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## External / Remote Phones

The **ring-u** Hello Hub is primarily a premise network phone system. In its default configuration, it exists behind a firewall and communicates directly to the local phone system. This provides a range of advantages over “cloud” based systems, particularly with automatic phone configuration, minimizing upstream network traffic and costs. But not everyone always works at the primary location. With a little proper network configuration, your Hello Hub can provide integrated phone service to phones outside of your local network. There are two methods of doing this, one requires some basic firewall port forwarding, the other requires a VPN (Virtual Private Network) and some skills. We are currently only supporting the firewall port forwarding method, it works well for most requirements.

Requirement Summary:

- [Advanced Mode Enabled](#) in the **ring-u** portal.
- Configure DHCP Server to provide a consistent/static IP address to the Hello Hub
- Port forwards for 5060,5061 and 10000 to 20000 to the Hello Hub static address.
- Manually configure external phones or use a supported auto-configurable phone listed below:
  - [Grandstream Wave](#) for iOS and Android supports configuration by ring-u QRcode.  
[Grandstream Wave Configuration Instructions](#)
  - [Zoiper](#) for iOS and Android and desktop OS's supports configuration by QRcode.

## Caveats

Supporting remote phones is an advanced phone system feature and dependent on several factors beyond the control of **ring-u**.

- Internet connectivity to the Hello Hub. (Your business internet connection)
- Internet/data connection on remote phones, wireless networks and mobile phone companies are a critical factor.
- Firewall quality and configuration.

This feature is most used for a mobile phone to be an extension off the phone system. Benefits include easy dialing to other extensions and being part of a call group or calling out from the business phone system and phone number. Of course, the ability to answer incoming calls and be a part of a ring group is the most desired feature. You'll want a good data plan on your mobile, and a mobile with a little extra battery capacity. Configuring your firewall and office network to work well is the most important aspect and potential pitfall for this feature to work. **Please consider having a professional check your network and configure your firewall. ring-u can advise, but can not do this from remote.**

## Steps to success:

- Using your router/firewall/DHCP server: Assigned your Hello Hub a static internal address.
- Reboot your Hello Hub. Then verify that your Hello Hub has reset to the assigned address, and that it has automatically configured auto-config supported phones to match and your phone system is working.
- Set the following ports and protocols to forward to your Hello Hub inside of your network.

Port	Protocol	Internal Address	Description
5060	UDP and TCP	x.x.x.x	VoIP/SIP Control
5061	UDP and TCP	x.x.x.x	VoIP/SIP Control (secure)
10,000-20,000	UDP	x.x.x.x	VoIP/SIP RTP (Voice Traffic)

- Add your phones in the **ring-u** portal using Manual Config.
- Configure your phone(s) to match.
- Enjoy!

## Troubleshooting:

Make sure you are using an “external” phone configuration. (if you are trying to use this from remote). The interface provides setting for both. The auto-generated QRcodes are specific to either an inside network only, or inside and outside network connection.

If using a manual/other configuration, use the internal address for internal only (an IP address), and use the [ruXXXX.ring-u.net](https://www.ring-u.net) address for external and internal configurations. If the firewall port forwarding is working properly, your mobile device will connect and work well either on WiFi or from outside of the network over your mobile device providers network. If it doesn't work when on WiFi, you may have internal network or firewall rules that are blocking it, but most small business WiFi networks are on the same network as everything else.

## Known Configs:

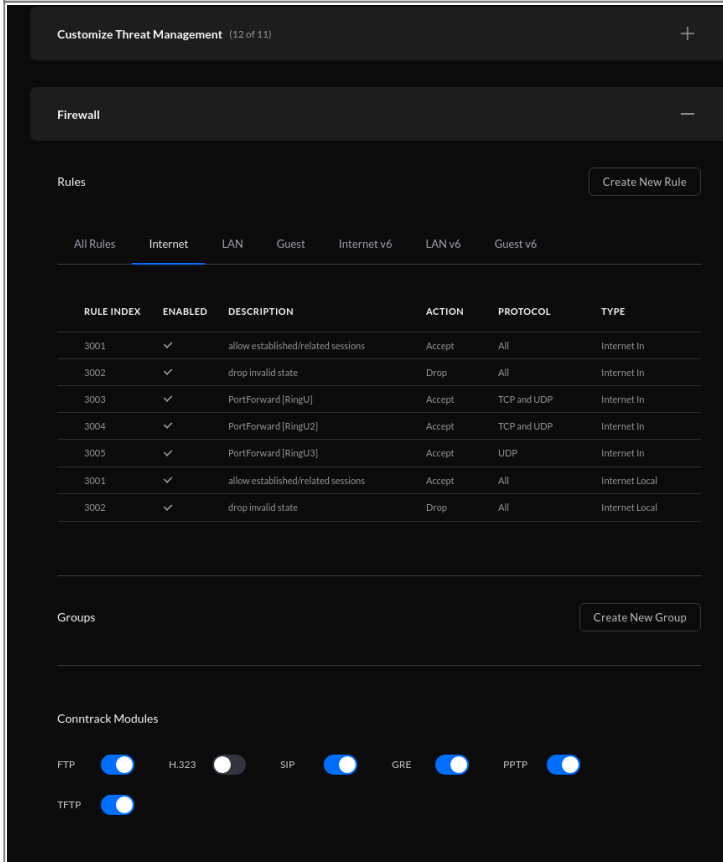
- **Asus** firewall/router/AP's are known working well in the field.
- **Linksys** firewall/router/AP's are known working well in the field.
- **Ubiquiti** firewall/router's are known working well in the field. Bluntly: Our favorite!
- **D-link** firewall/routers are known working well in the field.
- **pfSense** takes some serious tweaking. Not working well.
- **sonicwall** may take serious tweaking, sometimes it just needs “persistent nat” set.  
<https://www.sonicwall.com/support/knowledge-base/configuring-consistent-nat-network-address-translation/170505836533942/>

We really like the Ubiquiti gear. Upgrading to an Edgerouter X has fixed many broken networks, and

many customers are blown away that they are now getting the internet bandwidth they are paying for. We constantly say “use your WiFi router as an Access Point Only” and use a Ubiquiti ER-X. Note the Ubiquiti Dream Machine (all-in-one device) has serious problems with VoIP and we do not recommend it.

Example screen shot of configs for a Ubiquiti ER-X firewall, note Hairpin NAT is Disabled.

Example screen shot of a configured Ubiquiti USG using their cloud config interface. Note the 3 rules for port forwarding and that SIP CONNECTION TRACKING is ON. More info at: <https://help.ui.com/hc/en-us/articles/235723207-UniFi-USG-UDM-Port-Forwarding-Configuration-and-Troubleshooting>



## Rants:

This works very well when all of the pieces are working well. The voice quality and responsiveness has been very good. *Or it's not.* Being on the fringe of mobile network coverage, or using WiFi behind a restrictive firewall (depends on your favorite coffee shop or other places) breaks things. The #1 issue in doing this is firewall quality and configuration at the main network where the Hello Hub is. Price doesn't seem to matter, we see “commodity” Asus, Dlink, Netgear and other routers work great, and bespoke Cisco and pfSense firewalls be a pain. And the other way around as well. Devices provided by the ISP (Charter, Comcast, etc..) that provide both a connection (“modem”) and have a firewall managed by them are typically atrocious, mostly because they can't be controlled when needed. We highly recommend have a modem and firewall that are separate, or if integrated, one you can control. Our page on [Networking Disasters](#) is worth a read.



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Last update: **2020/12/09 15:59**