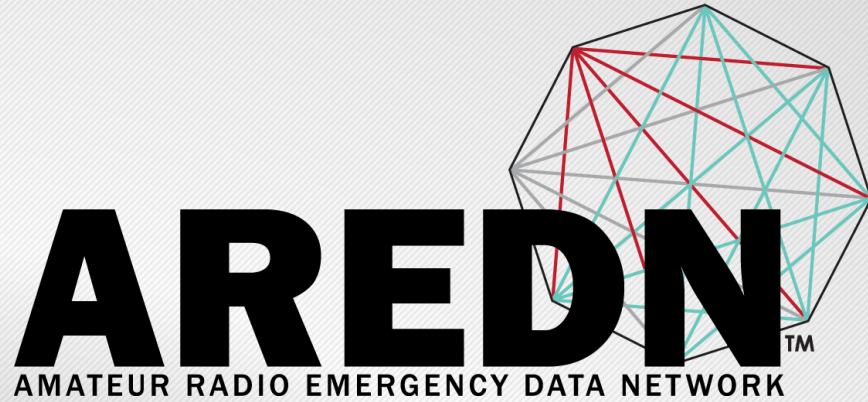




AREION™
AMATEUR RADIO EMERGENCY DATA NETWORK



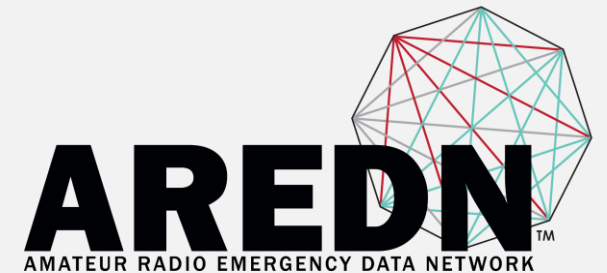
New Developments in Software / Implementations in the SW Division

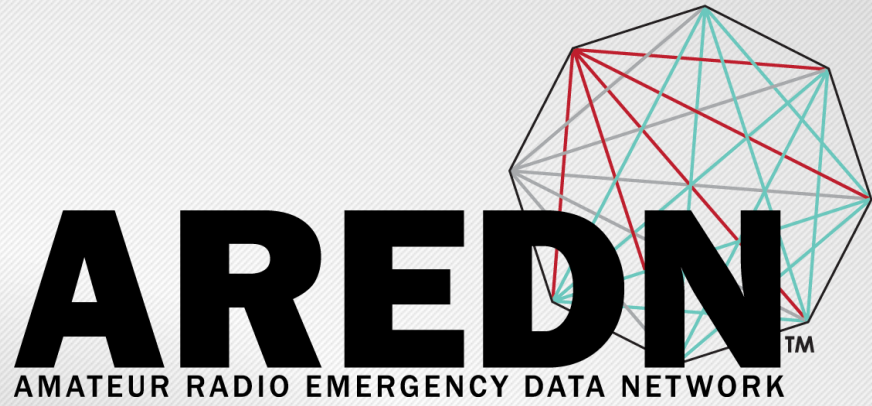
Andre, Hansen, K6AH

Yuma Hamfest - 2019
Yuma County Fairgrounds
February 16, 2019

- New Team Members
- Device Support
- Firmware Installation
- Documentation
- User Applications
- Network Growth in the SW Division

Presentation Overview

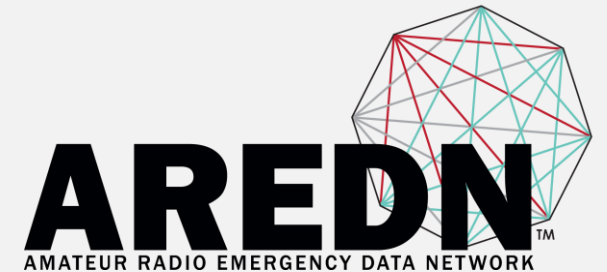




Team Members

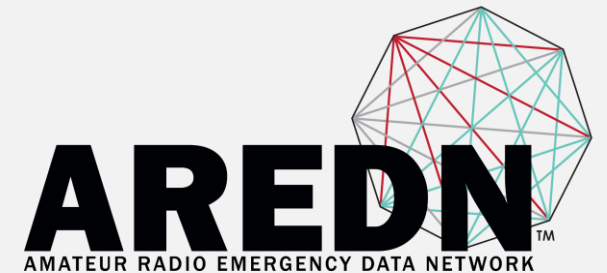
- Randy, WU2S, Webmaster, President
- Joe, AE6XE - Lead Developer
- Darryl, K5DLQ - Lead Developer
- Andre, K6AH, Project Manager

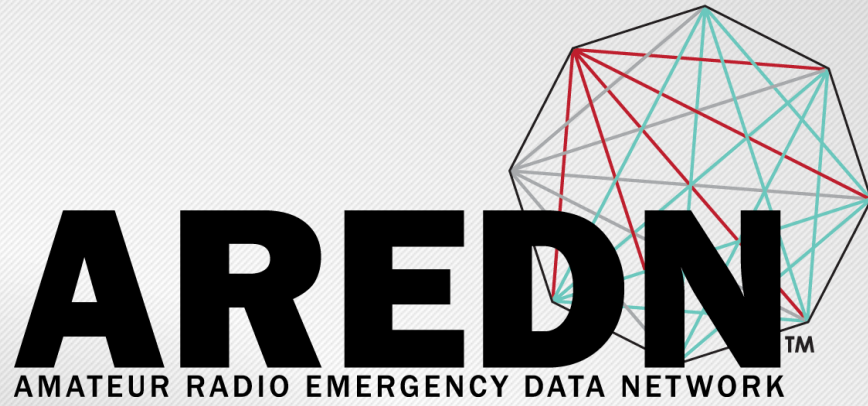
Core Team



- Andrew, KK4ZUZ - new device support
- Eric, KC6WXC - various
- Peter, KK6RUH - new device support
- Ray, KK6RAY - new UI
- Steve, KC0EUW - documentation
- Patrick, KE0RSX - new device support

New Contributors





New Device Support

Ubiquiti

Wide variety of devices for all topologies



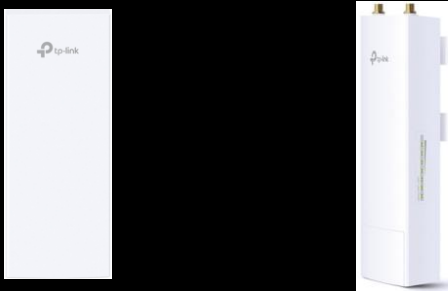
Mikrotik

Wide variety of devices for all topologies



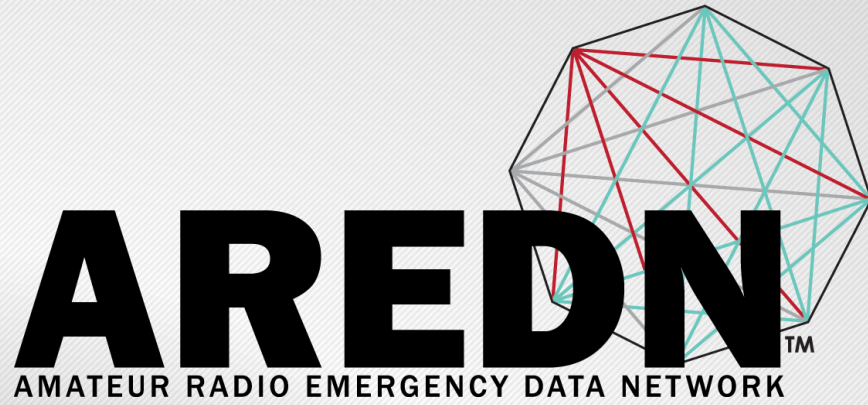
TP-Link

NanoStation and Rocket look-alikes



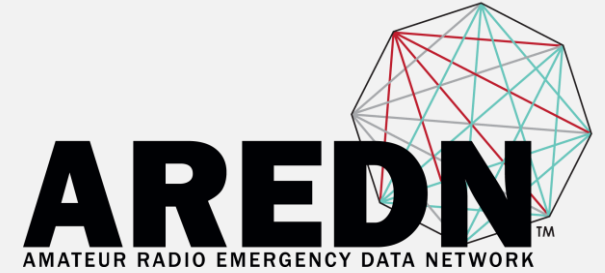
Robust Specifications

- Power Output: 23 - 28 dBm (200mW - 630mW)
- Antenna Gain: 11 - 30 dBi
- Some configurations capable of 50+ mile range
- Temperature: -40° to 176° F

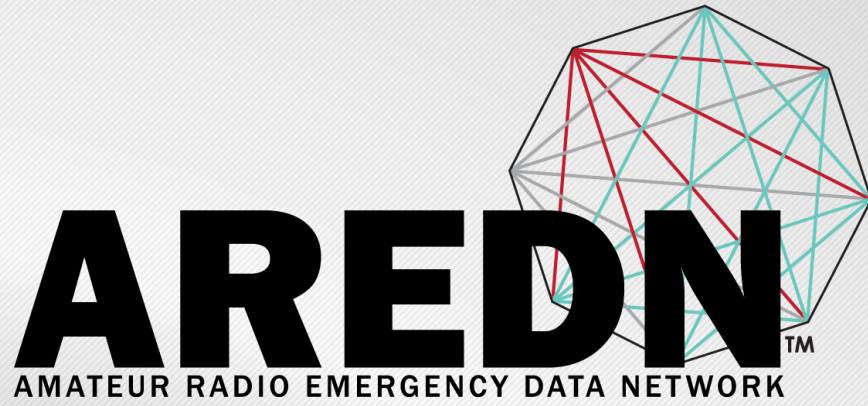


Firmware Installation

Firmware Installation

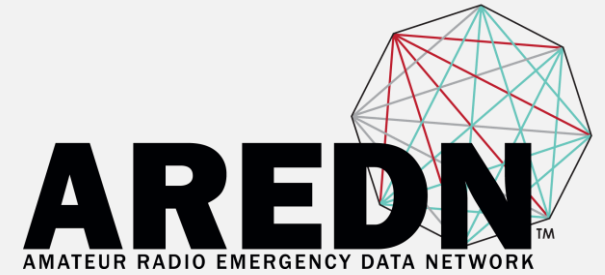


- Simplifying a complex situation
- Administrative F/W Update
 - Performed from the nodes user interface
 - Easy and convenient
 - Usable on all devices once it is running AREDN F/W
 - Use “sysupgrade” firmware files
- Trivial File Transfer Protocol (TFTP)
 - Performed with a LAN-connected PC (Windows or Linux)
 - Use when the manufacturers' firmware is installed or after a 20-second reset
 - Once TFTP is configured on your computer it is much easier to use
 - Use “factory” firmware files



Documentation

Documentation



AREDN Documentation
latest

GETTING STARTED GUIDE

AREDN Overview

Selecting Radio Hardware

Downloading AREDN Firmware

Installing AREDN Firmware

Basic Radio Setup

Node Status Display

Mesh Status Display

Advanced Configuration

NETWORK DESIGN GUIDE

Networking Overview

Network Topologies

Radio Spectrum Characteristics

Channel Planning

Network Modeling

APPLICATIONS AND SERVICES GUIDE

AREDN Services Overview

Chat Programs

Email Programs

Docs » AREDN Overview

AREDN Overview

The AREDN™ acronym stands for *Amateur Radio* operated service-oriented community.

For many years amateur radio transmissions for emergency use involved conveying the message in ICS-213 form. The message or type it on another ICS-213 delivered to the recipient then be handled through

This tried-and-true scenario of emergency and event traffic of traditional methods at electronic form, with mesh Factor, Fldigi, and others

In today's high-tech society accustomed to different communication needs. The short messaging and key communication, along with

Radio Spectrum Characteristics

Channel Planning

Channel Contention

Route Flapping

Collocated Nodes

Aligning Link Nodes

Channel Planning Tips

Network Modeling

APPLICATIONS AND SERVICES GUIDE

AREDN Services Overview

Chat Programs

Email Programs

File Sharing Programs

VoIP Audio/Video Conferencing

Video Streaming and Surveillance

Computer Aided Dispatch

Other Possible Services

HOW-TO GUIDES

AREDN How-to Guides Overview

How-to Use PuTTYGen on Windows to Make SSH Keys and Use Them on AREDN™ Nodes

Settings for Radio Mobile

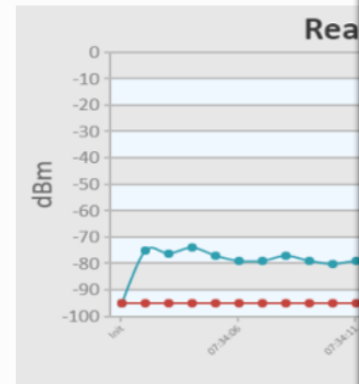
APPENDIX

Frequencies and Channels

Most of the latest AREDN™ devices that exploit multipath propagation. "chain" radios, another way to achieve antennas so that one is vertically polarized a signal separation of up to 20 dB. Vertical less susceptible to reflections and radio signal with clear line of sight. Note that the same way.

Aligning Link Nodes

The AREDN™ web interface provides being installed to form a link. On the *Signal to Noise* graph. Slowly turn and you see the best signal, as shown below. focus on the antenna position without *Sound* feature and align the antenna. Signal to Noise Ratio of 15 dB is adequate.



Radio Spectrum Characteristics

Channel Planning

Network Modeling

APPLICATIONS AND SERVICES GUIDE

AREDN Services Overview

Chat Programs

Email Programs

Citadel/UX

Open Source Email Server

Using WinLink to Send Email

Example Email Service Comparison

File Sharing Programs

VoIP Audio/Video Conferencing

Video Streaming and Surveillance

Computer Aided Dispatch

Other Possible Services

HOW-TO GUIDES

AREDN How-to Guides Overview

How-to Use PuTTYGen on Windows to Make SSH Keys and Use Them on AREDN™ Nodes

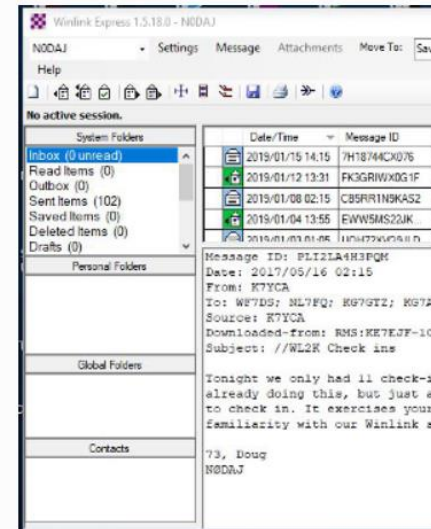
Settings for Radio Mobile

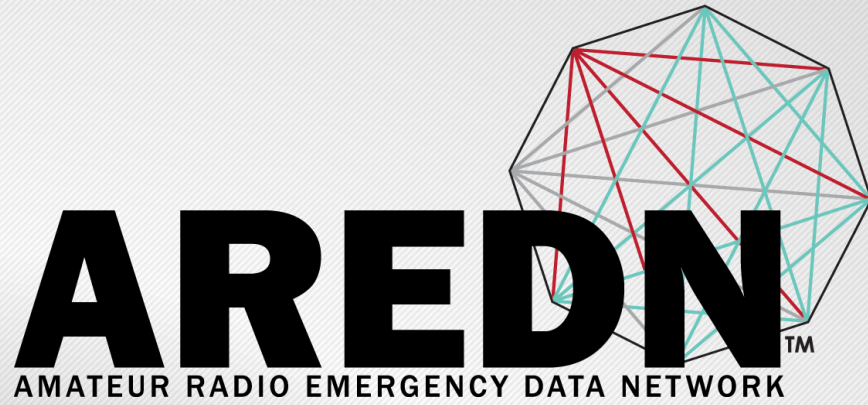
APPENDIX

Frequencies and Channels

Using WinLink to Send Email

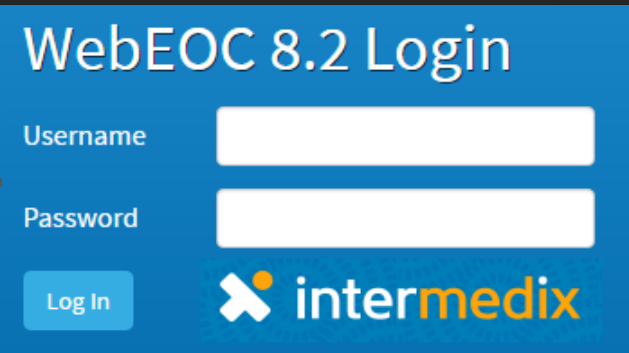
Although it is not typically used as a TCP/IP network familiar with *WinLink 2000* for sending messages to amateur radio frequencies. It is possible to configure P2P for sending email with attachments across a Windows computer with plenty of memory to run information link below for details about the specific maximum attachment size is currently 5MB per message on HF and Packet RMS stations. For additional information on Winlink located here: [Winlink Forum](#)





Applications for AREDN

How will you use AREDN ?



- Public Service / Public Safety
- Red Cross Disaster Services Technology
- Community Emergency Response Team
- Support MOUs with your municipal EOC
- Deliver paradigm changing services
 - VoIP & Chat with other sites
 - Cell Service Restoration - BYO
 - Access to cloud-based systems
 - Augment Winlink services



Administrative

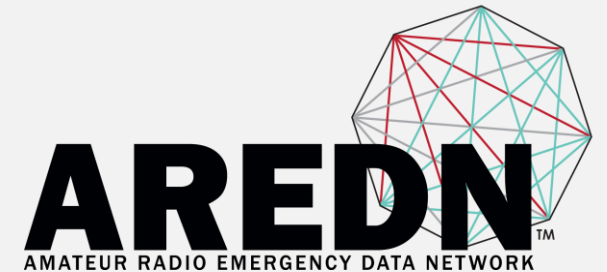
Advanced config
iperf Speed Test
Network monitoring
(snmp)
UPS monitoring
NNTP Time services
Antenna pointing/peaking

User Applications

Air Traffic Control
EmComMap
CERT Damage Assessment
MeshChat
Weather Stations
Remote cameras
VoIP telephony (226
assigned numbers)

Winlink
DMR linking
Web-based Email
Mattermost
FTP / fileshare
Website with
network/node info

Applications Running on AREDN Networks



PBX Configuration for VoIP Phones



FreePBX Support

UCP



FreePBX Administration



User Control Panel



Get Support



FreePBX
let freedom ring™

FreePBX is a registered trademark of
Sangoma Technologies Inc.
FreePBX 14.0.5.25 is licensed under the GPL
Copyright© 2007-2019

SANGOMA

MeshChat



CHAT FILES STATUS LOGOUT

Mesh Chat v1.0

Zone: MeshChat **Node:** kd7vea-rocketdish-to-westmountain
Call Sign: K6AH **Updated:** 86 seconds ago

Send a Message

New Message

Enter message here

Channel:

Everything

Mesh Chat Users 2

Call Sign	Node	Last Seen
K6AH	kd7vea-rocketdish-to-westmountain	2/14/19 9:33 AM
↑ KC7	ai6bx-2-chatpi	2/14/19

Messages

Search

Channel Everything

Time	Message	Call Sign	Channel	Node
2/13/19 6:02 PM	Testing...	W6BI		ai6bx-2-chatpi
2/13/19 6:01 PM	Just checking in	W6BI		ai6bx-2-chatpi

Node Management thru Smart Switches



TOUGHSwitch™ PoE PRO

STATUS DEVICE PORTS VLANS ALERTS

Tools: [dropdown] Logout



Status

Device Name: K6AH-Elsinore-ToughSwitch Date: 2015-07-17 22:51:24
 Device Location: Uptime: 1 day 19:18:30
 Firmware: SW.v1.3.2 Device MAC: 80:2A:A8:DF:8F:23

Port Status

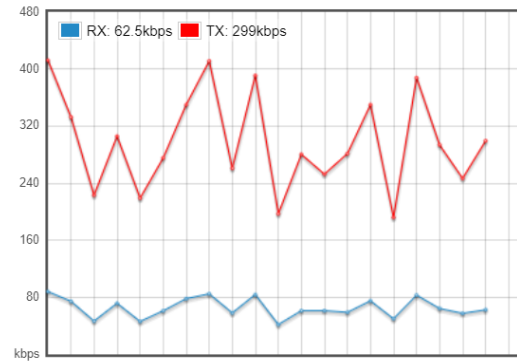
Port	Name	Port Status	Link Status	PoE	STP State	MTU	Alerts
1	5GHz Backbone to Redlands	Enabled	100Mbps-Full	24V	Forwarding	1518	Off
2	3GHz Downlink to N Riverside	Enabled	100Mbps-Full	24V	Forwarding	1518	Off
3	2GHz Downlink to S Riverside	Enabled	100Mbps-Full	24V	Forwarding	1518	Off
4	2GHz Downlink to N Riverside	Enabled	100Mbps-Full	24V	Forwarding	1518	Off
5	3Ghz Downlink S Riverside	Enabled	100Mbps-Full	24V	Forwarding	1518	Off
6	5GHz Backbone to Sleeping Indian	Enabled	100Mbps-Half	24V	Forwarding	1518	Off
7	Camera	Enabled	100Mbps-Full	Off	Forwarding	1518	Off
8	Management	Enabled	Down	Off	Blocking	1518	Off

Port Statistics

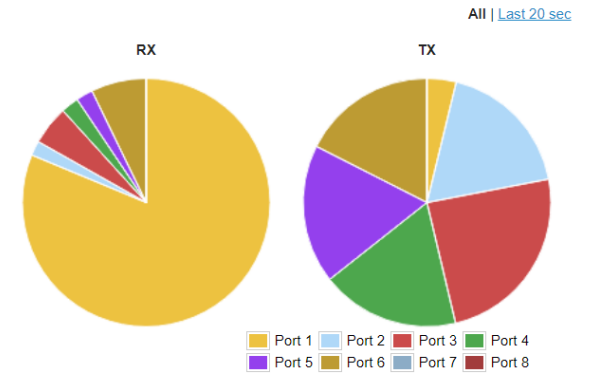
Port	Name	RX Data	RX Packets	RX Errors	TX Data	TX Packets	TX Errors
1	5GHz Backbone to Redlands	1375945217	1234806	0	230703932	979975	0
2	3GHz Downlink to N Riverside	32296798	140863	0	1100714639	1132231	0
3	2GHz Downlink to S Riverside	86482703	439282	0	1472374475	1447618	0
4	2GHz Downlink to N Riverside	39250492	142563	0	1095815961	1134112	0
5	3Ghz Downlink S Riverside	37242938	145915	0	1096856328	1137787	0
6	5GHz Backbone to Sleeping Indian	121095258	281768	0	1056993576	1290701	151
7	Camera	1099545	15940	0	5044910	78361	0
8	Management	0	0	0	0	0	0

Reset Statistics

Total Throughput



Data Distribution



Network Management with SNMP



OpManager

Dashboard Inventory Alarms Maps Apps Workflow Admin Reports

opman-hyperv.opmanhv.com
DomainController | Windows 2008 R2 | SNMP

Summary Interfaces

Status Clear

IPAddress 172.21.10.66

DNS Name OPMAN-HYPERV

Uplink Dependency None

Vendor Microsoft

System Description Hardware: Intel64 Family 6 Model 44 Stepping 2 AT/AT COMPATIBLE · Software: Windows Version 6.1 (Build 7600 Multiprocessor Free)

Monitoring Via ICMP

Polling Interval (mins) 5

RAM (MB) 16384

Hard Disk Size 149

Credentials [Click here to change](#)

Availability Time Line

0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24

● Up Time ● On Maintenance ● Dependent Unavailable ● On Hold ● Down Time ● Not Monitored

100 % Availability

0 % Packet Loss

001 ms Response Time

Recent Alarms

Currently there are no open Alarms.

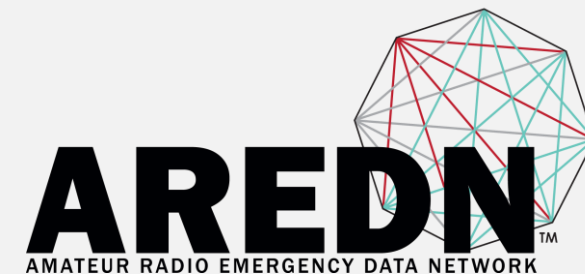
Custom Dials

36 % Memory Utilization (SNMP)

93 % Disk Utilization (SNMP)

10 % CPU Utilization (SNMP)

Team Collaboration Systems



Palo Alto Bank @brad.griffen

FAVORITE CHANNELS

- Eric Foster, Tania Wilson
- Dev Agenda
- Jamie Wells** (2)
- Help Desk
- SecOps Escalation**
- Threat Briefings

PUBLIC CHANNELS +

- Browser Compatibility
- Customers
- Developer Meetings
- DevOps Talk** (4)
- ISAC Talk
- Off-Topic
- Recruiting
- Release
- UX Design

PRIVATE CHANNELS +

- Android
- Confidential Bugs
- Developers: Private** (1)
- Integrations

SecOps Escalation ✓

Sec067 - Sec066 - Sec065 - Other Versions can be accessed on the [SecOps Repository](#).

Fri, June 14, 2019

Jamie Wells 3:12 PM

Hey @matt.santos, can you have a look at the latest Sec067 that came in? As always, do let me know if you have any queries.

Fri, June 14, 2019

Sophie Watkins 11:23 AM

@all please confirm with 🙌 that you've reviewed this week's threat briefings. @tania.wilson, please confirm we've loaded new indicators of Compromise into Splunk.

FactNote Threat Briefing (June 2019)

Brad Griffen 12:57 PM

We got an alert #IOC203 was triggered, investigating...

Thread Fri, June 14, 2019

PaloAltoBank Incident Bot BOT 4:02 PM

Post-Mortem #Sec067

Post-Mortem for Issue Sec067 attached.

Owner	Resolution Time
@matt.santos	59 minutes

Issue Sec067.pptx
PPTX 2MB

Jamie Wells 4:04 PM

Great work @matt.santos! Complete in record time.

12 👍 4 🙌

Write a message...

Add Comment

Mattermost

EmComMap



EMCOMMAP v0.4b **Northeast Survey** Tactical ID: [Change](#) [Documentation](#)

Traffic Operators Locations **Incident**

Incident: Northeast Survey
Description:

Incident start:
Incident end (blank if ongoing):

Info last updated:

[Update incident info](#) Refreshed 2 minutes ago

The screenshot displays the EmComMap v0.4b interface. The top header shows the application name, version, and the current incident title 'Northeast Survey'. A 'Tactical ID' field is present with a 'Change' button and a 'Documentation' link. Below the header is a navigation bar with tabs for 'Traffic', 'Operators', 'Locations', and 'Incident', with 'Incident' being the active tab. The main content area is split into two panes. The left pane shows a map of the Los Angeles metropolitan area with a red rectangular box highlighting a region from Burbank to El Monte. Numerous blue 'H' icons representing radio operators are scattered across the map, with a higher density within the red box. The right pane contains an incident details form. It includes a title 'Incident: Northeast Survey', a description field containing 'Traffic Net for ARES LAX NE', and input fields for 'Incident start' (12/12/2018 18:05) and 'Incident end'. There is also a large empty text area for 'Info last updated'. At the bottom of the right pane, there is a blue 'Update incident info' button and a status message 'Refreshed 2 minutes ago'. The map at the bottom left includes a scale bar (10 km / 5 mi) and map data attribution to OpenStreetMap.

Tickets



Current situation - Redlands, CA Viewing Regions (mouse over to view) Normal 0, Medium 0, High 0

Change display: Popout Incidents
 click item to view / edit, right click for act / pat / notes, Click headers to sort

No Incidents, please select another time period or add a new incident.....

Responders
 click on item to view / edit, Click headers to sort

Icon ▲	Handle	Mail	Incidents	Status	M	As of
ACQ	K6ACQ			available ▼		27 11:42
BX	AI6BX			available ▼	AP	15 19:34
CER	R-CERT			available ▼		18 18:46
DHR	KG6DHR			available ▼		16 21:54
DNO	K6DNO			available ▼		23 19:02
FCX	KA6FCX			available ▼		23 14:20
JYE	KM6JYE			available ▼		23 15:01
LN	AJ6LN			available ▼		23 14:04
NVK	N7NVK			available ▼		23 14:36
REG	W6EOC			available ▼		23 10:52
WOR	KE6WOR			available ▼		29 07:37

Facilities
 click on item to view / edit, Click headers to sort

Icon	Name	Mail	Status	Updated
261	Redlands Fire Station 261		Open ▼	23 14:24
262	Redlands Fire Department		Open ▼	23 14:24
263	Redlands Fire Department		Open ▼	23 14:25
ACH	Arrowhead Chrisitan Academy		Closed ▼	04 19:51
CC	Contemporary Club		Closed ▼	04 20:10
CMS	Clement Middle School		Closed ▼	04 20:09
CPS	Cope Middle School		Closed ▼	16 21:54
CVH	Citrus Valley High School Gym		Closed ▼	04 19:56
CVH	Citrus Valley High School Multipurpose Room		Closed ▼	04 20:05
FBC	First Baptist Church		Closed ▼	04 20:13
FMC	First United Methodist Church of Redlands		Closed ▼	05 06:49
JLP	Jerry L. Pettis VA Hospital		Open ▼	05 18:25

Show Assigned

Leaflet | Map data © 2011 OpenStreetMap contributors, Imagery © 2011 CloudMade
Redlands, CA

Allstar Management via Web GUI



Status for K8BKT - Node 44098

Last update - 02/14/2019 11:40:15 My IP - 76.27.25.238

[View this Node Graphically](#) [Search/Command another Node](#)

Selected system state	0
Signal on input	NO
System	ENABLED
Parrot Mode	DISABLED
Scheduler	ENABLED
Tail Time	STANDARD
Time out timer	ENABLED
Incoming connections	ENABLED
Time out timer state	RESET
Time outs since system initialization	2
Identifier state	CLEAN
Kerchunks today	0
Kerchunks since system initialization	2662
Keyups today	61
Keyups since system initialization	26398
DTMF commands today	0
DTMF commands since system initialization	49
Last DTMF command executed	22256
TX time today	00:12:0675
TX time since system initialization	90:12:15148
Uptime	3211:51:54
Nodes currently connected to us	2256
Autopatch	ENABLED
Autopatch state	DOWN
Autopatch called number	N/A
Reverse patch/IAXRPT connected	DOWN
User linking commands	ENABLED
User functions	ENABLED

<u>Node</u>	<u>Call</u>	<u>Description</u>	<u>Location</u>
44098	K8BKT	449.775 -	Pleasant Grove, Utah
2256*	VE3RTR	444.975-	Cobourg, ON

Node	Peer	Reconnects	Direction	Connect Time	Connect State
2256	72.142.154.178	0	OUT	11:25:50.61	ESTABLISHED

Host	Node	State
44.98.254.145:4569	44098	Registered

Allstar via Pi-Star Application



Hostname: pi-star Pi-Star:3.4.17 / Dashboard: 20190205

Pi-Star Digital Voice Dashboard for K6TZ

[Dashboard](#) | [Admin](#) | [Configuration](#)

Modes Enabled	
D-Star	DMR
YSF	P25
YSF XMode	NXDN
DMR XMode	POCSAG

Network Status	
D-Star Net	DMR Net
YSF Net	P25 Net
YSF2DMR	NXDN Net
YSF2NXDN	YSF2P25
DMR2NXDN	DMR2YSF

Radio Info	
Trx	Listening
Tx	445.480000 MHz
Rx	440.480000 MHz
FW	MMDVM:20170501

YSF Network	
Linked to:	YSF2DMR

YSF2DMR	
DMR ID	110629
YSF2DMR Master	
BM United States ..	

Gateway Activity								
Time (PST)	Mode	Callsign	Target	Src	Dur(s)	Loss	BER	
08:45:16 Feb 14th	YSF	K5CAW	ALL at K6TZ	Net	0.6	0%	0.0%	
22:21:55 Feb 13th	YSF	W6STP	ALL at K6TZ	Net	11.1	0%	0.0%	
21:17:54 Feb 13th	YSF	WB6OBB	ALL	RF	1.0	0%	0.1%	
21:06:24 Feb 13th	YSF	K6LCM	ALL	RF	0.9	0%	3.8%	
20:51:59 Feb 13th	YSF	K6BPM	ALL	RF	0.8	0%	3.6%	
20:51:27 Feb 13th	YSF	K16FFA	ALL at K6TZ	Net	8.8	0%	0.0%	

















Local RF Activity							
Time (PST)	Mode	Callsign	Target	Src	Dur(s)	BER	RSSI
21:17:54 Feb 13th	YSF	WB6OBB	ALL	RF	1.0	0.1%	
21:06:24 Feb 13th	YSF	K6LCM	ALL	RF	0.9	3.8%	
20:51:59 Feb 13th	YSF	K6BPM	ALL	RF	0.8	3.6%	

Pi-Star / Pi-Star Dashboard, © Andy Taylor (MW0MWZ) 2014-2019.
ircDDBGateway Dashboard by Hans-J. Barthen (DL5DI),
MMDVMDash developed by Kim Huebel (DG9VH),
Need help? Click here for the Facebook Group
or Click here to join the Support Forum
Get your copy of Pi-Star from here.

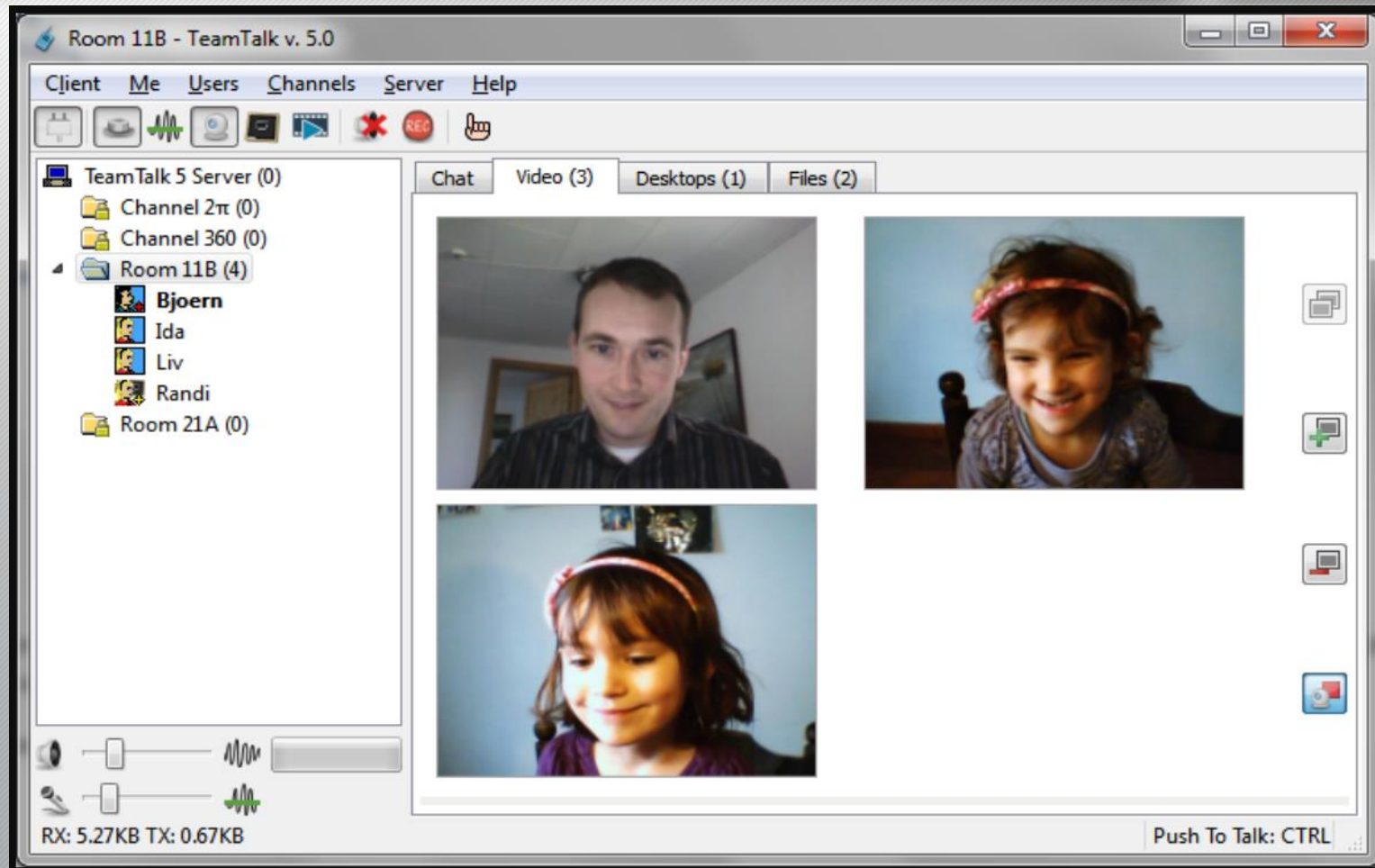
Fileshare / FTP



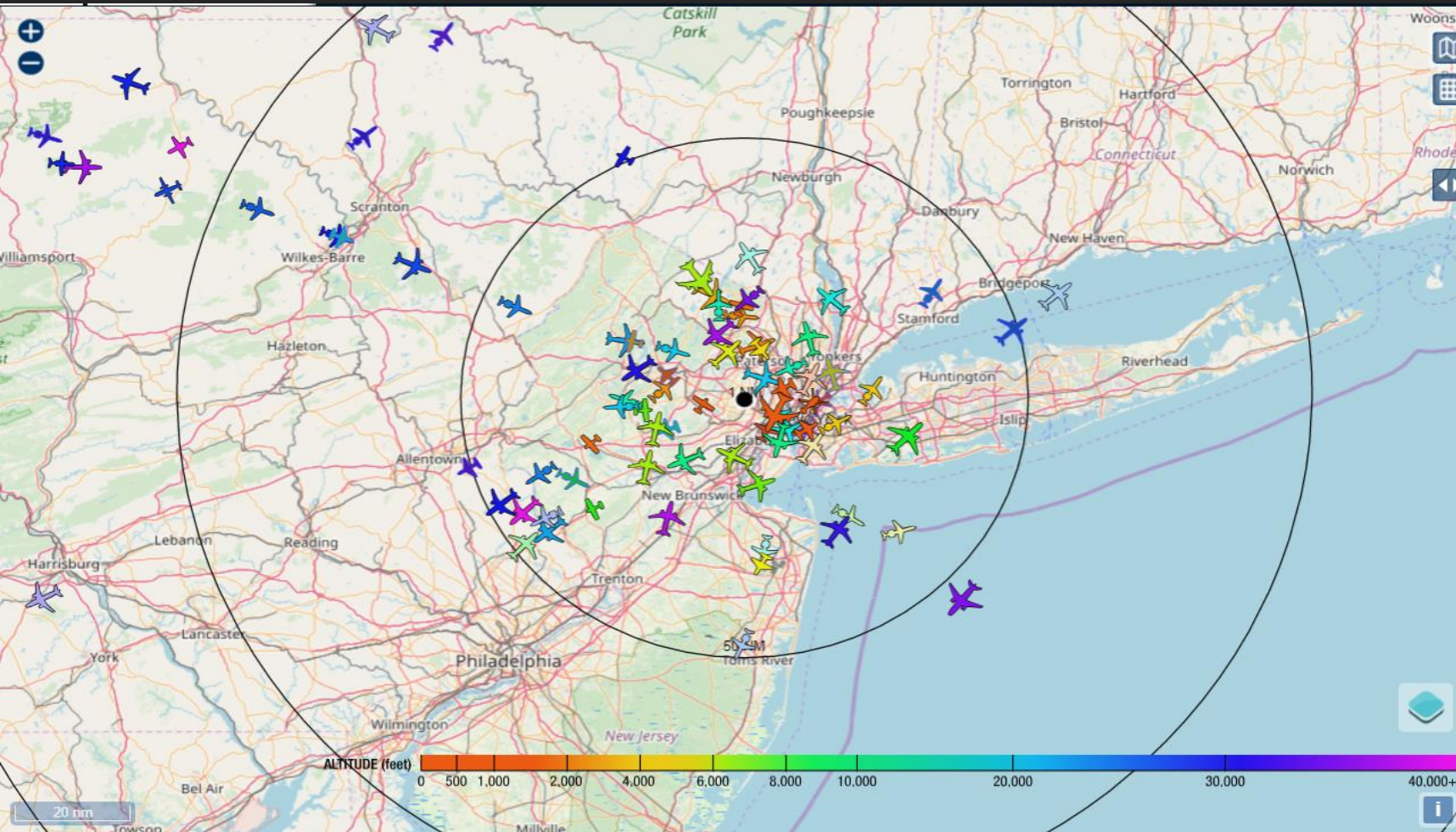
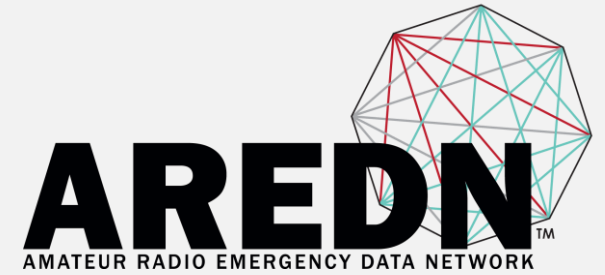
Index of /

	Name	Size	Date Modified
	3CXPhone6.msi	13.3 MB	8/21/16, 5:00:00 PM
	AV.exe	6.0 MB	9/5/18, 5:00:00 PM
	Camera Uploads/		1/28/19, 4:46:00 PM
	DMR Software/		12/25/16, 4:00:00 PM
	emergencycommplan.pdf	2.5 MB	10/14/18, 5:00:00 PM
	ExtIO_RTL_TCP.zip	58.2 kB	10/11/16, 5:00:00 PM
	HDSDR/		10/11/16, 5:00:00 PM
	ipscan-3.5.2-setup (1).exe	3.1 MB	7/23/18, 5:00:00 PM
	js8call-0.7.3-devel-win32.exe	18.3 MB	10/10/18, 5:00:00 PM
	KD7BKO Shared Docs/		3/19/17, 5:00:00 PM
	My radio software/		6/14/17, 5:00:00 PM
	P2P ID Finder Software/		9/30/16, 5:00:00 PM
	Packages/		10/23/16, 5:00:00 PM
	phpsysinfo/		11/5/16, 5:00:00 PM
	sdrsharp-x86/		11/10/16, 4:00:00 PM
	South-Tower-Camera/		4/18/17, 5:00:00 PM

TeamTalk Video Conferencing / Fileshare



Air Traffic ADS-B / SDR Dongle



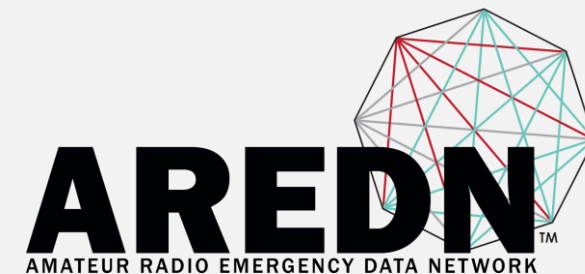
Total Aircraft: 102
With Positions: 85

Messages: 635.6/sec
History: 5757 positions

Filter by Altitude: ft to ft

ICAO	Ident	Squawk	Altitude (ft)	Speed (kt)	Distance (NM)	Heading
AD6884	AAL2287	4033	18,975	397	5.2	10
A8C4D8	UAL18	2465	1,100 ▼	135	6.2	20
C01EC5	POE130		ground	19	7.0	2
AAB37C		3042	1,375	202	7.0	24
A936FA	N693MM	1200	1,025 ▲	104	7.5	3
ADA227	JBU516	3223	16,400 ▼	321	9.3	16
ACB285	AAL1489	3567	4,875 ▲	229	9.5	4
A2CFA2	SKW3846	1735	12,175 ▲	261	10.0	19
478F43	SAS909	2451	4,375 ▼	282	10.0	14
A6F280	LXJ547	2643	14,925	298	10.0	24
A48438	EJA390	3656	2,625 ▼	241	10.6	6
ACBF73	N920PD				11.0	
A1AD1F	N207MH	0327	1,425 ▲	85	11.1	1
AC0A22	AAL1333	3035	5,850 ▲	225	11.2	29
A07CBB	N130RU	1200	1,400	97	11.8	4
A08095			200 ▼	123	12.1	7
A7D464	N603WM	3310	1,300	192	12.3	2
2AC772			200 ▼	87	12.6	5
A9RA85	N726H	0307	1,900	6	13.2	23

ARES Informational Site



Los Angeles Emergency Communications Team

Home

Los Angeles Emergency Communications Team

The Los Angeles Emergency Communications Team ("LAECT") is a group of dedicated individuals committed to training and education in all aspects of emergency preparedness, management and response, with an emphasis on emergency communications.

LAECT partners with cities, community groups and other preparedness organizations to coordinate and provide practical preparedness and communications training throughout Southern California. Its members have received specialized training related to emergency preparedness, including Community Emergency Response Team ("CERT"), and the federal Incident Management System and National Incident Management System, both used to manage response to disasters and emergency situations by all levels of government. They also actively participate in numerous preparedness exercises each year, including the California ShakeOut, the California Statewide Medical and Healthcare Exercise and various local and regional exercises.

LAECT also works cooperatively with the Los Angeles Section of Amateur Radio Emergency Service ("ARES LAX"). ARES LAX encompasses all of Los Angeles County, encompassing more than 4000 square miles, and its more than 10 million residents. ARES LAX is the largest ARES Section, and the only one comprised of a single county. There are more than 22,000 Amateur Radio operators licensed in Los Angeles County.

As its primary mission, ARES LAX provides backup and emergency communications support to the Los Angeles County Medical Alert Center and almost 70 hospitals throughout the County, including virtually all "911 receiving" hospitals (those with emergency departments). ARES LAX is recognized as a formal component of the Los Angeles County Emergency Medical Services Agency Emergency Communications Plan.

FCC station license KA6ECT

Node and Service Info



Home

AREDN Mesh Nodes

Located at Huntington Hospital in Pasadena, California (DM04WD)

KA6ECT-PAS-NBM5-60-241-34	5 GHz link to JPL
KA6ECT-PAS-NE-RM5-GPS-42-127-62	5 GHz, 120 degree sector pointing northeast
KA6ECT-PAS-SE-RM5-GPS-42-129-169	5 GHz, 120 degree sector pointing southeast
KA6ECT-ARHP-76-210-212	2 GHz device linking node
KA6ECT-BM2-170-202-183	2 GHz campus access
KA6ECT-BM2-170-201-235	2 GHz campus access

Other AREDN mesh nodes are operated by individual LAECT participants.

AREDN Mesh Services

Winlink RMS gateway KA6ECT-10 with RMS Relay, connecting to Winlink CMS

VHF packet, 145.050 MHz, 1200 baud

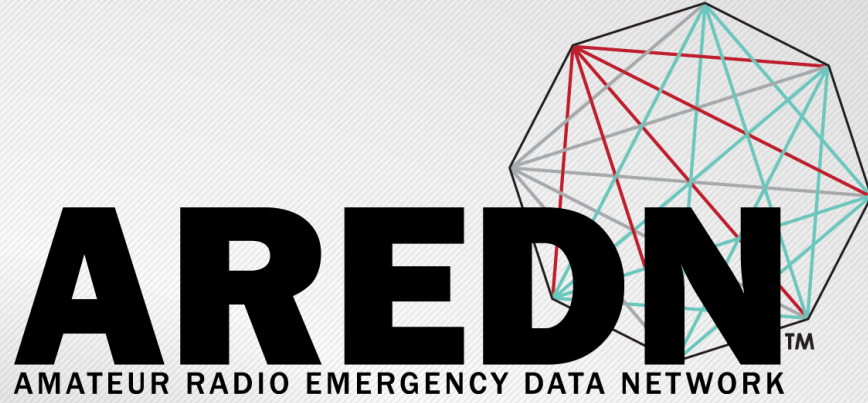
UHF packet, 431.125 MHz, 9600 baud

Mesh access using Telnet or Telnet Post Office session in Winlink Express, 10.205.45.75

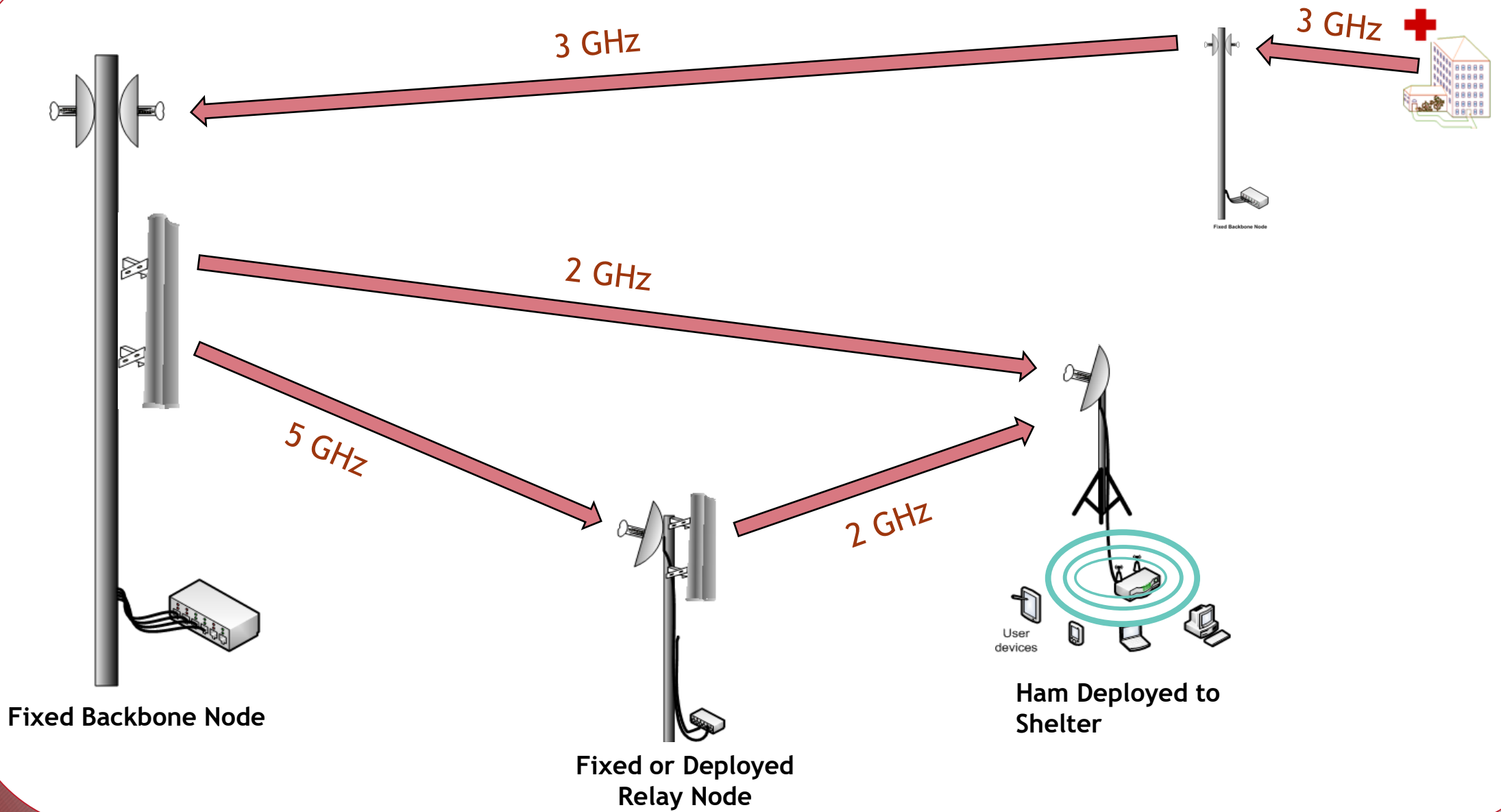
Winlink Telnet Post Office for local messages, no link to CMS, 10.205.45.70

Anonymous FTP server, 10.205.45.70 (files may be deleted at any time)

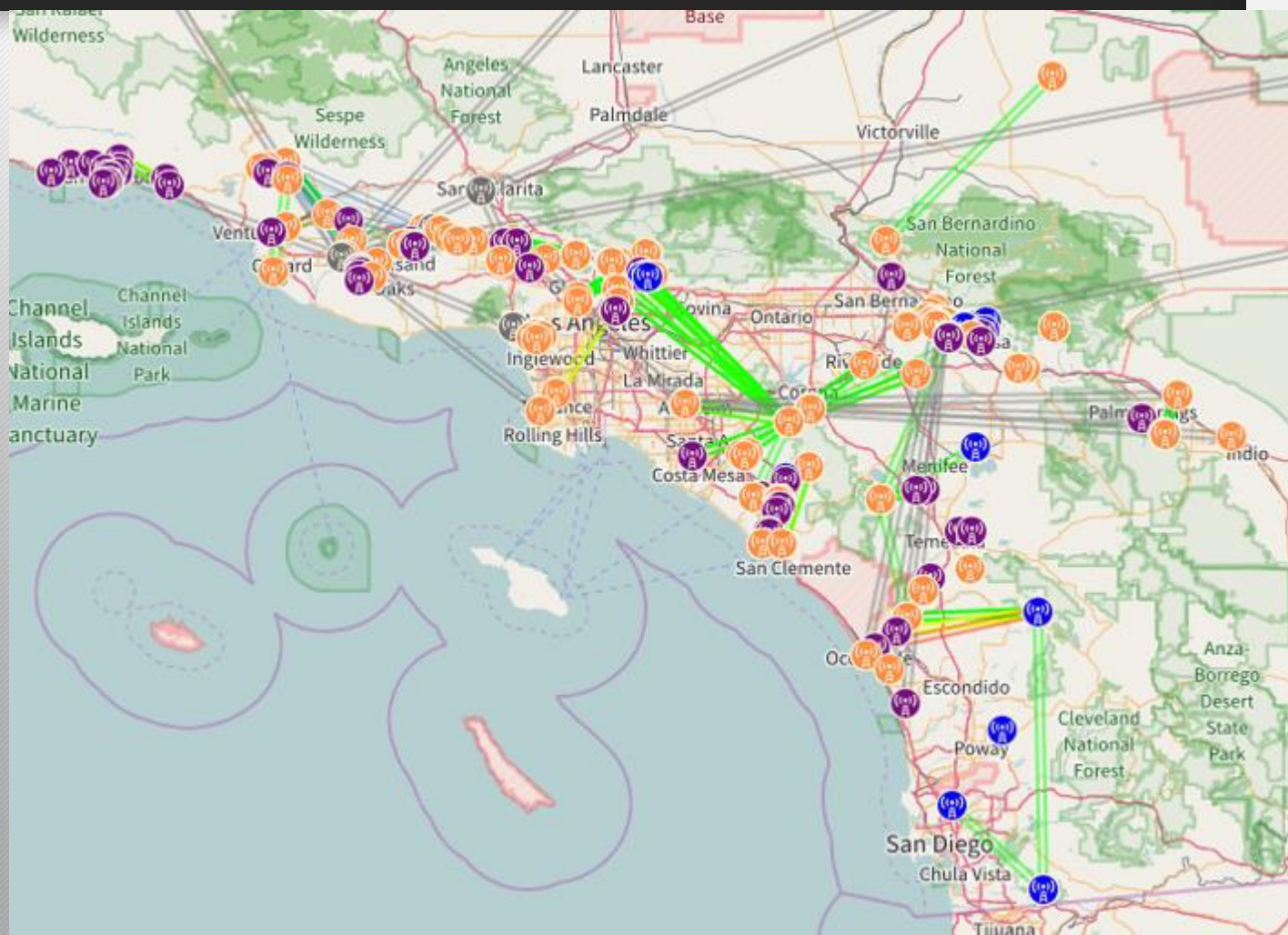
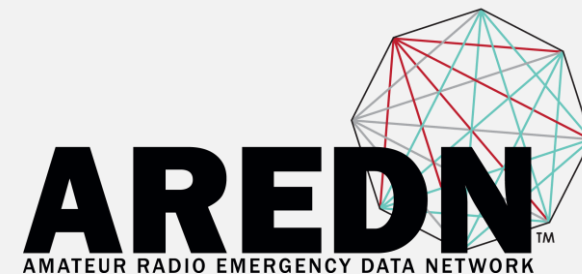
■ NTP service, Stratum 1 (provided by W6GSW), 10.101.205.250



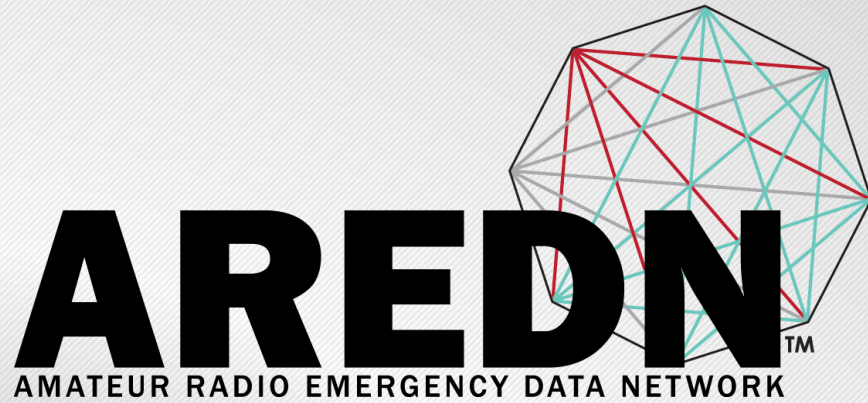
AREDN in the SW Division



Southwestern Division

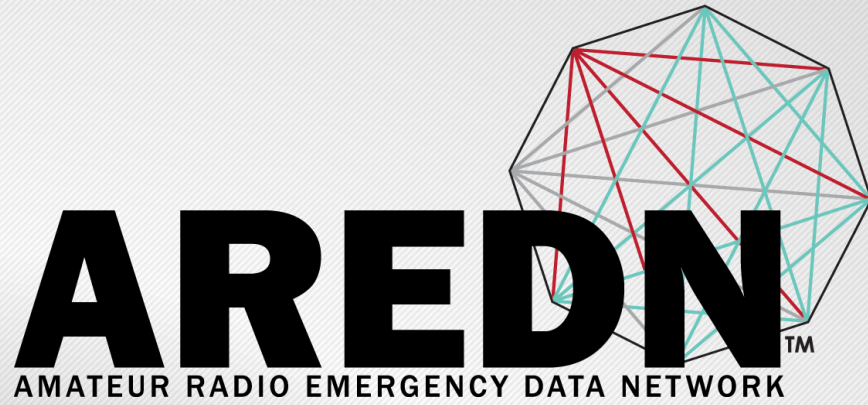


Nodes: 450+
OLSR Routes: 1200+



For More Info

- www.arednmesh.org
- QST June 2017, ARRL
- TAPR/ARRL DCC Proceedings 2015
- TAPR/ARRL DCC Proceedings 2016
- Search YouTube, HamRadioNow, HamNation videos



Contact Info

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www.arednmesh.org/forum