

VoIP issues can make calls difficult or even impossible, from echoing and popping noises, to distortion, one-way-audio, and dropped calls. When your call quality suffers, it may be due to one, or several, of the following:

Latency

Audio latency (delays) can occur when the raw audio is being compressed or when the compressed audio is traveling through the initial provider network (Twilio, etc.). Latency won't affect the quality of the audio, but it will throw off the delivery-timing. In the most pronounced cases of latency, call participants will "speak-over" one another, with the audio arriving at the recipient's device at irregular and awkward intervals.

Jitter

Jitter occurs when packets are delivered to a recipient at irregular intervals. Audio must be played at a constant rhythm to be intelligible, so any discrepancy will be noticeable in conversation. VoIP service providers may build in jitter buffers, but sometimes latency will go beyond the buffer's capacities. If this happens, you'll hear missing or "skipped" audio (if the packets are being delivered too quickly) or lapses of silence (to account for slow packet delivery).

Packet loss

If packets are lost, delayed, or contain errors, the network may drop and abandon them before reaching their intended destination. This is usually due to bandwidth restrictions or an unreliable internet connection. The result is missing chunks of audio

Mean opinion score (MOS)

Is a measure used in the domain of Quality of Experience and telecommunications engineering, representing overall quality of a stimulus or system. It is the arithmetic mean over all individual "values on a predefined scale that a subject assigns to his opinion of the performance of a system quality".[1] Such ratings are usually gathered in a subjective quality evaluation test, but they can also be algorithmically estimated.

MOS is a commonly used measure for video, audio, and audiovisual quality evaluation, but not restricted to those modalities. ITU-T has defined several ways of referring to a MOS in Recommendation P.800.1, depending on whether the score was obtained from audiovisual, conversational, listening, talking, or video quality tests.

The MOS is expressed as a single rational number, typically in the range 1–5, where 1 is lowest perceived quality, and 5 is the highest perceived quality. Other MOS ranges are also possible, depending on the rating scale that has been used in the underlying test. The Absolute Category Rating scale is very commonly used, which maps ratings between Bad and Excellent to numbers between 1 and 5

QoS - Quality of Service (QoS)

It goes without saying that without sufficient bandwidth, VoIP call quality will always be at risk. Voice packets travel through many stages before they reach a recipient, including access points, routers, switches, and more. Every step is a potential bottleneck and source of frustration.

Network prioritization is your ace-in-the-hole to do away with VoIP issues. When users on your network use multiple applications simultaneously, this uses bandwidth and clogs up your network, like a highway during rush hour.

If lanes aren't properly designated, congestion will quickly build up, and traffic will eventually slow to a stop. Think of network prioritization as adding carpool, emergency vehicle, and "Exit Only" lanes to our metaphorical highway. (Also, assume this is in a world where traffic signs are actually obeyed.) Reserving space for specific purposes won't eliminate traffic congestion completely, but it will allow high-priority vehicles (whether apps or ambulances) to travel unhindered when necessary.

With network prioritization, you can designate a few lanes (i.e. bandwidth) for VoIP only. This will make sure there's plenty of space for your conversations to maneuver. In the industry, this earmarking process is called Quality of Service (QoS). It ensures voice packets have higher bandwidth priority than other data packets.