



D-STAR Forum 2012

Welcome!



Agenda

“So many topics, so little time...”

Presenter	Topic
John Hays – K7VE Moderator	Using D-STAR & Do It Yourself: Radios, “Hotspots”, Repeaters, Gateways, Applications Update from G4ULF
Ed Woodrick – WA4YIH	D-STAR Radio Programming Simplified
Bryan Hoyer – KG6GEU	Designing the UDR56K-4 Digital Radio with support for DD/DV
Robin Cutshaw – AA4RC	Update: DPLUS, DVAP, and DVDongle

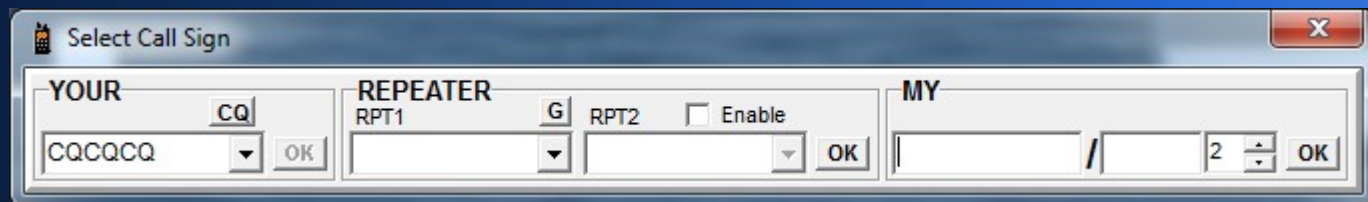
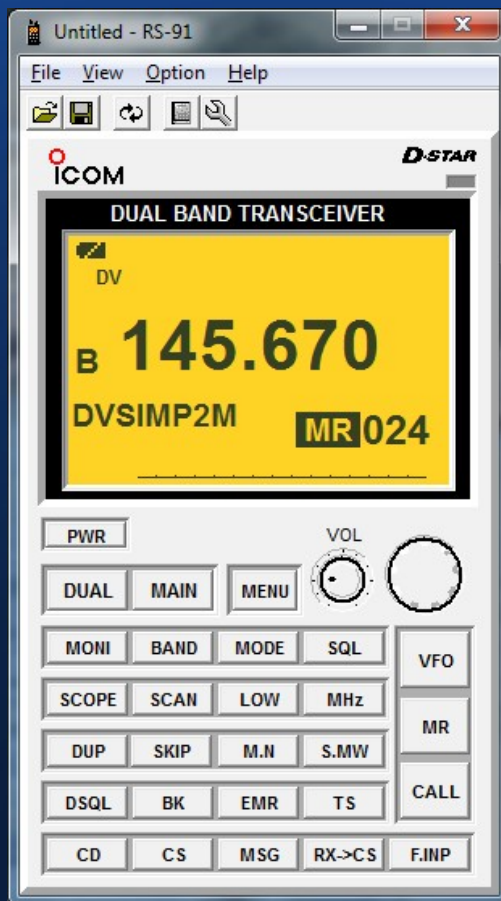
D-STAR Fundamentals

A Quick Overview

- 1st D-STAR Digital Voice Contact
- Adding Your Callsign ID
- 1st D-STAR Repeater Contact
- Registering to use the Gateway
- Use the Gateway with Linking
- Callsign Addressing
- STARnet Digital

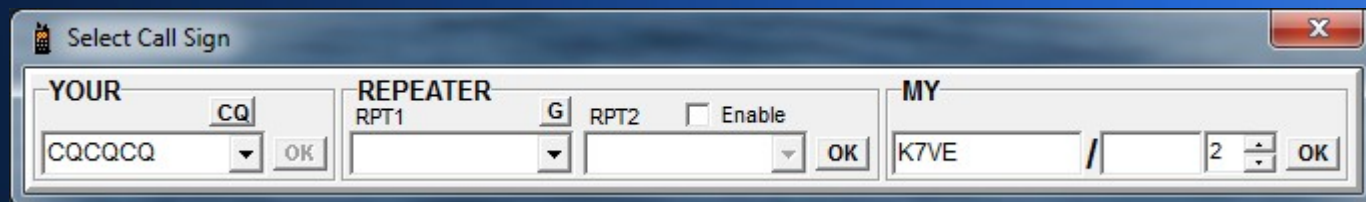
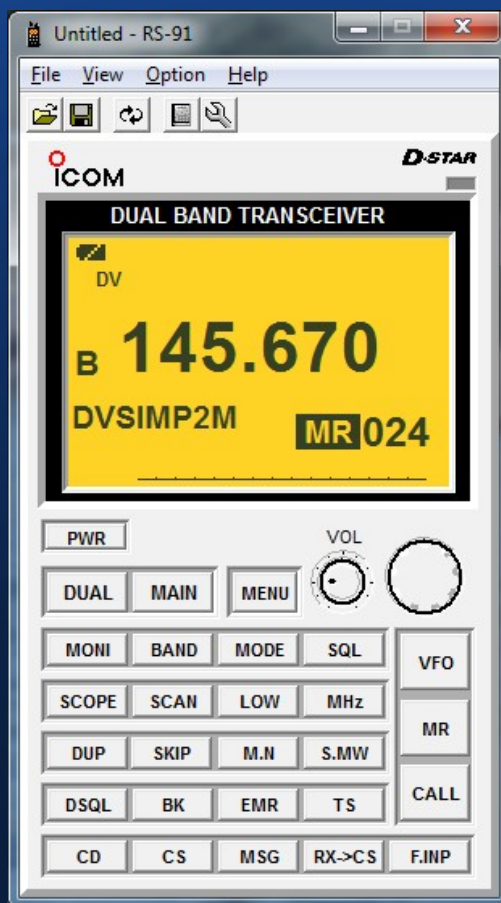
1st D-STAR Digital Voice Contact

- Turn the radio on
- Set frequency and DV mode
- Press PTT and talk!
- You did it, you're on D-STAR DV!



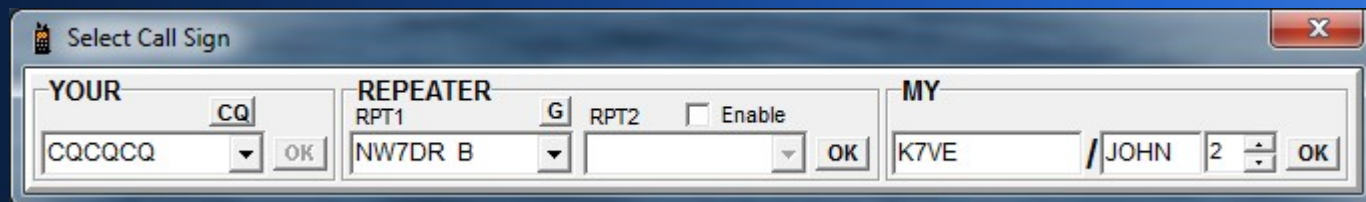
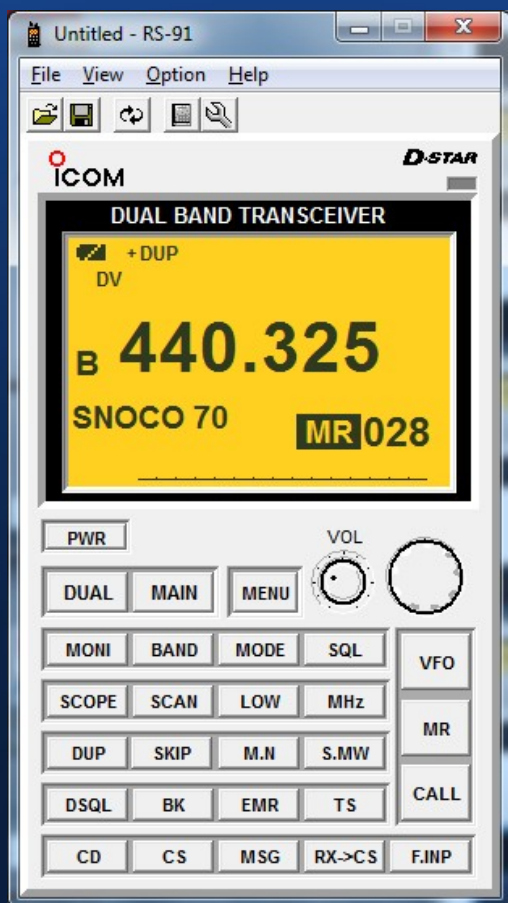
Add Your Callsign ID

- Program your callsign into the MY field on your radio
- Press PTT and talk!
- Your callsign will now be sent with every transmission.



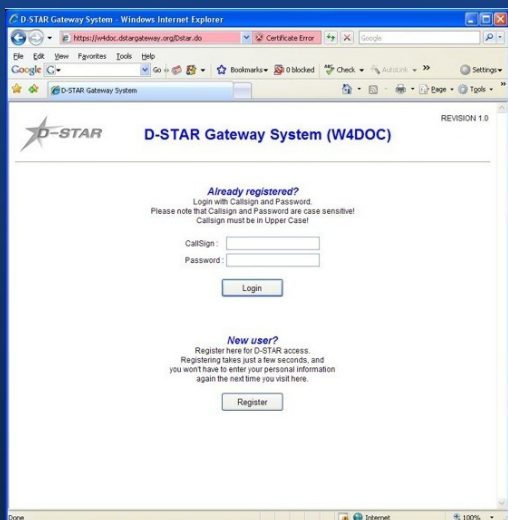
1st D-STAR Repeater Contact

- Set repeater frequency, Duplex, and DV mode
- Press PTT and Release!
- The repeater will set its callsign into RPT1.
- Press PTT and talk.



Register to use the Gateway

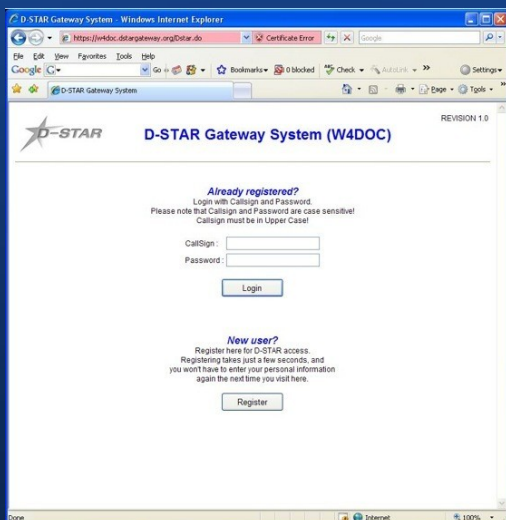
Only register on One Gateway!!!



- Find USRoot Gateway closest to you
 - Find at <http://dstarusers.org>
 - Usually <https://<callsign>.dstargateway.org>
 - Visit it's Web Registration Page
- Instructions at <http://www.dstargateway.org>
- Setup an account with your callsign, live email address, and name.
- Wait for notification from admin

Complete Registration

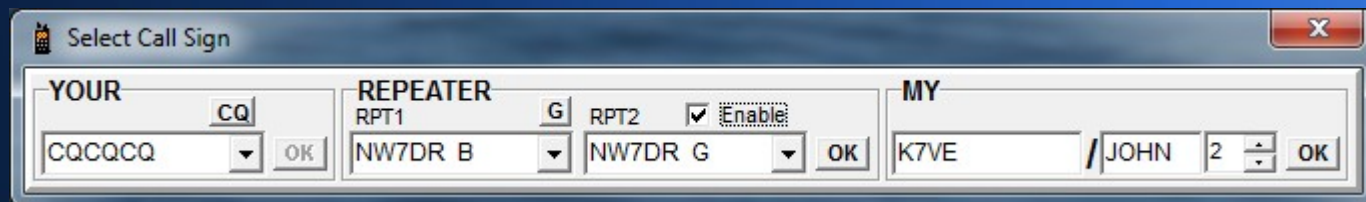
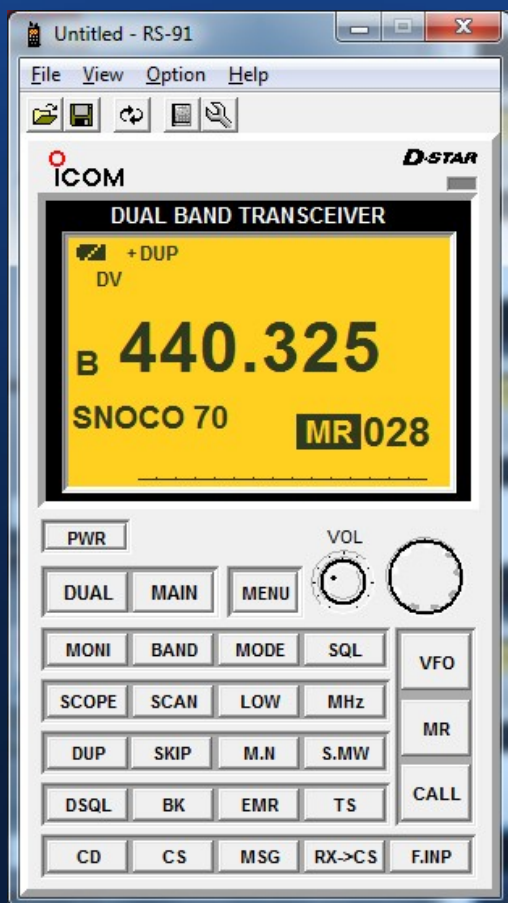
You are not authorized until completed and propagated.



- You cannot fully use the network until registration is completed
 - Return to Web Registration Page
 - Login and select Personal Information tab
- Check box to left of row number 1
- Put a space in “Initial”, lowercase callsign in pcname and update
- It takes a while to propagate through the network (allow 1-3 hours)

Use the Gateway with Linking

- Add the Gateway Callsign to RPT2
 - Copy from RPT1 and change 8th character to “G”
- Press PTT and talk.
- Your signal will pass to linked repeaters and reflectors



Linking Systems

Selected Features	DPLUS (Original - AA4RC)	DCS (Newest - Germany)
Rooms (Modules)	REF#### A-E	DCS#### A-Z
DVDongle/DVAP Connections	Yes	Yes
Echo Test (through Reflector)	REF#### E	DCS#### Z
Repeated Headers	Yes (Newest Version)	Yes
DTMF Commands	No	Yes
“UR” Commands	Yes – (REF001AL)	Yes – (DCS001AL)
Blocks Callsign Routed Traffic	Limited – On Link	Yes – On Link
Icom G2 Gateway	Add-on (Mature)	Add-on (Beta)
ircDDBGateway	Built-in <small>(As Hotspot/Dongle)</small>	Built-In
Repeater-to-Repeater	Yes	?
Source	Closed	Open (Future)?
Cross Reflector Bridge	No	All “DCS#### A” together
Reflector Info	http://ref####.dstargateway.org	http://xreflector.net

Callsign Addressing

- Native to the D-STAR Protocol
- Allows station to station calling
- Place the callsign (and terminal ID) in the UR Address
 - UR is meant to be the address of which station or service a station is calling.
- The network figures out where to deliver the traffic, the calling station doesn't care.

Callsign Addressing

- Supported in full gateways
 - Icom G2
 - IrcDDBGateway
 - G4ULF
 - Others
- Transmissions are in the 'blind', but the network sends back a message if the remote gateway is busy.

Callsign Addressing

- Courtesy requires the calling station state that they are using callsign calling if on DV
 - It is the primary method for DD
- A properly configured radio will automatically put a received callsign in the UR field if the transmission is directed to the called station.
- A station can capture a callsign using the RX/CS function on their radio.

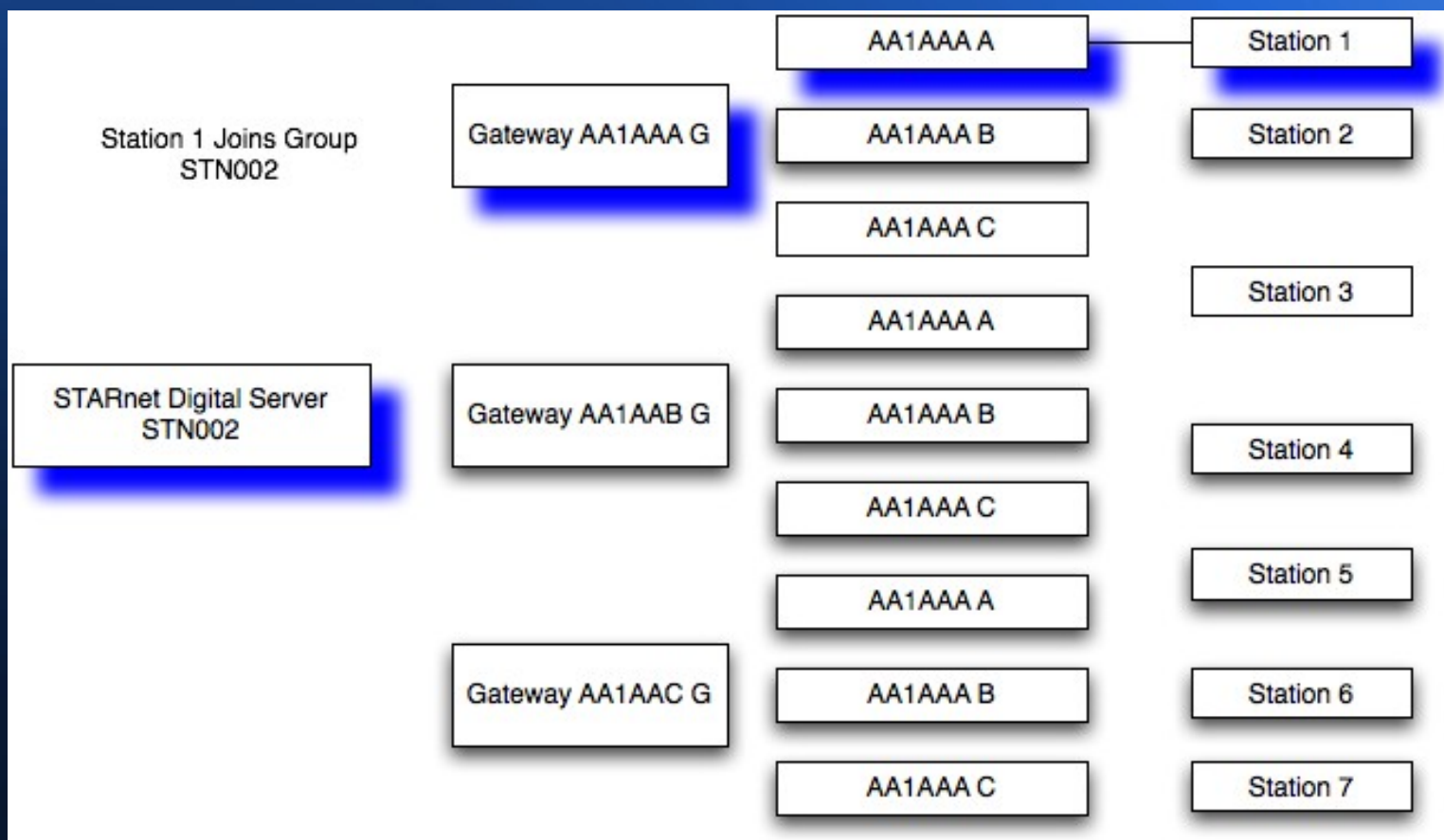
STARnet Digital

- STARnet Digital is a network service that allows individual stations to join a group by callsign addressing the group's callsign.
 - The STARnet Digital group tracks stations moving between repeaters, via ircDDB, and automatically redirects group traffic to each repeater where a group member station has transmitted.
 - Group and subscriber timers control when to expire group membership.

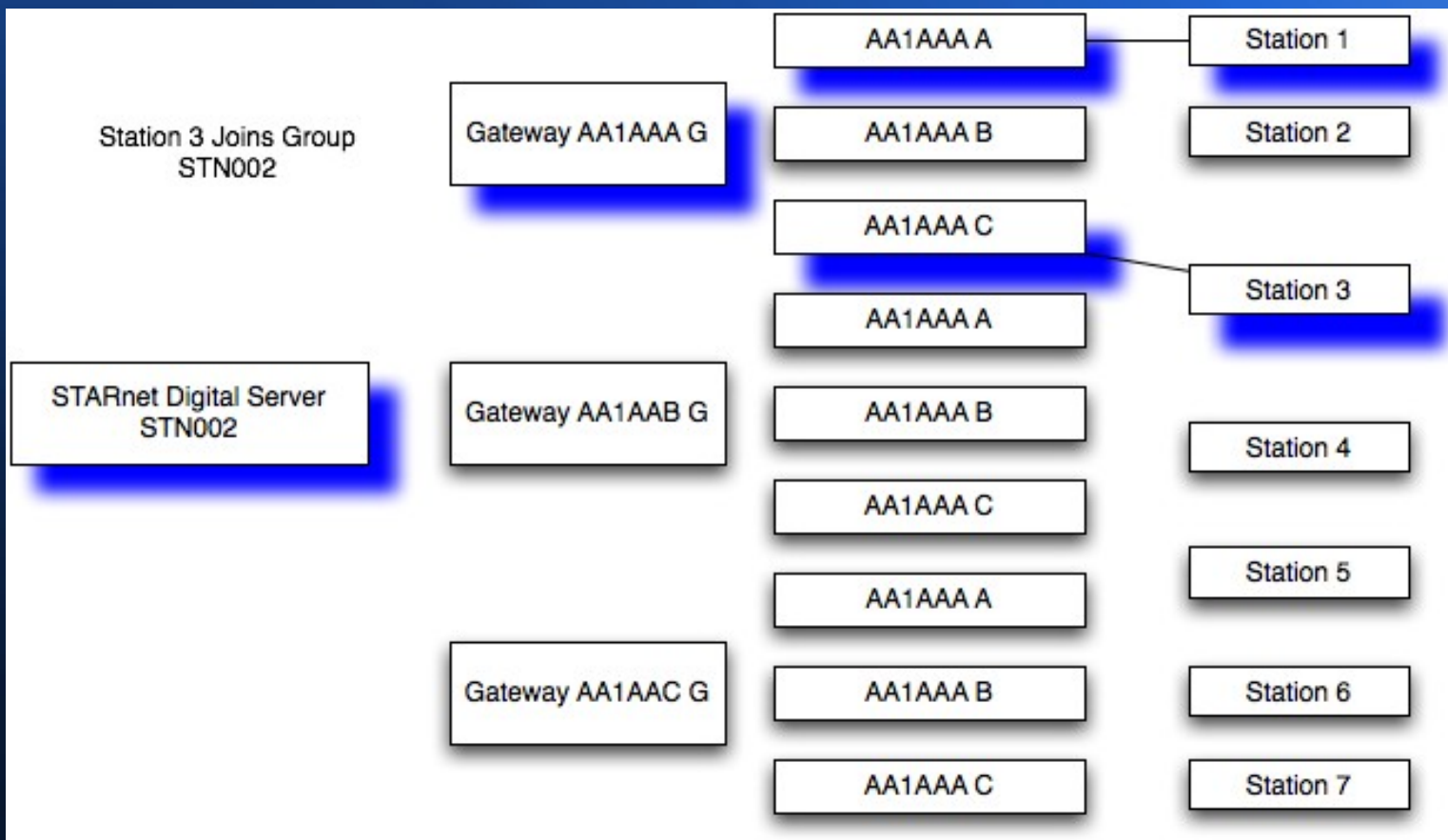
STARnet Digital Illustrated



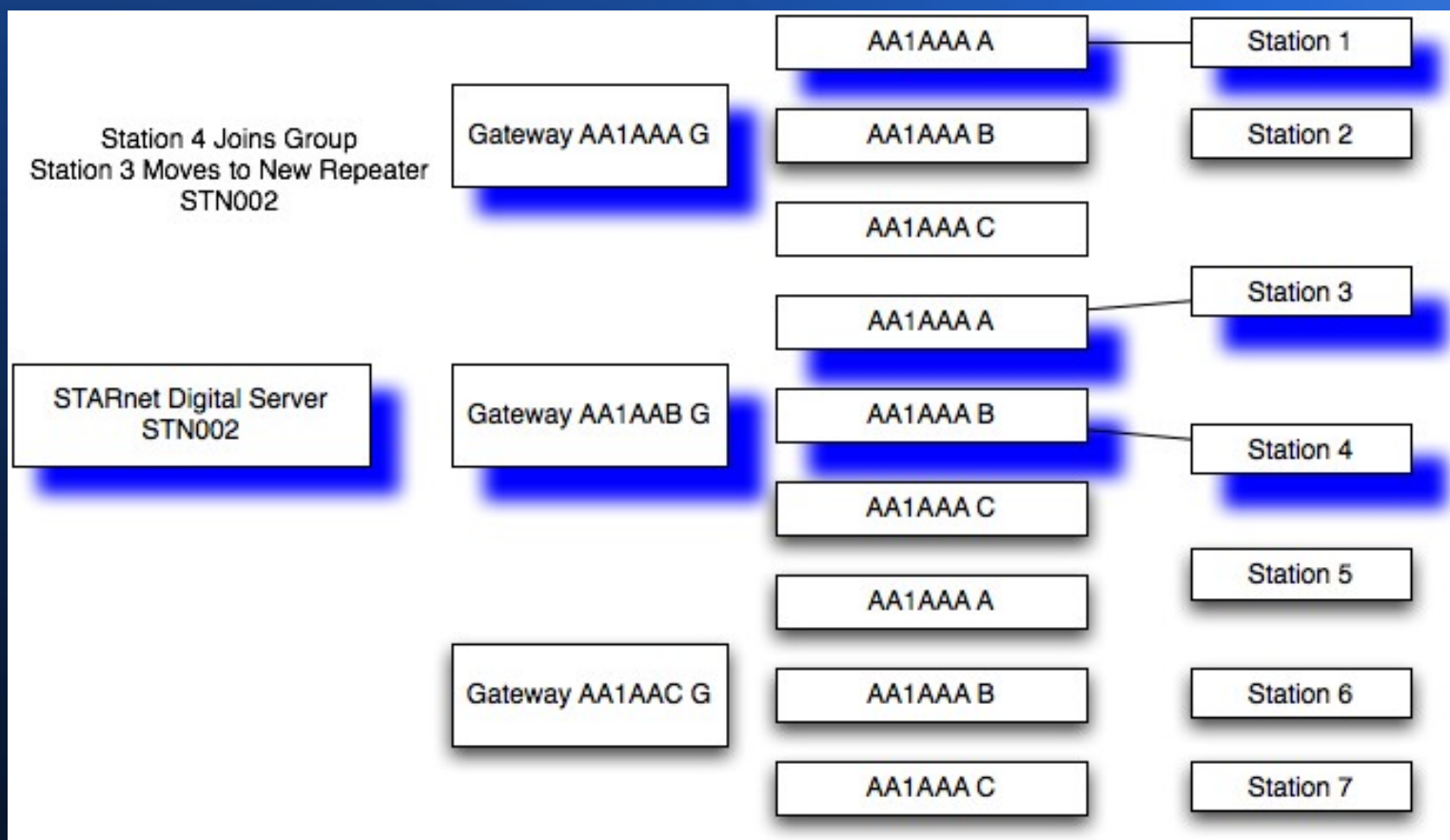
STARnet Digital Illustrated



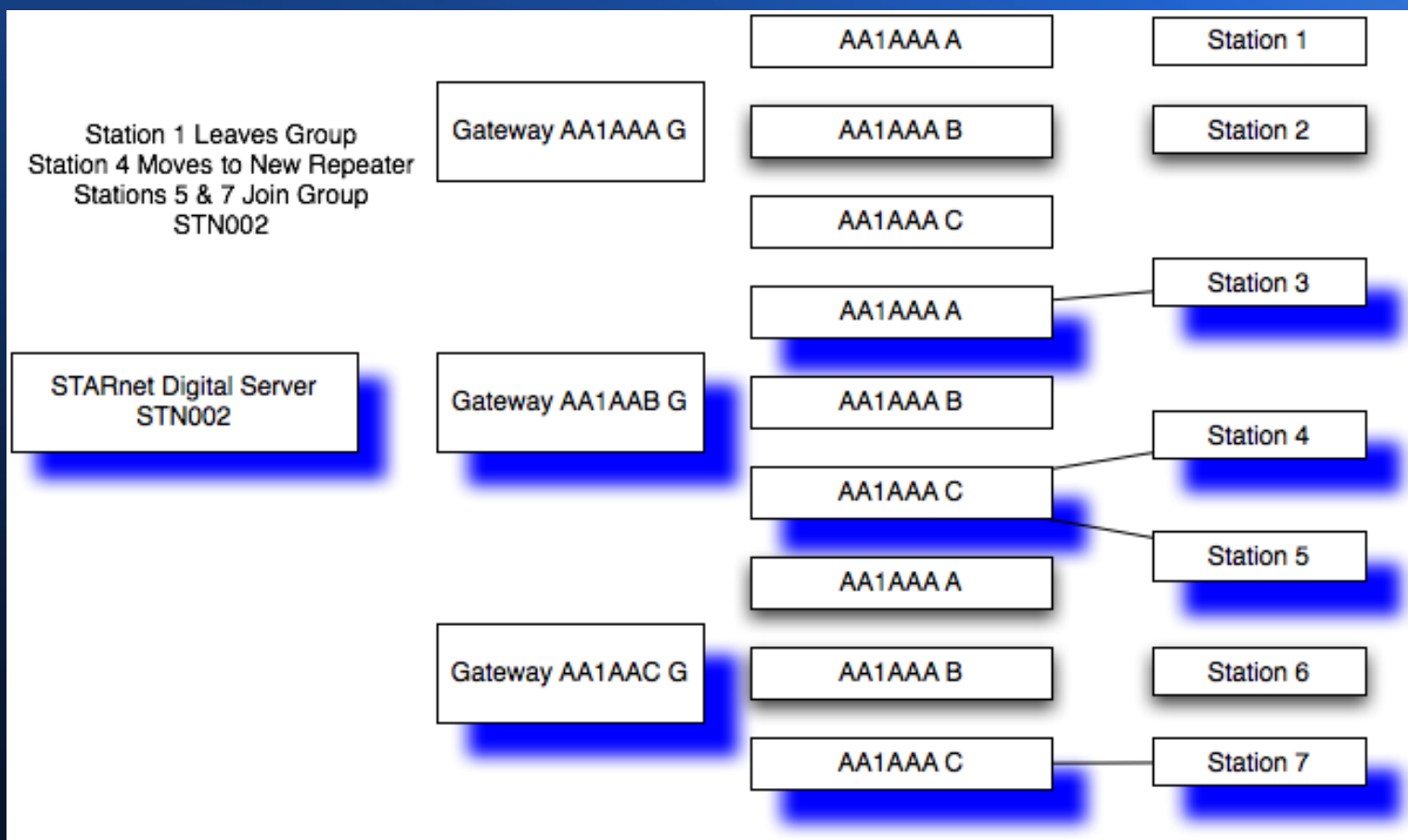
STARnet Digital Illustrated



STARnet Digital Illustrated



STARnet Digital Illustrated



STARnet Digital

- To join or transmit to a group leave the group callsign in UR (UR:STN002)
- Leave group by putting “LOGOFF” in Comment field, PTT, move to CQCQCQ
- Groups are dynamic and only use repeaters that have “interested” stations
- Tactical vs. “Casting your net.”

STARnet Digital Info

- Yahoo! Group STARnetDigital



- STARnet Digital Videos
<http://k7ve.org/blog/starnet-digital-videos/>

Do It Yourself D-STAR

- Adapt or Build a DV Radio
- Adapt or Build a DV or Dual Mode Repeater
 - Create A Half-Duplex Access Point or Hotspot
- Create a Gateway and register it.
 - Attach multiple DV Repeaters / HDAP / DVAP
 - Setup a STARnet Digital Group
- Setup a Reflector
- D-STAR Data (DD)

DIY: Adapt a Radio

- Software (Digital Voice by G4KLX)
 - <http://db0fhn.efi.fh-nuernberg.de/~g4klx/digitalvoice.html>
- 9600 baud FM Radio
- DVDongle or AMBE
- Adapter: GMSK Board, DV-RPTR, Soundcard + PTT, or DVAP



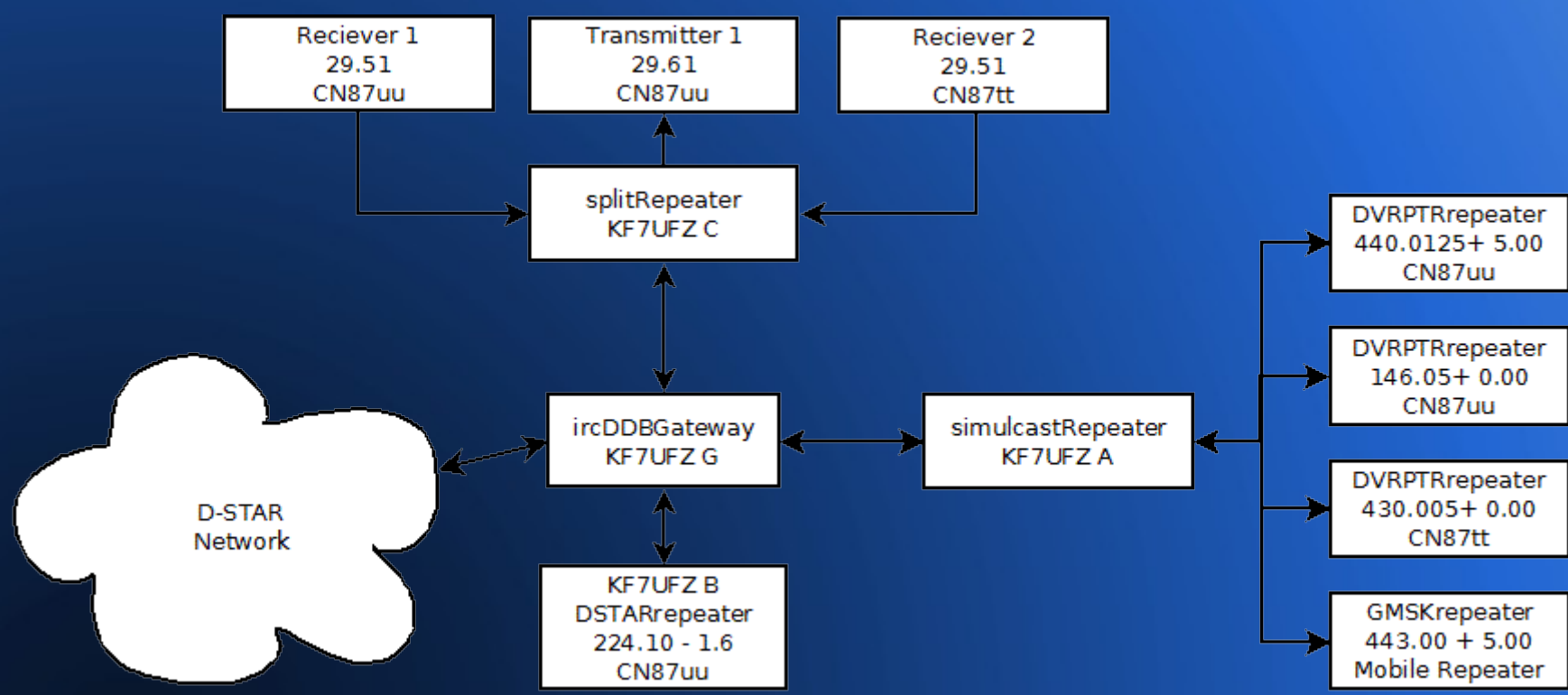
DIY: Build a Radio

- DVRPTR Board
- AMBE Card
- Radio
 - 9600 baud FM
 - 2m/70cm 2 watt
from DV-RPTR.DE



DIY: Create a Repeater / Gateway

(ircDDBGateway Example)



Reflector or DD

- Reflector
 - DPLUS (AA4RC)
 - DCS (DVRPTR)
 - Dextra (Multiple)
- DSTAR Digital
 - Ethernet Packets over D-STAR
 - UDR56K
 - IP Applications

Thank You!

- Blog: k7ve.org
- k7ve@k7ve.org