

ircDDB, ircDDBGateway, STARnet Digital, and an Analog Repeater Conversion

A Quick Overview of Some New and Open Systems For Use With D-STAR

ircDDB

- Provides near real time updates of callsigns and IP addresses to participating gateways
- Built upon the Internet Relay Chat (irc) protocol
- Fulfills the “promise” of D-STAR where a station is able to move from repeater to repeater and have the network locate a user by Callsign

ircDDB

- Requires software to be added to the gateway
 - Open Source in Java
 - Icom G2 and G4ULF
 - Built-in to ircDDBGateway
- No user action required
 - Users are automatically added to ircDDB on key-up

ircDDB

- Designed, built, and managed by German team
 - DG8NGN – Jann
 - DL5DI – Hans-Jürgen
 - DL1BFF – Michael
 - Team regularly available by email, chat, and VOIP telephony
- Redundant server clusters
 - Europe
 - North America

ircDDB

- Visualization Layer - VIS ON/OFF
 - ircddb.net/live.htm
 - A few Europeans complained that callsigns should be treated as personal privacy data
 - Opt in to have your callsign visible by
 - UR:VIS ON
 - UR:VIS OFF (to mask)

ircDDBGateway and pcrepeatercontroller

- Designed and built by Jonathan – G4KLX
- Supports multiple repeater platforms through pcrepeatercontroller software
 - Icom RP2C controller
 - GMSK modem (USB connected hardware)
 - Soundcard modem (GMSK in software)
 - DummyRepeater
- Comes as a Windows Binary and as source that can be compiled for Windows or Linux (C++)

ircDDBGateway

- Does not use or interact with the Trust Server
- Gets all callsign and gateway IP address information directly from ircDDB network
- No registration of users required
 - Talking to stations on Icom G2 and G4ULF requires that callsigns be registered
 - Filter to minimize non-regulatory callsigns in the system. (e.g. no “COAX”, “PIZZA”, etc.)

ircDDBGateway

- Many built-in services
 - DPLUS (Client Only – Like a DVDongle, DVAP, or DVAR Hotspot, it can connect to reflectors and gateways, but only certain systems can connect to it.)
 - DEXTRA (Alternative linking system, modeled after DPLUS, newer generation, uses XRF reflectors, and DEXTRA Gateways)

ircDDBGateway

- Features (continued):
 - Code to avoid DPLUS/DEXTRA cross-linking
 - D-RATS feature
 - login to gateway and run D-RATS out of attached repeater(s) (EOC)
 - DPRS gateway to APRS-IS (GPS-A only)

ircDDBGateway

- Features (continued)
 - Multi-Repeater support (A, B, C, D)
 - No DD mode connection but being investigated
 - Operates with full repeater or simplex radios attached. (Full function replacement for DVAR Hotspot.)
 - Server platform for STARnet Digital
 - Including a bridge to DEXTRA

STARnet Digital

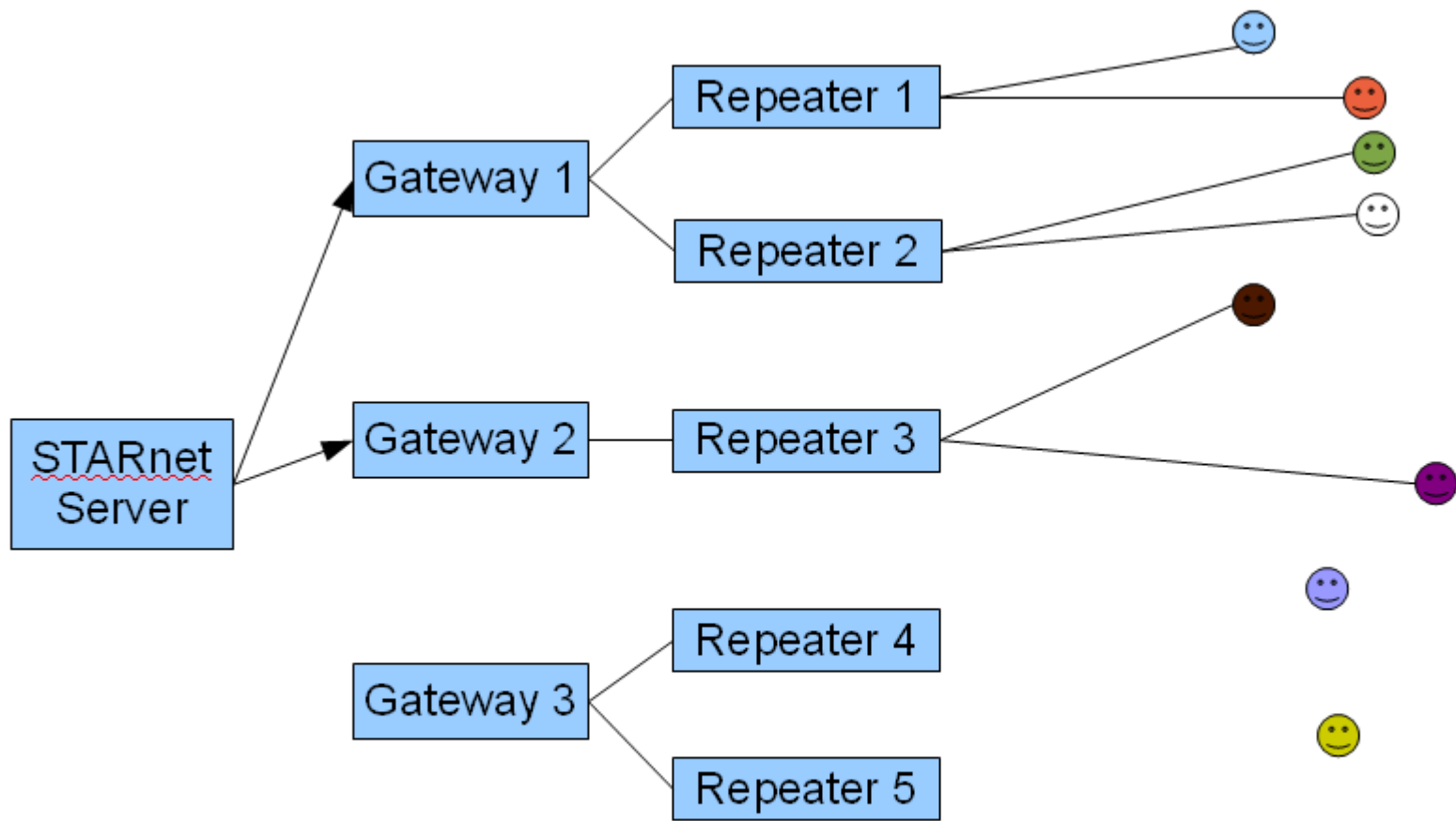
- New application for D-STAR
 - Announced on April 3rd, 2011
- Designed by K7VE and implemented by G4KLX
- It is not linking like DPLUS or DEXTRA
- It uses callsign routing to join a network of user stations into a “**group**”
 - A user joins or **subscribes** to a group by putting the group's callsign in the UR address on their radio and pressing PTT

STARnet Digital

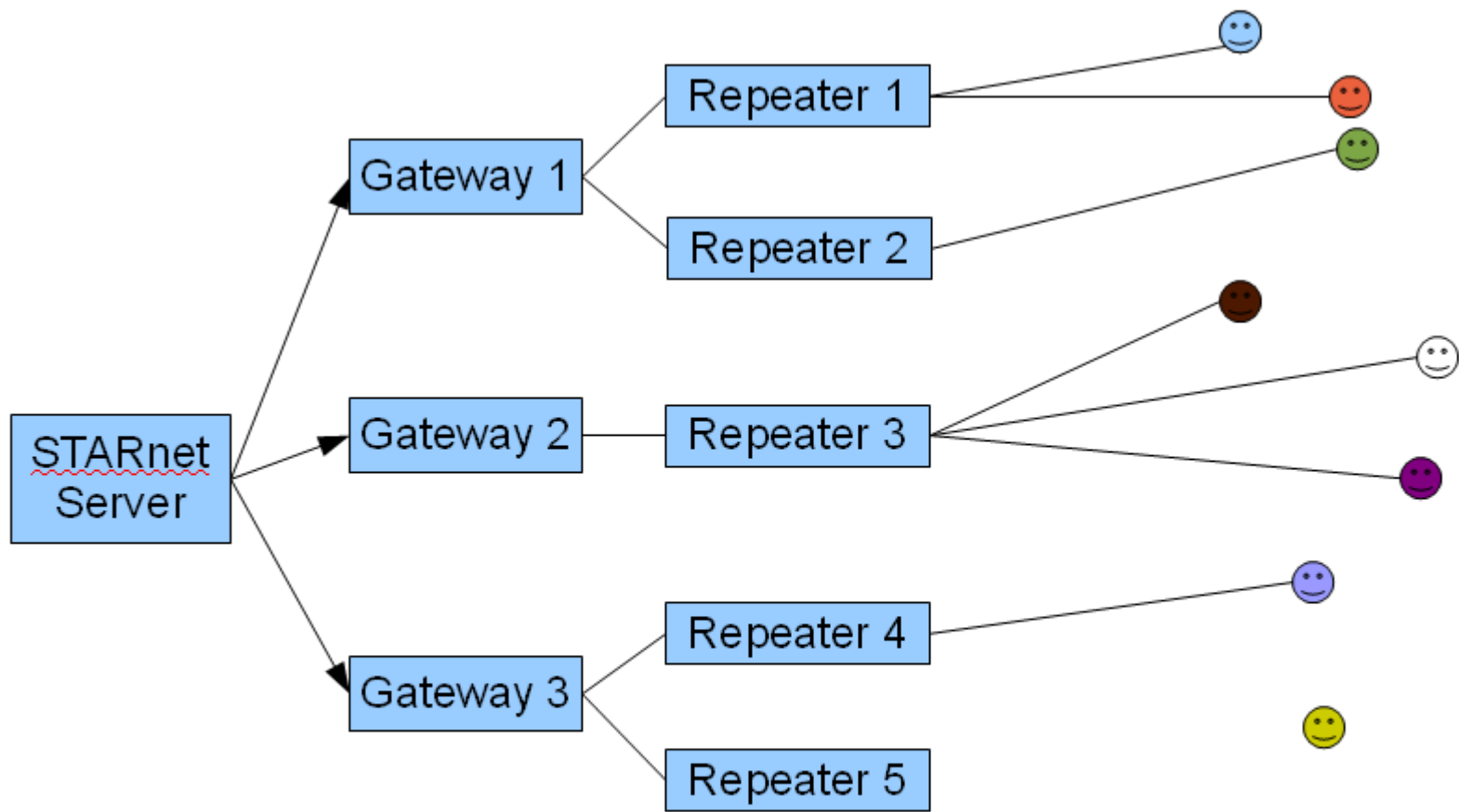
- No “unlinking”, no switching to “CQCQCQ”
- To talk to the group, set the group callsign in UR
- If you move to a new repeater
 - The group will follow you once you press PTT
 - The group will leave the old repeater if nobody else is subscribed.
 - Reenter the group callsign to UR to talk to the group (memories are your friends)

STARnet Digital

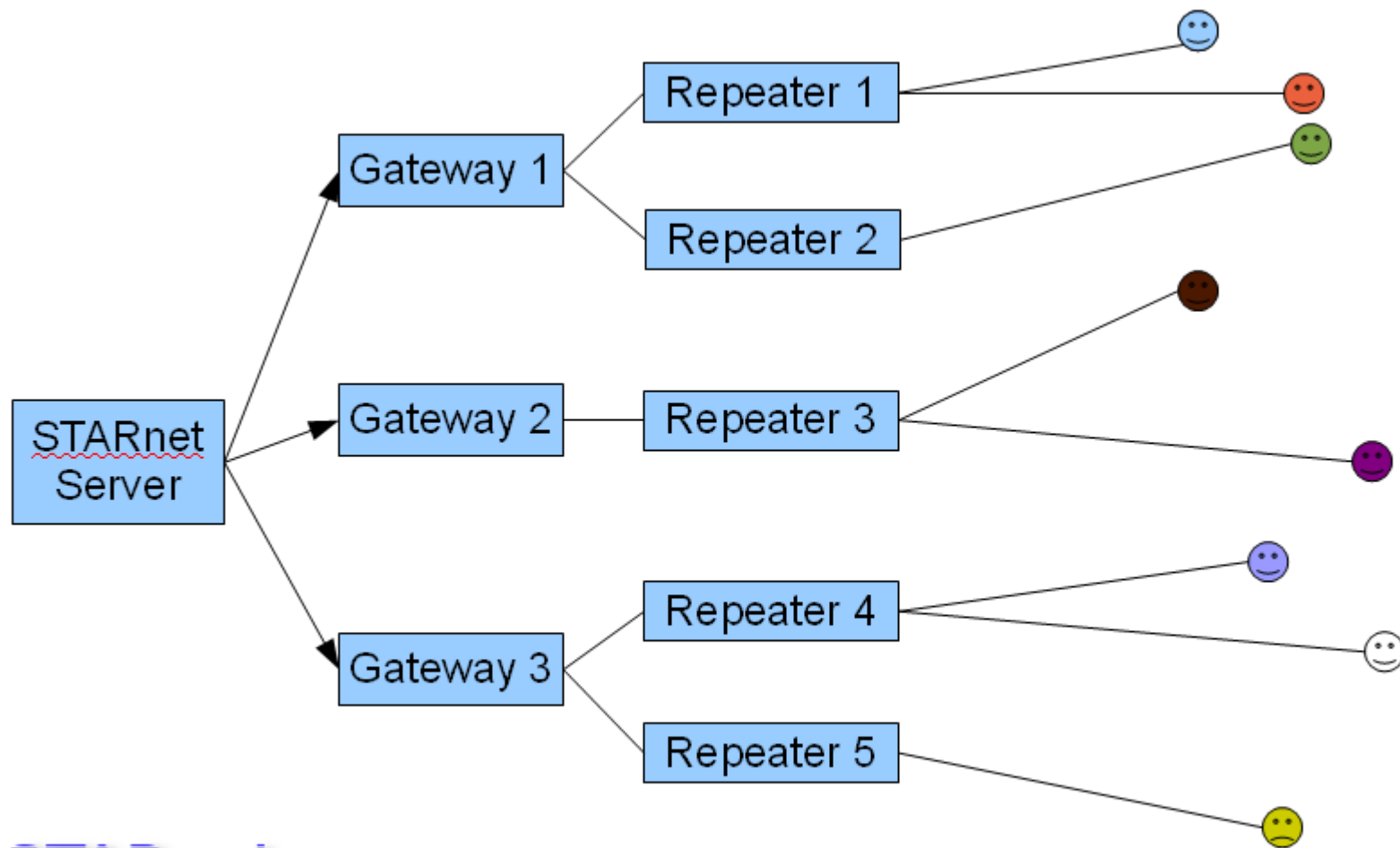
- To leave a group, put “LOGOFF” in the comment field and put the group call in UR (memories are very handy) and press PTT

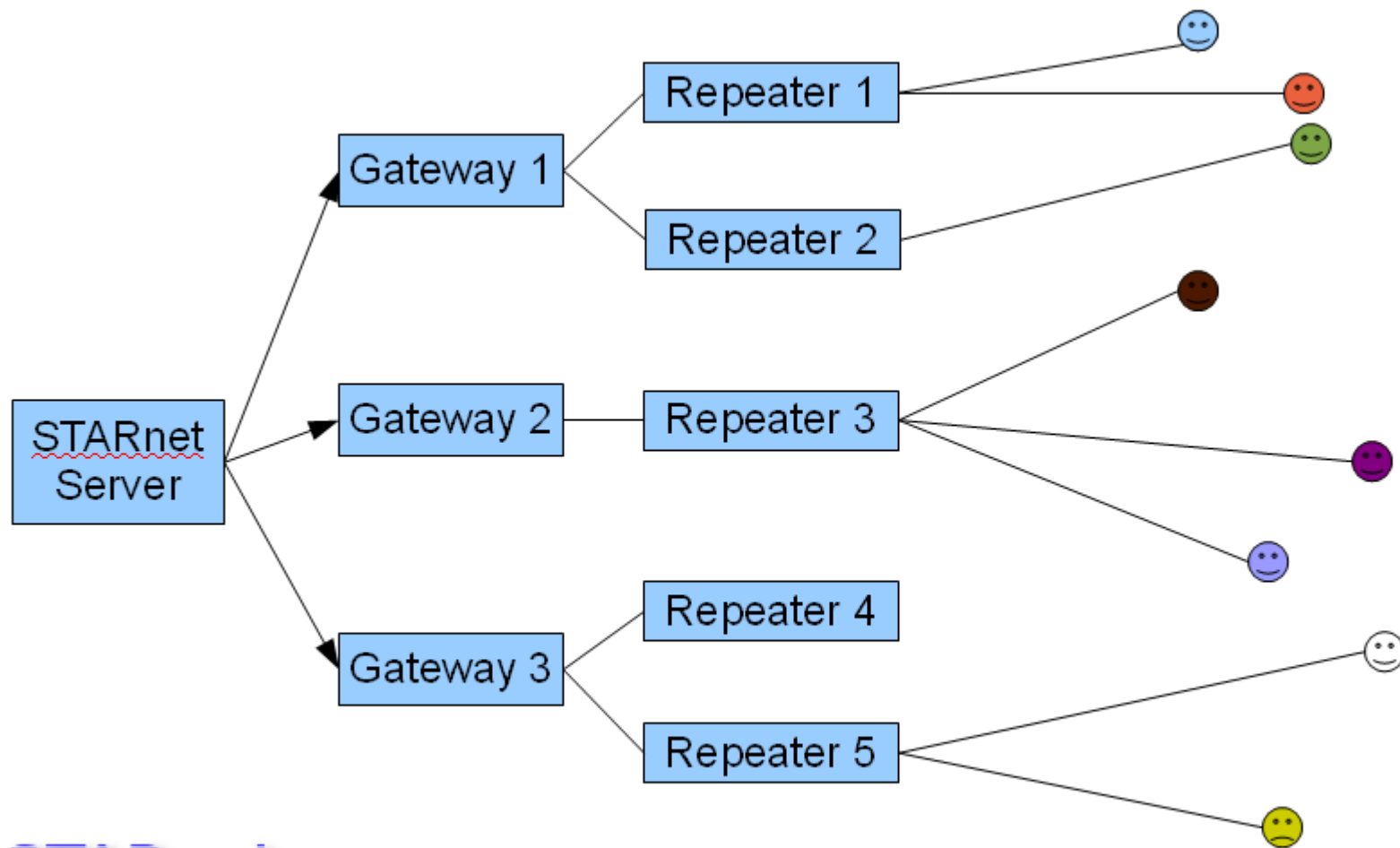


STARnet
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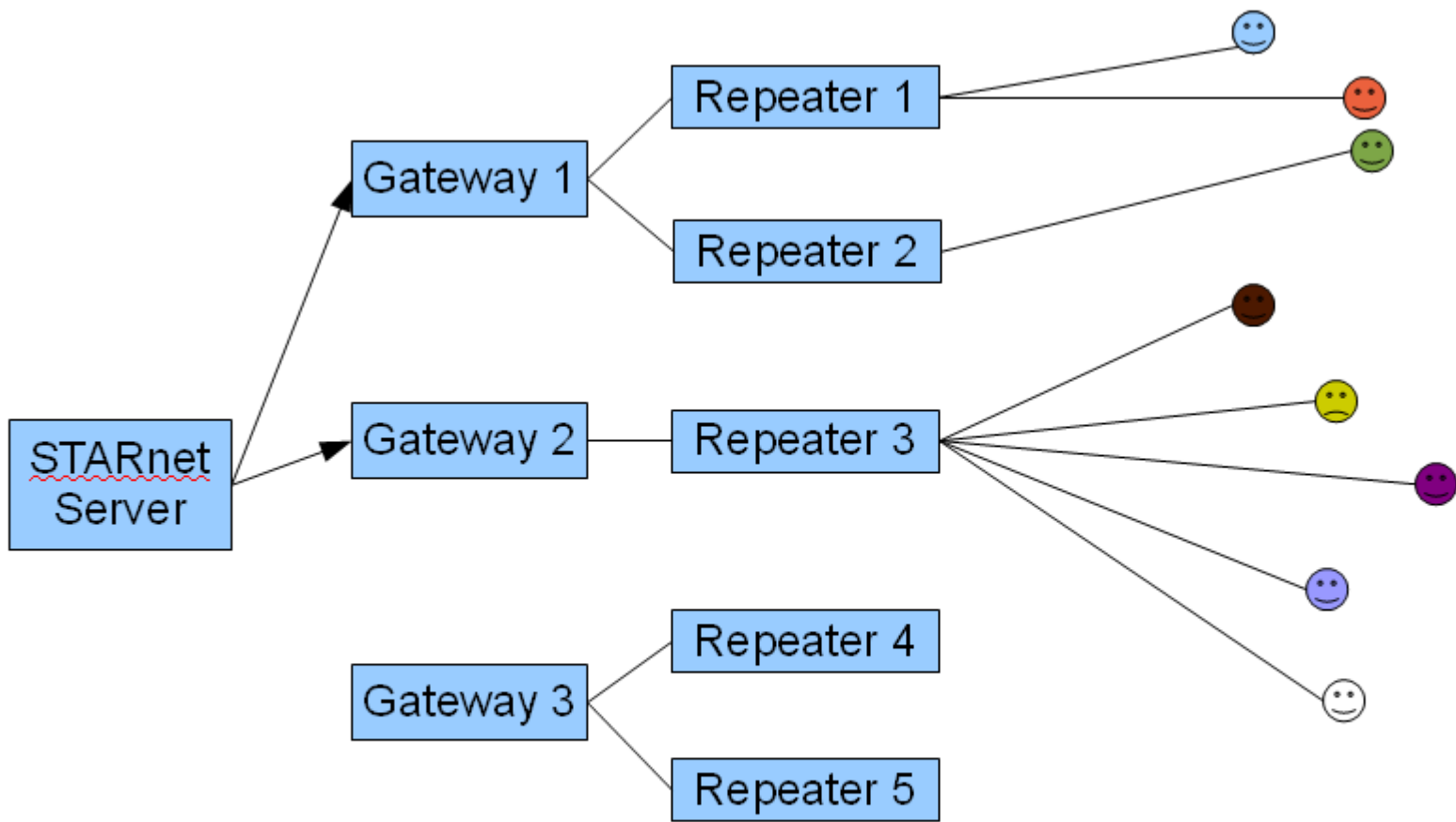


STARnet
Digital





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STARnet Digital

- The Server
 - Two implementations:
 - ircDDBGateway (if also connecting RF devices such as a repeater or simplex node)
 - Standalone STARnet Server (no RF attached)
 - Needs to have
 - a gateway callsign
 - public IP address (not shared with other gateway)
 - RF attached need a “club” callsign
 - ircDDB gateway credentials

STARnet Digital

- Each group needs a callsign/terminal ID that is registered on the “trust server”
 - For routing to Icom G2 and G4ULF systems
- Supports up to 10 groups (on STARnet Server) per server.
 - If needed we can increase this number.
- Can run with GUI or as a daemon/service
- Delivered as a Windows binary and source code that can be compiled on Windows or Linux
 - Open source C++

STARnet Digital

- Groups have two timers:
 - A user timer which unsubscribes a station that hasn't keyed up on the group before the timer expires.
 - A group timer which unsubscribes all users in the group if it expires and no station has transmitted to the group
 - Each timer is in minutes and can be set to never expire (except on reboot of the group)
- No “tactical” group callsigns at this time.

STARnet Digital

- Stations can subscribe to multiple groups
 - Subscribe then go about your regular operating, when traffic is sent to the group(s) it will appear on the repeater/simplex node you last transmitted on.
 - The gateway must have ircDDB enabled.
 - Unsubscribe from groups that you are no longer interested in receiving, from any ircDDB enabled gateway.
 - **LOGOFF** in Comment Field
 - Optional UR Callsign (on some groups)

STARnet Digital

- Powerful tool for EMCOMM as you can create separate groups for each team, such as:
 - State wide
 - County wide
 - Municipality wide
 - Tactical team
- Change UR callsign to talk to each group
- Change UR callsign to CQCQCQ when not talking to group, or a station callsign for direct

STARnet Digital

- Still adding features, but it is ready to go for you to use.
- More information:
 - Yahoo! Forum ircDDBGateway
 - Yahoo! Forum pcrepeatercontroller
 - My blog at k7ve.org
 - See Press Announcement
 - More articles to come

An Analog Repeater Conversion

- Converting an analog repeater can be easy or hard, depending on selected repeater.
 - Repeater must use true FM (not PM)
 - Access discriminator audio for receive
 - Access to modulator modulation point
 - PTT (COR optional)

An Analog Repeater Conversion

- Additional Items:
 - Modem board (mini-Hotspot and firmware), cheap soundcard, or Icom controller (with interface circuit)
 - Computer with pcrepeatercontroller or G4ULF repeater software and gateway software.

An Analog Repeater Conversion

- Adjust deviation to approximately 1.2 Khz
- If possible replace receive filters to obtain narrow band receive (6.25 Khz. Signal)
- Make sure audio in and out is flat, this may require removing some parts. GMSK has many low “audio” components (near 0 Hz.)

An Analog Repeater Conversion

- Adjust levels for proper modulation mask.
- Everything else about good repeater design:
 - low loss (hardline) coax, good duplexers, etc.
- I use a narrowbanded Kenwood TKR-820
 - See k7ve.org blog

Questions?

Visit <http://k7ve.org>
Email k7ve@k7ve.org