



## Product Bulletin

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### UNISlim Firmware Release 3.2 for IP Phones, including:

- **0604DCJ** for Phase II IP Phones (2001, 2002 & 2004),
- **0621C6M** for IP Phone 2007,
- **0623C6N, 0624C6N, 0625C6N and 0627C6N** for IP Phone 1110, 1120E, 1140E and 1150E respectively and
- **062AC6N** for IP Phone 1210, 1220, and 1230

#### REVISION HISTORY

Date	Revision #	Summary of Changes
27-Feb-09	Original bulletin	This is the original publication

#### Introduction

Nortel\* is pleased to announce the availability of UNISlim firmware release 3.2 for IP Phones. UNISlim firmware release 3.2 makes available firmware version **0604DCJ** for the Phase II IP Phone 2001, Phase II IP Phone 2002, and Phase II IP Phone 2004. UNISlim firmware release 3.2 also makes available firmware version **0621C6M** for the IP Phone 2007. In addition, UNISlim firmware release 3.2 makes available firmware version **0623C6N, 0624C6N, 0625C6N and 0627C6N** for the IP Phone 1110, IP Phone 1120E, IP Phone 1140E and IP Phone 1150E respectively. Finally, UNISlim firmware release 3.2 makes available firmware version **062AC6N** 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 3.2 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 3.2 for IP Phones delivers enhancements to Nortel’s IP Telephony Solution and delivers general quality improvements. The enhancements available include:

- “Reduced” screen mode on the IP Phone 2007 when used with Application Gateways
- Configurable Local Tools Menu passwords
- Auto provisioning support for VLAN source selection
- Ability to provision the SRTP-PSK payload type
- Support for Nortel Automatic QoS
- Adjustments to “Cache IP” when Voice VLAN is configured as “Auto”
- Intuitive entry of numeric digits from a USB keyboard
- Allow calling party numbers to be dialed from USB keyboard

## **Enhancements**

### **1. *Reduced screen mode on the IP Phone 2007 when used with Application Gateways (applies to the IP Phone 2007 only)***

UNISlim firmware release 3.2 for the IP Phone 2007 introduces a new “Reduced” phone mode for management on the phone’s screen. With UNISlim firmware release 3.2 there are now 3 phone modes available on the IP Phone 2007: Hidden, Full, and Reduced. The phone mode is used to determine what portion of the IP Phone 2007’s screen is dedicated to telephony display verses under the control of applications driven by external Application Gateways such as the Nortel Application Gateway 2000.

A description of the three phone modes is as follows:

**Full** – The Full screen phone mode is the default screen mode and will continue to behave in exactly the same manner as in all previous firmware releases. The full telephony screen is presented to the user, unless it is hidden behind applications driven by an associated Application Gateway. But even if the telephony screen is hidden behind an application, it will automatically come to the foreground when an incoming call is received or if the user either picks up the handset or presses the hands free or headset key. And if the toolbar at the bottom of the screen is visible, the telephony screen can also be forced to be displayed by touching the telephone icon.

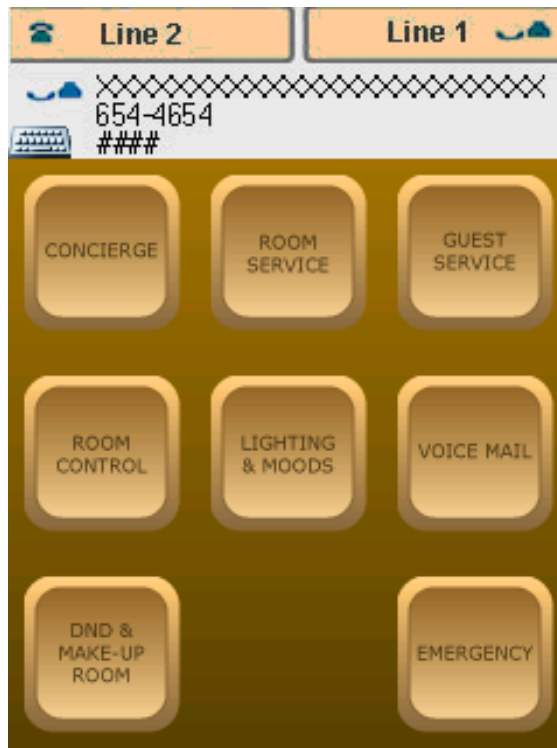
**Hidden** – In Hidden screen phone mode, the telephony screen is never visible to the user, even during an active call. In the Hidden screen mode the Application Gateway application

will always be visible and will use the entire screen of the IP Phone 2007. Even the toolbar at the bottom of the phone screen will not be visible. Note that since the telephony screen is hidden the Hold key is disabled since there is no way to take a call off hold.

The telephony screen (including the toolbar) can be forced to be visible only by using the magic key sequence of **\*\*26344##**. Forcing the telephony screen to be visible is meant to allow an administrator to perform configuration that requires the telephone screen interface (for example Node and TN entry or access to the toolbar).

**Reduced** – Reduced screen phone mode is new with UNISim firmware release 3.2 for the IP Phone 2007. In reduced screen phone mode the telephony screen is a small window that has most of the telephony display removed. All soft keys are removed (e.g. Inbox, Directory, Services, Copy, etc.) and are not accessible. In addition, most of the Auto Dial keys are removed. Only two line appearance keys remain. Information messages and caller ID are still displayed in the reduced telephony screen. The remainder of the phone's screen, including the portion where the toolbar normally appears is driven by the Application Gateway's application. The toolbar can be forced to be visible by using the magic key sequence of **\*\*26344##**. The reduced mode is especially useful if both basic phone functionality and application access is required both at the same time.

A reduced screen phone mode example is shown below, with the reduced telephony screen on top and a hospitality application being driven by an external Application Gateway using the remainder of the screen:



To provision the new reduced screen phone mode, a new “Reduced” option has been added to the Phone Mode configuration menu as depicted below:

Ntwk Port Duplex	Auto
Phone Mode	Full ▼
XAS Mode	Hidden
	Full
	Reduced

To auto-provision the new reduced screen phone mode, the XAS action byte parameter in the Info-Block structure now accepts the value ‘r’ representing “Reduced”. For example:  
xa=r

Only one of either ‘r’ (reduced) or ‘h’ (hidden) should be used to provision the phone mode in the XAS action byte. Note that there is no explicit character to select Full phone mode. Instead, the lack of specifying either hidden or reduced implies the phone is to be provisioned for Full phone mode. Please be careful not to confuse Full Screen XAS mode ‘f’ in the XAS action byte with Full phone mode.

## **2. Configurable Local Tools Menu password (applies to the IP Phone 2007, 1120E, 1140E, 1150E, 1210, 1220 and 1230)**

The IP Phone 2007, 1110, 1120E, 1140E, 1150E, 1210, 1220 and IP Phone 1230 contain a password protection mechanism to lock out access to the Local Tools menu. If **enabled**, access to the Local Tools menu is password protected and the user is prompted to enter the password via a pop up window. One must type the password from the dial pad and press the center of the navigation cluster (or press the “OK” softkey for the IP Phone 2007) to enter the Local Tools menu.

If an incorrect password is entered, the Local Tools Menu is not opened.

Customers have raised concern that the fixed password of "color\*set" (26567\*738) to unlock the Local Tools menu on the phone is public and becoming well known.

With UNISim firmware release 3.2, the ability to provision a unique Local Tools menu password has been delivered. A unique Local Tools menu password can now be provisioned by defining the password in the Info-Block structure that is used to auto-provision the phone via either file transfer or DHCP.

The parameter to provision the Local Tools menu password via the Info-Block is provided in the table below. Please refer to Appendix B for the complete list of parameters supported within the Info block.

menupwd	String between 1 and 21 characters containing only numeric digits, asterisk (*) and hash (#) – i.e. only the dialpad symbols	Administrator password <sup>1</sup>
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For example: menupwd=123#456\*

### Feature Limitation

The ability to provision a unique Local Tools menu password does have some limitation though:

- The Local Tools menu password is not encrypted in the Info Block
- The Local Tools menu password can only be changed via the Info Block. It cannot be changed manually.
- The Phase II IP Phone 2001, 2002 and 2004 do not support a Local Tools menu password and thus do not support this enhancement.
- The Local Tools menu password protects the phones local menus (Preferences, Local Diagnostics and Network Configuration) (also Touch Panel Setup, Contrast & Brightness, and USB Devices on the IP Phone 2007). It does not lock the menu structure presented by the call server (i.e. the TPS menus) including Telephone Options, Password Admin, and Virtual Office Login

### **3. Auto-provisioning support for VLAN source selection (applies to the IP Phone 2001, 2002, 2004, 2007, 1110, 1120E, 1140E, 1150E, 1210, 1220, 1230)**

With UNISim firmware commencing in release 2.2 on the IP Phone 2007, 1110, 1120E, 1140E, 1150E, 1210, 1220 and 1230 (but release 2.3 on the IP Phone 2001, 2002 and 2004) the default source for VLAN assignment was changed from “no VLAN” to “Auto”.

A limitation of the new functionality was that it would only apply to new phones being shipped from the factory pre-installed with UNISim firmware release 2.2 or greater. The default configuration of “Auto” does not get applied to field upgrades. Upgrading firmware does not change any pre-established values already in the phones.

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<sup>1</sup> Warning – provisioning this parameter via TFTP (and/or DHCP) means that secure information is transferred in clear text

To allow phones already deployed in the field to change the source of their VLAN information, UNISstim firmware release 3.2 introduces a new parameter to the Info Block. The new Info-Block parameter to allow VLAN source 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

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
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Recall that with UNISstim firmware release 3.1 for IP Phones 2007, 1110, 1120E, 1140E, 1150E, 1210, 1220 and 1230, the VLAN assignment source of “Auto” was expanded to accept a VLAN ID from both DHCP and LLDP. It is assumed that either DHCP or LLDP will be used for Auto VLAN assignment but not both. If the phone receives a VLAN assignment from both DHCP and LLDP, however, LLDP is given precedence over DHCP.

With Auto VLAN enabled, if VLAN assignment is provided by DHCP (option type VLAN-A), or LLDP (either VLAN Name TLV or MED Network Policy TLV) the phone will use the VLAN information to provision a voice VLAN. However, if no VLAN assignment is provided by either DHCP or LLDP, the phone will assume that no VLAN is to be provisioned. Since the phone automatically accepts a VLAN assignment from all the sources there is no longer the need to explicitly state whether the auto source is DHCP, LLDP VLAN Name or LLDP MED. This is different from the Phase II IP Phone 2001, 2002 and 2004 for which the source of automatic VLAN assignment must be chosen. Therefore provisioning the vsource parameter with the value “a”, “lv” and “lm” behaves differently if the phone receiving the provisioning is a Phase II IP Phone 2001, 2002, and 2004 versus an IP Phone 2007, 1110, 1120E, 1140E, 1150E, 1210, 1220 and 1230.

The table below depicts the different behavior of provisioning vsource:

<b>vsource value</b>	<b>Meaning for IP Phone 2007, 1110, 1120E, 1140E, 1150E, 1210, 1220 and 1230</b>	<b>Meaning for Phase2 IP Phone 2001, 2002, and 2004</b>
n	No VLAN	No VLAN
a	Auto	Auto via DHCP
lv	Auto	Auto via LLDP VLAN Name
lm	Auto	Auto via LLDP MED

A new “Voice VLAN Source” check box has also added to the “08. Voice 802.1Q” auto provision group of the auto-provisioning menu. When this item is checked, the user cannot

set the Voice VLAN setting manually on the Configuration page (the corresponding item is skipped when stepping through the configuration choices on phones with text display and disabled (greyed-out) for phones with graphic display).

There are no changes in UI for Phase2 IP Phone 2001, 2002, and 2004.

The new Voice VLAN Source auto-provisioning menu check box for text-display phones is as follows:

<b>Uncheck =Man</b>
Voice VLAN Source <input checked="" type="checkbox"/>
Man Cfg AllAut Cancel

The new Voice VLAN Source auto-provisioning menu check box for graphic-display phones is as follows:

08 . Voice 802.1Q	<input type="checkbox"/>
Voice VLAN Source	<input checked="" type="checkbox"/>
Voice VLAN Filter	<input type="checkbox"/>
Voice Control pBits	<input type="checkbox"/>

If auto provisioning is enabled for Voice VLAN Source and no “vsource” option is provided in the Info-Block provided, either via a provisioning file or via DHCP, then the Voice VLAN source depends on the Stickiness parameter configuration. If Stickiness is enabled then Voice VLAN setting does not change from what was previously provisioned. If the Stickiness is disabled the Voice VLAN setting is reset back to its default of “auto”.

#### Feature Limitation

- Changing the Voice VLAN source setting via auto-provisioning requires the IP phone to reboot for the change to take effect (the phone will automatically reboot if the VLAN source setting is changed via auto-provisioning)
- The Voice VLAN source setting cannot be configured to “Manual” Voice VLAN ID via auto provisioning.

- If “All Manual” was selected on the phone’s “Auto” page the VLAN source parameter will also be set to “Manual” as well after upgrading to UNISim firmware release 3.2. Otherwise the new VLAN Source parameter will default to “Auto”.

**4. Ability to provision the Payload Type ID for SRTP-PSK frames (applies to the IP Phone 2001, 2002, 2004, 2007, 1110, 1120E, 1140E, 1150E, 1210, 1220, 1230)**

Ensuring privacy of conversations in VoIP networks is an increasing priority for network administrators. Secure Real-time Transport Protocol (SRTP) [RFC 3711] is a standards based method to encrypt RTP media. SRTP specifies a protocol to provide confidentiality, authentication, and replay protection to RTP and RTCP traffic.

UNISim firmware release 1.0 for IP Phones introduced support for SRTP using Pre-Shared Keys (PSK). SRTP-PSK provided a method to encrypt RTP media using a standards based protocol but with a proprietary variant of the key exchange mechanism. It uses a pre-shared secret embedded in the Nortel IP Phones to generate and exchange encryption parameters. The SRTP-PSK feature uses RTP packets with Payload Type ID of 96 to exchange the encryption parameters. It has been discovered that the use of Payload Type ID of 96 sometimes causes interaction issues with other protocols, for example the transmission of DTMF tones.

Therefore, with UNISim firmware release 3.2, the phones have introduced the ability to select a different Payload Type ID for the exchange the encryption parameters. The choice of Payload Type ID is restricted to three choices: 96, 115 and 120. By default the value 96 is used.

A new parameter has been added to the Info Block to allow the Payload Type ID to be auto-provisioned. The new Info-Block parameter is provided in the table below. Please refer to Appendix B for the complete list of parameters supported within the Info block.

srtpid	96 115 120	Payload type ID
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A new SRTP Payload Type ID check box has also added to the “11. Stickiness” auto provision group of the auto-provisioning menu. When this item is checked, the user cannot set the SRTP Payload Type ID setting manually on the Configuration page (the corresponding item is skipped when stepping through the configuration choices on phones with text display and disabled (greyed-out) for phones with graphic display).



The new SRTP PSK Payload ID auto-provisioning menu check box for text-display phones is as follows:

```
Uncheck =Man
SRTP PSK Payload ID✓
Man Cfg AllAut Cancel
```

The new SRTP PSK Payload ID auto-provisioning menu for graphic-display phones is as follows:

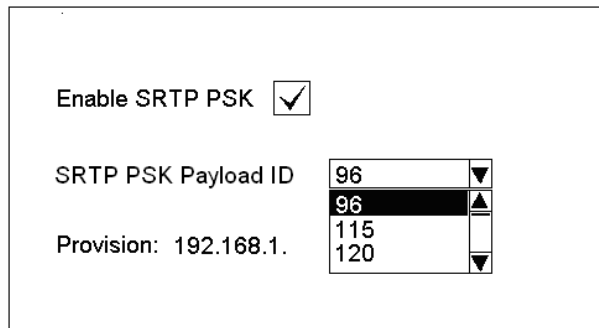
```
11. Stickness 
    Cached IP 
    Ignore GARP 
    Enable SRTP PSK 
    SRTP PSK Payload ID 
12. Provision Server 
```

In addition, a new SRTP PSK Payload ID option has been added to the Network Configuration menu to allow configuring payload ID for the SRTP PSK feature. This option can be changed only if “Enable SRTP PSK” option is enabled.

The new SRTP PSK Payload ID configuration menu for text-display phones is as follows:

```
Manual Cfg
PayID[0-96,1-115,2-120]0
OK Man BkSpc Clear
```

The new SRTP PSK Payload ID configuration menu for graphic-display phones is as follows:



Enable SRTP PSK	<input checked="" type="checkbox"/>
SRTP PSK Payload ID	96
Provision: 192.168.1.	96
	115
	120

##### **5. Nortel Automatic QoS (applies to the IP Phone 2007, 1110, 1120E, 1140E, 1150E, 1210, 1220, 1230)**

Nortel Automatic QoS is a set of capabilities that dramatically simplifies configuration of Quality of Service (QoS) in a network to ensure proper prioritization and forwarding of different traffic types.

When Nortel Automatic QoS support is enabled, the Differentiated Services Code Point (DSCP) field in the IP packets of the supported devices will be automatically set by the application. Nortel Automatic QoS capability simplifies QoS provisioning by moving away from defining QoS setting by specific end point device type or specific VLAN. The automatic assignment of DSCP values will allow Nortel applications to receive the desired QoS treatment.

Please note that customers, if they wish, will still be able to select their own DSCP values as they currently can today. Nortel Automatic QoS just simplifies the provisioning and guarantees that Nortel applications receive the desired QoS treatment.

For more details on Nortel Automatic QoS, please refer to the *"Nortel Automatic QoS Technical Configuration Guide for the ERS 4500, 5000, BCM 50, 450, CS1000, CS2100 and SRG 50, NN48500-576* available on the Nortel website located at: <http://support.nortel.com>.

Nortel Automatic QoS can be enabled on the IP Phone by provisioning the feature in the Communication Server 1000 Element Manager under the IP Network tab. The Nortel Automatic QoS is available on Communication Server 1000 Element Manager release 5.5 after applying patch **MPLR26485**. The Communication Server 1000 Element Manager patch is available from Nortel Technical Support.

Nortel Automatic QoS can also be enabled on the IP Phone by provisioning the feature directly on the phone either manually via the configuration menu or via auto-provisioning.

A new parameter has been added to the Info Block to allow the Nortel Automatic QoS to be auto-provisioned. The new Info-Block parameter is provided in the table below. Please refer to Appendix B for the complete list of parameters supported within the Info block.

ntqos	'y' yes 'n' no	Enable Nortel Automatic QoS
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A new “Nortel Automatic QoS” check box has also added to the “08. Voice 802.1Q” group of the auto-provisioning menu. When this item is checked, the user cannot set the Nortel Automatic QoS setting manually on the Configuration page (the corresponding item is skipped when stepping through the configuration choices on phones with text display and disabled (greyed-out) for phones with graphic display).

The new Nortel Automatic QoS auto-provisioning menu check box for text-display phones is as follows:

Uncheck = Man Nortel Auto QOS ✓ Man Cfg AllAut Cancel
---

The new Nortel Automatic QoS auto-provisioning menu for graphic-display phones is as follows:

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

In addition, a new Nortel Automatic QoS option has been added to the Network Configuration menu to allow manual configuring of the Nortel Automatic QoS feature.

The new Nortel Automatic QoS configuration menu for text-display phones is as follows:

```
Manual Cfg
NT AutoQOS? [0-N,1-Y]:
OK  Auto  BkSpC  Clear
```

The new Nortel Automatic QoS configuration menu for graphic-display phones is as follows:

```
Enable Nortel Auto QOS 
Control DSCP 
Media DSCP 
```

After upgrading to UNISlim Firmware release 3.2 for IP Phones, the auto provisioning for “Nortel Automatic QoS” is enabled by default. The parameter itself, however, is disabled by default and will remain disabled unless provisioned manually or automatically via the Info-Block.

If the feature is enabled (manually or via auto provisioning), the phone will use pre-defined Nortel Automatic QoS Control and Media DSCP values. The Nortel Automatic QoS Control and Media DSCP values will override any current or previously provisioned DSCP values

If the feature is disabled, the phone will use the explicit Control and Media DSCP values provisioned for the phone.

#### Feature Limitation

Please note that because of the precedence order of IP Phone provisioning, 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 Communication Server 1000 Element Manager or from the 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 Communication Server 1000 Element Manager or Info Block it will be ignored.

#### **6. Adjustments to “Cached IP” when Voice VLAN is configured as “Auto” (applies to the IP Phone 2007, 1120E, 1140E, 1150E, 1210, 1220 and 1230)**

Recall that the ability to provision “Cached IP” is provided within the IP Phones to allow phones, which has been configured to use DHCP, to remain in service in the event of a DHCP server failure (or loss of connection to the DHCP server). The use of a cached IP address, however, is not compliant to the DHCP specification. Therefore the ability to decide whether one wishes to cache the IP address or not is a configurable option. The default setting is compliant with the DHCP specification resulting in service denial until connection to the DHCP server can be re-established. Only if Cached IP is enabled will the phone be more resilient in the event of broken communication to the DHCP server.

In UNISlim firmware prior to release 3.2 the ability to provision Cached IP was not available – and was greyed out in the manual configuration menu – when the Voice VLAN was configured as Auto. Since in the past, “Auto” meant that the VLAN ID was being obtained from DHCP in a Nortel vendor option, caching the IP address had no value if the phone could not also obtain its Voice VLAN ID.

With UNISlim firmware release 3.2, the ability to configure Cached IP is now mutually exclusive to whether the Voice VLAN is configured as Auto. Since the Voice VLAN can also be obtained automatically from LLDP, the request to cache the IP address is valid. But also to ensure the phone still operated even if the Voice VLAN ID is being obtained from DHCP as well, if Cached IP is enabled, then the Voice VLAN is cached along with the IP address.

#### **7. Changes to numeric entry using USB keyboard or soft keyboard (applies to the IP Phone 2007, 1120E, 1140E and 1150E)**

In UNISlim firmware prior to release 3.2 the entering of numeric digits from either a USB keyboard or the IP Phone 2007’s soft keyboard was not intuitive.

For example, when it was required to enter numeric digits into Personal Directory entries, or Feature Key labels, the pressing of a numeric digit key on the keyboard keypad did not result in the specific digit being directly entered. Instead, the numeric digit key on the keyboard mimicked the pressing of the numeric digit key on the phone’s dialpad. The result being that the letters associated with the particular key are displayed and the key must be pressed multiple times to display the number. For example, if the key for the number 2 is pressed multiple times, the display will cycle through the following sequence of alphanumeric characters:

"a", "b", "c", "2"

With UNISlim firmware release 3.2 for IP Phones, the pressing of a numeric key on either a USB keyboard or the IP Phone 2007's soft keyboard, will result in the actual numeric digit only being displayed.

Correcting this non-intuitive behavior, in addition to upgrading to UNISlim firmware release 3.2, requires a patch to be installed on the Communication Server 1000. Patch **MPLR27155** is required on the Communication Server 1000 release 5.0 and 5.5<sup>2</sup>. The Communication Server 1000 patch is located in the Meridian PEP library at the [www.nortel.com/support](http://www.nortel.com/support) web site.

#### **8. *Calling numbers can now be dialed via the USB keyboard or soft keyboard (applies to the IP Phone 2007, 1120E, 1140E and 1150E)***

In UNISlim firmware prior to release 3.2 one could not enter a calling number from an attached USB keyboard or from the soft keyboard on the IP Phone 2007.

With UNISlim firmware release 3.2, the numeric keys on either a USB keyboard or the IP Phone 2007's soft keyboard, can be used to dial calling numbers.

To support this new functionality, in addition to upgrading to UNISlim firmware release 3.2, a patch must be installed on the Communication Server 1000. Patch **MPLR27155** is required on the Communication Server 1000 release 5.0 and 5.5<sup>2</sup>. The Communication Server 1000 patch is located in the Meridian PEP library at the [www.nortel.com/support](http://www.nortel.com/support) web site.

#### **Product Advisements**

The following is a list of advisements associated with UNISlim firmware release 3.2. Some advisements remain from previous releases of firmware, whereas other advisements reflect new or changed behavior introduced with UNISlim firmware release 3.2. Advisements that are new to UNISlim firmware release 3.2 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 3.2 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 3.2 onto the IP Phone 2007. If the IP Phone 2007 is currently running UNISlim firmware release 3.1 then one will be able to upgrade directly to UNISlim firmware release 3.2. But if the IP Phone 2007 is running any firmware prior to UNISlim firmware release 3.1, then the phone must first be upgraded to UNISlim firmware release 3.1 before subsequently upgrading to UNISlim firmware 3.2.

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<sup>2</sup> The patch is not supported on Communication Server 1000 prior to release 5.0

***NEW – 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.

***NEW – 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.

***Original display colors of the IP Phone 2007 Restored (applies to IP Phone 2007 only)***

In UNISlim firmware release 3.0 for IP Phone 2007, slight adjustments were made to the phone’s screen colors to support changes in the Nortel Application Gateway solution. With UNISlim firmware release 3.1, these color adjustments were restored to the same as they

were prior to UNISstim firmware release 3.0. A user upgrading from UNISstim firmware prior to release 3.0, directly to UNISstim firmware release 3.1 or later will not notice a change in the screen coloring. But, a user upgrading from UNISstim 3.0 to UNISstim firmware release 3.1 or later on the IP Phone 2007 will notice slight adjustments to the phone's screen colors.

***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)***<sup>3</sup>

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 Phase 1 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.

***DHCP Response String information in IP Phone's local diagnostic screen does not yet support the Nortel-i2004-B option string (applies to IP Phone 2001, 2002, 2004, 2007, 1110, 1120E, 1140E, 1150E, 1210, 1220 and 1230)***

The new Nortel specific DHCP option type ("Nortel-i2004-B") that was introduced in UNISstim firmware release 2.2 on the IP Phone 2007, 1100 series IP Phones and 1200 series IP Phones and in UNISstim firmware release 2.3 for the Phase II IP Phones (2001, 2002, and 2004). However, support for the new option type, did not include support within the local diagnostics menu. The "DHCP Response String" under the Local Diagnostics' "IP Set and DHCP Information" menu does not display information if the Nortel-i2004-B option type is received.

Of special note, although it is recommended to either remain with the existing option type of Nortel-i2004-A or move to the new option type of Nortel-i2004-B, but not both, the firmware will accept both option types. 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. But since the DHCP Response String does not yet support the Nortel-i2004-B option type, if the IP Phone receives both

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



option types it will wrongly display the Nortel-i2004-A option type even though the Nortel-i2004-B has higher priority.

***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.

***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 “vvsources” 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 be 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 3.2 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 3.2 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, 1150E)***

In association with Communication Server 1000 release 5.0, UNISTim firmware since release 2.0 delivered media stream protection using SRTP UNISTim 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 1000<sup>4</sup>. The Communication Server 1000 patch is located in the Meridian PEP library at the [www.nortel.com/support](http://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, 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 UNISTim 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, 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 4.0<sup>5</sup>. The Communication Server 1000 patch is located in the Meridian PEP library at the [www.nortel.com/support](http://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.

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<sup>4</sup> The patch is not required on Communication Server 1000 Release 5.5

<sup>5</sup> The patch is not required on Communication Server 1000 Release 5.0 and Release 5.5

***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”.

***User volume preference is retained if the IP Phone reboots (applies to IP Phone 2001, 2002, 2004, 2007, 1120E, 1140E, 1150E, 1210, 1220 and 1230)***

A problem exists with the IP Phone losing the user preference for ringer volume and audio volume if the IP Phone reboots due to a power outage. If the phone reboots the ringer volume and audio volume will be reset to their defaults. This problem exists in a Communication Server 1000 environment where the Communication Server 1000 is running release 4.5 or earlier. To correct the problem, it is recommended to upgrade the Communication Server 1000 to release 5.0 or greater.

## **Quality Improvements**

In addition to delivering the enhancements listed above, the UNISlim firmware release 3.2 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 18 customer cases have been closed in UNISlim 3.2.

UNISlim firmware release 3.2 for IP Phones close the following cases:

<b>Case #</b>	<b>Title</b>
080416-36952 081118-15560	Enable Cached IP when Auto VLAN via DHCP
080923-68911	IP Phone to request new DHCP address if unable to connect to S1 or S2 for a long period of time
081127-23155 081208-30187 081210-32395 090119-56100 090120-57403 090122-59304 090123-60006 090128-63144	Call alerting is heard through headset
081030-00039 080407-29068	Ability to auto-provision VLAN source
080702-01732	Allow asterisk to be used to input dot for IP address provisioning
080723-18527	Attenuate ring on incoming 2 <sup>nd</sup> call
081103-02323	Issue with key labels on GEM when language is other than English
081205-29441	Issue to auto-negotiating GigE on PC port
090128-63122	ATA sometime misses digits of dialed quickly

## **IP Phone Compatibility**

UNiStim firmware release 3.1 for IP Phones is compatible with the following IP Phones:

PEC	Description	Firmware file
NTDU90xxxxxx	IP Phone 2001	0604DCJ.bin
NTDU91xxxxxx	IP Phone 2002	0604DCJ.bin
NTDU92xxxxxx	IP Phone 2004	0604DCJ.bin
NTDU96xxxxxx	IP Phone 2007	0621C6M.bin
NTYS02xxxxxx	IP Phone 1110	0623C6N.bin
NTYS03xxxxxx	IP Phone 1120E	0624C6N.bin
NTYS05xxxxxx	IP Phone 1140E	0625C6N.bin
NTYS06xxxxxx	IP Phone 1150E	0627C6N.bin
NTYS18xxxxxx	IP Phone 1210	062AC6N.bin
NTYS19xxxxxx	IP Phone 1220	062AC6N.bin
NTYS20xxxxxx	IP Phone 1230	062AC6N.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, SRG 50 release 3.0 BCM 50 release 3.0 and BCM 450 release 1.0

Call Server	Notes / Advisements
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.



<p>SRG 50 3.0</p>	<p><i>Nortel recommends an upgrade to these firmware releases at the earliest opportunity.</i></p> <p>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. SRG50 3.0 supports the following set types: IP Phone 2000 Series, IP Phone 1110, 1120E and 1140E and corresponding Key Expansion Modules (KEMs). Note that KEMs are only supported in normal mode.</p> <p>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 <a href="http://www.nortel.com/support">www.nortel.com/support</a> web site.</p> <p>The IP Phone 1150E is not officially supported on SRG50 3.0 and is therefore supported in normal mode only</p>
<p>SRG 50 2.0</p>	<p><i>Nortel recommends an upgrade to these firmware releases at the earliest opportunity.</i></p> <p>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. SRG50 2.0 officially extends support for the following set types: IP Phone 2000 Series Key Expansion Module (KEM)* (in Normal Mode only), IP Phone 1120E, and IP Phone 1140E.</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 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 <a href="http://www.nortel.com/support">www.nortel.com/support</a> web site.</p> <p>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. SRG 200/400 1.5 officially extends support for the following set types: IP Phone 2000 Series Key Expansion Module (KEM)* (in Normal Mode only), IP Phone 1120E, and IP Phone 1140E.</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 <a href="http://www.nortel.com/support">www.nortel.com/support</a> 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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BCM 200/400 4.0	<p><i>Upgrading of the set firmware is dependent upon a BCM system patch that includes the set firmware.</i></p> <p>Although UNISTim firmware release 3.2 for IP Phones is GA quality, at the time of this writing, the extent of BCM support is being confirmed.</p> <p>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><i>Upgrading of the set firmware is dependent upon a BCM system patch that includes the set firmware.</i></p> <p>Although UNISTim firmware release 3.2 for IP Phones is GA quality, at the time of this writing, the extent of BCM support is being confirmed.</p> <p>The IP Phone 1150E is not supported on BCM 50 3.0.</p>
BCM450 1.0	<p><i>Upgrading of the set firmware is dependent upon a BCM system patch that includes the set firmware.</i></p> <p>Although UNISTim firmware release 3.2 for IP Phones is GA quality, at the time of this writing, the extent of BCM support is being confirmed.</p> <p>The IP Phone 1150E is not supported on BCM 450 1.0.</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 <b>P-2008-0005-Global</b>.</p> <p>The IP Phone 1150E does not support either the XAS (text-based) or GXAS (Graphical) External Application Servers thus it is not supported by the AG2000.</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 Method (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 more information on TFTP and UFTP firmware upgrade processes, please refer to the IP Phones Fundamentals NTP NN43001-368.

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

For information on firmware upgrade processes for the SRG200/400, please refer to the Main Office Configuration Guide for SRG200/400 RIs1.5, NTP 553-3001-207

For information on firmware upgrade processes 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 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](http://www.nortel.com/support) web site.

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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.<sup>6</sup> 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).

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<sup>6</sup> 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](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.

<b>Parameter</b>	<b>Value</b>	<b>Description</b>
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 0 to 4095	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 URL
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

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

Note [2]: Warning – provisioning this parameter via TFTP (and/or DHCP) means that secure information is transferred in clear text

## **Appendix C: Provisioning the IP Phone with an Info Block via TFTP (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 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 pk2 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
s1ip=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 1150E<sup>7</sup>, 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.

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<sup>7</sup> 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 reclassified<sup>8</sup> 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 following<sup>9</sup>:

```
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;dvip=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

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<sup>8</sup> 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.

<sup>9</sup> 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
- 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). 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:**   
    **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 PSK SRTP:**   
    **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 3<sup>rd</sup> 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:** [

**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 PSK SRTP:**

**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 3<sup>rd</sup> 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**  
**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**  
**PSK SRTP? [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 3<sup>rd</sup> 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**