



Configuration Guide

Configuring NetVanta Switches for a VoIP Network

This document describes how to configure settings using the Voice over IP (VoIP) Setup Wizard on ADTRAN's NetVanta switches to help optimize a VoIP network. This guide provides instructions using the ADTRAN Operating System (AOS) web-based graphical user interface (GUI) and the command line interface (CLI).

This guide consists of the following sections:

- *Overview on page 2*
- *Configuring Switches for a VoIP Network Using the GUI on page 2*
- *Configuring Switches for a VoIP Network Using the CLI on page 14*

Overview

The VoIP Setup Wizard configures ADTRAN NetVanta switches with best practices settings for deployment in a VoIP network. Although the recommended settings provided by this wizard are general best practice recommendations, they may not be applicable for every VoIP network. When running the wizard, you are given the option of applying the ADTRAN recommended settings or specifying your own settings. If you accept the recommended settings, your unit will be configured as follows:

The following Quality of Service (QoS) settings will be applied to all ports:

```
qos cos-map 1 0 1
qos cos-map 2 2 4
qos cos-map 3 3 6
qos cos-map 4 5 7
qos queue-type wrr 25 25 25 expedite
```

A voice port will be configured with the following settings:

```
description voice
spanning-tree edgeport
no shutdown
switchport voice vlan 2
qos trust cos
```

An uplink port will be configured with the following settings:

```
description uplink
no shutdown
switchport mode trunk
qos trust cos
```

Hardware and Software Requirements and Limitations

The steps outlined in this guide are compatible with NetVanta switches running AOS firmware version R11.3.0 or later.

Configuring Switches for a VoIP Network Using the GUI

The VoIP Setup Wizard can be run using either the GUI or the CLI. This section contains the following information needed to configure your VoIP settings using the GUI:

- [Accessing the GUI on page 3](#)
- [Applying Recommended VoIP Settings on page 3](#)
- [Applying Custom VoIP Settings on page 6](#)
- [Displaying the On-Demand VoIP Report on page 12](#)

Accessing the GUI

1. Connect to the GUI by opening a new page in your Internet browser and entering the unit's IP address in the address field in the following form: **http://<ip address>**, for example:



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



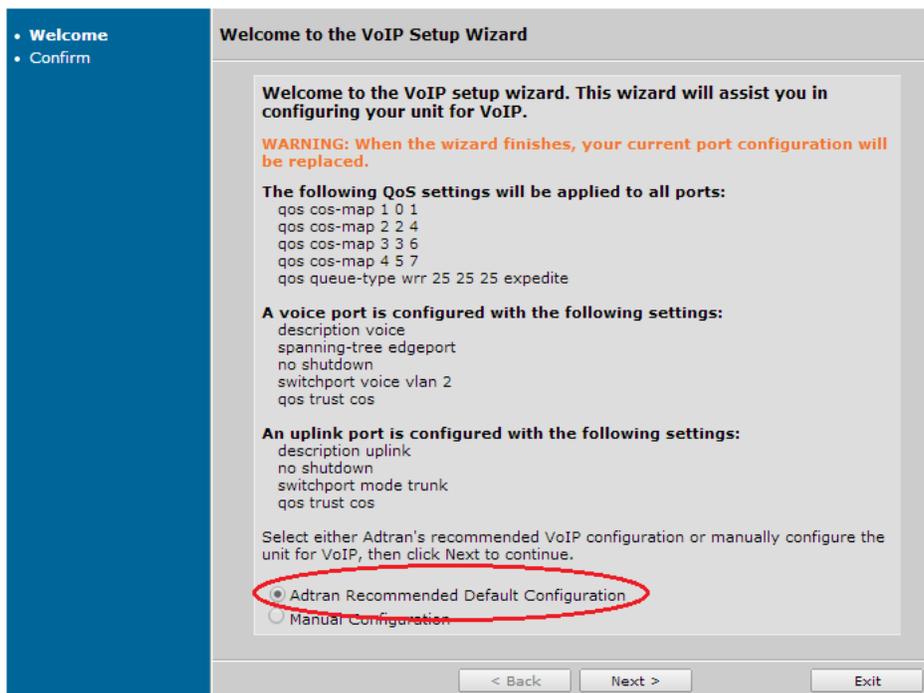
The default user name is **admin**, and the default password is **password**.

Applying Recommended VoIP Settings

1. Select the **VoIP Setup Wizard** link at the top of the page or navigate to **Voice > VoIP Wizard**.



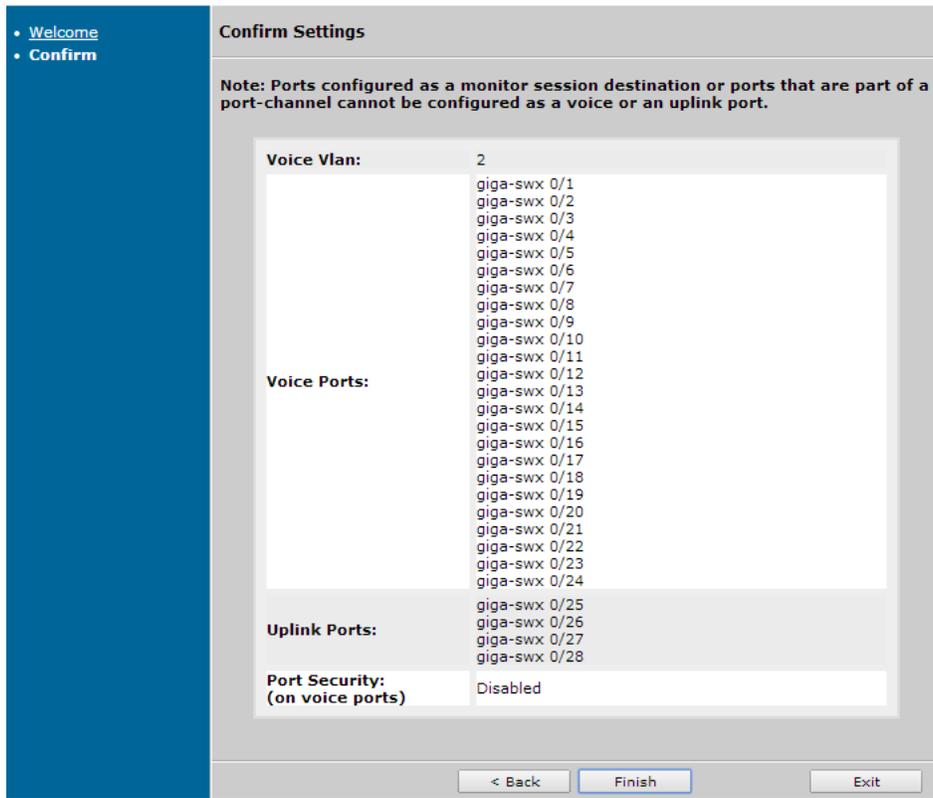
2. Select the **Adtran Recommended Default Configuration** option and then select the **Next** button. If you want to apply custom settings, refer to *Applying Custom VoIP Settings on page 6*.



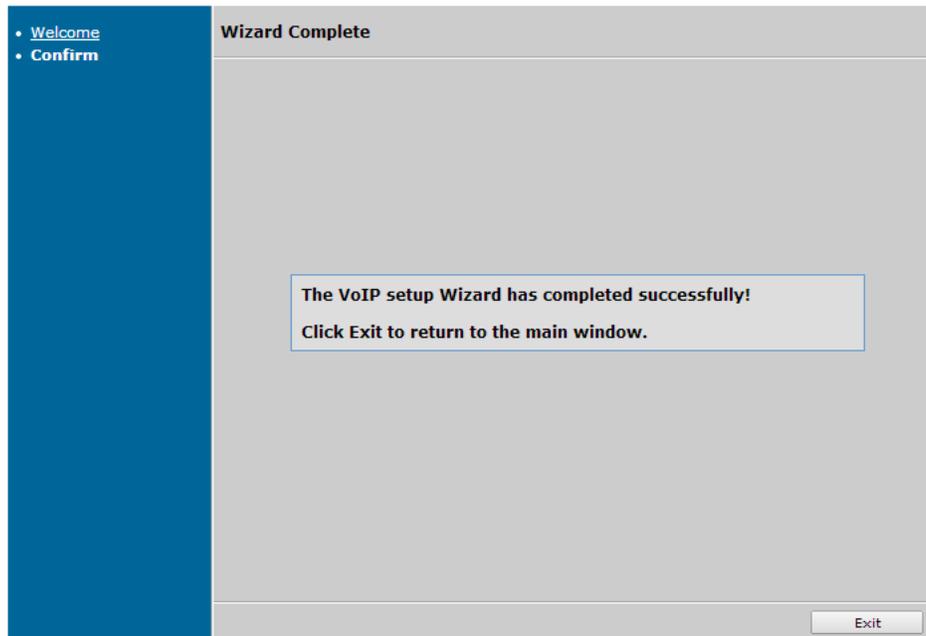


For more information about the class of service (CoS) settings that will be applied, refer to [Configuring Ethernet Switch QoS and CoS in AOS](https://supportforums.adtran.com) available on ADTRAN's Support Community at <https://supportforums.adtran.com>.

3. Review the configuration settings and select **Finish** to apply the settings.



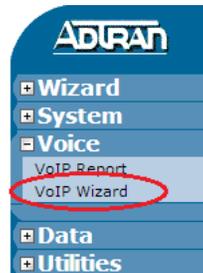
4. Select the **Exit** button to exit the wizard and return to the main window.



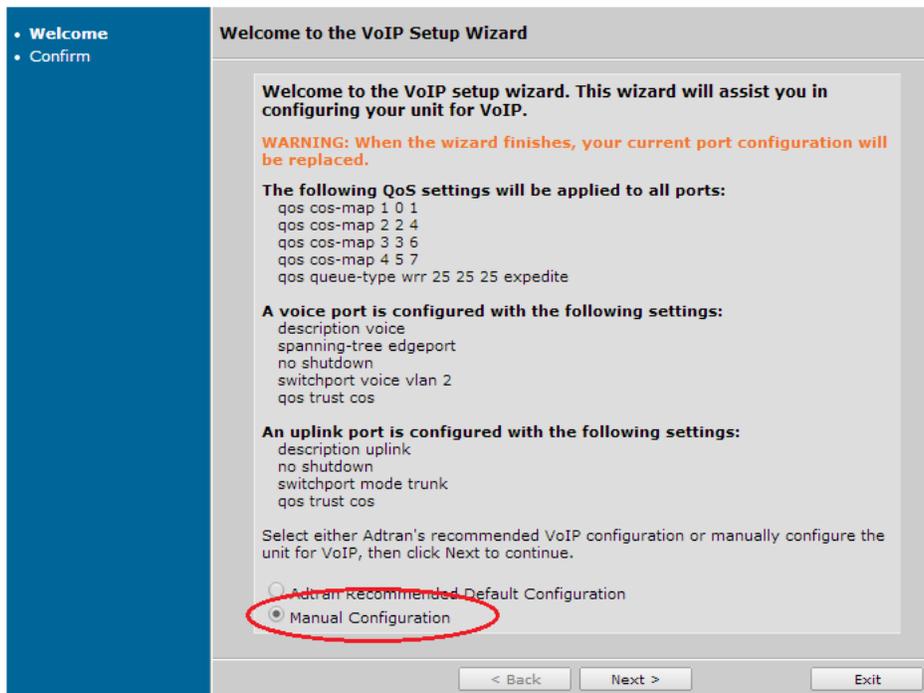
5. Select **Save** in the top right of the menu to save these changes.

Applying Custom VoIP Settings

1. Select the **VoIP Setup Wizard** link at the top of the page or navigate to **Voice > VoIP Wizard**.



2. Select the **Manual Configuration** option and then select the **Next** button. Selecting Manual Configuration will guide you through a series of steps to define the settings. If you want to apply the recommended settings displayed on the menu, refer to [Applying Recommended VoIP Settings on page 3](#).



3. Enter a voice VLAN ID to assign to voice port(s). Ideally, this VLAN will be used for VoIP traffic. The voice VLAN feature relies on VoIP devices to use Link-Layer Discovery Protocol-Media Endpoint Discovery (LLDP-MED) to recognize the configured voice VLAN. For more information, refer to [Configuring LLDP and LLDP-MED in AOS](#). For more information about VLANs, refer to [The](#)

Difference between VLANs and VLAN Interfaces. Both documents are available on ADTRAN's Support Community at <https://supportforums.adtran.com>.

The screenshot displays the 'VoIP Setup' configuration page. On the left is a blue navigation sidebar with the following menu items: 'Welcome', 'Voice Vlan' (highlighted), 'Assign Voice Ports', 'Port Security for voice ports', 'Assign Uplink Ports', and 'Confirm'. The main content area is titled 'VoIP Setup' and contains the instruction 'Please enter a voice VLAN ID to assign to voice port(s)'. Below this is a form with a label 'Voice VLAN:' followed by a text input field containing the number '2'. To the right of the input field is the text 'Voice VLAN ID (1-4094)'. At the bottom of the page are three buttons: '< Back', 'Next >', and 'Exit'.

4. Select the **Next** button to continue.

- Select the check box next to the applicable ports to designate them as voice ports. Voice ports will be configured with the voice VLAN and QoS settings.

- [Welcome](#)
- [Voice VLAN](#)
- [Assign Voice Ports](#)
- [Port Security for voice ports](#)
- [Assign Uplink Ports](#)
- [Confirm](#)

VoIP Setup

Select ports to configure as voice ports. **Note: Ports configured as a monitor session destination or ports that are part of a port-channel cannot be configured as a voice port.**

<input type="checkbox"/> Select All	Description
<input type="checkbox"/>	giga-swx 0/1 voice
<input type="checkbox"/>	giga-swx 0/2 voice
<input type="checkbox"/>	giga-swx 0/3 voice
<input type="checkbox"/>	giga-swx 0/4 voice
<input type="checkbox"/>	giga-swx 0/5 voice
<input type="checkbox"/>	giga-swx 0/6 voice
<input type="checkbox"/>	giga-swx 0/7 voice
<input type="checkbox"/>	giga-swx 0/8 voice
<input type="checkbox"/>	giga-swx 0/9 voice
<input type="checkbox"/>	giga-swx 0/10 voice
<input type="checkbox"/>	giga-swx 0/11 voice
<input type="checkbox"/>	giga-swx 0/12 voice
<input type="checkbox"/>	giga-swx 0/13 voice
<input type="checkbox"/>	giga-swx 0/14 voice
<input type="checkbox"/>	giga-swx 0/15 voice
<input type="checkbox"/>	giga-swx 0/16 voice
<input type="checkbox"/>	giga-swx 0/17 voice
<input type="checkbox"/>	giga-swx 0/18 voice
<input type="checkbox"/>	giga-swx 0/19 voice
<input type="checkbox"/>	giga-swx 0/20 voice
<input type="checkbox"/>	giga-swx 0/21 voice
<input type="checkbox"/>	giga-swx 0/22 voice
<input type="checkbox"/>	giga-swx 0/23 voice
<input type="checkbox"/>	giga-swx 0/24 voice
<input type="checkbox"/>	giga-swx 0/25 uplink
<input type="checkbox"/>	giga-swx 0/26 uplink
<input type="checkbox"/>	giga-swx 0/27 uplink
<input type="checkbox"/>	giga-swx 0/28 uplink

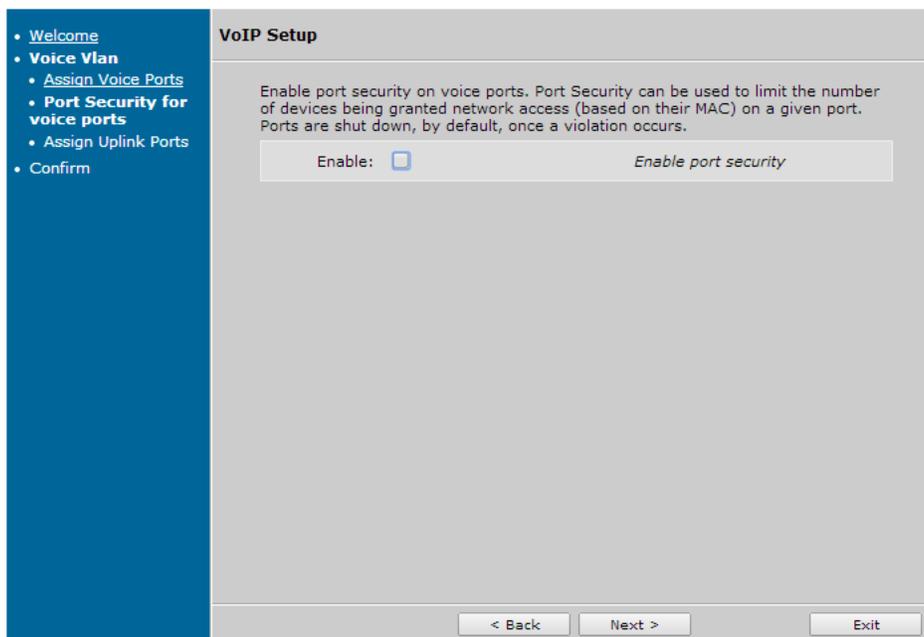
The checked ports will be configured with voice VLAN ID.



Ports configured as a monitor session destination and ports that are part of a port channel are not displayed in the list because they cannot be configured as voice ports.

- Select the **Next** button to continue.

7. Select the check box if you want to enable port security on voice ports. Port security can be used to limit the number of devices being granted access (based on their MAC addresses) on a given port. By default, ports will shut down once a violation occurs. For more information about port security, refer to *Configuring Port Access Control in AOS* available on ADTRAN's Support Community at <https://supportforums.adtran.com>.



The screenshot shows the 'VoIP Setup' configuration page. On the left is a blue navigation sidebar with the following menu items: Welcome, Voice Vlan, Assign Voice Ports, Port Security for voice ports (highlighted), Assign Uplink Ports, and Confirm. The main content area is titled 'VoIP Setup' and contains the following text: 'Enable port security on voice ports. Port Security can be used to limit the number of devices being granted network access (based on their MAC) on a given port. Ports are shut down, by default, once a violation occurs.' Below this text is a form with 'Enable:' followed by an unchecked checkbox and the label 'Enable port security'. At the bottom of the page are three buttons: '< Back', 'Next >', and 'Exit'.

8. If you enabled port security, enter the maximum number of end point devices allowed in this port.



This screenshot shows a close-up of the configuration form. The 'Enable:' checkbox is now checked. Below it, the 'Maximum:' field contains the number '2'. The label for this field is 'Maximum number of secure addresses (1-132)'. The 'Enable port security' label is also visible above the checkbox.

9. Select the **Next** button to continue.

10. Select the ports to configure as uplink ports. Uplink ports will be configured as trunk ports and, by default, will allow all VLANs.

- [Welcome](#)
- **Voice VLAN**
- [Assign Voice Ports](#)
- [Port Security for voice ports](#)
- **Assign Uplink Ports**
- [Confirm](#)

VoIP Setup

Select ports to configure as uplink ports. **Note: Ports configured as a monitor session destination or ports that are part of a port-channel cannot be configured as an uplink port.**

<input type="checkbox"/> Select All	Description	The checked ports will be configured for trunk mode.
<input type="checkbox"/>	giga-swx 0/3 voice	
<input type="checkbox"/>	giga-swx 0/4 voice	
<input type="checkbox"/>	giga-swx 0/5 voice	
<input type="checkbox"/>	giga-swx 0/6 voice	
<input type="checkbox"/>	giga-swx 0/7 voice	
<input type="checkbox"/>	giga-swx 0/8 voice	
<input type="checkbox"/>	giga-swx 0/9 voice	
<input type="checkbox"/>	giga-swx 0/10 voice	
<input type="checkbox"/>	giga-swx 0/11 voice	
<input type="checkbox"/>	giga-swx 0/12 voice	
<input type="checkbox"/>	giga-swx 0/13 voice	
<input type="checkbox"/>	giga-swx 0/14 voice	
<input type="checkbox"/>	giga-swx 0/15 voice	
<input type="checkbox"/>	giga-swx 0/16 voice	
<input type="checkbox"/>	giga-swx 0/17 voice	
<input type="checkbox"/>	giga-swx 0/18 voice	
<input type="checkbox"/>	giga-swx 0/19 voice	
<input type="checkbox"/>	giga-swx 0/20 voice	
<input type="checkbox"/>	giga-swx 0/21 voice	
<input type="checkbox"/>	giga-swx 0/22 voice	
<input type="checkbox"/>	giga-swx 0/23 voice	
<input type="checkbox"/>	giga-swx 0/24 voice	
<input type="checkbox"/>	giga-swx 0/25 uplink	
<input type="checkbox"/>	giga-swx 0/26 uplink	
<input type="checkbox"/>	giga-swx 0/27 uplink	
<input type="checkbox"/>	giga-swx 0/28 uplink	

Ports configured as a monitor session destination and ports that are part of a port channel are not displayed in the list because they cannot be as uplink ports.

- Review the settings. To change a setting, use the **Back** button to move back through the wizard. When you are ready to apply the settings to the system, select the **Finish** button.

The screenshot shows the 'Confirm Settings' step of the VoIP setup wizard. On the left is a blue sidebar with a breadcrumb trail: 'Welcome', 'Voice Vlan', and 'Confirm'. The main content area is titled 'Confirm Settings' and contains a table of settings:

Voice Vlan:	2
Voice Ports:	giga-swxx 0/1 giga-swxx 0/2
Uplink Ports:	giga-swxx 0/3 giga-swxx 0/4
Port Security: (on voice ports)	Enabled
Maximum number of secure addresses:	2

At the bottom of the main content area are three buttons: '< Back', 'Finish', and 'Exit'.

- Select the **Exit** button to exit the wizard and return to the main window.

The screenshot shows the 'Wizard Complete' step of the VoIP setup wizard. On the left is a blue sidebar with a breadcrumb trail: 'Welcome', 'Voice Vlan', and 'Confirm'. The main content area is titled 'Wizard Complete' and contains a message box:

The VoIP setup Wizard has completed successfully!
Click Exit to return to the main window.

At the bottom right of the main content area is an 'Exit' button.

- Select **Save** in the top right of the menu to save these changes.

Displaying the On-Demand VoIP Report

1. To display the VoIP report, navigate to **Voice > VoIP Report** at any time:



2. Review the settings and warnings:

Report generated on July 16, 2014 04:06:43 PM CDT [Print View](#)

VoIP Summary

Voice Vlans: 2

Voice Ports: swx 0/1, swx 0/2, swx 0/3, swx 0/4, swx 0/5, swx 0/6, swx 0/7, swx 0/8, swx 0/9, swx 0/10, swx 0/11, swx 0/12, swx 0/13, swx 0/14, swx 0/15, swx 0/16, swx 0/17, swx 0/18, swx 0/19, swx 0/20, swx 0/21, swx 0/22, swx 0/23, swx 0/24 ?

Trunk Ports: giga-swxx 0/1, giga-swxx 0/2, giga-swxx 0/3, giga-swxx 0/4

Queue Type: Weighted Round Robin (WRR)

Queue	Class of Service Priority	Queue Weight
1	0 1	25
2	2 4	25
3	3 6	25
4	5 7	0

Voice Port Warnings

There are no warnings.

Voice Ports

Port	Voice VLAN	Device MAC
swx_0/1 (voice)	2	
swx_0/2 (voice)	2	
swx_0/3 (voice)	2	
swx_0/4 (voice)	2	
swx_0/5 (voice)	2	
swx_0/6 (voice)	2	
swx_0/7 (voice)	2	
swx_0/8 (voice)	2	
swx_0/9 (voice)	2	
swx_0/10 (voice)	2	

3. To display a printable view of this report, select **Print View** at the top of the page.

Configuring Switches for a VoIP Network Using the CLI

The VoIP Setup Wizard can be run using either the GUI or the CLI. This section contains the following information needed to configure your VoIP settings using the CLI:

- [Accessing the CLI on page 13](#)
- [Applying Recommended VoIP Settings on page 13](#)
- [Applying Custom VoIP Settings on page 15](#)
- [Displaying the VoIP Setup Wizard Log File on page 18](#)

Accessing the CLI

To access the CLI, 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 IP address (10.10.10.1), use the configured IP address.

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



*The default user name is **admin** and the default password is **password**. If your system 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.

Applying Recommended VoIP Settings

1. Enter the **run voipwizard** command at the Enable mode prompt:

```
#run voipwizard
```

2. The VoIP Setup Wizard displays the ADTRAN recommended VoIP settings and prompts whether you want to apply these settings. To apply the recommended settings, enter **yes**. If you want to apply custom settings, enter **no** and follow the steps in [Applying Custom VoIP Settings on page 15](#).

```
Welcome to the VoIP Configuration Wizard.
```

```
This wizard will assist you in configuring your NetVanta 1234 for  
VoIP. You may automatically apply ADTRAN's recommended VoIP settings or  
specify your own port assignments.
```

```
WARNING: This will change the current configuration of the unit. If this
```

unit has already been configured, the following changes may conflict with the current settings. You will be able to review your changes before they are applied.

ADTRAN VoIP Recommendation:

Ports assigned as voice ports: (switchport 0/1-24)

Ports assigned as uplink ports: (gigabit-switchport 0/1-4)

Voice port configuration: description voice
spanning-tree edgeport
no shutdown
switchport voice vlan 2
qos trust cos

Uplink port configuration: description uplink
no shutdown
switchport mode trunk
qos trust cos

Global QoS configuration: qos queue-type wrr 25 25 25 expedite
qos cos-map 1 0 1
qos cos-map 2 2 4
qos cos-map 3 3 6
qos cos-map 4 5 7

Would you like to apply this recommendation? [yes/no]



For more information about the class of service (CoS) settings that will be applied, refer to [Configuring Ethernet Switch QoS and CoS in AOS](#) available on ADTRAN's Support Community at <https://supportforums.adtran.com>.

- If you enter **yes**, a summary of the applied settings displays, and you will be prompted to save the changes. Enter **yes** to save the changes to the configuration file.

Configuring voice ports...

Configuring trunk ports...

Configuring QoS...

***** SUMMARY *****

Ports successfully assigned as voice ports: (switchport 0/1-24)

Ports successfully assigned as uplink ports: (gigabit-switchport 0/1-4)

Voice port configuration: description voice
spanning-tree edgeport
no shutdown
switchport voice vlan 2
qos trust cos

Uplink port configuration: description uplink
no shutdown
switchport mode trunk
qos trust cos

Global QoS configuration: qos queue-type wrr 25 25 25 expedite
qos cos-map 1 0 1
qos cos-map 2 2 4

```

qos cos-map 3 3 6
qos cos-map 4 5 7

Number of errors: 0
*****
VoIP settings were successfully applied.
If you want this configuration to last after the unit reloads, you will
have to save it.

Would you like to save these changes? [yes/no]

```

Applying Custom VoIP Settings

1. Enter the **run voipwizard** command at the Enable mode prompt:

```
#run voipwizard
```

2. The VoIP Setup Wizard displays the ADTRAN recommended VoIP settings and prompts whether you want to apply these settings. To apply custom settings, enter **no**. If you want to apply the recommended settings, enter **yes** and follow the steps in *Applying Recommended VoIP Settings on page 13*. If you enter **no**, the wizard steps you through a series of questions to define the VoIP settings.

```

Welcome to the VoIP Configuration Wizard.

This wizard will assist you in configuring your NetVanta 1234 for
VoIP. You may automatically apply ADTRAN's recommended VoIP settings or
specify your own port assignments.

WARNING: This will change the current configuration of the unit. If this
unit has already been configured, the following changes may conflict with
the current settings. You will be able to review your changes before they
are applied.

ADTRAN VoIP Recommendation:

Ports assigned as voice ports: (switchport 0/1-24)
Ports assigned as uplink ports: (gigabit-switchport 0/1-4)
Voice port configuration:  description voice
                           spanning-tree edgeport
                           no shutdown
                           switchport voice vlan 2
                           qos trust cos

Uplink port configuration: description uplink
                           no shutdown
                           switchport mode trunk
                           qos trust cos

Global QoS configuration:  qos queue-type wrr 25 25 25 expedite
                           qos cos-map 1 0 1
                           qos cos-map 2 2 4
                           qos cos-map 3 3 6
                           qos cos-map 4 5 7

Would you like to apply this recommendation? [yes/no]

```

3. When prompted, enter a voice VLAN ID between **1** and **4094** to assign to voice ports. Ideally, this VLAN will be used for VoIP traffic. The voice VLAN feature relies on VoIP devices to use Link-Layer Discovery Protocol-Media Endpoint Discovery (LLDP-MED) to recognize the configured voice

VLAN. For more information, refer to *Configuring LLDP and LLDP-MED in AOS*. For more information about VLANs, refer to *The Difference between VLANs and VLAN Interfaces*. Both documents are available on ADTRAN's Support Community at <https://supportforums.adtran.com>.

```
What would you like to use as your voice vlan? (1-4094) [default: 2]
```



The default settings displayed by the wizard will be based on your device.

- Depending on the type of switch you have, you may be asked to specify which interfaces to configure as voice ports. In the following example, you could specify either **1** for the switchport, **2** for the gigabit-switchport or **1-2** for both:

```
What are the types of interfaces you would like to configure as voice ports?
```

```
--- Options ---
```

- switchport
- gigabit-switchport

```
-----
```

```
[default: switchport]
```

```
Specify one or more port types. (Examples: 1,2,1-2)
```

```
Enter your selection:
```

- When prompted, enter the port number(s) to assign as voice ports. Voice ports will be configured with the voice VLAN and QoS settings. You can enter one or more port numbers separated by commas (for example, **1,3** indicates ports 1 and 3), a range of consecutive port numbers separated by a hyphen (for example, **3-5** indicates ports 3, 4, and 5), or a combination of the two (for example, **1, 3-5, 7** indicates ports 1, 3, 4, 5, and 7).

```
Selected: switchport
```

```
For the 'switchport' interface type, which ports would you like to assign as voice ports? Enter port numbers or ranges of port numbers separated by commas. (Example: 1,2,3-9,13,15) [default: 1-24]
```



Ports configured as a monitor session destination and ports that are part of a port channel cannot be configured as voice ports.

- If you specified to configure more than one interface as a voice port in *Step 4*, the wizard will prompt you for the voice port number(s) for each interface specified.
- After defining all voice ports, you will be prompted for the interfaces to configure as uplink ports. In the following example, you could specify either **1** for the switchport, **2** for the gigabit-switchport or **1-2** for both:

```
What are the types of interfaces you would like to configure as uplink ports?
```

```
--- Options ---
```

- switchport
- gigabit-switchport

```

-----
[default: gigabit-switchport]
Specify one or more port types. (Examples: 1,2,1-2)
Enter your selection:

```

8. When prompted, enter the port number(s) to assign as uplink ports. Uplink ports will be configured as trunk ports and, by default, will allow all VLANs. You can enter one or more port numbers separated by commas (for example, **1,3** indicates ports 1 and 3), a range of consecutive port numbers separated by a hyphen (for example, **3-5** indicates ports 3, 4, and 5), or a combination of the two (for example, **1, 3-5, 7** indicates ports 1, 3, 4, 5, and 7).

```
Selected: gigabit-switchport
```

```
For the 'gigabit-switchport' interface type, which ports would you like
to assign as uplink ports? Enter port numbers or ranges of port numbers
separated by commas. (Example: 1,2,3-9,13,15) [default: 1-4]
```



Ports configured as a monitor session destination and ports that are part of a port channel cannot be configured as uplink ports.

9. If you specified to configure more than one interface as an uplink port in [Step 7](#), the wizard will prompt you for the uplink port numbers for each interface you specified.
10. After defining all uplink ports, you will be prompted whether to enable port security on voice ports. Port security can be used to limit the number of devices being granted access (based on their MAC addresses) on a given port. By default, ports will shut down once a violation occurs. For more information about port security, refer to [Configuring Port Access Control in AOS](#) available on ADTRAN's Support Community at <https://supportforums.adtran.com>. Enter **yes** to enable port security, or enter **no** to disable port security.

```
Would you like to enable port security on all voice ports?
(yes/no) [default: no]
```

11. If you entered **yes** in the previous step, enter the maximum number of endpoint devices to allow on each voice port when prompted:

```
How many mac addresses would you like to allow on each voice
port? (1-132) [default: 2]
```

12. A summary of the settings displays. When prompted, enter **yes** to apply these settings.

```
Selected VoIP configuration:
```

```
Ports assigned as voice ports: (switchport 0/1-24)
```

```
Ports assigned as uplink ports: (gigabit-switchport 0/1-4)
```

```
Voice port configuration:  description voice
                          spanning-tree edgeport
                          no shutdown
                          switchport voice vlan 2
                          qos trust cos
                          switchport port-security
                          switchport port-security maximum 2
```

```
Uplink port configuration: description uplink
                          no shutdown
```

```

switchport mode trunk
qos trust cos
Global QoS configuration: qos queue-type wrr 25 25 25 expedite
qos cos-map 1 0 1
qos cos-map 2 2 4
qos cos-map 3 3 6
qos cos-map 4 5 7

```

Would you like to apply this configuration? [yes/no]

13. After applying the settings, the wizard displays a summary and prompts you to save these changes. Enter **yes** to save the changes.

```

Configuring voice ports...
Configuring trunk ports...
Configuring QoS...
***** SUMMARY *****

Ports successfully assigned as voice ports: (switchport 0/1-24)
Ports successfully assigned as uplink ports:(gigabit-switchport 0/1-4)

Voice port configuration: description voice
spanning-tree edgeport
no shutdown
switchport voice vlan 2
qos trust cos

Uplink port configuration: description uplink
no shutdown
switchport mode trunk
qos trust cos

Global QoS configuration: qos queue-type wrr 25 25 25 expedite
qos cos-map 1 0 1
qos cos-map 2 2 4
qos cos-map 3 3 6
qos cos-map 4 5 7

Number of errors: 0
*****

VoIP settings were successfully applied.

If you want this configuration to last after the unit reloads, you will
have to save it.

Would you like to save these changes? [yes/no]

```

Displaying the VoIP Setup Wizard Log File

To display the VoIP Setup Wizard log file, enter the **show voipwizard log** command at the Enable mode prompt:

```

#show voipwizard log
Using 19358 bytes
***** SUMMARY *****

Ports successfully assigned as voice ports: (switchport 0/1-24)
Ports successfully assigned as uplink ports: (gigabit-switchport 0/1-4)

```

```
Voice port configuration: description voice
                        spanning-tree edgeport
                        no shutdown
                        switchport voice vlan 2
                        qos trust cos
Uplink port configuration: description uplink
                        no shutdown
                        switchport mode trunk
                        qos trust cos
Global QoS configuration: qos queue-type wrr 25 25 25 expedite
                        qos cos-map 1 0 1
                        qos cos-map 2 2 4
                        qos cos-map 3 3 6
                        qos cos-map 4 5 7
```