

# AllStarLink

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A modern RoIP node system for Amateur Radio

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## What is AllStarLink?

**AllStarLink** connects radio “nodes” over the Internet (or private IP).

- Network of Amateur Radio repeaters and hotspots **using VoIP (RoIP)**
- Nodes run on a **Linux computer** (Raspberry Pi or PC)
- Built on the open-source **Asterisk PBX software**
- Nodes can be linked **on-demand or permanently**
- AllStarLink 3 (**ASL3**) is the latest generation

## Why Should You Care?

- **Adding AllStar to the PARC 147.180 repeater**
- **Have your own personal hotspot**
  - **Connect to >1900 repeaters world wide**
  - **Connect to friends and family far away**
  - **Join remote nets and conversations**
  - **Connect back “home” when traveling or moving**

## FM-Based Systems



1,793



888



EchoLink

3,031

## Fully Digital Systems

4,584



2,550



1,278



# FM-Based ROIP System Comparison

Feature	<b>AllStarLink</b> 	<b>IRLP</b> 	<b>EchoLink</b> 
<b>Audio Quality</b>	★ Best – wideband analog	Good	OK – low-bitrate VoIP
<b>Open Source</b>	✓ Yes	✗ No	✗ No
<b>Multi-node Linking</b>	✓ Full mesh, hubs, conferences	✗ Very limited	✓ Conferences exist but smaller
<b>Smartphone/PC Users</b>	✓ via apps like DVSwitch/Hamshack Hotline	✗ No	✓ Primary user base
<b>Repeater Integration</b>	✓ Excellent	✓ Good	✓ Good
<b>Ease of Use for Users</b>	Medium	Medium	★ Easiest
<b>Typical Use Case</b>	Linking repeaters, hubs, custom networks	Club repeater RF-to-RF linking	Individual hams connecting from phones/computers

# How ASL3 works under the hood

AllStar  
apt\_rpt Software

Asterisk  
PBX Software



Linux

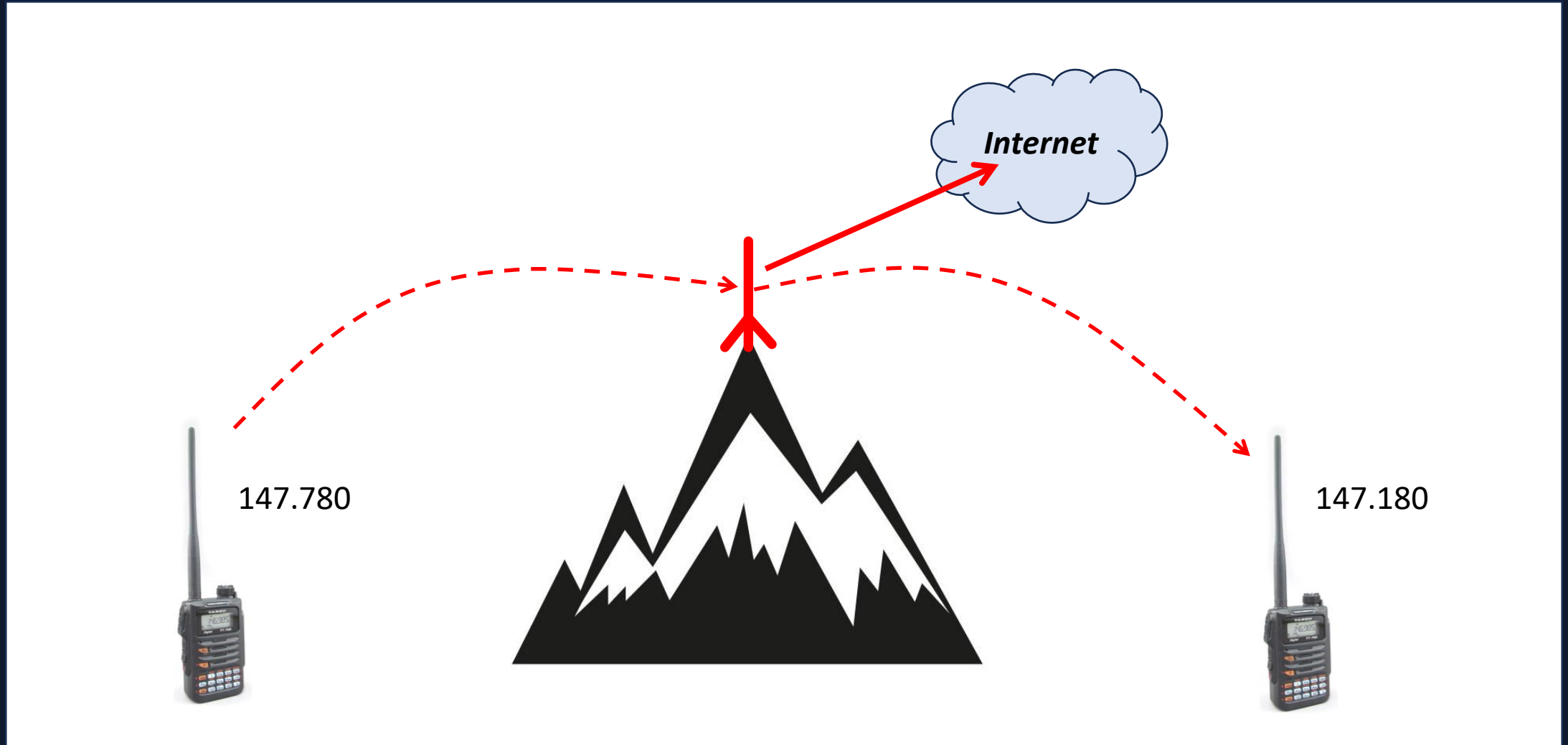
- app\_rpt adds repeater control and other radio related features
- Configuration files for IDs, timers, DTMF, macros
- Call control, media handling, and integration hooks
- Operating system



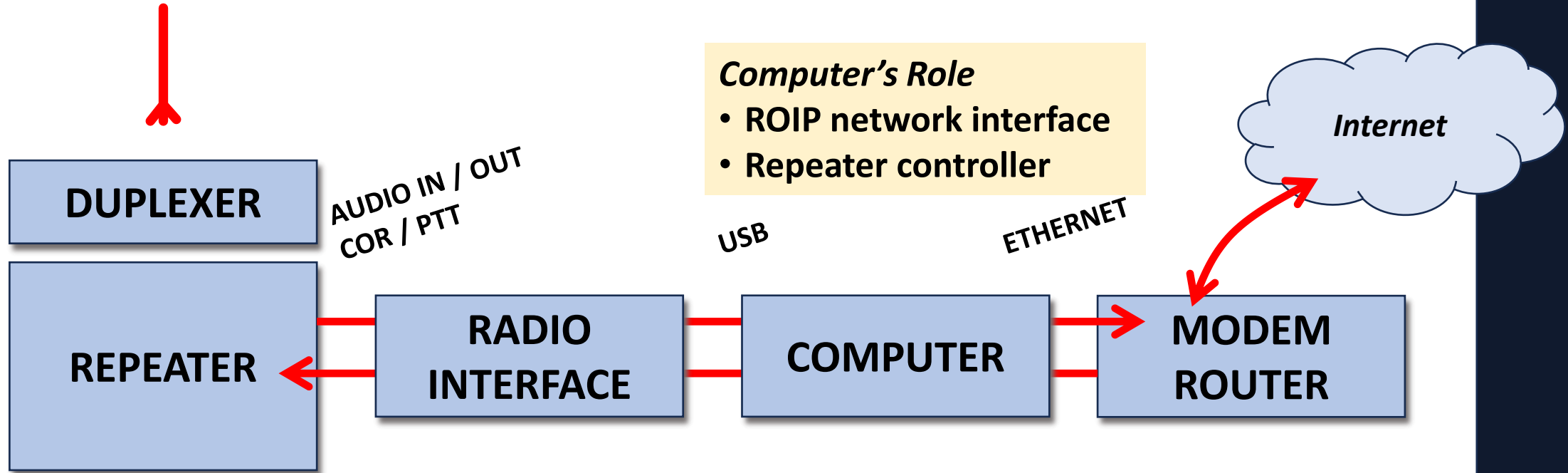
# AllStar Node Map



# Repeater Node



# Repeater Node



**Computer's Role**

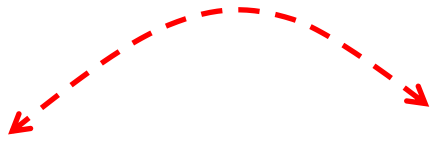
- ROIP network interface
- Repeater controller



# Hotspot Node



433.500



Ethernet or WiFi



SHARI

Raspberry Pi 4 or 5

Built in 2m or UHF radio

10 mW

USB powered

Example:

KJ6VU portable node 467172

Great for home, travel and portable – Take your network with you  
Connect to any node and don't tie up a repeater

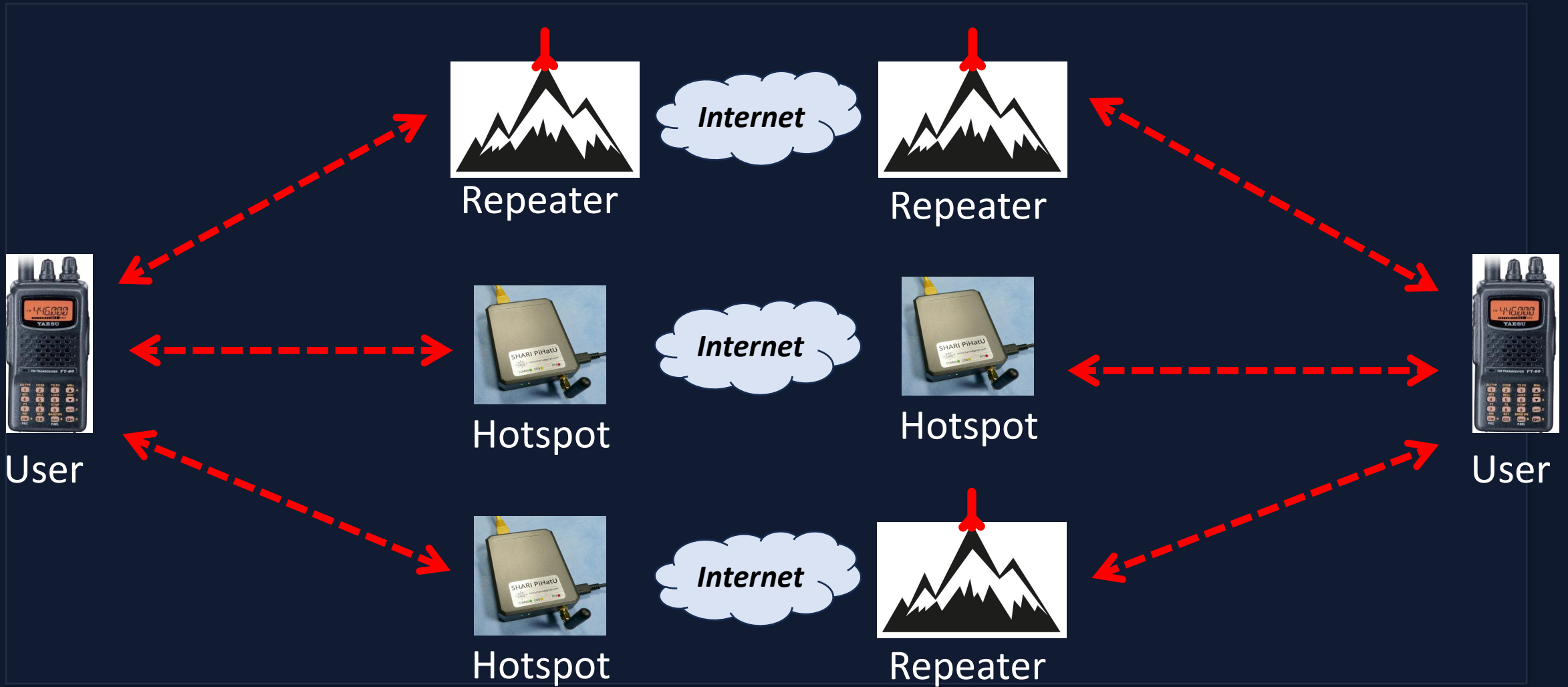
# Radioless Hub Node



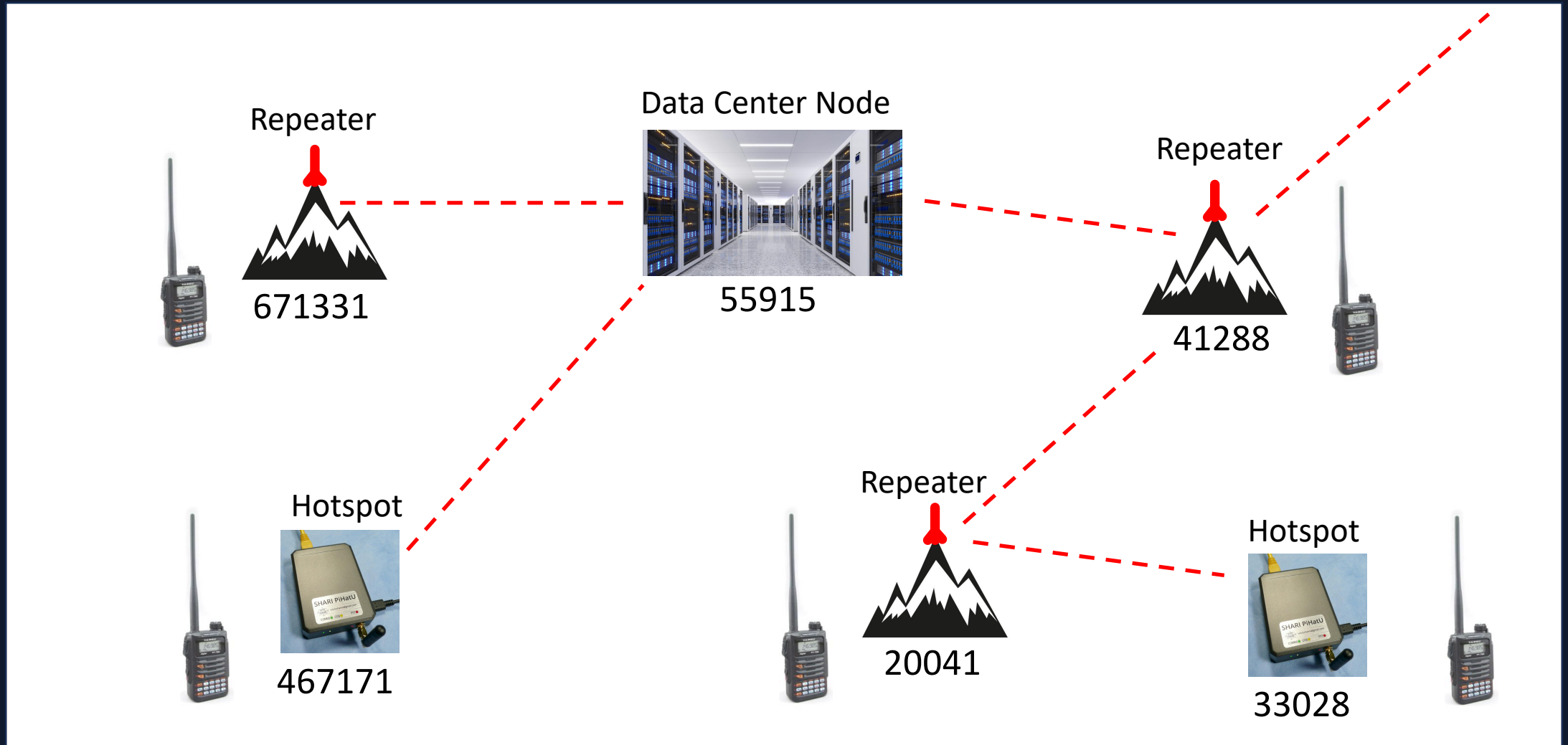
A node running on a computer  
in a data center ... or your house

Example: HRWB node 55915

# Any Combination Will Work



# Network Example – Every Node Can Have Multiple Connections





[55915 Status](#)

[671333 Status](#)

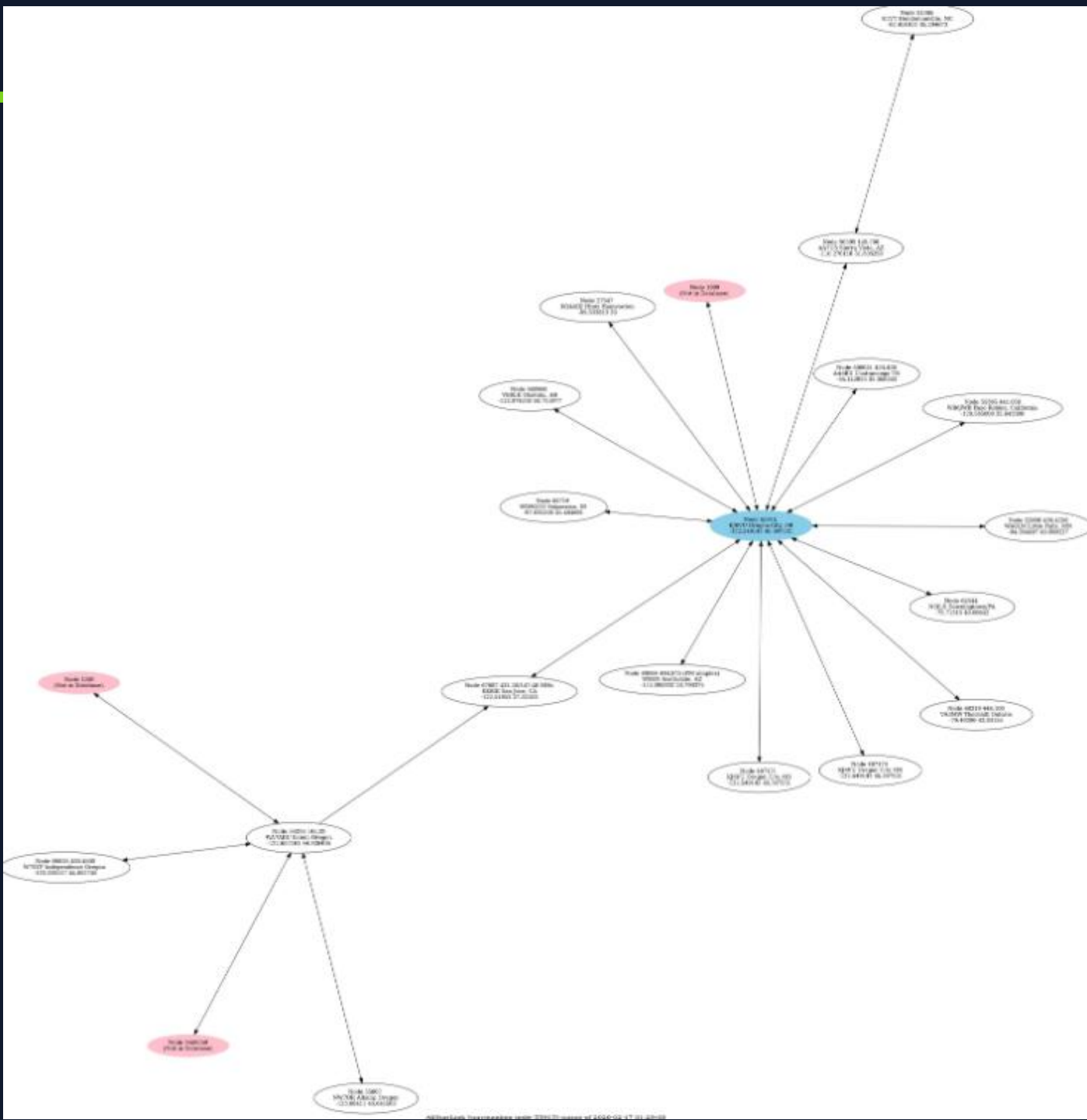
## Node 55915

KJ6VU Oregon City, OR

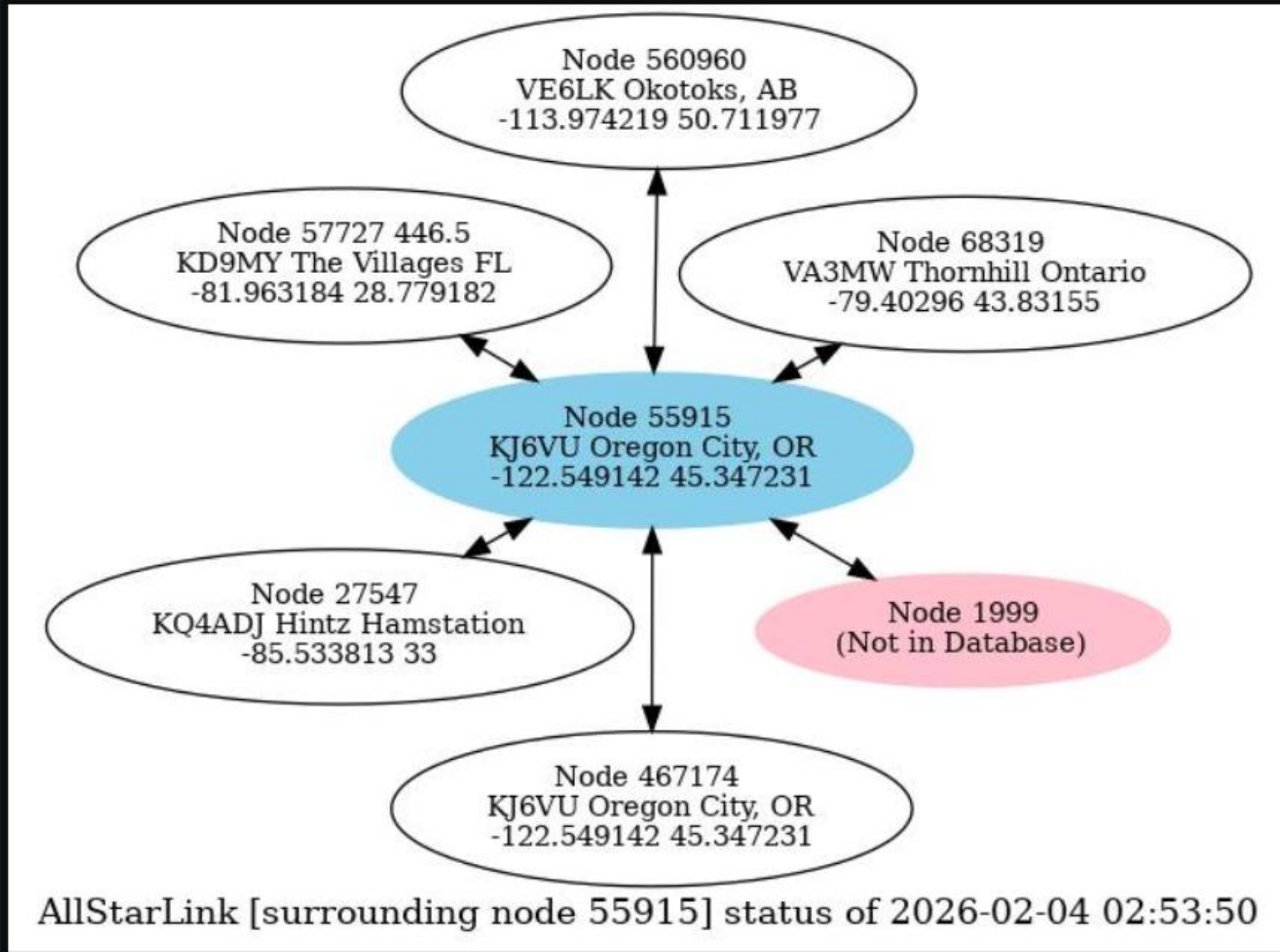
[Click here for the Bubble Chart](#)

Node	Callsign	Frequency	CTCSS	Location
1999	N/A	N/A	N/A	N/A
<a href="#">27547</a>	KQ4ADJ			Hintz Hamstation
<a href="#">467174</a>	KJ6VU			Oregon City, OR
<a href="#">467171</a>	KJ6VU			Oregon City, OR
<a href="#">49064</a>	W9EN	439.875	100.0	Scottsdale, AZ
<a href="#">52896</a>	WA0LM	430.425	123	Little Falls, MN
<a href="#">55365</a>	WB6JWB	441.050	77.4	Paso Robles, California
<a href="#">560960</a>	VE6LK			Okotoks, AB
<a href="#">56395</a>	AA7US	145.700	151.4	Sierra Vista, AZ
<a href="#">578499</a>	KJ7T	Amp-ASL Server		Grapeview, WA
<a href="#">600681</a>	AA6BD	433.400		Chattanooga TN
<a href="#">64544</a>	N3ILS			Downingtown/PA
<a href="#">65719</a>	WD9GCO			Valparaiso, IN
<a href="#">67887</a>	KK6IK	431.18/147.48 MHz	88.5	San Jose, CA
<a href="#">68319</a>	VA3MW	446.100	110.9	Thornhill Ontario

# Bubble Diagram



# Bubble Diagram





# How Do I Get Started?

If you have a hotspot...

Register at [allstarlink.org](http://allstarlink.org)

Get your node number


If you are using a repeater

just use it.

No node number required.

The screenshot shows the AllStarLink website homepage. The browser address bar displays "allstarlink.org". The navigation menu includes "About", "Help/Support", "Lists & Stats", "Login/Sign Up", and a "Donate" button. The main heading is "Welcome to AllStarLink!". Below this, a paragraph explains that AllStarLink is a network of Amateur Radio repeaters accessible via VoIP, running on a dedicated computer like a Raspberry Pi. A second paragraph states the primary use is as a dedicated computer node. A statistics line shows 43011 users and 45461 nodes. On the right, a "Help Support ASL" box explains the high cost of the system and includes a "Donate" button. The "ASL News" section features two articles: "AllStarLink Node Number Policy Changes" dated February 1, 2026, and "Reclamation of Unused Five-Digit Node Numbers". The "Getting Started" section provides information on supported hardware (64-bit Intel/AMD or Arm) and offers links for installation on Debian and Raspberry Pi, as well as help resources like the manual and community forum. The "ASL Features" section lists capabilities such as Full Feature Repeater Controller, VoIP Full Duplex Linking, ASL/Echolink Linking, Simplex Station, and Autopatch.

→ ↻ 🔍 allstarlink.org 🔍 🔖 ⌵

AllStarLink About ▾ Help/Support Lists & Stats ▾ Login/Sign Up  **Donate**

## Welcome to AllStarLink!

AllStarLink is a network of Amateur Radio repeaters, remote base stations and hot spots accessible to each other via Voice over Internet Protocol. AllStarLink runs on a dedicated computer (including the Raspberry Pi) that you host at your home, radio site or computer center. It is based on the open source Asterisk PBX running our app\_rpt application. App\_rpt makes Asterisk a powerful system capable of controlling one or more radios. It provides linking of these radio "nodes" to other systems of similar construction anywhere in the world via VoIP.

AllStarLink's primary use is as a dedicated computer node wired to your repeater or radio. Connections from Echolink, other VoIP clients and telephone calls are supported.

AllStarLink has **43011** users and **45461** nodes.

### ASL News

#### AllStarLink Node Number Policy Changes

February 1, 2026

As you may know, AllStarLink operates on the concept of node numbers, and, similar to telephone numbers, these node numbers are a finite resource. As AllStarLink continues to experience rapid growth, administrative changes are needed. AllStarLink is making two changes to its policies around node numbers that will impact some users of the AllStarLink system. Please read this carefully.

#### Reclamation of Unused Five-Digit Node Numbers

Beginning on April 3, 2026, AllStarLink is implementing a policy of reclaiming five-digit node numbers that have not been used in at least 24 months. This includes five-digit node numbers that have been extended to "NNX" six-digit numbers where all NNX numbers are also dormant. If you no longer use AllStarLink or no longer plan to use these node numbers, simply do nothing and they will be reclaimed automatically with no further action on your part. If you want to keep a node number, please put the five digit node number or one of the NNX numbers back online by April 2

### Getting Started

Want to get started? AllStarLink is supported on any 64bit Intel/AMD (x86\_64) or Arm (arm64) system including virtual machines, as well as many Raspberry Pi devices.

**Get started with:**

- [Installing on Debian \(PC or VM\)](#)
- [Imaging a Raspberry Pi](#)

**Get Help:**


- [AllStarLink Manual](#)
- [ASL Community Forum](#)

### ASL Features

- Full Feature Repeater Controller
- VoIP Full Duplex Linking with great audio
- ASL/Echolink Linking
- Simplex (half-duplex) Station
- Autopatch and reverse autopatch

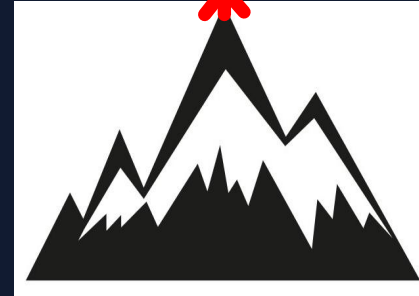
### Help Support ASL

The implementation of this system and its monthly upkeep is very costly. Any monetary help that you can and wish to give will be much appreciated. Allstarlink Inc. is a 501(c)(3) non-profit organization.

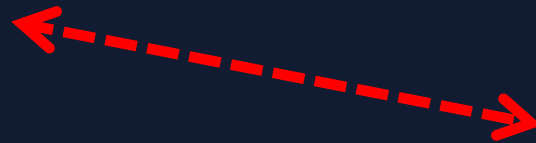
 **Donate**

# What Do I Need?

FM Radio  
DTMF Keypad



Access to a  
repeater  
with AllStar  
(147.180)



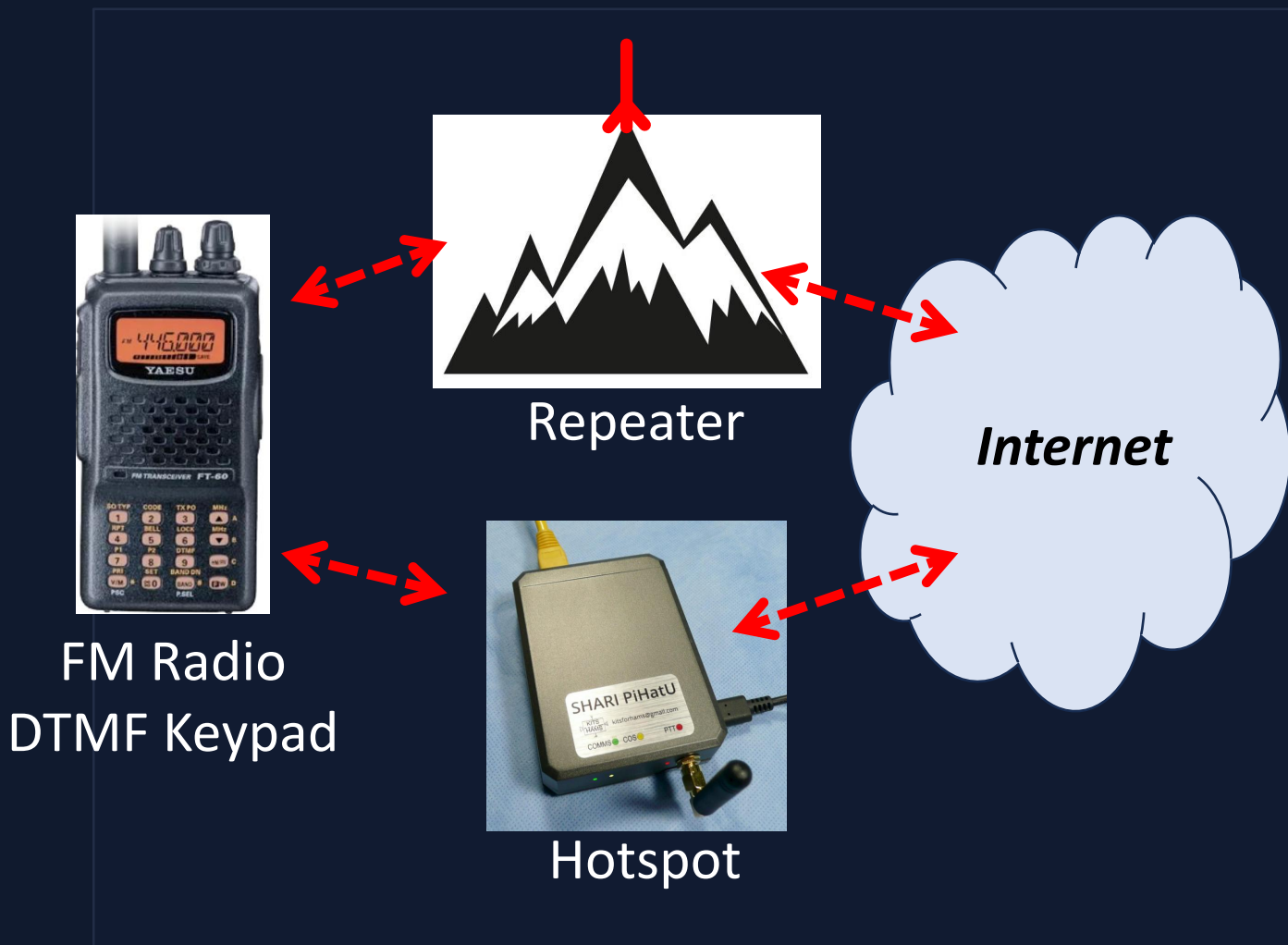
Your own  
AllStar  
hotspot

## Making a Connection to Node **12345**

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- \* 3 **1 2 3 4 5**      Connect in transceive mode - Connect to **1 2 3 4 5**
- \* 2 **1 2 3 4 5**      Connect in monitor mode - Connect to **1 2 3 4 5**
- \* 1 **1 2 3 4 5**      Disconnect node - Disconnect **1 2 3 4 5**

# Scenario #1 – I want to talk to someone, anyone.



Pick a popular AllStar hub node

- 55915 Ham Radio Workbench hub
- 41288 UK HubNet
- 54326 WA7ABU Salem - 10 AM nets
- 27339 East Coast Reflector

Example: Connect to **55915**

Key up, \*3 **55915** to connect

Key up, \*1 **55915** to disconnect

# Scenario #2 – I want to talk to a specific person, somewhere

Let's talk to Paul WD9GCO  
In Valparaiso Indiana

Search RepeaterBook  
For Allstar enabled repeaters  
In the area



<input type="checkbox"/>	~	ACCESS ⓘ	📍	COUNTY	📺	USE	🔊
<input type="checkbox"/>	29.6900 -	88.5	Ellettsville	Monroe	WB9STA	OPEN FM AllStar	
<input type="checkbox"/>	53.5700 -	173.8	Valparaiso	Porter	N9IAA	OPEN FM AllStar	
<input type="checkbox"/>	146.7150 -	141.3	Columbia City	Whitley	K9BLU	OPEN FM AllStar	
<input type="checkbox"/>	146.7450 -	CC 0 NAC 293 D346	Indianapolis	Marion	W9AMT	OPEN FM AllStar DMR P-25	
<input type="checkbox"/>	146.7750 -	88.5	Anderson	Madison	W2NAP	OPEN FM AllStar EchoLink	
<input type="checkbox"/>	146.8350 -	—	Evansville	Vanderburgh	W9KXP	OPEN AllStar EchoLink IRLP WIRES-X	
<input type="checkbox"/>	146.9250 -	—	Paxton	Sullivan	W9ILS	OPEN AllStar EchoLink Fusion WIRES-X	
<input type="checkbox"/>	146.9700 -	CC 0 131.8	Michigan City	La Porte	W9LY	OPEN FM AllStar DMR	
<input type="checkbox"/>	147.0450 +	103.5	Paoli	Orange	KB9OHY	OPEN FM AllStar Fusion	
<input type="checkbox"/>	147.2700 +	97.4	Columbia City	Whitley	N9MTF	OPEN FM AllStar EchoLink	
<input type="checkbox"/>	147.2850 +	146.2	Lawrenceburg	Dearborn	KB9GYO	OPEN FM AllStar EchoLink	
<input type="checkbox"/>	147.3900 +	127.3	New Castle	Henry	W9OB	OPEN AllStar	
<input type="checkbox"/>	223.9800 -	131.8	South Bend	Saint Joseph	WB9YPA	OPEN FM AllStar	

# Scenario #2 – I want to talk to a specific person, somewhere

Let's talk to Paul WD9GCO  
In Valparaiso Indiana

Search RepeaterBook  
For Allstar enabled repeaters  
In the area

repeaterbook.com:8443/repeaters/details.php?state\_id=18&ID=270

North America

Smart D-STAR Programming Starts Here  
RT Systems' Built-In Calculator Does the Work!

Search  
Update  
Claim Repeater

**W9LY** On-Air Open  
146.97000 (-) MHz CC 0 131.8  
Michigan City • La Porte County • Indiana  
Updated 2026-01-08

AllStar Link DMR

Technical

DOWNLINK	146.97000
UPLINK	146.37000
OFFSET	-0.600
UPLINK TONE	131.8
DOWNLINK TONE	131.8
SPONSOR	LPCARC
NOTES	LINKED TO DMR TGIF TG 31146
COORDINATION	IRC
LOCAL TIME	23:27 (CST UTC-06:00) America/Chicago
REVIEWED	2026-01-08

Tip: Click a tab below to view more details.

FM DMR AllStar

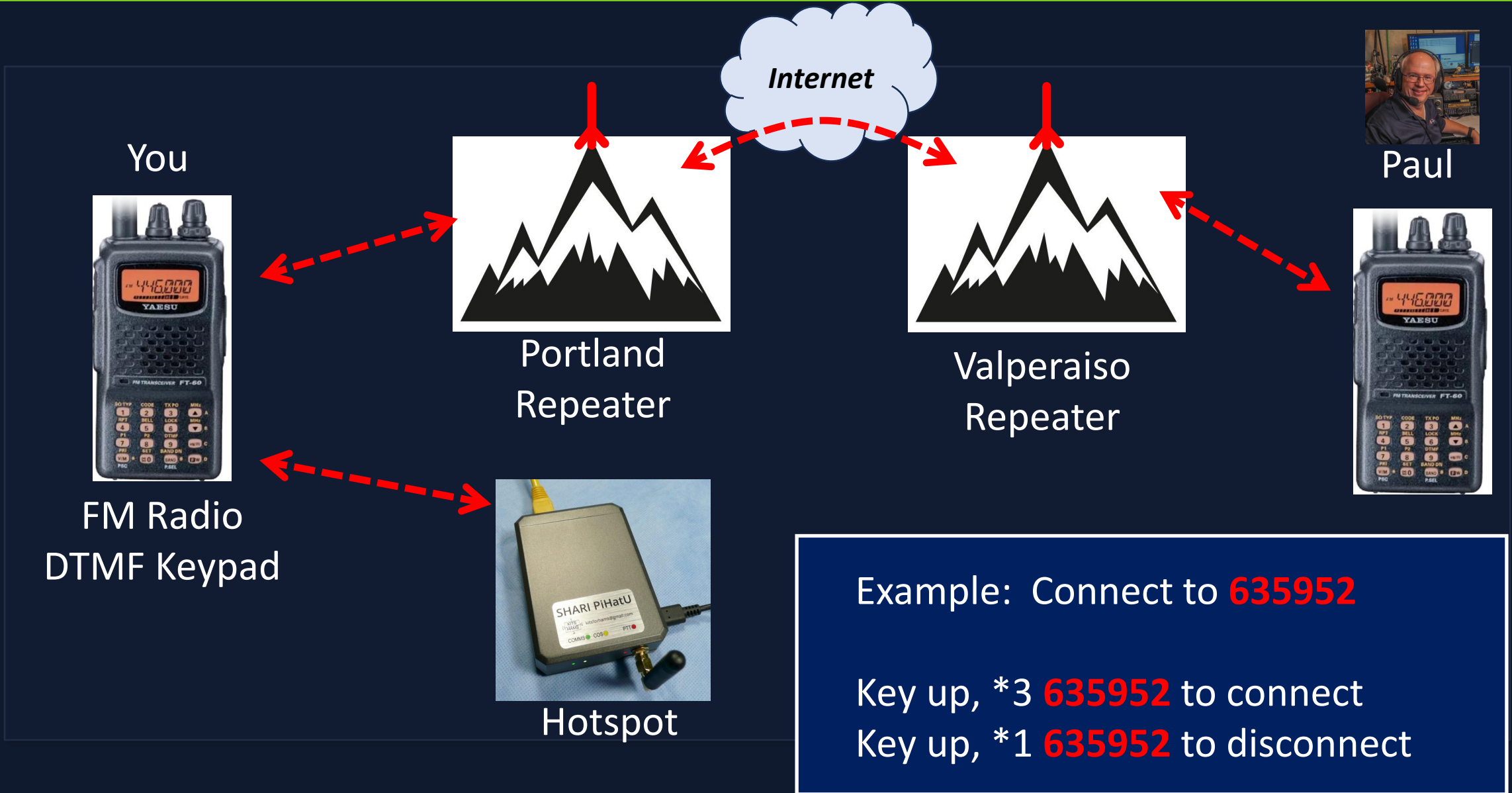
Node Number 635952

Map  
41.65657, -86.76657  
ENG

30 km  
20 mi  
Leaflet © OpenStreetMap contributors

Add Signal Report

# Scenario #2 – I want to talk to a specific person, somewhere



Example: Connect to **635952**

Key up, \*3 **635952** to connect

Key up, \*1 **635952** to disconnect

## Local Portland Repeaters with AllStar

Frequency	Tone	Call	Location	County
145.15	94.8	N7LF	Hood River - Mt Defiance	Hood River
145.31	136.5	AB7BS	Portland - Skyline	Multnomah
146.96	127.3	W7OTV	Colton - Goat Mtn	Clackamas
146.98	D023	AB7BS	Portland - KGW Tower	Multnomah
147.18	103.5	W7LT	Portland - Mount Scott	Clackamas
441.35	D023	AB7BS	Portland - Skyline	Multnomah
927.125	103.5	K7QDX	Portland - KGW Tower	Multnomah

## Demo Time !

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Portable hotspot: 439.7125 PL 100.0

\* 3 5 5 9 1 5      Connect in transceive mode - Connect to 55915

\* 2 5 5 9 1 5      Connect in monitor mode - Connect to 55915

\* 1 5 5 9 1 5      Disconnect node - Disconnect 55915

# Regularly Scheduled Events

## MONDAY

10 AM Technical Discussion Net  
7 PM Technical Discussion Net

## TUESDAY

10 AM Technical Discussion Net  
7 PM Project Net

## WEDNESDAY

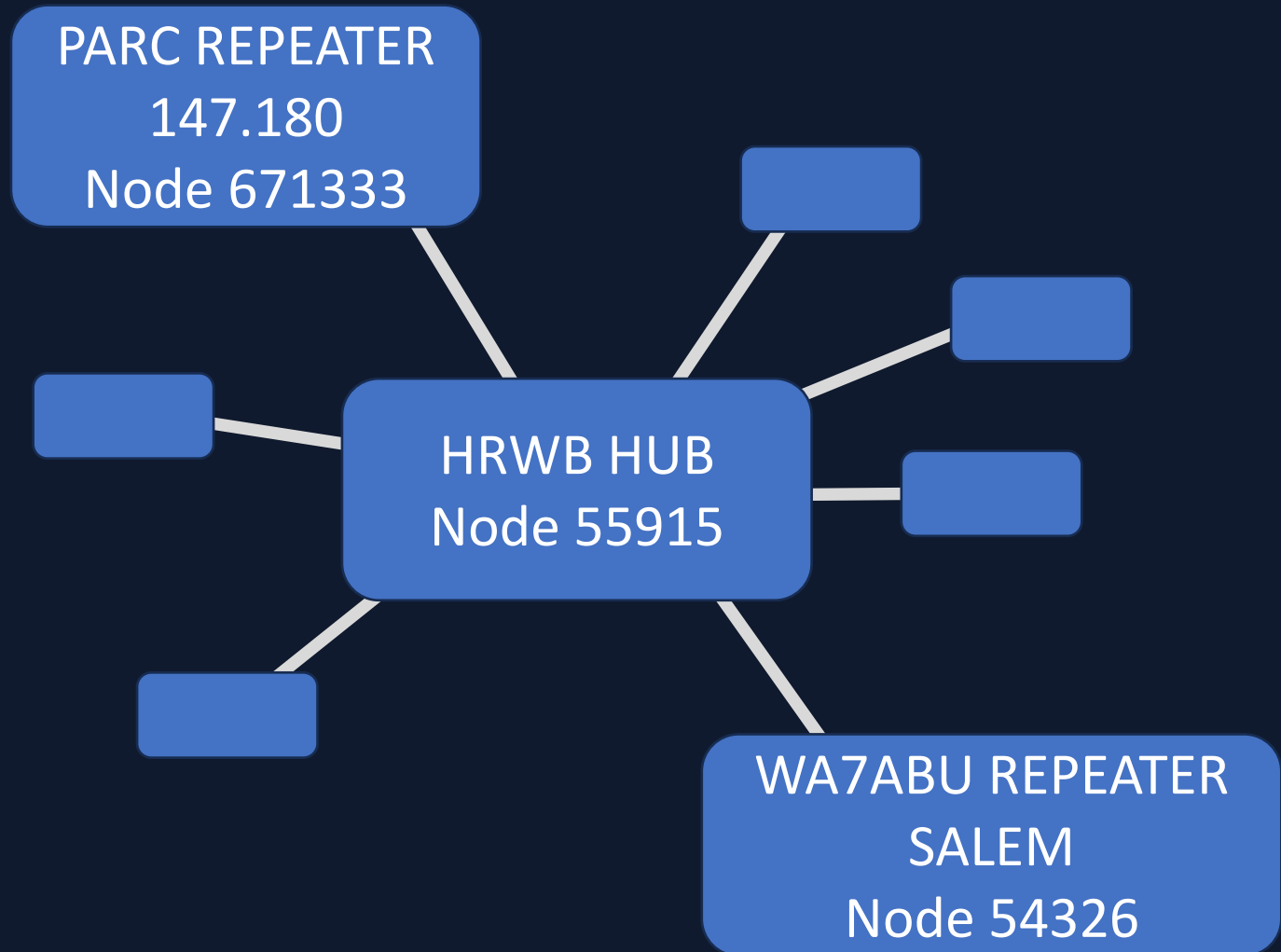
10 AM Technical Discussion Net

## THURSDAY

10 AM Technical Discussion Net  
7 PM Mesh Network Net

## FRIDAY

10 AM Technical Discussion Net  
7 PM Space Net



## What's Next ?

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1. Sign up for an AllStar Node number at [allstarlink.net](http://allstarlink.net)
2. Get on the air
  - Get a hotspot
  - Use the PARC 147.180 repeater
3. Connect to popular AllStar Nodes and have fun

Connect to your friends and popular nodes...

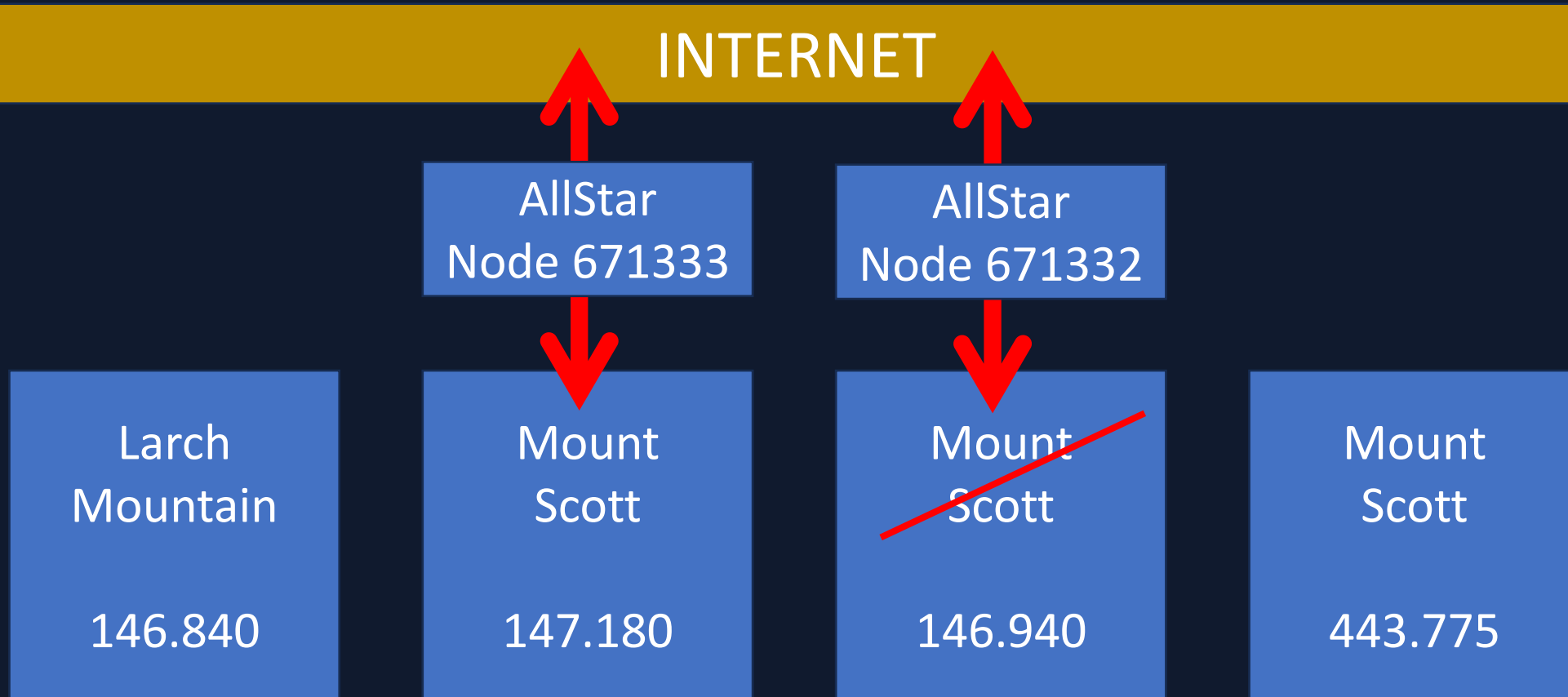
- 671333      PARC 147.180 Repeater
- 55915      Ham Radio Workbench hub
- 41288      UK HubNet
- 54326      WA7ABU repeater in Salem for 10 AM nets
- 27339      East Coast Reflector

Thank You !

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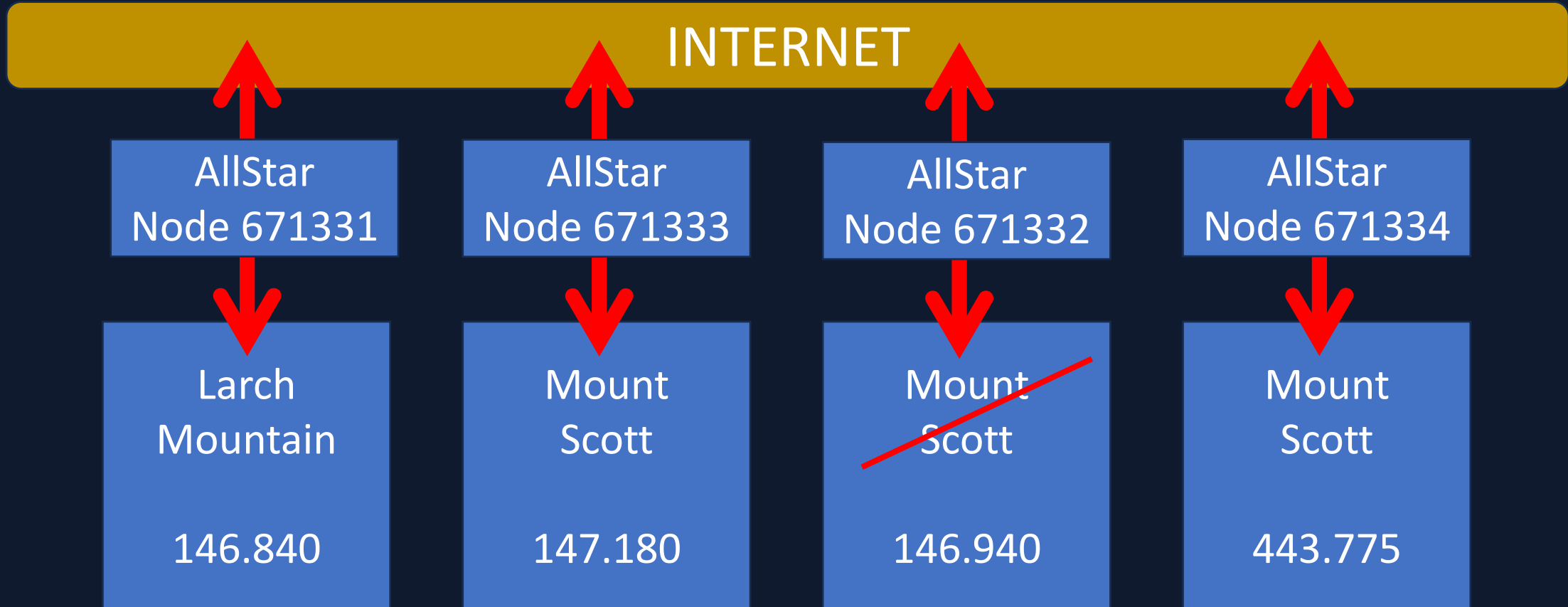
Questions ?

## Step #2 – Move 146.940



- Move 146.940 to another site providing better west-side coverage
- Figure out how to add AllStar in a cost effective way

### Step #3 – Link 146.840 (Larch Mountain) and 443.775 (Mount Scott)



- Over time, connect the other repeaters via AllStar