

# Quality of your Service

## Audio Quality

Your 8x8 phone is designed to provide excellent audio quality. This means that you should not hear static or echo when you are having a conversation and you should not have calls drop or lose connection.

For most customers, audio quality problems are correctable and typically occur because of Internet bandwidth issues such as insufficient Internet bandwidth, or voice and data traffic competing for bandwidth as it is passed from your router to and from the Internet. If you are experiencing audio quality that is not satisfactory, please consider these steps.

### Step 1: Run a VoIP Quality & Connectivity Speed Test

This test simulates 8x8 VoIP calls being made over your Internet connection to give you an indication of the quality of service you can expect from your 8x8 system and provide you insight about potential improvements that may be necessary to improve the quality of your service.

Go to <http://voiptest.8x8.com/> to begin the test. Click on the **Click here to start** button. The speed test will only take a few seconds. At the end of the test, you will get a brief summary on your download speed, upload speed, quality of service, jitter, packet-loss, and number of simultaneous calls supported on your network.

Click on the **Summary** tab, located on the left hand side box to view an explanation of the test results:

- **Download Speed** measures if your download speed is high enough to support a high quality Voice-over-IP conversation
- **Upload Speed** measures if your upload speed is high enough to support a high quality Voice-Over-IP conversation
- **Quality of Service** measures if your connection is producing a constant stream of data (measures fluctuation in your Internet speed)
- **Jitter** is another measure to test the constant flow of data. A good measure means conversations should be of good quality
- **Packet-loss** measures your Internet connectivity and how accurately it is transferring data. 0% packet-loss is desired for a good quality VoIP connection

Click on the **Advanced** tab, located underneath the **Summary** tab on the left hand side:

- **Number of VoIP calls supported** section shows the estimated number of simultaneous calls that you can have on your network based on the available bandwidth

In the **Summary** section, a green, yellow or red circle appears next to each of the 5 metrics. Green indicates positive results, yellow indicates potentially problematic results and red indicates unacceptable results. If your VoIP Test returns any yellow or red lights, you may need to consider some remedies such as: properly configuring your router, upgrading your network equipment or upgrading your Internet connection.

### Step 2. QoS router with correct configuration

Routers with Quality of Service (QoS) settings can be configured to prioritize the voice traffic that is coming to and from the Internet to improve voice quality. 8x8 recommends and sells the following routers, preconfigured with the correct 8x8 QoS settings:

The **D-Link DIR-655** router is recommended for customers with fewer than 10 phones with light to normal phone and Internet use, It also provides wireless (Wi-Fi) access to your office. If you have 5 or more phones and plan to grow, or have heavier Internet requirements, consider the EdgeMarc routers.

The **EdgeMarc 200AE1-10** router typically supports 5-20 phones and the **EdgeMarc 4550-15** is recommended for locations with 10-100 phones. These EdgeMarc QoS routers include virtual private network (VPN) capabilities, firewall, IDS/IPS, anti-virus, mail and web content filtering. If you use VPNs, the EdgeMarc 4550 is the best choice as it offers hardware VPN support. For QoS router questions or assistance, please contact Customer Support at **888.898.8733**.

### Step 3: Look at Your Local Area Network (LAN)

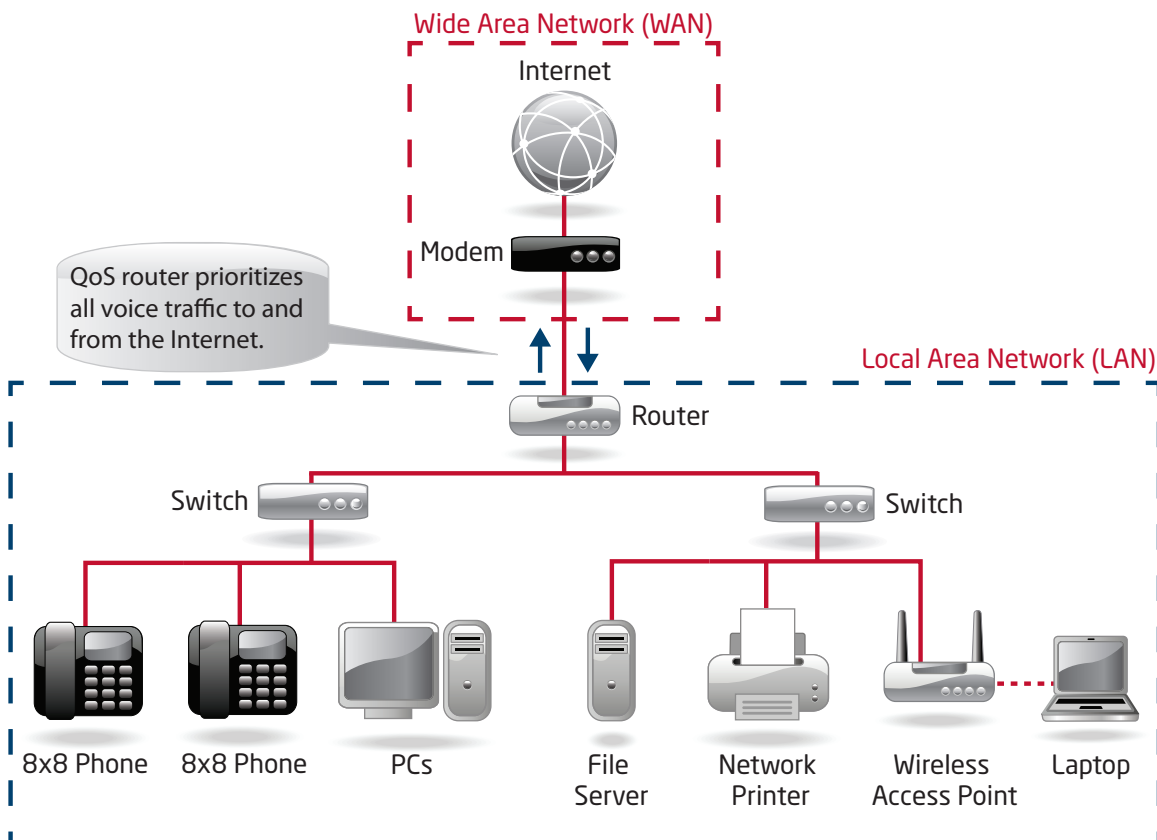
Your Local Area Network (LAN) is a term used to describe all of the equipment that is behind your modem (your modem is a piece of equipment that provides a connection to the Internet by connecting to a cable provided by your Internet service provider). An example of a local area network is below.

#### Typical LAN Equipment

- **Modem:** device that connects to the data connection provided by your Internet service provider that enables you to use the Internet
- **Router:** device that routes or splits your Internet connection among multiple devices. A router is an “intelligent” device in that it can divide your connection differently depending on certain configurations
- **Switch:** device that splits your Internet connection among multiple devices. Unlike a router, a switch provides an equal connection to all devices connected to it. In addition, a switch is different from a hub in that each device connected to a switch has a dedicated connection, whereas a hub provides the same data to all devices connected to it
- **8x8 Phones:** broadband phone adapters (BPAs) and phones purchased from 8x8
- Other connecting devices such as computers, servers and network printers

#### Network Setup

1. Connect your router directly to the modem that provides your Internet access
2. Connect your 8x8 phones directly to your router or connect your 8x8 phones to the router using a LAN switch to provide additional ports
3. Always connect your LAN resources that do not require WAN (Internet) access to your high-speed LAN switch (local printers, file servers, etc.) rather than directly to your WAN access router.
4. Make sure your Internet-facing (WAN) router has the default QoS Settings provided by 8x8, or follow the port prioritization recommendations provided by 8x8 to ensure prioritization of VoIP traffic over the WAN link to your Internet connection.



## SUPPORT

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### Step 4: Your Internet Service Provider (ISP)

In cases where you have insufficient bandwidth or there is jitter/packet-loss created by your Internet connection, upgrading and properly configuring your router will not resolve all issues. These cases require that you work with your Internet Service Provider (ISP) to make changes to your Internet connection and/or upgrading to a higher-speed Internet connection.

If you continue to experience poor audio quality after upgrading and configuring your QoS router, contact 8x8 Customer Support at **888-898-8733**. Our agents will assist you in performing additional troubleshooting and testing to help determine whether you need to improve bandwidth or whether your audio quality issues are being caused by another issue such as heavy Internet traffic involving the use of video over the Internet. This can impact the bandwidth requirements of your Internet connection far more than voice useage and need to be factored in.



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