



# WIRES-X

Madison Area Repeater Association

# Apologies



- First, My apologies. I know you geeks like to touch hardware. But for reasons I will discuss later (port forwarding) that is not possible tonight. You can touch some hardware but the working hardware is in my basement to which we will be communicating.

# Program



- Setting up a node and understanding Hardware and Software.
- Connecting to and Using a node.



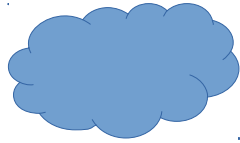
# Setting Up a Node and understanding the Hardware and Software

# What is WIRES-X



WIRES (Wide-coverage Internet Repeater Enhancement System) is an Internet communication system which expands the range of amateur radio communication. For WIRES-X, an amateur node station connecting to the Internet is used as the access point and connects the wireless communication to the Internet. Users' stations can communicate with other amateur stations all over the world using a node within the radio wave range.

# Infrastructure



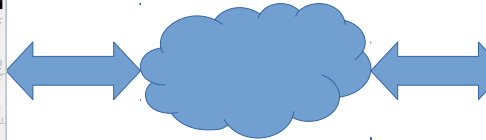


[illegible]

# Infrastructure

Wireshark - Packet 1000 (1000.000000) - 1000.000000

No.	Time	Source	Destination	Protocol	Length	Info
1000	0.000000	192.168.1.1	192.168.1.100	HTTP	1024	GET / HTTP/1.1
1001	0.000000	192.168.1.100	192.168.1.1	TCP	60	65535 → 80 [RST] Seq=1234567890 Win=0 Len=0
1002	0.000000	192.168.1.1	192.168.1.100	HTTP	1024	200 OK (text/html)
1003	0.000000	192.168.1.100	192.168.1.1	TCP	60	65535 → 80 [RST] Seq=1234567890 Win=0 Len=0
1004	0.000000	192.168.1.1	192.168.1.100	HTTP	1024	200 OK (text/html)
1005	0.000000	192.168.1.100	192.168.1.1	TCP	60	65535 → 80 [RST] Seq=1234567890 Win=0 Len=0
1006	0.000000	192.168.1.1	192.168.1.100	HTTP	1024	200 OK (text/html)
1007	0.000000	192.168.1.100	192.168.1.1	TCP	60	65535 → 80 [RST] Seq=1234567890 Win=0 Len=0
1008	0.000000	192.168.1.1	192.168.1.100	HTTP	1024	200 OK (text/html)
1009	0.000000	192.168.1.100	192.168.1.1	TCP	60	65535 → 80 [RST] Seq=1234567890 Win=0 Len=0
1010	0.000000	192.168.1.1	192.168.1.100	HTTP	1024	200 OK (text/html)



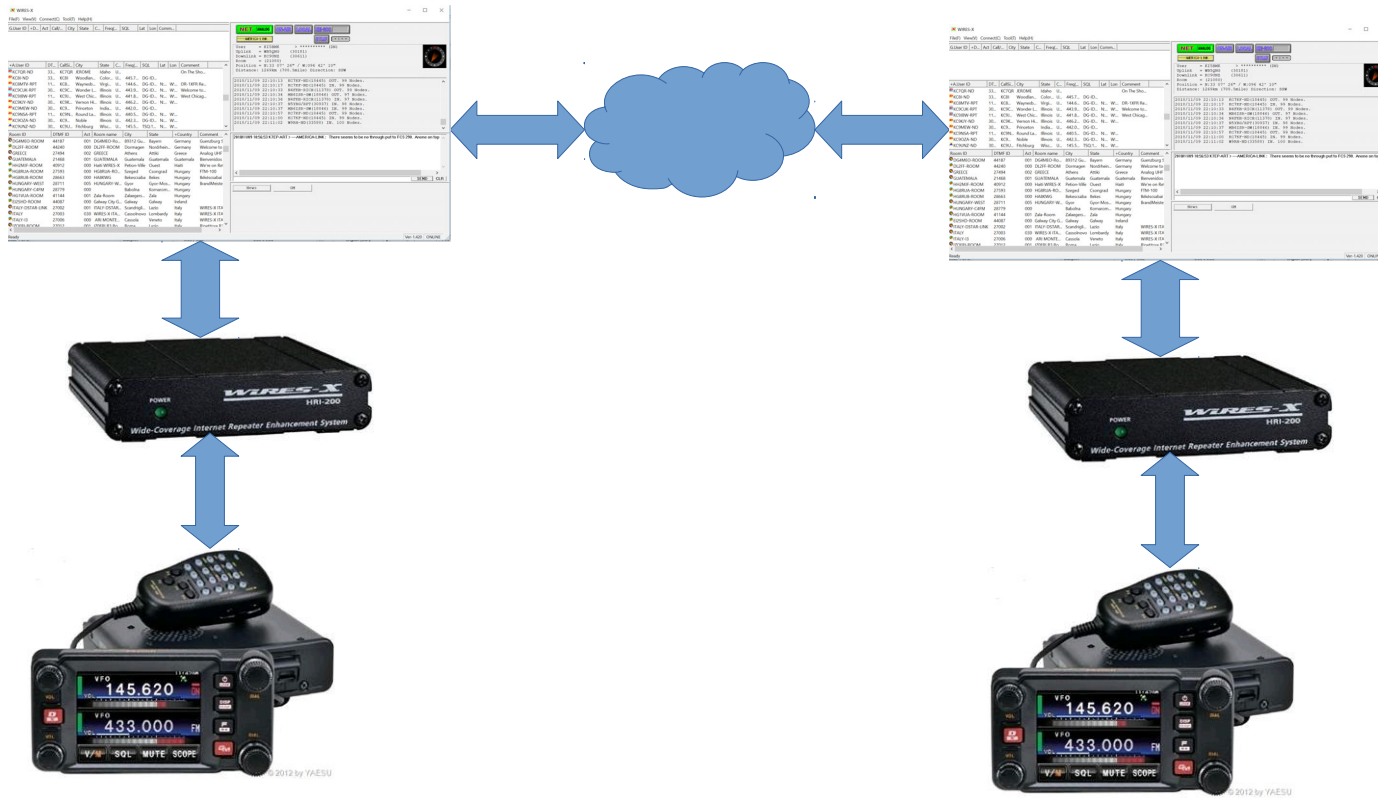
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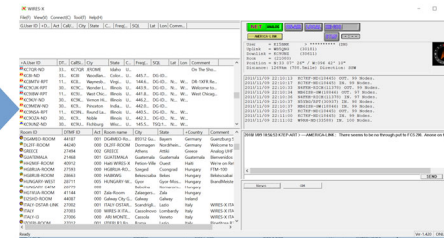
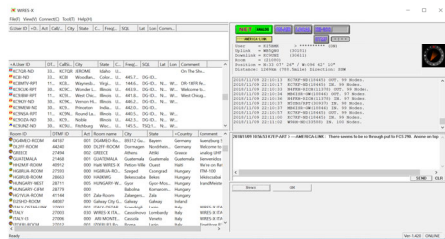




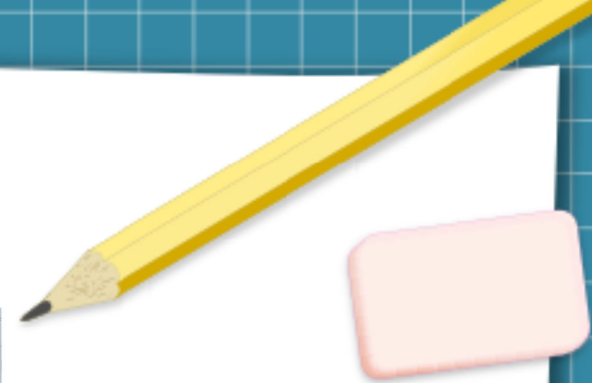
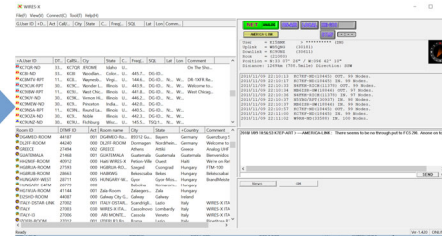
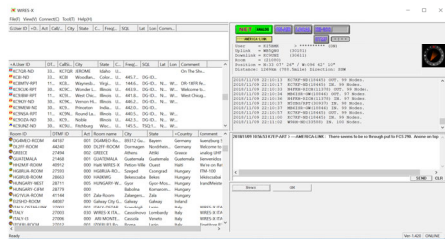
# Infrastructure



# Infrastructure



# Infrastructure





# Some Hardware Pics



Connected to the computer



Analog port



digital port



Rear of HRI-200

Analog

Digital



# WIRES-X Software

WIRES-X

File(F) View(V) Connect(C) Tool(T) Help(H)

G.User ID +D... Act Call/... City State C... Freq(...) SQL Lat Lon Comm...

+A.User ID	DT...	CallSi...	City	State	C...	Freq(...)	SQL	Lat	Lon	Comment
KC7QR-ND	33...	KC7QR	JEROME	Idaho	U...					On The Sho...
KC8I-ND	33...	KC8I	Woodlan...	Color...	U...	445.7...	DG-ID...			
KC8MTV-RPT	11...	KC8...	Waynesb...	Virgi...	U...	144.6...	DG-ID...	N...	W...	DR-1XFR Re...
KC9CUK-RPT	30...	KC9C...	Wonder L...	Illinois	U...	443.9...	DG-ID...	N...	W...	Welcome to...
KC9JBW-RPT	11...	KC9J...	West Chic...	Illinois	U...	441.8...	DG-ID...	N...	W...	West Chicag...
KC9KJY-ND	30...	KC9K...	Vernon Hi...	Illinois	U...	446.2...	DG-ID...	N...	W...	
KC9MEW-ND	30...	KC9...	Princeton	India...	U...	442.0...	DG-ID...			
KC9NSA-RPT	11...	KC9N...	Round La...	Illinois	U...	440.5...	DG-ID...	N...	W...	
KC9OZA-ND	30...	KC9...	Noble	Illinois	U...	442.3...	DG-ID...	N...	W...	
KC9UNZ-ND	30...	KC9U...	Fitchburg	Wisc...	U...	145.5...	TSQ:1...	N...	W...	

Room ID	DTMF ID	Act	Room name	City	State	+Country	Comment
DG4MEO-ROOM	44187	001	DG4MEO-Ro...	89312 Gu...	Bayern	Germany	Guenzburg S
DL2FF-ROOM	44240	000	DL2FF-ROOM	Dormagen	Nordrhein...	Germany	Welcome to
GREECE	27494	002	GREECE	Athens	Attiki	Greece	Analog UHF
GUATEMALA	21468	001	GUATEMALA	Guatemala	Guatemala	Guatemala	Bienvenidos
HH2MJF-ROOM	40912	000	Haiti WIRES-X	Petion-Ville	Ouest	Haiti	We're on Rel
HG8RUA-ROOM	27593	000	HG8RUA-RO...	Szeged	Csongrad	Hungary	FTM-100
HG8RUB-ROOM	28663	000	HA8KWG	Bekescsaba	Bekes	Hungary	Békéscsabai
HUNGARY-WEST	28711	005	HUNGARY-W...	Gyor	Gyor-Mos...	Hungary	BrandMeiste
HUNGARY-C4FM	28779	000		Babolna	Komarom...	Hungary	
HG1VUA-ROOM	41144	001	Zala-Room	Zalaegers...	Zala	Hungary	
EI2SHD-ROOM	44087	000	Galway City G...	Galway	Galway	Ireland	
ITALY-DSTAR-LINK	27002	001	ITALY-DSTAR...	Scandrigli...	Lazio	Italy	WIRES-X ITA
ITALY	27003	030	WIRES-X ITA...	Cassolnovo	Lombardy	Italy	WIRES-X ITA
ITALY-I3	27006	000	ARI MONTE...	Cassola	Veneto	Italy	WIRES-X ITA
I70ERI-ROOM	27012	001	I70ERI R3 Ro	Roma	Lazio	Italy	Rinettina R...

Ready

Ver-1.420 ONLINE

NET ANALOG ON-AIR LOCAL HRI-200

---AMERICA-LINK--- DTMF

User = KI5BMK > \*\*\*\*\* (DN)  
Uplink = WB5QNG (30181)  
Downlink = KC9UNZ (30611)  
Room = (21080)  
Position = N:33 07' 26" / W:096 42' 10"  
Distance: 1269km (788.5mile) Direction: SSW

2018/11/09 22:10:13 KC7KF-ND(18445) OUT. 99 Nodes.  
2018/11/09 22:10:17 KC7KF-ND(18445) IN. 99 Nodes.  
2018/11/09 22:10:33 N4FKH-RICH(11378) OUT. 99 Nodes.  
2018/11/09 22:10:34 MB6ISR-GW(18846) OUT. 97 Nodes.  
2018/11/09 22:10:36 N4FKH-RICH(11378) IN. 97 Nodes.  
2018/11/09 22:10:37 N5YBG/RPT(30937) IN. 98 Nodes.  
2018/11/09 22:10:37 MB6ISR-GW(18846) IN. 99 Nodes.  
2018/11/09 22:10:57 KC7KF-ND(18445) OUT. 99 Nodes.  
2018/11/09 22:11:00 KC7KF-ND(18445) IN. 99 Nodes.  
2018/11/09 22:11:02 W9RH-ND(33588) IN. 100 Nodes.

2018/11/09 10:56:53 K7EP-ART > ---AMERICA-LINK: There seems to be no through put to FCS 290. Anone on top

SEND CLR

News GM



# Online Users



+A.User ID	DT...	CallSi...	City	State	C...	Freq(...	SQL	Lat	Lon	Comment	
KC9CUK-RPT	30...	KC9C...	Wonder L...	Illinois	U...	443.9...	DG-ID...	N:...	W:...	Welcome to...	
KC9JBW-RPT	11...	KC9J...	West Chic...	Illinois	U...	441.8...	DG-ID...	N:...	W:...	West Chicag...	
KC9KJY-ND	30...	KC9K...	Vernon Hi...	Illinois	U...	446.2...	DG-ID...	N:...	W:...		
KC9MEW-ND	30...	KC9...	Princeton	India...	U...	442.0...	DG-ID...				
KC9NSA-RPT	11...	KC9N...	Round La...	Illinois	U...	440.5...	DG-ID...	N:...	W:...		
KC9OZA-ND	30...	KC9...	Noble	Illinois	U...	442.3...	DG-ID...	N:...	W:...		
KC9UNZ-ND	30...	KC9U...	Fitchburg	Wisc...	U...	145.5...	TSQ:1...	N:...	W:...		
KC9WKE-RPT	11...	KC9...	Youngsto...	Ohio	U...	144.9...					
KD0CNC-RPT	30...	KD0C...	Warsaw	Miss...	U...	147.3...	DG-ID...	N:...	W:...	Benton Cou...	
KD0ENX-RPT	11...	KD0E...	Grand Isla...	Nebr...	U...	147.3...	TSQ:1...	N:...	W:...	NEBRASKA-...	



# Online Rooms



Room ID	DTMF ID	Act	Room name	City	State	+Country	Comment
DG4MEO-ROOM	44187	001	DG4MEO-Ro...	89312 Gu...	Bayern	Germany	Guenzburg S
DL2FF-ROOM	44240	000	DL2FF-ROOM	Dormagen	Nordrhein...	Germany	Welcome to
GREECE	27494	002	GREECE	Athens	Attiki	Greece	Analog UHF
GUATEMALA	21468	001	GUATEMALA	Guatemala	Guatemala	Guatemala	Bienvenidos
HH2MJF-ROOM	40912	000	Haiti WIRES-X	Petion-Ville	Ouest	Haiti	We're on Re
HG8RUA-ROOM	27593	000	HG8RUA-RO...	Szeged	Csongrad	Hungary	FTM-100
HG8RUB-ROOM	28663	000	HA8KWG	Bekescsaba	Bekes	Hungary	Békéscsabai
HUNGARY-WEST	28711	005	HUNGARY-W...	Gyor	Gyor-Mos...	Hungary	BrandMeiste
HUNGARY-C4FM	28779	000		Babolna	Komarom...	Hungary	
HG1VUA-ROOM	41144	001	Zala-Room	Zalaegers...	Zala	Hungary	
EI2SHD-ROOM	44087	000	Galway City G...	Galway	Galway	Ireland	
ITALY-DSTAR-LINK	27002	001	ITALY-DSTAR...	Scandrigli...	Lazio	Italy	WIRES-X ITA
ITALY	27003	030	WIRES-X ITA...	Cassolnovo	Lombardy	Italy	WIRES-X ITA
ITALY-I3	27006	000	ARI MONTE...	Cassola	Veneto	Italy	WIRES-X ITA
IZOFER-ROOM	27012	001	IZOFER R3 Ro	Roma	Lazio	Italy	Rinettore R3

# Users connected to Room

Room ----AMERICA-LINK (21080) member 98 nodes Refresh Close

AMERICANLK	WN8Z-RPT	W6BML-RPT	K7REW-ND	KC9NSA-RPT	W3QV-RPT	N4FKH-RICH	NOEHQ-ED	W9LY-RPT	KL4C-RPT
KE4QYM-ND	WB9RKD-RPT	KX2TX-ND	N5BYS-RPT	K3SL-VE2-R	K3MJW-RPT	WM4RB-RPT	AE7G-ND	N9GZK-DAVE	W4OH-RPT
WA7ABU-RPT	7N1BZK-ND	VK2RAY-RPT	VK2YFM-ND	VK4KWS-ND	VK5HDT-ND2	VK5MOB-ND	VK2PKD-ND	R2DOO-GW	J131BK-ND
MB6IDB-GW	LA4YKA-ND	AA4FB-GW	K3PDR	GLOBAL-CQ	W4JAX/R	KB2NGU-RPT	WA3PNY-ND	K4CIO/RP-U	W5DTF-ND
N1TOQ-ND	MB6ISR-GW	JH1HBK-ND	JA4ETA-HAT	KE4IDF-ND	W9PXZ/R	N2YN-ND	N4LMC-RPT	K4MJF-GW	WB5QNG-ND
KC9MEW-ND	W4CHF	KB7VVD-ND	W7NEO-RPT	KG4Y-RPT	W7ECA-RPT	KM4YGL-ND	KC0VJD-RPT	W5DCR-RPT	KC9UNZ-ND
W5WIN-RPT	KC7AX	KC3FBL-ND	K5TKR-RPT	N5YBG/RPT	TK-JH1HRV	JS6DEW-ND	WQ0A-STPTR	N9ES-ND	NB3Y-ND
W9SBA-EOC	9Z4JC-ND	W4ZXE-RICH	WQ0A-MKTO	K5MPH	AA1OV-GW	N1OB-ND	N3BJY-ND	NOKHO-ND	KN4JGH-ND
N5XTR-ND	W7JDX-ND	N4WXI-GW	WB4U-ND	WY7Y-ND	KJ4LY-ND	KC6KGE-RPT	N7OZO-ND	K8DF-ND	AC3CZ-ND
AB9RP-ND	N9LCR-ND	KM6RSD-ND	K7PTZ-ND	N3JHS-BILL	WV8DH-ND	K17TWA-ND	HB9FIY-ND		

# Testing the Port Forwarding

Port check

ILS	NG	-----
Node control	NG	-----
Node voice	NG	-----
Room control	NG	-----
Room voice	NG	-----
News control	NG	-----

Port check

ILS	OK	0.234000 sec.
Node control	OK	0.234000 sec.
Node voice	OK	0.234000 sec.
Room control	OK	0.234000 sec.
Room voice	OK	0.234000 sec.
News control	OK	0.234000 sec.

- Using the tools you can test to see if your ports are open correctly.
- Any connection behind a router for which you do not have control will probably not work. Particularly if you cannot forward the ports.
- My cell phone give me an address inside a local network segment, 192.168.x.x and would need port forwarding.

# Network Requirements

- The WIRES-X software requires certain UDP ports to be forwarded to the machine running the software.
- UDP ports (46100, 46110, 46112, 46114, 46120, 46122)
- TCP port 46190
- My Netgear forwarding below:

## Port Forwarding / Port Triggering

Please select the service type.

- ☒ Port Forwarding  
☐ Port Triggering

Service Name

FTP

Server IP Address

192 . 168 . 1 .  [+ Add](#)

	#	Service Name	External Start Port	Internal Start Port	Internal IP address
<input type="radio"/>	1	echolink	5198-5199	5198-5199	192.168.1.106
<input type="radio"/>	2	WIRES-X	46100-46190	46100-46190	192.168.1.106
<input type="radio"/>	3	OS GRID	80,8002,9000-9009	80,8002,9000-9009	192.168.1.133

[Edit Service](#)

[Delete Service](#)

[+ Add Custom Service](#)

[Arrange by Internal IP](#)



Connecting to and Using a node



# Connecting



- Transmit to the node as you would any radio
- FM – Frequency, PL if it is set up as an analog station
- C4FM – if it is a digital station
- Same as you would any repeater
- Currently I am running mine simplex at 145.575 with TSQL PL of 123.0
- Check with Facebook page:  
<https://www.facebook.com/MadisonAreaRepeaterAssociation> for additional Information. I may do some experimentation with digital mode and I'll put a note there if I change.
- I have it set up so that if it is not connected it will automatically reestablish the connection with America-Link.



# DTMF Commands

- #99999 or \* - Disconnect
- #Node Number
  - #21080 America-Link
  - #21667 WI-Link
  - #20510 Japan (largest room)
  - #40611 KC9UNZ-Room
- #66666 – Status Report of Node
- [https://www.yaesu.com/jp/en/wires-x/id/active\\_room.php](https://www.yaesu.com/jp/en/wires-x/id/active_room.php)

# Helpful Info



- IDs of active rooms:

[https://www.yaesu.com/jp/en/wires-x/id/active\\_room.php](https://www.yaesu.com/jp/en/wires-x/id/active_room.php)

IDs of Nodes: [https://www.yaesu.com/jp/en/wires-x/id/id\\_usa.php](https://www.yaesu.com/jp/en/wires-x/id/id_usa.php)

# Demo



- Listen in on Stream
- See software in action
- Demonstration DTMF control codes
- I will place a PDF of this presentation up on [www.w9hsy.org](http://www.w9hsy.org) look under News
- Questions

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