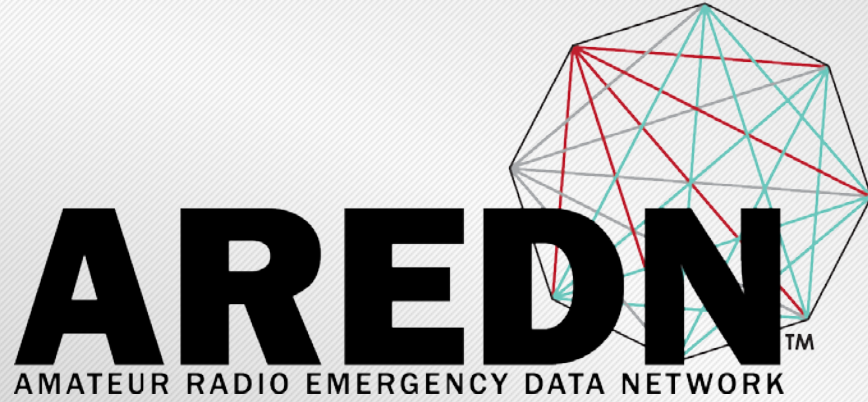




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AMATEUR RADIO EMERGENCY DATA NETWORK



# Getting Started on VoIP Without a PBX

Mark Herson, N2MH  
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# Getting Started on VoIP Without a PBX



- Discussion of Phone types
- Short Discussion of a PBX
- Direct IP Dialing
- Phones that Do Not Support Direct IP Dialing
- Node Configuration
- Preserving IP Addresses
- Telephone Directory
- Demo

# Background Information



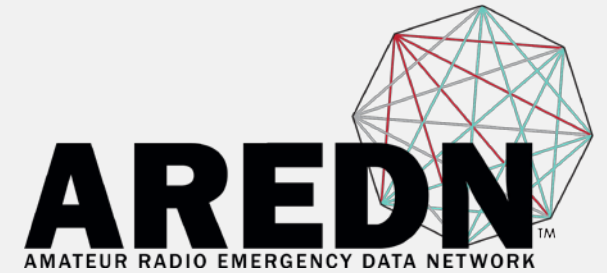
- This talk is about having one phone talk to another phone without using a PBX or other central server.
- All phone types discussed in this talk support the SIP protocol (Session Initiated Protocol)
- All SIP phones are designed to work with a central server.
- Those phone that can call other phones without the central server are doing so via an extended feature set provided by the vendor.

# Phone Types

- ATA (Analog Telephone Adapter)
- VoIP Desk Phone
- SmartPhone



# ATA - Analog Telephone Adapter



Example - Grandstream HT701

- Analog Device that converts an analog telephone into VoIP
- Connections
  1. Plug phone into phone jack on ATA
  2. Plug ethernet cable into "Internet" jack
  3. Supply 12V DC to unit
- Use included Wall Wart
- 12V from shack power supply
- 12V battery

# VoIP Desk Phones

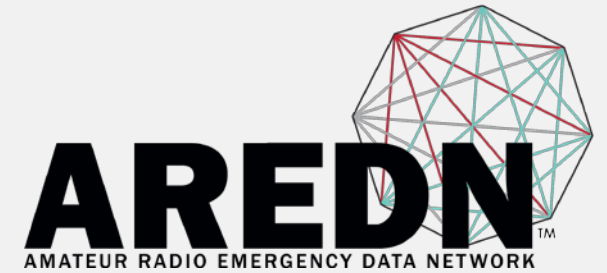


## Types

- Yealink
- Grandstream
- Cisco
- Polycomm
- Snom
  
- Others



# SmartPhones



- Zoiper
- Linphone
- CsipSimple
- Others
- All three are free and will give the phone VoIP Capability
- Available for both Android and Apple
- To make a Smartphone work with the Mesh, you will need an access point. This is a device that takes the ethernet Mesh interface and converts it to WiFi which will then talk to your Smartphone.
- I have found all three versions to be difficult to use with direct IP calling.

# PBX – Private Branch Exchange



- A PBX is a central server to which all phones connect. This server enables any phone to call any other phone on that server.
- It also has other features
- Conferencing
- Voice Mail
- Trunking
- Trunking is a feature where a phone on one PBX can call another phone on a different PBX

# Direct IP Dialing

(Calling from one phone to another using an IP address)



- The Grandstream line of phones is the most Ham friendly type of telephone to use.
- Other types may or may not offer the same functionality as Grandstream.
- Example
  - A Yealink phone can not make a direct IP call. It can only receive direct IP calls.

# Demonstration



A Grandstream ATA calls a Yealink desk phone over a 3.4 GHz. Mesh Link

- Connect the ATA to the node
- Supply power to the ATA
- Connect the analog phone to the phone jack

## Placing a Call

- Dial the IP address of the phone you want to call on the phone's DTMF dial pad
- Dial \*47 plus the IP address of the other phone (use \* for the dot in the IP address)

# IP Addresses



Question: How does one determine the IP address of a phone?

- Any VoIP device out of the box will be assigned an IP address by the node via DHCP
- **Grandstream ATA:** enter `***`, wait for the voice prompt, then enter 02. The ATA will speak its IP address (make note of this for future use).
- **Yealink:** Go to Menu, then Status. The first item should be the IP address (again, make note of this for future use).
- **Other types:** There will usually be some use of a menu and the included screen.
- **Using a Node:** Look it up on the "Port Forwarding, DHCP, and Services" page.

# Node Configuration

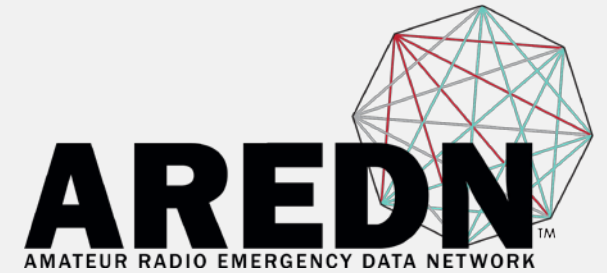


As noted previously, the phone will grab an IP address out of the node. If you do this many times, there is no guarantee that the IP address will be same each time.

To get the same IP address every time, you can configure the node so that any time the device is plugged into the node, the node will assign it the same IP address.

This is called  
Reserving an IP address in the node

# Node Configuration - Demo



## Important Concept

- Once you reserve an IP address for the phone, that phone is now “married” to that node. Therefore, you can not mix phones and nodes when you are out in the field.
- This is because the reserved address is tied to the MAC address of the phone.

# Telephone Directory



- Dialing an IP address for a phone call gets real troublesome, real fast!
- For use in the Field, you will need to make a Directory of who has which phone and its IP address.
- This can be done on paper and distributed to the interested parties (and then likely lost).

## Better Way

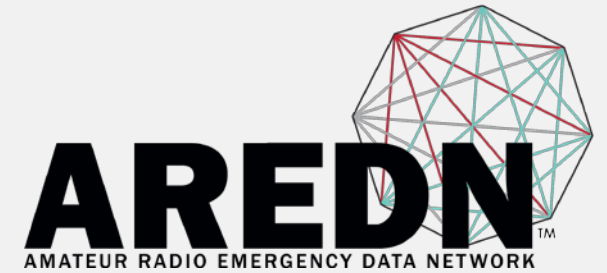
- Most desktop phones have a directory function built into the phone. It can be somewhat unwieldy to program this directory by hand.

## Instead

- Prepare a file with the appropriate information in the format specified by the vendor and upload it to the phone.



73!



73 and Happy Phoning!

N2MH Mark

KD2KHJ Karen

*n2mh@n2mh.net*