

# Mesh, Sonos and VoIP

This is an edited version of an email from Phil (The "CEO") to a customer that has at least 1 mesh network (maybe 2) and constant VoIP issues. He's using Luxul and Eero.com mesh WiFi trying to cover a large building without installing proper ethernet cables and solid real multi-use Access Points (Ubiquiti as an example). Add Sonos speakers, with a lot of chatter.. and you got issues.

## The email

Chris,

I don't have much to report other than a rethink on something we already discussed.

You said that you took one of the phones down and plugged it into a switch/router/ethernet port directly. This didn't change the behavior, still poor sound quality.

I didn't catch this at the time but here's the thing:

The phones have 2 MAC addresses, 1 for the wifi side, the other for the wired side. To actually get the phone to work, you have to plug it in via ethernet, then add a new extension in our interface, and THEN turn off the wifi on the phone, turning it into a "wired only" device. Following this procedure is the ONLY way to test the wired vs wifi thesis. If you do this and you have good, or even improved sound quality it helps us to find the correct solution.

My gut says that the only way to fix this properly is with an IT person on site, and possibly the creation of a separate wifi network that would use conventional wifi tech such as the access points made by Ubiquiti (Ubiquiti Uni-Fi) and others. You have a large and complex network, that needs active management to set it up properly for SIP/VoIP use.

Suggestions: (some may not apply as I do not know what equipment you have)

1. Do not use a modem/router provided by your service provider. Far better to use a cable modem from Motorola, Netgear etc (\$50-100), and a separate router (Ubiquiti Edgerouter or other semi-enterprise grade gear \$80-200). We are happy to make suggestions.
2. Your network needs to be flat: Only 1 device can be set up for DHCP. (Yours may be, we haven't gotten that deep yet).
3. Mesh networks and VoIP are not the best of friends. Better to run the VoIP side off of traditional wifi via access points.
4. Some of the network segmentation may be possible using v-lans instead of a physically segmented network, but this part will very much depend on your network map/topology.
5. There are a fair number of people in the Sonos forums that have consistent network issues. Let me explain why: Sonos is the best at what they do for many reasons, one of which is that the music being

streamed to multiple endpoints remains in perfect sync, not even a millisecond delay or lag. If there were lag, it would create an echo/surround effect changing the music considerably. The only way to keep multiple endpoints in perfect sync is to have them talk to each other over the network constantly and check/adjust their "timing". This creates an enormous amount of continual "chatter" on the network. This can be particularly troublesome on the wifi side of the network. When you disconnected the Sonus endpoints did you get ALL of them including the "master" at the head of the system? If a single unit is left on it will try and find all of the other units that it used to be speaking to in order to maintain sync. It is also possible that the Sonus is NOT the issue.

The advantage of implementing these suggestions is that anyone's devices and services should work properly if these steps are followed and maintained.

We really do want to help you, but there is very little we can actually do regarding your network.

This can be very frustrating. I know from personal experience of chasing gremlins in my own network.

Reach out if/when you need further assistance. If you decide to hire an IT guy we are happy to work with them, or even speak to them before you hire them. There are a lot of IT folk that are not very well acquainted with SIP/VoIP and best practices.

Phil Sieg

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