Asterisk Allstar Repeater

Doug Crompton, WA3DSP
Modified by Robert Conklin, N4WGY

Asterisk Allstar Radio VOIP

History of Asterisk

1999 – Mark Spencer (Huntsville AL) started a Linux software company

The company grew and needed phone services
They discovered available systems were very expensive
So they wrote their own PBX software
They formed a company called Digium in 2001 and their software is used to run the phone systems in thousands of companies worldwide.

Asterisk Allstar Radio VOIP

History of app_rpt

Asterisk is written to allow additional applications
to extend its capability

The app_rpt application was written
by Jim Dixon, WB6NIL and Steve Rodgers, WA6ZFT
in the mid 2000's for fulfill his need for a
repeater controller and VOIP interface.

Original system used a Quad PCI radio interface card
Later used USB sound card interface

Asterisk Allstar
Radio VOIP

Comparison of Amateur Radio VOIP systems

Other formats

- Mostly proprietary
- Varying audio quality
- Skype, Wires, Dstar, etc.

Comparison of Amateur Radio VOIP systems

Echolink

- Free
- Not open source – limited api (App Program Interface)
- Low audio quality – GSM – half duplex
- Relatively easy to use
- Large user base
- Mostly computer or phone originated
- Limited capability
- Stable but stale
- Not best choice for computer linking

Comparison of Amateur Radio VOIP systems

IRLP

- Internet Radio Linking Protocol
- Not open source – requires board purchase
- Good audio quality – ADPCM – half duplex
- Smaller user base
- Only radio originated
- Limited capability
- Limited connectability

Asterisk Allstar
Radio VOIP

Comparison of Amateur Radio VOIP systems

Allstar

- Fully open source - free
- Excellent audio quality – full duplex
- Choice of codecs
- Smaller user base (growing fast)
- Radio, phone or computer originated
- Endless capability and connectability
- Low cost
- Echolink, d-star, C4FM, DMR and other service bridges
- Requires some LINUX knowledge
- LOTS of internet support

Asterisk Allstar Radio VOIP

Features

- Linux operating system – very well supported
- Fully open source – Easy to modify and extend the code
- Easy to install and maintain
- Extremely low power consumption
- Excellent voice quality
- Ability to select different CODECS
- Great for restricted antenna areas – gives feel of radio
- Allows public or private connections
- Any number of nodes can be connected together
- Connection process totally at the discretion of the user
- Unlimited servers and nodes per IP address

Asterisk Allstar Radio VOIP

Features

- Full Duplex
- Integral repeater controller
- Connections to/from Phone PBX – sip, iax
- No single point of failure
- Build the system the way you want
- Simplex
- Duplex
- No radio

Asterisk Allstar Radio VOIP

CODECS

A codec is a device or computer program capable of encoding

ULAW

- 64Khz
- Lossless
- Excellent quality
- Least used

G726aa

- modified G726a
- 48Khz sample rate
- Very good quality
- Most used

ILBC

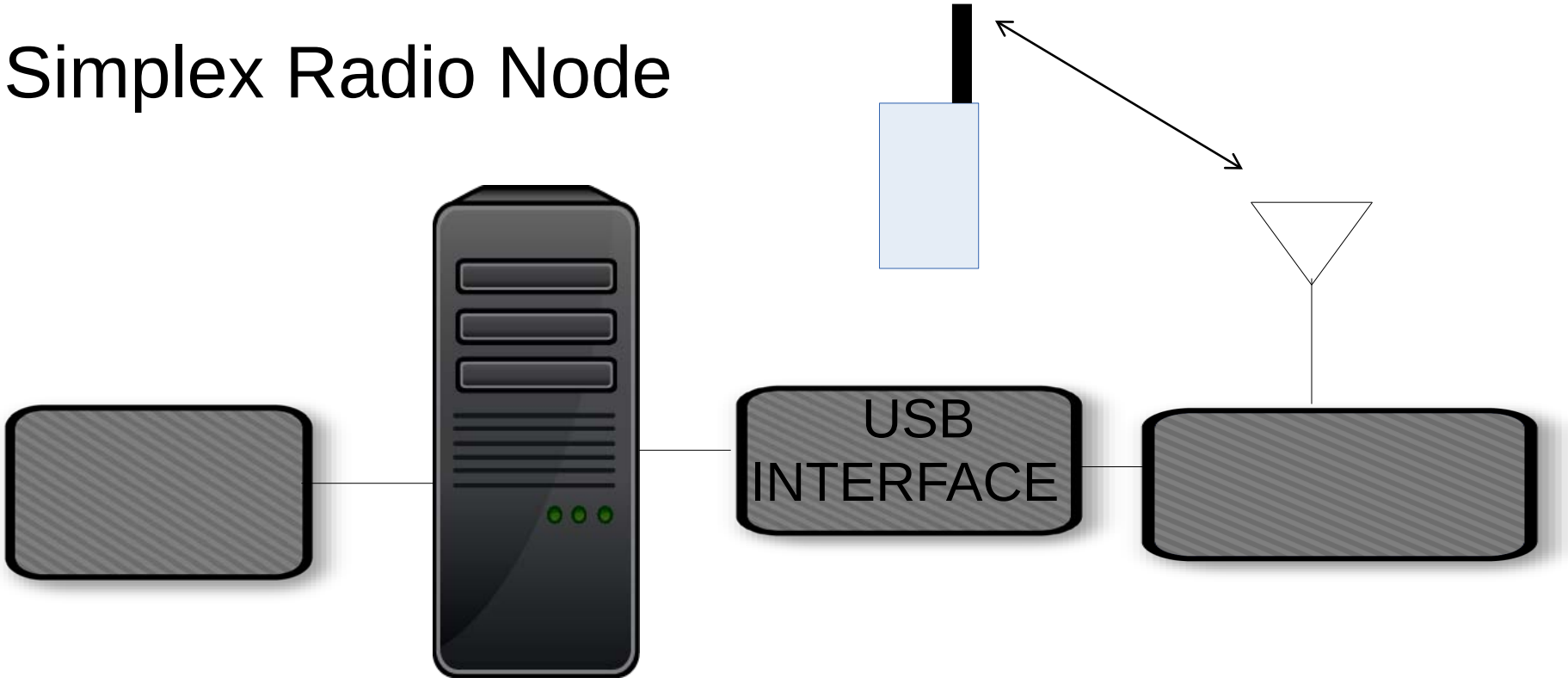
- Internet Low Bandwidth Codec
- 1/3 BW of g726aa
- Very close to g726 quality

GSM

- Very low sample rates
- Low bandwidth
- Fair quality
- Seldom used over VOIP
- Local voice messages

Asterisk Allstar Radio VOIP

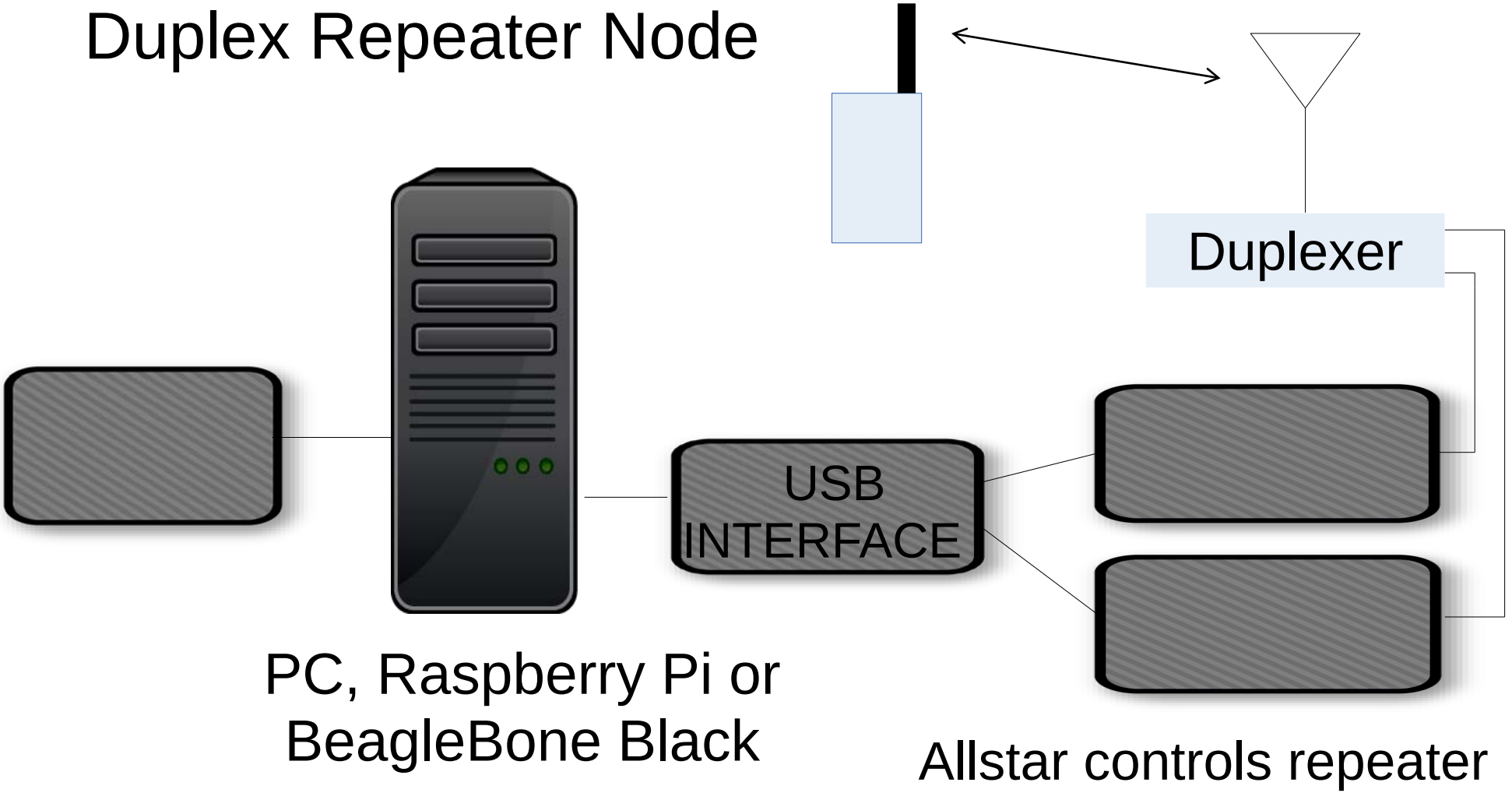
How Allstar Works

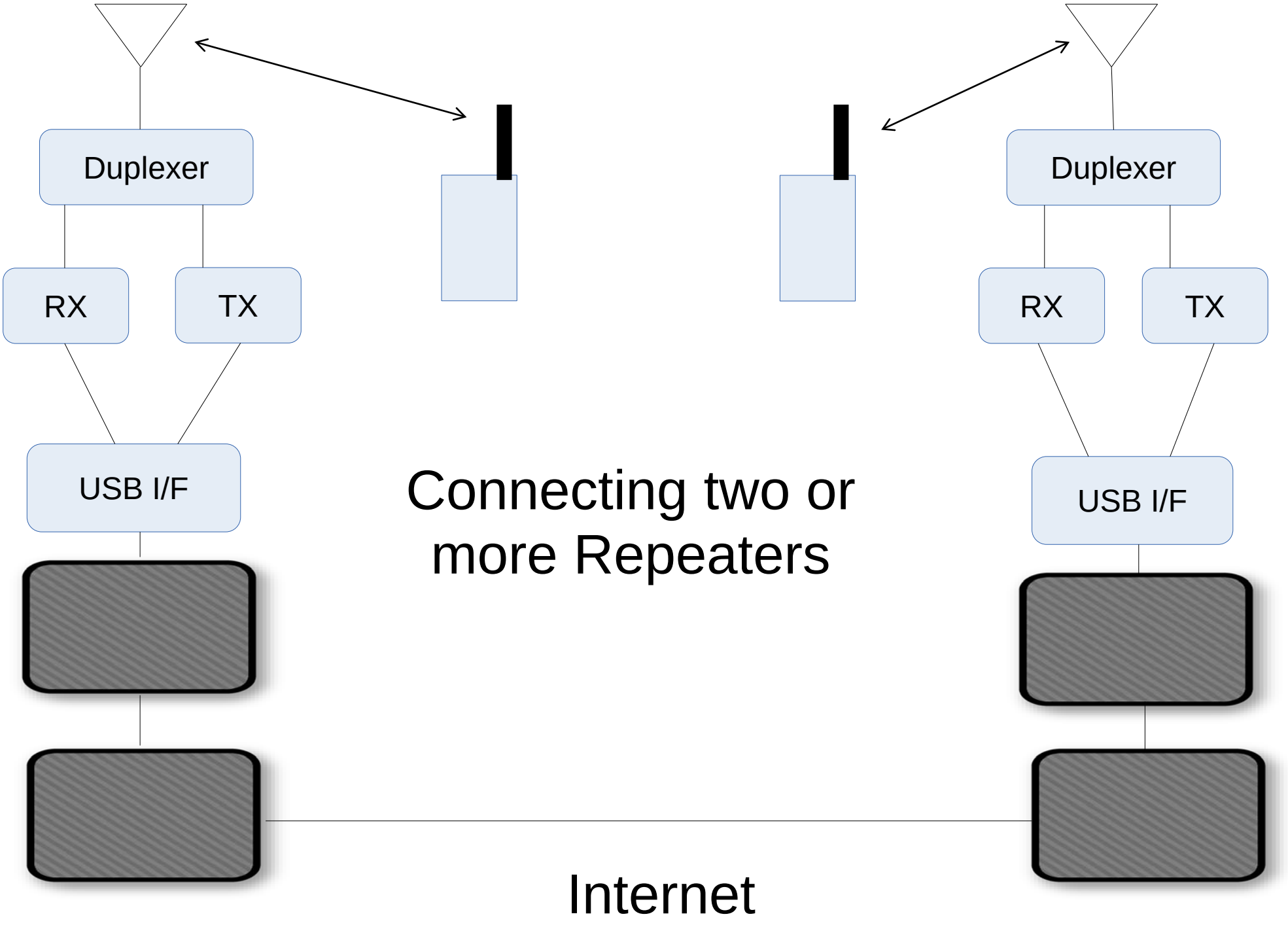


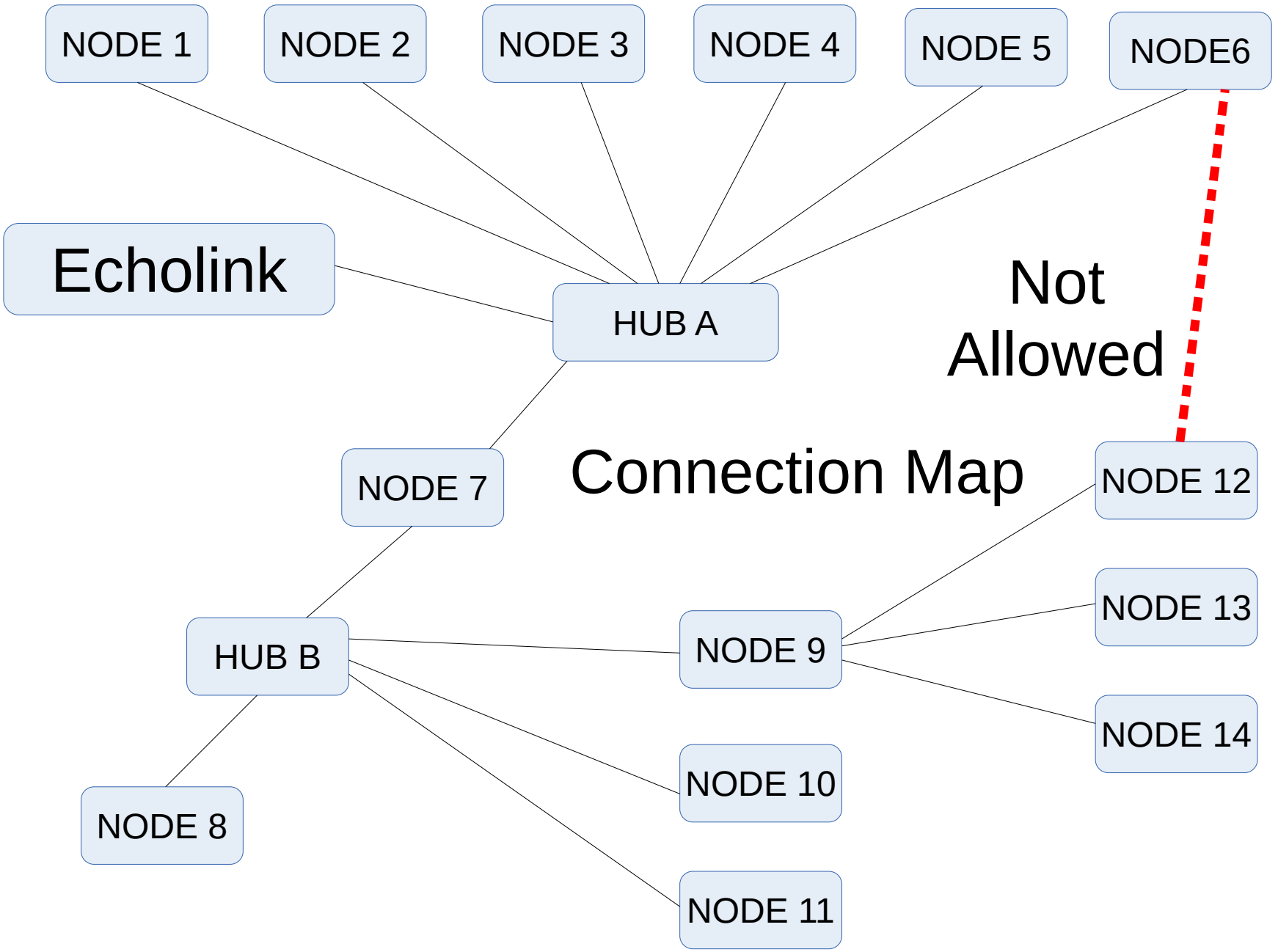
PC, Raspberry Pi or
BeagleBone Black

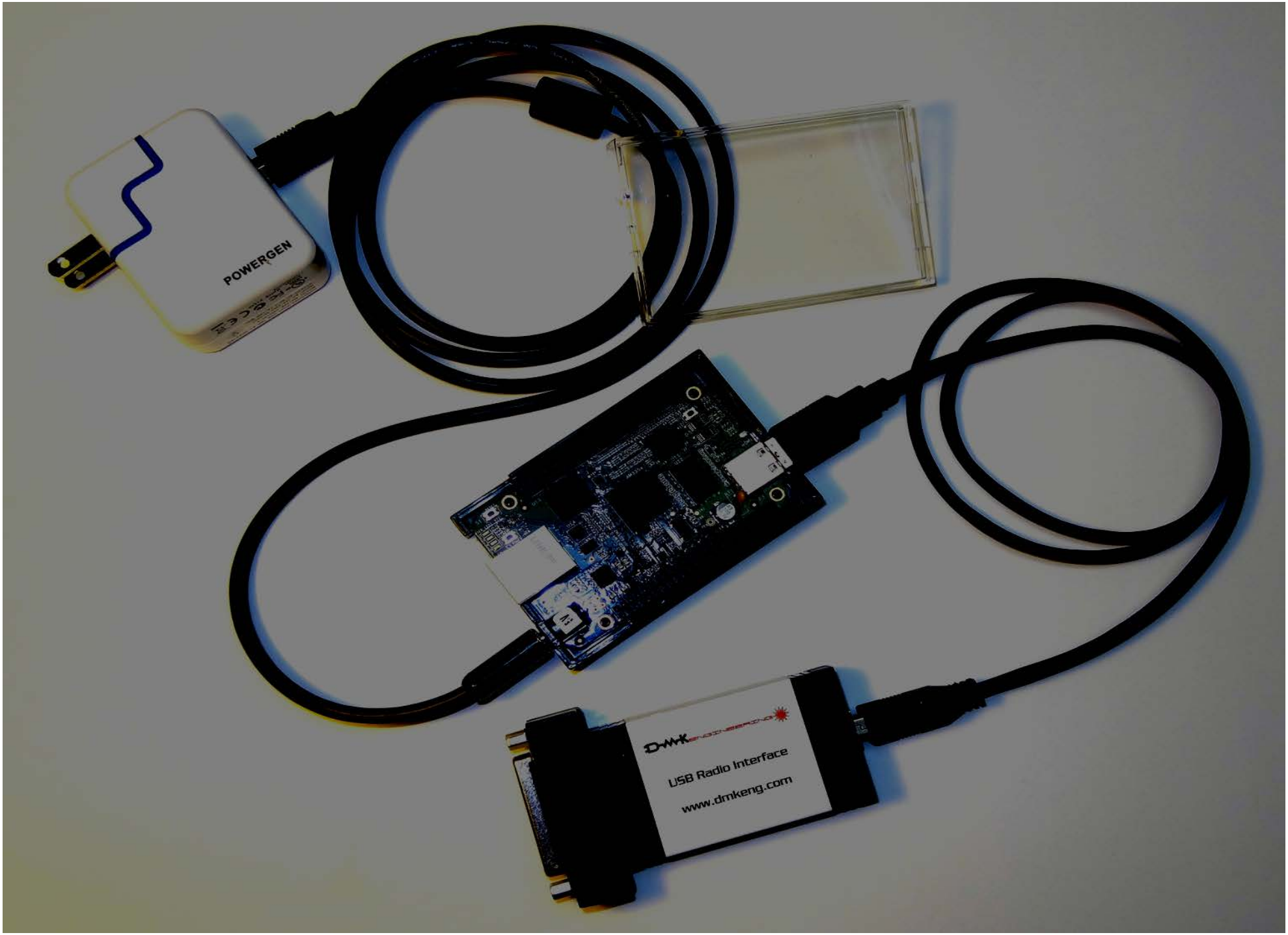
Asterisk Allstar Radio VOIP

How Allstar Works



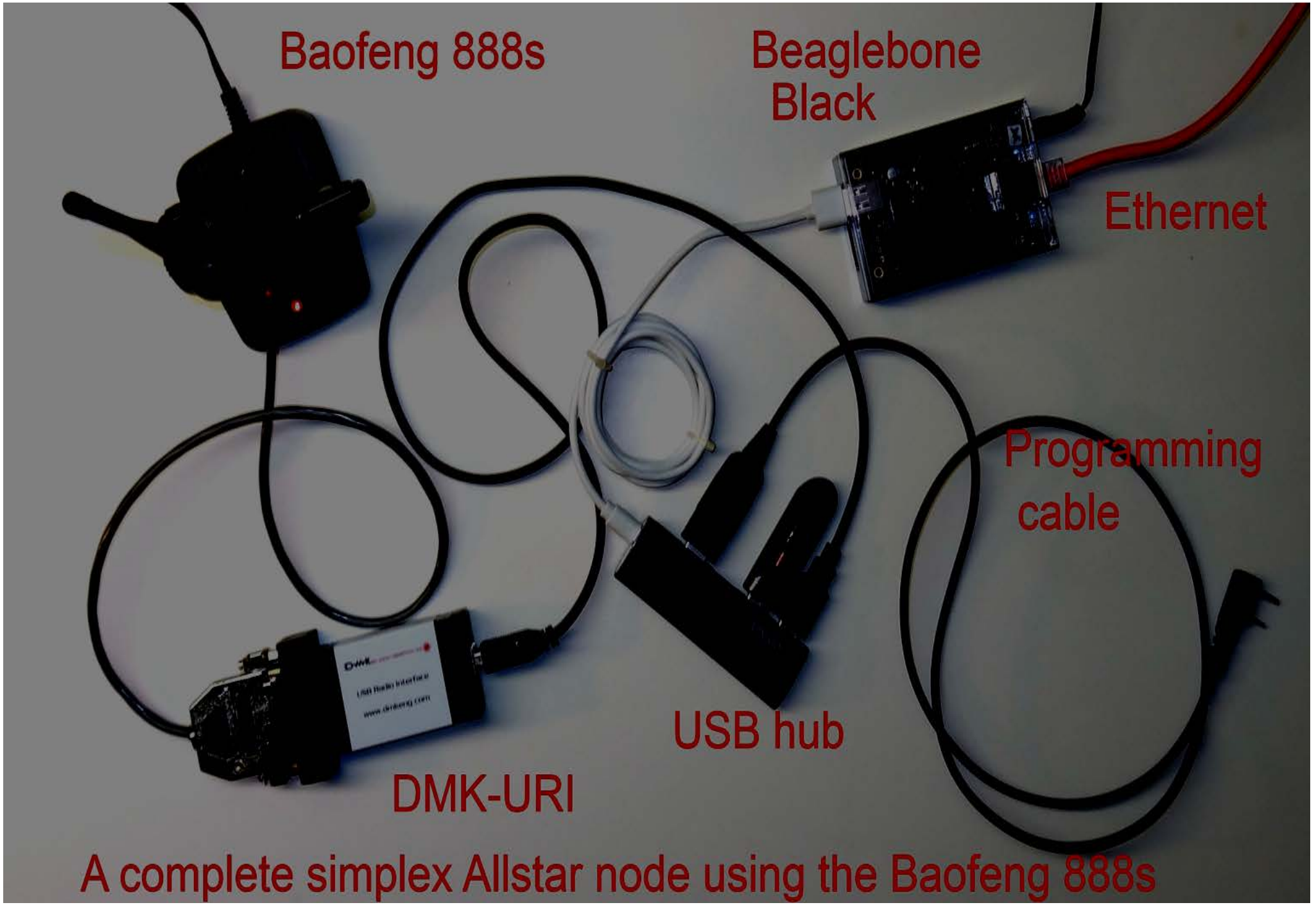

Duplexer
RX
TX
USB I/F
Duplexer
RX
TX
USB I/F
Connecting two or more Repeaters
Internet


NODE 1
NODE 2
NODE 3
NODE 4
NODE 5
NODE6
Echolink
HUB A
Not
Allowed
Connection Map
NODE 7
NODE 12
NODE 13
HUB B
NODE 9
NODE 14
NODE 10
NODE 8
NODE 11


POWERGEN
USB Radio Interface
www.dmkeng.com

7.1 Channel Sound
Vol
Vol

BAOFENG



A complete simplex Allstar node using the Baofeng 888s

AllStar Link

VOIP SOLUTIONS
FOR AMATEUR RADIO

Login:

Callsign: N4WGY

Password: ••••••••••••••

Login

Forgotten your password?

SignUp:

Signup today and get started using the AllStar Network!

Register Here

Welcome to Allstar Link!

We organize and administrate a network of publicly-accessible (license required) Amateur Radio repeater and remote base stations accessible to each other via Voice over IP on the Internet.

Our Administrative and Web presence and methodology has been completely re-vamped and vastly improved.

The implementation of this system and its monthly upkeep is very costly. I, Jim Dixon, WB6NIL personally bear this cost (along with several generous donations of server space/bandwith from others). Any monetary help that you can and wish to give will be much appreciated. A PayPal donation button is provided below if you wish to do so. Thanks, I very much appreciate it..

Donate

Click Here to see the list of all AllStar Link Network nodes

If you are new to Allstar Link, please see the About, the Get Started, and the Support pages for a full explanaton of who we are and what we do.

GET CONNECTED NOW!! Click HERE to see commercially available products which allow fast and easy connection of your radio system to the Allstar Link Network

Downloads

lsnodes

- Named after 'ls' the linux command to list directories
- Written in Perl
- View and control nodes from anywhere via the web

http://192.168.0.199/cgi-bin/lsnodes_web?node=41139
http://192.168.0.198/cgi-bin/lsnodes_web?node=41624

Status for N4WGY - Node 42754

Last update - 06/03/2016 19:19:11 My IP - 216.186.222.26

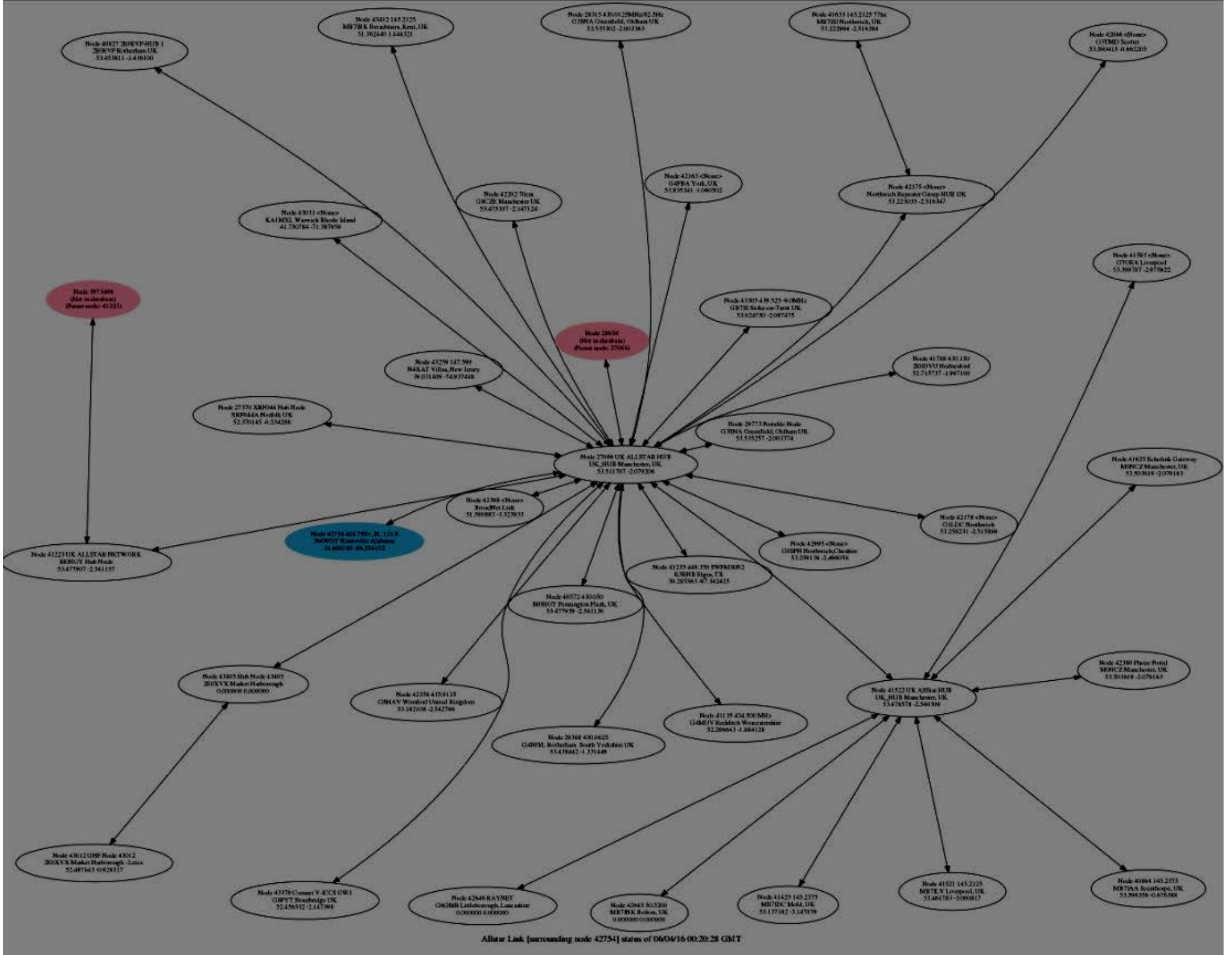
View this Node Graphically Search/Command another Node

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	ARMED
Time outs since system initialization	0
Identifier state	CLEAN
Kerchunks today	2
Kerchunks since system initialization	2
Keyups today	5
Keyups since system initialization	5
DTMF commands today	1
DTMF commands since system initialization	1
Last DTMF command executed	327066
TX time today	00:00:26494
TX time since system initialization	00:00:26494
Uptime	00:25:52
Nodes currently connected to us	27066
Autopatch	ENABLED
Autopatch state	DOWN
Autopatch called number	N/A
Reverse patch/IAXRPT connected	DOWN
User linking commands	ENABLED
User functions	ENABLED

Node	Call	Description	Location
42754	N4WGY	444.750+, PL 131.8	Huntsville Alabama
2536	GB3NU	430.8875 +7.6	Sheringham Norfolk UK
27066*	UK_HUB	UK ALLSTAR HUB	Manchester, UK
27370	XRF044A	XRF044 Hub Node	Norfolk UK
28315	G3SNA	430.0125MHz/82.5Hz	Greenfield, Oldham UK
28934	MB7IJD	29.280Mhz	Scotland NT62
29368	G4NJI/L	430.0625	Rotherham South Yorkshire UK
29773	G3SNA	Portable Node	Greenfield, Oldham UK
973498	M0HOY-L	ECHOLINK	
40572	M0HOY	430.050	Pennington Flash, UK
40827	2E0EVP	2E0EVP-HUB 1	Rotherham UK
40864	MB7IAA	145.2375	Scunthorpe, UK
41135	G4MUV	434.500 MHz	Redditch Worcestershire
41223	M0HOY	UK ALLSTAR NETWORK	Hub Node
41235	K5ENB	446.350 SWFM RPi2	Elgin, TX
41425	MB7IDC	145.2375	Mold, UK
41521	MB7ILV	145.2125	Liverpool, UK
41522	UK_HUB	UK AllStar HUB	Manchester, UK
41593	G7OEA		Liverpool
41625	M0NCZ	Echolink Gateway	Manchester, UK
41633	MB7ISJ	145.2125 77hz	Northwich, UK
41788	2E0DVU	430.150	Hednesford
42066	G3TMD		Scotter
42163	G4FBA		York, UK
42175	Northwich		Repeater Group HUB UK
42178	G1LDC		Northwich
42202	G8CZE	70cm	Manchester UK
42358	G8HAV	435.9125	Winsford United Kingdom
42380	M0NCZ	Phone Portal	Manchester, UK
42398	BroadNet		Link
42645	MB7INK	50.5200	Bolton, UK
42646	G6GMR	RAYNET	Littleborough, Lancashire
42995	G0SPH		Northwich,Cheshire
43012	2E0XVX	UHF Node 43012	Market Harborough - Leics
43031	KA1MXL		Warwick Rhode Island
43259	N4XAT	147.590	Villas, New Jersey
43305	GB7SI	439.525 -9.0MHz	Stoke-on-Trent UK
43379	G8PYT	Comnet V-ICCS GW1	Stourbridge UK
43405	2E0XVX	Hub Node 43405	Market Harborough
43412	MB7IBK	145.2125	Broadstairs, Kent, UK

Node	Peer	Reconnects	Direction	Connect Time	Connect State
27066	93.170.96.14	0	OUT	00:00:07.815	ESTABLISHED

Host	Node	State
67.215.233.178:4569	42754	Registered


Node 41627 2E0EVP-HUB 1
2E0EVP Rotherham UK
53.453811 -1.418100
Node 43012 145.2125
MB7BK Broadstairs, Kent, UK
51.362440 1.444321
Node 28154.850/1250MHz/82.5Hz
G3SWA Greenfield, Oldham UK
53.535302 -2.003363
Node 41631 145.2125 77Hz
MB7BJ Northwich, UK
53.222994 -2.516364
Node 42166 <None>
GB7MD Scotter
53.566415 -0.682205
Node 42202 70cm
G8CZE Manchester UK
53.475397 -2.147124
Node 42163 <None>
G4PBA York, UK
53.935341 -1.060502
Node 42175 <None>
Northwich Repeater Group HUB UK
53.223035 -2.518347
Node 43011 <None>
KA1MXL Warwick Rhode Island
41.750784 -71.387959
Node 397.5000
(Not in database)
(Parent node: 41223)
Node 41507 <None>
GB7OKA Liverpool
53.399707 -2.975622
Node 43305 439.525 -9.0MHz
GB7SE Stoke-on-Trent UK
53.024750 -2.087475
Node 28034
(Not in database)
(Parent node: 27066)
Node 43259 147.900
N4KAT Villas,New Jersey
39.051409 -74.937448
Node 41788 430.150
2E0DVU Hednesford
52.715737 -1.997100
Node 27370 XRF044 Hub Node
XRF044A Norfolk UK
52.550145 -0.234288
Node 29773 Portable Node
G3SNA Greenfield, Oldham UK
53.535257 -2.003774
Node 27066 UK ALLSTAR HUB
UK_HUB Manchester, UK
53.511707 -2.059306
Node 41925 Echolink Gateway
MONCZ Manchester, UK
53.503619 -2.079163
Node 42308 <None>
BrackNet Link
51.500885 -3.323933
Node 42178 <None>
GB3DC Northwich
53.258231 -2.515800
Node 42754 464.750/r, PL 131.8
N4WOT Huntsville Alabama
34.660160 -86.554102
Node 41223 UK ALLSTAR NETWORK
MO0UY Hub Node
55.477907 -2.541157
Node 42995 <None>
GB3PH Northwich,Cheshire
53.259136 -2.466056
Node 41235 448.350 SWPM.RPT2
K5RVB Elgin, TX
30.265563 -97.342425
Node 40572 430.050
MO0UY Penrington Flash, UK
53.477939 -2.541130
Node 43465 Hub Node 43465
2E0XVX Market Harborough
0.000000 0.000000
Node 42358 435.9125
GB0AV Winsford United Kingdom
53.182008 -2.542766
Node 41135 434.500 MHz
G4MOV Redditch Worcestershire
52.289643 -1.884128
Node 28168 430.0625
G4MWL Rotherham South Yorkshire UK
53.438442 -1.170449
Node 41522 UK AllStar HUB
UK_HUB Manchester, UK
53.478578 -2.501309
Node 42180 Phone Portal
MO0CZ Manchester, UK
53.503619 -2.079163
Node 43012 UHF Node 43012
2E0XVX Market Harborough - Leics
52.487143 -0.828317
Node 43370 Connect V.4/CS GW1
GB7YT Stourbridge UK
52.456532 -2.147391
Node 42640 RAYNET
GB3MR Littleborough, Lancashire
0.000000 0.000000
Node 42645 50.5200
MB7BVK Bolton, UK
0.000000 0.000000
Node 41425 145.2375
MB7IDC Mold, UK
53.137192 -3.147079
Node 41521 145.2125
MB7LV Liverpool, UK
53.461783 -3.000817
Node 41004 145.2375
MB7IAA Southport, UK
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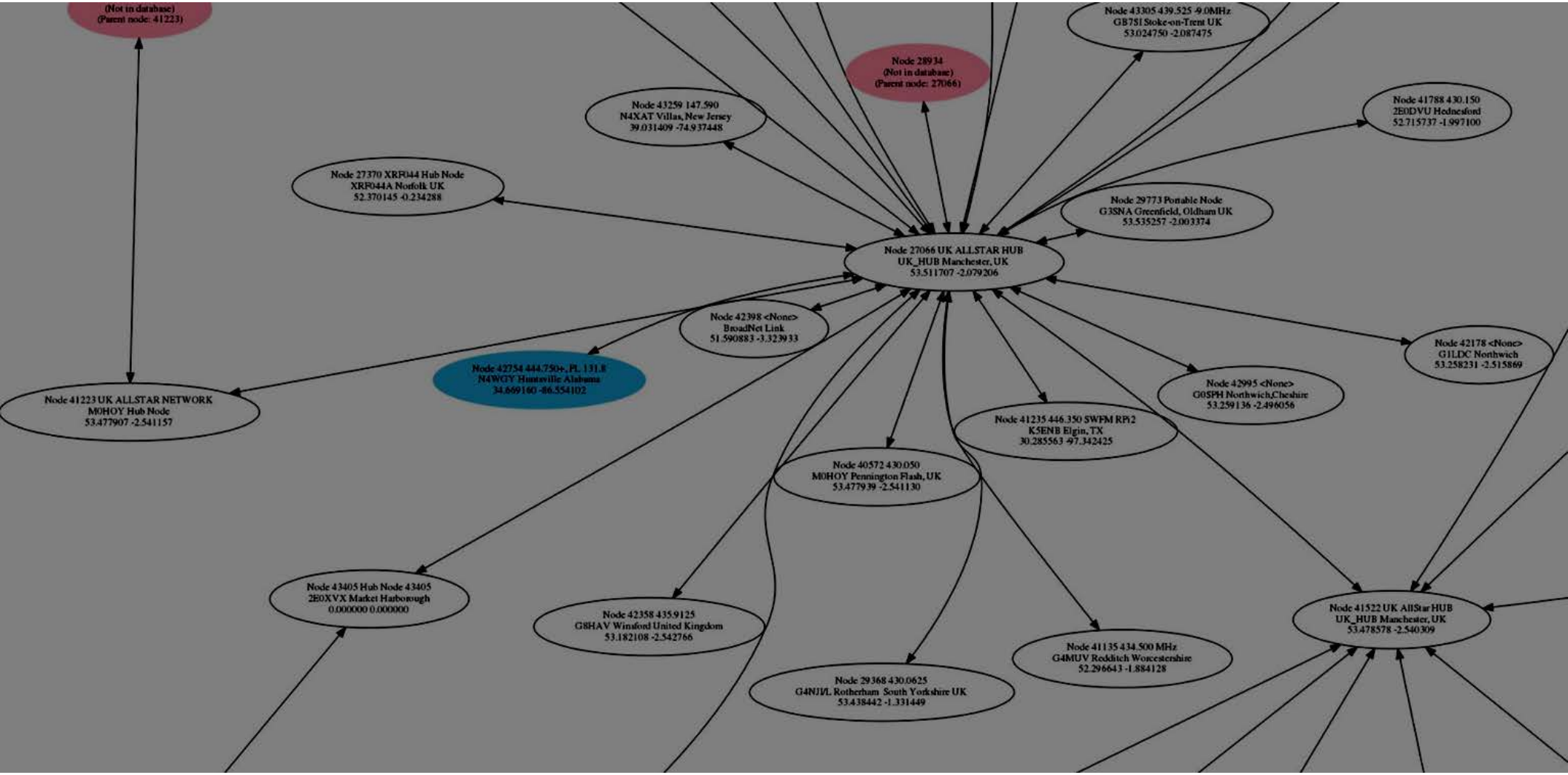
Allstar Link [surrounding node 42754] status of 06/04/16 00:20:28 GMT


(Not in database)
(Parent node: 41223)
Node 43305 439.525 -9.0MHz
GB7SI Stoke-on-Trent UK
53.024750 -2.087475
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39.031409 -74.937448
Node 41788 430.150
2E0DVU Hednesford
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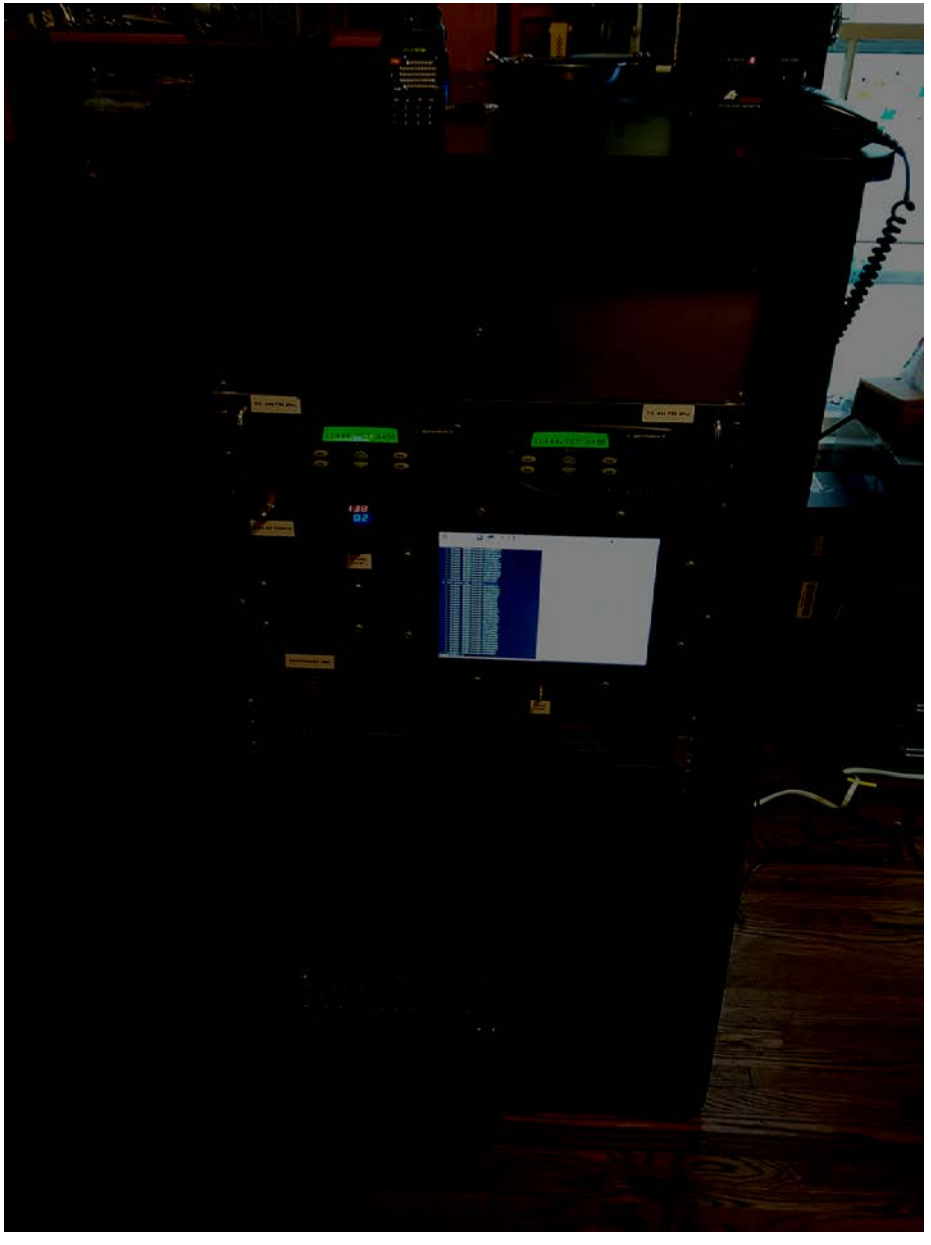
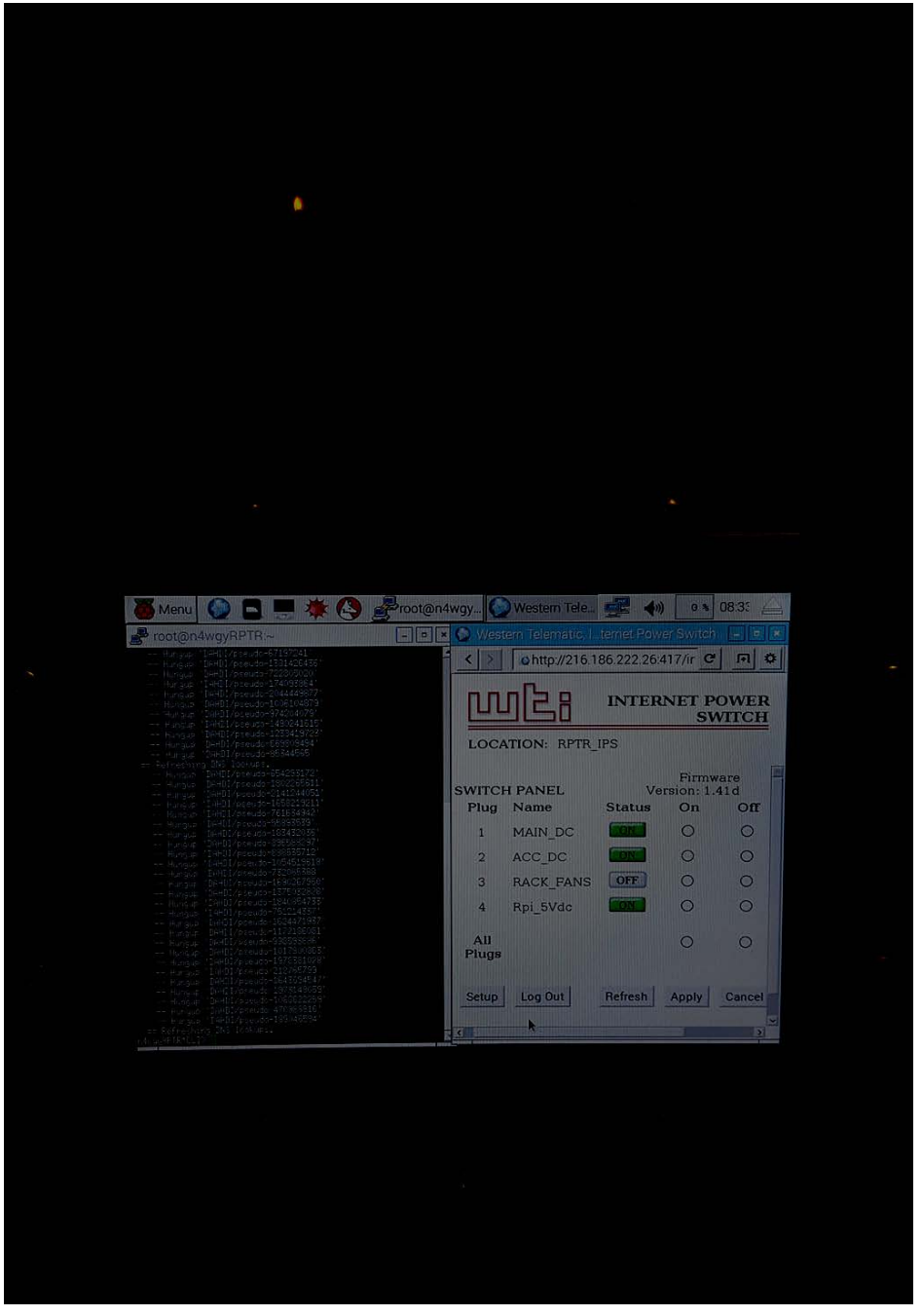
Node 29773 Portable Node
G3SNA Greenfield, Oldham UK
53.535257 -2.003374
Node 27066 UK ALLSTAR HUB
UK_HUB Manchester, UK
53.511707 -2.079206
Node 42398 <None>
BroadNet Link
51.590883 -3.323933
Node 42178 <None>
G1LDC Northwich
53.258231 -2.515869
Node 42754 444.750+, PL 131.8
N4WGY Huntsville Alabama
34.669160 -86.554102
Node 41223 UK ALLSTAR NETWORK
M0HOY Hub Node
53.477907 -2.541157
Node 42995 <None>
G0SPH Northwich,Cheshire
53.259136 -2.496056
Node 41235 446.350 SWFM RPt2
K5ENB Elgin, TX
30.285563 -97.342425
Node 40572 430.050
M0HOY Pennington Flash, UK
53.477939 -2.541130
Node 43405 Hub Node 43405
2E0XVX Market Harborough
0.000000 0.000000
Node 42358 435.9125
G8HAV Winsford United Kingdom
53.182108 -2.542766
Node 41522 UK AllStar HUB
UK_HUB Manchester, UK
53.478578 -2.540309
Node 41135 434.500 MHz
G4MUV Redditch Worcestershire
52.296643 -1.884128
Node 29368 430.0625
G4NJV/L Rotherham South Yorkshire UK
53.438442 -1.331449

The N4WGY 444.75Mhz Allstar/Echolink/Autopatch repeater.





More Information

hamvoip.org

allstarlink.org

wwwhttp://www.crompton.com/hamradio/BeagleBoneBlackAllstar/

http://www.k2ets.com/asterisk.html

https://allstarlink.org/getstarted.html

http://stats.allstarlink.org/