example of both an error (s1ip parameter name is wrong) and an invalid value (the valid range of p1 is only 1 to 65535).

```
Nortel-i2004-B:  
from 192.168.190.100  
s1p=192.168.190.2; ERROR  
p1=500000; INVALID  
a1=1;  
r1=10;
```

Special Notes

If auto provisioning for Voice VLAN is enabled but the Voice VLAN ID is received from a provisioning source other than the DHCP VLAN-A option string, “Not Provided” is displayed in the “VLAN-A” section in the “DHCP Information” dialog.

If auto provisioning for Voice VLAN is disabled, “AutoVLAN is disabled” is displayed in the “VLAN-A” section in the “DHCP Information” dialog.

If DHCP is disabled, “DHCP is disabled” is displayed in the “DHCP Information” dialog.

If DHCP is enabled but the DHCP server(s) is unreachable, “DHCP server unreachable” is displayed in the “DHCP Information” dialog. If the DHCP server in the Data VLAN is reachable (to provide the “VLAN-A” option) but the DHCP server in the Voice VLAN is unreachable, then the “VLAN-A” option string will be provided but the “Nortel-i2004-A” and the “Nortel-i2004-B” sections will display “DHCP server unreachable”.

Feature Limitation

If auto provisioning for the Voice VLAN is enabled and the Voice VLAN ID is received from the DHCP VLAN-A option string, the “VLAN-A” section in “DHCP Information” window would typically contain the DHCP response received from the DHCP server in the Data VLAN. Whereas, the “Nortel-i2004-A” and “Nortel-i2004-B” sections would typically contain DHCP response received from the DHCP server in Voice VLAN. If the “VLAN-A” option is also provided by the DHCP server in the Voice VLAN the “VLAN-A” section in “DHCP Information” will not be updated and will continue to display the original information received from the DHCP server in the Data VLAN.

The “Nortel-i2004-A” and “Nortel-i2004-B” options will not be updated if a DHCP OFFER is received after IP address lease expiration. The “DHCP Information” window displays the DHCP option string from the DHCP OFFER received during phone startup.

This feature is not supported on the Phase2 IP Phones.

5. *New icons and colors on the IP Phone 2007 (applies to the IP Phone 2007 only)*

With UNISim 3.3 a new “3D graphics” UI implementation is presented on the IP Phone 2007 screen. The new “3D graphics” include:

- 1) New telephony window color
- 2) New graphics for the soft keyboard
- 3) New icons and colors for the Toolbar
- 4) New colors and “3D graphics” for the buttons in the local menus and dialogs
- 5) New highlighted item colors in the local menus
- 6) Soft key text color is changed to white.

6. *Double-line edit boxes and drop down boxes on selected menu items (applies to the IP Phone 2007, 1120E, 1140E and 1150E)*

UNISim firmware release 3.3 introduces double-line (thick) framing. With this enhancement, edit boxes, check boxes and dropdown boxes, in all menus, when they are selected, are highlighted with a double-line frame instead of single-line frame. Since some display elements already have a single-line border, even when they are not selected, the double-line frame removes the ambiguity and lets a user immediately see which element is currently selected.

7. *GXAS inactivity timer lower limit restricted to 10 seconds (applies to the IP Phone 2007, 1120E, 1140E and 1150E)*

When an IP Phone is provisioned to support a Graphical eXternal Application Server (GXAS), and if the GXAS application (as opposed to the telephony application) is

provisioned to be displayed on the phone's screen during idle periods, then the phone needs to know how long after an active call to revert back to the GXAS application. Typically the duration of inactivity before the phone switches its screen is actually provisioned by the GXAS. With UNISlim firmware release 3.3, the inactivity time is still provisioned by the GXAS, but the phone will force a minimum of 10 seconds of inactivity.

If the GXAS specifies a timer value that is less than 10 seconds, the phone will ignore the value specified by the GXAS and use 10 seconds instead.

8. GEM firmware now included in IP Phone 1100 series factory image (applies to IP Phone 1110, 1120E, 1140E and 1150E)

In UNISlim firmware factory images prior to UNISlim release 3.3, the firmware load did not contain the firmware for the Graphical Expansion Module (GEM). The limitation of this oversight was that if a user connected a GEM running old GEM firmware to a brand new phone the GEM was not upgraded to its latest firmware.

When UNISlim 3.3, or greater, becomes the factory image, all new phones shipped from the factory will include the latest GEM firmware as well. As such, these phone will be able to upgrade the GEMs firmware image when the GEM is connected to these phones.

9. Default for 802.1ab LLDP changed to "Enabled" (applies to the IP Phone 2001, 2002, 2004, 2007, 1110, 1120E, 1140E and 1150E)

In firmware loads prior to UNISlim firmware release 3.3 the default configuration for the phone assumed that the phone was not being deployed into a network environment supporting 802.1ab LLDP. With LLDP disabled by default, the phones could not automatically retrieve VLAN information from the network switch using LLDP. For the phones to be deployed into a LLDP environment, one had to either manually enable LLDP, or auto provisioned LLDP to be enabled from the default VLAN.

With firmware UNISlim firmware 3.3, the default configuration for the phone now has LLDP enabled allowing the phone straight out of the box to obtain VLAN information from network switch using LLDP.

Important Note: Having LLDP enabled by default will not prevent the phones from operating in a network environment that does not support LLDP. On startup, the phone will automatically detect that LLDP is not supported from the network and will finish its startup without LLDP. The phones boot time is slightly increased as it auto detects whether the network switch to which the phone is attached supports LLDP.

Feature Limitation:

Although the default configuration for LLDP has changed, the new default configuration will not be applied to field upgrades. Upgrading firmware does not change any pre-established values already in the phones. The new default will only apply to new phones being shipped from the factory with UNISlim firmware release 3.3 or greater or to phones that are “restored to factory defaults” after UNISlim firmware release 3.3, or greater, is installed.

LLDP is not supported in the Bootloader of the IP Phone 1200 series. Since the IP Phone 1200 series ships from the factory with a Bootloader only (as opposed to the full firmware application) and since the Bootloader will not recognize LLDP, the IP Phone 1200 series cannot automatically retrieve VLAN information from the network switch using LLDP. As such the phone must retrieve initial boot configuration from the default VLAN. If the initial firmware image loaded onto the IP Phone 1200 series is UNISlim 3.3 or greater, LLDP will then be enabled.

10. OS Diagnostics support on the IP Phone 2007 (applies to the IP Phone 2007 only)

The UNISlim firmware release 3.3 for IP Phone 2007 introduces Operating System (OS) diagnostic capabilities to assist support personnel. The OS diagnostics provides support personnel the capability to analyze the state of the OS around the time of a phone error.

This functionality is available to Nortel support personnel only.

Feature Limitation:

OS diagnostics is not yet supported on the IP Phone 1100 series and IP Phone 1200 series, but is currently being implemented and is planned for the next UNISlim firmware release.

Product Advisements

The following is a list of advisements associated with UNISlim firmware release 3.3. Some advisements remain from previous releases of firmware, whereas other advisements reflect new or changed behavior introduced with UNISlim firmware release 3.3. Advisements that are new to UNISlim firmware release 3.3 or have changed since previous releases of UNISlim firmware are prefixed with "NEW".

NEW - 2-step upgrade may be required to load UNISlim Firmware release 3.3 on the IP Phone 2007 (applies to the IP Phone 2007 only)

Due to changes in the memory structure of the IP Phone 2007, a 2-step upgrade may be required to load UNISlim firmware release 3.3 onto the IP Phone 2007 if the upgrade is performed with TFTP. If the IP Phone 2007 is currently running UNISlim firmware release 3.2 then one will be able to upgrade using TFTP directly to UNISlim firmware release 3.3. But if the IP Phone 2007 is running any firmware prior to UNISlim firmware release 3.2 and the upgrade is performed with TFTP, then the phone must first be upgraded to UNISlim firmware release 3.2 before subsequently upgrading to UNISlim firmware 3.3. The 2-step upgrade is not required if the upgrade is performed from the call server using UFTP.

EAP-MD5 and Microsoft Windows Server 2008 (applies to IP Phone 2001, 2002, 2004, 2007, 1110, 1120E, 1140E, 1150E, 1210, 1220 and 1230)

If access control is enabled on the IP Phone and MD5 is chosen as the EAP mode, realize that EAP-MD5 is not available by default in the Microsoft Windows Server 2008 NPS² but can be turned on. Please refer to Microsoft support for more details on enabling EAP-MD5. In addition, minimally, Service Pack 2 is required on the Windows Server 2008 NPS to support the IP Phones using MD5 access control.

PC Port resets during firmware upgrade (applies to IP Phone 2002, 2004, and 2007)

The PC port on the IP Phone 2002, 2004 and 2007 temporarily resets during firmware upgrades and phone resets due to configuration changes. As a result, traffic to and from the network and a PC connected to the IP Phone's PC port will be disrupted during these periods.

Minimal firmware required on the Algo 4900 USB ATA (applies to IP Phone 1120E, 1140E, and 1150E)

The Algo 4900 USB ATA must have firmware version v1.00.32v or greater before connecting the adapter to the IP Phone. A Windows based configuration tool to upgrade the ATA firmware version can be found at the Algo web site:

<http://www.algosolutions.com/products/usbATA/fw-download.html>

² In Windows Server 2008, IAS has been replaced with Network Policy Server (NPS)

Also note that the Algo 4900 USB ATA is classified as a high power USB device and must be connected to the phone through a powered USB hub. If it is connected to the phone directly, it will cause the phone to shut off service to the USB port completely.

Constant humming sound may be heard in Nortel USB Adapter (applies to the IP Phone 1120E, 1140E and 1150E)

A constant humming noise is sometime heard through the Nortel USB Adapter headset when either the Nortel Enhanced USB Headset Adapter or the Nortel Mobile USB Headset Adapter is connected to the IP Phone 1120E, 1140E and 1150E.

The humming noise is within the headset adapter can be corrected with upgrading the headset adapter firmware to version 2.00.98 or greater.

Nortel USB Headset Adapter firmware version 2.00.98 is available for download from the “Software Download” link under “Support and Training” on the Nortel website located at: <http://support.nortel.com>. The firmware is available for the IP Phone 1120E, 1140E and 1150E models under “Phones, Clients and Accessories” as file Adapter3v2.0098.zip.

To load the version 2.00.98 firmware onto the Nortel USB Headset Adapter perform the following procedure:

1. Download the firmware file Adapter3v2.0098.zip from the Nortel Technical Support web site
2. Load the file Adapter3v2.0098.zip onto a PC
3. Uncompress (unzip) the file to obtain Adapter3v2.0098.exe.txt.
4. Rename Adapter3v2.0098.exe.txt to Adapter3v2.0098.exe
5. Connect the Nortel USB Headset Adapter to the PC.
6. Start the Adapter3v2.0098.exe application to load the firmware onto the device.

IP Phone’s performance will be diminished during broadcast storms (applies to IP Phone 2001, 2002, 2004, 2007, 1110, 1120E, 1140E, 1150E, 1210, 1220 and 1230)

By default, network traffic to the IP Phone will be accepted based on the packet’s destination MAC address. The phone will therefore accept, in addition to all unicast packets sent to the phones MAC address, all broadcast and multicast packets as well. If the network environment results in a high amount of broadcast or multicast traffic, the IP Phone’s performance may be impacted.

If “Voice 802.1Q” is enabled on the phone, the phone can then be provisioned to filter some or all of the broadcast or multicast traffic. If “VLAN Filter” is enabled, packets will be accepted by the phone based on the packet’s destination MAC address as well as the packet’s VLAN tag. Untagged packets and packets with a VLAN tag different from the Voice VLAN ID will be prevented from reaching the phone. This will protect the voice application

from excessive traffic sent to the broadcast address or to the multicast addresses. But please be aware, if VLAN filtering is enabled on the phone, one must ensure that voice packets are tagged with the appropriate VLAN ID as they exit the network switch, else the packets will be dropped by the filter.

Change in behavior of entering an asterisk (*) to manually provision the “Provision” parameter in the network configuration menu (applies to the IP Phone 2007, 1120E, 1140E, and 1150E)

In UNISlim firmware prior to release 3.2 the asterisk (*) key could not be used to input the dot (.) for defining an IP address in the “Provision” parameter in the network configuration menu. Since the “Provision” parameter in the network configuration menu can accept both a URL as well as an IP address the entry is a text based field causing the asterisk key to be accepted as an actual asterisk. But since this is different from other parameters that accept only an IP address where the asterisk key is used to represent the dot the inconsistent behavior of this field can be confusing.

Therefore with UNISlim firmware release 3.2, the typing of the asterisk key in the “Provision” parameter in the network configuration menu has slightly changed. Now, if the asterisk key is pressed twice relatively quickly it will input the dot. Pressing the asterisk key once will still input the asterisk character consistent with previous behavior.

Throughput may be slow for large file transfers on conversions from GigE to 100Mbit (applies to the IP Phone 1120E, 1140E and 1150E)

In networks in which a PC is connected to the IP Phone’s PC port and the PC’s NIC speed is 100Mbit but the network speed is at GigE, large file transfers to the PC can take quite a long time. This is an issue with large file transfers only which due to the speed mismatch between the two phone ports can overflow the buffers in the phone resulting in retransmissions.

Although the IP Phones support Ethernet flow control (802.3x), the support is only implemented on the phone’s PC port, not on the phone’s network port. Ethernet flow control is a mechanism where the IP Phone can request a brief “pause” from the transmitting Ethernet device if the IP Phone buffers are about to overflow.

Ethernet flow control cannot be implemented on the phone’s network port, since it impacts the phone’s voice quality. As a result, in environments where the network is GigE but the PC NIC is only 100Mbit, large file transfers from the network to the PC can take quite a long time.

On the other hand, since Ethernet flow control is implemented on the phone’s PC port, in environments where the PC NIC is GigE but the network is only 100Mbits, large file transfers should be well managed by the phone’s Ethernet flow control mechanism.

Minimum allowable firmware on the new IP Phone 1120E and new IP Phone 1140E with hardware changes (applies to the new IP Phone 1120E and 1140E)

Recent hardware changes in the IP Phone 1120E and IP Phone 1140E restrict the minimal allowable firmware version on these phones. The new hardware phones will absolutely accept an upgrade to UNISstim firmware release 3.2. But the new hardware IP Phone 1120E and new hardware IP Phone 1140E will NOT accept a downgrade to any firmware version previous to UNISstim firmware release 3.1 (0624C6J and 0625C6J respectively)

The new hardware is introduced with the following specific PEC and hardware release numbers:

PEC	Hardware Release	Description
NTYS03ADE6	01	IP Phone 1120E Graphite with Icon Keycaps (RoHS)
NTYS03BDE6	01	IP Phone 1120E Graphite with English keycaps (RoHS)
NTYS03BDGS	01	IP Phone 1120E GSA (RoHS)
NTYS05ACE6	50	IP Phone 1140E Graphite with Icon Keycaps (RoHS)
NTYS05BCE6	50	IP Phone 1140E Graphite with English keycaps (RoHS)
NTYS05BCGS	01	IP Phone 1140E GSA (RoHS)

The below Figure 1 provides an explanation of where to identify the PEC and Hardware Release Number on the white product label (located on the back of the IP Phone).

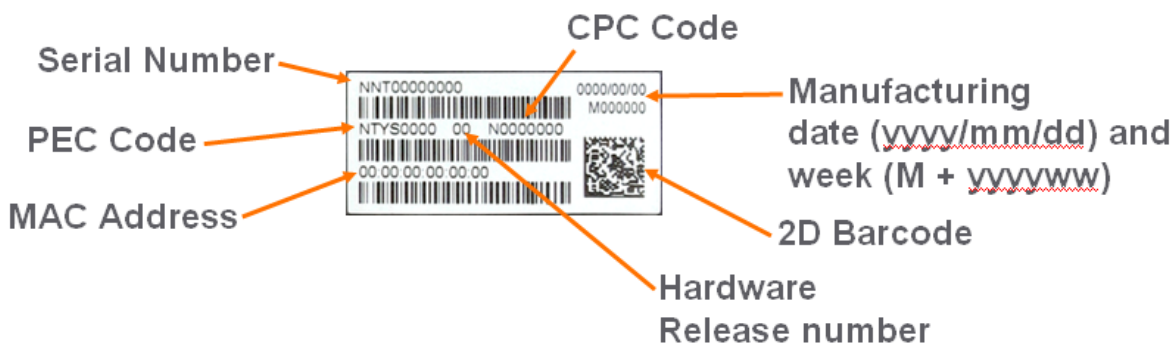


Figure 1 – IP Phone Product Label

If UFTP firmware download is used within the Communication Server 1000 environment, Nortel recommends that the firmware image for the IP Phone 1120E and IP Phone 1140E on the signaling server be upgraded minimally to UNISstim firmware release 3.1.

Communication Server 1000 release 5.0, and greater, will interpret denial of firmware downgrade responses from the new hardware phones. However, Communication Server 1000 prior to release 5.0 require patch MPLR23154 to interpret correctly the phones denial of firmware downgrade responses. Failure to install the patch introduces the risk that the call

server may continuously try and downgrade the firmware thereby denying service to the phone.

If TFTP firmware download is used, and the TFTP server is not upgraded to UNISlim firmware release 3.1 or greater, the TFTP server will continuously try and downgrade the firmware in the phone. The new hardware phone will prevent the downgrade resulting in the phone being denied service.

In a Communication Server 1000 environment containing SRG and SRG50 branch office systems, the "umsUpgradeAll" Main Office system command should **not** be executed when the branch office sites has the new hardware IP Phone 1120E or the new hardware IP Phone 1140E and the IP phone firmware at the Main Office precedes UNISlim firmware release 3.1.

If the IP phone firmware at the Main Office precedes UNISlim firmware release 3.1 then the firmware should be replaced UNISlim firmware release 3.1 or greater prior to the "umsUpgradeAll" command being executed.

If the "umsUpgradeAll" command is executed when the Main Office IP Client software precedes UNISlim firmware release 3.1 then any new hardware IP Phone 1120E and new hardware IP Phone 1140E will be in a continual download cycle and therefore will not provide service.

For complete details on the minimal allowable firmware for the new hardware changes in the IP Phone 1120E and IP Phone 1140E, please refer to product bulletin **P-2009-0015-Global**.

Incompatibility between older IP Phones and the Nortel-i2004-B option string (applies to Phase 0 IP Phone 2004, Phase 1 IP Phone 2002 and Phase 1 IP Phone 2004 only)³

A compatibility issue was found with the new Nortel-i2004-B option type and the older Phase 0 IP Phone 2004 (NTEX00), Phase 1 IP Phone 2002 (NTDU76) and Phase 1 IP Phone 2004 (NTDU82). Even though these older phones ignore the Nortel-i2004-B option type, the length of the DHCP frame causes problems for the older phones. Since the list of all the parameters that can be provisioned via the Nortel-i2004-B options is extensive, the length of the DHCP frame can be quite large. The older phones will only accept a DHCP message to a maximum of 590 bytes (far short of the maximum DHCP message size of 1456 bytes). In a mixed environment of phones that support Nortel-i2004-B with Phase 0 and Phase1 phones one must either:

- Ensure any option string that are defined are small enough that the DHCP message does not exceed 590 bytes, or
- Service the Phase 0 and Phase 1 phones with a DHCP offer that excludes the Nortel-i2004-B option.

³ The Phase 0 IP Phone 2004, Phase 1 IP Phone 2002 and Phase 1 IP Phone 2004 are now End of Life (EOL) products

Receiving a LLDP MED Network Policy TLV from the network infrastructure will cause the phone to ignore DSCP from the Communication Server 1000 Element Manager and the Info Block (applies to IP Phone 2001, 2002, 2004, 2007, 1110, 1120E, 1140E, 1150E, 1210, 1220 and 1230)

Because of the precedence order, in auto-provisioning mode (i.e. the value has not been overridden manually) if the IP Phone receives a LLDP MED Network Policy TLV from the network infrastructure, the phone will provision its DSCP from the LLDP MED Network Policy TLV and not from the Call Server or Info Block. When the phone receives a Network Policy TLV from the network infrastructure, it sets its voice VLAN, L2 Priority and DSCP to the value specified in the VLAN ID field, L2 Priority field and DSCP Value field respectively. Thus, if the Network Policy TLV is received, any QoS values also received from the Call Server (i.e. Telephony Manager and/or Element Manager) or Info Block it will be ignored.

New - Special Note: As already mentioned in this bulletin, the new feature “DSCP provisioning precedence override” introduced in UNISlim firmware release 3.3 provides a work-around to this advisory.

Phones default for Auto VLAN changed to “Enabled”. And Auto VLAN now supports a No VLAN option (applies to IP Phone 2001, 2002, 2004, 2007, 1110, 1120E, 1140E, 1150E, 1210, 1220 and 1230)

In firmware loads prior to UNISlim firmware release 2.2 for IP Phone 2007, 1110, 1120E, 1140E, 1150E, 1210, 1220 and 1230 and in firmware loads prior to UNISlim firmware release 2.3 for Phase II IP Phone 2001, 2002 and 2004, one had to manually provision whether the phone was to be installed in an 802.1Q VLAN environment or not. The default configuration for the phone was assuming that the phone was not being deployed into an environment supporting a Voice VLAN. The default source for VLAN assignment was “no VLAN”.

For the phones to be deployed into a voice VLAN environment, the phone had to be manually provisioned with either a Voice VLAN ID, or manually provisioned to accept and Auto VLAN assignment.

With UNISlim firmware commencing with release 2.2 (and 2.3) and continuing with UNISlim firmware release 3.1 the default configuration for the phone now has Auto VLAN assignment via DHCP enabled. But realizing that not all phones will be deployed in an 802.1Q VLAN environment, the Auto VLAN assignment support has also been updated to support both an 802.1Q VLAN environment and an environment without 802.1Q VLANs.

With Auto VLAN enabled, if VLAN information is provided within the DHCP option type VLAN-A, the phone will use the VLAN information to provision a voice VLAN. However, if no

VLAN-A option type is provided by DHCP, the phone will assume that no VLAN is to be provisioned.

Although the default configuration for voice VLAN has changed, the new default configuration will not be applied to field upgrades. A limitation of the new functionality is that it could only apply to new phones being shipped from the factory with UNISlim firmware release 2.2 or greater. The default configuration of "Auto" will not be applied to field upgrades. Upgrading firmware does not change any pre-established values already in the phones.

But as mentioned above, to allow phones already deployed in the field to change the source of their VLAN information, with UNISlim firmware release 3.2 a new parameter called "vvsorce" has been added to the Info Block to allow VLAN source to be auto-provisioned.

Important Note: While these changes provide greater flexibility, the change might impact the deployment of new phones into the network.

Manually provisioned link speed and duplex mode restored to "Auto" after firmware upgrade (applies to IP Phone 2001, 2002, 2004, 2007, 1120E, 1140E and 1150E)

In UNISlim firmware release 1.3 for IP Phones including 0604DAX for Phase II Phones, 0621C3N for IP Phone 2007, 0623C3F, 0624C3F, 0625C3F and 0627C3F for IP Phone 1110, 1120E, 1140E and 1150E respectively, Nortel introduced greater low level network control available through the phones configuration menus. The greater control included allowing the link speed and the duplex mode on the IP phones to be provisioned independently for both the network port and the PC port

By delivering this greater network control, the firmware unfortunately has to reset link speed and duplex mode back to "Auto" after an upgrade. Regrettably, preservation of the forced manual override could not be maintained during the upgrade.

What this means, is that if the IP Phone is running firmware prior to UNISlim firmware release 1.3 and if the link speed was manually provisioned to force the link to 10Mbit Full Duplex or 100MBit Full Duplex, after upgrading the firmware to UNISlim firmware release 1.3 or greater (including the current UNISlim firmware release 3.0), the link speed and duplex mode is reset to "Auto" representing Auto-negotiation. With the phone now configured for Auto-negotiation a duplex mode mis-match will occur if the other end of the link is still provisioned to force the link to 10Mbit Full Duplex or 100MBit Full Duplex.

But, with UNISlim firmware release 3.1 for IP Phones, the means to provision the network port speed and the network port duplex mode has been added to the Info-Block (see feature #3 "*Auto-Provisioning Support for Network Port Speed and Network Port Duplex Mode*" detailed earlier in this bulletin. If a duplex mis-match occurs as a result of the firmware upgrade, the speed and duplex mode can forced, by provisioning them via the Info Block. This is possible because the auto-negotiation will pick the correct speed but the wrong duplex mode. Since the speed is correct, but the duplex mode is wrong, transmission can

occur, albeit of poor quality. The duplex mismatch will impact the time taken for the phone to receive the Info Block, but re-transmission mechanisms built into the transmission protocols should allow the Info Block to eventually be received by the phone thus correcting the resetting of link speed and duplex mode to “Auto”.

Proportional spacing may not be optimal (applies to IP Phone 2007, IP Phone 1110, 1120E, 1140E, 1150E and 1210)

The IP Phone 2007, IP Phone 1110, IP Phone 1120E, IP Phone 1140E, IP Phone 1150E and IP Phone 1210 support graphical fonts. The supported fonts include hinting – or ‘intelligence’ – to the font outline, making the font more readable by preventing the letters in the font from becoming distorted and difficult to identify. But in some rare instances, the hinting may impact the proportional spacing resulting in characters appearing too close or too far apart.

Some models of Plantronics Bluetooth headset may unexpectedly become unpaired. (applies to IP Phone 1140E and 1150E)

An issue was uncovered with certain Plantronics Bluetooth headsets (including the formerly validated Plantronics Voyager 510/510S) in which the headset may unexpectedly become unpaired. If the unpair occurs during an active call, all audio will be lost to and from the headset. In such a situation the call will remain active and the user is recommended to switch to handset or handsfree.

Due to the severity of this issue, Nortel does not recommend the use of the Plantronics Voyager 510/510S headset. For a complete list of wired and wireless headsets that Nortel has confirmed provide acceptable audio quality when used in conjunction with Nortel IP Phones please refer to the product bulletin [Headsets for Nortel IP Phones](#), P-2006-0084-Global-Rev7

2-step upgrade may be required (applies to IP Phone 1120E and 1140E)

One important note when upgrading the IP Phone 1120E and IP Phone 1140E to UNISlim firmware release 3.3 from any load previous to 0624C1B or 0625C1B respectively is that a 2-step upgrade will be required. The IP Phone 1120E and 1140E cannot be upgraded directly to the newly released firmware if they are currently running firmware previous to 0624C1B and 0625C1B respectively. Instead, the phones must first be upgraded to 0624C1B and 0625C1B or newer (recommend 0624C3G and 0625C3G). Once the phones are running at least 0624C1B and 0625C1B firmware, they will accept being upgraded to UNISlim firmware release 3.3 respectively.

2-step upgrade may be required to load Asian fonts (applies to IP Phone 2007)

Adding Asian languages to an IP Phone 2007 that has firmware version 0621C3N (UNISlim firmware release 1.3) or earlier requires a 2 step process since the configuration file format has changed to support the new font downloads.

1. One must first upgrade the IP Phone 2007 firmware to using TFPT with the former configuration files (“BasicConfig” folder) – or upgrade the firmware from the call server.
2. Once the IP Phone 2007 is running the new firmware one must update the TFTP server to the new configuration files (“AsianConfig” folder) to download the Asian font files.

Running SRTP PSK with Communication Server 1000 release 5.0 requires a patch (applies to IP Phone 2001, 2002, 2004, 2007, 1110, 1120E, 1140E and 1150E)

In association with Communication Server 1000 release 5.0, UNISim firmware since release 2.0 delivered media stream protection using SRTP UNISim Keys (USK). However, running SRTP using PreShared Keys (PSK) is still a valid option in the IP Phones. But, if one wishes to run SRTP PSK with Communication Server Release 5.0, patch MPLR24632 is required on the Communication Server 1000⁴. The Communication Server 1000 patch is located in the Meridian PEP library at the www.nortel.com/support web site.

Current release of SRTP PSK is not backward compatible with older version of SRTP PSK (applies to IP Phone 2001, 2002, 2004, 2007, 1110, 1120E, 1140E and 1150E)

As stated above, running SRTP using PreShared Keys (PSK) is still a valid option in the IP Phones. But one important note when upgrading the IP Phones to the current releases of firmware is to realize that the current releases of SRTP PSK is not compatible with older versions of SRTP PSK. The minimum firmware releases for which the current release of SRTP PSK is backward compatible is UNISim firmware release 1.3 for IP Phones (including firmware version 0604DAX for the Phase II IP Phone 2001, Phase II IP Phone 2002, and Phase II IP Phone 2004, firmware version 0621C3N for the IP Phone 2007 and firmware 0623C3G, 0624C3G, 0625C3G and 0627C3G for the IP Phone 1110, 1120E, 1140E and IP Phone 1150E respectively).

One way speech path behind NAT routers (applies to IP Phone 2001, 2002, 2004, 2007, 1120E, 1140E and 1150E)

A problem exists with some NAT routers that cause one way speech path. This problem is addressed by the application of patch MPLR21030 on the Communication Server 1000 Release 4.5 and 4.0⁵. The Communication Server 1000 patch is located in the Meridian PEP library at the www.nortel.com/support web site.

Backlight Interaction with USB devices (applies to IP Phone 2007, 1120E, 1140E and 1150E)

Some USB devices (i.e. Mice or Keyboards) send regular coordinate update messages to the phone even when the device is not being used. This can cause the sleep mode for the backlight to not be properly invoked.

⁴ The patch is not required on Communication Server 1000 Release 5.5

⁵ The patch is not required on Communication Server 1000 Release 5.0 and greater

Certain USB mice do not work with IP Phone 2007 (applies to IP Phone 2007 only)

It has been discovered that certain USB Mice do not work with the IP Phone 2007. If the mouse does not transmit information in the “Production”, “Vendor” and “Manufacturing” fields of the USB communication exchange, the mouse will not be recognized by the IP Phone 2007. Note that failure to send the above mentioned information is in violation of the USB communication exchange standard. Most leading brands of mice do send the required information.

Contrast adjustments: Local & TPS contrast adjustments are not synchronized (applies to IP Phone 1110, 1120E, 1140E and 1150E)

The IP Phone 1110, 1120E, 1140E and 1150E graphical display contrast control can be adjusted either locally (on the phone) or through the call server (TPS) control. The Communication Server 1000 TPS does not yet synchronize its contrast setting with the local control. This means if the local control is used exclusively, then whenever the phone has a power cycle, the TPS contrast setting is restored and the user may need to adjust contrast again.

The local contrast control on the IP Phone 1110, 1120E, 1140E and 1150E is accessed by a “double press” of the Services key and selecting “1. Preferences”, then “1. Display Settings” in the menu. The TPS contrast control is accessed with a “single press” of the Services key, then selecting “Telephone Options”, then “Contrast Adjustment”.

Volume adjustments are not persistent across phone resets (applies to IP Phone 2001, 2002, 2004, 2007, 1110, 1120E, 1140E, 1150E, 1210, 1220 and 1230)

Even though the speech volume and ringer volume is controlled by the IP phone, the user selected preferences are stored by the Communication Server 1000. Prior to release 5.0 of the Communication Server 1000, the server did not save the user selected preferences across a phone reboot. Thus, if the phone rebooted, for whatever reason, the speech volume and ringer volume would be reset to their default values. Upgrading to release 5.0 or greater of the Communication Server 1000 corrects this issue.

Power disruption during firmware upgrade will corrupt the upgrade (applies to IP Phone 2001, 2002, 2004, 2007, 1110, 1120E, 1140E, 1150E, 1210, 1220 and 1230)

During a firmware upgrade, if a power disruption is experienced by the phone, the firmware upgrade will fail. In some instances a power disruption during an upgrade may also corrupt the existing firmware on the phone. If this corruption should occur, the phone will fail over into its boot code known as “BootC”. BootC will automatically try to restore the phone’s firmware from the image on a call server. But for the IP Phone 2007, the IP Phone 1100 series and the IP Phone 1200 series, if the phone’s firmware was obtained from a TFTP

server instead, in order to restore, or upgrade, the firmware from BootC a manual TFTP download from BootC must be performed. The Manual TFTP Download from BootC Procedure is documented in the IP Phones Fundamentals NTP NN43001-368. **Regardless, caution should be exercised to avoid power disruptions during firmware upgrades.**

Quality Improvements

In addition to delivering the enhancements listed above, the UNISlim firmware release 3.3 for IP Phones also continues to improve the overall quality of the IP Phone firmware through the delivery of ongoing resolution of CRs and closed cases. Numerous quality improvements have been delivered, and 8 customer cases have been closed in UNISlim 3.3.

UNISlim firmware release 3.3 for IP Phones close the following cases:

Case #	Title
080930-74956	IP Phone rejects a new IP address from DHCP server following network outage
090108-49139	Default Data VLAN ID of 4095 is invalid
090121-58744	IP Phone 1100 series has problems obtaining a CA certificate using SCEP
090313-97845	IP Phone 1200 series is not sending EAPOL logoff for devices disconnecting from PC port
090420-23401	Invalid VLAN ID after phone is restored to factory defaults
081205-29459	DHCP String is truncated when displayed in the IP Set and DHCP Information screen
090224-83500 090313-97721	Headset volume on Phase 2 IP Phone fluctuates when surrounding environment is noisy

IP Phone Compatibility

UNISim firmware release 3.3 for IP Phones is compatible with the following IP Phones:

PEC	Description	Firmware file
NTDU90xxxxxx	IP Phone 2001	0604DCL.bin
NTDU91xxxxxx	IP Phone 2002	0604DCL.bin
NTDU92xxxxxx	IP Phone 2004	0604DCL.bin
NTDU96xxxxxx	IP Phone 2007	0621C6P.bin
NTYS02xxxxxx	IP Phone 1110	0623C6R.bin
NTYS03xxxxxx	IP Phone 1120E	0624C6R.bin
NTYS05xxxxxx	IP Phone 1140E	0625C6R.bin
NTYS06xxxxxx	IP Phone 1150E	0627C6R.bin
NTYS18xxxxxx	IP Phone 1210	062AC6R.bin
NTYS19xxxxxx	IP Phone 1220	062AC6R.bin
NTYS20xxxxxx	IP Phone 1230	062AC6R.bin

IP Phone 2004 (NTEX00), Phase 1 IP Phone 2002 (NTDU76), and Phase 1 IP Phone 2004 (NTDU82) cannot load these releases.

Call Server Compatibility and Requirements

These firmware releases are compatible with the below Nortel Call Servers. Note that the IP Phone 1200 series is only supported on Communication Server 1000 release 5.5 and greater, SRG 50 release 3.0, BCM 50 release 3.0, BCM 450 release 1.0, and Communication Server 2100 CICM 10.1 MR2.

Communications Server 1000

Call Server Release	Notes / Advisements
CS 1000 6.0 - IP Line 6.00.18 - SS (Linux App) 6.00.018	<i>Nortel recommends an upgrade to these firmware releases at the earliest opportunity.</i>
CS 1000 5.5 - IP Line 5.5.12 - SS 5.5.12	<i>Nortel recommends an upgrade to these firmware releases at the earliest opportunity.</i>
CS 1000 5.00W - IP Line 5.00.31 - SS 5.00.31	<i>Nortel recommends an upgrade to these firmware releases at the earliest opportunity.</i> The IP Phone 1200 series is not supported on this platform.
CS 1000 4.5 - X21 4.50W - IP Line 4.50.88 or later - SS 4.50.88 or later	<i>Nortel recommends an upgrade to these firmware releases at the earliest opportunity.</i> The IP Phone 1200 series is not supported on this platform.
CS 1000 4.0 - X21 4.00T - IP Line 4.00.55 or later - SS 4.00.55 or later	<i>Nortel recommends an upgrade to these firmware releases at the earliest opportunity.</i> For Phase II IP Phones, details on using Telephony Manager and/or Element Manager to upgrade the phones can be found in NTP 553-3001-365. For IP Phone 2007, 1110, 1120E and 1140E a Trivial File Transfer Protocol (TFTP) Server is required to distribute firmware to IP Phones. The TFTP Upgrade menu on the IP Phone is used to upgrade the firmware. The IP Phone 1150E and IP Phone 1200 series are not supported on this platform.

Survivable Remote Gateway (SRG)

Call Server Release	Notes / Advisements
SRG 50 3.0	<p data-bbox="492 478 1357 548"><i>Nortel recommends an upgrade to these firmware releases at the earliest opportunity.</i></p> <p data-bbox="492 590 1386 695">No SRG50 patches are required to support the Enhanced Firmware Download feature that allows the IP Phone firmware supported on the SRG50 to remain in synch with the Communication Server 1000 Main office.</p> <p data-bbox="492 737 1393 989">In addition, if the “Main” Communication Server 1000 is on release 4.5, or later, no patch is necessary on the Communication Server 1000 to upgrade the IP Phone. But if the “Main” Communication Server 1000 is on release 4.0 a Communication Server 1000 patch is required on the “Main” to allow the SRG50 to upgrade the IP Phone firmware. The patch is MPLR21148 and is available from the Meridian PEP library at the www.nortel.com/support web site.</p> <p data-bbox="492 1031 1159 1066">The IP Phone 1150E is not supported on the SRG50 3.0.</p>
SRG 50 2.0	<p data-bbox="492 1075 1357 1144"><i>Nortel recommends an upgrade to these firmware releases at the earliest opportunity.</i></p> <p data-bbox="492 1186 1373 1291">No SRG 50 patches are required to support the Enhanced Firmware Download feature that allows the IP Phone firmware supported on the SRG 50 to remain in synch with the Communication Server 1000 Main office.</p> <p data-bbox="492 1333 1386 1585">In addition, if the “Main” is Communication Server 1000 release 4.5, or later, no patch is necessary on the Communication Server 1000 to upgrade the IP Phone. But if the “Main” is Communication Server 1000 release 4.0, a Communication Server 1000 patch is required on the “Main” to allow the SRG 50 to upgrade the IP Phone firmware. The patch is MPLR21148 and is available from the Meridian PEP library at the www.nortel.com/support web site.</p> <p data-bbox="492 1627 1333 1696">The IP Phone 1110, IP Phone 1150E and IP Phone 1200 series are not supported on SRG 50 2.0.</p>

SRG 200/400 1.5	<p><i>Nortel recommends an upgrade to these firmware releases at the earliest opportunity.</i></p> <p>No SRG patches are required to support the Enhanced Firmware Download feature that allows the IP Phone firmware supported on the SRG 200/400 1.5 to remain in synch with the Communication Server 1000 Main office.</p> <p>In addition, if the "Main" is Communication Server 1000 release 4.5, or later, no patch is necessary on the Communication Server 1000 to upgrade the IP Phone. But if the "Main" is Communication Server 1000 release 4.0, a CS1000 patch is required on the "Main" to allow the SRG 200/400 to upgrade the IP Phone firmware. The patch is MPLR21148 and is available from the Meridian PEP library at the www.nortel.com/support web site.</p> <p>The IP Phone 1110, IP Phone 1150E and IP Phone 1200 series are not supported on SRG200/400 RIs1.5</p>
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Business Communications Manager (BCM)

Call Server Release	Notes / Advisements
BCM 200/400 4.0	<p data-bbox="488 478 1377 543"><i>Upgrading of the set firmware is dependent upon a BCM system patch that includes the set firmware.</i></p> <p data-bbox="488 590 1377 730">Although UNISstim firmware release 3.3 for IP Phones is GA quality, at the time of this writing, the extent of BCM support is being confirmed. However, a BCM system patch that includes the UNISstim firmware release 3.3 for IP Phones is under development.</p> <p data-bbox="488 774 1333 842">The IP Phone 1110, IP Phone 1150E and IP Phone 1200 series are not supported on BCM 200/400.</p>
BCM 50 3.0	<p data-bbox="488 850 1377 915"><i>Upgrading of the set firmware is dependent upon a BCM system patch that includes the set firmware.</i></p> <p data-bbox="488 961 1377 1102">Although UNISstim firmware release 3.3 for IP Phones is GA quality, at the time of this writing, the extent of BCM support is being confirmed. However, a BCM system patch that includes the UNISstim firmware release 3.3 for IP Phones is under development.</p> <p data-bbox="488 1146 1125 1178">The IP Phone 1150E is not supported on BCM 50 3.0.</p>
BCM450 1.0	<p data-bbox="488 1186 1377 1251"><i>Upgrading of the set firmware is dependent upon a BCM system patch that includes the set firmware.</i></p> <p data-bbox="488 1297 1377 1438">Although UNISstim firmware release 3.3 for IP Phones is GA quality, at the time of this writing, the extent of BCM support is being confirmed. However, a BCM system patch that includes the UNISstim firmware release 3.3 for IP Phones is under development.</p> <p data-bbox="488 1482 1141 1514">The IP Phone 1150E is not supported on BCM 450 1.0.</p>

Communication Server 2100 Centrex IP Client Manager (CICM)

Call Server Release	Notes / Advisements
CICM 10.1 MR2 (Succession)	<p><i>Upgrading of the set firmware is dependent upon CICM performing regression test activities on UNIStim firmware release 3.3 for IP Phones to verify their performance on this CICM product.</i></p> <p>Although UNIStim firmware release 3.3 for IP Phones is GA quality, at the time of this writing, the extent of CICM support is being confirmed.</p> <p>The IP Phone 1210 is not supported on CICM 10.1</p>
CICM 10.0 (Succession)	<p><i>Upgrading of the set firmware is dependent upon CICM performing regression test activities on UNIStim firmware release 3.3 for IP Phones to verify their performance on this CICM product.</i></p> <p>Although UNIStim firmware release 3.3 for IP Phones is GA quality, at the time of this writing, the extent of CICM support is being confirmed.</p> <p>The IP Phone 1200 series are not supported on CICM 10.0</p>
CICM 9.0 (Succession)	<p><i>Upgrading of the set firmware is dependent upon CICM performing regression test activities on UNIStim firmware release 3.3 for IP Phones to verify their performance on this CICM product.</i></p> <p>Although UNIStim firmware release 3.3 for IP Phones is GA quality, at the time of this writing, the extent of CICM support is being confirmed.</p> <p>The IP Phone 1200 series are not supported on CICM 9.0</p>

System Compatibility and Requirements

System	Notes / Advisements
<p>Nortel Application Gateway 2000 6.3 and higher</p>	<p><i>These firmware releases provide support to interwork with Nortel Application Gateway 2000 (AG2000) release 6.3</i></p> <p>The Nortel Application Gateway solution continues to deliver on IP Telephony's promise of convergence with important enhancements to the powerful packaged applications on the IP Phone's desktop, applications that are simply not possible to deliver with the traditional digital telephone. With the Nortel Application Gateway, IP Phone communication is truly transformed into a new feature-rich communications experience.</p> <p>For more information on the capabilities introduced with AG2000 please refer to the Product Bulletin P-2008-0005-Global.</p> <p>The AG2000 does not support the IP Phone 1150E.</p>
<p>Nortel Secure Multimedia Controller (SMC) 1.0</p>	<p><i>These firmware releases continue to provide support to interwork with Nortel Secure Multimedia Controller (SMC) 2450.</i></p> <p>The SMC 2450 is a purpose-built application firewall, delivering an integrated inside threat security solution to protect Nortel's IP phones and multimedia communication servers. The SMC 2450 creates a "Secure Multimedia Zone" around the converged infrastructure to protect against Denial of Service attacks and other security threats, while pre-configured policy settings simplify deployment and ensure the integrity and availability of the business critical converged, multimedia infrastructure.</p> <p>For more information on the capabilities introduced with Nortel SMC 2450 please refer to the SMC 2450 Product bulletin P-2006-0131-Global and the SMC 2450 Sales and Marketing bulletin SM-2006-0132-Global.</p>

IP Phone Firmware Upgrade Methods (Communication Server Dependent)

Upgrading the firmware in a Communication Server 1000 environment

The IP Phone 2007, 1110, 1120E, 1140E and 1150E supports remote firmware upgrades through both a TFTP process and a more automated UFTP process direct from the Communication Server 1000 Release 4.5 or later. The method to upgrade the IP Phone 2007, 1110, 1120E and 1140E firmware depends on the call server software.

- Communication Server 1000 Release **4.0** must use TFTP
- Communication Server 1000 Release **4.5** or later systems can use UFTP or TFTP

The IP Phone 1150E firmware can use UFTP or TFTP since it is only supported on Communication Server 1000 Release **4.5** or later.

For information on the TFTP firmware upgrade process for the Communication Server 1000, please refer to the IP Phones Fundamentals NTP NN43001-368.

For information on the UFTP firmware upgrade process for the Communication Server 1000, please refer to the IP Line Fundamentals NTP NN43100-500.

Upgrading the firmware in a Survivable Remote Gateway (SRG) 200/400 and SRG50 environment

For information on the firmware upgrade process for the SRG200/400, please refer to the Main Office Configuration Guide for SRG200/400 RIs 1.5, NTP 553-3001-207

For information on the firmware upgrade process for the SRG50, please refer to the Main Office Configuration Guide for SRG50 RIs 2.0, NTP 553-3001-207.

Upgrading the firmware in a Business Communications Manager (BCM) environment

Upgrading of the firmware is dependent upon a BCM system patch that includes the set firmware. This is applicable to all BCM platforms. BCM system patches will be delivered initially as atomic patches that are individually installable. These patches will be rolled up into a monthly Smart Update which includes all atomic patch content since the previous Smart Update.

Patches and Smart Updates are posted for partner access on the www.nortel.com/support web site under "Voice, Multimedia & Unified Communications" then under the respective BCM platform.

Upgrading the firmware in a Communication Server 2100 CICM environment

Depending on the MR level, the IP Phone firmware will either be included in the installation files or will need to be transfer to the CICM Element Manager.

If the firmware is included in the installation files some manual administrator configuration will still be required. If the firmware is not included in the installation file the administrator can transfer these firmware loads to the CICM Element Manager, configure the terminal's Recommended and Minimum firmware levels and the Element Manager will propagate the firmware to the CICM. The user will be prompted to upgrade their firmware at their own convenience.

For details on using the CICM Element Manager to configure the recommended firmware and how to upgrade the IP Phones, refer to the CICM Administration and Security NTP (NTP NN10252-611.06.03) in the section titled "Downloading firmware to the CICM Element Manager".

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Appendix A: Certificate Installation (applies to the IP Phone 2007, 1110, 1120E, 1140E, 1150E, 1210, 1220, 1230)

CA Root Certificate Installation

The recommended means to install the CA root certificate on the phone is to use the configuration file (e.g. 1140e.cfg). An example of the modified configuration file is shown below where cacert.pem contains the PEM format CA root certificate

```
[USER_KEYS]
DOWNLOAD_MODE AUTO
PROTOCOL TFTP
VERSION 1
FILENAME cacert.pem
```

When the phone boots and connects to the TFTP server, the phone will download the certificate. The installer will then be prompted to accept the fingerprint of the certificate file. Once accepted, the certificate is saved and the phone will be ready to use the CA root certificate.

Device Certificate Installation

Simple Certificate Enrollment Protocol (SCEP) is used to request both the CA root certificate and then the Device certificate.

To successfully install the certificates, the following phone parameters must be configured (either manually or using auto-provisioning):

- *CA Server:* Enter the URL of the SCEP interface of the CA Server. As an example, for a Microsoft CA server this would be:
http://www.<<ca_url.com>>/certsrv/mscep/mscep.dll
- *Domain Name:* The domain to which the phone will belong. (e.g. acme.com)
- *Hostname:* The name assigned to the phone. For some authentication servers (i.e. Microsoft IAS), this must match a username that can be authenticated in the server. If left blank, the hostname will be automatically filled with NTIPP012345 where the final 6 characters are the last 6 hex characters from the phone's MAC address.

When the phone boots with the above configuration, a CA root certificate will be requested from the CA Server. Once the CA root certificate is received, the prompt "CA Fingerprint" will be displayed on the phone's screen. The installer must press the "Accept" softkey to install the CA root certificate. Once accepted, the certificate will be saved on the phone and the prompt will never appear again.

After the CA root certificate is installed, a Device certificate must be installed. Depending on the CA Server configuration, the user may be prompted to enter a challenge password.⁶ If no challenge password is required, the installer must simply select the OK softkey.

Once the challenge password is entered (or the OK softkey is pressed), the phone will then request a device certificate and “Waiting for Approval...” will be displayed on the phone’s screen. Depending on the CA Server configuration, it may be necessary for the installer to manually approve the certificate request using the CA Server.

After the certificate is approved (automatically or manually), the “Waiting for Approval...” prompt will be removed. If for any reason the approval fails (and while the phone is actually waiting for approval), an “Abort” key will appear to allow the installer a chance to abort the process.

Once approved, phone will be ready to use the device certificate.

For additional information on installing certificates into the IP phone, please refer to the [IP Phones Fundamentals](#) document (NTP NN43001-368).

⁶ For the Microsoft CA Server, MSCEP installation allows the option of configuring a challenge password. If configured, the user must access http://www.<<ca_url>>/certsrv/mscep/mscep.dll with a web browser to obtain a temporary password. For the EJBCA CA Server, the password (if any) defined for the End Entity for each phone must be entered.

Appendix B: IP Phone Info Block (applies to the IP Phone 2001, 2002, 2004, 2007, 1110, 1120E, 1140E, 1150E, 1210, 1220, 1230)

The list of all the parameters that can be provisioned via the Info-Block is provided in the table below. Note that not all parameters need be specified in the Info-Block. If the option is included, the parameter will be provisioned with the value specified. If the option is not included, the parameter will retain its default value, or the value that was previously provisioned for the parameter if the “stickiness” parameter is also set.

Parameter	Value	Description
s1ip	Value from 0.0.0.0 to 255.255.255.255	Primary server IP address
p1	Value from 1 to 65535	Primary server port number
a1	Value from 0 to 255	Primary server action code
r1	Value from 0 to 255	Primary server retry count
s2ip	Value from 0.0.0.0 to 255.255.255.255	Secondary server IP address
p2	Value from 1 to 65535	Secondary server port number
a2	Value from 0 to 255	Secondary server action code
r2	Value from 0 to 255	Secondary server retry count
dhcp	'y' yes 'n' no	Enable DHCP
xip	Value from 0.0.0.0 to 255.255.255.255	XAS server IP address
xp	Value from 0 to 65535	XAS server port number
xa	Character string up of the following character 'g' graphical XAS mode 'f' full screen XAS mode 's' secure XAS mode 'h' hidden Phone mode 'r' reduced Phone mode	XAS server action code (XAS Mode and Phone Mode) Note that there is no explicit character to select text-mode. Instead, the lack of specifying graphical 'g' implies the XAS mode is text. Also note that there is no explicit character to select Full phone mode. Instead, the lack of specifying either hidden 'h' or reduced 'r' implies the phone is to be provisioned for Full phone mode. Please be careful not to confuse Full Screen XAS mode 'f' with Full phone mode.
unid	Character string up to 32 characters	Unique network identification

menulock	'f' full lock 'p' partial lock 'u' unlock	Menu lock mode
vq	'y' yes 'n' no	Enable 802.1Q for voice [1]
vcp	Value from 0 to 15	802.1Q control p bit for voice stream
vmp	Value from 0 to 15	802.1Q media p bit for voice stream
vlanf	'y' yes 'n' no	Enable VLAN filter on voice stream
nis	'a' auto negotiation '10' 10 Mbps '100' 100 Mbps	Network port speed [1]
nid	'a' auto negotiation 'f' full duplex 'h' half duplex	Network port duplex [1]
pc	'y' yes 'n' no	Enable PC port
pcs	'a' auto negotiation '10' 10 Mbps '100' 100 Mbps	PC port speed
pcd	'a' auto negotiation 'f' full duplex 'h' half duplex	PC port duplex
dq	'y' yes 'n' no	Enable 802.1Q for PC port
dv	'y' yes 'n' no	Enable VLAN for data
dvid	Value from 1 to 4094	VLAN ID for data VLAN
dp	Value from 0 to 15	802.1Q p bit for data stream
pcuntag	'y' yes 'n' no	Enable stripping of tags on packets forwarded to PC port
lldp	'y' yes 'n' no	Enable 802.1ab LLDP [1]
pk1	Character string of 16 character representing 16 hexadecimal digits	S1 PK [2]
pk2	Character string of 16 character representing 16 hexadecimal digits	S2 PK [2]

stickiness	'y' yes 'n' no	Enable stickiness (provisioning is persistent in the event a new info block is not received)
cachedip	'y' yes 'n' no	Enable cached IP
igarp	'y' yes 'n' no	Ignore GARP
srtplib	'y' yes 'n' no	Enable SRTP-PSK
eap	'dis' disable 'md5' EAP-MD5 'peap' PEAP/MD5 'tls' EAP-TLS	Disable or choose an EAP authentication method [1] [2]
eapid1	Character string up to 32 characters	802.1x (EAP) device ID1 [1] [2]
eapid2	Character string up to 32 characters	802.1x (EAP) device ID2 [1] [2]
eappwd	Character string up to 32 characters	802.1x (EAP) password [1] [2]
ca	Character string up to 80 characters	Certificate Authority (CA) server
cahost	Character string up to 32 characters	Certificate Authority (CA) host name
cadomain	Character string up to 50 characters	Certificate Authority (CA) domain name
cdiff	Value from 0 to 255	Diffserv code points for control messages
mdiff	Value from 0 to 255	Diffserv code points for media messages
prov	Character string up to 50 characters	Provisioning server address or URL (if the string is prefixed with "http://" the phone will connect to a HTTP server, otherwise the phone will connect to a TFTP server)
dns	Character string up to 50 characters	Primary DNS server URL
dns2	Character string up to 50 characters	Secondary DNS server URL
ct	Value from 0 to 15 for IP Phone 1100 series Value from 7 to 39 for IP Phone 2007	Contrast value
br	Value from 2 to 32	Brightness value

blt	'0' 5 seconds '1' 1 minute '2' 5 minutes '3' 10 minutes '4' 15 minutes '5' 30 minutes '6' 1 hour	Backlight timer
dim	'y' yes 'n' no	Enable screen dimmer
bt	'y' yes 'n' no	Enable Bluetooth (IP Phone 1140E and 1150E only)
zone	Character string up to 8 characters	Zone ID
file	Character string up of the following character 'z' read zone file 't' read type file 'd' read device file	For system specific provisioning file specifies what other provisioning files to read
hd	Character string up of the following character 'w' wired 'b' Bluetooth 'n' none	Headset type
ar	'y' yes 'n' no	Enable Auto-recovery
arl	'cr' critical 'ma' major 'mi' minor	Auto-recovery level
ll	'cr' critical 'ma' major 'mi' minor	Log level
ssh	'y' yes 'n' no	Enable SSH
sshid	Character string between 4 and 12 characters	SSH user ID [2]
sshpwd	Character string between 4 and 12 characters	SSH password [2]
bold	'y' yes 'n' no	Enable bold on font display

menupwd	String between and 21 characters containing only numeric digits, asterisk (*) and hash (#) – i.e. only the dialpad symbols	Administrator password [2]
vsource	'n' no VLAN 'a' auto VLAN via DHCP 'lv' auto VLAN via VLAN Name TLV 'lm' auto VLAN via Network Policy TLV	Source of VLAN information
srtpid	96 115 120	Payload type ID
ntqos	'y' yes 'n' no	Enable Nortel Automatic QoS
dscpovr	'y' yes 'n' no	DSCP Precedence Override

[1]: Warning - changing this parameter could impact the network connectivity and may require manual correction

[2]: Warning – provisioning this parameter via TFTP, HTTP, or DHCP means that secure information is transferred in clear text

Appendix C: Provisioning the IP Phone with an Info Block via TFTP or HTTP **(applies to the IP Phone 2007, 1110, 1120E, 1140E, 1150E, 1210, 1220, 1230)**

The IP Phones can receive the Info-Block inside one or more provisioning files that can be retrieved from a TFTP or HTTP server. Multiple provisioning files are supported by the phone:

- SYSTEM provisioning file – provides provisioning information to all IP Phones that support the auto-provisioning feature (e.g. system.prv)
- ZONE provisioning file – provides provisioning information to IP Phones that belong to a unique defined zone or group (e.g. headqrtr.prv)
- TYPE provisioning file – provides provisioning information to all the IP Phones of a particular model types (i.e. 1140E.prv)
- DEVICE provisioning file – provides provisioning information to a specific single device based on the device's MAC address (i.e. 001365FEF4D4.prv)

The provisioning files contain the provisioning Info Block only. The IP Phone continues to use the configuration file(s) for obtaining firmware and font file updates. The provisioning files are text-based file, which contains parameters that require provisioning.

An example of using hierarchal provisioning files (using system, zone and type provisioning files) is as per the following:

system.prv

```
# System level provisioning file
# Applies to all phones
file=zt;                # read <zone>.prv and <type>.prv
zone=headqrtr;         # Zone id
unid=Main-tower;      # Unique network identification
menulock=p;           # Menu lock mode
vq=y;                 # Enable 802.1Q for voice
vcp=3;               # 802.1Q control p bit for voice
vmp=4;               # 802.1Q media p bit for voice
vlanf=y;             # Enable VLAN filter
pc=y;                # Enable PC port
pcs=a;               # PC port speed
pcd=a;               # PC port duplex
dq=y;                # Enable 802.1Q for PC port
lldp=y;              # Enable 802.1ab (LLDP)
pk1= ffffffff;        # force pk1 to ff SMC will update
pk2= ffffffff;        # force pk1 to ff SMC will update
stickiness=y;        # Enable stickiness
cachedip=n;          # Enable cached IP
igarp=n;             # Ignore GARP
srtp=n;              # Enable PSK SRTP
eap=peap;            # Enable 802.1x (EAP)
eapid1=DEV1024;      # 802.1x (EAP) device ID 1
eapid2=TOW2234;      # 802.1X (EAP) device ID 2
eappwd=D3c6v5;       # 802.1x (EAP) password
cdiff=13;            # DiffServ code point for control
```



```

mdiff=12;           # DiffServ code point for media
prov=47.11.232.115; # Provisioning server IP address
dns=47.11.20.20;   # Primary DNS server IP address
dns2=47.11.20.21;  # Secondary DNS server IP address
ct=20;             # Contrast value
br=18;             # Brightness value
blt=1;             # Backlight timer
dim=y;             # Enable dim
hd=w;              # Headset type
bold=y             # Enable font display in bold

```

headqrtr.prv

```

# Zone level provisioning file
# Applies to all phones within the headquarters zone
slip=47.11.62.20;   # Primary server IP address
p1=4100;           # Primary server port number
a1=1;              # Primary server action code
r1=10;            # Primary server retry count
s2ip=47.11.62.21;  # Secondary server IP address
p2=4100;           # Secondary server port number
a2=1;              # Secondary server action code
r2=10;            # Secondary server retry count
xip=47.11.62.147;  # XAS server IP address
xp=5000;           # XAS server port number
xa=g;              # XAS server action code

```

1140E.prv

```

# Type level provisioning file specific to IP Phone 1140E
# Applies to all IP Phone 1140E within the network
bt=y;              # Enable Bluetooth

```

For additional information on configuring the IP phone with the Info Block and on auto-provisioning in general, please refer to the [IP Phones Fundamentals](#) document (NTP NN43001-368).

Info Block Feature Restriction

Please note that support for provisioning the IP Phone via an Info Block in provisioning files was not extended to the Phase II IP Phone 2001, Phase II IP Phone 2002 and Phase II IP Phone 2004. For these phones, provisioning the IP Phone with an Info Block can be accomplished via DHCP only. UNISim firmware release 2.3 for IP Phones introduced provisioning with an Info Block via DHCP for the Phase II IP Phones. Firmware 0604DBP, or greater, for the Phase II IP Phone 2001, 2002, and 2004 supports the new Nortel specific option type (“Nortel-i2004-B”) which allows the Info Block to be sent via DHCP. For more details on provisioning the IP Phone with an Info Block via DHCP please refer to “Appendix E”.

Appendix D: Auto-Provisioning the IP Phone's Node and TN in a Communication Server 1000 Environment (applies to the IP Phone 2007, 1110, 1120E, 1140E, 1150E, 1210, 1220, 1230)

The introduction of auto-provisioning on the IP Phone 2007, the IP Phone 1100 series, and the IP Phone 1200 series also provides a centralized method of provisioning the Node and TN fields for these IP Phones when they are connected on a Communication Server 1000 system.

Prior to the availability of UNISlim firmware release 3.0 for IP Phones, if the Node and TN values in the phone were un-initialized, the only means to provision the Node and TN value was for the phone installer to manually enter these values at the phone when prompted to do so on the phone's display.

With the delivery of UNISlim firmware release 3.0 for IP Phones the phones will now accept a list of Node and TN values associated to particular MAC addresses. The Node and TN value is assigned to an appropriate phone by the phone recognizing its own MAC address within the list of Node and TN values.

The phone will accept the Node and TN information when contained in any of the existing .PRV files including:

- Device file (XXXXXXXXXXXXX.PRV)
- Zone file (ZZZZZZZZ.PRV)
- Type file (TTTTTT.PRV)
- System file (SYSTEM.PRV)

If the phone's MAC address is found in more than one valid association across the different .PRV files, the association that the phone ultimately accepts will be the one in the highest priority file. The precedence order of the .PRV files from highest priority to lowest is device, zone, type then system as shown above.

A format has been defined, which is similar to the existing auto-provisioning info block items, to provision the Node and TN values. The new Node and TN provision string has the following format:

reg =MACaddr, CallServerType, ConnectServer, NodeID, TN

The items can be separated by spaces or commas or any combination of them. The string is case insensitive, so uppercase, lowercase or mixed case is all acceptable.

MACaddr: Delimiters in the MAC address can be dashes, colons, spaces or any combination thereof. The following are examples of valid MAC address formats:

00-13-65-FE-F4-D4

00:13:65:FE:F4:D4

00 13 65 FE F4 D4

001365FEF4D4

CallServerType: Currently the implementation only supports the Communication Server 1000, thus the only supported CallServerType is CS1K.

ConnectServer: Only values S1 and S1S2 are supported at this time.

NodeID – The Node ID can be any number from 0 - 9999.

TN - The same format is used for the Terminal Number as would be entered via the TN prompt on the phone's display during registration. So two formats exist:

Large system TN: "LLL-SS-CC-UU" or "LLL SS CC UU"

Small system TN: "CC-UU" or "CC UU"

The TN must be in one of the formats shown above. The numbers in the TN can be separated by spaces, dashes or any combination thereof. The numbers can either have leading zeros to fill the field size, or not – e.g. LLL can be 096 or just 96.

Format errors resulting in no processing of the reg provisioning are silently discarded (no error message is provided).

The "reg" item(s) must be at the end of the file's provisioning info data items. No other provisioning info items should come after it (them). This is required to optimize the speed of the parsing.

The following is an example of a valid Node and TN provision string that could be included in any of the .PRV files.

```
# Set Auto Node and TN
reg=00:1B:BA:F8:82:0D,CS1K,S1,123,096-1-22-01;
reg=00:1B:BA:F8:82:0E,CS1K,S1,123,096-1-22-02;
```

Appendix E: Provisioning the IP Phone with an Info Block via DHCP (applies to the IP Phone 2001, 2002, 2004, 2007, 1110, 1120E, 1140E, 1150E, 1210, 1220, 1230)

The new Nortel specific option type (“Nortel-i2004-B”) that was introduced in UNISstim firmware release 2.2 and release 2.3 for IP Phones. The Nortel-i2004-B specific option type expands the number of parameters that can be provisioned to include all those previously provisioned in the existing option type of Nortel-i2004-A, plus more.

In firmware loads prior to UNISstim firmware release 2.2 for the IP Phone 2007, IP Phone 1110, IP Phone 1120E, IP Phone 1140E and IP Phone 1150E and prior to UNISstim firmware release 2.3 for the Phase II IP Phone 2001, 2002 and 2004 the IP Phones could obtain only limited provisioning parameters via Nortel specific DHCP options. The Nortel specific DHCP option types supported included:

- **Nortel-i2004-A** is a unique identifier for provisioning Nortel call server information into the IP Phone
- **VLAN-A** is a unique identifier for provisioning 802.1Q VLAN information into the IP Phone

With the introduction of the UNISstim firmware release 2.2 and greater for the IP Phone 2007, IP Phone 1110, IP Phone 1120E, IP Phone 1140E and IP Phone 1150E⁷, and UNISstim firmware release 2.3 and greater for the Phase II IP Phone 2001, 2002 and 2004, a new Nortel specific option type is introduced (“Nortel-i2004-B”). The new Nortel-i2004-B specific option type expands the number of parameters that can be provisioned to include all those previously provisioned in the existing option type of Nortel-i2004-A, plus more. The existing option type of Nortel-i2004-A will continue to be supported for backward compatibility. In fact, the new firmware will accept both option types, although it is recommended to either remain with the existing option type or move to the new option type, but not both. In the event that the IP Phone receives both option types, values provisioned with the new option type of Nortel-i2004-B will have a higher priority than values provisioned with the old option type Nortel-i2004-A.

DHCP option type VLAN-A continues to be supported.

DHCP support for provisioning the IP Phones requires DHCP to send a class identifier option with the valid option type in each DHCP Offer and DHCP Acknowledgement.

⁷ IP Phone 1210, 1220 and 1230 were introduced with UNISstim firmware release 2.2 for IP Phones and support Nortel-i2004-B from initial release.

The IP Phone supports both vendor specific sub-ops and site specific options. The new firmware now supports 42 Nortel specific DHCP options as listed below. Newly claimed options are in bold where as the reclassified⁸ options are in italics.

- 21 DHCP vender specific options: 128, 131, 144, 157, 188, 191, 205, 219, 223, **224**, **227**, **230**, 232, **235**, **238**, **241**, **244**, 247, **249**, 251, and **254**
- 21 DHCP site specific options: 128, 131, 144, 157, 188, 191, 205, 219, 223, **224**, **227**, **230**, 232, **235**, **238**, **241**, **244**, 247, **249**, 251, and **254**

The vendor specific field of the DHCP response is parsed to extract the provisioning information.

The format of the “Nortel-i2004-B” DHCP option type is:

Nortel-i2004-B,param1=value1;param2=value2;param3=value3; ...

An example DHCP provisioning string is as per the following⁹:

```
Nortel-i2004-B,s1ip=47.11.62.20;p1=4100;a1=1;r1=255;s2ip=47.11.62.21;  
p2=4100;a2=1;r2=2;xip=47.11.62.147;xp=5000;xa=g;  
menulock=p;vq=y;vcp=3;vmp=4;vlanf=y;pc=y;pcs=a;pcd=a;  
dq=y;dv=y;dvid=60;dp=5;pcuntag=y;
```

The list of all the parameters that can be provisioned via the Nortel-i2004-B options is provided in the following table. Note that not all parameters need be specified in the option string. If the option is included, the parameter will be provisioned with the value specified. If the option is not included, the parameter will retain its default value, or the value that was previously provisioned for said parameter.

Feature Advisements

A compatibility issue was found with the new Nortel-i2004-B option type and the older Phase 0 IP Phone 2004, Phase 1 IP Phone 2002 and Phase 1 IP Phone 2004. Even though these older phones ignore the Nortel-i2004-B option type, the length of the DHCP frame causes problems for the older phones. Since the list of all the parameters that can be provisioned via the Nortel-i2004-B options is extensive, the length of the DHCP frame can be quite large. The older phones will only accept a DHCP message to a maximum of 590 bytes (far short of

⁸ RFC 3942 states that DHCP site-specific options 128 to 223 are hereby reclassified as publicly defined options. The IP Phone supports 9 vender specific options in this range and will continue to do so for backward compatibility. However, as suggested in RFC3942, the use of these options should be discouraged to avoid potential future collisions.

⁹ Carriage returns have been added to the DHCP configuration string for readability only. A true DHCP configuration string would contain no such carriage returns

the maximum DHCP message size of 1456 bytes). In a mixed environment of phones that support Nortel-i2004-B with Phase 0 and Phase1 phones one must either:

- Ensure any option string that are defined are small enough that the DHCP message does not exceed 590 bytes, or
- Service the Phase 0 and Phase 1 phones with a DHCP offer that excludes the Nortel-i2004-B option.

Appendix F: IP Phone Provisioning Precedence Rule and Stickiness Control **(applies to the IP Phone 2007, 1110, 1120E, 1140E, 1150E, 1210, 1220, 1230)**

The IP Phone 2007, IP Phone 1110, IP Phone 1120E, IP Phone 1140E, IP Phone 1150E, IP Phone 1210, IP Phone 1220 and IP Phone 1230 can obtain provisioning information from multiple sources when the parameter source is defined as AUTO from the Auto Provisioning page. The sources of automatic provisioning information include:

- LLDP when the phone is connected to an 802.1ab enabled network switch
- DHCP
- Provisioning file transferred via TFTP or HTTP
- Call server (and/or associated telephony manager) using UNISlim

It is assumed that each network provisioning parameter will be supplied by one and only one source. However, if the phone receives network configuration information from multiple sources a precedence rule is applied to determine the one source the phone selects for its provisioning information.

The precedence rule from highest priority to lowest priority for IP Phone provisioning is as follows:

- Manual provisioning
- Automatic provisioning using Link Layer Discovery Protocol (LLDP) from an 802.1ab enabled network switch
- Automatic provisioning using Info Block contained within provisioning files (and transferred via TFTP or HTTP). Provisioning files contain their own precedence order based on the file type:
 - Info Block carried by the Device-specific provisioning file
 - Info Block carried by the Zone-specific provisioning file
 - Info Block carried by the Type-specific provisioning file
 - Info Block carried by the System-specific provisioning file
- Automatic provisioning using Info Block contained within DHCP option strings (and transferred via DHCP Acknowledge message). DHCP provision contain its own precedence order based on the DHCP option
 - Info Block carried by the Nortel-i2004-B DHCP option
 - Former provisionable parameters carried by the Nortel-i2004-A DHCP option (Note that VLAN-A option is still supported with both Nortel-i2004-B DHCP and Nortel-i2004-A DHCP options)
- Automatic provisioning from the call server (and/or associated telephony manager) using UNISlim
- Last automatic provisioned value
- Factory default

Automatic provisioning defines provisioning control for each parameter. One can either manually or automatically provision each parameter. Each provisioning parameter provides an attribute that specifies if the parameter was previously provisioned manually or automatically.

If the provisioning parameter is AUTO, the IP Phone can receive the value from automatic provisioning sources based on the precedence rule. If one manually changes the parameter, the attribute value is MANUAL. If the attribute is MANUAL, the provisioning information from automatic provisioning sources is ignored except for the standard DHCP parameters. If one enables DHCP, then the phone's IP address, the subnet mask, and the default gateway address, which the IP Phone obtains from the DHCP server, overwrites any manually configured value.

Provisioning information from a provisioning source with high priority will overwrite the provisioning information from a provisioning source with low priority. Manual provisioning always has the highest priority.

If one configure stickiness and the current provisioning source does not provide the provisioning information for the particular parameter, the last received provisioning value is used. The default value of the stickiness attribute is AUTO.

The Phase II IP Phones (IP Phone 2001, IP Phone 2002, and IP Phone 2004) do not support the precedence rule, therefore the phones use the last value received.

Appendix G: IP Phone Configuration Menu on the IP Phone 1120E, IP Phone 1140E and IP Phone 1150E

The full-screen based configuration menu structure below presents the complete configuration menu now available on the IP Phone 1120E, IP Phone 1140E and IP Phone 1150E:

EAP Mode: [Disable, MD5, PEAP, TLS]

ID 1:

ID 2:

Password:

Enable 802.1ab (LLDP): []

DHCP: [No, Yes]

Set IP: xxx.xxx.xxx.xxx

Net Mask: xxx.xxx.xxx.xxx

Gateway: xxx.xxx.xxx.xxx

DNS1 IP: xxx.xxx.xxx.xxx

DNS2 IP: xxx.xxx.xxx.xxx

CA Server:

Domain Name:

Hostname:

S1 IP: xxx.xxx.xxx.xxx

Port:

S1 Action:

Retry:

S1 PK: FFFFFFFFFFFFFFFF

S2 IP: xxx.xxx.xxx.xxx

Port:

S2 Action:

Retry:

S2 PK: FFFFFFFFFFFFFFFF

Ntwk Port Speed: [Auto, 10BT, 100BT]

Ntwk Port Duplex: [Auto, Force Full, Force Half]

XAS Mode: [Text Mode, Graphical, Secure Graphical]

XAS IP: xxx.xxx.xxx.xxx

XAS Port:

Enable Voice 802.1Q: []

VoiceVLAN: [No VLAN, Auto, Enter VLAN ID]

The Auto option in the VoiceVLAN menu is only available if DHCP is provisioned to "Yes" above or if LLDP is enabled above

VLAN Filter : []

Ctrl Priority Bits: [Auto, 0, 1, 2, 3, 4, 5, 6, 7]

Media Priority Bits: [Auto, 0, 1, 2, 3, 4, 5, 6, 7]

Enable Nortel Auto Qos:

DSCP Override: *This DSCP Override menu item is only presented if "Enable 802.1ab (LLDP)" is enabled above and "Control DSCP" or "Media DSCP" are not manually set below*

Control DSCP: xxx

Media DSCP: xxx

Enable PC Port:

PC Port Speed: [Auto, 10BT, 100BT]

PC Port Duplex: [Auto, Force Full, Force Half]

Enable Data 802.1Q:

DataVLAN: [No VLAN, Enter VLAN ID]

Data Priority Bits: [Auto, 0, 1, 2, 3, 4, 5, 6, 7]

PC-Port Untag All:

Enable Stickiness

Cached IP: *This Cached IP menu item is only presented if DHCP is provisioned to "Yes".*

Ignore GARP:

Enable SRTP PSK:

SRTP PSK Payload ID: [96, 115, 120]

Provision: xxx.xxx.xxx.xxx

Provision Zone ID:

Enable Bluetooth: [Yes, No] *This menu item is on the IP Phone 1140E and 1150E only.*

The IP Phone 1120E, IP Phone 1140E, and IP Phone 1150E contain a password protection mechanism to lock out access to the Local Tools menu including the Network Configuration menu. If **enabled**, access to the Local Tools menu is password protected and the password is prompted by a pop up window. One must type the password 26567*738 (color*set) from the dial pad and press the center of the navigation cluster (enter key) to enter the Network Configuration menu.

When an incorrect password is entered, the Local Tools menu is not opened.

To thwart password guessing, only 3 incorrect password entries in a row are allowed. After the 3rd incorrect entry, the password entry is ignored for 5 minutes. During this period of time, the password prompt is displayed and the entered digits accepted; however, the phone will not process the incoming digits. The password prompt window simply closes and the behavior is identical to that of an incorrect password entry. The user will assume the incorrect password has been entered and try again. Thus even if the correct password is guessed during the 5 minute period, it will be ignored. This effectively reduces the guess entry rate to 3 guesses every 5 minutes.

Once the password has been entered, access to the Local Tools menu remains active for 5 minutes. During the 5 minutes, the menu can be freely navigated, exited and entered

without being prompted again for the password. When the 5 minutes expires, the menu is closed. The password must be reentered to access the Local Tools menu.

Appendix H: IP Phone Configuration Menu on the IP Phone 2007

The full-screen based configuration menu structure below presents the complete configuration menu now available on the IP Phone 2007:

EAP Mode: [Disable, MD5, PEAP, TLS]

ID 1:

ID 2:

Password:

Enable 802.1ab (LLDP): [

DHCP: [No, Yes]

Set IP: xxx.xxx.xxx.xxx

Net Mask: xxx.xxx.xxx.xxx

Gateway: xxx.xxx.xxx.xxx

DNS1 IP: xxx.xxx.xxx.xxx

DNS2 IP: xxx.xxx.xxx.xxx

CA Server:

Domain Name:

Hostname:

S1 IP: xxx.xxx.xxx.xxx

Port:

S1 Action:

Retry:

S1 PK: FFFFFFFFFFFFFFFF

S2 IP: xxx.xxx.xxx.xxx

Port:

S2 Action:

Retry:

S2 PK: FFFFFFFFFFFFFFFF

Ntwk Port Speed: [Auto, 10BT, 100BT]

Ntwk Port Duplex: [Auto, Force Full, Force Half]

Phone Mode [Hidden, Full, Reduced]

XAS Mode [Text Mode, Graphical, Full Screen, Secure Graphical, Secure Full Screen]

XAS IP: xxx.xxx.xxx.xxx

Port:

Enable Voice 802.1Q: [

VoiceVLAN: [No VLAN, Auto, Enter VLAN ID]

The Auto option in the VoiceVLAN menu is only available if DHCP is provisioned to "Yes" above or if LLDP is enabled above, respectively.

VLAN Filter : [

Ctrl Priority Bits: [Auto, 0, 1, 2, 3, 4, 5, 6, 7]

Media Priority Bits: [Auto, 0, 1, 2, 3, 4, 5, 6, 7]

Enable Nortel Auto QoS: [

DSCP Override: *This DSCP Override menu item is only presented if "Enable 802.1ab (LLDP)" is enabled above and "Control DSCP" or "Media DSCP" are not manually set below*

Control DSCP: xxx

Media DSCP: xxx

Enable PC Port:

PC Port Speed: [Auto, 10BT, 100BT]

PC Port Duplex: [Auto, Force Full, Force Half]

Enable Data 802.1Q:

DataVLAN: [No VLAN, Enter VLAN ID]

Data Priority Bits: [Auto, 0, 1, 2, 3, 4, 5, 6, 7]

PC-Port Untag All:

Enable Stickiness

Cached IP: *This Cached IP menu item is only presented if DHCP is provisioned to "Yes" above.*

Ignore GARP:

Enable SRTP PSK:

SRTP PSK Payload ID: [96, 115, 120]

Provision: xxx.xxx.xxx.xxx

Provision Zone ID:

The IP Phone 2007 contains a password protection mechanism to lock out access to the Local Tools menu including the Network Configuration menu. If **enabled**, access to the Local Tools menu is password protected and the password is prompted by a pop up window. One must type the password 26567*738 (color*set) from the dial pad and press the "OK" softkey to enter the Local Tools menu.

When an incorrect password is entered, the Local Tools menu is not opened.

To thwart password guessing, only 3 incorrect password entries in a row are allowed. After the 3rd incorrect entry, the password entry is ignored for 5 minutes. During this period of time, the password prompt is displayed and the entered digits accepted; however, the phone will not process the incoming digits. The password prompt window simply closes and the behavior is identical to that of an incorrect password entry. The user will assume the incorrect password has been entered and try again. Thus even if the correct password is guessed during the 5 minute period, it will be ignored. This effectively reduces the guess entry rate to 3 guesses every 5 minutes.

Once the password has been entered, access to the Local Tools menu remains active for 5 minutes. During the 5 minutes, the menu can be freely navigated, exited and entered without being prompted again for the password. When the 5 minutes expires, the menu is closed. The password must be reentered to access the Local Tools menu.

Appendix I: IP Phone Configuration Menu on IP Phone 1110, IP Phone 1210, IP Phone 1220 and IP Phone 1230

The single-line based configuration menu structure below presents the complete configuration menu now available on the IP Phone 1110, IP Phone 1210, IP Phone 1220 and IP Phone 1230:

EAP[0-N,1-M, 2-P, 3-T]:0

if "1" or "2" or "3"

ID 1: []

also if "1" or "2"

ID 2: []

Password: [***]**

LLDP Enable?[0-N,1-Y]:0

DHCP? [0-N,1-Y]:1

if "0"

Set IP: xxx.xxx.xxx.xxx

Netmsk: xxx.xxx.xxx.xxx

Def GW: xxx.xxx.xxx.xxx

DNS1 IP: xxx.xxx.xxx.xxx

DNS2 IP: xxx.xxx.xxx.xxx

CA Server:

Domain Name:

Hostname:

S1 IP: xxx.xxx.xxx.xxx

S1 Port:

S1 Action:

S1 Retry Count:

S2 IP: xxx.xxx.xxx.xxx

S2 Port:

S2 Action:

S2 Retry Count:

Speed[0-A,1-10,2-100]:0

if "1" or "2"

Duplex[0-A,1-F,2-H]:0

Cfg XAS? [0-N, 1-Y]:1

if "1"

XAS IP: xxx.xxx.xxx.xxx

Voice 802.1Q[0-N,1-Y]:1

if "1"

Voice VLAN?[0-N,1-Y]:0

if "1"

VLAN Cfg ?0-Auto,1-Man :1

This VLAN Cfg menu is only presented if DHCP is provisioned to "Y" above or if LLDP Enabled is provisioned to "Y" above.

if "1"

VLAN ID :

VLAN Filter?[0-N,1-Y] :0

Ctrl pBits[0-7,8-Au] :8

Media pBits[0-7,8-Au] :8

NT AutoQOS? [0-N,1-Y]:0

DSCP Ovrde [0-N,1-Y]:0 *This DSCP Override menu item is only presented if "LLDP Enable?" is enabled above and neither the "Control DSCP" or "Media DSCP" are not manually set below*

CTRL DSCP [0-255]: xxx

Media DSCP [0-255]: xxx

PC Port ? [0-Off,1-On] :1

if "1"

Speed[0-A,1-10,2-100]:0

if "1" or "2"

Duplex[0-A,1-F,2-H]:0

Data 802.1Q[0-N,1-Y]:1

if "1"

VLAN ID :

Data pBits[0-7,8-Au] :8

PCUntagAll? [0-N,1-Y]:1

Stickiness? [0-N,1-Y]:1

Cached IP? [0-N, 1-Y]:0 *This Cached IP menu item is only presented if DHCP is provisioned to "Y" above*

GARP Ignore?[0-N,1-Y]:0

SRTP PSK? [0-N, 1-Y]:0

PayID[0-96,1-115,2-120]0

Prov: xxx.xxx.xxx.xxx

Prov Zone ID:

End of Menu

The IP Phone 1110, IP Phone 1210, IP Phone 1220 and IP Phone 1230 contain a password protection mechanism to lock out access to the Local Tools menu including the Network Configuration menu. If **enabled**, access to the Local Tools menu is password protected and the password is prompted by a pop up window. One must type the password 26567*738

(color*set) from the dial pad and press the center of the navigation cluster (enter key) to enter the Local Tools menu.

When an incorrect password is entered, the Local Tools menu is not opened.

To thwart password guessing, only 3 incorrect password entries in a row are allowed. After the 3rd incorrect entry, the password entry is ignored for 5 minutes. During this period of time, the password prompt is displayed and the entered digits accepted; however, the phone will not process the incoming digits. The password prompt window simply closes and the behavior is identical to that of an incorrect password entry. The user will assume the incorrect password has been entered and try again. Thus even if the correct password is guessed during the 5 minute period, it will be ignored. This effectively reduces the guess entry rate to 3 guesses every 5 minutes.

Once the password has been entered, access to the Local Tools menu remains active for 5 minutes. During the 5 minutes, the menu can be freely navigated, exited and entered without being prompted again for the password. When the 5 minutes expires, the menu is closed. The password must be reentered to access the Local Tools menu.

Appendix J: IP Phone Configuration Menu on Phase II IP Phone 2001, Phase II IP Phone 2002 and Phase II IP Phone 2004

The single-line based configuration menu structure below presents the complete configuration menu now available on the Phase II IP Phone 2001, Phase II IP Phone 2002 and Phase II IP Phone 2004:

EAP Enable?[0-N,1-Y]:0

if "1"

DeviceID:[]

Password:

LLDP Enable?[0-N,1-Y]:0

DHCP? [0-N, 1-Y]:1

if "0"

SET IP: xxx.xxx.xxx.xxx

NETMSK: xxx.xxx.xxx.xxx

DEF GW: xxx.xxx.xxx.xxx

S1 IP: xxx.xxx.xxx.xxx

S1 PORT:

S1 ACTION:

S1 RETRY COUNT:

S2 IP: xxx.xxx.xxx.xxx

S2 PORT:

S2 ACTION:

S2 RETRY COUNT:

else if "1"

DHCP:0-Full,1-Partial:1

if "1"

S1 IP: xxx.xxx.xxx.xxx

S1 PORT:

S1 ACTION:

S1 RETRY COUNT:

S2 IP: xxx.xxx.xxx.xxx

S2 PORT:

S2 ACTION:

S2 RETRY COUNT:

Speed[0-A,1-10,2-100]:0

if "1" or "2"

Duplex[0-A,1-F,2-H]:0

Cfg XAS?[0-N, 1-Y]:1

if "1"

XAS IP: xxx.xxx.xxx.xxx

Voice 802.1Q[0-N,1-Y]:1

if "1"

VOICE VLAN?[0-N,1-Y]:0

if "1"

VLAN Cfg?0-Auto,1-Man :1

The VLAN Cfg menu is only presented if DHCP is provisioned to "Partial" or "Full" above or if LLDP is enabled above.

if "0"

LLDP MED? [0-N, 1-Y] :0

The LLDP MED menu is only presented if LLDP is enabled above.

if "0"

LLDP VLAN? [0-N,1-Y] :0

The LLDP VLAN menu is only presented if LLDP is enabled above.

if "0"

DHCP? [0-N, 1-Y] :0

The DHCP menu is only presented if DHCP is provisioned to "Partial" or "Full" above.

else if "1"

VOICE VLAN ID :

VLANFILTER?[0-N, 1-Y] :0

Ctrl pBits[0-7,8-Au] :8

Media pBits[0-7,8-Au] :8

PC Port? [0-OFF,1-ON] :1 *This menu item, and submenus, are not available on the IP Phone 2001.*

if "1"

Speed[0-A,1-10,2-100]:0

if "1" or "2"

Duplex[0-A,1-F,2-H]:0

Data 802.1Q[0-N,1-Y]:1

if "1"

DATA VLAN? [0-N, 1-Y]:0

if "1"

DATA VLAN Cfg?0-A,1-M:0

This DATA VLAN Cfg menu item is only presented if LLDP is enabled above.

if "1"

DATA VLAN ID:

Data pBits[0-7,8-Au] :8

PCUntagAll?[0-N,1-Y]:0

Cached IP? [0-N, 1-Y]:0

This Cached IP menu item is only presented if DHCP is provisioned to "Yes" above and Voice VLAN is not provisioned as "Auto".

GARP Ignore?[0-N,1-Y]:0

PSK SRTP?[0-N, 1-Y]:0

PayID[0-96,1-115,2-120]0

Appendix K: Restore to Factory Defaults

The UNISlim firmware release 3.0 for IP Phones introduces the ability to restore an IP Phone to a “factory default” configuration. This can be useful when redeploying an IP Phone from one location to another, when starting to use an IP Phone with unknown history, or to reset to a known baseline configuration.

With UNISlim firmware release 3.0, and greater, the following keypad sequence is used to reset all provisioning parameters to a “factory default”:

[*][*][7][3][6][3][9][MAC][#][#]

Where MAC corresponds to the MAC address of the IP Phone which can be found on a label on the back of the IP Phone.

Since a MAC address can contain the letters A through F, the letters A, B and C can be entered via the [2] key on the dialpad, and letters D, E and F can be entered via the [3] key.

For example, an IP Phone with MAC address 00:19:E1:E2:17:12 would be reset to “factory default” when the sequence **73639001931321712## is entered on the keypad.