W6YX 1.2Ghz Repeater Project

Presented by Bob Warmke W6CYX

to

Stanford Amateur Radio Club

March 14th, 2006
Old Repeater
New Repeater

- New ICOM 1220 repeater (modified)
- New Comet GP21 21 element colinear antenna and mast
- New LMR400 Feed line
- New Linkcom RLC-1 Plus controller
- New Kenwood TM-541A link transceiver and associated feed line and antenna
- New IRLP & Echolink connectivity
- New Connectivity to W6RLW Network
Typical W6RLW Repeater
Standard Duplexer
Advantages of 1.2 GHZ

- Low Noise
- Reduced intermod
- 249 pairs available – less than 100 in use in Northern California
- Small size Repeater equipment
- Small antennas
- More high tech users
Disadvantages of 1.2 GHZ

- Equipment expensive and scarce
- Feed line and connector losses
- Frequency stability and accuracy
- Propagation
- Radar Interference
**Propagation Observations**

- Higher loss through foliage
- Multipath and Reflections are more obvious
- Terrestrial distance record greater on 1.2Ghz than on 440Mhz
- Knife edging (Refraction) or Reflection?
Refraction or Reflection?
Repeater System Architecture

Repeater A

Receiver
Transmit
Link Radio

Repeater B

Receiver
Transmit
Repeater System Architecture

Repeater A
- Receiver
- Transmit
- Link Radio

Repeater B
- Receiver
- Transmit
Repeater System Architecture

Repeater A
- Receiver
- Transmit
- Link Radio

Repeater B
- Receiver
- Transmit
March 14th, 2006

Repeater Site

Stanford 1282.500

1282.000
Questions
Internet Radio Linking Project

Presented by Don Ferguson  
*KD6IRE*  
to  
Stanford Amateur Radio Club

March 14th, 2006
What’s IRLP about?

- Use the Internet to link amateur repeaters.
- Allow links to be controlled by Repeater users
- Provide REFLECTORS to link multiple repeaters
- Make it affordable and dependable.
- Keep it secure from unauthorized use.

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Hardware

- The Custom Red Hat CD-ROM
- Red Hat Boot Floppy Diskette

- Custom PCB by VE2LTD
  - PCB Does COR, PTT & DTMF
  - DB9 IRLP to Repeater Interface
- LPT1 to IRLP Jumper Cable
Node 7670

The W6CYX IRLP Node 7670
Link Antenna

The W6CYX IRLP Node 767
Node 7670 Setup

- **ADSL MODEM**
- **Router**
- **1.5Mb+ Internet connection**
- To another IRLP Node
- **10Mb Ethernet Connection**
- **10/100Mb Ethernet Connection**
- **SMC 7004wabr**
- **IRLP Computer**
  - Custom Fedora Core 3 O/S
- **PTT COR Audio**
- **RF Link gating on COS**
- **RF Link**
  - 145 mhz
  - 440 mhz
  - 1.2 ghz
- **Kenwood TM-541a**
- **Link Xcvr**
- **Repeater Controller Link Port**
- **Repeater or Remote Base**
- **PTT COR Audio**
- **1282.200mhz Loma Prieta**
- **To another IRLP Node**
- **10Mb Ethernet Connection**
- **Repeater Controller**
Point to Point IRLP

IRLP Server

145 mhz

RPTR

IRLP

1.2 ghz

RPTR

IRLP
What does it sound like?

The underlying VoIP software is a program called **Speak Freely** it is digital and sounds GREAT!

In fact, unless you knew you where connected to a data link, you would never know!

Everyone sounds like locals!!
What a QSO Sound Like?
Direct - Point to Point Mode

This is an actual connection and QSO to the Bundaberg Australia.

It sounds like just another user of the repeater.
For More Information

For more information on NODE 7670 contact:

w6cyx@arrl.net or kd6ire@arrl.net

For General Information about IRLP, on the WWW see:

http://www.irlp.net

For Node Activity and connection Status, see:

http://status.irlp.net/static.html

For Node Information Web Pages, on the WWW see:

http://www.irlp.net/03-background/body.html
Even more exciting for Hams who own a computer
EchoLink

http://www.echolink.org/
Introducing EchoLink

EchoLink is software which allows Amateur Radio stations to communicate with one another over the Internet, using voice-over-IP (VoIP) technology. The program allows worldwide connections to be made between stations, from computer to station, or from computer to computer. There are more than 82,000 registered users in 131 countries worldwide!

NEW Repeater Linking Tips
Download EchoLink

EchoLink is offered free of charge to licensed Amateur Radio operators worldwide. Please note that you must hold a valid Amateur Radio license in order to use EchoLink.

Please register by entering your callsign and e-mail address below. Then, choose Submit for instructions on how to download.

Callsign: KD6IRE
E-Mail Address: KD6IRE@sbcglobal.net

Submit
W6RLW-R

EchoIRLP

http://www.echolink.org/