Asterisk Allstar Digital Network

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Roland K. Smith K7OJL
rolandksmith@gmail.com
(435) 849-1946

Allstar Link
yavoip

- Introduction
- What Is AllStar Link
- Why Yet Another VOIP System
- How Does It Work
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Roland K. Smith Introduction

Amateur Radio Callsign K7OJL

First licensed in February 1959

Hold an Amateur Extra license

Active in community and emergency services

Regularly on the air using digital modes

- Retired from the Idaho National Laboratory
- Tooele resident since November 2017
- Vice President of the West Desert Amateur Radio Club
- Tooele County Emergency Management liaison to the amateur radio community in Tooele County

K9YA Telegraph

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Morse Code & USAF Chinese Reconnaissance Flights

Roland Smith, K7OJL

During the middle 1960s I was a Chinese linguist in the United States Air Force Security Service. The mission of this now discontinued unit was declassified in the late 1990s and some of the stories are beginning to be told. This is about the People's Republic of China's air defense network and their use of Morse code.

Our airborne unit flew specially configured C-130 aircraft with ten operating positions in each aircraft. These positions were set up with radio receiving equipment, recording equipment, and some special signals

the target being tracked, the distance to the aircraft, and the altitude. The regional center collected all of the incoming information and relayed that information using Morse code to Beijing.

One of the stations on our aircraft was designated for our "ditty-bop" operator, an airman trained in Morse code. The ditty-bop would pick up the local radar station on the radio and another station on the aircraft using direction finding equipment would verify the location of the radar station, even though each station had its own specific set of frequencies. Quite often the operator would also tune in the regional center to see what Beijing was being told about us and our position.

I was a General Class license holder with good CW skills and would occasionally sit at the ditty-bop station, copy the code, and plot our position so the regular operator could take a break, get a cup of cof-

What Is Allstar Link

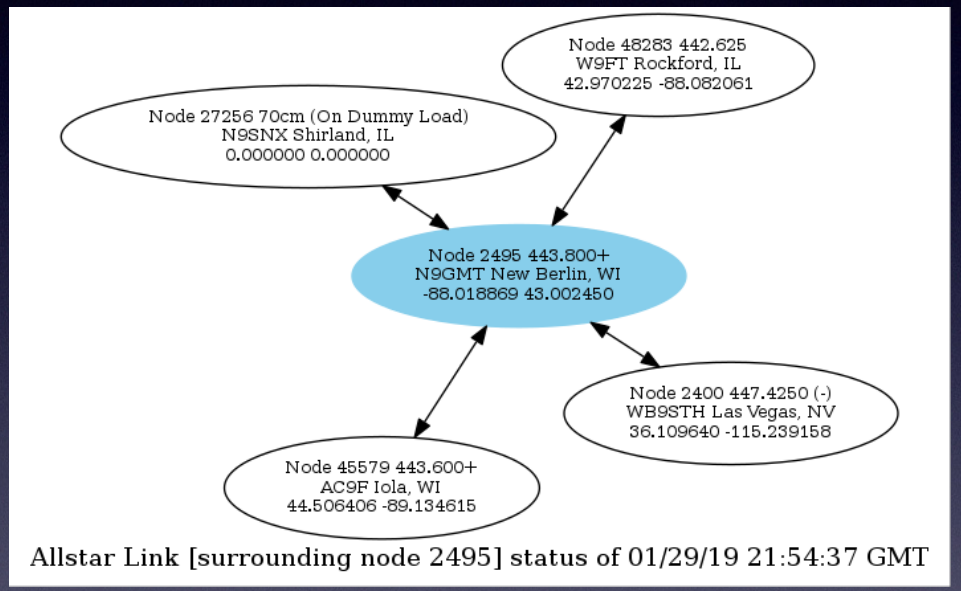
Allstar Link Features

- A full featured repeater controller
- VOIP full duplex linking with great audio
- Frequency agile remote base station
- Simplex (half-duplex) station
- Echolink
- APRS
- Autopatch
- Based on Asterisk
  - Open source PBX
- Real time status reporting


Topology
HAM RADIO
OPERATOR
ECHOLINK
Internet
Radio
Linking
Project
Debian
Linux
with
Asterisk
PC with
EchoLink
Software
AllStar
Link
Access via Webtransceiver, Mobile & Base Radio
Echolink, IRLP, SIP Phone/Android/iPhone/Phone, DStar

Asterisk … Open Source PBX

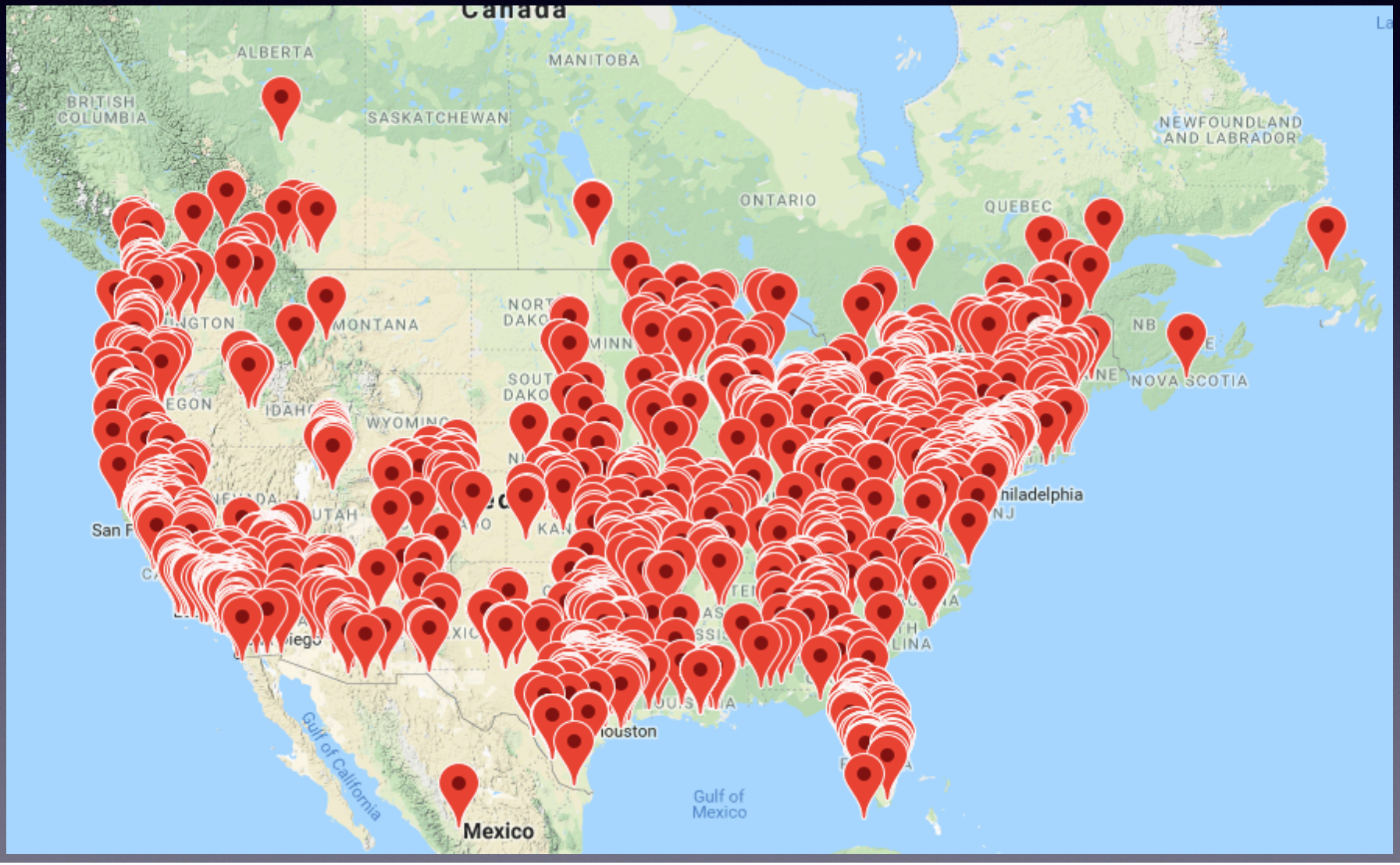
- Asterisk is a well-known and widely used Open Source PBX system
- Asterisk enables multiple PBX's to be linked to each other
- Asterisk provides excellent quality, full-duplex voice through the linked PBX systems
- AllStar Link has forked Asterisk and modified it to accommodate amateur radio needs



Why Yet Another VOIP System

- Very low cost
  - A radio, URI interface, and a Raspberry Pi
  - Software is Open Source
- Excellent support system
- Flexible software, straight-forward setup
- Worldwide deployment
- Link and unlink to Allstar Link nodes easily from the keypad

Where Are AllStar Link Nodes?



How Does It Work

- The Asterisk software considers the radio to just be another PBX extension
  - Anything coming in from the radio is sent by Asterisk to any/all connected nodes
- The Asterisk software can connect to or disconnect from any other PBX node in the database
  - The AllStar Link website (https:web-tpa.allstarlink.org) maintains the database
  - Full-duplex audio between Allstar PBX nodes
- Anything coming from a linked node is sent to the radio

System Setup

Hardware and Software

- Computer
  - Linux capable desktop / laptop, or
    - Raspberry Pi v2 or v3
  - 8mb of storage space
- Operating System: Debian or Raspbian
- Radio with a data interface
- A URI or modified sound card fob to connect the computer to the radio
  - Repeater Builder has a very nice interface for Alinco, Motorola, and a couple other radios
- AllStar Link Software: https://wiki.allstarlink.org/wiki/Main_Page

My Simplex Setup

The Computer

- Raspberry Pi v3 Model B
- OS image from AllStar Link
- Two AllStar Link Nodes
  - 42284: RF Node
  - 42287: Conference Bridge
- $45 from Element 14

The Interface

- DMK URI configured for the Alinco radio
- $75 shipped

The Radio

- Alinco DR-135 2-meter transceiver
  - $35 swap meet bargain
- Feeds a 2-meter J-pole 35’ in the air
- Transmitting 10 watts which is about 6 watts at the antenna
  - Good coverage in northern Tooele County

Installation Process

- The wiki has detailed installation instructions
- You must register with AllStar Link (https://web-tpa.allstarlink.org/) to obtain a node number. That is the information which will be put in the database so that your node can connect to other nodes in the network
- Many folks register two nodes, one as an RF node and one as a conference bridge node
  - Conference bridges can be connected to other nodes without sending out RF
  - They can also be connected to the RF node or disconnected at will

Demonstration

Demonstration

- I have three methods to reach my AllStar Link node
  - Any of my HT's or my mobile radio from around Tooele
  - iaxRpt on my (disliked) Windows laptop
  - ZoiPer on either my iPhone or my Android tablet
- ZoiPer can be used either on my home wifi or someone else's wifi. Works fairly well on LTE cell phone data
- For this demo, I'll use my iPhone to connect to my RF node which is connected to the Hawaii-US node and see if we can raise anyone

Questions?