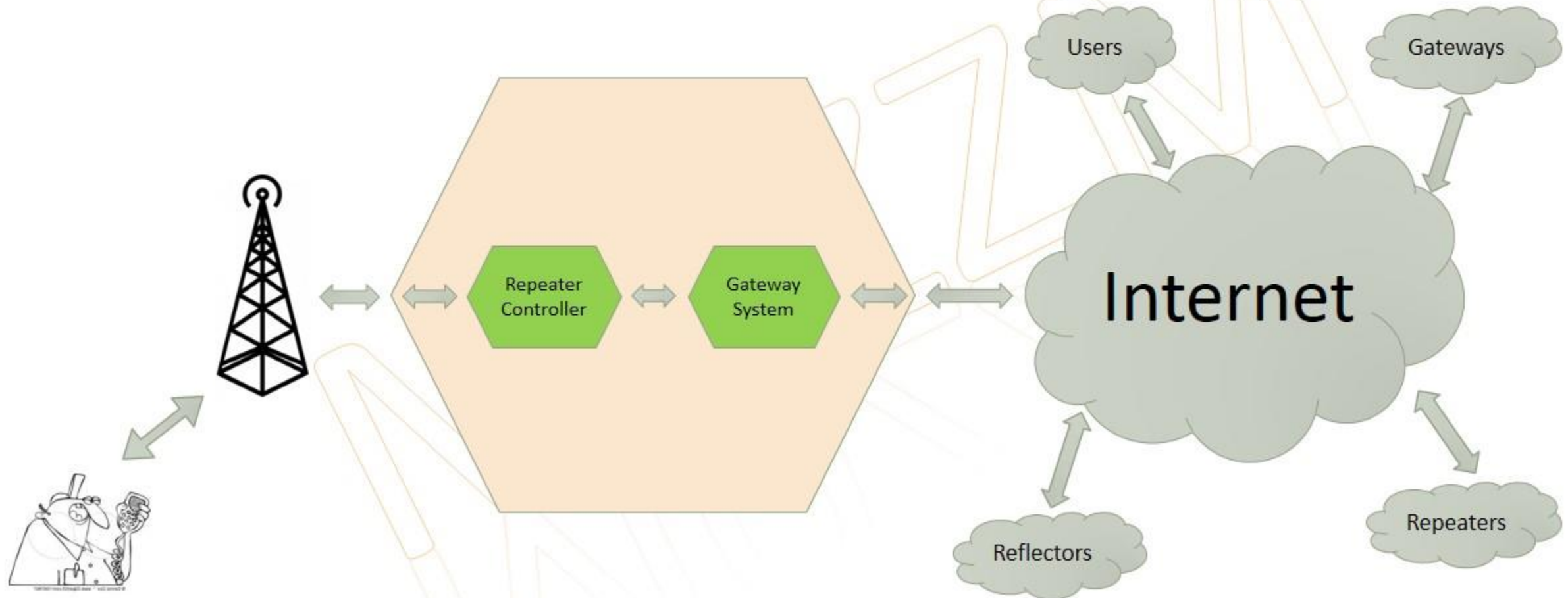


D-STAR For Beginners

HOW TO UNLEASH THE FULL POTENTIAL OF YOUR NEW D-STAR RADIO

HOW TO CONNECT ALL THE WORLDWIDE D-STAR NETWORKS USING ALL THE SYSTEM FEATURES AND OPTIONS TO CONTACT OTHER USERS AND GROUPS

What can I do with my D-STAR radio?



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You can connect with other people who are also using D-STAR equipment:

- Directly, as in a normal traditional FM analogue contact
- Via a repeater that covers any given “local area”
- Via a repeater that also functions as a gateway, connected to the internet and to reflectors, allowing longer distance contacts

To do this you need to have four settings correctly set in your radio:

- Your/UR
- RPT1
- RPT2
- My

Who will hear me and from where?

It all depends on how you set your radio and the capabilities of the gateway you connect to:

- Direct contact will take you as far as your RF signal goes
- Via a repeater you will go as far as the repeater's RF signal can take you
- Via a gateway you will be able to connect to the networks allowed by the gateway – this can potentially be unlimited and it may be possible that your signal is repeated worldwide by many repeaters. If the gateway that you use is a repeater, you will also be heard within the area covered by that repeater



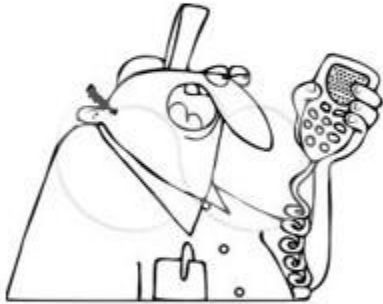
D-STAR radio main settings

Below is an overview of the D-STAR main settings, all fields can contain up to 8 characters:

- Your/UR: for general talk, it is normally set as [CQCQCQ], that is 6 characters and 2 spaces.
- RPT1: this can be left blank for direct contact, or set with the repeater/gateway callsign plus the band indicator when applicable. The band indicator always occupies the eighth character. For example, if you are using the UHF module of GB7IC, you will need to set this as [GB7IC B], that is 5 characters, 2 spaces, plus the band indicator B at the end of the string. Similarly, [GB7IC C] would apply for the VHF module.
- RPT2: if you want to be heard beyond the reach of this repeater (e.g. another gateway, another band module, or a reflector), you would need to set this as [GB7IC G]. The suffix G is for Gateway, it allows you to route your voice and data via the internet to other remote D-STAR infrastructures. Leave blank if you wish to communicate only locally.
- My: this is your callsign, it also takes 8 characters with the eighth character being a suffix. Many people use this suffix, however my advice is not to use it unless you have good reasons for doing so. The bottom line is that if you use it people will never know how to quickly find you, unless they track all your callsigns. However if you do data (and if you are reading this you probably don't) this feature helps.

Examples: direct contact (local)

AB1XYZ



Your: [CQCQCQ]
RPT1: []
RPT2: []
My: [AB1XYZ]

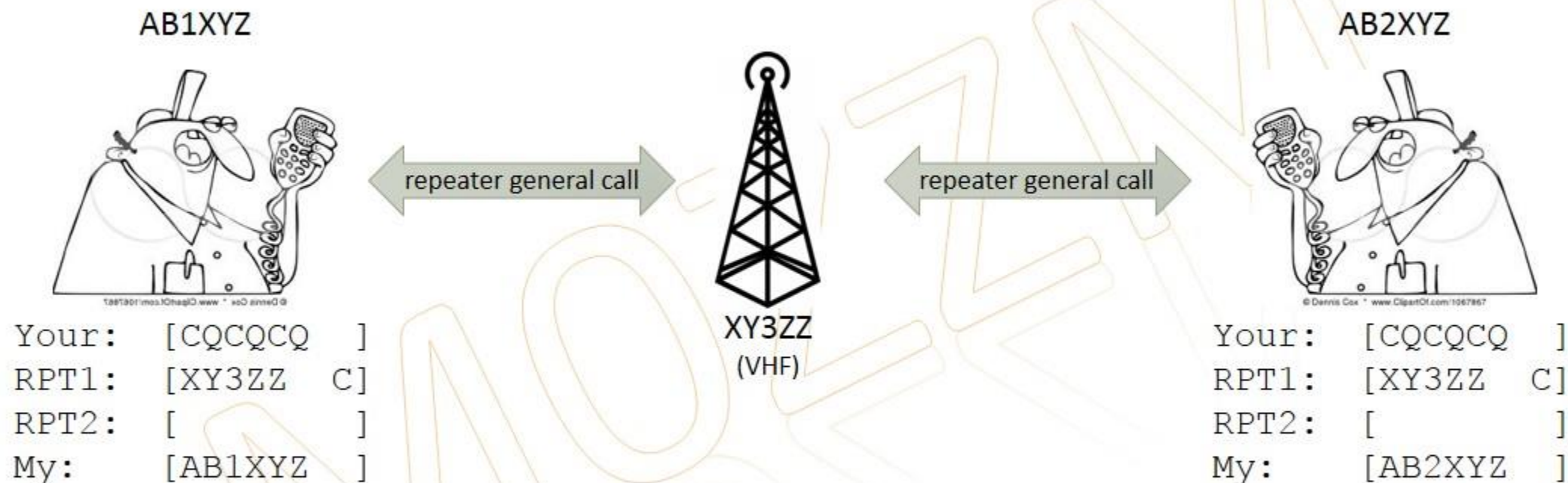
direct contact, general call, no repeater

AB2XYZ



Your: [CQCQCQ]
RPT1: []
RPT2: []
My: [AB2XYZ]

Examples: repeater contact (local)



- The call is heard on the TX frequency of the repeater
- As RPT2 is left blank, the repeater will not route these calls via the gateway
- If the gateway is connected to the internet, incoming calls will be heard but the above points still apply.

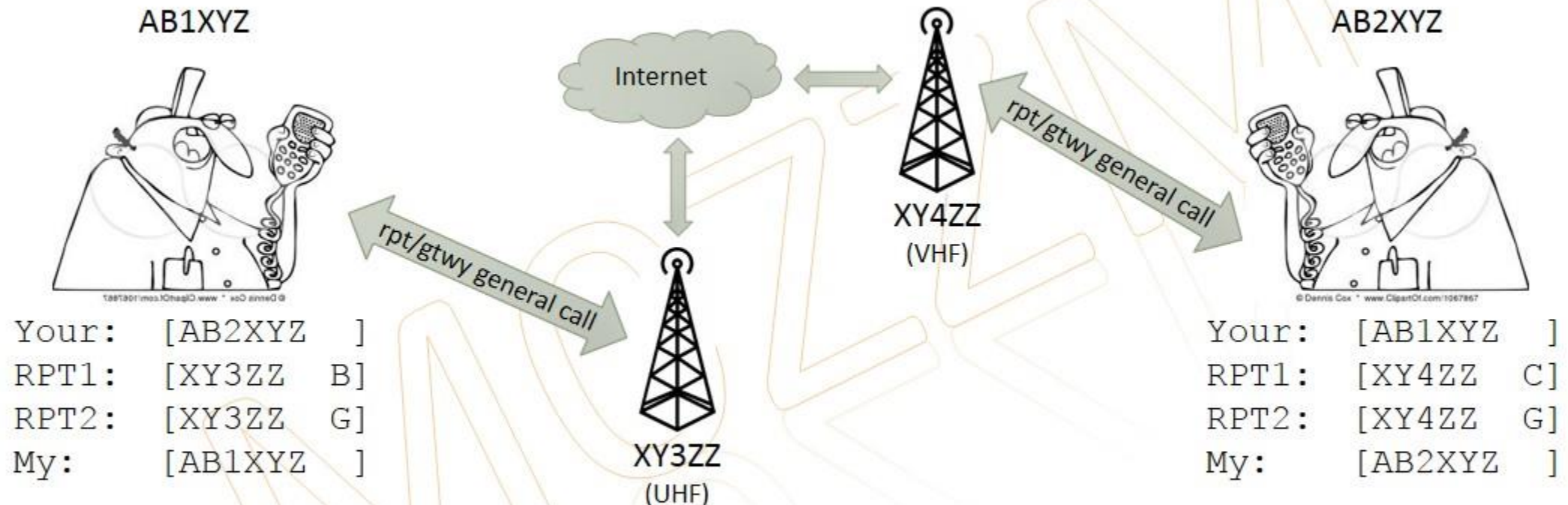
Network contact

Over the years the D-STAR network has evolved. Today the network can rely on a number of linking and routing facilities, most of which can be embedded and made available to users via powerful software packages running on the gateway, such as ircDDBGateway. The most popular are:

- Callsign Routing: a way of contacting a given person by specifying his/her callsign
- D-Plus, a network of reflectors (REFxxx series, where xxx are three digits)
- D-Extra, a network of reflectors (XRFxxx series, where xxx are three digits)
- DCS, a network of reflectors (DCSxxx series, where xxx are three digits)
- CCS, a callsign routing system that allows to connect a user or a gateway by keying a DTMF code
- Starnet: a temporary connection that allows a user to temporarily link to an existing network of users, repeaters, or reflectors

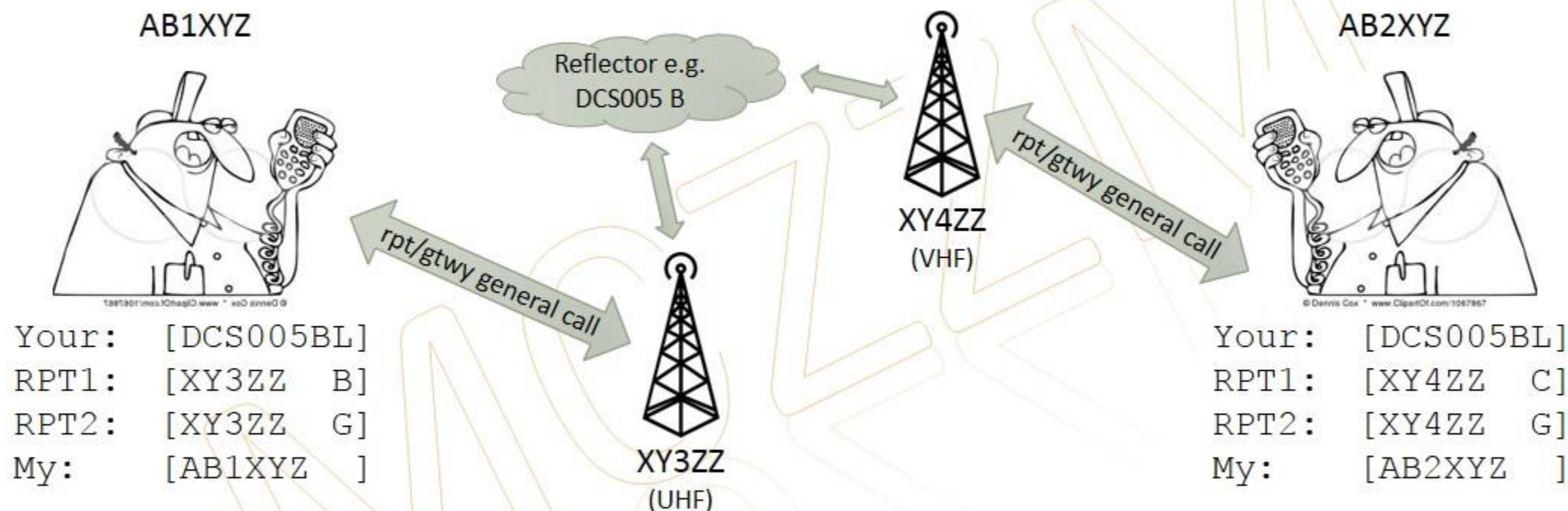
The above is a very simplistic description. If you are a D-STAR beginner, you may or may not want to go into more detail however the above will set you on the correct path to use your D-STAR radio to its full potential.

Examples: callsign routing direct call



- The call is routed from one station to the other. When the receiving station hears the call, the [CQCQCQ] setting has to be changed into the callsign of the calling station [AB1XYZ] in this case. This can easily be done by pressing the RX-CS button on the D-STAR radio.
- If the receiving call does not do as above, the caller won't hear the reply, any station having [CQCQCQ] in the UR field won't be heard on the other repeater
- If the gateways are connected to a reflector, this call will not be heard on the reflector(s)

Examples: reflector linking entries (applies to D-Plus, D-Extra, DCS)



- The 'Your' entry consists of the reflector's callsign, its B module, and the L instruction for the gateway to link to that reflector. After voice or slow-text confirmation, the 'Your' field has to be set to [CQCQCQ]
- All the reflector's traffic, if any, will be heard via the repeater in use
- Any subsequent call will be routed to the reflector and, in turn, to all repeaters/stations connected to it
- The above applies to repeaters too, e.g. you could connect GB7IC C by entering [GB7IC CL]

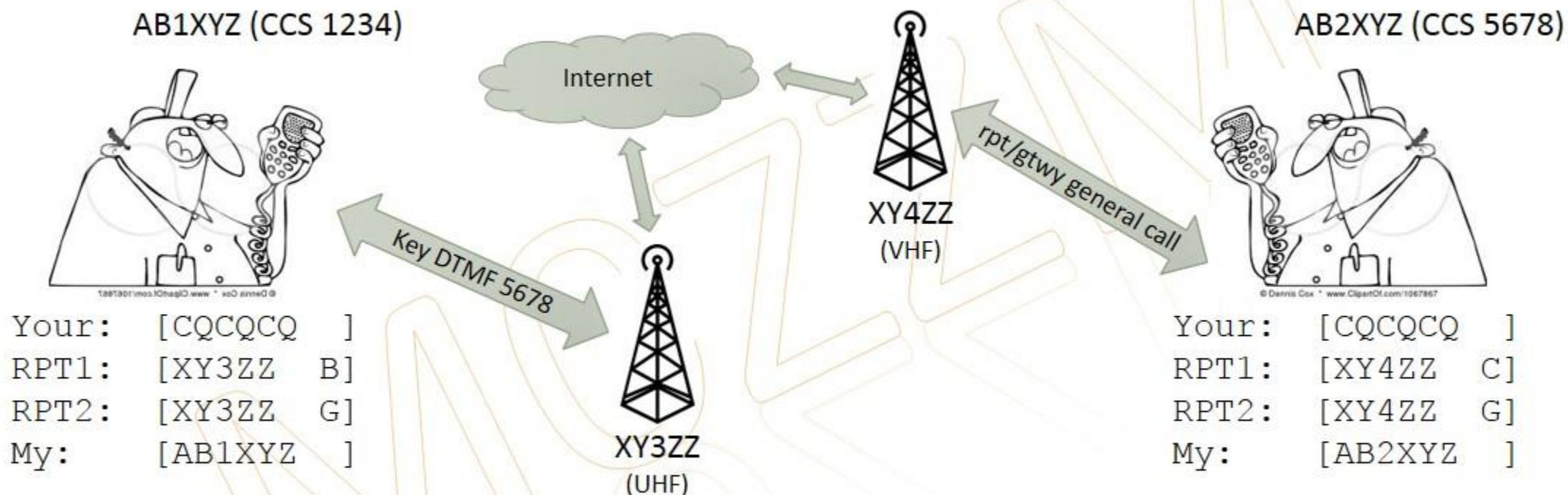
Network contact - CCS

The CCS functionality allows D-STAR users to place direct calls to other users who are also registered on the CCS network, by simply dialling a four-digit DTMF code in their radio. To use CCS you need to register your callsign on xreflector.net. Registration is free and you just need a callsign and an email address.

Although CCS looks similar to the older callsign routing, there are some key differences:

- Callsign routing simply routes calls through the net, it doesn't create any links. This means that there can be broken communication, i.e. you may be able to hear one station on a give repeater but not others. You will also be missing the incoming reflector traffic on the destination repeater.
- CCS creates a connection by linking the source and destination gateways through the network, not the users directly. This way, the caller will be immediately aware if the destination repeater/gateway is busy and will know when to initiate a call.
- CCS connections time out after 5 minutes inactivity on the originator's side, so it's more suited to a one to one call rather than larger QSOs, where more than 5 minutes can elapse between activities. For larger QSOs, linking directly a repeater or reflector is a better option.

Examples: CCS direct call



- AB1XYZ keys DTMF 5678 with the 'Your' field of his radio set to [CQCQCQ]
- The network will locate AB2XYZ on XY4ZZ C and link this repeater to XY3ZZ, where the caller is located
- Any reflectors or repeaters connected to the caller's repeater will be disconnected; any existing connections to the the receiving repeaters will be held, so that the caller can hear any ongoing talking on the receiving side
- You can terminate the call by keying A, or by letting the connection lapse after 5 minutes of inactivity

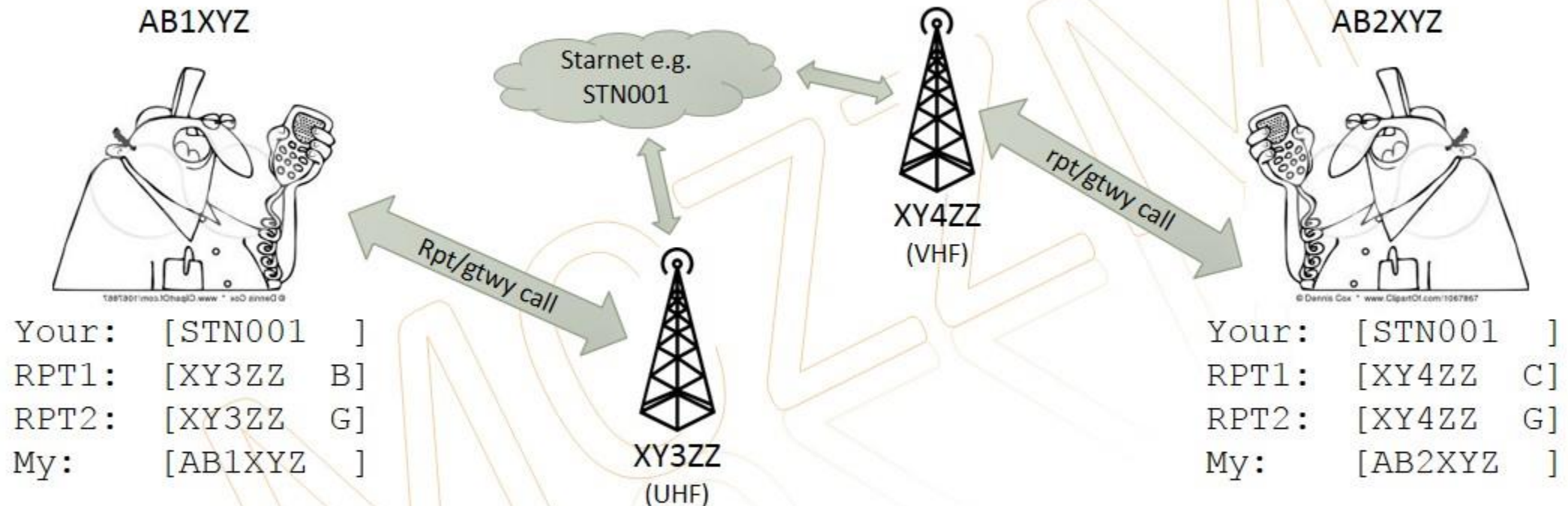
Network contact - Starnet

Starnets are conferencing networks that can be joined by keying the relevant Starnet code in the 'Your' field of a D-STAR radio. This page <http://db0fhn.efi.fh-nuernberg.de/doku.php?id=projects:dstar:starnet> contains a list of Starnets, here you will find general information and time out settings.

You can find a detailed explanation of Starnet on the K7VE's page <http://k7ve.org/blog/2011/04/starnet-digital/>, however below are some of its main features:

- Connecting and disconnecting a Starnet is very easy, just add its code to the 'Your' field.
- If you remain inactive for a set period of time, usually 15 minutes or more, the network will automatically disconnect you and only active users will remain connected

Examples: Starnet call



- Users use [STN001] instead of [CQCQCQ] when communicating via Starnet STN001 (this is just an example). Setting the radio back to [CQCQCQ] will result in your calls not reaching the network but you will still hear the incoming Starnet traffic until timeout disconnection.
- If your local gateway is linked to a reflector, when you join a Starnet none of your outgoing or incoming Starnet traffic will be heard through that reflector.
- You can disconnect a Starnet by issuing a T instruction, in the above example it would be [STN001 T], or by letting it time out.

D-STAR other miscellaneous entries

The below list of entries and network instructions is subject to your local gateway's capabilities and settings. These may vary depending on the installed software and the keeper's decisions.

Using 'Your' field instructions:

- [I] returns Info on its current linking status
- [E] echoes your transmission back to you
- [U] unlinks remote stations/repeaters/reflectors

Using DTMF entries:

- *1C connects you to D-Plus reflectors (REF series), in this case to REF001 C
- B333B connects you to D-Extra reflectors (XRF series, in this case XRF333 B
- D6A connects you to DCS reflectors (DCS series), in this case DCS006 A. See xreflector.net for more
- 4 or 5 CCS digits will connect you to a user or a gateway via CCS. See xreflector.net for the CCS users list
- STN006 will connect you to a Starnet, STN006 in this case
- # will unlink a reflector