

An Introduction

to

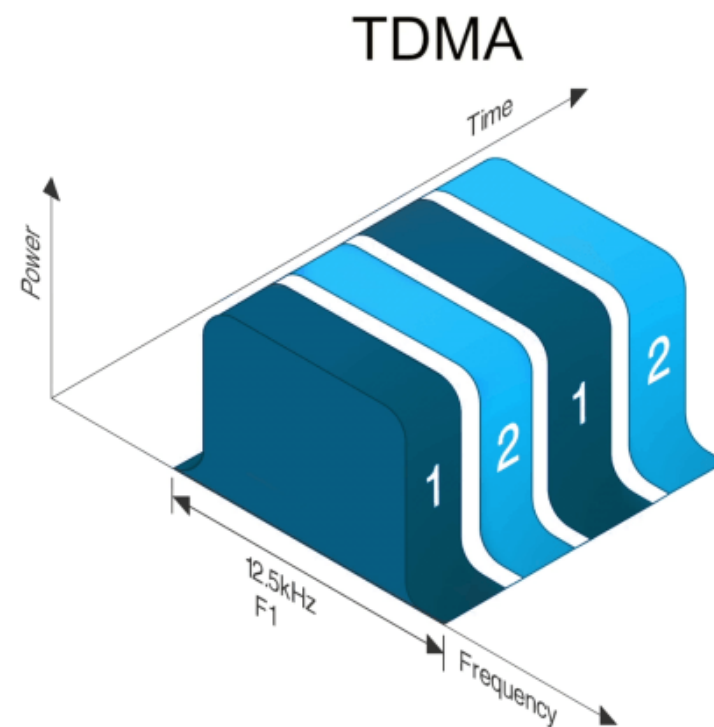
Digital Mobile Radio

by

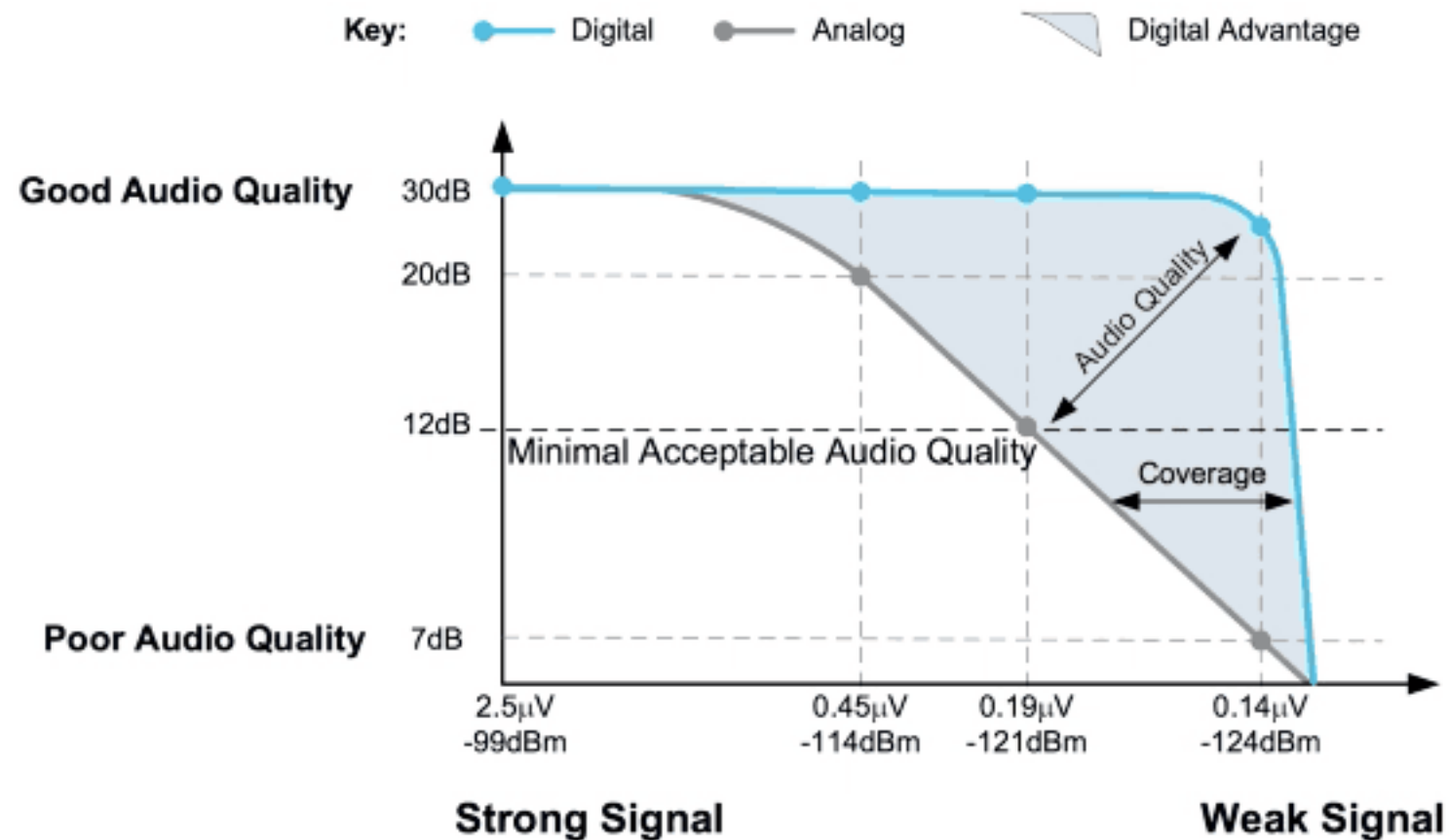
The PVARC DMR Team

What is DMR ?

- **Digital Voice**
- **2 Channels on One Repeater**



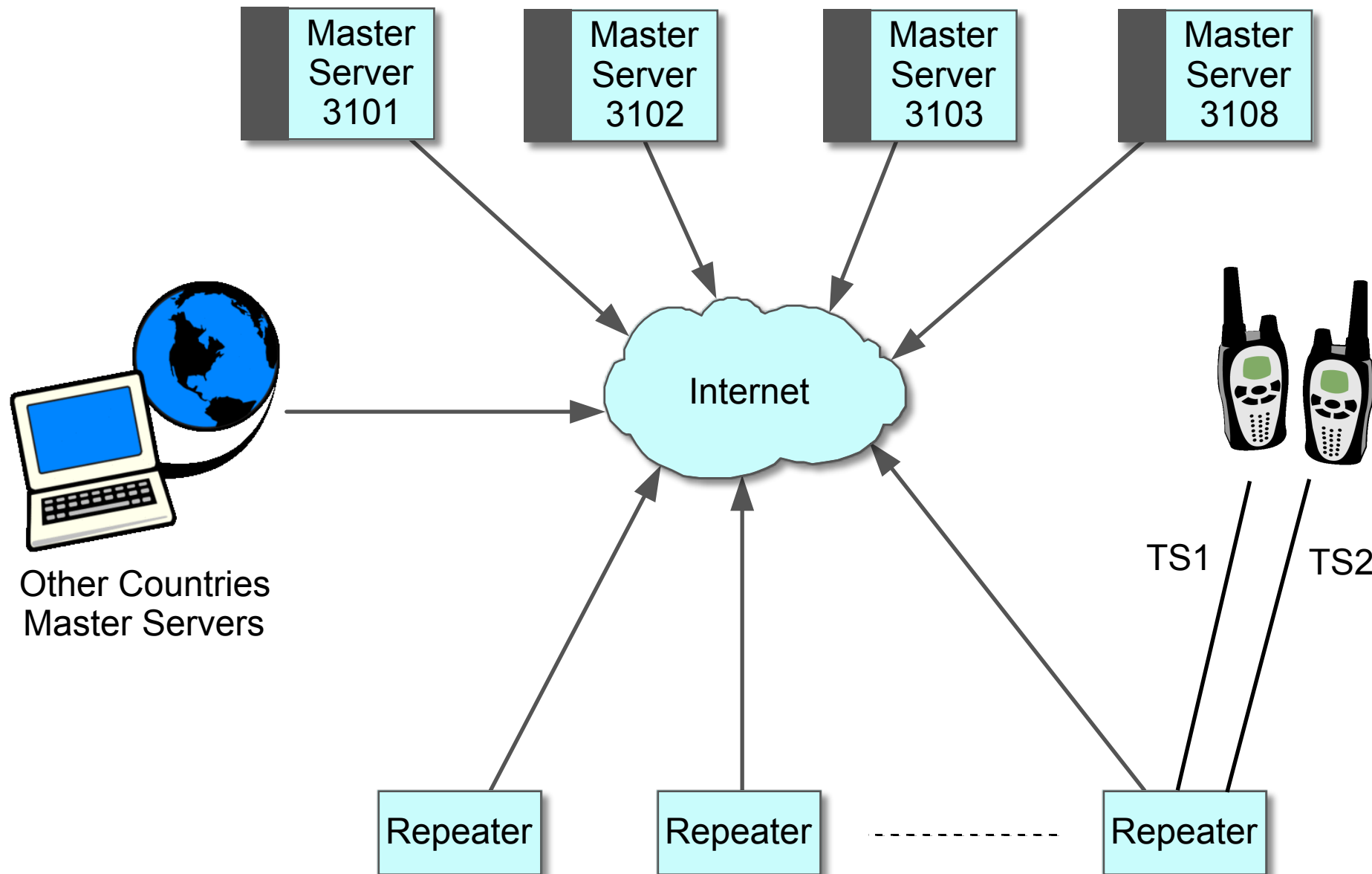
Full Quieting to the Edge of Reception



Brandmeister

- **Brandmeister Network of Internet Connected Repeaters**
 - **Local and International Access**
 - **3,200 Connected Repeaters**
 - **9,200 Connected Hotspots**
 - **1,287 Talk Groups**
 - **Access Anywhere there is Internet Service, via Hotspots**

Brandmeister Network



Local Repeaters

- **K6PV Dual Mode Repeater**
 - **Brandmeister Networked DMR**
 - **Analog FM**
- **PAPA System**
 - **16 Brandmeister Networked DMR Repeaters**
 - **18 Analog FM Repeaters**
- **Brandmeister Repeaters are Network Access Points**



***Never press on the OLED screen!**

Hotspots

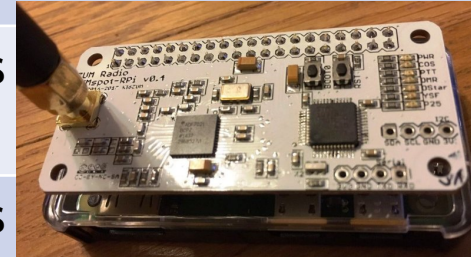


- Internet Connected “Small Personal Repeaters”
 - OpenSpot2
 - ZumSpot
 - Chinese Copies
- Talks RF Simplex to your DMR Radio
- Connects to your to local WiFi or iPhone
- Can Connect you to any Brandmeister Talk Group
- Can Cross Mode DMR and Fusion



Hot Spots

| | OpenSpot2 | ZumSpot | Generic MMDVM* |
|--|---|---------------------------------|--|
| Price to your door | \$250 (from Estonia) | \$150 (HRO) | \$110 or less (Amazon) \$20 kit (ebay) |
| Multimode (DMR, D-Star, Fusion, NXDN, etc.) | Yes | Yes | Yes |
| Cross mode function (e.g., talk DMR to Fusion) | Yes | Yes | Yes |
| Wi-Fi | 2.4GHz | 2.4GHz | 2.4GHz |
| Amateur Band | 70cm | 70cm | 70cm |
| Display | No | Optional/usually | Usually |
| Size | 85 x 48 x 15 mm 32g (3¼ x 2 x ½ 1oz) | 73 x 33 x 23 mm (3 x 1¼ x 1) | 73 x 33 x 23 mm (3 x 1¼ x 1) exclusive of antenna |
| Power | 5V via USB-C 150mA | 5V via USB-A micro | 5V via USB-A micro |
| Warranty | 2 years | 1 year | ??? |







*Multi-Mode Digital Voice Modem

Radios

- **DMR Started as a Commercial Radio System**
- **International ETSI Standards**
- **Many Manufacturers**
- **Low Cost of Entry**
- **DMR Radios also support Analog FM**
- **For the same price as an Analog only Radio, you can buy a Dual Mode DMR/Analog Radio.**

We say again: PVARC currently supports three DMR radio models

| PVARC Supported DMR radio models |  TERA TR-7400 |  Any-Tone 868UV 878UV |  TYT UV-380 —also MD-380* (UHF), now discontinued. |  Motorola XPR-7550 |
|--|---|---|--|--|
| | | | | |
| Features: | | | | |
| Price (base unit), excluding sales tax | \$249 | \$160-220, depending on accessories | \$95-130 | \$1,100 |
| Storage: | Channels: 1,024 Zones: 64 Talk Groups: 800 DMR database holds: 100,000 ham radio IDs | Channels: 4,000 Zones: 250 Talk Groups: 10,000 DMR database holds: 150,000 ham radio IDs | Channels: 3,000/1,000* Zones: 250 Talk Groups: N/A DMR database holds: Not stated | Channels: 1,000 Zones: 64 Talk Groups: In Channels DMR database holds: 1,000 ham radio IDs |
| Display type | OLED (easy to read in bright daylight) | TFT LCD | LCD | "Color display" but not otherwise specified |
| Frequencies covered | 403-470 MHz | 136-174 MHz and 400-480 MHz | 136-174 MHz and 400-480 MHz | 403-527 MHz |
| Transmit power levels | 4.0/1.0 W | 6.0/4.0/2.5/1.0 W | 5.0/1.0 W | 4.0/1.0 W |
| Frequency stability | ±1.0 ppm | ±2.5 ppm | ±1.0 ppm | ±0.5 ppm |
| Weather protection | IP67 waterproof | None | None | IP68 waterproof |
| Ruggedness: Military Standard tests claimed for vibration, shock, dust, water, temperature, humidity, etc. | MIL-STD 810 C/D/E/F/G | (None stated) | (None stated) | MIL-STD 810 C/D/E/F/G |
| Battery capacity (Li-ion) | 2200 mAh | 3100 mAh | 2000 mAh | 2,250 or 3,000 mAh |
| Rated audio output | 1.5 Watts | 1.0 Watt | 1.0 Watt | 0.5 Watt |
| Warranty | 2 years | 1 year | 1 year | 2 years |
| Reported quality of customer technical support | Excellent | Varies...Excellent from BridgeCom, none from Amazon.com | Depends on seller | Excellent if bought through authorized dealer |
| Other features | | Optional addition: 500 hours of voice recording or Bluetooth audio | | Built-in WiFi, Bluetooth audio and data; optional IP Site connect |

Note: No VHF DMR in SoCal

What is a Brandmeister Talk Group?

- **Like a VOIP Conference Call**
- **There are 1,287 of them**
- **They are all accessible from all DMR radios**
- **Each Talk Group has a Number**

Talk Group Database











Talkgroups

User Dashboard > Talkgroups

Copy CSV PDF Print

Show 10 entries

Search: 3106

| Country | Talkgroup | Name | |
|--|-----------|--------------------|--|
| US  | 3106 | California | LH Hoseline Wiki |
| US  | 31060 | PVARC | LH Hoseline Wiki |
| US  | 31061 | Cal 1 | LH Hoseline Wiki |
| US  | 31062 | Mountain West | LH Hoseline Wiki |
| US  | 31063 | Mtn West 1 | LH Hoseline Wiki |
| US  | 31064 | Santa Clara County | LH Hoseline Wiki |
| US  | 31065 | NorCal AllStar | LH Hoseline Wiki |
| US  | 31066 | SoCal | LH Hoseline Wiki |
| US  | 31067 | SoCal 1 | LH Hoseline Wiki |
| US  | 31068 | NorCal | LH Hoseline Wiki |

Showing 1 to 10 of 12 entries (filtered from 1,287 total entries)

Previous 1 2 Next

<https://brandmeister.network/?page=talkgroups>

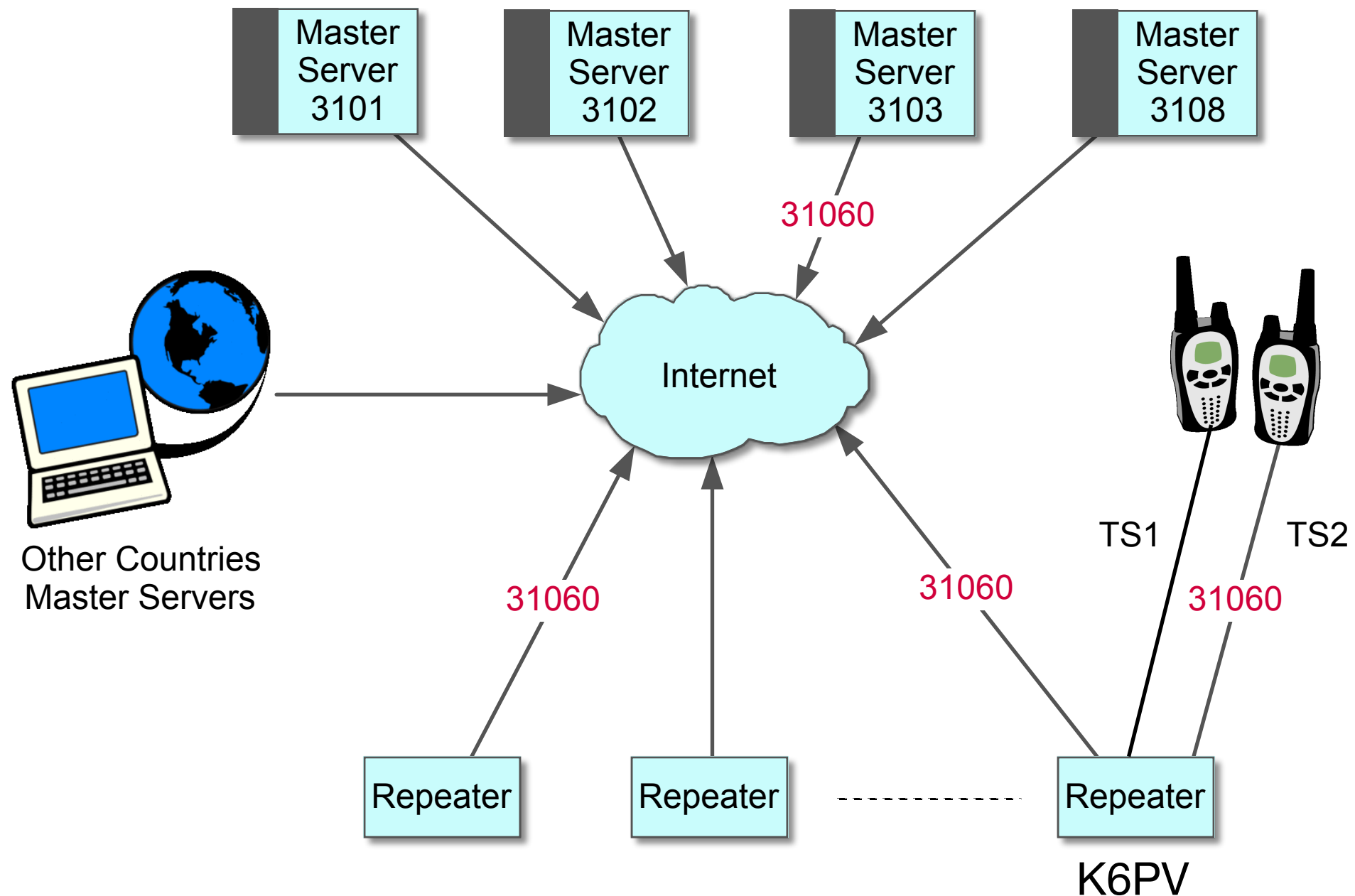
TalkGroup/31 060

Talk Group/31060 is the DMR TalkGroup of the Palos Verdes Amateur Radio Club.

Visitors are encouraged and welcomed.

To find out more about the PVARC, visit our website at K6PV.org




Brandmeister Network



Static and Dynamic

- **There are two types of Talk Groups on a Repeater**
- **Static TG - Always Passes through the repeater.**
- **Dynamic TG - Only Passes Through the repeater for 15 minutes, after last PTT.**
- **Which Talk Groups are Static on the repeater is determined by the repeater Admin.**
- **Check the Brandmeister repeater information page.**

Time Slot Matrix

| | |
|--|---|
| Slot details  | |
| Timeslot 1 |  310554 |
| Timeslot 2 |  31060 |
| Reflector | Disconnected |

K6PV Repeater

Time Slot Matrix

| | | | |
|-----------------------------|---------------------------|----------------------|----------------------|
| Slot details i | | | |
| Timeslot 1 | 🔒 3106 | | |
| Timeslot 2 | 🔒 31066 | 🔒 31076 | 🔒 31077 |
| Reflector | Disconnected | | |

PAPA Saddle Peak Repeater

Time Slot Matrix

Time Slot 1

California
TG 3106

California-1
TG 31061

North America
TG 93

Worldwide
TG 91

TAC 310
TG 310

USA/3100
TG 3100

EMCOM
TG 9911

Static

Dynamic

Use Slot 1 for connecting to other BrandMeister talkgroups

Time Slot 2

PAPA Chat
TG 31077

SoCal
TG 31066

SoCal 1
TG 31067

PAPA Bridge
TG 31078

Local
TG 2

Static

Dynamic

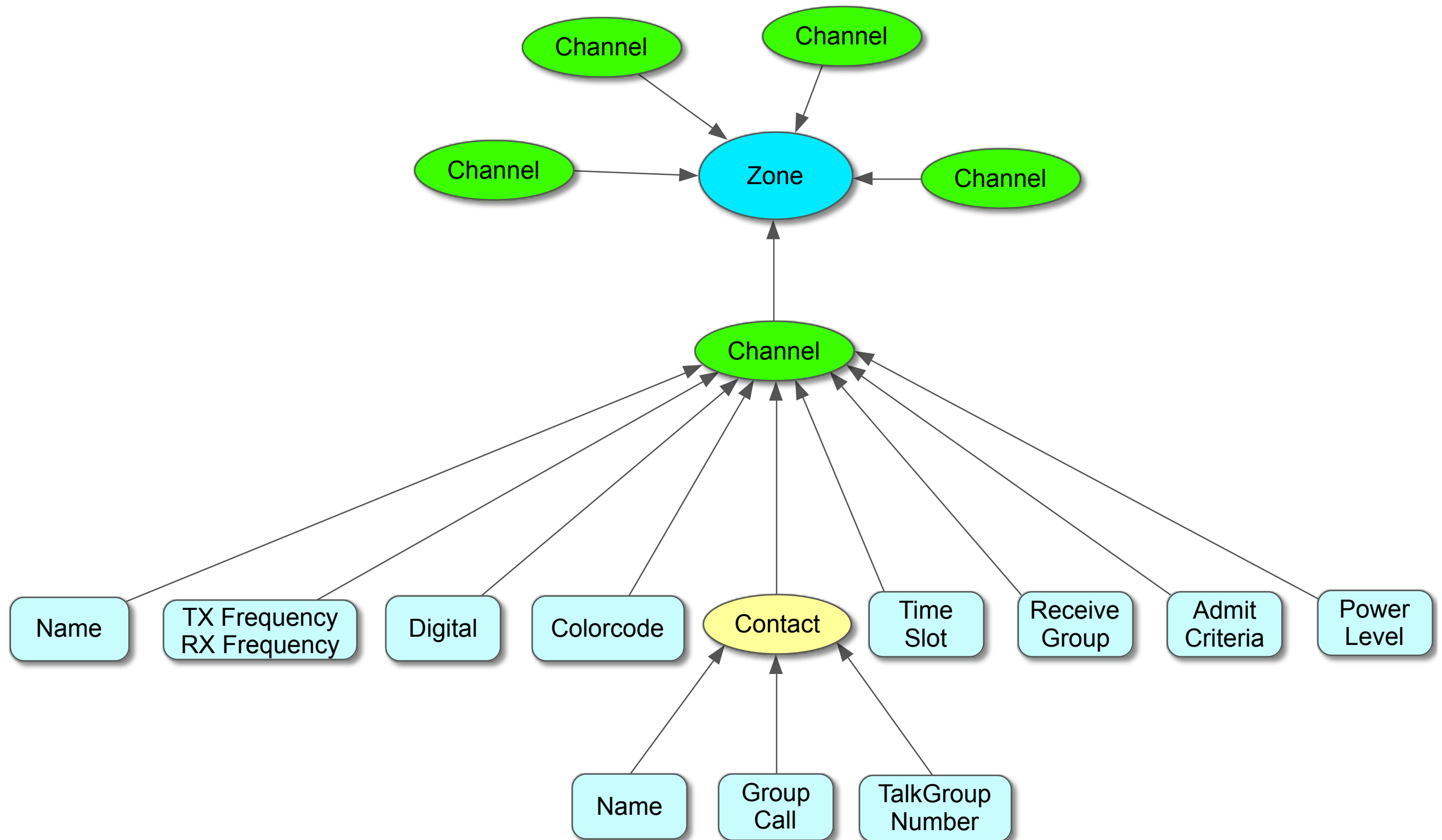
<http://papasys.com/dmr/TG-TS/>

Programming Your Radio

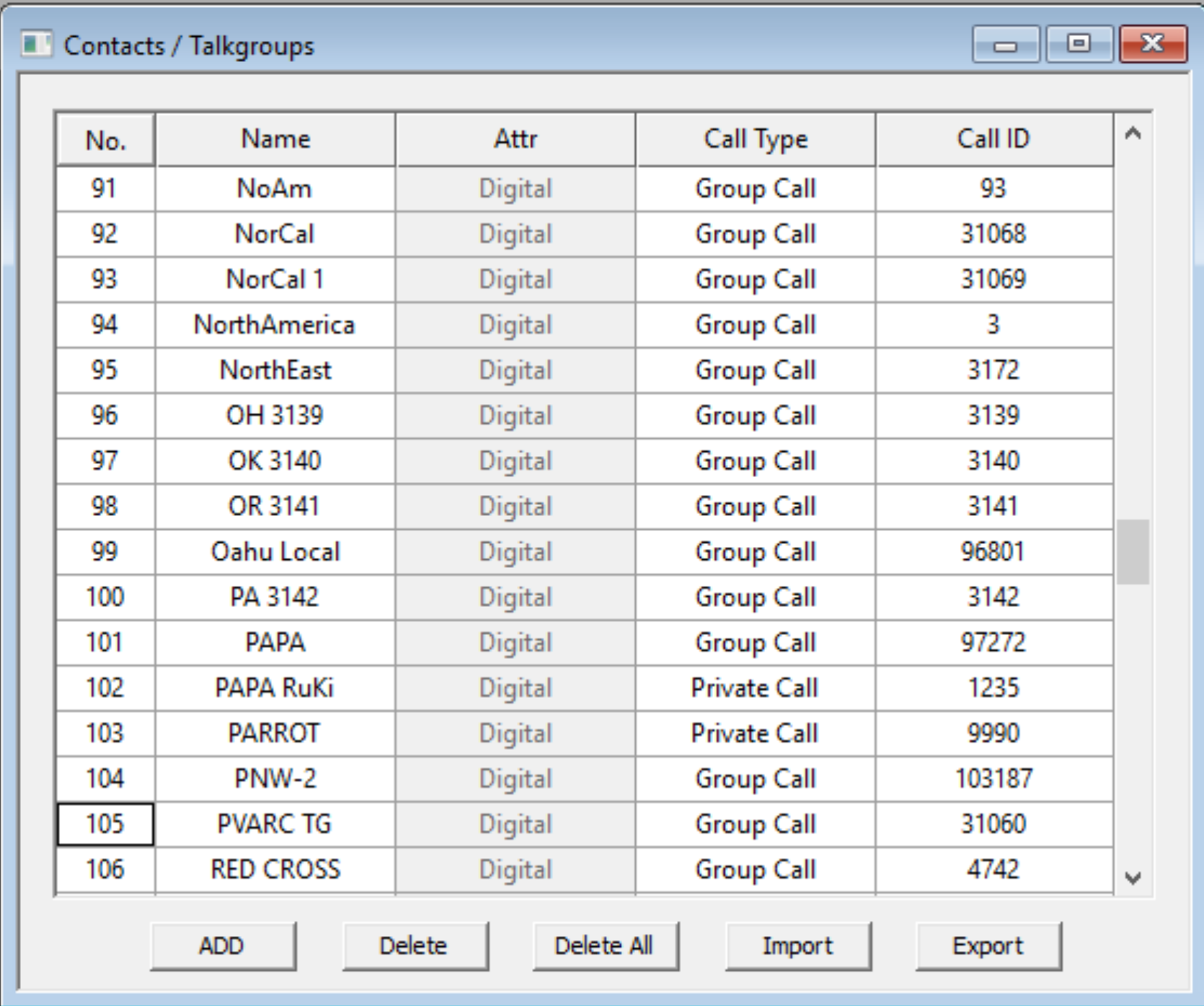
Contact > Channel > Zone

- **Contact list is an Address Book of Talk Groups**
- **Channel is a Contact with an assigned Repeater**
- **Zone is a Folder to Organize your Channels**

Contact > Channel > Zone



Contact List



| No. | Name | Attr | Call Type | Call ID |
|-----|--------------|---------|--------------|---------|
| 91 | NoAm | Digital | Group Call | 93 |
| 92 | NorCal | Digital | Group Call | 31068 |
| 93 | NorCal 1 | Digital | Group Call | 31069 |
| 94 | NorthAmerica | Digital | Group Call | 3 |
| 95 | NorthEast | Digital | Group Call | 3172 |
| 96 | OH 3139 | Digital | Group Call | 3139 |
| 97 | OK 3140 | Digital | Group Call | 3140 |
| 98 | OR 3141 | Digital | Group Call | 3141 |
| 99 | Oahu Local | Digital | Group Call | 96801 |
| 100 | PA 3142 | Digital | Group Call | 3142 |
| 101 | PAPA | Digital | Group Call | 97272 |
| 102 | PAPA RuKi | Digital | Private Call | 1235 |
| 103 | PARROT | Digital | Private Call | 9990 |
| 104 | PNW-2 | Digital | Group Call | 103187 |
| 105 | PVARC TG | Digital | Group Call | 31060 |
| 106 | RED CROSS | Digital | Group Call | 4742 |

ADD Delete Delete All Import Export

Channel

Channel Edit

☐ Rx Only

☐ Talk Around

Channel

19

Channel Name

PVARC TG

Rx Frequency

447.12000

Offset [MHz]

0.00000

Copy

Tx Frequency

442.12000

Attributes

Digital

Auto Detect Tx Mode

Detect Reset Time

Power Select

High

Contact

PVARC TG

Scan List

None

☐ Auto Start Scan

☐ Emergency Alarm Indication

☐ Emergency Alarm Ack

☐ Alarm ID Alert

Digital Option

Encryption Key

None

Tx Admit

Color Code Free

Rx Group List

None

Color Code

1

Slot Operation

Slot 2

Emergency System

None

☐ Short Data Confirmed

☐ Private Call Confirmed

Analog Option

W/N

Wide

Receive CTC/DCS

None

Transmit CTC/DCS

None

Tx Admit

<

<

>

>

Add

Delete

Expanded Channel

The screenshot shows a 'Channel Edit' window with two main sections. The left section contains general channel settings, and the right section is titled 'Digital Option' and contains digital-specific settings.

Channel Edit

☐ Rx Only ☐ Talk Around

Channel: 19

Channel Name: PVARC TG

Rx Frequency: 447.12000

Offset (MHz): 0.00000

Tx Frequency: 442.12000

Attributes: Digital

Auto Detect Tx Mode:

Detect Reset Time:

Power Select: High

Contact: PVARC TG

Scan List: None

Digital Option

Encryption Key: None

Tx Admit: Color Code Free

Rx Group List: None

Color Code: 1

Slot Operation: Slot 2

Emergency System: None

☐ Short Data Confirmed

☐ Private Call Confirmed

Zone

Zone

Zone List

| No. | Zone Alias |
|-----|------------|
| 1 | Home Zone |
| 2 | Santiago |
| 3 | SntaMonica |
| 4 | PVAN 1 |
| 5 | RPV DMR |
| 6 | HotSpot |
| 7 | Lukens |
| 8 | PAPA Anlog |
| 9 | Sunset |
| 10 | Oat |
| 11 | Palomar |
| 12 | Woodson |

Up

Down

Add

Delete

RPV DMR

Available

| Chan... | Alias |
|---------|------------|
| ~ 1 | K6PV |
| ~ 2 | K6PV rev |
| ~ 3 | K6PV splx |
| ~ 4 | N6RPV |
| ~ 5 | N6RPV rev |
| ~ 6 | N6RPV splx |
| ~ 7 | K6RH |
| ~ 8 | K6RH rev |
| ~ 9 | K6RH splx |
| ~ 10 | PV West |
| ~ 11 | PV West R |
| ~ 12 | PV West S |
| ~ 13 | K6RH |
| ~ 14 | W6PVE rev |
| ~ 15 | W6PVE splx |
| ~ 16 | 440 Smpix |
| ~ 17 | Analog17 |
| ~ 18 | TAC310 KI6 |
| ~ 20 | Hytera TG |
| ~ 21 | PAPA 1 |
| ~ 22 | PAPA 3 |
| ~ 23 | PAPA 4 |
| ~ 24 | PAPA 6 |
| ~ 25 | PAPA 8 |
| ~ 26 | PAPA 9 |
| ~ 27 | PAPA 10 |

->

<-

Up

Down

Members

| No. | Ch. | Alias |
|-----|-----|-----------|
| ~ 1 | 19 | PVARC TG |
| ~ 2 | 830 | K6PV TG |
| ~ 3 | 832 | PV Local |
| ~ 4 | 833 | PV SoCal |
| ~ 5 | 834 | PV Tac310 |
| ~ 6 | 835 | D Simplex |

What's Next?

- **Come to DMR Pre-Meetings**
- **Ask Questions**
- **Get a Radio**
- **Download / Make a Code Plug**
- **Join the PVARC DMR Net**
- **Explore the Brandmeister Network**