

Addendum

Tenor Commands for Nortel Interoperability

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Introduction

The commands described in this addendum were added to allow Quintum to interoperate with Nortel devices. In general, when using a Tenor to interoperate with a Nortel device, the default settings should be as follows:

```
iptg/inbandtone           = no(0)
h323gw/progindalert      = no(0)
h323gw/earlyh245        = yes(1)
h323gw/starth245flag    = yes(1)
h323gw/usepartynum      = no(0)
```

If a Tenor is to be used to register with a Nortel Gatekeeper, the following parameters also need to be set:

```
h323gw/primaryautodisc  = false(0)
h323gw/registerdn       = register as E.164 IDs(2)
h323gw/ignorebw         = yes(1)
h323gw/h323id           = <some string here>
```

Changes to these defaults will depend on how the Nortel device is configured.

IP Trunk Group

inbandtone

Command config→iptg→inbandtone

Description The *inbandtone* command alters how Tenor responds to incoming VoIP calls.

Default no(0)

Arguments If inbandtone = no(0):

- Tenor responds to inbound Setup with CallProc and Alerting messages.
- There is no Fast Start in these msgs.
- There is no Progress Indication IE in the Alerting msg.
- The Progress msg is not sent (this is not needed as without ProgIndIE it is an empty msg).
- Tenor does not provide inband ringback.
- When the user answers, a Connect msg is sent with Fast Start.

If inbandtone = yes(1):

- Tenor responds to inbound Setup with CallProc, Progress and Alerting messages.
- All of these msgs include Fast Start.
- Progress and Alerting include Progress Indication IE.
- After Alerting is sent, Tenor sends Facility msg with startH245.
- Tenor provides inband ringback.

When user answers, a Connect msg is sent without Fast Start.

H323 Gateway

progindalert

- Command** config→h323gw→progindalert
- Description** The *progindalert* command adds a Progress Indication IE to the Alerting message.
- Default** no(0)
- Arguments** If set for yes(1): Alerting returned by the Tenor has a Progress Indication IE with Progress Description = 1 (call is not end-to-end ISDN; further call progress information may be available in-band).

earlyh245

- Command** config→h323gw→earlyh245
- Description** For inbound VoIP calls where FastStart=true and H245 Tunneling=false, the *earlyh245* command determines when a Facility message with startH245 is sent (before or after the Connect message).
- Default** no(0)
- Arguments** If set for no(0): The Facility with startH245 is sent after the Connect message.
If set for yes(1): The Facility with startH245 is sent after the Alerting message, but before the Connect.

starth245flag

- Command** config→h323gw→starth245flag
- Description** The *starth245flag* command determines how a startH245 collision is resolved. The H323 spec states in Section 8.2.3:
*“In the event that both endpoints simultaneously initiate the separate H.245 connection, the endpoint with the numerically smaller **h245Address** shall close the TCP connection it opened and use the connection opened by the other endpoint.”*
- Default** yes(1)
- Arguments** If set for no(0): If it has the smaller H245 address, the Tenor violates the H323 spec and keeps its TCP connection open.
If set for yes(1): The Tenor adheres to the spec as written above.

usepartynumber

For a more detailed description of this feature, see the topic [Party Number](#).

Command config→h323gw→usepartynumber

Description The *usepartynumber* command allows the Tenor to use the PartyNumber rather than E.164 or H323-ID for the AliasAddress in either the ARQ, Setup, or both.

Default no(0)

Arguments If set for no(0):

- The command is disabled, Tenor will use E.164 or H323-ID for AliasAddress elements in ARQ and/or Setup.

Note: The Tenor must be configured with an H323-ID in order to interoperate with a Nortel Gatekeeper.

The feature is enabled for settings other than 0; their meanings are as follows:

- **1**, PartyNumber is used in Setup only.
- **2**, PartyNumber is used in ARQ only.
- **3**, PartyNumber is used in both ARQ and Setup.

primaryautodisc

Command config→h323gw→primaryautodisc

Description Dictates whether the Tenor will go through an Auto-Discovery process in registering with the External Gatekeeper that is listed in **primarygkadd**.

Default 0 (Off)

Arguments 0 (Off): Tenor goes through registration process, but not auto-discovery process. <RRQ & RCF>

1 (On): Tenor goes through an additional Registration and Acknowledgement step to Auto-Discover the External Gatekeeper. <GRQ, GCF, RRQ & RCF>

registerdn

- Command** config→h323gw→registerdn
- Description** For interoperability purposes, it is sometimes necessary to **not** register DN's with an external or non-Quintum Gatekeeper.
- Default** 2 (register as E.164 IDs)
- Arguments** 0 (Off): This Tenor does not register DNs with external or non-Quintum Gatekeepers.
 1 (register as GW prefixes): This Tenor registers DNs with external or non-Quintum Gatekeepers using the GW prefix structure in the Registration Request (RRQ) message.
 2 (register as E.164 IDs): This Tenor registers DNs with external or non-Quintum Gatekeepers using E.164 IDs in the Terminal Alias structure of the Registration Request (RRQ) message.

ignorebw

- Command** config→h323gw→ignorebw
- Description** For interoperability purposes, it is sometimes necessary for the Tenor to ignore bandwidth requests & responses with external or non-Quintum Gatekeepers in order to complete calls.
- Default** 1 (Yes)
- Arguments** 0 (No): This Tenor pays attention to bandwidth requests and responses with external or non-Quintum Gatekeepers.
 1 (Yes): This Tenor ignores bandwidth requests and responses with external or non-Quintum Gatekeepers.

Party Number

PartyNumber is one of many ways to represent DNs (AliasAddresses) in H.323. The PartyNumber choice of the AliasAddress structure supports the following Numbering Plans:

- Public (1)
- Data (2)
- Telex (3)
- Private (4)
- National Standard (5)

The Data, Telex and National Standard are all E.164 strings. The Public and Private plans contain further information: both an E.164 string and a Type of Number.

These are broken down in the table below.

Numbering Plan	Type of Number
Public	unknown (1) internationalNumber (2) nationalNumber (3) networkSpecificNumber (4) subscriberNumber (5) abbreviatedNumber (6)
Private	unknown (1) level2RegionalNumber (2) level1RegionalNumber (3) pISNSpecificNumber (4) localNumber (5) abbreviatedNumber (6)

The PartyNumber structure in the Tenor ARQ/Setup is used for both CALLED and CALLING numbers. For outgoing messages, the CLI settings described in the [usepartynumber](#) topic deal with ARQ and/or Setup sent out from the Tenor Gateway.

For incoming messages, the Tenor Gatekeeper behaves as follows:

- On an incoming Setup, checks for PartyNum as well as E.164, but sets the AliasAddr string in both cases.
- For incoming ARQs, parses them to see if they contain E.164 or PartyNumber. If it is PartyNumber, the Tenor routes accordingly. Quintum supports only Public and Private PartyNumbers; any other type received is routed as if it were Public.

Numbering Plans

Currently, the Tenor Gateway has Q.931 Numbering Plans defined for Unknown (0), Public (1), Data (3), and Private (9), per the Q.931 spec. Quintum supports *only* the Public, Data, and Private numbering plans, as the PartyNumber does not define an “Unknown.” If an “Unknown” or some undefined numbering plan code is received, the ARQ/Setup will be populated with a default of **Public**.

Q.931 Numbering Plan	PartyNumber Numbering Plan
Unknown	Public
Public	Public
Data	Data
Private	Private

Type of Number

The Tenor Gateway supports the following Number Types: Unknown (0), International (1), National (2), and Local (4), all taken from Q.931 spec. The Public and Private numbering plans in PartyNumber each support a list of Number Types (see table above).

The table below shows how Public and Private PartyNumbers will have their Type of Number set based on what Q.931 Number Type is received (this is for ARQ/Setup).

Number Type	PublicTypeOfNumber	PrivateTypeOfNumber
Unknown	Unknown	Unknown
International	International	Unknown
National	National	Unknown
Local	Subscriber	Local
Any other value	Unknown	Unknown

Optional Features

The following features are not specifically required for Nortel Interoperability. However, using them may make the process easier.

Quality of Service (QoS)

qos

Command	config→dsp→qos <type> <hex value>
Description	The Quintum Tenor will support either TOS or DiffServ for QoS. The default value of the DiffServ supported QoS is the Nortel default DiffServ value for "Expedited Forwarding" (0xB8). It can also be set to any other value desired.
Default	QOS = TOS(0) value(0xb0) (Critical Precedence/ Minimum delay)
Arguments	type – Quintum-defined flag indicating how QoS field is used TOS (0) DiffServ (1) Value range (0 – 0xfc) – QoS settings, if type is TOS (0) bits 7-2 indicate Precedence and DTR bits. If type is DiffServ(1) bits 7-2 indicate Diffserv Code Point (DSCP).

User Programmable DialPlan (UPDP)

The user-programmable dial plan allows the service provider to customize the way the Tenor reads and sends the sequence of digits input by the user. When UPDP is used, it overrides the default dial plan settings configured under config→system.

In general, the dial plan defines which sequences of digits will be recognized by the Tenor as valid dial strings, suitable to send through the network (e.g., 555-1212, 1-408-555-1212, 011 46 8 1234 1234). You can program a dial plan with easy rules without fully understanding the selection algorithm.

To use UPDP, set the following Config changes:

```

config→system→country           = 0
config→system→countrycode       = <blank>
config→system→areacode           = <blank>
config→system→us10digitlocaldia = no(0)
config→system→intercom           = no(0)
config→system→private            = no(0)
config→dialplan→updp             = yes(1)

```

You can program various different dial plans as required. Commands and brief descriptions are listed on the following pages. For the full CLI Guide, go to the Quintum Customer Service website: <http://www.quintum.com/main/service.php3>.

updp

Command	config→dialplan→udp
Description	<p>This command is used to enable or disable the User Programmable Dial Plan (UPDP) feature. This allows the Tenor to identify a completely customizable set of digit sequences as Local, National, International or Private numbers.</p> <p>Once the dial plan is established on one Tenor, it may be archived by FTP and uploaded by FTP to any other Analog or Digital Tenor. The file location for this is "dialplan.sys". Follow the directions detailed in Section 9, Chapter 1 of your Training Guide: "How to Archive & Restore Firmware." Instead of "put c:\sys.bin...", it will be "put c:\dialplan.sys..."</p>
Cmd Type	command
Prompt Level	config dialplan#
Syntax	updp {0 1}
Arguments	<p>0 UPDP is disabled and the values in the <i>config sys#</i> prompt are in effect.</p> <p>1 UPDP is enabled.</p>
Default	0 UPDP
Availability	Digital and Analog Tenors with Software Release P4-2-15 and higher
Examples	<p>config dialplan# updp 1</p> <p>Enables the UPDP feature of Tenor.</p>
Related Commands	adddp, deldp, disdp

adddp

Command	config→dialplan→adddp
Description	<p>Once updp is enabled (1), you may start adding dialing patterns, so that the Tenor can identify the sequences of digits, and treat them accordingly. The types of DN sequences are: International, Long Distance (National), Carrier Selection Prefixes, Local, Special Service, Supplementary Service and Private.</p> <p>Once the dial plan is established on one Tenor, it may be archived by FTP and uploaded by FTP to any other Analog or Digital Tenor. The file location for this is "dialplan.sys". Follow the directions detailed in Section 9, Chapter 1 of your Training Guide "How to Archive & Restore Firmware". Instead of "put c:\sys.bin...", it will be "put c:\dialplan.sys..."</p>
Cmd Type	command
Prompt Level	config dialplan#

Syntax	adddp <i>{[dptype] [pattern] {min_digit} {max_digit} {nPrefix]}</i>
Arguments	<p>dptype Required parameter. A single digit from 1-7 may be used as a value. Values are defined as follows:</p> <ol style="list-style-type: none"> 1 (International): Designates an international dial plan. 2 (Long Distance): Designates that the dial plan is supported within the domestic long distance calling area, but not international. 3 (Carrier Selection). Designates a carrier (e.g., Verizon); used mostly for connecting to the VoIP service provider (this can be a service selection code as well). Code provided by Central Office. 4 (Local). Designates a dial plan supported in the local calling area. 5 (Special Service). Designates Special Service, other than international, long distance, local, carrier selection. Examples would be 911 and 411 calls. Code provided by Central Office. 6 (Supplementary Services): Designates Supplementary services, such as call waiting, call forwarding, call transfer, call forwarding, 3 way call, conference call etc.; all supplementary services have individual “codes” provided by the Central Office. You can start any of these services by entering dptype 6 followed by the activation or termination code. An activation code will turn on the service. For example, type <i>*xx#</i>, where <i>xx</i> indicates the number that corresponds to the service. To terminate a service, for example, type <i>#xx#</i> where <i>xx</i> indicates the number that corresponds to the service. For example, to turn on call waiting, type <i>dptype 6 *31#</i>. 7 (Private Dial Plan): If UPDP is selected and a private number is activated, UPDP becomes the dial plan used for the Tenor. To activate a private number using UPDP, ensure the “private” option (via <i>config sys#</i>) is enabled (1), the private DN is defined (<i>config pbxtg1# huntprvldn</i>), and the updp option is enabled (1). <p>Pattern Required parameter. Used to define a dial plan format, such as E.164 prefix (long distance, local, international, etc.), PBX extension number, special code, etc. Maximum of 9 digits. Valid entry 0-9, and ‘~’ (indicates a range, for example, 192~9 means: 192, 193, 194, 195, 196, 197, 198, 199). In addition, you can use “x” (wildcard placeholder), where <i>x</i> indicates any number 0-9, to indicate a group of numbers. For example, if you enter <i>1xx</i>, any three-digit dial plans beginning with 1 will be used, such as 100, 101, etc., or 111, 112, etc.</p> <p>Min_digit Optional parameter. Defines a minimum number of digits to receive; once this limit is met, the string can be sent. If you select less than the minimum and the interdigit timer (via <i>config sys#</i>) expires, a fast busy tone will be heard. If pattern length is same as <i>min_digit</i>, this field is not required. <i>Min_digit</i> must be equal to pattern length. You can use “x”, where <i>x</i> indicates any number 0-9, to indicate a length of numbers. For example, if you set the min digit to 3, you can enter <i>1xx</i>, and any three digit dial strings beginning with 1 will be used, such as 100, 101, 102, etc. or 111, 112, 113, etc.</p>

max_digit Optional parameter. Defines a maximum number of digits to receive. If max_digit is same as min_digit, this field is not required. Max_digit must be larger than min_digit. Once this digit is met, the Tenor will stop receiving characters immediately and send the string. You can use "x", where x indicates any number 0-9, to indicate a length of numbers. For example, if you set the max digit to 7, you can enter 127xxx and any seven digit dial strings beginning with 127 will be used, such as 1274444, 1275555, 1276666, etc.

nPrefix Defines a number of prefix digits to delete. If this field is not set, it is set to the default value as follows:

- pattern length (international)
- 1 (long distance)
- 0 (local)
- 0 (special service)
- pattern length (carrier selection)

The default value covers most cases except for some international dial plans.

For example, the international dial plan in China is 001-009. If the PSTN requests the last digit (1-9) to select a service provider, the prefix number is 2. Otherwise, prefix number is 3, which means three digits will be deleted.

Default Null

Availability Release P4-2-15 and higher of both the Digital and Analog Tenors.

Sample Dialplan and Display **adddp 4 2~9 7**
Local number, 2-9 dial plan format, 7 digit minimum number. This means that all local numbers will be 7 digits maximum and will begin with any digit 2-9.

adddp 2 12~9 11
Long distance number, 12-9 dial plan format, 11 digits minimum & maximum. This means that all long distance numbers will be 11 digits long, and must begin with the digit 1, followed by any digit 2 through 9 as the second digit.

adddp 1 0112~9 10 18 3
International Number, 0112-9 dial plan format, 10 digit minimum number, 18 digit maximum number, 3 prefix digits will be deleted. This means that all international numbers will be no less than 10 digits and no more than 18, must always begin with 011, followed by a digit 2-9 as the 4th digit and the first 3 digits (011) are to be deleted to meet the E.164 format.

Dialplan table:

index	Pattern	DpType	min	max	nprefix
1:	2~9	Local	7	7	ff
2:	12~9	Nation	11	11	ff
3:	0112~9	Inter	10	18	3

Related Commands updp, deldp

deldp

Command	config→dialplan→deldp
Description	Used to delete dialing patterns.
Cmd Type	command
Prompt Level	config dialplan#
Syntax	deldp [<i>index</i>]
Arguments	<i>index</i> index number of the pattern to delete * delete all
Default	Null
Availability	Release P4-2-15 and higher of both the Digital and Analog Tenors.
Example	deldp * Deletes all previously defined dialing patterns.
Related Commands	updp, adddp