

D-STAR

The Real Thing - Building an Inexpensive D-Star
Compatible Repeater

Rich Timpa

KC6OBJ

Lake Oroville

Lake Oroville...

- Built in 1968
- Located in Butte county, in the Foothills of the Sierra Nevada
- 167 Miles of Shoreline
- 2nd largest Earthen Dam in the Western Hemisphere
 - (770 ft high – Taller than Hoover Dam!)
- California's 2nd largest reservoir
- 4th largest waterfall in US.
- Camping, Hiking, Horseback riding
- No development around the lake!
- Popular spot for many bass tournaments
- 4 multilane launch ramps
- 9,000ft landing area for seaplanes
- Bidwell Canyon Marina is home to <900 boats! & KC6OBJ KG6TAA



D-Star problem solving

Problem: No Communication on the Lake...

- Geography did not allow any Radio communications while on the lake.
- No Cell Phone service on 80% of the lake
- Typical analog Linked repeater system not effective or possible
- (too close to PAVE PAWS)





Goals

- Cover the lake
- Avoid Pave Paws issues
- Emergency / Medical Communication
- Communicate outside the area
- Keep in touch with friends & family

D-Star to the Rescue!



Local *Low level* D-Star Hotspot Repeater
(Power output < 15w)

Hotspot covers ~80 % of the lake

Repeater allows full access Worldwide to
the D-Star Community via Internet
linking (No link radios required)

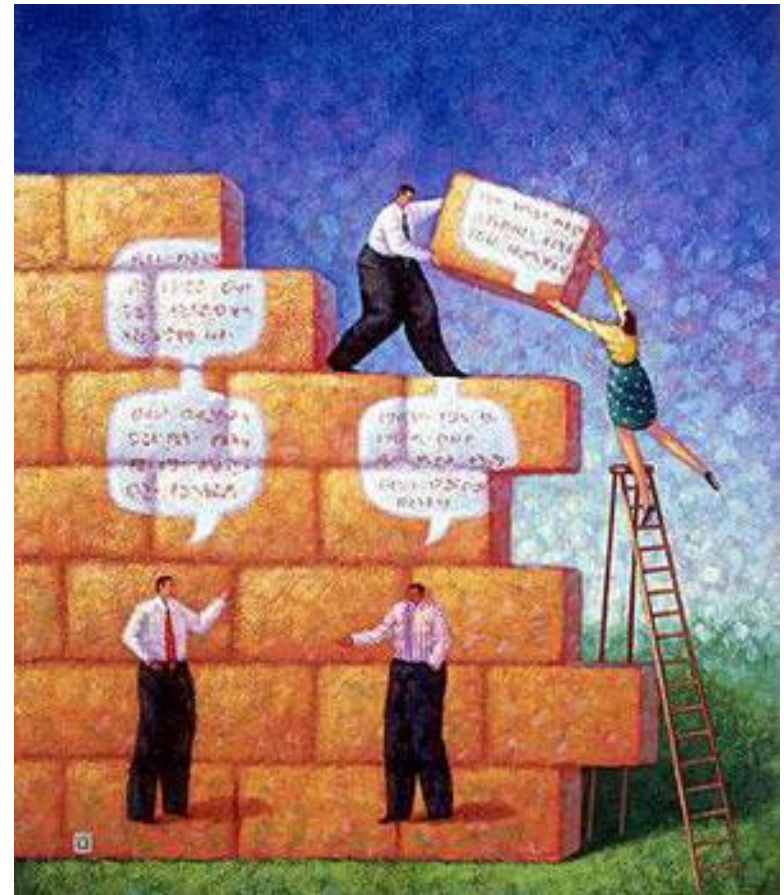
Birth of **L**ake **O**roville **A**mateur **N**et

(Thanks to Bidwell Canyon Marina!!)



D-Star Hotspot Repeater Shopping List

- 2 Maxtrac (or other) radios
- Mobile duplexer (min)
- 1 Satoshi modem board
- 1 Yaesu data cable CT-39
- 2 16 Pin connector cables
- Any computer running XP
- Internet
- Some remote control sw
 - (Teamviewer, etc)



D-Star Maxtrac cable

Build your own or ebay it!

This cable is wired as follows:

Pin

2	MIC	BLU	(use this input for speech audio)
3	PTT	WHI-BLU	
5	FLAT TX AUDIO etc)	GRN	(use this input for PL tones, data, signaling,
7	GROUND	WHI-GRN	
8	PROGRAMMABLE I/O (COR)	ONG	
11	RECEIVE AUDIO	WHI-ONG	
4	PROGRAMMABLE OUTPUT	BRO	
14	PROGRAMMABLE I/O	WHI-BRO	
15-16	Jumpered to enable internal speaker		



L.O.A.R.N. Block Diagram

eBay Generic Duplexer



Maxtrac Tx



Maxtrac Rx

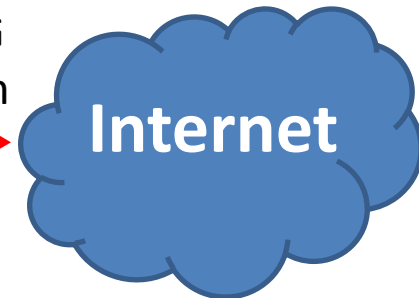
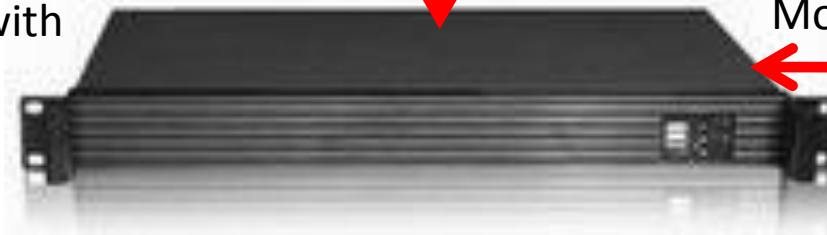


Satoshi modem board

USB

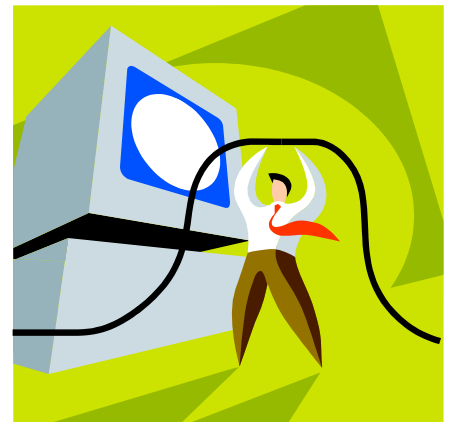
USB 3G
Modem

Standard PC Win XP with
DVAR Hotspot SW.
Remote control
Via Teamviewer



Bringing up the Software

- Load USB drivers for Satoshi board
- Attach Satoshi board and Radios
- Test setup using Satoshi Programs
 - RfRead.exe / Echotest03.exe
- Install Teamviewer (or other remote software)
- Install Latest version of D-star Hotspot software from http://groups.yahoo.com/group/gmsk_dv_node/



Setting the Hotspot software

Repeater mode settings window:

Node Callsign: MY9RPT B

Gateway Auth Callsign: MY9RPT

PIN:

Operating Mode

Simplex Node

Repeater

Require proper RPT1 to repeat transmission

Require proper RPT2 to gateway transmission

ID after every repeated transmission

Transmit Mode

Enable GMSK Node Adapter

TX RPT1:

TX Delay Time: 500ms

Receive Mode

GMSK Node Adapter

GMSK Sound Card Decoder

DVR Settings

Enable recording by default

Auto delete QSO's after 0 days

DPRS Settings

Enable slow speed output

Port number: 20003

Automatically Start/Stop D-PRS Interface

Path: C:\Program Files\AE5PL\DPRSIn Browse

Save Cancel

Your Call plus 8th Character

Your Authorized Call Sign.



- A few simple steps and your ready to go.



DVAR Hot Spot

File DVR Edit Help

Gateway: REF014 C
 Address: 64.72.103.12:20001 Configure
 Connection Status: Disconnected Connect

REF014 C K6MDD C W6DHS C K6LRG B REF001 C
 WW6BAY B QT-7 QT-8 QT-9 QT-10

Inbound Connections

GMSK Node Adapter
 Status: D-STAR Interface V07.08 (C)7M3TJZ/AD6GZ

Last Gateway User Time: 10/13/2010 7:20:08 PM

MyCall	UrCall	RPT1	RPT2
KC6OBJ /2820	CQCQCQ	REF014 C	WW6BAY G

Message: Rich - KC6OBJ from S

Last RF User Time:

MyCall	UrCall	RPT1	RPT2

Message:

Hotspot Software running (Viewed via Teamviewer)

Your con

avast! Antivirus

Click this balloo

Free license (non-commercial use only)
TeamViewer.com

Functions

Session list

Rick Desk (772969477)

D-Star Hotspot operation

Call sign must be gateway authorized

UR set to CQCQCQ

RPT1 and RPT2 not used

D-Plus linking/unlinking supported

– Or use the UI on the computer (via Teamviewer)

Record and playback of RF side available

Log files can be kept on activity for

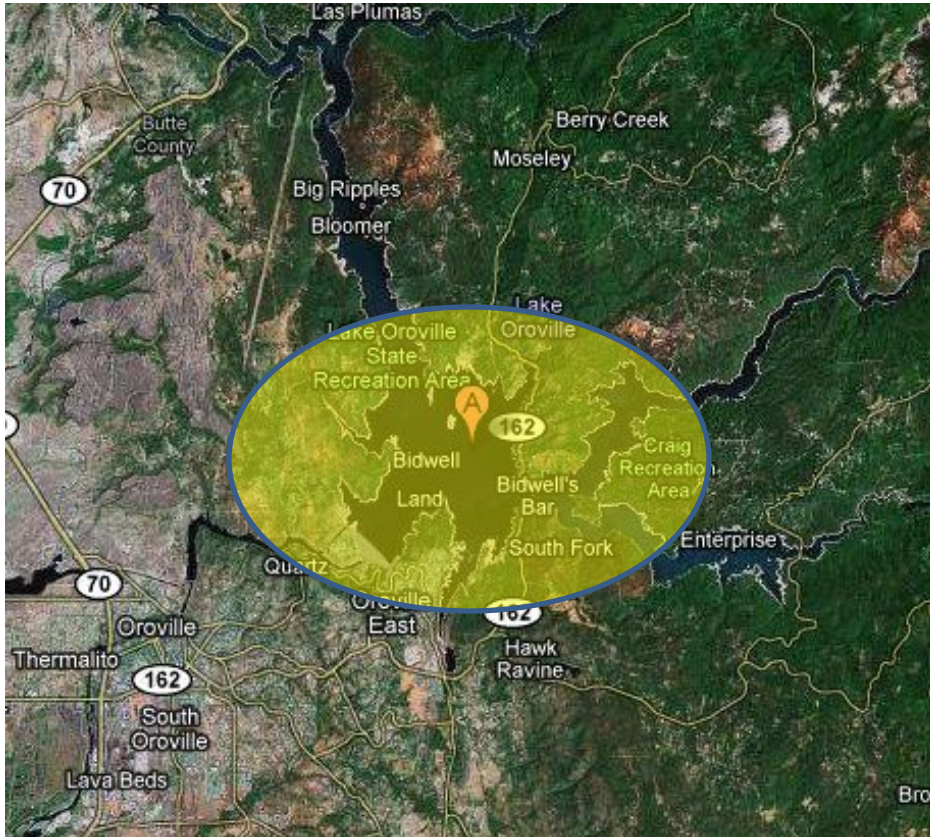
remote download



L.O.R.A.N. KG6TAA/KC6OBJ Coverage

D-Star Hotspot Repeater

- 444.275 +5 Digital
- 3G Cell Modem Connected



- Elevation 951 ft
- Low level coverage
- Typically linked REF014C

Get building!
We're waiting to hear from you



George KJ6VU - helping me set up Maxtracs
and sharing his vast knowledge.

Mark KM9KHM - For building the Hotspot
software.

Tim K6BIV - For being so friendly and helpful

Satoshi 7M3TJZ/AD6GZ
For creating the Hotspot Board

Everyone's support on K6MDD

Bidwell Canyon Marina for our location

Thank
you!!!

References for Hotspots

- **GMSK DV Node Adapter Group**
groups.yahoo.com/group/gmsk_dv_node
- **D-Star Development (non-ICOM)**
g4ulf.blogspot.com
- **Satoshi GMSK DV Node Adapter**
d-star.dyndns.org



More Useful Information

- **D-STAR Calculator**

[www.dstarinfo.com/Calculator/DSTAR Web Calculator.aspx](http://www.dstarinfo.com/Calculator/DSTAR%20Web%20Calculator.aspx)

- **D-STAR Info**

www.dstarinfo.com/default.aspx

- **D-STAR Users**

www.d-starusers.org

