



## Configuration Guide

# International Configuration Guide NetVanta 7000 Series

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This configuration guide provides international configuration support for ADTRAN Operating System (AOS) NetVanta 7000 Series products. It describes how to configure the system country, the system clock time zone, the Simple Network Time Protocol (SNTP) server, analog voice trunk disconnect supervision, call progress tones for local blind transfers, the dial plan, accept and reject numbers, trunk access codes (TACs), and E1 interfaces using both the AOS command line interface (CLI) and Web-based graphical user interface (GUI).

This guide consists of the following sections:

- *International Configuration Overview on page 2*
- *Hardware and Software Requirements and Limitations on page 2*
- *Configuration Overview on page 2*
- *International Configuration Using the CLI on page 3*
- *International Configuration Using the GUI on page 16*
- *Additional Resources on page 47*

## International Configuration Overview

By default, NetVanta voice products comply with United States standards; however, NetVanta 7000 Series products running AOS firmware versions A4.05 and later can readily be adapted to comply with other country standards. Multiple system settings can be configured simultaneously by changing the system country. These settings include the coder-decoder (CODEC) companding type, foreign exchange station (FXS) ringing frequency and cadence, default FXS/FXO impedance, and the default CODEC country. Changing the system country also affects other system settings, such as the default local emergency numbers and the default language for the voice prompts and the system email. Additionally, the system clock time zone, SNTP server, dial plan, and accept and reject numbers can be manually configured to match the conventions of the country in which the unit is operating. Analog voice trunks can also be adapted for auto attendant, modem, and fax applications in countries where a busy tone is used to indicate that a call has ended. In these countries, disconnect supervision for busy tone can be configured on analog voice trunks to monitor foreign exchange office (FXO) ports connected to the trunk. This ensures that calls are not connected indefinitely in auto attendant, modem, and fax applications. The trunk access code (TAC), the digit entered before a dial string to signify that an external number is being dialed, can be changed from the default **9** or removed altogether if it is preferable to access an outside line by dialing a different digit or no extra digit at all.

## Hardware and Software Requirements and Limitations

When using disconnect supervision for busy tone, the busy tone is detected within  $\pm 10$  percent of the specified frequency and cadence. Disconnect supervision is only available for loop start and ground start analog trunks.

NetVanta 7000 Series products cannot be configured to generate tones of one country type and detect tones of a different country type.

International call progress tones for blind transfers is only supported on NetVanta 7000 Series products running AOS firmware versions R10.3.0 and later. NetVanta 7000 Series products use a digital signal process (DSP) by default to generate ringback tones based on the system country setting during blind transfers over a SIP trunk when operating in local transfer mode. The DSP is only able to provide ringback tones and does not generate a busy tone on SIP to SIP calls.

The TAC configuration method described in this document is only supported in AOS version R10.8.0 or later.

## Configuration Overview

While many international features can be configured using the GUI, some features, including the startup configuration, the system country, disconnect supervision for busy tone, always-permitted dial plan patterns, and named digit timeouts, can only be configured using the CLI. The following sections will first present CLI-based instructions for configuring the features that must be configured using the CLI, then will provide GUI-based instructions for configuring the features that can be configured using the GUI.

## International Configuration Using the CLI

The following sections provide configuration instructions for international features that can only be configured using the CLI. For instructions on configuring international features using the GUI, refer to *International Configuration Using the GUI on page 16*.

### Accessing the CLI

To access the CLI on your AOS unit, follow these steps:

1. Boot up the unit.
2. Telnet to the unit (**telnet** <ip address>). For example:

**telnet 10.10.10.1.**



*If during the unit's setup process you have changed the default Internet Protocol (IP) address (10.10.10.1), use the configured IP address.*

3. Enter your user name and password at the prompt.



*The AOS default user name is **admin** and the default password is **password**. If your product no longer has the default user name and password, contact your system administrator for the appropriate user name and password.*

4. Enter the Enable mode by entering **enable** at the prompt as follows:

**>enable**

5. Enter your Enable mode password at the prompt.



*The default Enable mode password is **password**. If your product no longer has the default Enable password, contact your system administrator for the appropriate password.*

6. Enter the unit's Global Configuration mode as follows:

**#configure terminal**

(config)#

## Configuring the System Country Using the CLI

To configure the NetVanta 7000 Series products for operation in a specific country, changes are made to the system country setting. Once the system country is set, several default settings will automatically change to match the standards of the specified country. These settings include the CODEC companding type, FXS ringing frequency and cadence, default FXS/FXO impedance, and the default CODEC country. Changing the system country also affects other system settings, such as the default local emergency numbers and the default language for the voice prompts and the system email.

The system country setting is not stored as part of the running configuration or the startup configuration; therefore, erasing the startup configuration will not change the system country. Also, if a particular feature or configuration option is configured to something other than the default, changing the system country will have no effect on that feature or option.

The following tables show some of the FXO and FXS parameters and other system parameters affected by the system country setting. *Table 1 below* includes a comprehensive list of features affected by the system country and CODEC country settings. Because changing the system country also changes the default CODEC country (if the CODEC country has not been previously changed), setting the system country affects all features in both the **System Country** and **CODEC Country** columns. *Table 2 on page 5* shows the default settings of several parameters affected by the system country setting. The defaults for other parameters affected by the system country setting are outlined in tables in subsequent sections. *Table 3 on page 5* lists general system parameters that are affected by the system country setting. *Table 4 on page 6* lists the emergency numbers that are affected by the system country setting.

**Table 1. Features Affected by System Country and CODEC Country Settings**

System Country	CODEC Country
PRI Compatibility (T1 or E1)	Dial Tone
Default Voice Prompt Language	Busy Tone
Default System Email Language	Fast Busy Tone
Default CODEC Country	Ringing Parameters
Default CODEC Companding Type	SAS Tone
Default Caller ID Type	CAS Tone
Default FXO/FXS Impedance	Test Tone
Release Tone Detection	Stutter Dial Tone
Dial Tone Detection	Confirmation Tone
FXS Ring Frequency	Howler Tone
Default Country Code	Call Waiting Tone
Default International Dialing Prefix	Ring Cadence
Maximum Frequency-Shift Keying (FSK) Based Caller ID Name Length	
Emergency Numbers List	

**Table 2. Default Parameters**

System Country	CODEC Country	CODEC Companding	Country Code	International Dialing Prefix	Impedance	PRI Compatibility
Australia	Australia	A-law	61	0011	Z1 (Rs 220 $\Omega$ , Rp 820 $\Omega$ , Cp 115 nF)	E1
Belgium	Belgium	A-law	32	00	600 $\Omega$ real	E1
Canada	Canada	$\mu$ -law	1	011	600 $\Omega$ complex	T1
ETSI	ETSI	A-law	N/A	N/A	Z2 (Rs 270 $\Omega$ , Rp 750 $\Omega$ , Cp 150 nF)	E1
Ireland	Ireland	A-law	353	00	Z2 (Rs 270 $\Omega$ , Rp 750 $\Omega$ , Cp 150 nF)	E1
Mexico	Mexico	A-law	52	00	Z1 (Rs 220 $\Omega$ , Rp 820 $\Omega$ , Cp 115 nF)	E1
Puerto_Rico	Puerto_Rico	$\mu$ -law	1	011	600 $\Omega$ complex	T1
United_Arab_Emirates	United_Arab_Emirates	A-law	971	00	600 $\Omega$ real	E1
United_Kingdom	United_Kingdom	A-law	44	00	Z4 (Rs 320 $\Omega$ , Rp 1050 $\Omega$ , Cp 230 nF)	E1
United_States	United_States	$\mu$ -law	1	011	600 $\Omega$ complex	T1

**Table 3. General System Parameters**

System Country	Default GUI Language	Default Voice Prompt Language*	Default Email Language
Australia	English	English	English
Belgium	English	English	English
Canada	English	English	English
ETSI	English	English	English

**Table 3. General System Parameters**

System Country	Default GUI Language	Default Voice Prompt Language*	Default Email Language
Ireland	English	Irish	English
Mexico	English	Spanish	Spanish
Puerto_Rico	English	Spanish	Spanish
United_Arab_Emirates	English	English	English
United_Kingdom	English	UKEnglish	English
United_States	English	English	English

\* The default voice prompt language affects the voice prompts for voicemail, FindMe-FollowMe, auto attendants, and call queuing.

**Table 4. Emergency Service Numbers**

Country	Police	Medical	Fire
Australia	000	000	000
Belgium	112	112	112
Canada	911	911	911
ETSI	112 (European Union)	112 (European Union)	112 (European Union)
Ireland	112 or 999	112 or 999	112 or 999
Mexico	066, 060, 080	065	068
Puerto Rico	911	911	911
United Arab Emirates	112 or 999	998 or 999	997
United Kingdom	112 or 999	112 or 999	112 or 999
United States	911	911	911



*To minimize dialing errors in emergency situations, the emergency numbers lists for the NetVanta 7000 Series products also contain a version of the emergency number with a TAC added at the beginning (for example, 9911 is also contained in the emergency numbers list for the **United\_States**, **Canada**, and **Puerto\_Rico** system countries). Consequently, users can dial the emergency number alone or precede the emergency number with a TAC, and the call will be considered an emergency call.*

Use the **voice system-country** command from the Global Configuration mode to configure the system country for your unit. To configure your unit's system country, follow these steps:

1. From the Global Configuration mode prompt, enter the following:

```
(config)#voice system-country <country>
```

The `<country>` keyword specifies the default settings for several parameters. To view a full list of the countries supported, enter the command followed by a question mark. For example:

```
(config)#voice system-country ?
```

2. After entering the `voice system-country` command, you will be prompted with the following:

WARNING! Any unsaved configuration will be lost.

Save system-country setting and continue with reboot? [y/n]

Enter **y** to save the system country settings and continue with the system reboot. Enter **n** to abort the operation and return to the Global Configuration mode prompt.

The following example configures the default settings for Australian compliance:

```
>enable
#configure terminal
(config)#voice system-country Australia
```

## Configuring the Ring Frequency Using the CLI

In most circumstances, setting the system country will automatically configure the appropriate default FXS port ring frequency for the specified country. However, the FXS port ring frequency can be manually changed from the default system country setting if necessary. The table below shows the default ring frequencies for supported system countries:

**Table 5. Default Ring Frequencies**

System Country	Default Ring Frequency (Hz)
Australia	25
Belgium	25
Canada	20
ETSI	25
Ireland	25
Mexico	25
Puerto Rico	20
United_Arab_Emirates	25
United_Kingdom	25
United_States	20

Use the `ring-frequency` command to change the ring frequency of a single FXS port from the default system country value. From the FXS interface configuration mode, enter the command as follows:

```
(config-fxs slot/port)#ring-frequency <value>
```

The `<value>` variable specifies the FXS port ring frequency. Valid values are **20**, **25**, and **50** Hz

The following example configures the ring frequency for FXS port 2/1 as **25** Hz.

```
(config)#interface fxs 2/1
(config-fxs 2/1)#ring-frequency 25
```

Use the **ring-frequency** command to change the ring frequency of a range of FXS ports from the default system country value. From the FXS interface range configuration mode, enter the command as follows:

```
(config-fxs slot/port-port)#ring-frequency <value>
```

The *<value>* variable specifies the FXS port ring frequency. Valid values are **20**, **25**, and **50** Hz

The following example configures the ring frequency for FXS ports 2/1 through 2/4 as **25** Hz.

```
(config)#interface range fxs 2/1-4
(config-fxs 2/1-4)#ring-frequency 25
```

## Configuring the Loop Disconnect Time Using the CLI

Loop disconnect time is the length of time a line must maintain a loop current feed open (LCFO) state to qualify as a valid disconnect. In most circumstances, setting the system country will automatically configure the defaults for the appropriate loop disconnect time for FXO trunks for the specified country. However, the loop disconnect time for loop-start and ground-start FXO trunks can be manually changed from the default system country setting if necessary. The table below shows the default loop disconnect time for supported countries:

**Table 6. Default Loop Disconnect Times**

System Country	Loop Disconnect Time (ms)
Australia	500
Belgium	200
Canada	500
ETSI	200
Ireland	200
Mexico	500
Puerto Rico	500
United_Arab_Emirates	200
United_Kingdom	200
United_States	500

Use the **loop-disconnect time** command to change the time period that qualifies as a valid loop disconnection on a specified FXO trunk. From the loop start or ground start analog Voice Trunk Configuration mode, enter the command as follows:

```
(config-TRUNK)#loop-disconnect time <value>
```

The *<value>* variable specifies the loop disconnect time in milliseconds. Valid range is **50** to **1000** milliseconds.



The following example configures the loop disconnect time for loop-start FXO trunk T01 as **500** ms.

```
(config)#voice trunk t01 type analog supervision loop-start
(config-t01)#loop-disconnect time 500
```

## Configuring Dial Tone Detection Timeout Using the CLI

When an outbound call is placed from an FXO port on an AOS unit, the FXO seizes the line and waits for a dial tone. Once the unit detects a dial tone, the unit qualifies the tone for one second to determine the tone is indeed a dial tone. Depending on the network, it is possible for the time between when the FXO seizes the line and when the unit detects and qualifies the dial tone to exceed the detection timeout period (the total length of time the unit monitors the line for dial tone before moving to the next trunk or releasing the line). In this case, the dial tone detection timeout period must be lengthened in order for a call to be completed.



*The dial tone detection timeout period is configured on a per-trunk basis. The dial tone detection timeout period configured for the trunk apply to all connected FXO ports.*

Use the **dialtone timeout** *<value>* command to set the dial tone detection timeout period (in milliseconds) for dial tone detection. Use the **no** form of this command to return to the default value. By default, the dialtone detection timeout period is **2000** milliseconds for the United States, Puerto Rico, and Canada and is **4000** milliseconds for all other supported countries. From the Voice Analog Trunk Configuration mode, enter the command as follows:

```
(config-TRUNK)#dialtone timeout <value>
```

The *<value>* variable specifies the dial tone detection timeout period in milliseconds. The valid range is **1500** to **60000** milliseconds.

The following example specifies that analog loop start trunk **T01** will use a **3000** milliseconds dial tone detection timeout period:

```
>enable
#configure terminal
(config)#voice trunk t01 type analog supervision loop-start
(config-T01)#dialtone timeout 3000
```

## Configuring Call Progress Tones for Local Blind Transfers Using the CLI

AOS units with voice features can be configured to provide international call progress tones during blind transfers over a SIP trunk operating in local transfer mode. For all international call progress tones, G.711 A-Law (PCMA), G.711 mu-Law (PCMU), and G.729 audio CODECs are supported. To configure international call progress tones, you must enable the AOS unit's File Transfer Protocol (FTP) server, upload the appropriate .wav files to the unit using an FTP client, and configure the unit to use the uploaded files. International call progress tones can be downloaded from the ADTRAN website at the following link: [Download International Call Progress Tones](#).



*AOS units with voice features that have a DSP use the DSP by default to generate ringback tones based on the system country setting during blind transfers over a SIP trunk operating in local transfer mode. The DSP is only able to provide ringback tones and does not generate a disconnect tone. However, these AOS units can be configured to provide both ringback and disconnect tones using the procedure described in this section.*



*By default, AOS units with voice features that lack a DSP provide North American ringback and busy tones during blind transfers over a SIP trunk operating in local transfer mode. The required .wav files for North America are included with the AOS firmware and are automatically installed in the **Tones** directory on the unit.*

### Enabling the Unit's FTP Server

In order to transfer files to the unit using FTP you must enable the unit's FTP server. Use the **ip ftp server** command to enable the unit's FTP server. Enter the command as follows at the Global Configuration Mode command prompt:

```
(config)#ip ftp server
```

### Uploading International Tone Files Using FTP

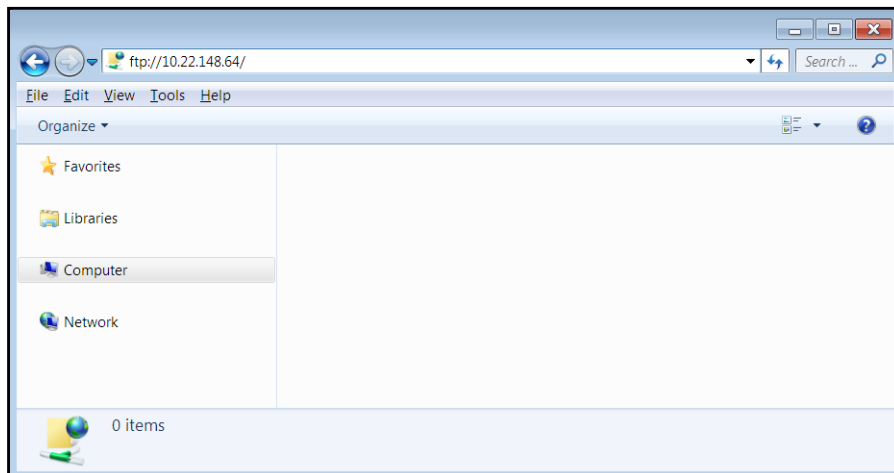
After enabling the unit's FTP server, you can download the international call progress tones to your computer and then upload them to the **Tones** directory on the unit using an FTP client. You must upload a .wav file for each progress tone you want to support. Call progress tone files have the general form *<location prefix>\_<tone type>\_<codec>.wav*, where *<location prefix>* is the country or area prefix, *<tone type>* is the type of call progress tone (**ringback** or **busy**), and *<codec>* is the CODEC type used for the tone (**PCMA**, **PCMU**, or **G729**). For example, the United Kingdom G.711 A-Law ringback tone file is named **UK\_ringback\_PCMA.wav** and the United Kingdom G.729 busy tone file is named **UK\_busy\_G729.wav**.



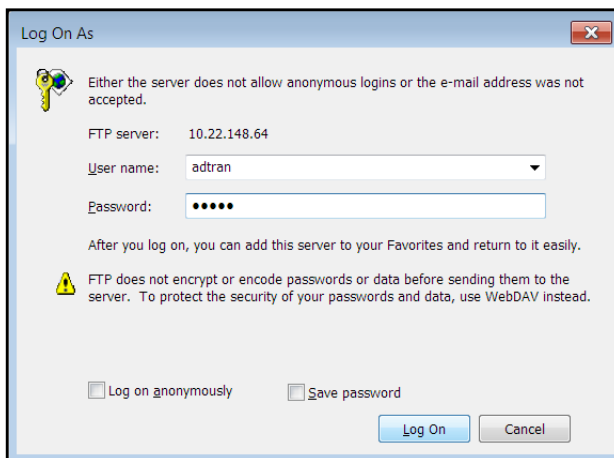
*Because the CODEC type used on a blind transfer can vary depending on the CODEC list used for the SIP trunk on which the blind transfer occurs, it is strongly recommended that you upload the .wav files for your country corresponding to each CODEC (**PCMA**, **PCMU**, and **G729**). Otherwise, the transferred caller will hear silence instead of call progress tones any time a CODEC is used for which there are no .wav files on the unit.*

To upload international call progress tone files to the unit, follow these steps:

1. Open Windows Explorer on the computer that has the downloaded call progress tone files.
2. In the Address Bar at the top of Windows Explorer, enter the FTP address of the AOS unit (for example, **ftp://10.22.148.64**) and press **Enter**. The **Log On As** window will appear.

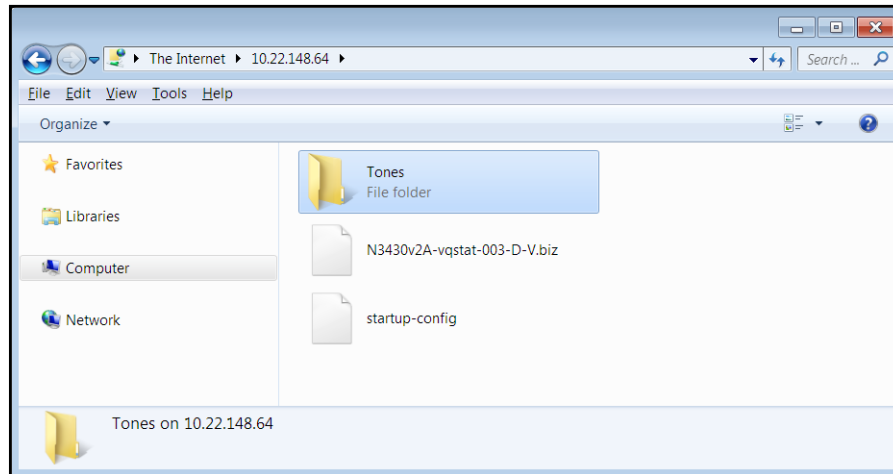


3. In the **Log On As** window, enter the **User name** and **Password** used to log in to the unit. Select **Log On** to log in to the unit.

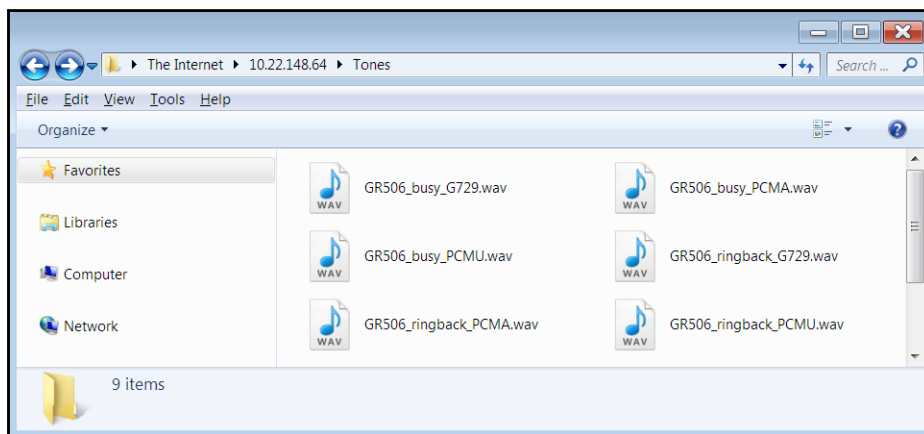


*The default user name is **admin** and the default password is **password**.*

4. Once you have logged in to the unit, open the **Tones** directory.



5. Copy the international call progress tone .wav files into the **Tones** directory.



6. Close Windows Explorer to end the FTP session. You can now specify the tone files used for blind transfers over SIP trunks on the AOS unit.

## Specifying the Tone Files to Use for SIP Blind Transfers

After transferring the desired international call progress tone .wav files to the unit using FTP, you must use the CLI to specify the tone files that the unit should use for blind transfers over SIP trunks. Use the **ip sip tone-file-prefix <flash | cflash> <location prefix>** command to specify which tone files to use. Use the **no** form of the command to return to the default setting.



*By default, AOS units with a DSP use the DSP to generate ringback tones based on the system country setting during blind transfers over SIP trunks. By default, AOS units without a DSP use the North American call progress tone .wav files to provide ringback and disconnect tones during blind transfers over SIP trunks.*

Enter the command as follows at the Global Configuration Mode command prompt:

```
(config)#ip sip tone-file-prefix <flash | cflash> <location prefix>
```

The **flash** keyword specifies that the tone file is located in the unit's internal flash memory.

The **cflash** keyword specifies that the tone file is located in the CompactFlash memory.

The *<location prefix>* variable specifies the location prefix of the tone files to be used. The table below lists the available locations and the corresponding location prefixes used for the tone files.

**Table 7. Location Prefixes**

Location	Location Prefix
Australia	AU
Belgium	BE
Canada	GR506
ETSI	ETSI
Ireland	IE
Mexico	MX
Puerto Rico	GR506
United Arab Emirates	AE
United Kingdom	UK
United States	GR506

The following example configures the unit to use tone files stored in flash memory that have the **UK** location prefix:

```
(config)#ip sip tone-file-prefix flash UK
```



*You cannot designate the exact tone files that the unit will use during blind transfer. The tone file that is played is determined by the unit based on the user-configured location prefix, the progress of the call, and the CODEC type used in the call.*

## Configuring the Dial Plan Using the CLI



*For instructions on configuring dial plans using the GUI, refer to [Configuring the Dial Plan Using the GUI](#) on page 32.*

The dial plan notifies the unit when to stop collecting the digits being dialed and begin forwarding a phone call. Programmed number patterns and types also govern the telephone numbers allowed by AOS voice products for inbound and outbound calls. Number-complete templates can be created and stored in the dial plan. The AOS unit listens for digits and looks for a match against the number-complete templates in the dial plan. As soon as the digits dialed by the user match a pattern in the dial plan, the call is routed by the

switchboard. If the digits dialed do not match any of the number-complete templates, the call is routed by the switchboard after a timeout period expires. In addition to number patterns, call types are defined in the dial plan, allowing the system to recognize dialed numbers as a particular type of call (local, long distance, toll free, etc.) for class of service purposes.

It is possible to successfully route calls through the unit without configuring any dial plan entries. However, your country may have a unique emergency numbering option or telephone numbering plan that will require configuration changes to the dial plan for proper execution of inbound and outbound calls. In AOS version R10.3.0 and later, emergency service numbers are configured automatically when the system country is specified using the **voice system-country** <country> command. Consequently, **always-permitted** entries do not need to be added to the dial plan for emergency service numbers if the appropriate system country setting is configured for your system. However, if your unit is running a previous version of AOS, an appropriate system country cannot be configured on your unit, or the emergency service numbers have been disabled using the **no voice emergency-services** command, you must configure **always-permitted** entries in the dial plan for your country's emergency service numbers in order for emergency calls to be routed properly.



*AOS units running AOS version R10.3.0 or later have no entries in the **always-permitted** group because emergency service numbers are automatically included. NetVanta 7000 Series units running an AOS versions prior to R10.3.0 have both the **911** and the **9-911** entries in the **always-permitted** group.*

For a comprehensive list of all emergency numbers added to the emergency services list when the system country is configured, refer to [Table 4 on page 6](#) in [Configuring the System Country Using the CLI on page 4](#).

Use the **voice dial-plan** command to create a dial plan entry. From the Global Configuration mode, enter the command as follows:

```
(config)#voice dial-plan <pattern ID> <group> <pattern> [default | none | <NDT name>]
```

The <pattern ID> variable specifies the identification number to assign to this dial plan. The valid range is **0** to **255**.

The <group> variable specifies the type of call the dial plan entry will represent. The available choices are: **900-number**, **always-permitted**, **extensions**, **internal-operator**, **international**, **local**, **long-distance**, **operator-assisted**, **specify-carrier**, **toll-free**, **user1**, **user2**, and **user3**.



*All **always-permitted** calls are considered emergency calls and are handled accordingly. **Always-permitted** dial plan patterns can be defined in the CLI (but not in the GUI) and will be handled exactly like an emergency call by emergency call routing.*

The <pattern> variable specifies a dialing pattern. You can enter a complete phone number, or wildcards can be used to define the dialing pattern. The available wildcards for this command are:

- 0 - 9** Match the exact digit(s) only
- X** Match any single digit 0 through 9
- N** Match any single digit 2 through 9
- M** Match any single digit 1 through 8

- \$ Match any number string dialed
- [] Match any digit in the list within the brackets (for example, [1,4,6])
- ,() Formatting characters that are ignored but allowed
- Use within brackets to specify a range, otherwise ignored

The following are example template entries using wildcards:

- |                   |   |
|-------------------|---|
| 1) NXX-XXXX       | Match any 7-digit number beginning with 2 through 9   |
| 2) 1-NXX-NXX-XXXX | Match any number with a leading 1, then 2 through 9, then any 2 digits, then 2 through 9, then any 6 digits |
| 3) 555-XXXX       | Match any 7-digit number beginning with 555   |
| 4) XXXX\$         | Match any number with at least 5 digits   |
| 5) [7,8]\$        | Match any number beginning with 7 or 8  |
| 6) 1234           | Match exactly 1234  |

Some template number rules:

- 1) All brackets must be closed with no nesting of brackets and no wildcards within the brackets.
- 2) All brackets can hold digits and commas, for example: [1239]; [1,2,3,9]. Commas are implied between numbers within brackets and are ignored.
- 3) Brackets can contain a range of numbers using a hyphen, for example: [1-39]; [1-3,9].
- 4) The \$ wildcard is only allowed at the end of the template, for example: 91256\$; XXXX\$.

The optional **default** parameter sets the named-digit-timeout (NDT) to the default value. The default value is set with the **voice timeouts interdigit** *<seconds>* command.

The optional **none** parameter indicates that no NDT is associated with this dial plan entry.

The optional *<NDT name>* variable specifies the NDT to associate with this dial plan entry. The named-digit-timeout is assigned a timeout value with the **voice timeouts named-digit-timeout** *<NDT name>* [*<value>*] command (refer to [Creating a Named Digit Timeout Using the CLI on page 15](#)).

The following example adds **9-112** to the **always-permitted** dial plan. After entering this command, the unit will route any calls matching the pattern as an emergency call.

```
>enable
#configure terminal
(config)#voice dial-plan 1 always-permitted 9-112
```

## Creating a Named Digit Timeout Using the CLI

An NDT can be created and associated with a number-complete template to indicate the amount of time to wait for additional digits to be dialed before routing the call. Setting the NDT to **default**, uses the system interdigit timeout. Setting the NDT to **none** will immediately route the call after a template match. If no NDT value is specified, the system will assign a value of 0.

Use the **voice timeouts named-digit-timeout** command to create a named-digit-timeout and assign it a value. From the Global Configuration mode, enter the command as follows:

```
(config)#voice timeouts named-digit-timeout <NDT name> [<value>]
```

The *<NDT name>* variable specifies a name for the NDT.

The *<value>* variable indicates the value in seconds for the NDT.

Creating an NDT does not require a value. If a value is not specified, the system assigns the value of 0 seconds.



*When removing an NDT and its value, if the NDT is assigned to a dial plan entry, then the deletion is not allowed. The dial plan entry must be removed first and added back into the system without the NDT association.*

The following example creates a named-digit-timeout named **short1** and sets the timeout value to **2** seconds:

```
>enable
#configure terminal
(config)#voice timeouts named-digit-timeout short1 2
```

## International Configuration Using the GUI

Many international features can be configured using the GUI. However, setting the system country, configuring disconnect supervision for busy tones, adding always-permitted dial plan patterns, and specifying named digit timeouts can only be accomplished using the CLI. Refer to [Configuration Overview on page 2](#) for more information on configuring these features.

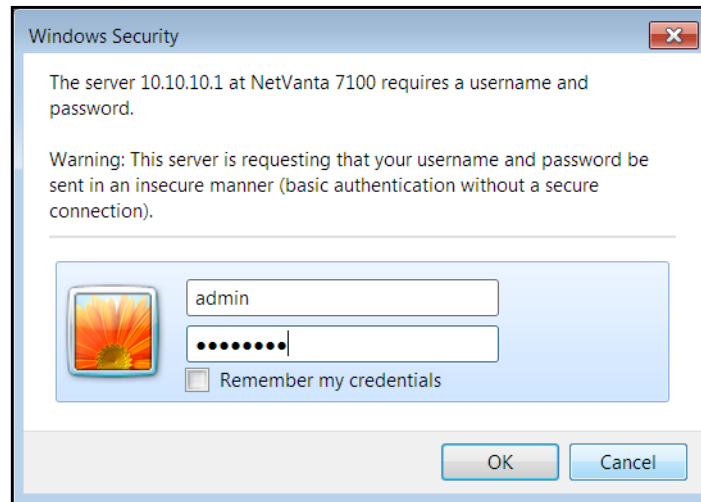
## Accessing the GUI

To access the GUI, follow these steps:

1. Open a new Web page in your Internet browser.
2. Enter your AOS product's IP address in the Internet browser's address field in the following form:  
**http://<ip address>/admin**. For example:  
**http://10.10.10.1/admin**



3. At the prompt, enter your user name and password and select **OK**.

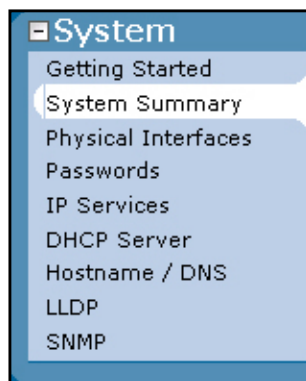
**NOTE**

*The default user name is **admin** and the default password is **password**.*

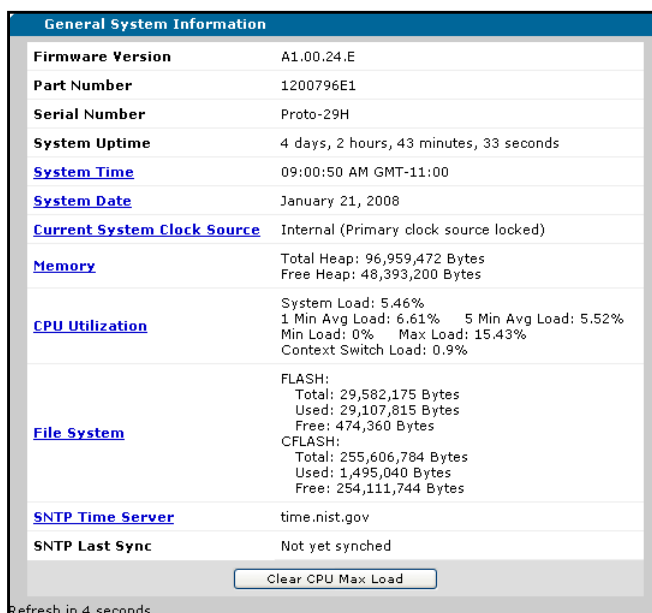
## Configuring the System Clock Time Zone and SNTP Server Using the GUI

The system clock time zone should be set to the geographic time zone in which the unit is operating. To configure the time zone and SNTP server for the unit using the GUI, follow these steps:

1. Navigate to the **System > System Summary** menu (the system's main menu).



2. Select the **System Time**, **System Date**, or **SNTP Time Server** link to access the **Time Server Configuration** menu.

A screenshot of the "General System Information" page in the GUI. The page has a blue header and a white background. It displays various system metrics and configuration details in a table-like format. At the bottom, there is a "Clear CPU Max Load" button and a "Refresh in 4 seconds..." indicator.

General System Information	
<b>Firmware Version</b>	A1.00.24.E
<b>Part Number</b>	1200796E1
<b>Serial Number</b>	Proto-29H
<b>System Uptime</b>	4 days, 2 hours, 43 minutes, 33 seconds
<a href="#">System Time</a>	09:00:50 AM GMT-11:00
<a href="#">System Date</a>	January 21, 2008
<a href="#">Current System Clock Source</a>	Internal (Primary clock source locked)
<a href="#">Memory</a>	Total Heap: 96,959,472 Bytes Free Heap: 48,393,200 Bytes
<a href="#">CPU Utilization</a>	System Load: 5.46% 1 Min Avg Load: 6.61%    5 Min Avg Load: 5.52% Min Load: 0%    Max Load: 15.43% Context Switch Load: 0.9%
<a href="#">File System</a>	FLASH: Total: 29,582,175 Bytes Used: 29,107,815 Bytes Free: 474,360 Bytes CFLASH: Total: 255,606,784 Bytes Used: 1,495,040 Bytes Free: 254,111,744 Bytes
<a href="#">SNTP Time Server</a>	time.nist.gov
<b>SNTP Last Sync</b>	Not yet synched

Clear CPU Max Load

Refresh in 4 seconds...

3. Select **SNTP** from the Time Server drop-down menu.

4. If you would like the time server to automatically correct for Daylight Savings Time (DST), ensure that the **Auto-Correct DST** check box is checked. If you would not like the time server to correct for DST, ensure that the check box is not checked.
5. Select the desired time zone from the **Time Zone** drop-down menu
6. Enter the host name of the desired SNTP server in the **SNTP Server Hostname** field.
7. Using the **SNTP Server Version** drop-down menu, choose the SNTP version of the SNTP server entered in Step 4.
8. Optional. In the **SNTP Wait Time** field, enter the desired number of seconds between updates from the SNTP server. The valid range for this field is **10** to **2000000** seconds.
9. Optional. In the **SNTP Retry Timeout** field, enter the desired number of seconds to wait for a response from the SNTP server before allowing a new request. The valid range for this field is **3** to **2000000** seconds.
10. Select **Apply** to apply the time server configurations to the system.
11. Select **Save** at the top right corner of the screen to save the configuration. A dialog box appears if the save is successful. Select **OK** to close the dialog box and return to the previous menu.

## Configuring the Trunk Access Code Using the GUI



*The configuration method described in this section is only supported in AOS version R10.8.0 or later.*

The outbound TAC is a single digit entered before a dial string to signify an external number is being dialed. On NetVanta 7000 Series products, the default digit used for this purpose is **9**. In your deployment, it may be preferable to access an outside line by dialing either a different digit or no extra digit. If this is the

case, the TAC can be changed or removed.

## Identify the Range of Numbers Currently in Use on the System

To avoid conflicts with routing calls to users or internal applications running on the NetVanta 7000 Series product, it is important to make note of the numbers that are currently being used in the system. This includes internal extensions as well as applications (for example, auto attendant, paging groups, etc.).



*If you are omitting the TAC, this step is not required and should be skipped.*

Review the extensions currently in use and select a digit that is not already used as the first digit of an extension or application on the NetVanta 7000 Series product. Make a note of any that may cause a conflict with the new TAC you have chosen, otherwise reconfiguration of the conflicting numbers will be necessary to change the ranges.

Review each of these settings:

- Aliases
- Auto attendant extensions
- Call queue extensions
- Call queue de-queue extensions
- Paging group extensions
- Shared call appearance extensions
- Shared line accounts names
- Shared line account held call pick-up extensions
- Voice loopback extensions
- Ring group extensions
- Pick-up group extensions
- User account extensions
- Voicemail login extension
- Leave voicemail extension
- Overhead paging extension

Make any changes necessary to accommodate the new digit you have selected as your TAC.



*Changing the TAC to 0 will make the internal operator unreachable. Keep this in mind when selecting a new TAC.*

To review the internal extensions in use for these applications, navigate to **Voice > Reports > Extensions List** in the GUI.

Review the internal extensions in use. Make a note of any that may cause a conflict with the new TAC you have chosen.

**Extensions List**

This page displays all of the configured extensions in the system.

Account Type acronyms:  
 AA = Auto Attendant      CQ = Call Queue      DP = Desktop Paging  
 LA = Shared Line/Shared Call      LB = Loopback Account      OG = Operator Group  
 PG = Pickup Group/SLA Pickup      RG = Ring Group      SR = System Reserved  
 UA = User Account

Extension	Name	Account Type	Status	DND	Fwd	New VM
0	Operator Group	OG	--	--	--	No
1		UA	Not Present	Off	Off	No
1234	Doe, Jane	UA	Not Present	On	Off	No
2001	Port 0/1, Analog FXS	UA	Idle	Off	Off	No
2002	Port 0/2, Analog FXS	UA	Idle	Off	Off	No
2003	SIP User, Default	UA	Idle	Off	Off	No
2013	SIP User, Default	UA	Idle	Off	Off	No
2025	SIP User, Default	UA	Idle	Off	Off	No
3001		RG	--	--	--	No
3434		RG	--	--	--	No
3456	Sales	CQ	--	--	--	--
5555		UA	Not Present	Off	Off	No
5566	SIP User, Default	UA	Idle	Off	Off	No
5577		LA	--	--	--	--
6850		LA	--	--	--	--
7890	Smith, John	UA	Idle	Off	Off	No
8000	Overhead Paging Ext	SR	--	--	--	--
8200	DefaultAA	AA	--	--	--	--
8500	Voicemail Login Ext	SR	--	--	--	--
8504	Leave Voicemail Ext	SR	--	--	--	--
OVERHEAD...	Overhead Paging Ext	Alias (SR)	--	--	--	--
Sales	Operator Group	Alias (OG)	--	--	--	No
Support	Operator Group	Alias (OG)	--	--	--	No
VM_CHECK	Voicemail Login Ext	Alias (SR)	--	--	--	--
VM_LEAVE	Leave Voicemail Ext	Alias (SR)	--	--	--	--

### Modifying the TAC Configuration

Now that you have noted the internal extensions currently in use, you are ready to modify the current TAC configuration. The following instructions describe how to configure a TAC digit other than the default or to remove the TAC completely.

1. To modify the current TAC digit, navigate to **Voice > System Setup > Dial Plan**.
2. Select **Local Dialing Type**, either **7 Digit Dialing** or **10 Digit Dialing**. The system will not allow you to change the TAC without specifying one of these options.
3. Select the new digit from the drop-down menu. Valid entries are **none**, or **0** through **9**. Selecting **none** indicates that no TAC is necessary to access an outbound trunk.

**Dial Plan Parameters**

Dial plan parameters not only tell the system how to route calls, but also work with Classes of Service to determine whether a user has permission to dial a given number.

Local Dialing Type: <No Dialing Type Selected>

Local Emergency Services:

Trunk Access Code: 7

none  
0  
1  
2  
3  
4  
5  
6  
7  
8  
9

Apply

Select a **Local Dialing Type**.

Select the new digit from the drop-down menu. Select **none** to specify no TAC is necessary.

Select **Apply** to accept the changes.



*Changing the TAC to 0 will make the internal operator unreachable. Keep this in mind when selecting a new TAC.*

4. Select **Apply** to accept the new TAC setting.



*If the selected TAC causes a conflict with an existing internal extension, a warning displays on the GUI. It provides instructions for addressing the conflict.*

Your configuration selection in this step determines which set of instructions to follow beyond this point. Proceed to *Changing the TAC Digit on page 22* if you are changing to a TAC digit other than the default, or proceed to *Omitting the TAC Digit on page 26* if you are removing the TAC digit completely.

## Changing the TAC Digit

The following steps are required to change the TAC to a new digit:

*Step 1: Modify Voice Dial Plan Entries on page 22.*

*Step 2: Modify the Dial Strings for the IP Phone Configuration File on page 24.*

### Step 1: Modify Voice Dial Plan Entries

Dial plan entries are required for the AOS unit to recognize when a dial string is complete, as well as for applying CoS rules. When changing the TAC, it is important to remove dial plan entries that contain a leading 9. These entries should be modified to contain the new leading digit. Conflicts can result if left unchanged.

A typical dial plan for a default configuration is shown below. This example is for illustrative purposes only and does not imply that your dial plan entries must match the example.

1. To view and edit the current dial plan entries from the GUI, navigate to **Voice > System Setup > Dial Plan**.

**Dial Plan Templates (Advanced)**

Dial plan templates allow the system to recognize dialed numbers as a particular type of call. The type of call is matched against the user's class of service to determine whether that user has the permission to make the call.

**Add New Dial Plan Template**

Template:  ?

Number Type:  ?

**View/Delete Dial Plan Templates**

The following list details the currently configured dial plan templates. To delete a template, click on the Delete button next to that template. You can use an existing template as the basis for a new template by clicking on a template row. The form above will be initialized to that template's values.

Dial Plan Template	Number Type	
911	Local Emergency	
9-911	Local Emergency	
9-NXX-NXX-XXXX	Local	<input type="button" value="Delete"/>
0	Internal Operator	<input type="button" value="Delete"/>
MXXX	Extensions	<input type="button" value="Delete"/>
9-1-NXX-NXX-XXXX	Long Distance	<input type="button" value="Delete"/>
9-1-800-NXX-XXXX	Toll Free	<input type="button" value="Delete"/>
9-1-888-NXX-XXXX	Toll Free	<input type="button" value="Delete"/>
9-1-877-NXX-XXXX	Toll Free	<input type="button" value="Delete"/>
9-1-866-NXX-XXXX	Toll Free	<input type="button" value="Delete"/>
9-1-855-NXX-XXXX	Toll Free	<input type="button" value="Delete"/>
9-0-NXX-NXX-XXXX	Operator Assisted	<input type="button" value="Delete"/>
9-011-\$	International	<input type="button" value="Delete"/>
9-1-900-NXX-XXXX	900	<input type="button" value="Delete"/>
9-1-976-NXX-XXXX	900	<input type="button" value="Delete"/>
9-976-XXXX	900	<input type="button" value="Delete"/>

Review the current dial plan entries and make note of templates containing the default TAC 9.

2. Review the current dial plan entries and look for templates containing the default preceding **9**.
3. Select an entry from the list that must be modified. The selected template will populate the **Template** field at the top of the **Dial Plan Templates** menu, allowing you to edit it.
4. Modify the **Template** to contain the new preceding digit (for example, **7**). Select **Add** to accept the new template.
5. Remove the old template by selecting **Delete** from the same line as the listing.

**Dial Plan Templates (Advanced)**

Dial plan templates allow the system to recognize dialed numbers as a particular type of call. The type of call is matched against the user's class of service to determine whether that user has the permission to make the call.

**Add New Dial Plan Template**

Template:  ?

Number Type:  ?

**View/Delete Dial Plan Templates**

The following list details the currently configured dial plan templates. To delete a template, click on the Delete button next to that template. You can use an existing template as the basis for a new template by clicking on a template row. The form above will be initialized to that template's values.

Dial Plan Template	Number Type	
911	Local Emergency	
9-911	Local Emergency	
9-NXX-NXX-XXXX	Local	<input type="button" value="Delete"/>
0	Internal Operator	<input type="button" value="Delete"/>

Modify the template to contain the new TAC digit.

Select **Add** to accept the new template.

Remove the old template by selecting **Delete** from the same line as the template.

Select each entry from the list to display the template in the **Template** field above.

6. Continue steps 2 through 5 until you have modified all the dial plan entries that require a preceding digit to access an outside line.

7. Additionally, the extensions dial plan template **MXXX** should be removed by selecting **Delete** from the same line as the listing. A new template must be added that omits the TAC digit. For example, if the new TAC is **7**, add a new template of **[12345689]XXX** for extensions. Enter the new template in the **Template** field at the top of the **Dial Plan Templates** menu. Select **Extensions** for the **Number Type**.
8. Select **Add** to accept the new template.

**Dial Plan Templates (Advanced)**

Dial plan templates allow the system to recognize dialed numbers as a particular type of call. The type of call is matched against the user's class of service to determine whether that user has the permission to make the call.

**Add New Dial Plan Template**

Template:

Number Type:

**View/Delete Dial Plan Templates**

The following list details the currently configured dial plan templates. To delete a template, click on the Delete button next to that template. You can use an existing template as the basis for a new template by clicking on a template row. The form above will be initialized to that template's values.

Dial Plan Template	Number Type	
911	Local Emergency	
7-911	Local Emergency	
7-1-800-NXX-XXXX	Toll Free	<input type="button" value="Delete"/>
7-1-888-NXX-XXXX	Toll Free	<input type="button" value="Delete"/>
0	Internal Operator	<input type="button" value="Delete"/>
MXXX	Extensions	<input type="button" value="Delete"/>
7-1-877-NXX-XXXX	Toll Free	<input type="button" value="Delete"/>

Annotations:

- Enter the new extensions dial plan template.
- Select **Extensions** as **Number Type**.
- Select **Add** to accept the new template.
- Remove the old template by selecting **Delete** from the same line as the extensions template.

9. An example of a dial plan using **7** as the TAC for external numbers is shown below.

**View/Delete Dial Plan Templates**

The following list details the currently configured dial plan templates. To delete a template, click on the Delete button next to that template. You can use an existing template as the basis for a new template by clicking on a template row. The form above will be initialized to that template's values.

Dial Plan Template	Number Type	
911	Local Emergency	
7-911	Local Emergency	
7-NXX-NXX-XXXX	Local	<input type="button" value="Delete"/>
0	Internal Operator	<input type="button" value="Delete"/>
[12345689]XXX	Extensions	<input type="button" value="Delete"/>
7-1-NXX-NXX-XXXX	Long Distance	<input type="button" value="Delete"/>
7-1-800-NXX-XXXX	Toll Free	<input type="button" value="Delete"/>
7-1-888-NXX-XXXX	Toll Free	<input type="button" value="Delete"/>
7-1-877-NXX-XXXX	Toll Free	<input type="button" value="Delete"/>
7-1-866-NXX-XXXX	Toll Free	<input type="button" value="Delete"/>
7-1-855-NXX-XXXX	Toll Free	<input type="button" value="Delete"/>
7-0-NXX-NXX-XXXX	Operator Assisted	<input type="button" value="Delete"/>
7-011-\$	International	<input type="button" value="Delete"/>
7-1-900-NXX-XXXX	900	<input type="button" value="Delete"/>
7-1-976-NXX-XXXX	900	<input type="button" value="Delete"/>
7-976-XXXX	900	<input type="button" value="Delete"/>

## Step 2: Modify the Dial Strings for the IP Phone Configuration File

In order for SIP phones to be aware of the TAC change, dial strings in the IP phone configuration files must be modified. You must replace the **9** for dialed extensions with the new TAC digit. Also, depending on which digit is used for the TAC, the dial string of **[1-8]xxx** (for four-digit extensions) must be modified to omit the digit from the brackets. For example, if the desired TAC is **7**, you will replace **[1-8]xxx** with **[12345689]xxx**.





*The dial strings cannot be modified from the command line interface (CLI), only from the GUI.*

In this example, the configuration was changed to use the TAC **7** instead of the default **9**. All of the external number dial strings where a **9** is currently used, should be modified to replace the preceding **9** with a **7** (or other digit if you are using a different trunk access code). Also, you must apply this to any new or existing configurations, by selecting the **New and Existing Configurations** radio button before selecting **Apply**.

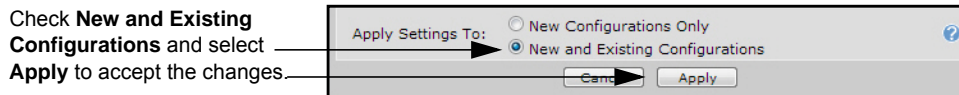
1. Navigate to **Voice > Stations > IP Phone Globals**. Select the **Default Settings** tab.
2. Select **[1-8]xxx** from the **Extension Dial Strings** field.
3. Edit the entry **[1-8]xxx** to read **[12345689]xxx**. Select the **Change Entry** radio button.
4. Select **Change** to accept the changes.
5. Select each external dial string and replace the **9** at the beginning of the string with the new TAC. Some of the system default dial strings that must be altered include (but are not limited to) the following:
  - 9,[2-9]xxxxxx.T
  - 9,[2-9]xx[2-9]xxxxxx
  - 9,[0-1][2-9]xx[2-9]xxxxxx
  - 9,011xxx.T

Select the dial string to modify from the **Extension Dial Strings** field.

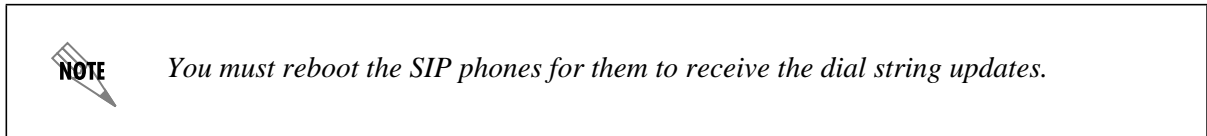
Make the necessary changes to the dial string in the field provided.

Select the **Change Entry** radio button and select **Change** to accept the new dial string.

6. From the bottom of the **IP Phone Globals** menu, select the **New and Existing Configurations** as the **Apply Settings To** option. This option applies the phone configurations to all new and all existing IP phone configurations, overwriting any customizations.



7. Select **Apply** to accept all the changes.



## Omitting the TAC Digit

In certain installations, it is preferable to omit the TAC altogether and not require dialing a preceding digit for placing external calls. The following steps are required to omit the TAC:

*Step 1: Modify Voice Dial Plan Entries on page 26.*

*Step 2: Add an Interdigit Timeout to the Extensions Dial Plan Template on page 28.*

*Step 3: Modify the Dial Strings for the IP Phone Configuration File on page 28.*

### Step 1: Modify Voice Dial Plan Entries

Dial plan entries are required for the AOS unit to recognize when a dial string is complete, as well as for applying CoS rules. When changing the TAC, it is important to remove dial plan entries that contain a leading **9**. These entries should be modified to contain the new leading digit. Conflicts can result if left unchanged.

A typical dial plan for a default configuration is shown below. This example is for illustrative purposes only and does not imply that your dial plan entries must match the example.

1. To view and edit the current dial plan entries from the GUI, navigate to **Voice > System Setup > Dial Plan**.

**Dial Plan Templates (Advanced)**

Dial plan templates allow the system to recognize dialed numbers as a particular type of call. The type of call is matched against the user's class of service to determine whether that user has the permission to make the call.

**Add New Dial Plan Template**

Template:  ?

Number Type:  ?

**View/Delete Dial Plan Templates**

The following list details the currently configured dial plan templates. To delete a template, click on the Delete button next to that template. You can use an existing template as the basis for a new template by clicking on a template row. The form above will be initialized to that template's values.

Dial Plan Template	Number Type	
911	Local Emergency	
9-911	Local Emergency	
9-NXX-NXX-XXXX	Local	<input type="button" value="Delete"/>
0	Internal Operator	<input type="button" value="Delete"/>
MXXX	Extensions	<input type="button" value="Delete"/>
9-1-NXX-NXX-XXXX	Long Distance	<input type="button" value="Delete"/>
9-1-800-NXX-XXXX	Toll Free	<input type="button" value="Delete"/>
9-1-888-NXX-XXXX	Toll Free	<input type="button" value="Delete"/>
9-1-877-NXX-XXXX	Toll Free	<input type="button" value="Delete"/>
9-1-866-NXX-XXXX	Toll Free	<input type="button" value="Delete"/>
9-1-855-NXX-XXXX	Toll Free	<input type="button" value="Delete"/>
9-0-NXX-NXX-XXXX	Operator Assisted	<input type="button" value="Delete"/>
9-011-\$	International	<input type="button" value="Delete"/>
9-1-900-NXX-XXXX	900	<input type="button" value="Delete"/>
9-1-976-NXX-XXXX	900	<input type="button" value="Delete"/>
9-976-XXXX	900	<input type="button" value="Delete"/>

Review the current dial plan entries and make note of templates containing the default TAC 9.

2. Review the current dial plan entries and look for templates containing the default preceding **9**.
3. Select an entry from the list that must be modified. The selected template will populate the **Template** field at the top of the **Dial Plan Templates** menu, allowing you to edit it.
4. Modify the **Template** by removing the preceding **9**. Select **Add** to accept the new template.
5. Remove the old template by selecting **Delete** from the same line as the listing.

**Dial Plan Templates (Advanced)**

Dial plan templates allow the system to recognize dialed numbers as a particular type of call. The type of call is matched against the user's class of service to determine whether that user has the permission to make the call.

**Add New Dial Plan Template**

Template:  ?

Number Type:  ?

**View/Delete Dial Plan Templates**

The following list details the currently configured dial plan templates. To delete a template, click on the Delete button next to that template. You can use an existing template as the basis for a new template by clicking on a template row. The form above will be initialized to that template's values.

Dial Plan Template	Number Type	
911	Local Emergency	
9-911	Local Emergency	
9-NXX-NXX-XXXX	Local	<input type="button" value="Delete"/>
0	Internal Operator	<input type="button" value="Delete"/>

Modify the template to remove the TAC digit.

Select **Add** to accept the new template.

Remove the old template by selecting **Delete** from the same line as the template.

Select each entry from the list to display the template in the **Template** field above.

6. Continue steps 2 through 5 until you have modified all the dial plan entries that require a preceding digit to access an outside line. An example dial plan with no assigned TAC for external numbers is shown below.

View/Delete Dial Plan Templates		
The following list details the currently configured dial plan templates. To delete a template, click on the Delete button next to that template. You can use an existing template as the basis for a new template by clicking on a template row. The form above will be initialized to that template's values.		
Dial Plan Template	Number Type	
911	Local Emergency	
911	Local Emergency	
NXX-NXX-XXXX	Local	Delete
0	Internal Operator	Delete
MXXX	Extensions	Delete
1-NXX-NXX-XXXX	Long Distance	Delete
1-800-NXX-XXXX	Toll Free	Delete
1-888-NXX-XXXX	Toll Free	Delete
1-877-NXX-XXXX	Toll Free	Delete
1-866-NXX-XXXX	Toll Free	Delete
1-855-NXX-XXXX	Toll Free	Delete
0-NXX-NXX-XXXX	Operator Assisted	Delete
011-\$	International	Delete
1-900-NXX-XXXX	900	Delete
1-976-NXX-XXXX	900	Delete
976-XXXX	900	Delete

## Step 2: Add an Interdigit Timeout to the Extensions Dial Plan Template

To allow analog phones to dial external numbers after the dial plan has been modified, an interdigit timeout must be added to the extensions template. This step can only be completed from the CLI. (If you are unfamiliar with accessing or using the CLI, refer to the *AOS Command Reference Guide* available online in the ADTRAN support community at <https://supportforums.adtran.com>.)

1. Access the CLI.
2. Enter the **voice dial-plan** <pattern id> **extensions** <pattern> **default** command from the Global Configuration mode. The <pattern id> specifies the dial pattern ID. Valid range is **1** to **255**. The <pattern> parameter specifies the dialing pattern using wildcards. The **default** setting specifies using the default named-digit-timeout value. In the following example, the pattern **MXXX** specifies a four-digit extension beginning with any digit 1 through 8, using the default timeout:

```
(config)#voice dial-plan 3 extensions MXXX default
```



The *default* named-digit-timeout is set using the *voice timeouts interdigit* <value> command.

## Step 3: Modify the Dial Strings for the IP Phone Configuration File

In order for SIP phones to be aware of the omission of the TAC, the dial strings in the IP phone configuration files must be modified. The dial string of **[1-8]xxx** (for dialing four-digit extensions) must be changed to **[1-9]xxx.T**. Since **9** is no longer the TAC, changing the **[1-8]** to **[1-9]** allows additional extension numbers to be used. In case the user is dialing a local number and not an extension, adding the **.T** to the dial string instructs the phone to wait for an interdigit timeout to occur before sending the call. Also, the preceding **9** must be removed from each of the external dial strings. Use the following steps to modify the dial strings:

1. Navigate to **Voice > Stations > IP Phone Globals**. Select the **Default Settings** tab.
2. Select **[1-8]xxx** from the **Extension Dial Strings** field.
3. Edit the entry to read **[1-9]xxx** and include **.T** at the end of the dial string. Select the **Change Entry** radio button.
4. Select **Change** to accept the changes.
5. From each of the external dial strings, remove the preceding **9** and comma (,). Select **Change** to accept the changes. Some of the system default dial strings that must be altered include (but are not limited to) the following:
  - 9,[2-9]xxxxxx.T
  - 9,[2-9]xx[2-9]xxxxxx
  - 9,[0-1][2-9]xx[2-9]xxxxxx
  - 9,011xxx.T

The screenshot shows the 'IP Phone Globals' configuration page. The 'Default Settings' tab is active. A list of 'Extension Dial Strings' is displayed, with '[1-8]xxx' selected. Below the list, the 'Change Entry' radio button is selected, and the 'Change' button is visible. Annotations include:
 

- An arrow pointing to '[1-8]xxx' with the text: 'Select the dial string to modify from the Extension Dial Strings field.'
- An arrow pointing to the 'Change Entry' radio button with the text: 'Select the Change Entry radio button and select Change to accept the new dial string.'
- An arrow pointing to the 'Change' button with the text: 'Make the necessary changes to the dial string in the field provided.'

6. From the bottom of the **IP Phone Globals** menu, select the **New and Existing Configurations** as the **Apply Settings To** option. This option applies the phone configurations to all new and all existing IP phone configurations, overwriting any customizations.
7. Select **Apply** to accept all the changes.

The screenshot shows the 'Apply Settings To' dialog box. The 'New and Existing Configurations' radio button is selected. The 'Apply' button is highlighted. Annotations include:
 

- An arrow pointing to the 'New and Existing Configurations' radio button with the text: 'Check New and Existing Configurations and select Apply to accept the changes.'
- An arrow pointing to the 'Apply' button with the text: 'Apply to accept the changes.'

## Configuring Disconnect Supervision on Analog Voice Trunks Using the GUI

Disconnect supervision is used in auto attendant, fax, and modem applications to ensure that a connection is not maintained indefinitely when a call has ended or could not be completed. Disconnect supervision monitors an FXO port for a specific condition to determine when the line should be released. The conditions typically monitored include: the lack of battery current (loop current feed open), the transition of battery current from a normal state to a reversed state and back again (reverse loop current feed), or the presence of a call progress tone that indicates that a call cannot be completed or should be disconnected.



*Disconnect supervision is configured on a per-trunk basis. Disconnect supervision settings configured for the trunk apply to all connected FXO ports.*

Disconnect supervision for busy tones can be configured on a per-trunk basis for loop start and ground start analog voice trunks using the GUI. When this feature is enabled, the system will configure the voice trunk to monitor for busy tone. After a busy tone has been detected for **10** seconds, the call will be terminated. Additionally, if users on the system experience phantom calls and dial-tone voicemails, the time (in seconds) the trunk will wait to terminate the call after release tones have been detected can be specified. The table below shows the frequency and cadence of the busy release tones supported by NetVanta 7000 Series products.

**Table 8. Frequency and Cadence of Busy Release Tones**

Country	Frequency (Hz)	Cadence (ms)
Australia	425	375 on 375 off
Belgium	425	500 on 500 off
Canada	480 + 620	500 on 500 off
ETSI	425	500 on 500 off
Ireland	425	500 on 500 off
Mexico	425	250 on 250 off
Puerto Rico	480 + 620	500 on 500 off
United Arab Emirates	400	370 on 370 off
United Kingdom	400	375 on 375 off
United States of America	480 + 620	500 on 500 off

To configure disconnect supervision for busy tones using the GUI, follow these steps:

1. Navigate to **Voice > Trunks > Trunk Accounts**. The **Add/Modify/Delete Trunk Accounts** menu will appear.

- In the **Add/Modify/Delete Trunk Accounts** menu, select an analog trunk account on which you want to configure disconnect supervision for busy tones. The **Edit Trunk** menu will appear.

Use this page to add and configure trunk accounts.

**Add a New Trunk Account**

Trunk Name:

Type:

**Modify/Delete Trunk Account**

Click on a name to edit that trunk's settings.

Trunk Name	ID	Type	Supervision	Role	
<a href="#">&lt;No Trunk Name Set&gt;</a>	T02	Analog	Ground Start	User	<input type="button" value="Delete"/>
<a href="#">&lt;No Trunk Name Set&gt;</a>	T03	Analog	Loop Start	User	<input type="button" value="Delete"/>
<a href="#">PROVIDER</a>	T01	SIP	SIP	User	<input type="button" value="Delete"/>
<a href="#">UC SERVER</a>	T11	SIP	SIP	User	<input type="button" value="Delete"/>

- To enable disconnect supervision for busy tones, select the **Disconnect Tone Busy** check box.

Use this dialog to modify the Trunk Account configuration.

**Trunk Account Information**

Trunk ID: T02

Type: Analog

Supervision: Ground Start

Role: User

Trunk Name:

System Mode	Trunk Number
Default	<None>
Night	<Same as Default>
Lunch	<Same as Default>
Weekend	<Same as Default>
Override	<Same as Default>
Custom1	<Same as Default>
Custom2	<Same as Default>
Custom3	<Same as Default>

Trunk Number:

Blind Dialing:

Reject External:

Disconnect Tone Busy:  Delay:

Disconnect Release Delay:

- In the **Delay** field, enter a value (in seconds) for the amount of time the trunk should wait to terminate a call after release tones have been detected. Changing this value can help eliminate the occurrence of phantom calls and dial-tone voicemails for users on the system. The default value for this field is **10** seconds, and the valid range for this field is **1** to **120** seconds.
- In the **Disconnect Release Delay** field, enter a value (in seconds) for the amount of time the unit should hold the FXO port in a clearing state after an inbound call has been terminated. During this time, calls can be accepted, but not placed, on the port. When this release delay expires, the AOS unit places the FXO port in an idle state, allowing calls to be placed on the port again. The default value for this field is **12** seconds, and the valid range for this field is **1** to **120** seconds.

## Configuring the Dial Plan Using the GUI

The dial plan notifies the AOS unit when to stop collecting the digits being dialed and begin forwarding a phone call. Programmed number patterns and types also govern the telephone numbers allowed by AOS voice products for inbound and outbound calls. Number-complete templates can be created and stored in the dial plan. The AOS unit listens for digits and looks for a match against the number-complete templates in the dial plan. As soon as the digits dialed by the user match a pattern in the dial plan, the call is routed by the switchboard. If the digits dialed do not match any of the number-complete templates, the call is routed by the switchboard after a timeout period expires. In addition to number patterns, call types are defined in the dial plan, allowing the system to recognize dialed numbers as a particular type of call (local, long distance, toll free, etc.) for class of services purposes.

It is possible to successfully route calls through the unit without configuring any dial plan entries. However, your country may have a unique emergency numbering option or telephone numbering plan that will require configuration changes to the dial plan for proper execution of inbound and outbound calls. In AOS version R10.3.0 and later, emergency service numbers are configured automatically when the system country is specified using the **voice system-country** <country> command. Consequently, **always-permitted** entries need not be added to the dial plan for emergency service numbers if the appropriate system country setting is configured for your system. However, if your unit is running a previous version of AOS, an appropriate system country cannot be configured on your unit, or the emergency service numbers have been disabled, you must configure **always-permitted** entries in the dial plan for your country's emergency service numbers in order for emergency calls to be routed properly. Always-permitted entries can only be added to the dial plan using the CLI. For instructions on how to configure the dial plan using the CLI, refer to *Configuring the Dial Plan Using the CLI on page 13*.



*AOS units running AOS version R10.3.0 or later have no entries in the **always-permitted** group because emergency service numbers are automatically included. NetVanta 7000 Series units running an AOS versions prior to R10.3.0 have both the **911** and the **9-911** entries in the **always-permitted** group.*

To configure dial plan entries using the GUI, follow these steps:

1. Navigate to **Voice > System Setup > Dial Plan** to open the **Dial Plan** configuration menu.



- In the **Template field**, enter the desired dial plan pattern. Dashes and parentheses are ignored. You can enter the pattern using the exact digits or using wildcards.

**Dial Plan Templates (Advanced)**

Dial plan templates allow the system to recognize dialed numbers as a particular type of call. The type of call is matched against the user's class of service to determine whether that user has the permission to make the call.

**Add New Dial Plan Template**

Template:  Valid characters: 0-9, () - M N X [] \$

Number Type:  Used when defining what call types are permitted in the user class of service.

**View/Delete Dial Plan Templates**

The following list details the currently configured dial plan templates. To delete a template, click on the Delete button next to that template. You can use an existing template as the basis for a new template by clicking on a template row. The form above will be initialized to that template's values.

Dial Plan Template	Number Type
911	Always Permitted
NXX-XXXX	Local

The available wildcards for this field are:

- 0 - 9** Match the exact digit(s) only
- X** Match any single digit 0 through 9
- N** Match any single digit 2 through 9
- M** Match any single digit 1 through 8
- \$** Match any number string dialed
- []** Match any digit in the list within the brackets (for example, [1,4,6])
- ,()** Formatting characters that are ignored but allowed
- Use within brackets to specify a range, otherwise ignored

The following are example template entries using wildcards:

- 1) NXX-XXXX Match any 7-digit number beginning with 2 through 9
- 2) 1-NXX-NXX-XXXX Match any number with a leading 1, then 2 through 9, then any 2 digits, then 2 through 9, then any 6 digits
- 3) 555-XXXX Match any 7-digit number beginning with 555
- 4) XXXX\$ Match any number with at least 5 digits
- 5) [7,8]\$ Match any number beginning with 7 or 8
- 6) 1234 Match exactly 1234

Some template number rules:

- All brackets must be closed with no nesting of brackets and no wildcards within the brackets.
  - All brackets can hold digits and commas, for example: [1239]; [1,2,3,9]. Commas are implied between numbers within brackets and are ignored.
  - Brackets can contain a range of numbers using a hyphen, for example: [1-39]; [1-3,9].
  - The \$ wildcard is only allowed at the end of the template, for example: 91256\$; XXXX\$.
- Select the number type for the dial plan entry using the **Number Type** drop-down menu. The number type is used when defining what call types are permitted in the user class of service (CoS).
  - Once the dial plan template has been entered and the number type has been selected, select **Add** to add the dial plan template to the system.
  - Repeat Steps 2 through 4 for each additional dial plan entry.

6. Remove dial plan entries by selecting the **Delete** button next to the dial plan template in the **View/Delete Dial Plan Templates** section.
7. Select **Save** at the top right corner of the screen to save the configuration. A dialog box appears if the save is successful. Select **OK** to close the dialog box and return to the previous menu.

## Disabling the Local Emergency Service Numbers Using the GUI

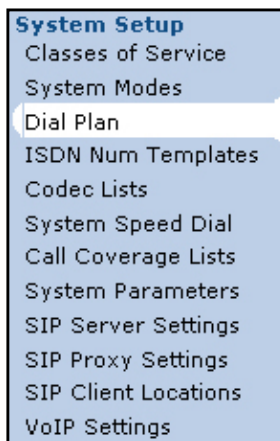
In AOS version R10.3.0 and later, local emergency service numbers are configured automatically when the system country is specified using the **voice system-country <country>** command. If necessary, the local emergency service numbers can be manually disabled using the GUI.



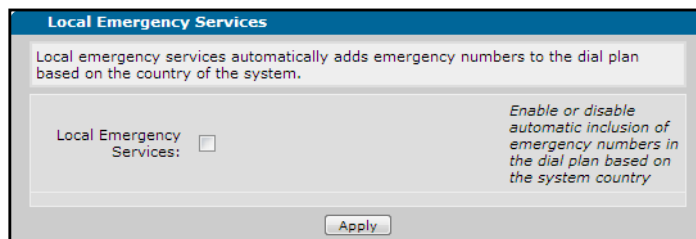
*Disabling the local emergency service numbers on a unit will remove all local emergency service numbers from the emergency services list. If local emergency service numbers are disabled, for emergency calls to be routed properly, you must manually add the local emergency service numbers to the **always-permitted** group using the CLI. For more information on configuring **always-permitted** dial plan entries, refer to [Configuring the Dial Plan Using the CLI on page 13](#).*

To disable the local emergency service numbers using the GUI, follow these steps:

1. Navigate to **Voice > System Setup > Dial Plan** to open the **Dial Plan** configuration menu.



2. In the **Local Emergency Services** section uncheck the **Local Emergency Services** check box to disable the local emergency service numbers.



3. Select the **Apply** button to apply the change.

## Configuring Accept Numbers for Trunk Groups Using the GUI

Accept numbers are used to configure numbers users can dial on a trunk. Accept numbers for trunk groups can be configured using the GUI.

To configure accept numbers using the GUI, follow these steps:

1. Navigate to **Voice > Trunks > Trunk Groups** to access the **Add/Modify/Delete Trunk Groups** menu.



- To create a new trunk group and add accept numbers to it, enter a name for the new group in the **Group Name** field of the **Add a New Trunk Group** section and select add. The **Edit Trunk Group** menu will appear.  
To add accept numbers to an existing trunk group, select the name of the group to which you would like to add an accept number in the **Modify/Delete Trunk Group** section. The **Edit Trunk Group** menu will appear.

- In the **Detailed View - Permit/Restriction Call Templates** section, select **Configure Advanced Templates**. The **Advanced Permit/Restriction Templates** menu will appear.

- In the **Add/Delete Permit Templates** section, enter the accept number template into the **Template** field. Dashes and parentheses are ignored. You may enter the pattern using the exact digits or using wildcards. The available wildcards for this field are:

- 0 - 9** Match the exact digit(s) only
- X** Match any single digit 0 through 9
- N** Match any single digit 2 through 9
- M** Match any single digit 1 through 8
- \$** Match any number string dialed
- []** Match any digit in the list within the brackets (for example, [1,4,6])
- ,()** Formatting characters that are ignored but allowed
- Use within brackets to specify a range, otherwise ignored

The following are example template entries using wildcards:

- 1) NXX-XXXX Match any 7-digit number beginning with 2 through 9
- 2) 1-NXX-NXX-XXXX Match any number with a leading 1, then 2 through 9, then any 2 digits, then 2 through 9, then any 6 digits
- 3) 555-XXXX Match any 7-digit number beginning with 555
- 4) XXXX\$ Match any number with at least 5 digits
- 5) [7,8]\$ Match any number beginning with 7 or 8
- 6) 1234 Match exactly 1234

Some template number rules:

- 1) All brackets must be closed with no nesting of brackets and no wildcards within the brackets.
- 2) All brackets can hold digits and commas, for example: [1239]; [1,2,3,9]. Commas are implied between numbers within brackets and are ignored.
- 3) Brackets can contain a range of numbers using a hyphen, for example: [1-39]; [1-3,9].
- 4) The \$ wildcard is only allowed at the end of the template, for example: 91256\$; XXXX\$.

**Add/Delete Permit Templates**

Use this form to add and delete specific outbound permit call templates.

**Add Outbound Permit Template**

Template:  *All calls matching the specified pattern will be permitted ?*  
Valid characters: 0-9, () - M N X [] \$

Cost:  *Enter cost value between 0-499 for this template (optional) ?*

**View/Delete Permit Templates**

These are all of the Permit templates currently defined for trunk group 'GROUP 1'. You can delete an existing template by clicking on the 'Delete' button. You can use an existing template as the basis for a new template by clicking on a entry row. The form above will be initialized to that template's values.

Permit Template	Cost
There are no configured Permit Templates	

5. Optional. Enter the cost value for the accept template in the **Cost** field. This option is used if a call is accepted by several trunks. The call will be routed to the trunk with the lowest cost value in the case of identical matching accept statements. If no value is enter, the default cost value of **0** will be assigned to the template. The valid range is **0** to **499**. Select **Add** to add the accept template.
6. Select **Save** at the top right corner of the screen to save the configuration. A dialog box appears if the save is successful. Select **OK** to close the dialog box and return to the previous menu.

## Configuring Reject Numbers for Trunk Groups Using the GUI

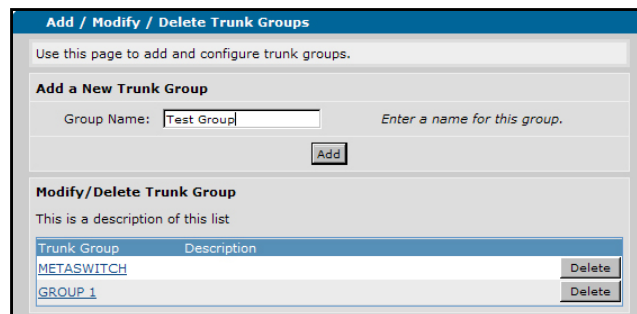
Although reject numbers are not required for proper switchboard function, they can be used to restrict callers from making unwanted outbound calls, such as international and 900 number calls.

To configure reject numbers using the GUI, follow these steps:

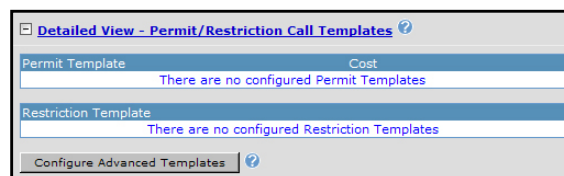
1. Navigate to **Voice > Trunks > Trunk Groups** to access the **Add/Modify/Delete Trunk Groups** menu.



- To add reject numbers to an existing trunk group, select the name of the group to which you would like to add a reject number in the **Modify/Delete Trunk Group** section. The **Edit Trunk Group** menu will appear.



- In the **Detailed View - Permit/Restriction Call Templates** section, select **Configure Advanced Templates**. The **Advanced Permit/Restriction Templates** menu will appear.



- In the **Add/Delete Restriction Templates** section, enter the reject number template into the **Template** field, and select **Add**. Dashes and parentheses are ignored. You may enter the pattern using the exact characters or using wildcards. The available wildcards for this field are:

<b>0 - 9</b>	Match the exact digit(s) only
<b>X</b>	Match any single digit 0 through 9
<b>N</b>	Match any single digit 2 through 9
<b>M</b>	Match any single digit 1 through 8
<b>\$</b>	Match any number string dialed
<b>[]</b>	Match any digit in the list within the brackets (for example, [1,4,6])
<b>,()</b>	Formatting characters that are ignored but allowed
<b>-</b>	Use within brackets to specify a range, otherwise ignored

The following are example template entries using wildcards:

- NXX-XXXX** Match any 7-digit number beginning with 2 through 9
- 1-NXX-NXX-X XXX** Match any number with a leading 1, then 2 through 9, then any 2 digits, then 2 through 9, then any 6 digits
- 555-XXXX** Match any 7-digit number beginning with 555
- XXXXX\$** Match any number with at least 5 digits

- 5) **[7,8]\$** Match any number beginning with 7 or 8
- 6) **1234** Match exactly 1234

Some template number rules:

- 1) All brackets must be closed with no nesting of brackets and no wildcards within the brackets.
- 2) All brackets can hold digits and commas, for example: [1239]; [1,2,3,9]. Commas are implied between numbers within brackets and are ignored.
- 3) Brackets can contain a range of numbers using a hyphen, for example: [1-39]; [1-3,9].
- 4) The \$ wildcard is only allowed at the end of the template, for example: 91256\$; XXXX\$.

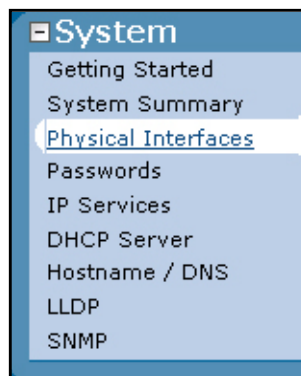
5. Select **Save** at the top right corner of the screen to save the configuration. A dialog box appears if the save is successful. Select **OK** to close the dialog box and return to the previous menu.

## Configuring E1 Interfaces Using the GUI

There are four main settings to consider when configuring E1 network interfaces. The source timing (clocking), framing format, line coding, and active channels must all be configured to match the circuit supplied by your network provider. By default, all NetVanta E1 interfaces are configured for standard multiframe without the optional CRC4 error correction. Generally, the framing format and line coding default values will be correct for your application and do not need to be changed.

To configure the E1 interface, follow these steps:

1. Navigate to **System > Physical Interfaces** to access the **Physical Interfaces** menu.



- From the list of physical interfaces, select the name of the E1 interface you would like to configure. The interface should be labeled **e1** <slot/port>. For example, **e1 2/1**. The **Interface Configuration** menu will appear.

Field	Value	Description
Description:	Voice	Description label (optional)
Enable:	<input checked="" type="checkbox"/>	Enable or disable this interface
Clocking:	System	Please go to the <a href="#">Clock Source</a> page to set the system clock source.
Framing:	CRC4	Select the framing that matches the network provider framing format
Coding:	HDB3	Select the coding that matches the network provider line coding
Sa4Tx-Bit:	0	Select a '0' or '1' for the Tx value of Sa4 on this E1.

Reset Apply

- Optionally, enter a description of the interface in the **Description** field.
- Select the check box next to **Enable** to allow the interface to pass data.
- Use the **Clocking** drop-down menu to select the source timing used for the E1 interface.
- Use the **Framing** drop-down menu to select the framing that matches the network provider framing format. Selecting **CRC4** configures CRC4 framing for the E1 interface. This enables CRC4 bits to be transmitted in the outgoing data stream. The received signal is also checked for CRC4 errors.
- Use the **Coding** drop-down menu to select the coding that matches the network provider line coding.
- Use the **Sa4Tx-Bit** drop-down menu to select a **0** or **1** for the Tx value of Sa4 on the E1 interface.
- Select **Apply** to apply the settings to the interface.
- Select **Save** at the top right corner of the screen to save the configuration. A dialog box appears if the save is successful. Select **OK** to close the dialog box and return to the previous menu.

## Configuring ISDN PRI Trunks for E1 Interfaces Using the GUI

The E1 Integrated Services Digital Network (ISDN) primary rate interface (PRI) is a circuit composed of 30 bearer channels (B-channels) and 2 data channels (D-channels). ISDN PRI is an international standard for digital communications, allowing a full range of enhanced services supporting voice and data. The 30 B-channels are used to transmit voice or data over an all-digital public switched telephone network (PSTN). The 2 D-channels are used to transmit out-of-band signaling for the B-channels that controls dialing numbers and features such as call waiting.

The NetVanta 7000 series can support the following ISDN PRI switch types: ETSI 300 102 and ETSI 300 403.



## Configuring the ISDN PRI Physical Interface

1. Navigate to the **System > Physical Interfaces** menu to display a list of physical interfaces.
2. From the list of physical interfaces, select the name of the E1 physical interface.

**Physical Interfaces**

This is a list of all the physical interfaces that are either physically tied to the product or connected via a plug-in module. View or edit the configuration of an interface by clicking its name.

Name	Logical Interface	Line Status	Type
<a href="#">eth 0/0</a>	none	Down	Ethernet
<a href="#">eth 0/1</a>	none	Up	Ethernet
<a href="#">eth 0/2</a>	none	Down	Ethernet
<a href="#">eth 0/3</a>	none	Down	Ethernet
<a href="#">eth 0/4</a>	none	Down	Ethernet
<a href="#">eth 0/5</a>	none	Down	Ethernet
<a href="#">eth 0/6</a>	none	Down	Ethernet
<a href="#">eth 0/7</a>	none	Down	Ethernet
<a href="#">eth 0/8</a>	none	Down	Ethernet
<a href="#">eth 0/9</a>	none	Down	Ethernet
<a href="#">eth 0/10</a>	none	Down	Ethernet
<a href="#">eth 0/11</a>	none	Down	Ethernet
<a href="#">eth 0/12</a>	none	Down	Ethernet
<a href="#">eth 0/13</a>	none	Down	Ethernet
<a href="#">eth 0/14</a>	none	Down	Ethernet
<a href="#">eth 0/15</a>	none	Down	Ethernet
<a href="#">eth 0/16</a>	none	Down	Ethernet
<a href="#">eth 0/17</a>	none	Down	Ethernet
<a href="#">eth 0/18</a>	none	Down	Ethernet
<a href="#">eth 0/19</a>	none	Down	Ethernet
<a href="#">eth 0/20</a>	none	Down	Ethernet
<a href="#">eth 0/21</a>	none	Down	Ethernet
<a href="#">eth 0/22</a>	none	Down	Ethernet
<a href="#">eth 0/23</a>	none	Down	Ethernet
<a href="#">eth 0/24</a>	none	Down	Ethernet
<a href="#">giga-eth 0/1</a>	none	Down	Gigabit Ethernet
<a href="#">giga-eth 0/2</a>	none	Down	Gigabit Ethernet
<a href="#">fxs 0/1</a>	x2001	OnHook	FXS
<a href="#">fxs 0/2</a>	x2002	OnHook	FXS
<a href="#">fxo 0/1</a>	(trunk) Analog Trunk T01	OnHook	FXO
<a href="#">fxo 0/2</a>	none	Down	FXO
<a href="#">t1 1/1</a>	none	Interface Disabled	WAN-T1
<a href="#">e1 2/1</a>	pri 1	Interface Disabled	WAN-E1

Attached USB Devices

Statistics Rate Interval: 300 Statistics Rate Interval (in seconds)

Apply

Select the E1 interface.

3. Under **Add a Connection**, select **PRI** from the **Connect To** drop-down menu to map the DS0s to the PRI trunk. Set the **DS0 Range** to be mapped and select **Add** to apply the map.

**Configured DS0 Connections for "e1 2/1"**

Use this dialog to connect a group of DS0's to a particular interface or service provided by this unit. To configure a connected interface's settings, click on the item in the list below. To remap a group of DS0's that are currently in use, click the delete button to remove the connections group.

**Add a Connection**

Connect To: PRI *Select an interface type to map to the DS0s*

Available DS0 Range: 1-31

DS0 Range: 1 to 31 *Set the range of DS0s to be mapped*

Speed: 64kbps *Select the speed for the DS0s being mapped*

Add

Connected Interface	Multiblink	DS0's Used	Group Number	Speed
There are no connections configured				

Select PRI from the drop-down menu.

Map the DS0 Range.

Select Add.

4. Enable the interface and configure the required parameters for your trunk. The service provider should provide a list of settings for the PRI, such as the **Switch Type**.

The screenshot shows the 'PRI Configuration' window with the following settings:

- Description: pri 1
- SNMP Alias: (empty)
- Enabled:
- Switch Type: ETSI 300 403
- Protocol Emulation: User
- B-Channel Restart:  Enabled
- Resource Selection: Auto
- Digits Transferred: All
- Digit Prefix: (empty)
- Calling Party Options**
  - Presentation: Allowed
  - Override: None
  - Override Number: (empty)

Buttons: Cancel, Apply

### Settings and Descriptions

**SNMP Alias** sets a text name assigned by a Simple Network Management Protocol (SNMP) network management system (NMS).

**Enabled** allows data to pass through the interface.

**Switch Type** configures the switch type. Choose from ETSI 300 102 and ETSI 300 403.

**Protocol Emulation** sets the emulation mode for this interface to one of the following:

**Network** operates as an NT/qsig master port.

**User** operates as a TE/qsig slave port.

**B-Channel Restart** enables or disables B-channel restarts if the protocol emulation is set to **Network**.

**Resource Selection** selects the manner in which resources are selected for use. The default setting is **Auto**.

**Name Delivery** configures the manner in which the calling party name is delivered. Calling party name can be delivered to customer premises equipment (CPE) in the **Setup** message by means of a Facility information element (IE) or by means of a **Display IE**. It can also be delivered in a facility message after the **Proceeding** message has been received from the CPE. This setting is only available when the **Protocol Emulation** is set to **Network** role.

**Digits Transferred** sets the number of inbound DID digits to transfer for internal call routing (**0, 3, 4, 7, All**). Use varies based on **Protocol Emulation** mode:

When the **Protocol Emulation** is set to **Network** role, this setting is disabled on the NetVanta 7000 Series.

When the **Protocol Emulation** is set to **User** role, this setting specifies how many digits of the called party number received in the setup message are used by the internal switchboard to route the call to its destination.

**Digit Prefix** adds a prefix to the digits transferred for internal call routing.

**Presentation** controls the presentation of the calling party number on outbound calls when **Protocol Emulation** is set to **User** role.

**Override** controls the calling party number on outbound calls when **Protocol Emulation** is set to **User** role.

**Override Number** sets the calling party number on outbound calls when **Protocol Emulation** is set to **User** role and **Override** is set to **Always** or **If No CID**.

## Configuring the System Clock Source

In order to establish a PRI connection, the E1 interface configured in *Configuring the ISDN PRI Physical Interface on page 41* must be set as the primary system clock source. To set the primary system clock source, follow these steps:

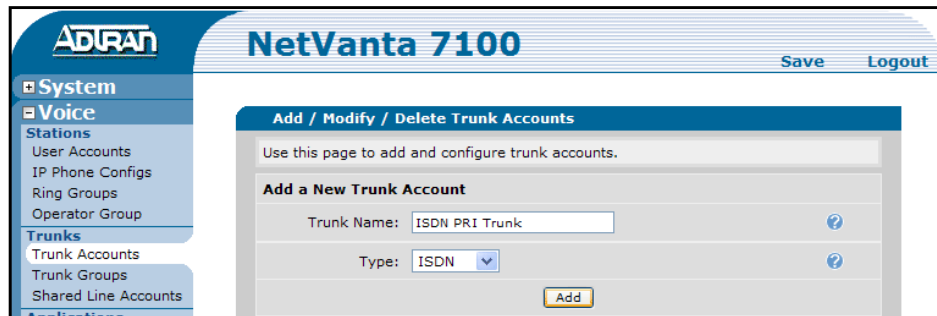
1. Navigate to **System > System Summary** to access the **General System Information** menu.
2. In the **General System Information** menu, select **Current System Clock Source** to access the **Set Primary/Backup Clock Source** menu.

3. In the **Set Primary/Backup Clock Source** menu, use the **Primary Clock Source** drop-down menu to select the E1 interface you configured in *Configuring the ISDN PRI Physical Interface on page 41*. Then, select **Apply**.

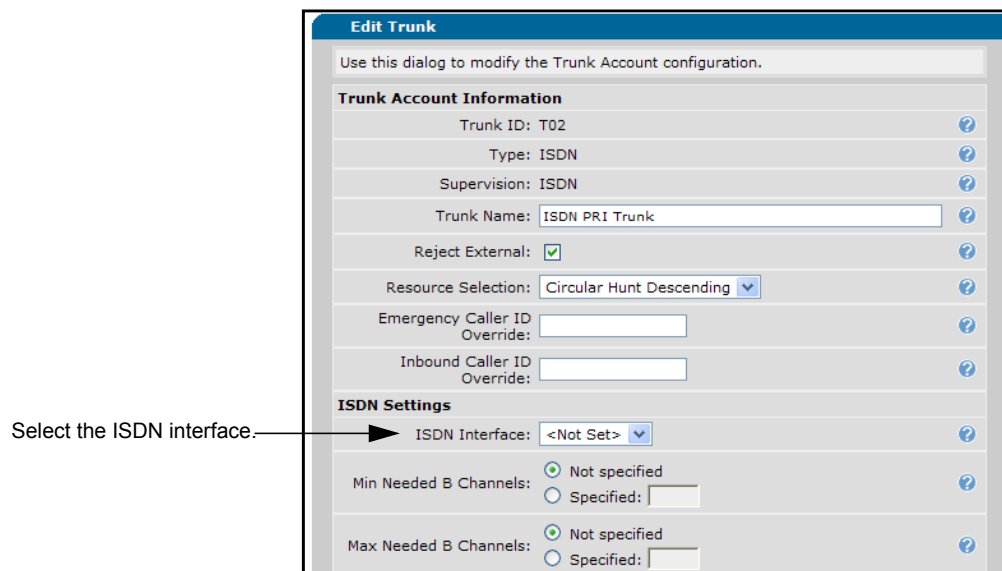
## Configuring the ISDN/PRI Trunk Account

A trunk account must be created in order to make and receive calls over the E1 interface. Create the trunk account and assign the PRI interface. Make sure the PRI settings (trunk number, caller ID, etc.) match the parameters set by your service provider.

1. Navigate to **Voice > Trunks > Trunk Accounts** to access the **Add/Modify/Delete Trunk Accounts** menu. Enter a name for the trunk and set the **Type** to **ISDN**. Select **Add** to append the settings and create the new trunk account.



2. After selecting **Add** to add the new trunk account, the **Edit Trunk** menu appears. Configure the ISDN trunk. Use the **ISDN Interface** drop-down menu to select the PRI interface configured in [Configuring the ISDN PRI Physical Interface on page 41](#).



## Settings and Descriptions

**Trunk Name** specifies a name for this trunk.

**Reject External** rejects trunk-to-trunk calls.

**Resource Selection** specifies how resources will be used by the switchboard for outbound calls made on this trunk.

**Linear Hunt Ascending** accepts calls on the lowest number DS0 or port that is available in this group at the time the call is received.

**Linear Hunt Descending** accepts calls on the highest number DS0 or port that is available in this group at the time the call is received.

**Circular Hunt Ascending** (default) distributes calls evenly among available DS0s or ports in this group beginning at the lowest numbered DS0 or port.

**Circular Hunt Descending** distributes calls evenly among available DS0s or ports in this group beginning at the highest numbered DS0 or port.

**Emergency Caller ID Override** configures the caller ID number on outbound emergency calls to be overridden with the specified value (on this trunk).

**Inbound Caller ID Override** configures the caller ID number on inbound calls to be overridden with the specified value (on this trunk).

- Optional. At the bottom of the **Edit Trunk** menu, select the **VoIP Settings** tab. Edit the VoIP and RTP settings. Select **Apply** to apply the settings, or proceed to the **DNIS Substitution** tab.

4. Optional. Use **DNIS Substitution** if a dialed number should be replaced with a specific number of your choice. Select **Apply** to apply the settings. Multiple **DNIS Substitution** entries can be added to each trunk. Order of input is important. The first valid match that is found for outbound numbers will be used.

## Settings and Descriptions

**Match Number** specifies the dialed number that you want to match.

**Substitution Number** specifies the number that will be sent in place of the number that was matched.

### Example Substitution for 10-digit Dialing

Match Number: NXX-XXXX                      Substitution Number: 256-NXX-XXXX

### Example Substitution for Long Distance 10-digit Dialing

Match Number: 1-NXX-XXX-XXXX              Substitution Number: NXX-XXX-XXXX

### Example Substitution for Long Distance PIC Code for a Particular Service Provider

Match Number: 1-NXX-NXX-XXXX              Substitution Number: 10-10-220-NXX-NXX-XXXX

### Example Substitution for 411 Information Calls

Match Number: 411                              Substitution Number: 256-555-1212

## Examples of Wildcard Characters

- 0-9**              Match exact digit only.
- X**                Match any single digit 0-9.
- N**                Match any single digit 2-9.
- [ ]**              Match any digit in the list. For example [1,4,6], matches 1, 4, and 6 only, while [1-3,5] matches 1 through 3 and 5.
- \$**                Match any number, must occur at end of pattern.
- ( )**              Punctuation characters ignored unless used within [ ].

## Additional Resources

There are additional resources available to aid in configuring your AOS unit. The documents listed below are available online at ADTRAN's Support Forum at <https://supportforums.adtran.com>.

- *AOS Command Reference Guide*
- *AOS Voice International Configuration Guide*