

**Business Services**

# **HVoIP OTT FAQ / Troubleshooting**

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**User Guide v1.0**

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## Purpose

This document provides answers to many frequently asked questions (FAQ) around WOW!'s Hosted Voice over IP (HVoIP) services as well as some basic troubleshooting guidelines. It will also serve to outline a handful of basic considerations that should be taken when integrating the services to an existing network.

## Definition of Terms

- **Packet:** The units that make up a data transmission within a computer network.
- **Latency:** The travel time for data packets, i.e., how long it takes them to reach their destination.
- **Jitter:** A measurement of the difference in latency between data packets when they reach their destination. A low jitter value indicates consistent transmission and ideal voice quality. A high jitter value can mean some packets arrive out of order or fall outside of a packet buffer.
- **Packet loss:** This occurs when some packets intended for a certain destination do not arrive as expected. The user experience of this would be poor or lost audio during a conversation.
- **LAN:** The Local Area Network present within a customer's business.
- **VLAN:** Virtual LAN – A method used when it is necessary to segregate traffic within a single physical network.
- **CPE:** Customer Premise Equipment – The catch all term used to describe any servicing equipment present at a customer's business.
- **IP:** Internet Protocol – The specific address designated to a device on a computer network.
- **Port:** The location at which a device communicates on a specific IP. Networks will typically use ports to designate traffic for a certain application.
- **SIP:** Session Initiation Protocol – The communication method by which WOW! delivers HVoIP services over an Internet connection.
- **OTT:** Over the Top – The term used to describe a provider offering VoIP services over another provider's internet connection.
- **Bandwidth:** The amount of data transmitted on a computer network within a fixed period of time. For Internet services, this equates to the subscribed service package. It should be noted that the bandwidth available to a specific device on a network (e.g. WOW! HVoIP phones and/or soft clients) can be restricted due to the usage of other devices on the same network.
- **ISP:** Internet Service Provider – The company through which the customer obtains internet access.

## General Recommendations

In order to maintain consistent quality with voice calls, it's important that the servicing Internet connection be as stable as possible. If there are any sort of reliability issues with that connection (including excessive Jitter, Packet Loss, etc) during general usage, it will translate directly to the symptom of poor audio on WOW!'s Hosted VoIP service. Also, while the required bandwidth for a single VoIP call is only approximately 100 Kbps, voice quality issues can occur if a network is excessively utilized or improperly configured.

### Specific Feature Interactions

All Hosted VoIP features have been tested and verified functional in various lab scenarios but it is possible that certain CPE may exhibit issues when certain features are in use. Phones using side cars with multiple monitored extensions or ring all hunt groups could potentially have service issues. To minimize this, it is recommended to follow the guidelines below when configuring the servicing router/firewall for use with WOW!'s OTT Hosted VoIP services. It should also be noted that paging services will only function with devices local to the OTT device (i.e. the same physical network) and with that device fully supporting multicast traffic. For the purposes of paging, Polycom phones will need to use the 224.0.1.116 network for multicast.

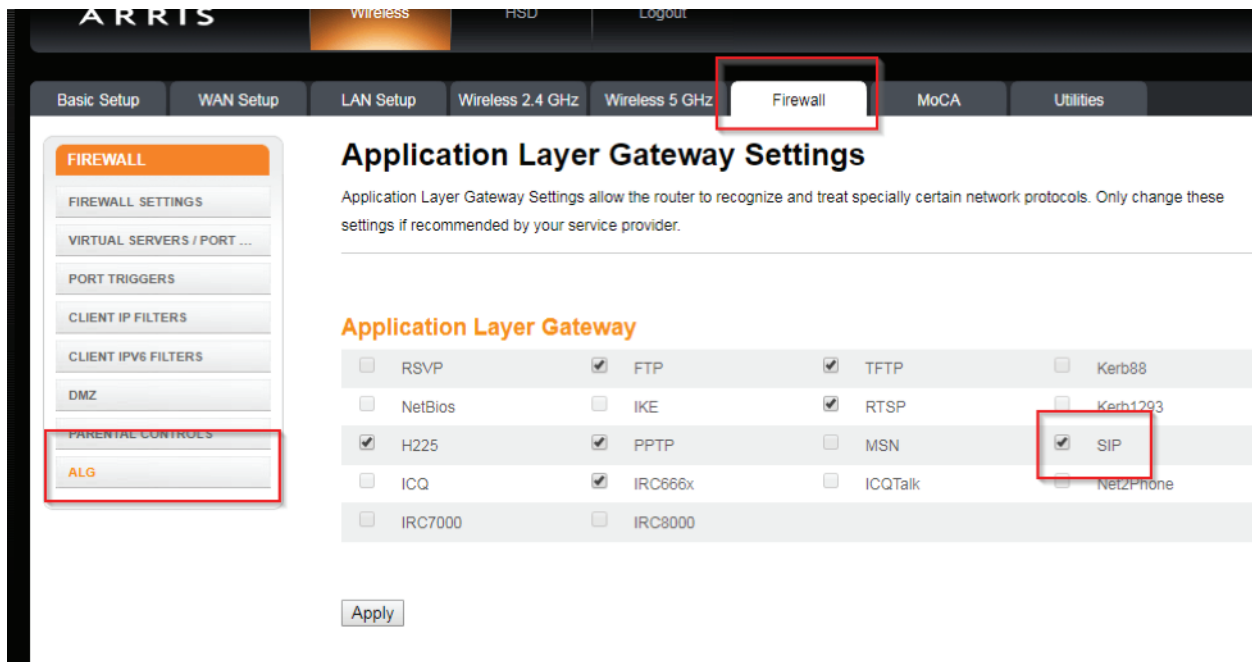
### Router/Firewall Considerations

Since there are a host of routers and firewalls on the market, this section will serve as a general guideline for configuration as opposed to specific examples for those various manufacturers and devices. If the sole device in use is the service provider's modem with its built-in router and switch, please consult that provider's documentation in order to verify its configuration.

- Internal wiring should be well sorted and consistent, preferably using shielded cables to reduce RF interference within the building. If this is an issue, it will likely have shown itself as such via general service issues.
- 0% packet loss on the internal network. Depending on the equipment being used to provide Internet service to WOW!'s devices, this may or may not be an available metric.
- <20ms jitter. Again, this measure may or may not be available.
- SIP ALG disabled. While this may or may not cause an immediate issue, it's a best practice to ensure that any deployed firewall does not inspect SIP traffic to ensure consistent and reliable service.
- If WOW!'s Hosted VoIP service is being deployed within an already complex network (e.g. with VLANs), please ensure that the Hosted VoIP service resides within its own, with that VLAN having Internet connectivity abiding by the aforementioned guidelines.
- While a single VoIP call will only consume a small amount of bandwidth, a good business rule for this method of deployment is to assume that 35% of the available users will be on a call at any given time and to reserve 50% of the available bandwidth for usage spikes.

## Disabling SIP ALG

It is recommended that firewall rules in the servicing modem/router be disabled to provide the best voice service. This can vary considerably by manufacturer so if there are questions with how to accomplish this, please consult either the documentation for the device or the Service Provider. For the sake of explanation, an Arris device is used in the screenshot below, with the feature being shown as enabled.



## SIP Provisioning Server

In order for phones and soft clients to be able to receive their configuration, they must be able to connect to WOW!'s SIP Provisioning system. If devices are having issues check that the customer's DNS can resolve and that they can reach the following:

- voice.wowway.com (via HTTPS, port 443)
- phone.wowforbusiness.com (via HTTPS, port 443)

To test DNS, open a command prompt or terminal session on a device on the customer's network, and type (for example) 'nslookup voice.wowway.com' and verify that an IP address is returned (and not an error message).

To test connectivity, open a web browser on a device on the customer's network and attempt to go directly to the above two domain names via <https://voice.wowway.com> should return a 404 error message, phone.wowforbusiness.com should return a login page. If they are blocked you will see connection errors.

## WOW! SBC Connectivity

In order for phones and soft clients to be able to register and make/receive calls, they must be able to communicate with the SIP Adjacency on the WOW! SBC. If devices are having issues check that the customer's DNS can resolve and that they can reach the following (depending on which market they are assigned to):

- inevvl.hvoip.voice.wowway.com
- ilnpr.hvoip.voice.wowway.com
- mitroy.hvoip.voice.wowway.com
- ohcolm.hvoip.voice.wowway.com
- ohclev.hvoip.voice.wowway.com
- flpana.hvoip.voice.wowway.com
- flpine.hvoip.voice.wowway.com
- gaclmb.hvoip.voice.wowway.com
- alhunt.hvoip.voice.wowway.com
- gaagst.hvoip.voice.wowway.com
- tnknox.hvoip.voice.wowway.com
- scchar.hvoip.voice.wowway.com
- almont.hvoip.voice.wowway.com
- flpana.hvoip.voice.wowway.com

(For all of the above, port 5060 will be used for IP phones, port 443 for the mobile client, and port 80 for the desktop client)

To test DNS, open a command prompt or terminal session on a device on the customer's network, and type (for example) 'nslookup inevvl.hvoip.voice.wowway.com' and verify that an IP address is returned (and not an error message).

To test connectivity, open a command prompt or terminal session on a device on the customer's network and type (for example) 'telnet inevvl.hvoip.voice.wowway.com 5060' and verify that a connection occurs. If you see the telnet session hang while trying to connect, or get rejected immediately, there is an issue. You should see "connected to" or see the window go to a blank screen with a blinking cursor if a connection is successfully made. You can then use ctrl+] or ctrl+c to end the connection.

## Basic Troubleshooting

### NAT/Port Issues

Depending on the intelligence of the router in use, it's possible for traffic to be improperly routed based on its port. As a specific example, WOW!'s Polycom VVX phones are configured to send/receive on local port 5060 which is the default for SIP traffic in most cases. If there is an issue with devices not registering, it's possible that the local port address of each device will need to be reconfigured to work around this limitation. This can be accomplished via CommPortal BAdmin using the following option:



In the above example, this phone has been set to use local port 5062 rather than the default of 5060, to avoid conflicting with another phone. This step may or may not be necessary depending on the router being used. WOW! recommends using ports 5062 and up for phones if the default 5060 will not work.

### Port Availability – ISP

It is possible (albeit unlikely) that the customer's ISP may block certain ports for security. If there are general issues with the device not registering or other calling issues, reach out to the ISP and ensure that they're not blocking communication on port 80.

## **Additional Support**

Additional user guides and tutorials to assist you with your WOW! Business services can be found at <https://www.wowforbusiness.com>.