VoIP Call Quality Troubleshooting Checklist

Diagnose and resolve VoIP call quality issues systematically — audio problems, network diagnostics, QoS, hardware checks, and escalation procedures.

6	50+	Score	Free
DIAGNOSTIC AREAS	CHECKS TO PERFORM	EACH SECTION OUT OF 10	PRINT & USE NO STRINGS

How to Use This Checklist

When call quality issues are reported, work through this checklist systematically from top to bottom. Start with the symptoms to narrow down the cause, then investigate the most likely areas. Score each section to identify where your weaknesses lie.

1 Audio Quality Issues

Identify the specific symptoms being reported to narrow down the root cause before investigating.

- [ ] Document the **specific audio symptoms** reported — choppy audio, one-way audio, echo, static, robotic voice, or complete silence
- [ ] Determine if the issue affects **inbound calls, outbound calls, or both** — this indicates whether the problem is local or remote
- [ ] Check if the issue is **intermittent or constant** — intermittent issues often point to network congestion at specific times
- [ ] Identify if the problem affects **all users or specific users/extensions** — isolated issues suggest local hardware or cabling problems
- [ ] Ask whether the issue occurs on **internal calls, external calls, or both** — internal-only suggests LAN issues; external suggests WAN or SIP trunk issues
- [ ] Check if **softphone users** experience the same issues as desk phone users — this helps isolate handset hardware problems
- [ ] Verify the **time of day** when issues occur most frequently — peak-hour problems often indicate bandwidth congestion
- [ ] Review **MOS scores** in the VoIP platform dashboard for the affected calls to quantify the quality degradation

Section Score: ____/10

2 Network Diagnostics

Network quality is the single biggest factor in VoIP call quality. Diagnose network issues thoroughly.

- [ ] Run a **continuous ping test** to the VoIP provider's SBC/proxy server for at least 30 minutes to detect packet loss and latency spikes
- [ ] Measure **jitter** using a VoIP-specific tool — jitter above 30ms causes audible quality degradation (target: below 15ms)
- [ ] Check **internet bandwidth utilisation** at the time of reported issues — saturation above 80% commonly causes voice quality problems
- [ ] Verify the **internet connection speed** matches contracted levels using a wired speed test during the affected periods
- [ ] Check for **packet loss** on the path between your network and the VoIP provider using traceroute and MTR/WinMTR tools
- [ ] Inspect **switch port statistics** for errors, CRC failures, and collisions on ports connected to affected phones
- [ ] Verify **PoE power levels** on switch ports — insufficient power causes phones to restart or malfunction intermittently
- [ ] Check for **network loops** or broadcast storms that could be flooding the voice VLAN with unnecessary traffic
- [ ] Review **firewall and router logs** for any dropped VoIP packets, rate limiting, or SIP-related errors

Section Score: _____/10

3 QoS & Prioritisation

Even with sufficient bandwidth, VoIP will suffer without proper Quality of Service configuration.

- [ ] Verify **QoS is configured on the firewall** to prioritise SIP (UDP 5060) and RTP (UDP 10000–20000) traffic above data
- [ ] Confirm **DSCP markings** are set correctly: EF (46) for voice media (RTP) and CS3 (24) for SIP signalling
- [ ] Check that **network switches honour DSCP markings** and prioritise tagged voice frames in their egress queues
- [ ] Verify QoS is configured **end-to-end** — a single unconfigured switch or router in the path negates the entire QoS chain
- [ ] Confirm the **ISP preserves DSCP markings** across the WAN — some providers strip QoS markings at the handover point
- [ ] Check that **bandwidth reservation** for voice traffic is sufficient for the number of concurrent calls at peak times
- [ ] Verify that **traffic shaping policies** prevent non-essential traffic (streaming, social media) from consuming voice bandwidth
- [ ] Test call quality during a **deliberate bandwidth load test** (e.g., large file transfer) to verify QoS is protecting voice traffic effectively

Section Score: ____/10

4 Hardware Checks

Faulty or misconfigured hardware causes call quality issues that no amount of network tuning will resolve.

- [ ] Check the **handset firmware version** and update to the latest stable version recommended by the VoIP provider
- [ ] Test with a **known-good replacement handset** to rule out a faulty phone as the cause of the issue
- [ ] Inspect **Ethernet cables** connecting phones to the network — damaged, kinked, or low-quality cables cause intermittent issues
- [ ] Verify the phone is connected to a **Gigabit switch port** and not daisy-chained through another device at 100 Mbps
- [ ] Check **headset compatibility** — non-certified headsets can cause echo, static, and audio level problems
- [ ] Verify that **Bluetooth headsets** are not experiencing interference from nearby wireless devices or WiFi access points
- [ ] Check conference room **speakerphones for echo cancellation settings** and ensure they are positioned away from reflective surfaces
- [ ] Verify that **softphone audio settings** (input/output device, codec selection, echo cancellation) are configured correctly

Section Score: _____/10

5 Platform & Configuration

VoIP platform settings and SIP trunk configuration can cause quality issues even on a perfect network.

- [ ] Verify the **codec configuration** on the VoIP platform — G.711 provides best quality but uses more bandwidth; G.729 is compressed but lower quality
- [ ] Check **SIP trunk registration status** — intermittent registration issues cause dropped calls and one-way audio
- [ ] Verify **SIP ALG is disabled** on all routers and firewalls in the path — this remains the most common cause of VoIP issues
- [ ] Check **NAT traversal settings** (STUN/TURN) are configured correctly if phones are behind NAT
- [ ] Review **firewall rules** for SIP and RTP traffic — ensure the correct port ranges are open to the VoIP provider's IP addresses
- [ ] Check for **SIP retransmissions** in the platform logs, which indicate packet loss or firewall issues on the signalling path
- [ ] Verify the **RTP port range** is large enough for the number of concurrent calls and is correctly opened on the firewall
- [ ] Check whether **TLS/SRTP encryption** is causing CPU overload on the router or firewall, especially on older hardware

Section Score: ____/10

6 Escalation & Resolution

When initial troubleshooting does not resolve the issue, follow a structured escalation process.

- [ ] Document all **troubleshooting steps taken** with results before escalating to the VoIP provider or ISP
- [ ] Capture **packet captures (PCAP)** on the affected network segment to provide technical evidence to the provider
- [ ] Request **call quality reports** from the VoIP provider for the specific calls experiencing issues (CDRs with MOS scores)
- [ ] If the ISP is suspected, request a **line test and circuit health check** with documented results
- [ ] Escalate to the VoIP provider with **specific call examples** including timestamps, caller/callee numbers, and symptoms
- [ ] If multiple providers are involved (ISP + VoIP), arrange a **three-way troubleshooting call** to avoid finger-pointing between vendors
- [ ] Set a **resolution deadline** based on business impact — persistent call quality issues directly affect customer experience and revenue
- [ ] Document the **root cause and resolution** for the knowledge base to accelerate future troubleshooting of similar issues

Section Score: _____/10

7 Audit Summary & Action Plan

#	AUDIT AREA	SCORE	PRIORITY
1	Audio Quality Issues	/ 10	H / M / L
2	Network Diagnostics	/ 10	H / M / L
3	QoS & Prioritisation	/ 10	H / M / L
4	Hardware Checks	/ 10	H / M / L
5	Platform & Configuration	/ 10	H / M / L
6	Escalation & Resolution	/ 10	H / M / L
TOTAL SCORE		**/ 60**	

Score Interpretation

80–100: Excellent. Your IT setup is well-managed. Focus on continuous improvement and emerging threats.
60–79: Good foundation but gaps exist. Prioritise areas scoring below 6 and create an action plan.
Below 60: Significant gaps that put your business at risk. Consider an urgent review with an IT specialist.

Top 3 Priority Actions:

1. _____
2. _____
3. _____

Additional Notes

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Audit completed by: _____ Date: _____ Next review due: _____