Recommended QoS Configuration Settings for AdTran NetVanta 3448 Router

RingCentral

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Introduction

RingCentral® has taken the "guesswork" out of router selection. Since we know that Quality of Service (QoS) is paramount to your business, we have carefully selected and tested a set of dependable routers suitable for supporting high quality Voice-over-IP conversations.

This document provides recommended configuration settings to ensure the highest possible QoS for voice calls on the AdTran® NetVanta® 3448 router.

Additional routers that have been tested and recommended are shown on the Recommended Routers page of the RingCentral Customer Care website.

Supported browsers for test

- Internet Explorer 11 or higher (Windows XP, 7, 8 or higher)
- Firefox version 36 or higher (Windows and Mac)
- Safari version 6.2 or higher (Mac)

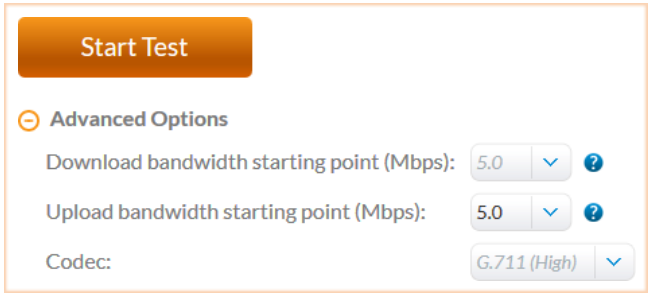
Quality of Service

RingCentral® provides reliable, high-quality voice service. Your local network, Internet connection, and your router all contribute to overall call quality, with sufficient dedicated bandwidth to voice calls being the biggest factor. To help you manage your call quality, RingCentral offers tools to check your Internet connection speed, and instructions to configure the Quality of Service (QoS) settings of your routers.

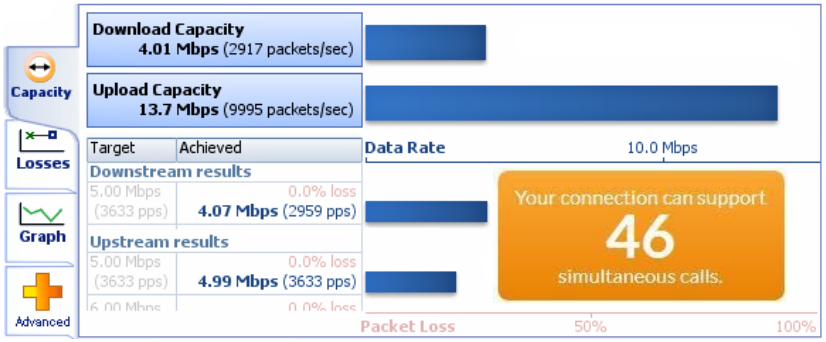
The Quality of Service (QoS) settings on your router enable it to give priority to real time voice traffic over lower priority data traffic, such as large downloads. This document provides recommended configuration settings to ensure the highest possible QoS on the AdTran NetVanta 3448 router. After configuring your router for optimum QoS, select port and firewall settings for mobile and softphone apps from the table here.

Test your connection capacity

The RingCentral Connection Capacity test will help determine the maximum number of simultaneous RingCentral calls that can be supported on your broadband connection. Run this test during normal business hours when the connection is in use by other applications, including large file downloads.



The capacity test should be run using the maximum number of simultaneous call connections needed, and should use the G.711 codec selection.



Specific requirements for QoS: *Bandwidth 100Kbps up and down per call; Latency (one-way) less than 150ms; Jitter not to exceed 100ms; Packet loss less than 3%.*

These requirements are the foundation for ensuring your local network can support satisfactory VoIP. Failure to meet these requirements will result in poor voice quality.

When the test completes, you will see the recommended number of simultaneous calls your connection can support while maintaining good quality voice calls.

Test your connection quality

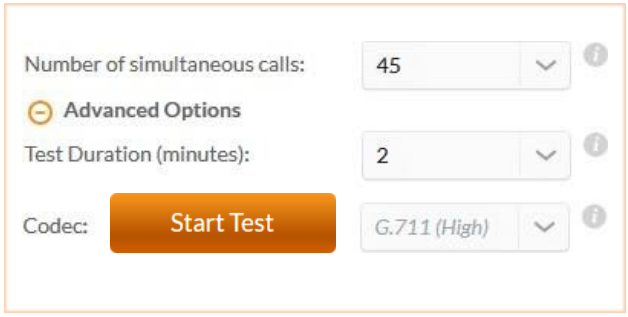
RingCentral provides a VoIP Quality test that will simulate VoIP calls between your computer and RingCentral, and provide an estimate of the voice quality you should expect when using our service. For the most accurate results, run this test *at least* three different times throughout a business day, and *during peak usage times*, while connected to the network that you plan to use for RingCentral.

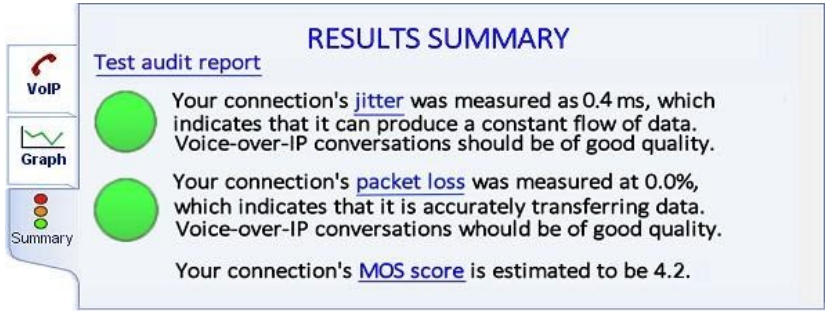
A two-minute test is typically sufficient, while longer tests are useful to find intermittent problems or to simultaneously test VoIP performance along with other traffic such as file transfers or remote access.

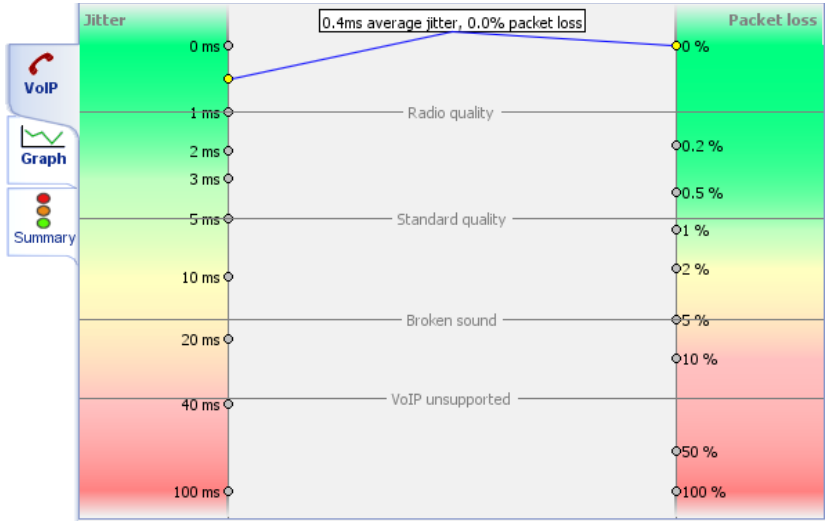
Select the maximum number of simultaneous users you expect to support, and set the test duration between 1 and 5 minutes; 2 minutes is considered sufficient in most instances.

Click jitter and packet loss on the RESULTS SUMMARY page to view the overall quality of your expected VoIP connection.

MOS score (Mean Opinion Score) refers to a test that has been used for decades in telephony networks to obtain the human user's view of the quality of the network. The MOS is the arithmetic mean of all the individual scores, and can range from 1 (worst) to 5 (best). An MOS score of 4 is good.







Configure your router

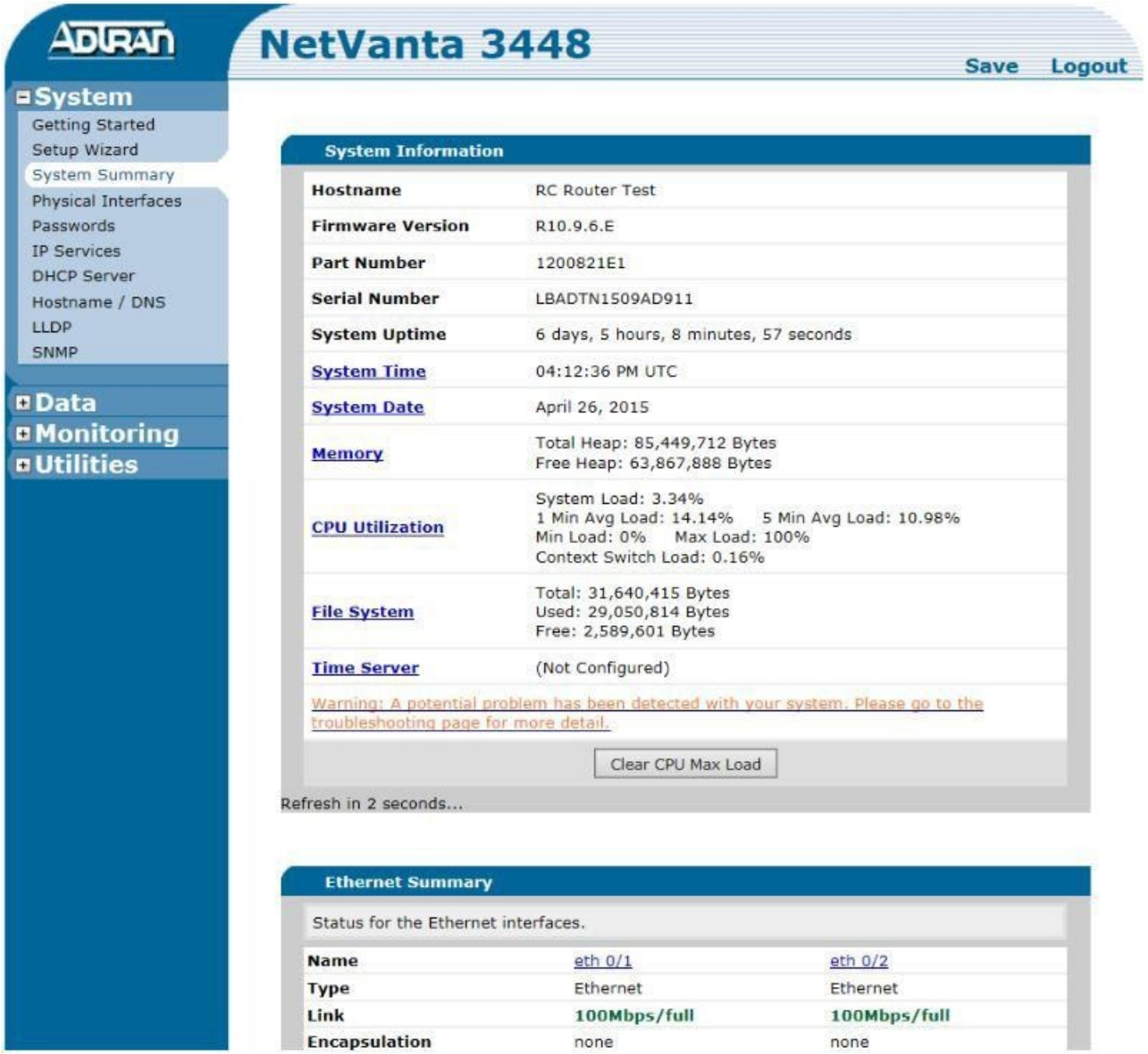
AdTran NetVanta 3448 QoS configuration

Brand: AdTran
Model: NetVanta 3448
Hardware version:
Last tested 1200821E1
Latest available 1200821F1
Firmware version: AOS R12.3.1

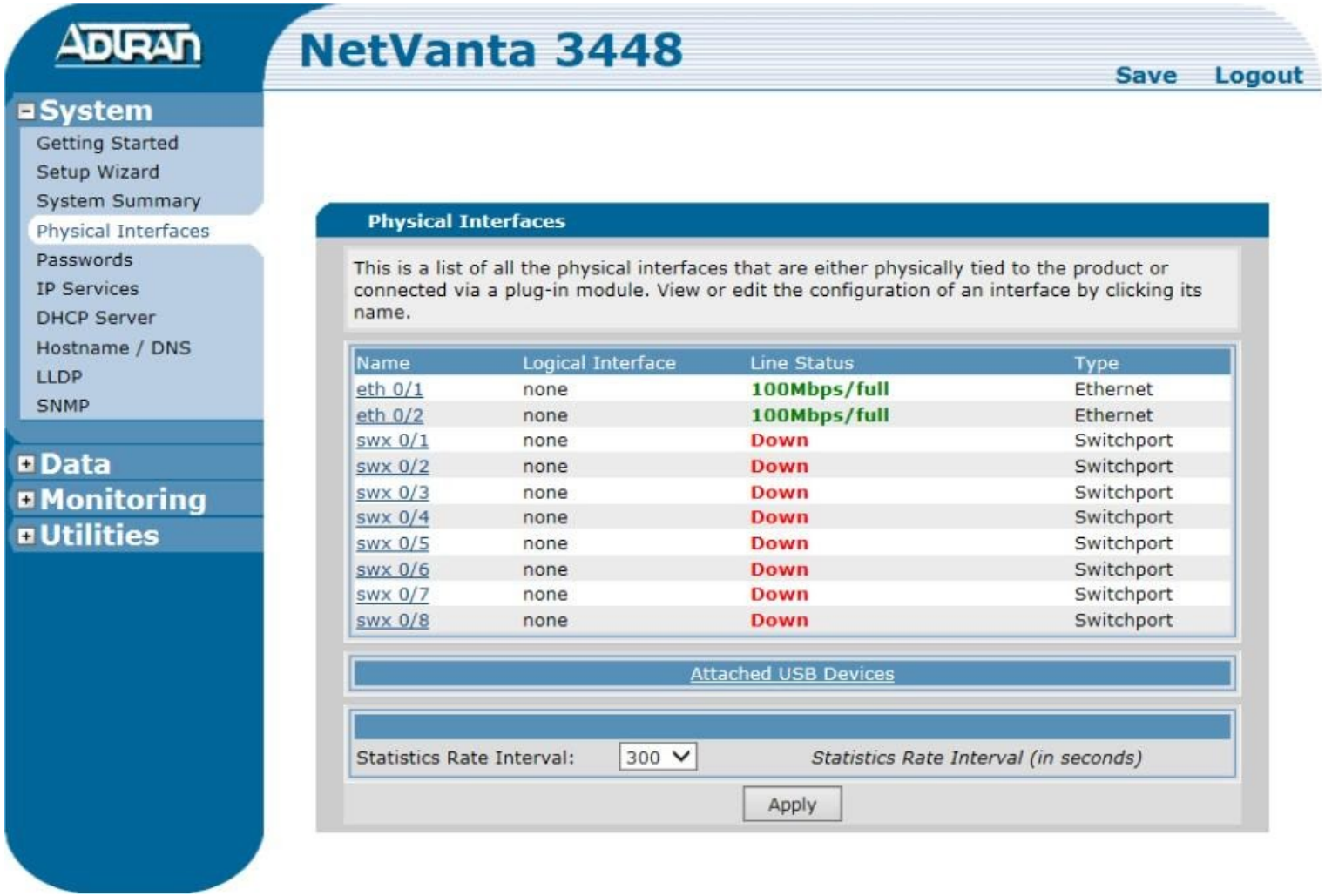
To review the AdTran guide that covers configuring QoS in the AOS operating system click here.

1. Access the router on your LAN default gateway: 192.168.1.99. The default username is ***admin*** and the default password is ***password***. Then click **OK**.

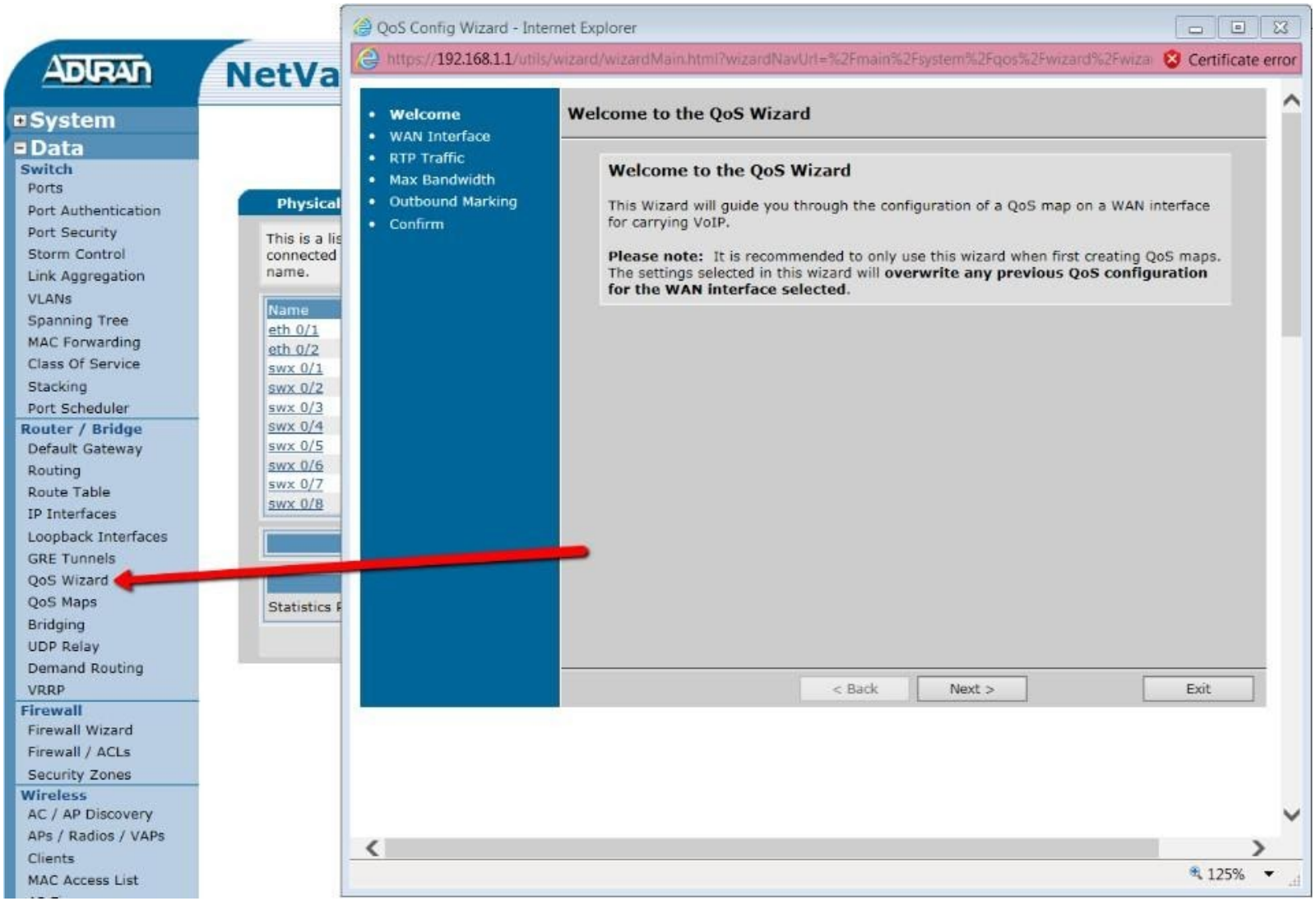
2. After logging in, you will be at the **System Summary** page of the GUI.



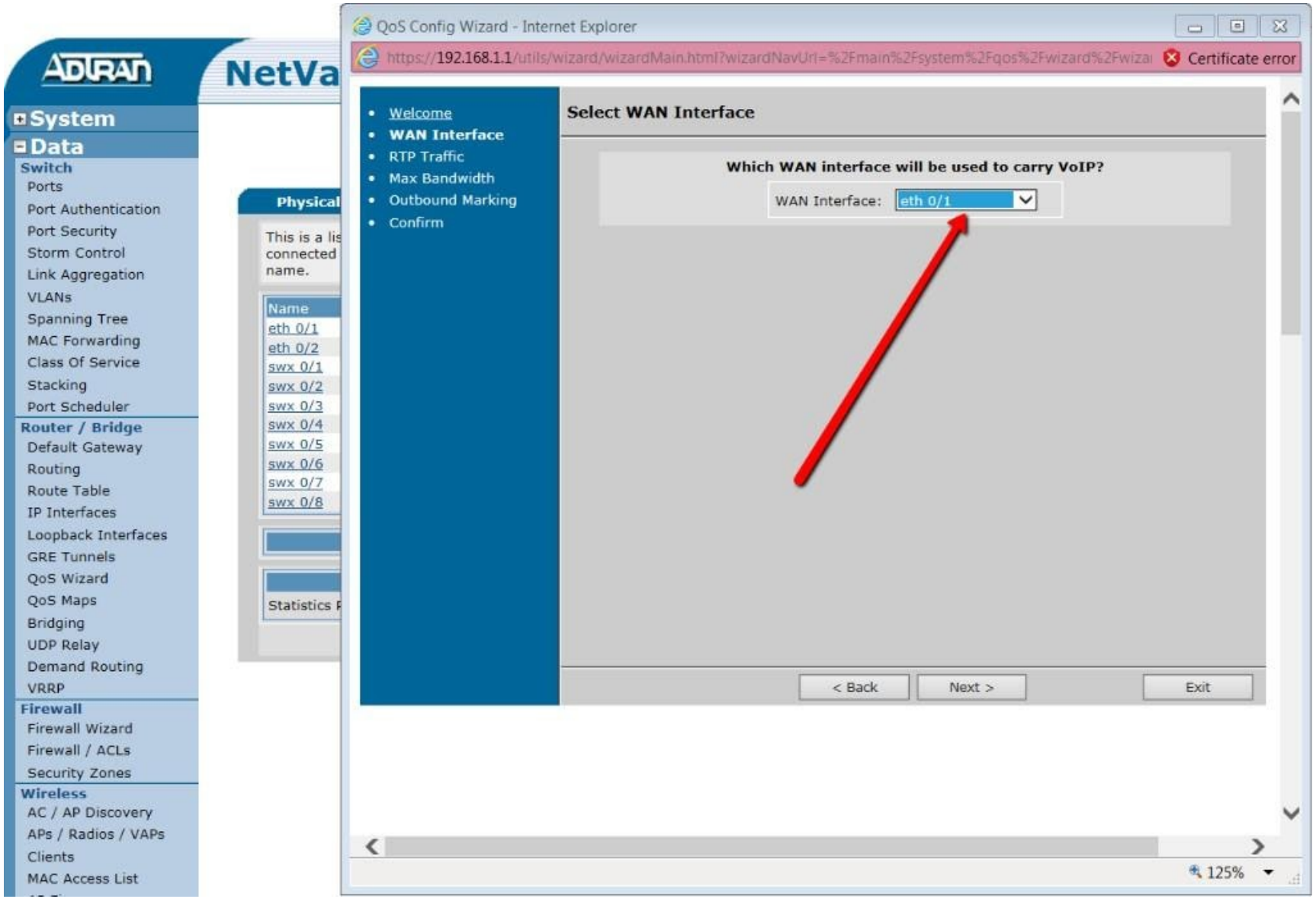
3. Check your Physical Interfaces to ensure they are up and running in full duplex mode. You can do this by clicking **Physical Interfaces** under the **System** tab.



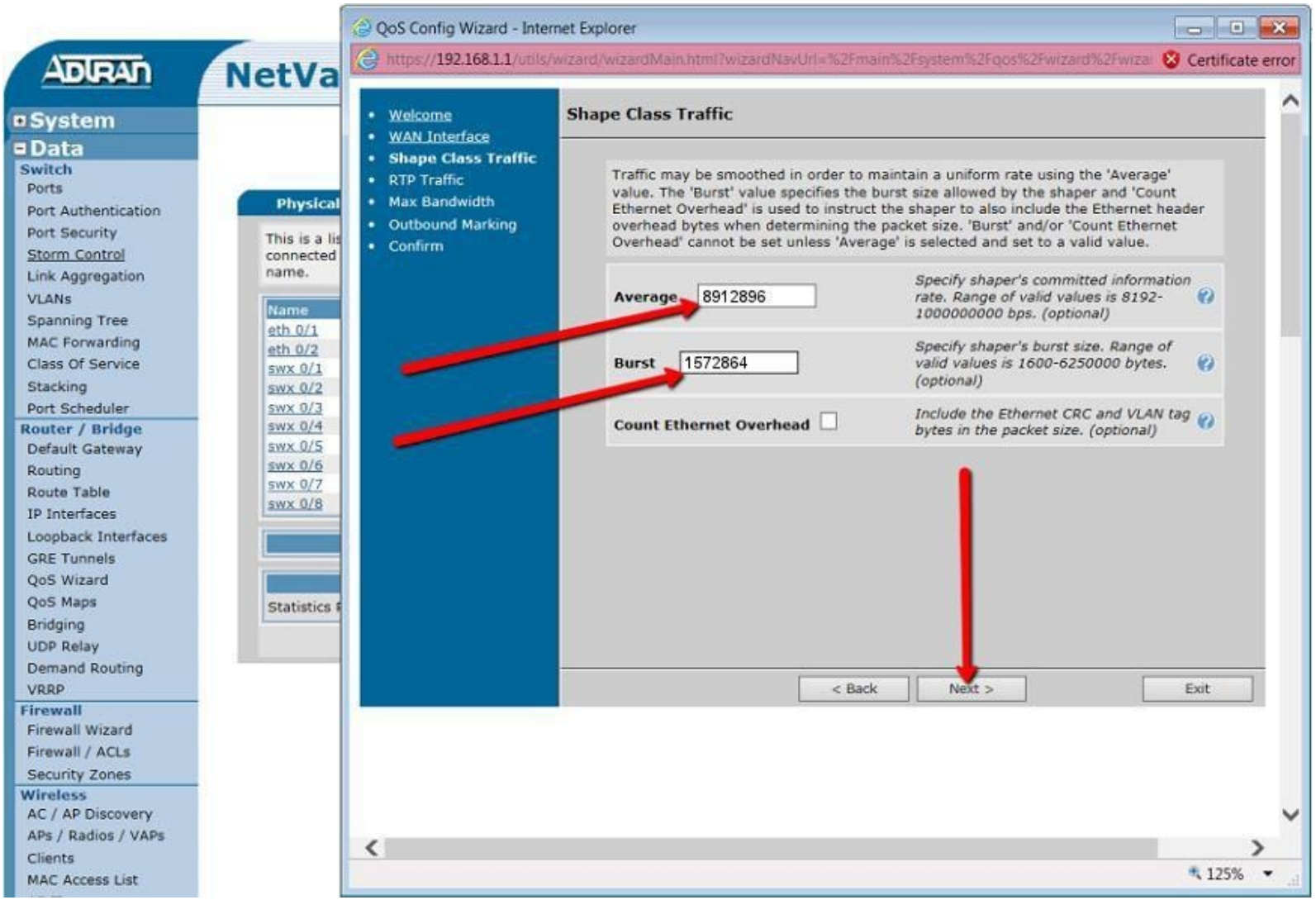
4. Click the **Data** tab. Click **QoS Wizard**. Click **Next** at the bottom of the new window. **NOTE**: if you already have QoS rules configured, using the QoS Wizard will delete and replace them with the new rules. If you have QoS rules already configured, you will have to manually configure the new rules.



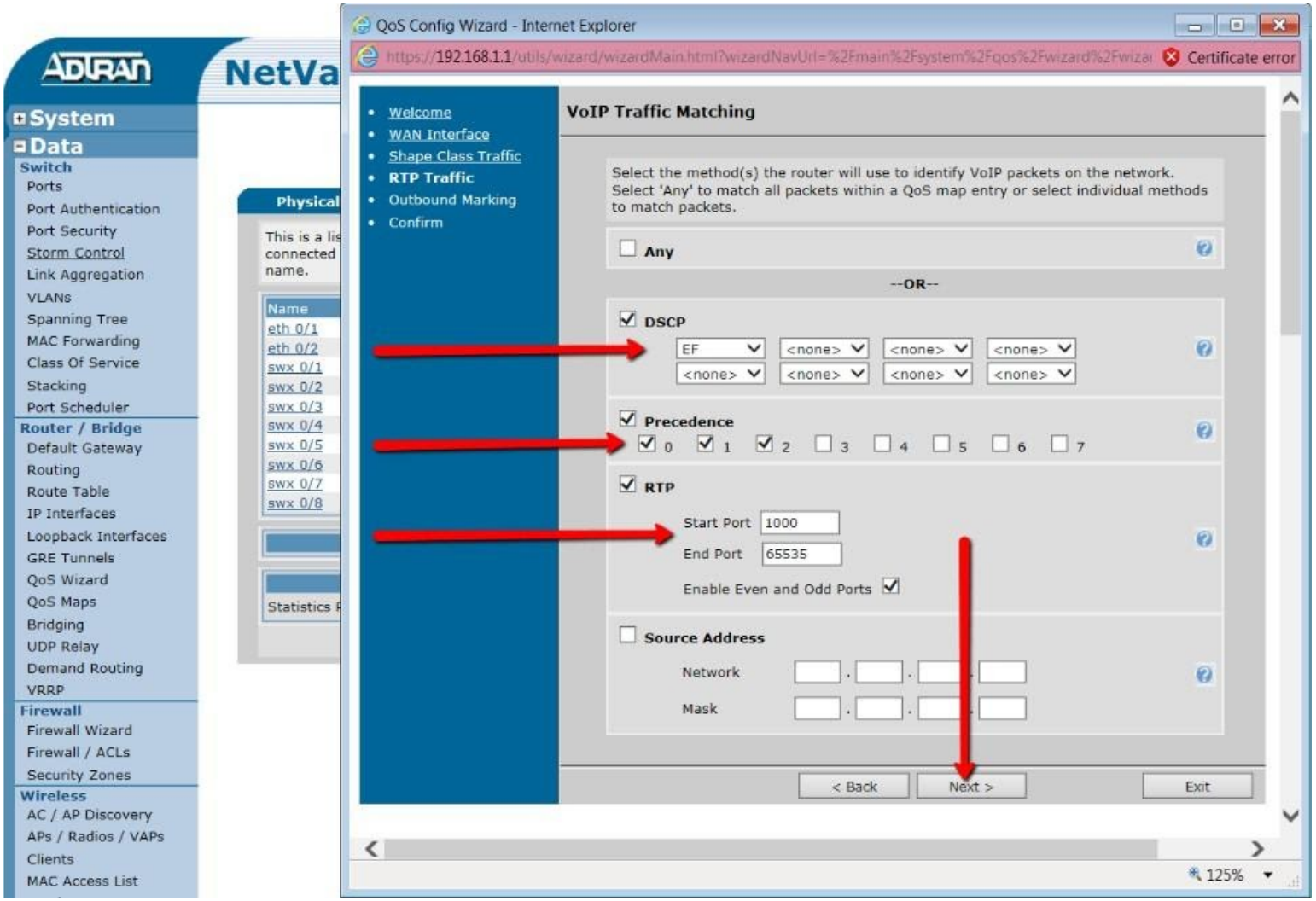
5. The QoS Wizard will prompt you to define the WAN interface used to carry VoIP. Select the appropriate interface and click **Next**.



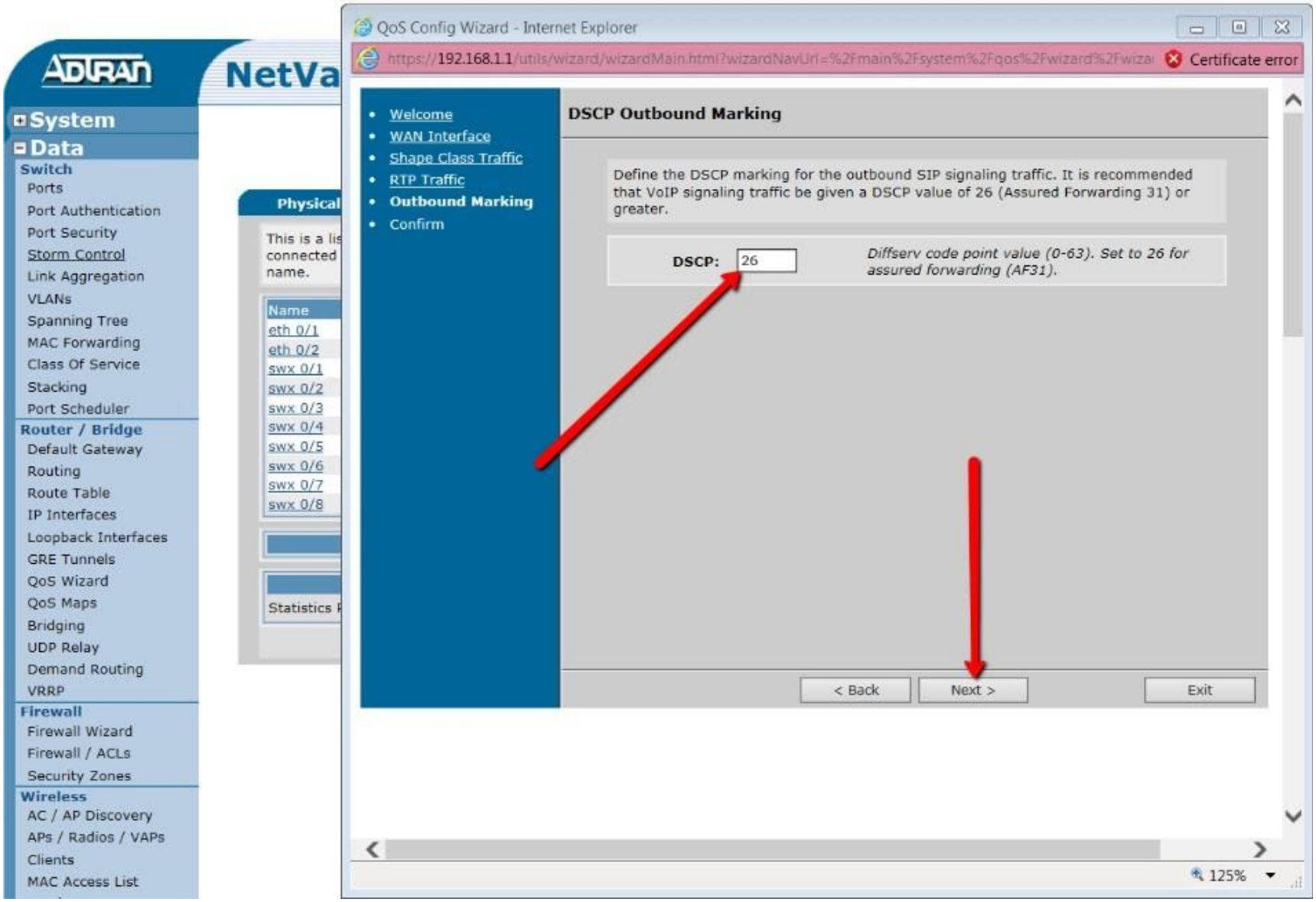
6. Next, enter the Average bandwidth you would like to configure for the traffic shaper. If the connection speed is contracted at 10 Mbps, assume 85% as "Average". *Remember, this entry is in bits per second, so 8.5 Mbps equals 8912896 bps.* Set Burst at 15% of 10 Mbps, which equals 1572864 bps. Functionally, the router should never "Burst" beyond the contracted rate. Convert Mbps to bps carefully using a calculator; several are available online. When done, click **Next**.



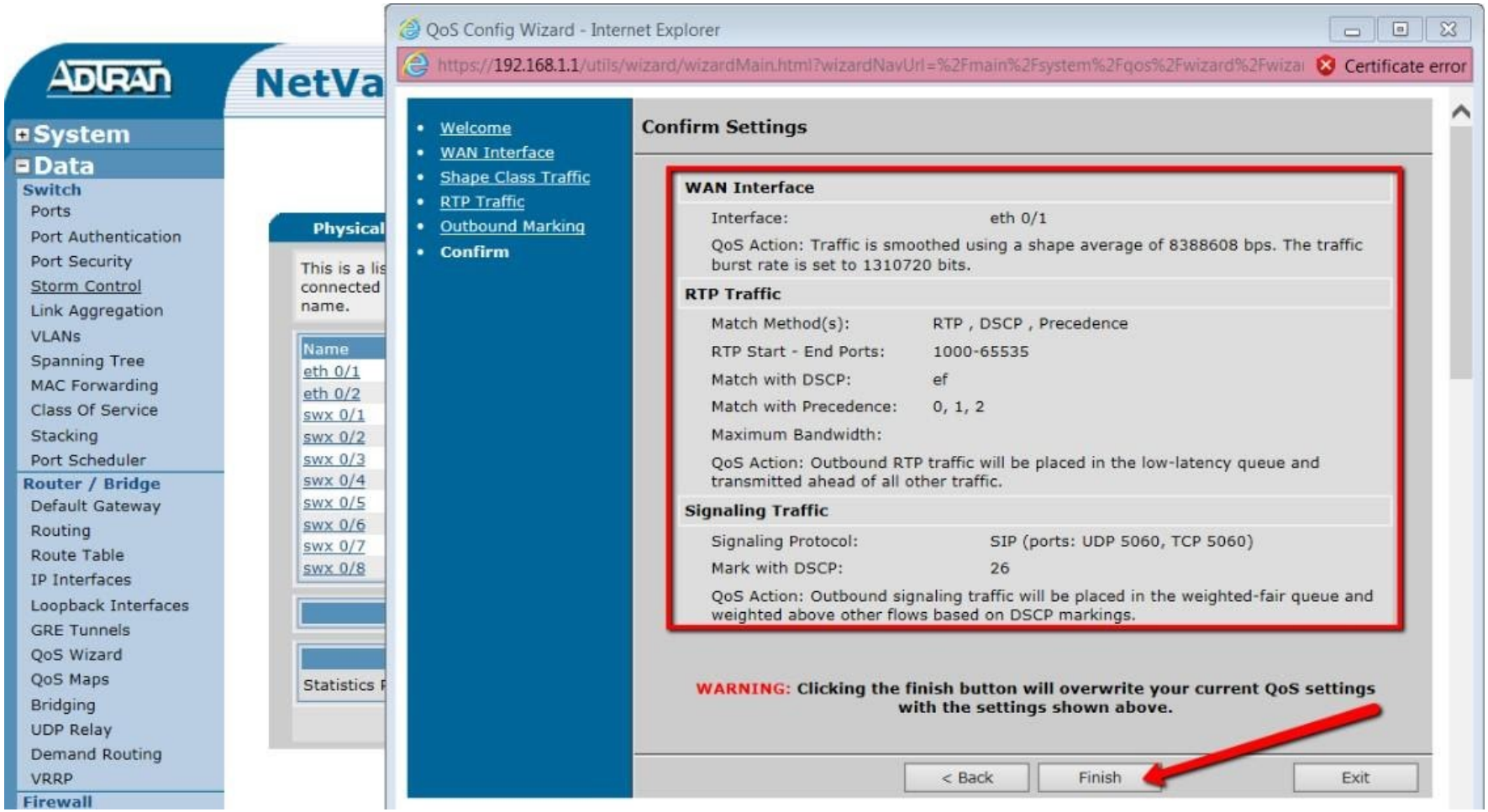
7. Now the QoS Wizard will ask you to configure the **VoIP Traffic Matching**. Select the following methods of matching packets. Use the **DSCP** option and set the first DSCP field to **EF**. Next, use the **Precedence** option and select "0", "1", and "2". Finally, use the **RTP** option and use the Start Port of 1000 and the End Port of 65535. Make sure you also enable the even and odd ports when using the RTP method. It is not recommended to use the **Source Address** option. Finally, click **Next**.



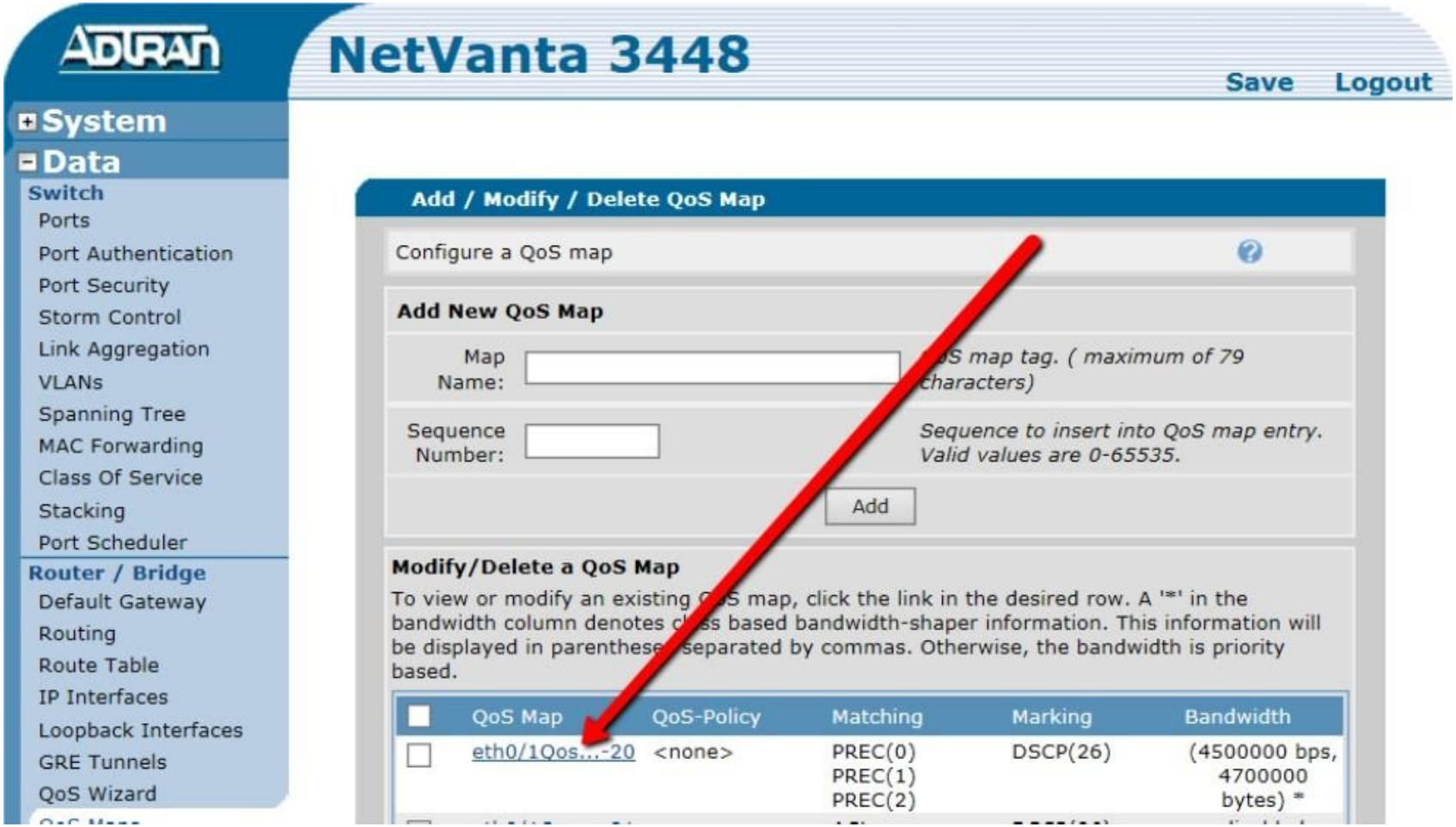
8. The QoS Wizard will now take you to the **DSCP Outbound Marking** section. Set the **DSCP** value to "26". Then click **Next**.



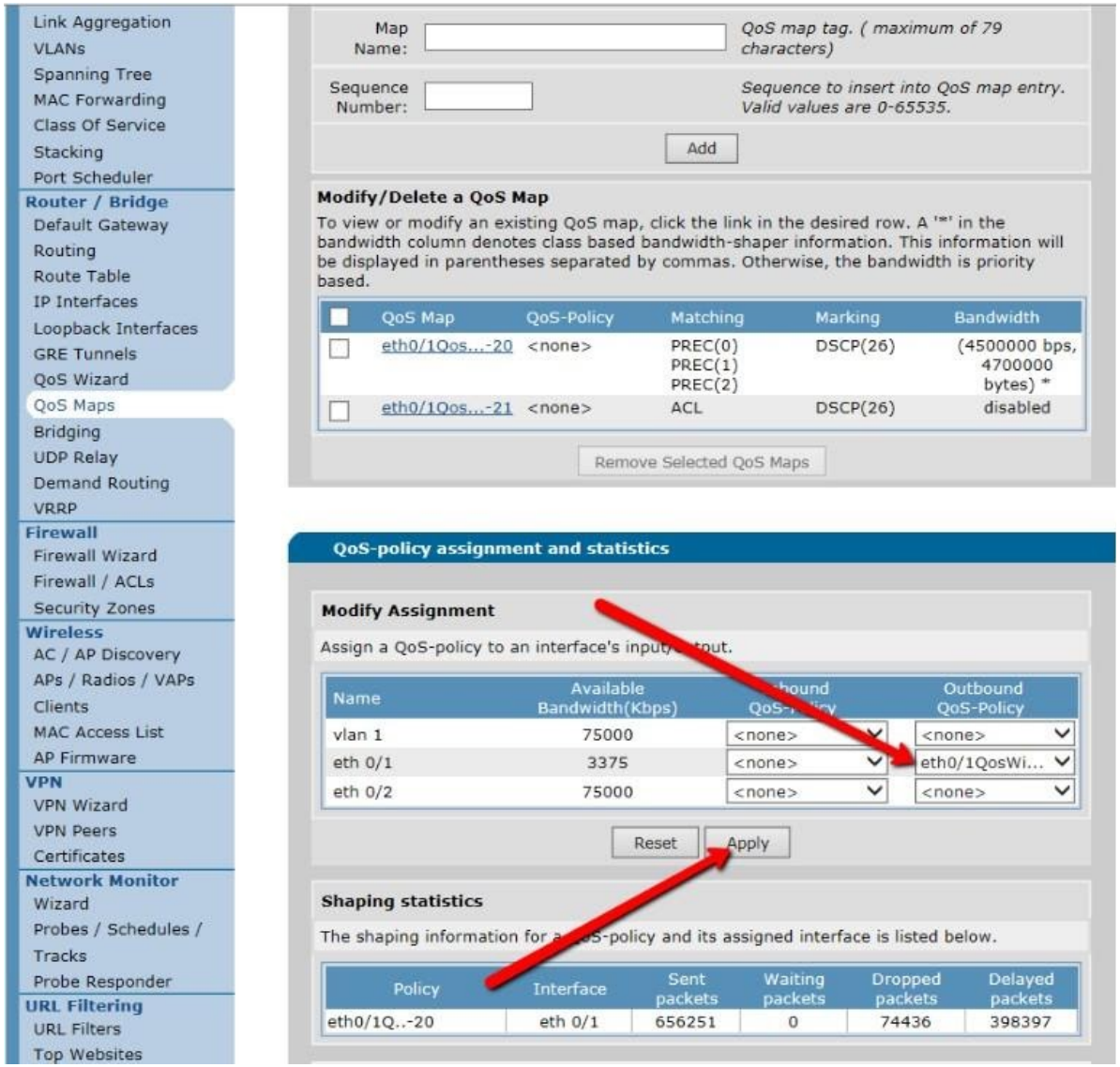
9. The QoS Wizard will now ask you to review and confirm your settings. If everything looks correct, click **Finish**.



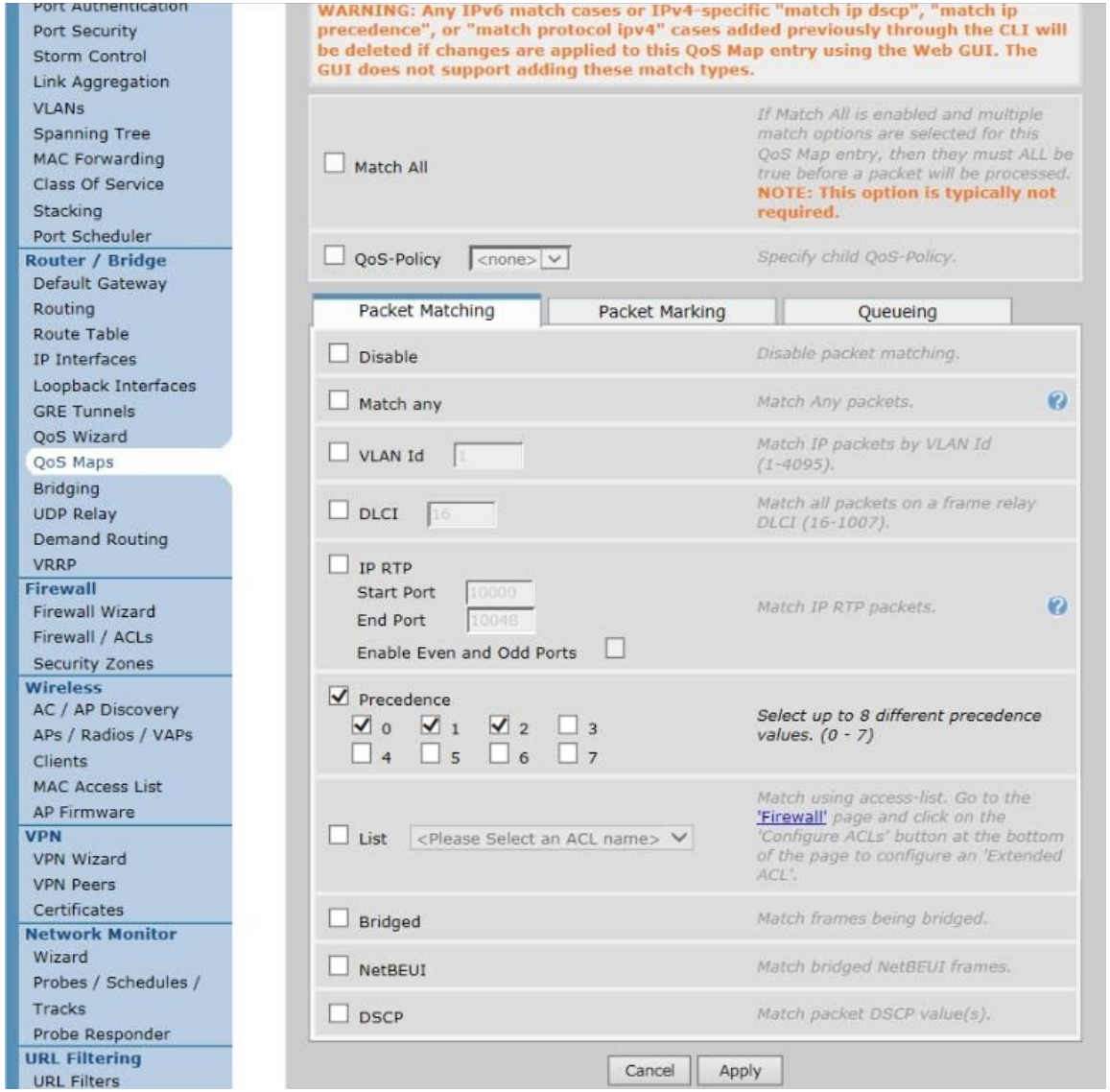
10. Next, go into **QoS Maps** and you will see the new QoS Map that was just created by the QoS Wizard. In this case, eth0/1 is the WAN interface.



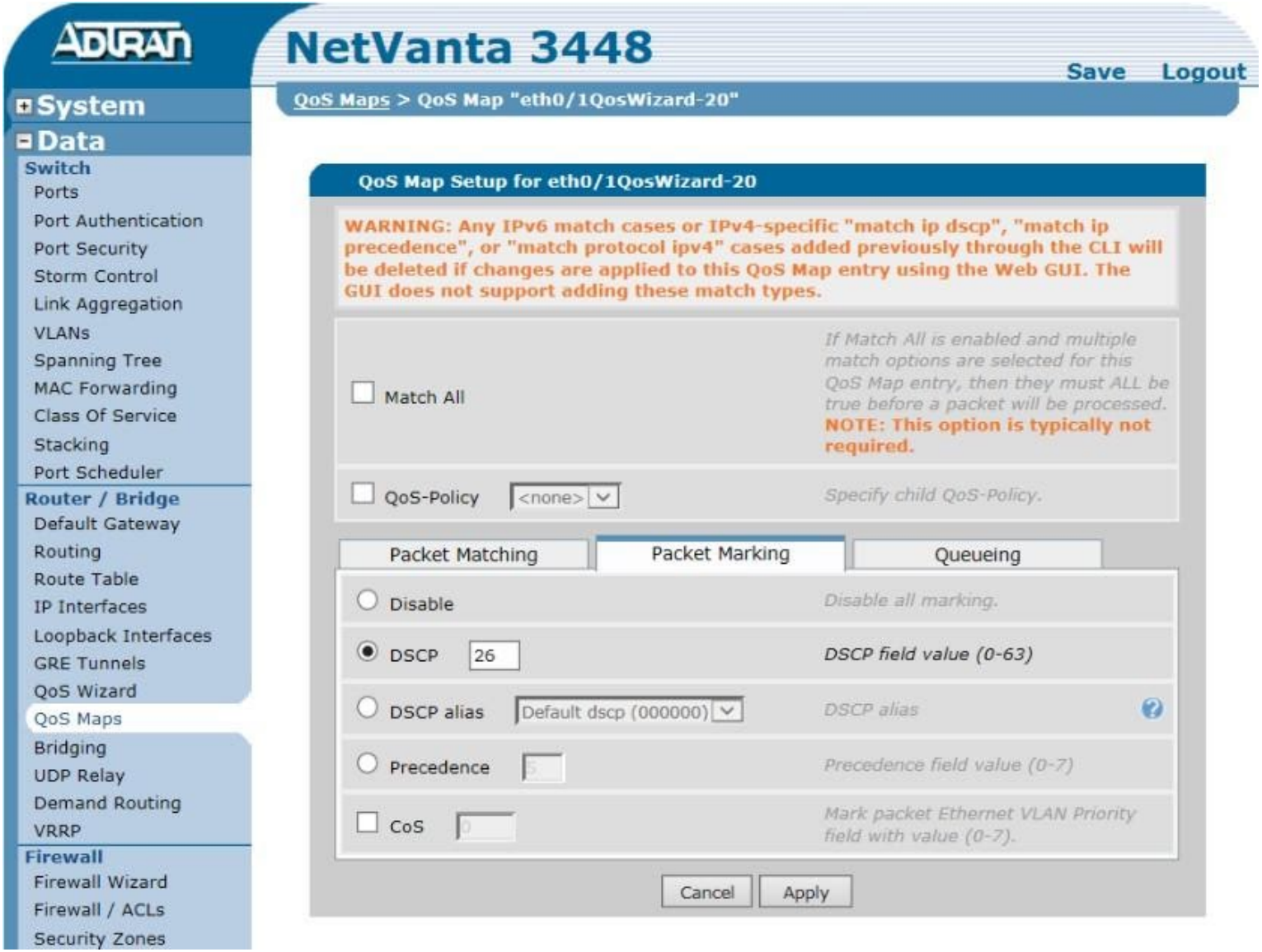
11. Now scroll down to the **QoS-policy assignment and statistics** section and select your QoS map that was just created under the **Outbound QoS-Policy** on your WAN interface. Then click **Apply**.



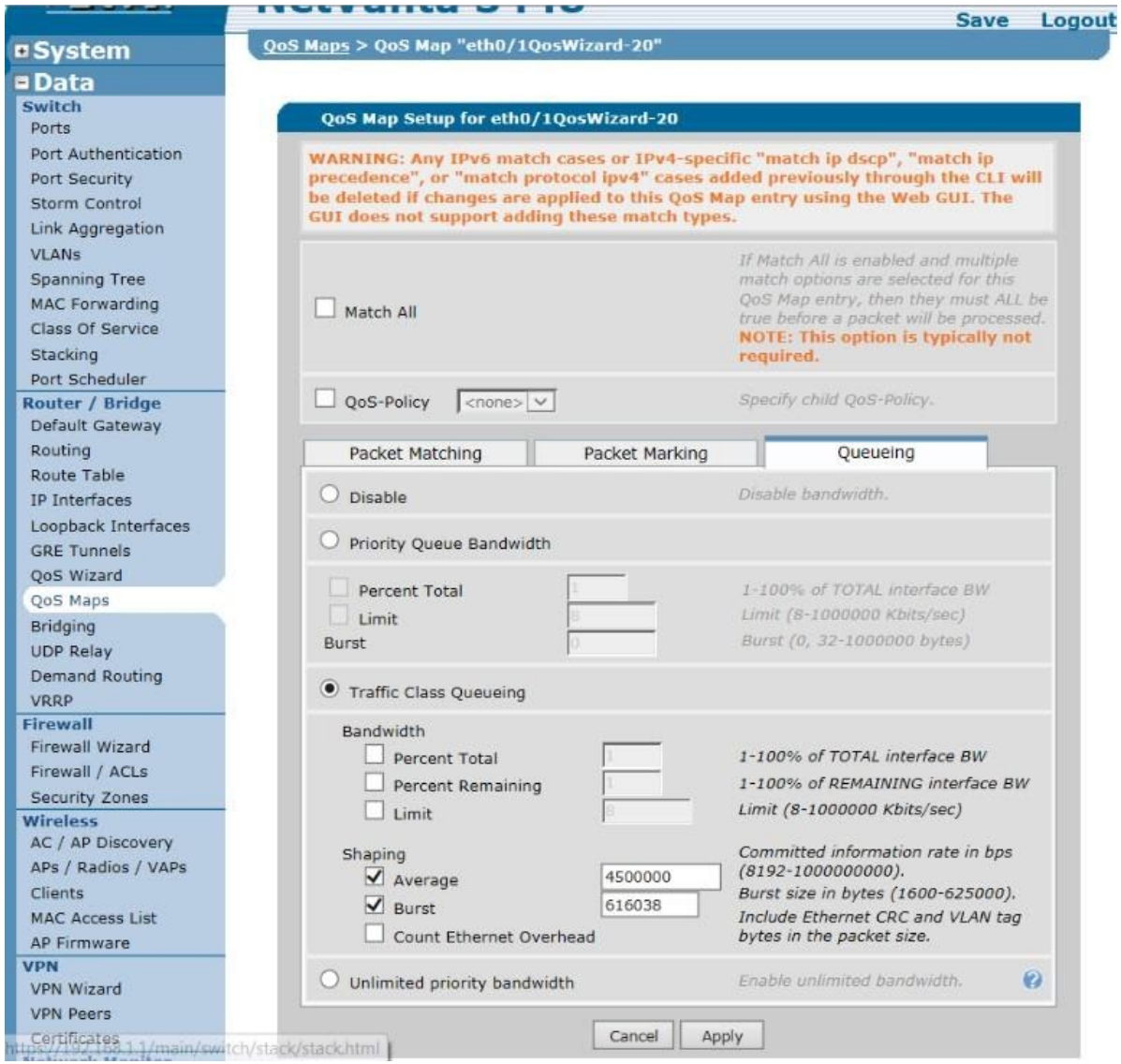
12A. Now, if you click **QoS Maps** and select the QoS map that was created earlier, you can review your settings under the **Packet Matching**, **Packet Marking**, and **Queueing** tabs in the following three screen shots.



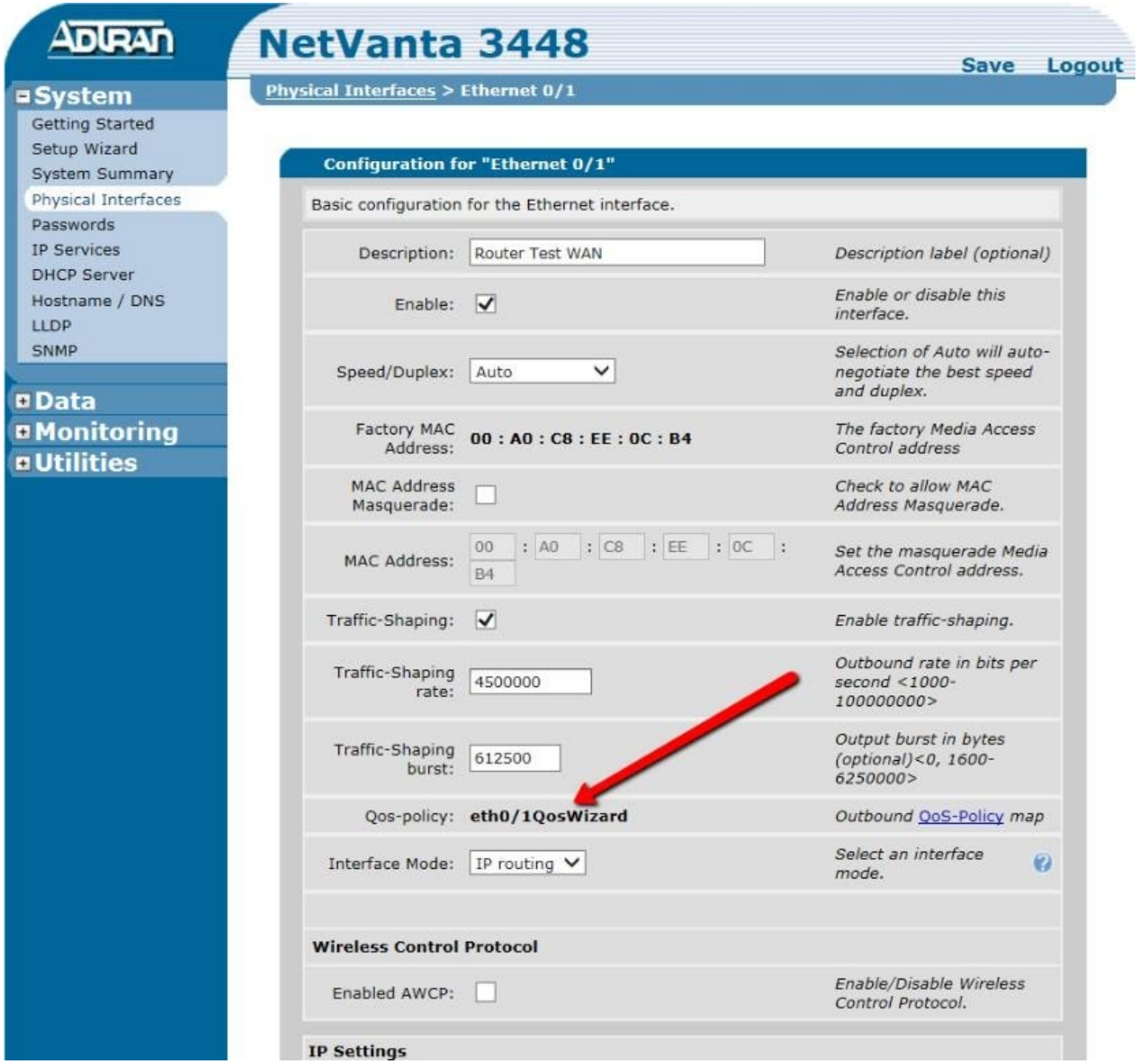
12B. QoS Maps – Packet Marking.



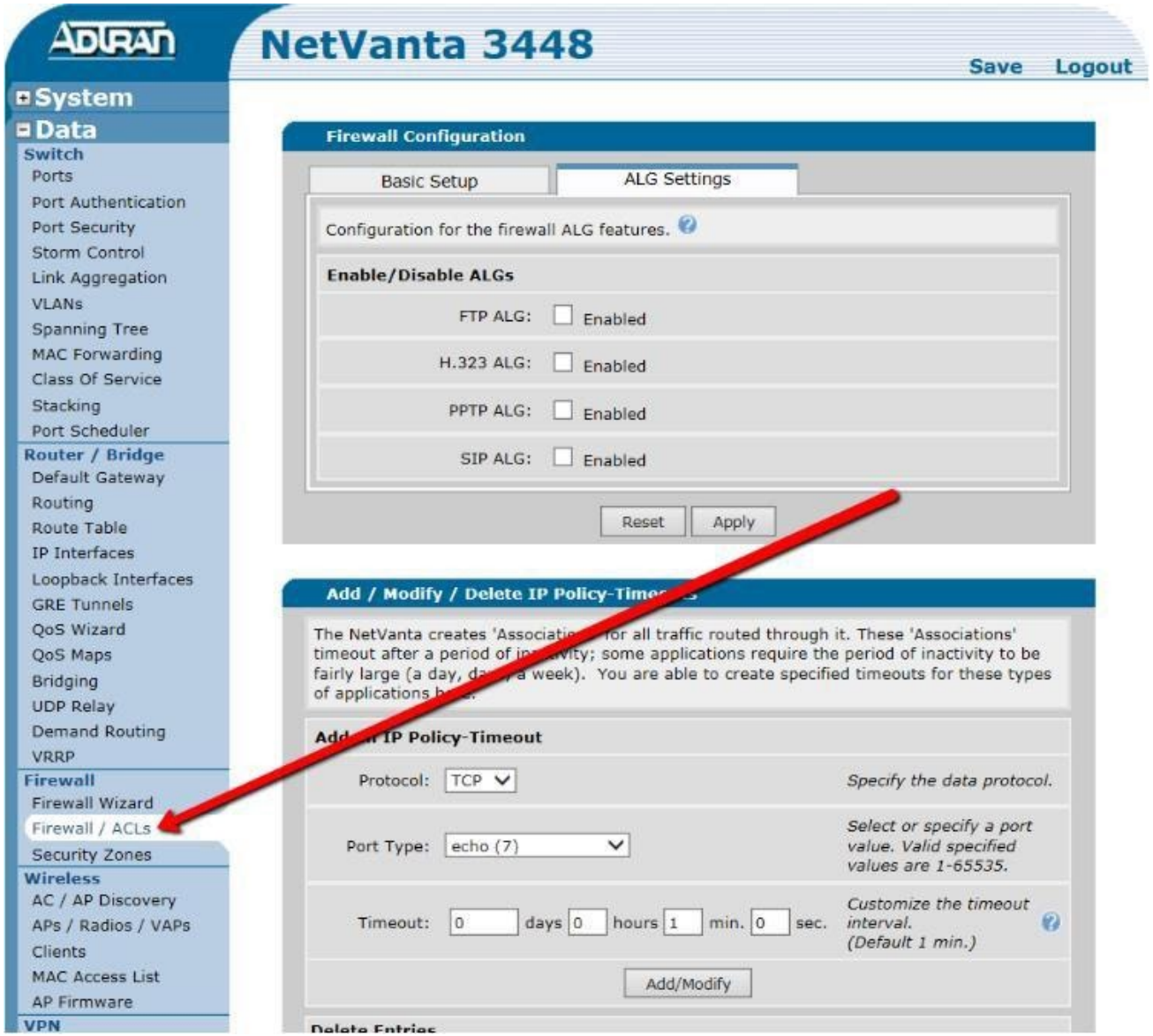
12C. QoS Maps – Queueing.



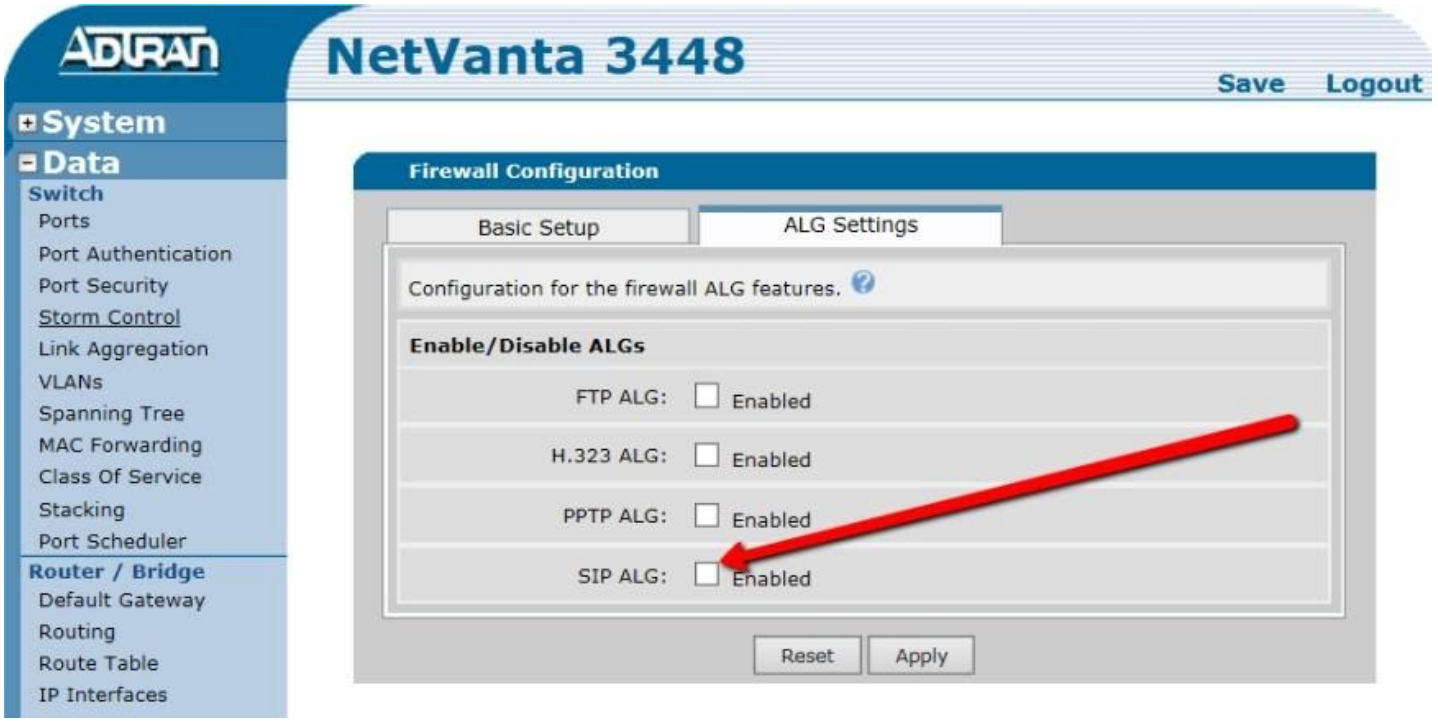
13. Click **Physical Interfaces** under the **System** tab and look at the QoS policy; note that it now has the **Outbound QoS Policy Map**.



14. Now you are ready to disable SIP ALG. Click **Firewall / ACLs** under the **Data** tab.



15. If **SIP ALG** is enabled, disable it by clicking the checkbox. The checkmark should disappear. Click **Apply**.



Congratulations. You have finished configuring your AdTran NetVanta 3448 router to use QoS to prioritize the voice packets.

Now select the port and firewall settings for mobile and softphone apps from the table on the next page.

Ports and Firewalls Settings for RingCentral VoIP Service

Please see RingCentral Ports and Firewalls reference link for the required TCP/UDP ports that need to be opened for RingCentral devices to work. Categories are:

- Device Type
- Protocol
- Source Port—Customer Side
- Destination Port—RingCentral Side

Also see information on **Port Triggering** on the referenced page.