

A decorative graphic on the left side of the slide, consisting of a network of orange lines and circles of varying sizes, resembling a circuit board or a digital network topology. The lines are vertical and horizontal, with some diagonal connections, and the circles are placed at various points along these lines.

INTRODUCTION TO DMR

NETWORKS, REPEATERS, TALK GROUPS, AND CODEPLUGS

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W9LW.FARLOWCONSULTING.COM

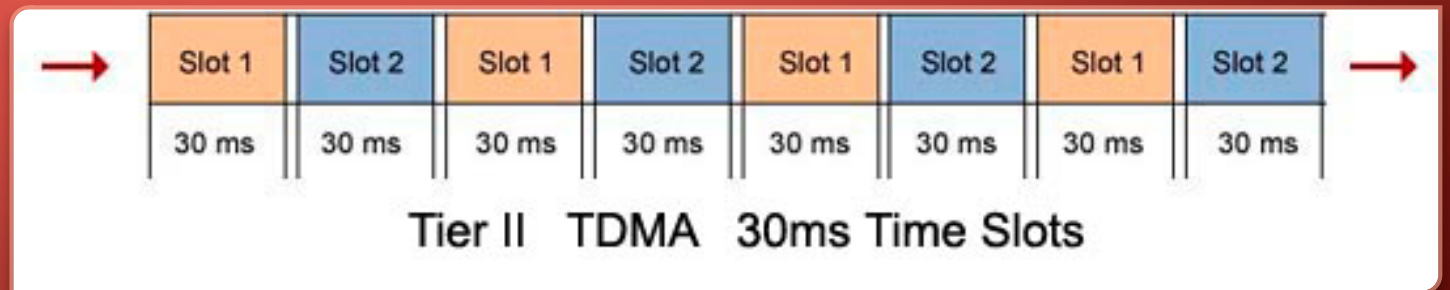


INTRODUCTION TO DMR

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DIGITAL MOBILE RADIO

- Digital audio (as are D-STAR and Yaesu Fusion)
- Commercial roots
- Internet connections
- Radio ID numbers issued via www.radioid.net
- Time-division multiple access: Two 30ms time slots per radio frequency



TALK GROUPS

- Virtual channels
- Identified by numbers (3118 = Indiana Statewide)
- Dedicated to geographic areas or purposes (Military Vets, 98008)
- Static vs. dynamic
- “Private” vs. Group

NETWORKS

- Multiple networks available, not fully interconnected
 - Brandmeister
 - c-Bridge (Crossroads, Chicagoland, DMR-MARC)
 - DMR Plus (Tri-State)
 - TGIF (No Indiana Repeaters, few, if any, connections to other networks)

C-BRIDGE NETWORKS (CROSSROADS, CHICAGOLAND)



- Networking device
- Repeater owners choose talk groups to carry
- Repeater owners specify time slots for each talk group
- Mostly use talk groups from the DMR-MARC list
- “Parrot” is a **group** call to 9998
- Crossroads website: www.idhr.info
- Chicagoland website: chicagoland-cc.org/

BRANDMEISTER



- **Any** talk group on Brandmeister list (1,500 choices!)
- Any Brandmeister talk group on either time slot
- Some talk groups bridge to other networks.
 - Indiana statewide (3118) linked with Crossroads (3118) and Tri-State (Ref. 4607)
 - Tactical talk groups (e.g., 310, 311) linked with Crossroads and Tri-State (same numbers)
 - “Crossroads” talk group (31189) linked with Crossroads (8710)
 - “Midwest” 3169 linked with Crossroads (3169) and Tri-State (Ref. 4640)
 - “North America” (93) and “Worldwide” (91) **not** cross linked.
- “Parrot” is a **private** call to 9990 (either time slot)

INDIANA DMR NETS

- Crossroads Net, Mondays, 8 p.m. ET, Crossroads 8710 or Brandmeister 31189.
- Indiana DMR Net, Tuesdays, 8 p.m. ET, 3118 or DMR Plus reflector 4607.
- Allen County ARES Net, Tuesdays, ~9:15 p.m. ET, Brandmeister 31001.
- Grant County Amateur Radio Club Net, Sundays, 8:30 p.m. ET, Brandmeister 31181.

PREPARING TO PROGRAM A DMR RADIO

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OBTAIN A DMR ID NUMBER

- Every user must have DMR ID number
 - Go to www.radioid.net
 - Sign up for account
 - Follow instructions to get DMR ID.
 - Most users need only one ID, even with multiple radios.

OBTAIN REPEATER INFO

- Frequency
- “Color” code
- Network
- Static & dynamic
talk groups per time slot



DMR Base Stations & Repeaters | DMR Tier 2 compatible repeaters | QT/DQT/Colour Code signalling

INDIANA DMR REPEATER MATRIX

- Popular online references (RepeaterBook, RFinder) unreliable
- Indiana Digital Ham Radio website: idhr.info



Indiana Digital Ham Radio

It's all 1's and 0's....

Menu

- About Us
- DMR**

Indiana DMR Repeater List (All Networks)

Important information

Static talk groups are always on. Dynamic talk groups are activated on demand when a local user transmits on that talk group. Dynamic talk groups automatically deactivate after a certain time without local activity (typically 15 minutes).

Repeaters on the Brandmeister network support each of the more than 1,500 Brandmeister talk groups on either time slot. The Brandmeister repeater entries below therefore list individually only the talk groups that are static on those repeaters. Users should avoid dynamically activating a static talk group on the opposite time slot. For example, if Indiana statewide (3118) is static on time slot one, users should not activate that talk group on time slot 2. On all Brandmeister

INDIANA DMR REPEATER LIST

Fort Wayne K9MMQ

Status: On Air

Frequency: 443.10000 +5 MHz

Color code: 1

Network: Crossroads

Mode: DMR only

DMR ID: 311803

Talk Group Name (Number)	Time Slot 1	Time Slot 2
US Nationwide (1776)	Static	
Midwest Region (3169)	Static	
Local 1 (3181)	Static	
North America (3)	Dynamic	
Michigan (3126)	Dynamic	
Ohio (3139)	Dynamic	
Audio Parrot (9998)	Dynamic	
EchoLink-IRLP (63951)	Dynamic	
Indiana (3118)		Static
Local 2 (3166)		Static
Crossroads (8710)		Static
Worldwide (1)		Dynamic
WW English (13)		Dynamic

INDIANA DMR REPEATER LIST

Fort Wayne N9MTF

Status: On Air

Frequency: 442.63750 +5 MHz

Color code: 1

Network: Brandmeister

Mode: DMR only

DMR ID: 311841

Talk Group Name (Number)	Time Slot 1	Time Slot 2
Local (2)	Static	Static
IN WX Ops (31183)	Static	
R5AUXCOMM (31673)	Static	
Indiana (3118)		Static
All other Brandmeister groups	Dynamic	Dynamic

CONFIGURING A DMR RADIO

WRITING A WORKING “CODEPLUG”

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BACKGROUND AND TIPS

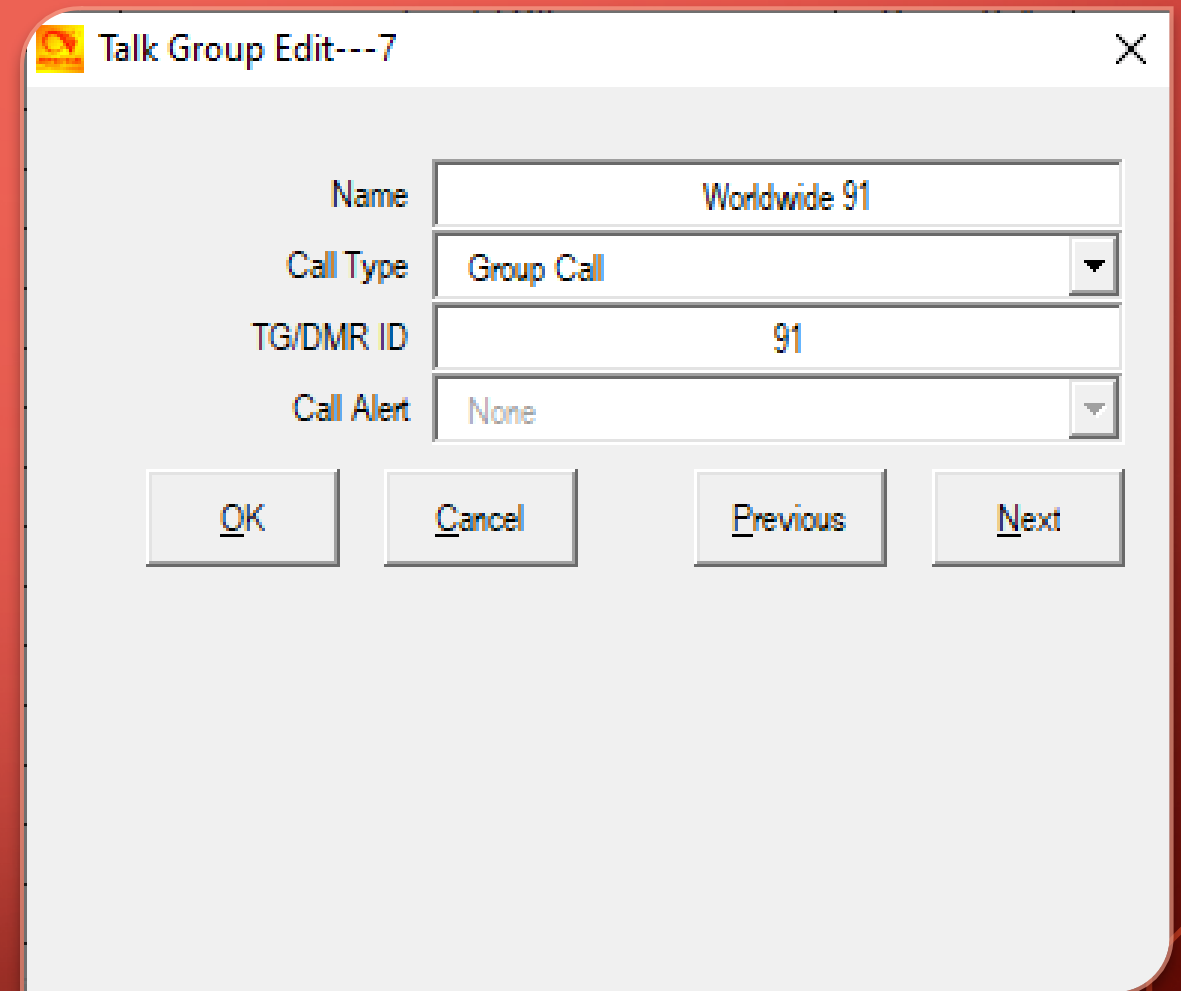
- Use customer programming software (CPS) created for that radio.
(Can't use CHIRP)
- Match CPS and firmware version
- Resulting file is called “codeplug”
- “Save as” to new name before any change
E.g., W9LW-ATD878UV-2023-11-19-1230.rdt

BUILD YOUR CODEPLUG IN ORDER

1. Personal ID number
2. Talk groups
3. Channels (one per talk group / frequency combination)
4. Zones

CODEPLUG WRITING PROCESS

1. Enter personal DMR ID
2. Enter talk group names & numbers
Tip: Include talk group number in name field.



Talk Group Edit---7

Name	Worldwide 91
Call Type	Group Call
TG/DMR ID	91
Call Alert	None

OK Cancel Previous Next

CODEPLUG WRITING PROCESS

3. Create one channel per talk group per repeater.

Tip: Identify the repeater & talk group in the channel name.

The screenshot shows the 'Channel Information Edit' window for a channel named 'FW-E WW'. The window is divided into several sections for configuring channel parameters.

Channel Name: FW-E WW

Frequency Settings:

- Receive Frequency: 442.63750
- Transmit Frequency: 447.63750
- Correct Frequency[Hz]: 0

Channel Type and Power:

- Channel Type: D-Digital
- Transmit Power: Turbo
- Band Width: 12.5K
- TX Permit: Different Color Code
- Scan List: None

Advanced Settings:

- Exclude channel from roaming: off
- DMR MODE: Repeater
- Analog APRS Report Freq: 1

Digital Settings:

- Contact: Worldwide 91
- Radio ID: W9LW Jay
- Color Code: 1
- Slot: Slot1
- Receive Group List: None
- Digital Encryption: Off
- AES Digital Encryption: Off
- Multiple Key: Off
- Random Key: Off
- SMS Forbid: Off

Checkboxes:

- ☐ PTT Prohibit
- ☐ Talk Around(Simplex)
- ☐ APRS RX
- ☐ Work Alone
- ☐ DataACK Disable
- ☐ Auto Scan
- ☐ Send Talker Alias
- ☐ Call Confirmation
- ☐ Ranging
- ☐ Slot Suit
- ☐ SMS Confirmation

CODEPLUG WRITING PROCESS

4. Create at least one zone
(Tip: One zone for each DMR repeater, identify repeater in zone name)
5. Save codeplug to computer
6. Write codeplug to radio

The screenshot shows the 'Zone Edit---2' window with the following details:

- Zone Name:** Ft Wayne East D
- A Channel:** FW-E IN
- B Channel:** FW-E IN
- Zone Hide:** ☐
- Available Channel List:**

1	145.510 SX DMR
2	145.790 SX DMR
3	146.430 SX
4	146.460 SX
5	146.490 SX
6	146.520 SX
7	146.550 SX
8	146.580 SX
9	147.420 SX
10	147.450 SX
11	147.480 SX
12	147.510 SX
13	147.540 SX
14	147.570 SX
15	151.820 MURS1
16	151.880 MURS2
17	151.940 MURS3
18	154.570 MURS4
19	154.600 MURS5
20	2 Rivers 03
21	433.450 SX DMR
22	441.000 SX DMR
- Zone Channel Member List:**

388	FW-E Local1
389	FW-E Local2
393	FW-E NIARA
383	FW-E IN
384	FW-E IN Lnk
385	FW-E IN TAC
386	FW-E IN WX
397	FW-E SIN
379	FW-E Crsds
394	FW-E OH
403	FW-E TGS
390	FW-E MW
396	FW-E R5AuxCom
392	FW-E Nation
391	FW-E NA
404	FW-E WW
405	FW-E WW Eng
398	FW-E TAC310
399	FW-E TAC311
400	FW-E TAC312
401	FW-E TAC313
402	FW-F TAC314
- Order By:** ID, Name, Up, Down
- Buttons:** OK, Cancel, Previous, Next

OPERATING DMR

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TEST YOUR CODEPLUG

- Select desired zone.
- Select desired channel.
 - Start with parrot.
 - Make a test transmission. Listen for echo.
- Pause between PTT and speaking.
- If channel's TG is *static* on repeater, monitor for activity for a minute before transmitting.
- If channel's TG is *dynamic*, make a very brief transmission, then monitor for activity.

DMR OPERATING BEST PRACTICES

- Before transmitting, listen to the **time slot**, not just a single talk group
- Use the talk group carried by fewest number of repeaters
- Avoid rag chewing on wide-area talk groups. QSY to a TAC group
- Brandmeister: Don't dynamically activate a TG on time slot 2 if it's static on time slot 1

W9LW CODEPLUG-WRITING GUIDES

- w9lw.farlowconsulting.com
 - Radioditty RD-5R / Baofeng DM-5R
 - TYT MD-380
 - Anytone AT-D878UV

SOME TALK GROUP SUGGESTIONS

- Brandmeister

- Local 2 (TS 1 and 2)
- Indiana Statewide 3118
- Crossroads 31189
- Indiana Link 31181
- Midwest 3169
- U.S. 3100
- North America 93
- Worldwide 91

- Crossroads

- Local-1 3181 (TS 1)
- Local-2 3166 (TS 2)
- Indiana Statewide 3118
- Crossroads 8710
- Midwest 3169
- North America 3
- Worldwide 1

The background is a solid dark red color. In the corners, there are decorative elements consisting of thin, light red lines that resemble circuit traces or a stylized map. These lines form various shapes, including circles and straight segments, creating a modern, technical aesthetic.

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