NocTel

Call Quality Troubleshooting Guide

For IT teams and network administrators

How to use this guide

This guide covers the network, firewall, and configuration checks for common call quality problems reported by users. Issue titles match the NocTel User Guide, so you can go straight to what your users are reporting. Have users complete the User Guide steps first to rule out device and handset issues.

Find your problem

Can't Hear or Be Heard

- You can't hear the other person
- The other person can't hear you
- Nobody can hear anything

Sound Quality

- Choppy or robotic audio
- Static, crackling, or buzzing
- You hear an echo of your own voice
- Delay between speaking and hearing

Calls and Phones

- Calls drop unexpectedly
- Calls go straight to voicemail
- Calls ring the wrong phone
- Phone is offline or won't connect
- Menus don't respond to keypresses

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Monday to Friday, 6 am to 6 pm Pacific

CAN'T HEAR OR BE HEARD

You can't hear the other person

Inbound one-way audio. Common causes: inbound RTP blocked or misrouted, NAT, SIP ALG, remote carrier issue.

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Step	
1	Disable SIP ALG and any SIP inspection, SIP fixup, or "VoIP helper" feature on the router and firewall.
2	Confirm inbound RTP from NocTel is permitted on the required port range. See "Network Requirements" at the end of this guide.
3	Verify that SIP and RTP leave from the same public IP. Avoid load-balanced or multi-WAN egress for voice traffic.
4	Determine scope: all calls versus specific destinations. All calls usually points to the local network; specific destinations usually points to the carrier path, so send NocTel example calls.
5	If possible, capture traffic on the firewall WAN interface during a test call to confirm whether inbound RTP is arriving.

The other person can't hear you

Outbound one-way audio. Common causes: outbound RTP blocked, egress filtering, NAT, SIP ALG, remote carrier issue.

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Step	
1	Disable SIP ALG and any SIP inspection, SIP fixup, or "VoIP helper" feature on the router and firewall.
2	Confirm outbound RTP to NocTel is permitted and not restricted by egress rules. See "Network Requirements" at the end of this guide.
3	Check for asymmetric routing or multiple WAN links that could send RTP out a different path than SIP.
4	Determine scope: all calls versus specific destinations. All calls usually points to the local network; specific destinations usually points to the carrier path, so send NocTel example calls.
5	If possible, capture traffic on the firewall WAN interface during a test call to confirm whether outbound RTP is leaving the network.

CAN'T HEAR OR BE HEARD (CONTINUED)

Nobody can hear anything

No audio in either direction. Common causes: firewall, network or VLAN configuration, RTP routing, SIP ALG.

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Step	
1	Verify the phones are on the correct voice VLAN and receiving the correct DHCP settings (IP address, gateway, DNS).
2	Disable SIP ALG and any SIP inspection, SIP fixup, or "VoIP helper" feature on the router and firewall.
3	Confirm SIP and RTP are permitted in both directions, and that IPS, UTM, geo-blocking, or content filtering features are not dropping UDP voice traffic. See "Network Requirements" at the end of this guide.
4	Determine whether it affects all phones and all calls, or only certain phones or destinations.

SOUND QUALITY

Choppy or robotic audio

Common causes: packet loss, jitter, insufficient bandwidth, no QoS, Wi-Fi or VPN, remote carrier issue.

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Step	
1	Measure packet loss, jitter, and latency from the site during the affected time. General targets for good voice quality: packet loss under 1%, jitter under 30 ms, one-way latency under 150 ms.
2	Confirm available bandwidth: roughly 100 kbps upload and 100 kbps download per concurrent call, plus headroom for other traffic.
3	Configure QoS to prioritize voice traffic (DSCP EF/46 for RTP is typical), and shape upload slightly below the actual circuit speed so the router controls queuing.
4	For softphone users, check Wi-Fi signal and congestion, and route voice outside the VPN (split tunnel) where possible.
5	Check switch ports for errors, discards, or duplex mismatches.
6	Determine scope: all calls versus specific destinations. All calls usually points to the local network; specific destinations usually points to the carrier path, so send NocTel example calls.

Static, crackling, or buzzing

Common causes: faulty headset, handset, or cord; cabling; PoE; remote carrier issue.

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1	Check the switch port for CRC errors. Replace the patch cable and test a different port.
2	Confirm the switch has enough PoE budget for all connected phones.
3	Swap the phone with a known-good unit to rule out hardware.
4	Determine scope: all calls versus specific destinations. All calls usually points to the local network; specific destinations usually points to the carrier path, so send NocTel example calls.

You hear an echo of your own voice

Common causes: acoustic echo at the far end, echo on the remote carrier's network, made more noticeable by latency.

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1	Echo heard by the local user is almost always generated at the far end. Collect example calls (numbers and times) for NocTel to investigate the carrier path.
2	If echo occurs on all calls, measure latency. High latency makes echo more noticeable. Apply the latency guidance under "Delay between speaking and hearing."

Delay between speaking and hearing

Common causes: network latency, jitter, congestion, Wi-Fi or VPN routing.

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1	Measure latency to NocTel, both idle and under load. One-way latency above about 150 ms becomes noticeable.
2	If latency rises sharply under load (bufferbloat), apply QoS and upstream shaping as described under "Choppy or robotic audio."
3	Make sure voice traffic isn't being hairpinned through a VPN concentrator or another site.
4	Determine scope: all calls versus specific destinations. All calls usually points to the local network; specific destinations usually points to the carrier path, so send NocTel example calls.

CALLS AND PHONES

Calls drop unexpectedly

Common causes: internet instability, firewall UDP or session timeouts, SIP ALG, registration issues.

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1	Drops at about 30 seconds usually mean the signaling path is broken (the call setup isn't confirmed), most often from SIP ALG or NAT. Disable SIP ALG and any SIP inspection, SIP fixup, or "VoIP helper" feature on the router and firewall.
2	Drops after the same length of time on every call (often around 15 or 30 minutes) usually mean a firewall UDP or session timeout. Set the UDP timeout for SIP traffic longer than the phones' registration interval. NocTel can confirm the interval.
3	Review WAN stability, ISP logs, and any failover events during the affected time.
4	For softphone users, check Wi-Fi roaming and VPN reconnects.

Calls go straight to voicemail

Common causes: phone offline or unregistered, Do Not Disturb, forwarding, ring time, routing.

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1	Confirm the phone is registered. NocTel can check registration status from our side.
2	If phones intermittently lose registration, check firewall UDP timeouts and SIP ALG (see "Calls drop unexpectedly").
3	Check for DHCP lease problems or IP address changes on the voice VLAN.
4	For ring time or routing changes, contact NocTel.

Calls ring the wrong phone

Common causes: call routing, forwarding rules, phone provisioned to the wrong extension, IP conflicts.

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1	Check for duplicate IP addresses, such as static IPs overlapping the DHCP scope or conflicting reservations.
2	Confirm the phone's MAC address is provisioned to the correct extension. NocTel can verify this.
3	For call routing changes, send NocTel the dialed number, time, and the phone that rang.

Phone is offline or won't connect

Common causes: network, cable, or PoE; wrong VLAN; DHCP or DNS; firewall blocking SIP; SIP ALG.

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1	Confirm link and PoE on the switch port, and that the port is on the correct voice VLAN.
2	Confirm the phone receives a valid DHCP lease (IP address, gateway, DNS) and that DNS resolution works from the voice VLAN.
3	Confirm SIP to and from NocTel is permitted. See "Network Requirements" at the end of this guide. Disable SIP ALG and any SIP inspection, SIP fixup, or "VoIP helper" feature on the router and firewall.
4	If several phones went offline at once, check for recent firewall, ISP, or network changes.

Menus don't respond to keypresses

Common causes: DTMF mode mismatch, packet loss, SIP inspection, remote menu system.

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1	Check packet loss and jitter. Loss can corrupt keypress tones.
2	Disable SIP ALG and any SIP inspection, SIP fixup, or "VoIP helper" feature on the router and firewall.
3	Send NocTel the number dialed and the time so we can review the call and DTMF settings.

Network Requirements

Recommended baseline for NocTel voice service:

- ✓ SIP ALG and SIP inspection disabled on all routers and firewalls
- ✓ Roughly 100 kbps upload and 100 kbps download per concurrent call, plus headroom
- ✓ QoS prioritizing voice traffic, with upstream shaping below the circuit speed
- ✓ Firewall UDP timeout for SIP longer than the phones' registration interval
- ✓ SIP and RTP to and from NocTel permitted in both directions (ports and addresses below)
- ✓ Required Open Ports: 123 UDP, 5060 UDP, 80 TCP, 443 TCP. All UDP, for RTP for voice data receipt and transmission
- ✓ NocTel Voice Server Range: 192.69.24.0/21

More help articles: noctel.com/help

Help Us Solve It Faster

We're glad to work through any issue with you. Sharing these details when you open a ticket lets our team go straight to the right logs and calls.

- ☐ Example calls: date and time (with time zone), calling and called numbers, and direction
- ☐ How many phones or users are affected, and whether it's site-wide
- ☐ The site's public IP address
- ☐ Router and firewall make and model, and whether SIP ALG is disabled
- ☐ Any recent network, firewall, or ISP changes
- ☐ Packet loss, jitter, and latency test results
- ☐ A packet capture (pcap) of a test call, if available
- ☐ Steps in this guide you've already completed

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