

OBRA Education Series

<http://www.obraobx.com>

Digital Mobile Radio (DMR) Net Discussion

What Will Be Covered

- Why Digital is Important
- Basics of DMR
- DMR Radios
- Support

Why is Digital Important

- Over time Analog repeaters will increase in cost and parts will become scarce.
- Many services have gone Digital:
 - Cell Phones, TV, Police/Fire/EMS
 - There are a number of Digital Amateur Services
 - D-Star, YSF, P25, DMR
 - DMR is emerging as main Digital service for Amateur and Commercial use.
- Analog repeaters may eventually go away.
- Digital has advantages over Analog:
 - Noise free communication
 - Uses less bandwidth
 - Can support features Analog can't

Basics of DMR

- DMR uses the same VHF/UHF frequencies as Analog.
- Digital converts varying voltage audio to a varying number stream.
- Once you have a number stream you can add ID, Location/Destination, Error Correction, etc.
- DMR introduces the concepts of:
 - Dual Time Slots
 - Talk Groups
 - Internet Connectivity
 - Hot Spots

Dual Time Slots/Talk Groups

- A DMR radio and a DMR repeater break the digital stream into 30ms time slots.
- This allows two conversations to take place over a repeater channel at the same time.
- Along with the digitized voice a Talk Group ID is sent.
- This allows only radios tuned to that talk group to communicate with each other.

Internet Connectivity/Hot Spots

- DMR Repeaters are connected to the Internet.
- This allows DMR repeaters around the world to communicate with each other and thus DMR radios to communicate locally and world wide.
- When a user is out of range of a DMR repeater a device called a Hot Spot can connect a DMR radio to the Internet providing the same local and world wide access.

DMR RADIOS

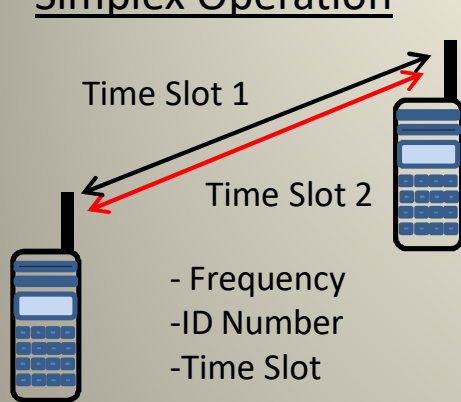
- Hand Held VHF/UHF Analog and Digital
 - BaoFeng DM-1801 (~\$70)
 - Radioddity GD-77 (~\$80)
 - AnyTone AT-D878 (~\$230)
- Mobile VHF/UHF Analog and Digital
 - TYT MD-9600 (~\$280)
 - AnyTone AT-D578 (~\$430)
 - Yaesu FTM-400XDR (~\$470)

SUPPORT

- The Internet is a great source for DMR Info.
 - www.google.com
 - www.youtube.com
- OBRA Members are very willing to help.
- OBRS web site has programs for popular DMR radios. (Called Code Plugs).

DMR Basic Structure

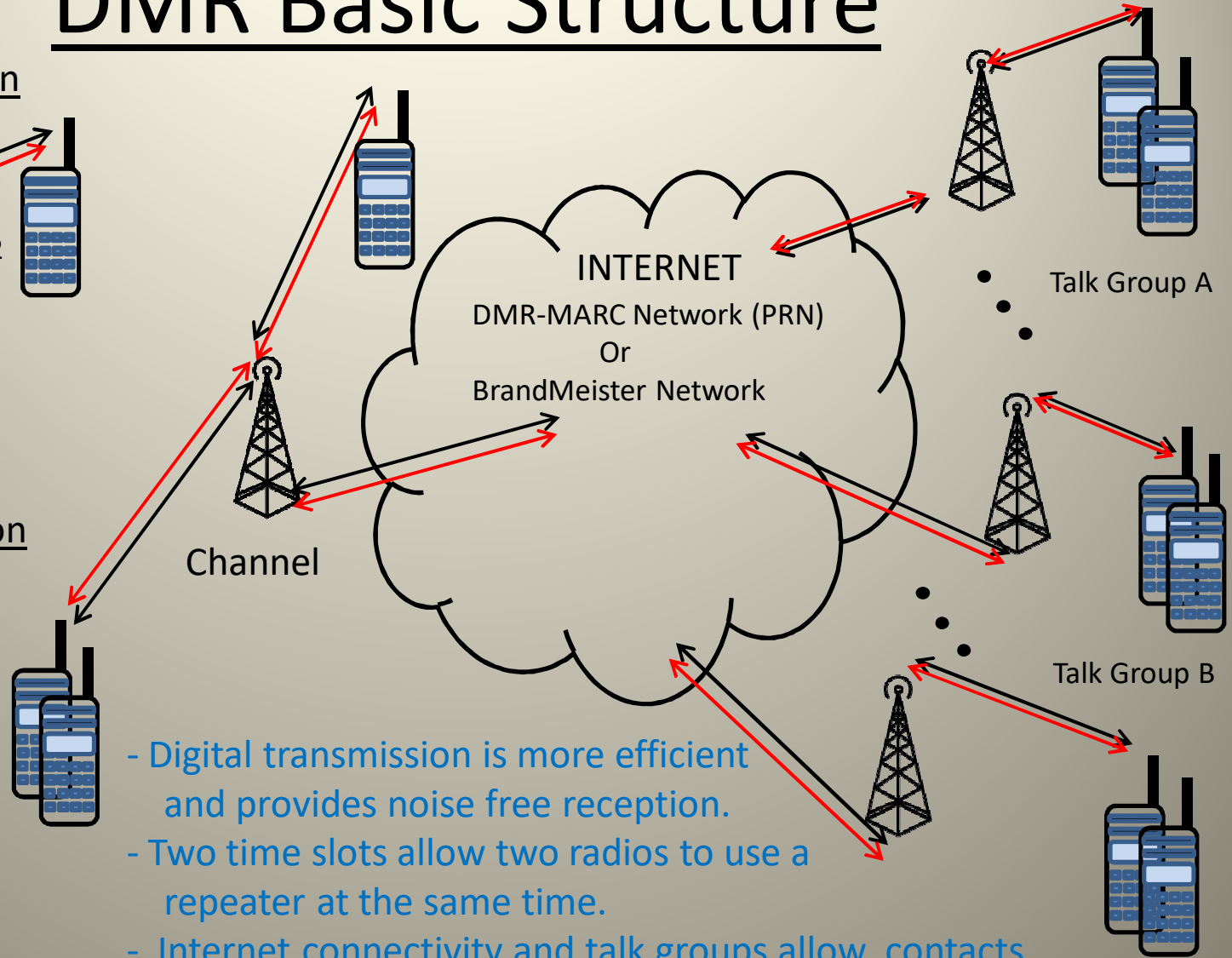
Simplex Operation



Repeater Operation

- Channel
- Frequency/Offset
 - Color Code
 - Talk Group
 - Time Slot

- Zone
- Group of Channels

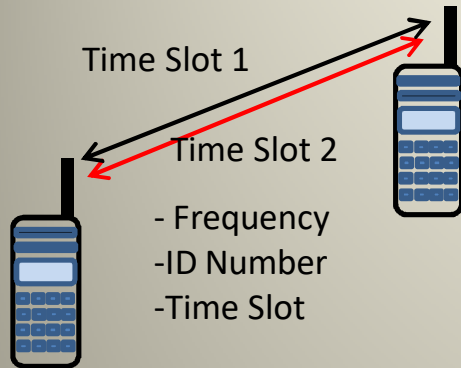


- Digital transmission is more efficient and provides noise free reception.
- Two time slots allow two radios to use a repeater at the same time.
- Internet connectivity and talk groups allow contacts to be directed to specific groups of participants.

DMR Basic Structure

With Hot Spot

Simplex Operation



Repeater Operation

- Channel
- Frequency/Offset
 - Color Code
 - Talk Group
 - Time Slot

- Zone
- Group of Channels

