



E-BOOK



Troubleshooting Poor VoIP Audio

Hostcomm's guide to the four leading causes of low quality calls & what you can do to fix them

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About the Author



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Chris is founder and Managing Director of hosted telephony provider Hostcomm. The business was one of the first of its kind in the UK and today offers an unrivalled VoIP network infrastructure. Chris's 20 years' experience in voice and data networking and pursuit of innovative new technologies ensure Hostcomm's services are stable, cost-effective and continuously evolving.

Don't settle for low-quality VoIP

When VoIP first came to market, it was a cutting edge technology unlike anything we'd seen before. It's no surprise, then, that it had a few issues, including a reputation for crackling, distorted, and fragmented audio.

But in the years that have passed, VoIP technology has evolved. It's a mature platform that's commonplace in organisations of all sizes, from small sales teams to large-scale contact centres. And there's no excuses left for below par audio quality.

If you're suffering from call quality issues, the consequences could be disastrous. Your agents feel frustrated that they're not equipped with the best tools for the job. Meanwhile, your customers aren't willing to make sense of what you're saying through noise and stuttering audio.

- 1 Your router
- 2 Your available bandwidth
- 3 Your internet connection
- 4 Your local network

Thankfully, most audio quality issues are easily fixed. To help, we've put together this guide to the four most common causes of poor audio quality.

1 Check your router

Some routers aren't designed to work correctly with VoIP. This may cause audio quality issues.

To process multiple VoIP calls simultaneously, a router needs large amounts of memory – and memory is expensive. As a result, a very cheap router (less than £80) is unlikely to include much memory, and fundamentally unable to handle your calls.



You should avoid any router designed to handle just a single VoIP call or data.

In particular, we **don't** recommend:

- ✘ **Draytek:** Most Draytek models hijack SIP port 5060, redirecting VoIP traffic to an internal VoIP port
- ✘ **Sonicwall:** Even with SIP ALG enabled, we have found Sonicwall routers to be unreliable with SIP VoIP
- ✘ **BT Homehub and Businesshub:** These routers are not designed for VoIP and, as such, unreliable
- ✘ **VirginMedia Superhub:** Unreliable with VoIP calls, as well as regular registration issues and random firmware updates
- ✘ **Thomson Speedtouch:** Unreliable with VoIP calls under load

Recommendations

- ✔ Choose a good router, for example Cisco or Billion routers – both of which work well with VoIP
- ✔ Reboot your router every 2 weeks for optimal performance
- ✔ If your router offers traffic prioritisation, make use of it. However, this won't help with the inbound voice channel if you are using broadband
- ✔ Make sure your service isn't automatically performing firmware updates to your router, this can interfere with VoIP permanently.

2 Check your bandwidth

Any connection has a maximum capacity – the amount of information that can travel down it at any one time.

If the total size of all the data you need to transfer exceeds the connection's bandwidth, information will have to wait its turn. This can lead to stuttering, dropped sections of calls, and other quality issues.



An uncompressed VoIP call requires 100Kbps using the G711 (ulaw/alaw) codec. This means that if you have bandwidth of 1000Kbps or 1Mbps, you have enough bandwidth for ten simultaneous VoIP calls, although your upstream bandwidth may also affect performance.

If your VoIP calls share bandwidth with data traffic on the same line, it's impossible to control call quality. Your emails, file transfers, and web traffic will take all the bandwidth – even if it's already in use. So while you may begin a call with crystal-clear quality, as soon as someone downloads an attachment or plays a video, all VoIP calls will degrade.

Recommendations

- ✓ Separate your VoIP and data traffic using two broadband lines
- ✓ If you are sharing, choose a router that supports traffic shaping
- ✓ Install a larger broadband pipe with additional capacity
- ✓ Hostcomm can provide compressed VoIP on certain products to reduce bandwidth requirements
- ✓ Always choose business standard broadband services

3 Check your internet connection

Your internet connection is made up of a number of sections (hops) between your premises and the remote server.

These hops are all separated by routers and, if there is congestion or a fault at any one of these points, call quality will suffer.



One useful way to investigate connection issues is using traceroute, which measures the transit delays of packets across the network. If you can see packets being dropped or latency on the network, this could mean that there are too many hops on the connection.

Recommendations

- ✓ Run traceroute from a device inside your network
- ✓ If available, purchase monitoring services from your ISP to keep a watchful eye on potential faults
- ✓ Try to sample data whenever the problem occurs, which can be used for further investigation
- ✓ A monitoring tool that presents historical data will help you to spot patterns

4 Check your local network

It may sound obvious that a badly configured local network will cause issues including poor audio quality.

But it's important to remember that even a fast, functional network could be poorly suited to VoIP.



Many organisations overcomplicate their networks or tighten security so much that VoIP services are affected. These problems are then difficult to resolve since the local network is not the responsibility of any specific supplier.

In general terms, VoIP performs best on a simple network.

Recommendations

- ✓ Configure a simple flat network with no layer3 routing (if possible)
- ✓ Maintain organised IP addressing to avoid any duplication
- ✓ Separate voice and data with subnets and separate routers
- ✓ Avoid proxy servers and use recommended firewalls
- ✓ Maintain and document your cabling infrastructure
- ✓ Make sure you know whose responsibility the local network is.

VoIP troubleshooting checklist

Identifying a problem with your VoIP quality is usually a process of elimination. You'll begin by ruling out certain possibilities, leaving you with a better idea of where an issue comes from.

Work methodically through all the potential causes and, once you've narrowed it down, you can begin looking for a fix.

- ✔ **Test the VoIP quality from a different broadband service (for example, at home).**

Do you get the same problem? If so, it's likely to be an issue with your VoIP service provider.

- ✔ **Swap the router and re-test.**

We can sometimes provide a router to help with your testing.

- ✔ **Connect VoIP phones or PCs with soft phones loaded directly to your router and re-test.**

This direct connection will eliminate the local network as the cause.

- ✔ **Log the audio problems.**

Do they happen to everyone? Or just a few specific users?
This information is valuable when searching for a fault.

- ✔ **Get expert advice.**

At Hostcomm, we've got ten years' experience in VoIP and more than 500 clients. We've seen all kinds of problems before and would be happy to help resolve yours.

- ✔ **Check network components.**

If the problem involves a Hostcomm network component, we'll confirm this. Check with us and we'll be upfront about known service issues and how we intend to resolve them.

Make the Move to VoIP and Hostcomm

Hostcomm was formed in 2004 to provide hosted VoIP telephone services and cloud contact centre services for businesses around the world based on VoIP.

We are specialists in delivering hosted predictive diallers, hosted VoIP telephony, SIP trunking and cloud contact centre services based on VoIP technology. All services are provided on a monthly subscription fee basis - so there are no large capital expenses to pay.

Our main strength is our ability to select the right technology and provide a low cost, reliable service, which delivers tangible business benefits. All of our services are supported by a team of engineers who provide technical support, monitoring, consultancy and training.

Sign up for a free demo of any of our services and experience the difference Hostcomm can make.

Talk to us... we are here to help

If you have any questions or require further information, please get in touch:

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Business VoIP Solutions