

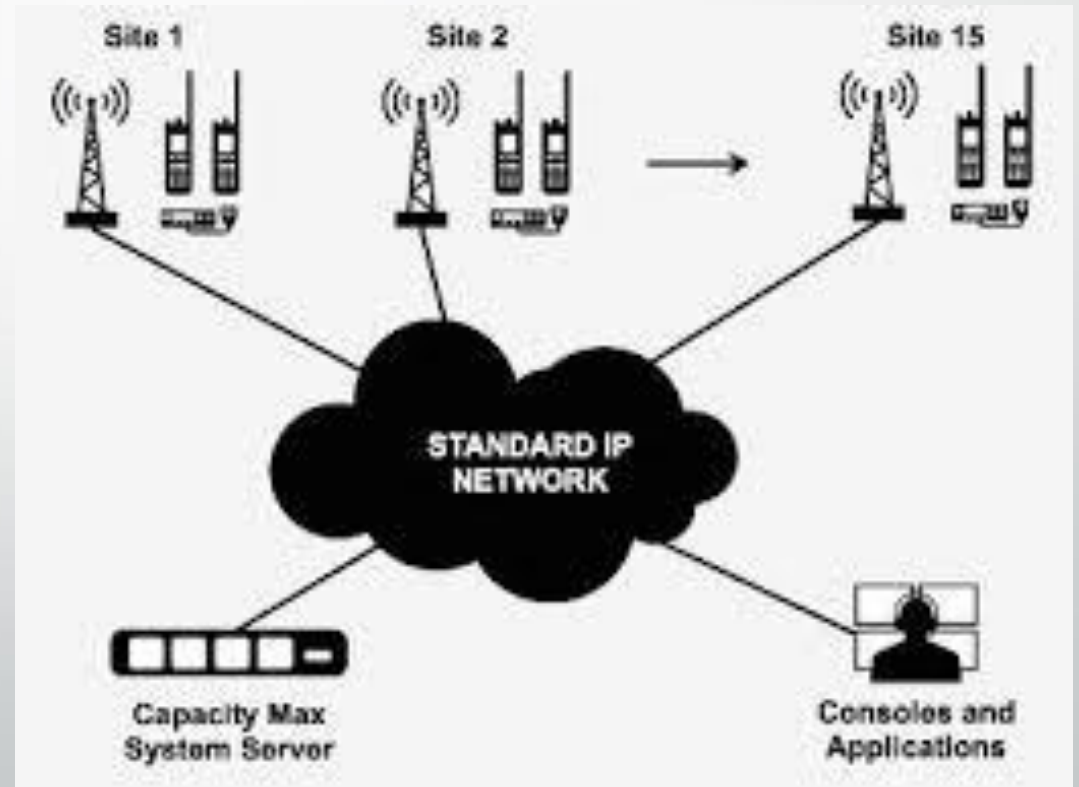


C4FM, YSF, and Wires-X

Paul KN4BAR

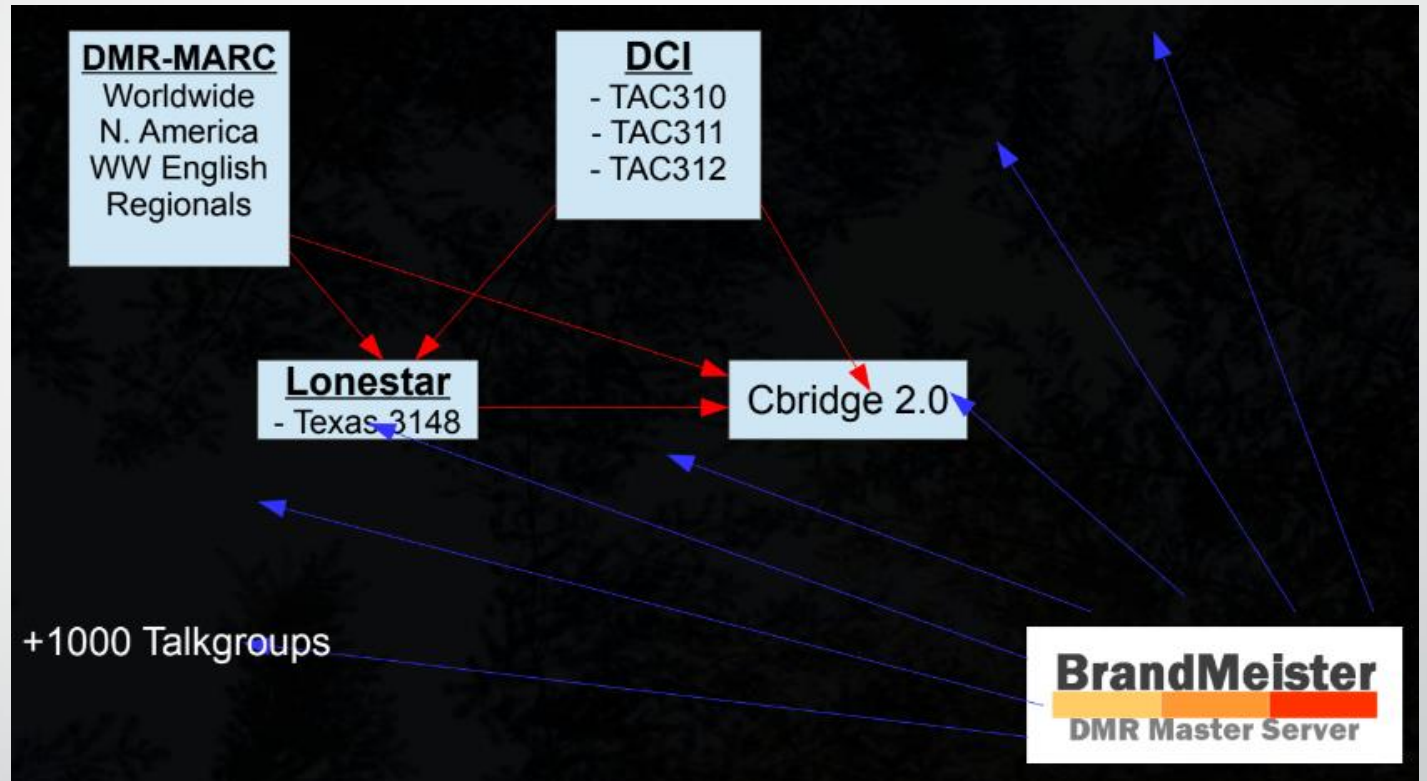
Tamiami ARC – January 2024

Digital V/UHF Radio



DMR Mode and Networks

- (TDMA - Time Division Multiple Access)
- DMR-MARC
 - First in USA
 - Uses C-Bridges
- Chicagoland
- Brandmeister
 - Master Server
 - Allows Hotspots
 - Some Talkgroups can do cross-mode to D-Star, NXDN, and YSF
 - (**Brandmeister TG 31656 = Wires-X America Link room**)
 - (**Brandmeister TG 313136 = Wires-X KCWide room**)



What's in a Name?



View QSL de K8JTK (ID:K8JTK-ND)



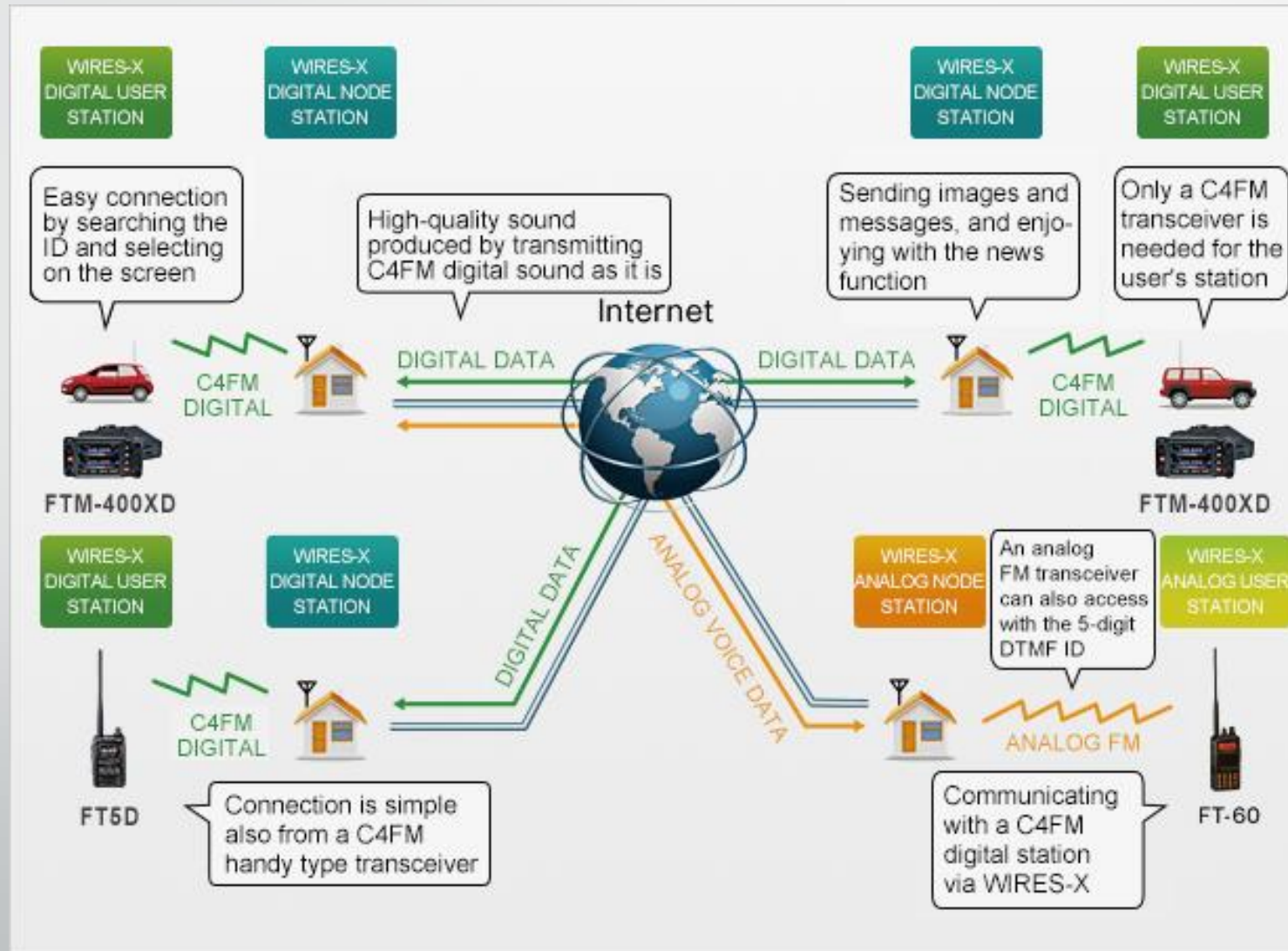
C4FM is a Digital Communications Mode

- Fusion Digital is just another mode, like FM
- C4FM stands for Continuous 4-level Frequency Modulation
- Fusion transmits a bandwidth of 12.5 KHz – DN uses 6.25 KHz to send your voice and the other 6.25 to send data (GPS location information) – VW uses all 12.5 KHz to send your voice leaving no room for any data (No GPS location information sent)
 - DN means Digital Narrow
 - VW means Voice Wide
 - AMS means Automatic Mode Selection (includes FM)

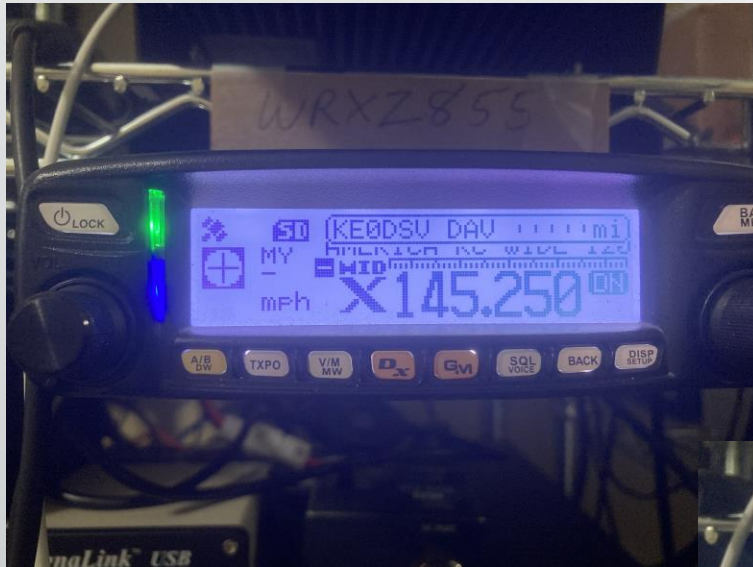
What is Special About C4FM?

- **GM** - Digital Group Monitor automatically checks whether users within a communication group are in or out of range, and displays information such as distance and orientation on the screen of the client radio for up to 24 Stations.
- **Position Data** is transmitted together with voice signals so the distance and direction to the other stations can be displayed in real-time while communicating with them. (**NOT APRS**)
- **Text/Voice Messaging** one-to-one and group/room news bulletins
- **Pictures** with optional MH-85A11U Speaker Microphone with Camera, an operator can quickly and easily transmit images to other C4FM Users.
- **NO CODE PLUG REQUIRED.** Turn on, tune frequency, and select room.

The Wires-X Universe



Simple Digital Station Operation



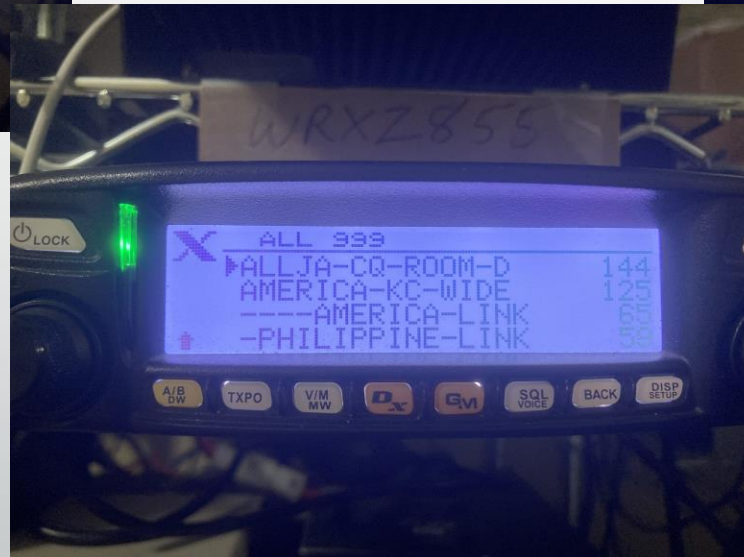
AA4FB Wires-X Repeater
145.25 (+)

W4IE Wires-X Repeater
444.925 (+)

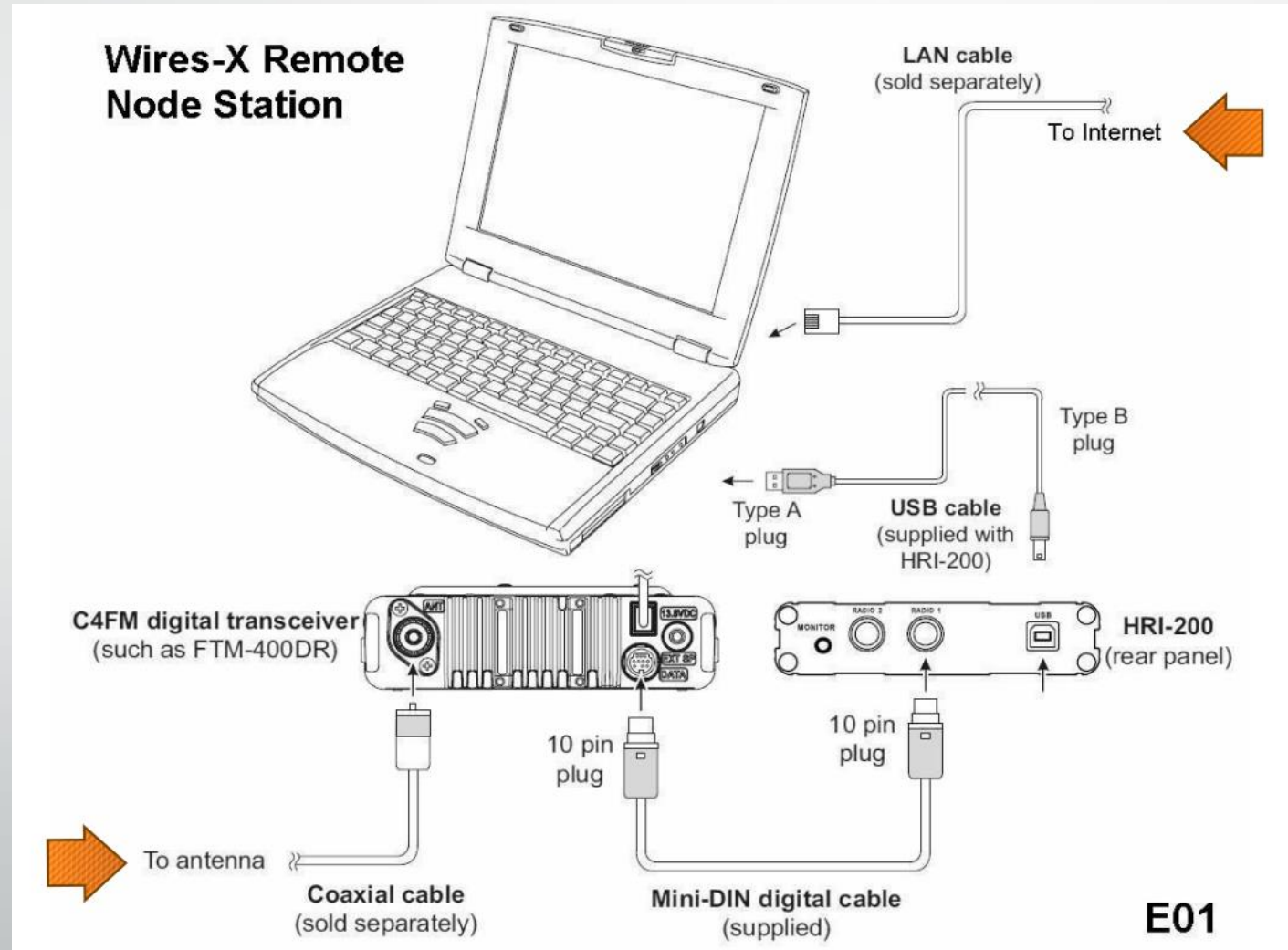
DN
VW
FM
AMS



W4AC Wires-X Repeater
147.120 (+) 136.5 Hz

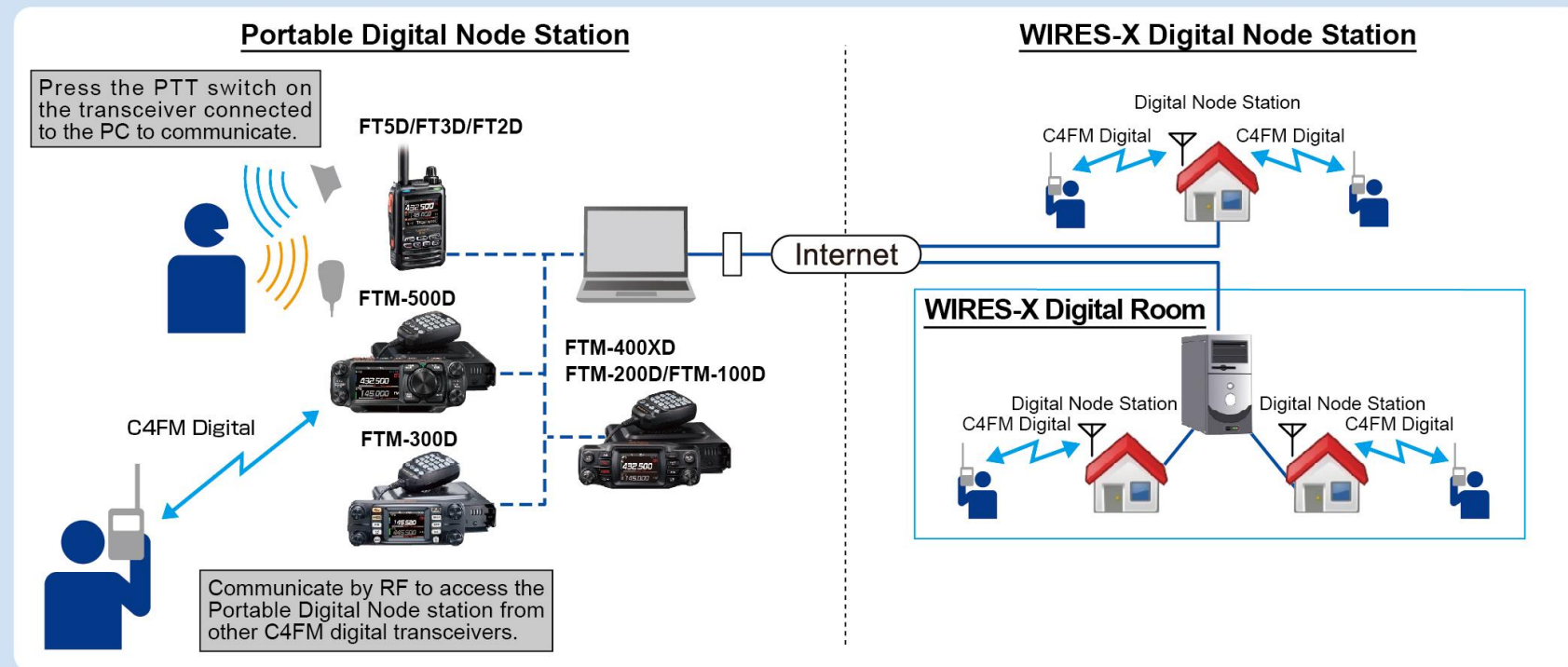


Wires-X Node Station/Gateway



Yaesu Radio as PDN or Access Node

Access Point (Portable Digital Node Mode) Illustration



Wires-X PDN Direct Mode

Room AMERICA-KC-WIDE(28054) member 132 nodes Refresh Close

76506 **GORDH-BRI** Send Node : 76506 / Mobile : GORDH-BRI

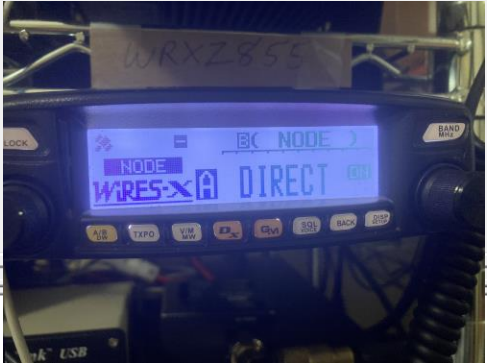
WM4RB-RPT	TG9AOR-ND	WOJD-HV1L	K9GOX-GW	KOGBW-SHMN	JJ2YKX-ND2	JA7UDE-ND	FK-JA6HET	2M0JVR-GW	KCOKW-OP
WB0WXS-ND	KA0JTI-RPT	K3PDR	KK4TXB-ND1	NOEG-SPRNG	N1TOQ-ND	KASHIWA-ND	JJ2YOU-ND	K3CUJ-RPT	WA0SPF-D2X
KG4Y-RPT	JJ6VAR-ND	JA1ZAF-PDN	NB3Y-ND	KE0HMK-LOJ	W9RES-RPT	KU0S/GW	W4ADZ-BOB	KF7FY-ND	KG5UFR-ND
K9EQ-SDG	KA9WDX-RPT	KCOKW-WLNT	KN4BAR-ND	W3YXZ-ND3	K0SEK-RPT	VK5ST-ND	SCH-VHF	KA0FCT-ND	KBONBE-ND
VA7REF-RPT	51405	51689	51814	52183	52207	52322	52391	52432	52649
54011	54513	55369	55636	55763	56430	58544	58766	58853	58974
58997	70235	70269	71044	71235	71421	71507	71557	72182	72395
72408	72589	72630	72720	73487	73614	73754	73955	73986	74075
74633	74644	74733	74898	74913	75017	75045	75218	75883	77741
78445	78936	79769	90163	90444	90527	90549	90674	90675	90971
91382	91519	91952	91958	91977	92194	92257	92262	92362	92479
92501	92506	92579	92851	93070	93360	93362	93388	93389	93513
93556	93566	93630	93718	93750	93856	93892	93981	94077	96375

NET DIGITAL **ON-AIR** LOCAL FTM-1000 RADIO 1

AMERICA-KC-WIDE **2 : 2 9**

User = GORDH-BRI > ***** (DN:FTM-400D)
 Uplink = GORDH (76506)
 Downlink = KN4BAR (36091)
 Room = (28054)
 Position = N:54 04' 00" / W:002 50' 34"
 Distance: 6945km (4316mile) Direction: NE

2024/01/01 10:57:58 Transceiver Mode:Digital/Digital
 2024/01/01 11:04:05 *-*- Call Start No.28054 *-*-
 2024/01/01 11:04:06 Room Member 130 Nodes.
 2024/01/01 11:04:06 Connected to AMERICA-KC-WIDE (28054).



SEND CLR

Room ID	DTMF...	-Act	Room name	City	State	Cou...	Comment
AMERICA-KC-WIDE	28054	131	America's "KC-WIDE"	KANSAS CITY	Missouri	USA	"All Welcome to the Center of...
ALLJA-CQ-ROOM-D	20610	131	ALL JA CQ ROOM D	Komoro-city	Nagano	Japan	ALL JA CQ ROOM Digital - htt...
----AMERICA-LINK	21080	073	America Link Network	Beaumont	Texas	USA	Original America Link Network
-PHILIPPINE-LINK	43534	058	PHILIPPINES ROOM D	Rancho Palos Ver...	California	USA	PHILIPPINE-LINK [DIGITAL C4...
ALLJA-CQ-ROOM	20510	048	ALL JA CQ ROOM A	Komoro-city	Nagano	Japan	ALL JA CQ ROOM FM & Digit...
CQ-UK	27793	035	CQ-UK	ABERDEEN	Aberdeenshire	UK	Busy World Wide Room Over 3...
ITALY	27003	035	WIRES-X ITALIA	Cassolnovo	Lombardy	Italy	WIRES-X ITALIA - http://www...
TFX&S-NFXIIS	71636	029	TFX&S-NFXIIS	Austin	Texas	USA	

Ready Ver-1.550 ONLINE

Wires-X PDN Access Gateway

WIREX-X

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

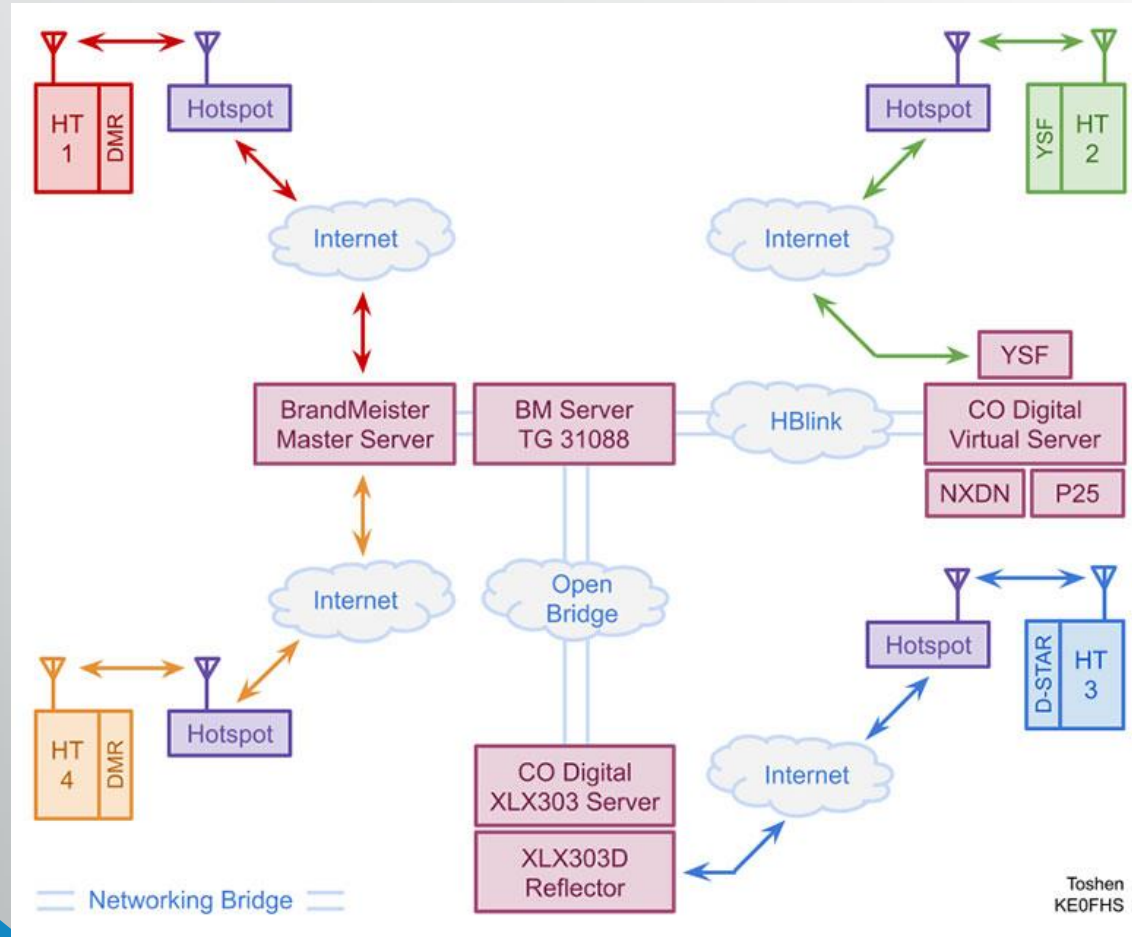
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<div style="display: flex; justify-content: space-between;"> WO1VES-GW KN4BAR-ND N1EUN-GW N1CML-RPT KX1B-GW1 WOLFPACK N1ATV-HRI WSIEC-ND NIEFG-ND KC1PEQ-ND3 </div> <div style="display: flex; justify-content: space-between;"> N1CML-PEPP KC1QKU-ND WIZOT-ND </div>																																																																																																																																																																																																																																		
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<div style="display: flex; justify-content: space-between;"> NET DIGITAL ON-AIR LOCAL FTM-100D RADIO 1 </div> <div style="display: flex; justify-content: center; margin-top: 5px;"> WOLF-DEN --- </div> <div style="margin-top: 10px;"> <p>User = WB3JUV > ***** (DN:FT-991)</p> <p>Uplink = KC0KW (72395)</p> <p>Downlink = KN4BAR (36091)</p> <p>Room = (28054)</p> </div> <div style="margin-top: 10px;"> <p>2024/01/01 12:08:38 Transceiver TX Stop. Disconnect.</p> <p>2024/01/01 12:08:38 ON Air Lock ON</p> <p>2024/01/01 12:09:18 *-*-* Call Start No.28054 *-*-*</p> <p>2024/01/01 12:09:18 Connected to WIREX-X WOLF-DEN(28941).</p> </div> <div style="margin-top: 10px;"> </div> <div style="display: flex; justify-content: flex-end; margin-top: 10px;"> SEND CLR </div>																																																																																																																																																																																																																																		

Ready

Ver-1.550 ONLINE



What is a Hot Spot?



- A personal, low-power hotspot is a combination of hardware, firmware, and software that enables an amateur radio enthusiast with internet connectivity to link directly to digital voice (DV) systems around the world. Hotspots can link to DMR, P25, and NXDN talkgroups; D-STAR reflectors; YSF rooms
- Basically, hotspots are your own personal digital voice repeater and gateway.

• **Wires-X**

Hot Spots Can Do Cross-Mode



MMDVM Duplex Hotspot Module Dual Hat with 0.96 OLED Display V1.47 Support P25 DMR YSF NXDN DMR Slot 1 + Slot 2 for Raspberry pi

Pi-Star is complex services and configuration software for Digital Voice on Amateur radio that runs on Raspberry pi

Supports cross modes* (example: talk with your D-STAR[®] transceiver on DMR, and with your DMR transceiver on D-STAR[®] networks). Or NXDN or YSF, etc.

Repeater Node and Room Etiquette

- Repeater or Nodes on Wires-X are a SHARED RESOURCE
- Know Trustee's policy for room changes
- PTT and "1-2" before talking. Count "1-2" Between Exchanges"
- Announce When Entering a Room ("testing", "room change", "demo", etc.)
- Disconnect from a room when you are done
- Return room to original connection if know
- Most repeaters/nodes will time out a room connection if not being used and return room connection to Trustee selected default room

Resources



The screenshot shows the Yaesu Wires-X website. At the top left is the Yaesu logo with the tagline "The radio". To its right is the "WIRES-X" logo. Below the logo is a navigation menu with the following items: "What is WIRES-X?", "User page", "WIRES-X ID list", and "Opening a node". Below the menu is a "Member login" section with fields for "User ID:" and "Password:", and a "Login" button. The main content area features a blue banner with a world map background. The banner text reads: "Meet the Next Generation of WIRES The Leader in VoIP Communication for Amateur Radio". Below this, it says: "WIRES-II, the Amateur Radio internet communications network takes another leap forward with WIRES-X and support for the new C4FM Digital radio communications mode. Enjoy many new and exciting features, including superior audio quality, intuitive user IDs, and advanced operating convenience, thanks to digital technology. Have fun and do more, with greater ease! WIRES-X is the network linking system Amateur Radio Operators have been waiting for." There are small images of people at the bottom of the banner.

- You need a Yaesu radio/device to get a User account/ ID
- This becomes your node ID on Wires-X
- With an HRI-200 you get a room ID as well on Wires-X
- Go PDN direct or as access node for your HT/mobile
- 3 area repeaters
- Hotspot

<https://www.yaesu.com/jp/en/wires-x/>