

CC User Manual

Manual by [Gary ZL2iFB](#)
Software by Lee VE7CC

Version 1.3 **DRAFT**

February 2026

This **DRAFT** is an as-yet incomplete guide to installing, configuring, using and getting the most out of VE7CC's **Cluster Client** ("CC User") software. Connect to DX Cluster nodes and configure them easily through its intuitive point-and-click user interface. See a custom-filtered selection of DX spots streaming from the clusters or skimmers to your logging software, populating your band maps. Aggregate time-sensitive DX info from various sources around the globe. Run your own private virtual DX cluster node in the shack!

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Hinson tip: click whatever catches your beady eye on the contents listing to go straight there. There is advice on getting the most out of this manual [here](#), plus more Hinson tips like this one scattered liberally throughout.

Document history

Version	Date	Change
1.3	Feb 28 th	Linked keywords to their glossary entries. Explained the DX tab 's lock function. Added instructions for updating the country file .
1.2	Feb 22 nd	More about eQSL and LoTW user checks in the DX tab . More about talkies in the Users tab . Listed [some?] PCnn and CCnn message types .
1.1	Feb 19 th	More on the Bands tab .
1.0	Feb 16 th	Expanded on the Bands tab (thanks for the prompt Jim W1JHG).

Version	Date	Change
0.9	Feb 14 th	Suggested searching the Wayback Machine (web.archive.org) for archived copies of the now sadly defunct British Columbia DX Club's website (bcdxc.org). Listed a few reasonably reliable DX Clusters worth trying.
0.8	Feb 6 th	Expanded the Settings tab description, including more screenshots ... and a fair bit of guesswork.
0.7	Jan 26 th	Improved the instructions re feeding spots through CC User to logging software . Tidied up the CC Cluster appendices . Added a QR code to the front page to download the current, live manual.
0.6	Jan 15 th	Expanded the quick start section to show how to connect to a cluster and start spots flowing – just the basics for now.
0.5	Jan 7 th	Updated CC User installation plus v2 update and v3 upgrade instructions.
0.4	Jan 2 nd 2026	Minor updates pending agreement to continue the documentation project.
0.3	Oct 2021	Released the incomplete initial draft, for now.
0.2	Aug 2021	Awaiting input/clarification from Lee ...
0.1	July 2021	Skeleton migrated into Word, fleshed-out and reformatted.
0.0	July 2021	Initial outline/skeleton knocked together in Google Docs.

Copyright/license

The compiled **CC User software** (written by VE7CC) and the **PDF version** of this manual (written by ZL2iFB) are both freeware. However, the original program source code and MS Word document are protected by copyright.

The current, latest, 'official' version of this CC User Manual is maintained and available online at https://www.g4ifb.com/CC_User_Manual.pdf The history table ▲ gives details of changes.

Any other copies of the PDF found elsewhere on the web are *probably* out of date.

Hinson tip: although this is freeware, please use and by all means share the URL for the 'official' PDF version of this manual, which is https://www.g4ifb.com/CC_User_Manual.pdf or use the QR code on the cover. Please *don't* circulate or republish the PDF itself, especially while this manual is still being drafted. It is incomplete and has errors that are being weeded-out, gradually, during 2026.

1 Introduction

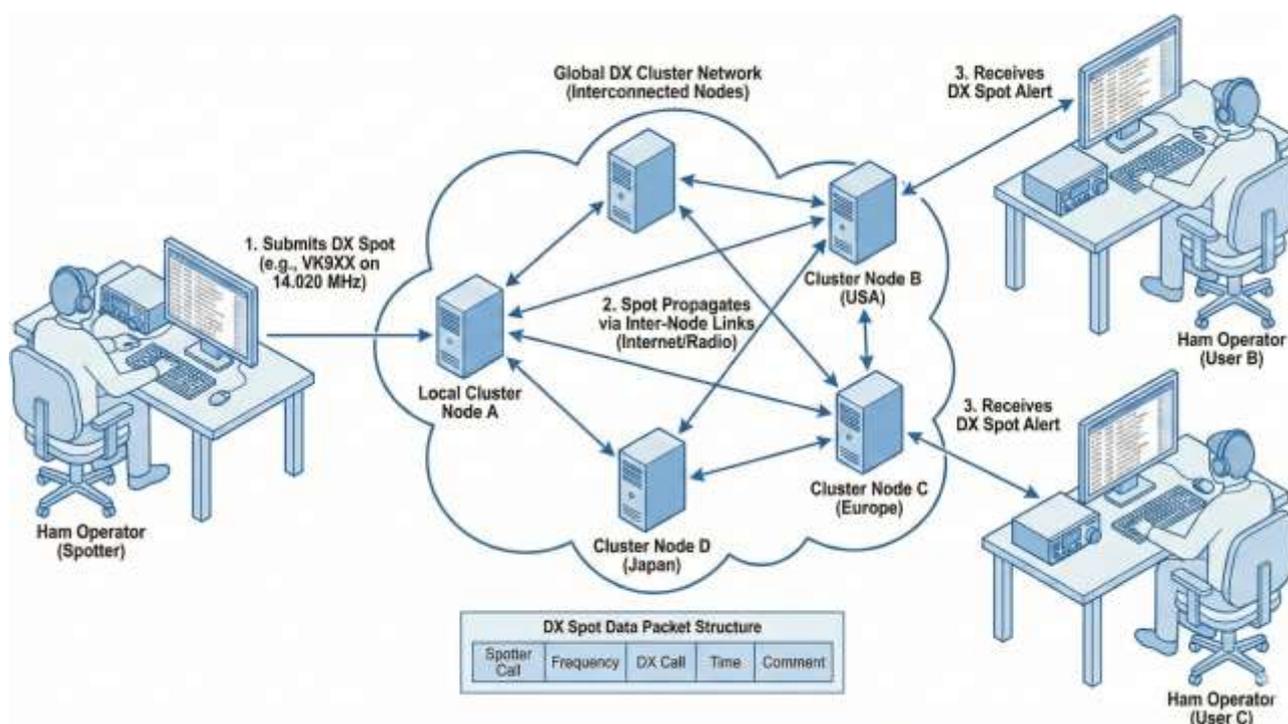
1.1 About DX cluster

1.1.1 A basic introduction and brief history

“A DX cluster is a network of computers, each running a software package dedicated to gathering, and disseminating, information on amateur radio DX activities. The computers comprising the network are called nodes, the network itself being termed a cluster of nodes.”

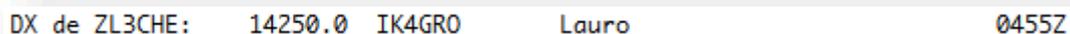
[Source: [Wikipedia](#)]

In the 1980's, the first **DX clusters** were established for active hams to share information about the DX stations they heard or contacted, passing **DX spots** around to alert each other in real time – or as soon as practicable anyway. The DX cluster systems (nodes or servers) communicated with each other on amateur radio-based data networks in a mesh-like peer-to-peer network, passing on DX spots to adjacent nodes as well as to their connected users ▼



Those DX clusters grew out of even earlier informal arrangements between groups of friends, typically local DXers keeping in touch on 2m or 70cm FM channels, or alerting each other about band openings and similar excitement by telephone.

Before that, DX information had been compiled and mailed out regularly as printed news sheets ... sometimes arriving days, weeks or months after the DX had long since disappeared causing a great gnashing of teeth. Between the World Wars, printed newspapers, journals and gazettes spoke of pioneering amateur experiments and astounding achievements, such as short-wave signals crossing the globe despite some professionals believing radio to be useless over such long distances.



DX de ZL3CHE: 14250.0 IK4GRO Lauro 0455Z

These days, **DX spots** are short news snippets ▲, not unlike SMS/text messages, containing:

- The spotter’s call – the [callsign](#) of the person who originally supplied the DX spot to the DX cluster network via one of the nodes;
- The frequency on which the DX station is reportedly transmitting;
- The DX station’s [callsign](#) (IK4GRO in this example);
- Optional free-text comments or brief notes, such as the split frequency on which the DX station is listening for callers, his IOTA/SOTA reference, grid square, path/propagation mode *etc.*, and yes his name and often a friendly greeting;
- The UTC time that the spot was accepted into the DX cluster network. This is important because DX spots are often time-critical and lose their value rapidly. Stale spots are barely even of historical interest, except perhaps for statistical and propagation prediction purposes. DX cluster networks are optimized to circulate DX-related information quickly and efficiently in near-real-time (as opposed to, say, store-and-forward systems such as email).

In the early days (mid-1980’s), the DX cluster networks used amateur frequencies and radio equipment - typically VHF/UHF bands and “[packet radio](#)” based on the AX.25 protocol – an amateur version of [X.25](#). “Packet cluster” nodes and users communicate using modems called **Terminal Node Controllers**. During the 1990’s, most DX cluster **nodes** shifted onto the Internet as it formed, using TCP/IP protocols. Most are now accessed using Telnet or HTTP. VHF/UHF packet cluster links have dwindled, at least in those areas where the Internet is readily available and reliable. Packet radio is still used for **Automatic Packet Reporting System**

1.1.2 How DX cluster works

As hams have increasingly adopted computer logging, logging programs can receive, process, display, send and most of all *use* DX spots. Instead of manually tuning the radio’s VFO or typing-in the frequency from an interesting DX spot, we can simply point the mouse cursor at the spot on the screen and click to send our CAT-enabled radios right there, instantly. Very convenient, particularly if the logging software will also log the transmit and receive frequencies accurately after we tune around in a pileup situation.

In much the same way, we can typically compose and send a DX spot to the DX cluster network with just a click or two. These days, however, DX spots originated by people are *far* outnumbered by those originated by robotic systems – mostly CW Skimmers and FT8 systems.

Automated spotting involves analogue or digital (software defined) radios linked to software decoders. Amateur transmissions on CW, RTTY and digital modes such as FT8 and FT4 can be decoded automatically, extracting [callsigns](#) plus related information such as signal strength and frequency.

The **Reverse Beacon Network** connects **Skimmers** – automated systems monitoring the amateur bands for CW and RTTY signals, and where possible decoding them, measuring their strength, then composing and sending DX spots. [ReverseBeacon.net](#) maps them.

Other DX spotting networks include:

- Web-based DX cluster portals such as [DX Summit](#) and [DX Watch](#). These do a nice job of filtering and displaying spots, and their historical records can be useful to check when a given DX station or [DXCC](#) entity has been spotted, but that's about it really. In particular, they don't link to your radio, so you can't simply click a DX spot shown in your web browser to start listening instantly on the specified frequency.
- [PSKreporter.info](#) collates and maps digimode (FT8, FT4, PSK etc.) spots, which are fed to it by digimode software such as WSJT-X, JTDX and others. [Callsigns](#) decoded in messages received by hams monitoring or using the digimode sub-bands can be sent to PSKreporter if so configured by the users.
- [WSPRnet.org](#) collates and maps WSPR spots in a similar fashion, with spots originated by WSPR monitoring stations around the globe.
- Several DX and contest clubs have established private spotting networks, circulating spots of interest to their members, or spots of their members.
- Some DX spotting networks are interconnected e.g. feeding Skimmer spots from RBN into the global DX cluster network.

The increasing volume of DX spots lends itself to statistical analysis supporting propagation predictions and research.

1.2 What are DX spots?



DX spots are reports about amateur stations currently on the air, circulated rapidly through the global DX cluster network and distributed to connected DXers around the world.

In more detail, DX spots are structured plain ASCII text strings circulating between nodes (servers) and DXers (clients).

Spots are originated/created by 'spotters', either manually (typed by amateurs into apps on their shack computers or smartphones) or automatically (e.g. extracted from digital mode software or Skimmer-type robots).



Cluster message formats or structures vary according to the DX cluster server software and configurations, plus the intended destinations. As of 2026, DX Spider, AR-Cluster and CC-Cluster nodes use “PC Protocol” packets for node-to-node (server-to-server) and node-to-user (server-to-client) communications:

Packet ID	Message type	Fields (caret-terminated)
PC11	DX spot	PC11^Freq^DX call^Date^Time^Comment^Spotter^Node^ Information about a DX station heard on the air (supposedly)
CC11	Enhanced DX spot	See below
PC12	Announcement	PC12^From^To^Message^Node^ Brief announcements or talkies, like SMS/TXT messages
PC16	User login	PC16^Node^Callsign^Hops^ Tells the DX cluster network that a user has logged in
PC17	User logout	PC17^Callsign^Node^ Tells the DX cluster network that a user has logged out
PC18	Node login	PC18^NodeCall^Version^Flags^ Tells the DX cluster network that a node has joined
PC23	WWV report	PC23^Date^Time^SFI^A^K^Forecast^Spotter^Node^ Provides solar and geomagnetic data from WWV or WCY
PC61	Enhanced DX spot	PC61^Freq^Call^Date^Time^Comment^Spotter^Node^ IPAddr^ Appends the spotter’s IP address or grid
CC61	Further enhanced DX spot	See below

VE7CC extended the PC Protocol with **CC11** and **CC61** messages providing more metadata than standard PC11 or PC61 packets. The command `<SET/VE7CC>` activates this extended mode on compatible DX cluster nodes.

A CC61 message includes the following fields (even if empty), separated by carets (^) ▼

Field	Meaning/use
Packet ID (type of message)	CC61
DX frequency	Reported frequency of the DX station in kHz with up to 2 decimal places e.g. 14005.22
DX station’s callsign	Reported callsign of the DX station being spotted
Date	UTC date (day-month-year) on which the spot was initially posted (sent to the first DX cluster node) e.g. 09-NOV-2021

Field	Meaning/use
Time	UTC time (hour and minute) on which the spot was initially posted e.g. 2216Z (the Z is optional).
Spotter's callsign	Callsign of the station that originated (submitted, sent) the DX spot
Comments	Notes about the DX from the spotter e.g. UP 1 or CW 5dB 15 WPM BEACON
Hops remaining	A count that is decremented each time this spot is forwarded from one DX cluster node to another. Spots are no longer forwarded once the count hits zero, on the presumption that they must have got to where they should have been by then. They are ex-spots. This stops them circulating indefinitely, like zombies.
RX via node	DX cluster node that sent us the spot.
Origin node	DX cluster node to which the spot was initially posted.
Spotter's ITU zone	Geographical information to help locate both the spotter and the DX station. This info can be used to filter spots quite specifically e.g. "Only show me spots for DX stations outside my CQ zone that have been spotted by spotters in my country."
Spotter's CQ zone	
DX station's ITU zone	
DX station's CQ zone	
Spotter's state	
DX station's state	
Spotter's DXCC entity	
DX station's DXCC entity	
Spotter's grid square	
DX station's grid square	
Location	Latitude and longitude of the DX are determined and added to the spot by the last DX cluster node in the chain, using grid squares if known, otherwise states or DXCC entities. This can be used by the client to calculate approximate bearings and distances relative to the user's home QTH.
Spot mode	Differentiates manually-entered from automated spots e.g. CW or RTTY Skimmer, FT8 etc. Enables quicker look-ups and responses to SH/DX commands. Skimmer spots are simply passed along and are not stored by the cluster nodes, whereas manually-entered spots are cached for a while. 'Own spots' (DX spots for the cluster user) can be handled differently e.g. showing bearing and distance from the user to the spotter, rather than from the user to the spotted DX station as would normally be the case.
Spotter's IP address	Useful for identifying Internet spotters, collating statistics etc.
Message timestamp	Used to discard (i.e. drop, not forward) stale old DX spots.

1.3 About the Cluster Client software (“CC User”)

Here are just some of the things that CC User can do for us:

- Connect simultaneously to multiple DX cluster nodes and other sources of DX spots (such as local Skimmers and FT8 software), aggregating the information into a consolidated stream while removing duplicate spots;
- Reconnect automatically if connections fail;
- Configure the DX cluster filters *etc.* through a straightforward point-and-click user interface, without having to get to grips with the differing command sets and syntax used by cluster server software running on various DX cluster nodes;
- Send DX spots, talkies *etc.* into the DX cluster network, and of course receive, process and display them, optionally passing them on to our logging software or other shack systems.

Manually composing cluster commands to configure complex filters and other functions is error-prone and time consuming, especially if the same filters are required on several DX clusters running different software. CC User makes it quick and painless.

These are CC User’s functions and features originally designed by Lee:

- Full-featured Telnet and TNC program for use with CC Cluster, AR Cluster, DX Spider, CLX, DxNet or WinCluster nodes.
- 32-bit Windows program for point-and-click setting of node parameters, runs under Win95 and later versions of Windows.
- Provides Telnet, DDE and RS-232 outputs for logging and contest programs.
- Can insert US States and Canadian Provinces into feed to contest programs to aid in multiplier determination.
- Separates-out DX spots from WWV messages, Announcements, Mail, filtering *etc.* Each has their own display tab.
- DX spots are coloured according to band.
- Bad DX spots (blanks or duplicates) are removed.
- Can reject (filter out) or pass (show) DX spots by caller, by DX callsign or by comments.
- Displays bearing and distance to spotted DX.
- As well as the usual data in a DX spot, the following data can also be shown: spotter's node and country; DX country's name and regular prefix; spotter and DX stations' CQ and ITU zones, grid squares and US states/Canadian provinces.
- Flags known LoTW users with a “+”.
- Full WWV data displayed on DX spot page.
- Hypertext links *e.g.* QRZ.com pages are displayed by clicking DX or spotter callsigns.
- Auto-reconnects if a cluster connection drops out, retrieving missed spots.
- Talk messages can be sent to multiple users at the same time, in addition to supporting DX Spider’s Chat function.
- For TNCs, receives spots in both connected and unconnected modes and broadcast UI frames.
- Fix spots: corrects DX location errors for some DX stations.
- DX alarms: emails alerts for needed countries.
- Saves DX spots to a log file for later analysis or reloading to program.

CC User's benefits, advantages or plus points include:

- **Simplicity:** ease of use, fire-and-forget, low-impact;
- **Visibility:** DX spots can be color-coded by bands and displayed in frequency order, making it easy to keep an eye on, say, DX spotted on 20m CW if that's your bag;
- **Added value:** can calculate and display supplementary information in addition to the DX spots themselves *i.e.*:
 - Bearings and distances to spotted DX stations from our station QTH;
 - Spotters' nodes, indicating roughly and unreliably where the DX was spotted;
 - [DXCC](#) entities/countries and CQ/ITU zones for both spotters and DX stations;
 - Usual prefixes for spotted DX [callsigns](#) - useful for those using rare/unusual prefixes, special event calls *etc.*;
 - Whether the DX uses LoTW and/or eQSL;
 - Grid squares;
 - States or provinces.
- **Consistency:** CC competently handles the arcane command syntax required by DX cluster nodes using [CC Cluster](#), [AR Cluster](#), [DX Spider](#), DxNet or WinCluster software. Having configured your choice of band and mode filters in CC User, for instance, the same filter settings can be applied simply by connecting and clicking the <**Tell Cluster**> button, even though a given cluster node may be running different software requiring different commands and syntax¹;
- **Reliability and resilience:** CC User can automatically reconnect to cluster nodes and catch up with missed spots if the connections drop out for some reason (e.g. due to RF interference temporarily blocking the shack Internet connection);
- **Data integrity:** CC User filters out duplicate, blank and most corrupted spots;
- **Flexibility:** e.g. CC User makes it easy to connect to, configure and manually compare different DX cluster nodes;
- **Performance:** rapid throughput is particularly important during major openings and contests when a large volume of DX spots is circulating through the DX cluster networks.

1.3.1 Why would we *not* use CC User?

Possible reasons we might *not* choose to use CC User include:

- Downsides, concerns or drawbacks such as:
 - No interest in DX Cluster, DX spots, RBN *etc.*
 - No computer!
 - No Internet / TNC.
 - Reluctance to complicate things, installing yet more technology.
- We may prefer alternatives e.g.:
 - Manual cluster connections and reconnections.

¹ However, if a given cluster node does *not* support a particular function that other nodes offer and you want to use, CC cannot magically make it work. It has its limits!

- Manual configuration of each cluster node, individually, making full use of their particular set of available functions.
- Custom scripting e.g. your cluster login scripts may send a series of configuration commands (which should be valid for the specific type of cluster to avoid unpredictable results).
- Other spot aggregators, such as logging programs that facilitate simultaneous connections to multiple clusters, merging the spots into one stream.
- Web-based DX clusters display spots on the World Wide Web as conventional HTML-based web pages. Most offer mapping, filtering and searching functions

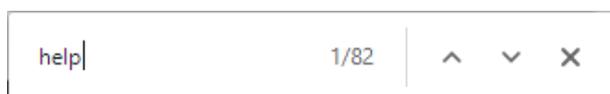
1.4 About this manual

For general guidance on something, the [contents listing](#) is a good place to start. Find the section that seems most relevant, click it and see where it takes you.

There are [underlined hyperlinks](#) to related content sprinkled liberally throughout the manual. Click to go. Mostly, these lead you to the heading at the start of the relevant section so you may need to browse down for the golden nuggets of information you seek.

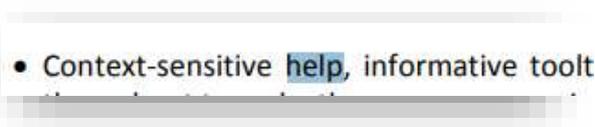
If you can, it helps to run CC User, calling up the screens and trying out the functions at the same time as reading the manual. CC User’s configuration options, menu items, tabs and settings are generally covered in the same logical sequence that they appear in CC User itself.

For help with something specific, use the search function in your PDF reader. Open the search bar using the magnifying glass icon (if available) or <Ctrl+F> (hold the control key and tap **F** for **Find**), then type in the word or phrase you’re looking for – a puzzling program option for instance, a curious term, function or whatever.



◀ The PDF reader in Google Chrome shows how many times the specific term occurs.

The search is refined as you type further character, so if there are *dozens* of hits, carry on typing a more specific phrase ▶



◀ The search term is highlighted wherever it occurs in the text with a blue background. Click the little up or down arrowheads ▲ in the search bar to go directly to the previous or next

occurrence, or drag the slider on the righthand side of the window ▶ to any of the yellow bars where the term occurs.



1.4.1 Typographical conventions in the manual

Red text shows functions that are not yet clearly understood or have not yet been documented. **Please email the author (ZL2iFB@gmail.com) if you have further information about these.**

Menu items are generally shown in **bold** with nifty little ⇨ arrows pointing to submenus e.g. **Configuration** ⇨ **Bands** means click “Configuration” on the menu to open a submenu, then click “Bands” on the submenu.

I use **bold** for configuration items, options and menu items, usually surrounding them with angle brackets to make them stand out from the text, like this: <**Bands**>.

Bold letters show how words and phrases are abbreviated e.g. **Cluster Client** abbreviates to **CC**.

Solid triangles ◀ ▲ ▼ ▶ point from the text to the associated images - mostly screenshots from my CC installation on a Windows 11 PC ... but don't be shocked to see something a little different on yours. For example, your Windows settings for the colours and fonts used in the captions and menus probably differ from mine.

Folders (also called directories) and file names are shown in *italics* e.g. *C:\VE7CC\Cluster Client.exe*

File and folder operations are best performed through Windows Explorer (also known as File Explorer): open that using <**Windows+E**> ... meaning hold down the key printed with the Windows logo just left of the space bar, usually, and tap the E key (that's **E** for **Explorer** – **Easy**, **Eh?**) or click the Windows <**Start**> button (bottom left of the screen) and type **file explorer** <**Enter**>.

Hinson tips are asides, additional notes and suggestions to help you get more out of the software.

1.4.2 Seeking additional help

Aside from this User Manual, hovering the mouse pops up additional context-related information in various places in CC User. However, the **Help** ⇌ **Version 3 Help** points to a page on the British Columbia DX Club's website that is QRT.

If something doesn't make sense, or you can't figure out how to achieve something, you are encouraged to email a query to [the CC User reflector](#). Here's how ...

- It helps us help you if you take the trouble to explain:
 - What it is that you are after, if anything. What are you trying to achieve? What is causing your problems?
 - Why are you trying to do whatever it is? What is your situation?
 - What have you tried already? What actually happened, as opposed to what you expected/hoped would happen?
 - Have you browsed/searched this Manual for guidance? What is it lacking or failing to explain?
 - Are there any messages from CC User with specific information?
- Screenshots are often the best way to show us exactly what you see:
 - Press <**Alt+PrtScn**> (hold the Alt key and tap the Printscreen key, often labelled PrtScn) to grab an image of the in-focus window². The image is held in memory in the Windows clipboard.

² You may need to click the relevant CC User window first to get it 'in-focus'. If you need to show several windows in one shot, press <**PrtScn**> without <**Alt**> to grab an image of the entire screen. To grab a shot of a menu/window that disappears at the vital moment, try <**Ctrl+PrtScn**>.

- If possible, paste the image into your favourite image editor to check and edit it e.g. crop or mask irrelevant parts (especially anything sensitive, such as passwords); use the paintbrush to highlight or draw rings around particular things in a bright/contrasting colour.
- Perhaps describe or show us what you *expected* to see as opposed to what you saw.
- Compose an email to the CC User reflector – preferably an HTML email so you can embed the image/s in your message, explaining your issue. If you can only send plain text messages, attach the screenshot image/s.
- Wait for the CC User reflector community to respond, answering any requests for clarification.
- If someone suggests doing something specific, follow their instructions carefully, line-by-line, as best you can³. If you get stuck or a certain step doesn't work, tell us where you are up to and what happened so far.
- When your issue is resolved, *please* take a moment to tell us about the fix in a closing email. It's a nice way to thank those who responded, confirm that it was resolved, and inform others who may have been watching the exchange.

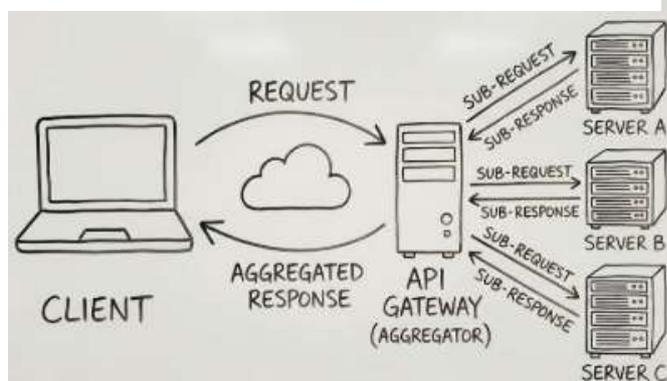
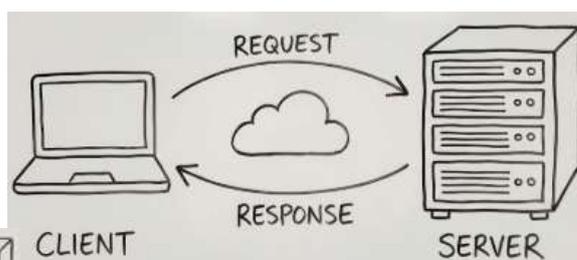
Hinson tip: aside from support queries, problems and complaints, it's nice to receive positive feedback from CC User users about the program, the add-on utilities, maybe even this manual. Have you any tips or suggestions for other CC User users? What do you wish you had figured out earlier? Go ahead, email the CC User reflector!

1.4.3 Glossary and abbreviations

- **Address:** like mail in the postal system, network packets (also called datagrams or messages) are automatically routed from the sources towards their intended destination nodes (often through many intermediate nodes) using the addresses in the packet headers. Depending on the type of packet, there can be various or multiple addresses, such as a user's preferred DX Cluster node, IP address or device MAC address, or a domain name for an Internet-connected resource.
- **CC User = Cluster Client software:** written by Lee, VE7CC, and formerly named "AR User". Although the software is occasionally known by Lee and others as 'CC' and 'Cluster User', I use "CC User" consistently in this manual.

³ It can be very frustrating when users fail to follow instructions. Please spare a thought for those who provide the software and support for free. We are busy hams with other things to do (not least, using CC User, DX cluster and DXing!).

- **Client-server:** at its simplest ► a powerful “server” computer with a fast Internet connection interacts with and provides information services simultaneously to a number of ordinary “client” computers, as



well as linking to other servers. Clients typically send requests to the server which responds accordingly. More complex client-server architectures ◀ involve complementary software applications at both the back and front ends, or even in the middle, communicating data through the network and sharing the processing.

- **Callsign:** licensed radio amateurs are allocated unique personal callsigns by the authorities. Clubs, groups and special events may also be formally issued with callsigns. Under ITU rules, callsign prefixes identify the licensing country, with additional details for subsidiary areas in some cases (e.g. G is a country prefix for England, while GW indicates Wales). We use our callsigns plus [SSIDs](#) as **ID**entifiers when logging-in to a DX cluster node. **Short Wave Listeners** may also be licensed and formally allocated SWL IDs but many aren't, choosing their own IDs such as VE7001SWL for an SWL in the seventh call area of Canada (British Columbia). The **Short Wave Amateur Radio Listening** group (for one) maintains a *voluntary* list of SWL callsigns. [More info:](https://swarl.org/) <https://swarl.org/>
- **DXCC = DX Century Club**, a prestigious ARRL award scheme based on making contacts with at least one hundred ‘entities’ (conventional countries, mostly, plus overseas territories, dependencies, islands etc.). [More info:](https://www.arrl.org/dxcc-rules) <https://www.arrl.org/dxcc-rules>
- **ISP = Internet Service Provider:** the company that provides our connection to the global internet. These days, most shacks are connected on ‘broadband’ or ‘fibre’, with ‘satellite’ or ‘cellular’ connections for remote/rural stations.
- **Node:** a networked computer, usually a server. Like the knot in a commercial fishing net, nodes are the junctions of network connections to many other systems, originating, processing and communicating data through the network for local and distant users elsewhere in the mesh. A “DX Cluster node” is simply a computer running DX Cluster software and providing DX Cluster services via the network.
- **Port:** various kinds of network traffic with differing protocols are routed to and from the corresponding applications running on [nodes](#) through designated network ports (portals). Ports are numbered for reference.
- **Primary node:** CC User v3 can connect to and receive messages from multiple DX [nodes](#) or Skimmer systems simultaneously, but can only send commands to one at a time – that being the **primary node**. The primary node’s box has a blue background e.g. GM4LLD’s cluster ► Red means disconnected, yellow means logging in, and green means connected but *not* primary.



Hinson tip: if for some reason there is presently *no* blue primary node (e.g. we have logged out or disconnected from it), our outbound DX spots and commands have nowhere to go. They simply disappear into the ionosphere, with no error message or clue other than the fact that the spots don't come back to us and our cluster commands don't work. Click to enable a different node as the primary. There should always be one blue.

- **Reflector:** a group or forum that receives individual messages sent to it by members, and 'reflects' (copies) them back out to all members – generally through email and/or a Web interface. A convenient mechanism for communities of common interest (such as users of CC User) to share information, support each other and collaborate.
- **SSID = Secondary Station IDentifier:** in order to route messages through a packet-based network such as DX cluster, each station needs a unique ID. A plain [callsign](#) will work for one connection to the network, but what if I want a second connection, maybe to a different cluster [node](#), and I only have one callsign? Appending a hyphen and number⁴ to a [callsign](#) turns it into an SSID e.g. ZL2iFB-1, ZL2iFB-2 and so on. By convention, numbers below 16 indicate the [type of station](#), while 16 and up are free-choice.
- **Sysop = System operator:** the person who operates (installs, configures, monitors, maintains and secures) a computer system such as a DX Cluster [node](#).
- **Talkie:** a 'talk' message passed from one connected user to another through the DX cluster network, submitted using the TALK or T command.
- **TCP/IP = Transmission Control Protocol/Internetworking Protocol:** a suite of communications protocols and applications commonly used to establish links and exchange information through networks, most notably the Internet.
- **Telnet =** a mature (old!) telecommunications networking protocol, used to login to, communicate with and command (send instructions to) distant servers.
- **UTC = Universal Time Coordinated,** a global time standard based on atomic clocks.

1.5 About Lee VE7CC (software developer & sysop)

Lee Sawkins VE7CC tells us "A lot of those who write ham programs come from a business background where they were using databases. I have a different background - a hardware guy writing test programs for a communications equipment manufacturing company. Eventually I ended up designing the hardware for test systems and writing Visual Basic programs on Windows systems to control the hardware. Visual Basic does everything I want it to do and remains my tool of choice.

I originally called the program **AR User** as it was written to interface with AB5K's AR Cluster program. On request, I made it compatible with DX Spider. Due to shortcomings in both AR Cluster and DX Spider, I *tried* to persuade both developers to make changes. In the end, I realised the best way to get the systems to do what I really wanted was to write my own DX cluster server program – hence CC Cluster was born. At the client end, AR User morphed into **CC User ...** or **Cluster User** since it is not just compatible with CC Clusters (it also works with Skimmers directly and doesn't strictly require any DX cluster input). Now I am calling it **Cluster Client**, mostly to emphasise that it is the client part of a [client-server](#) system ... and, yes, partly due to my affinity for those particular initials!

⁴ Or letters e.g. A through Z are used by Dstar stations.

Software always has glitches that need fixing. Simply trying to automate the identification and removal of bad spots takes up a huge amount of my time. Today, for instance, I see that my 6 meter CW skimmer decoded and posted DX spots for DM2B and R7NV. According to the map, I had an EU opening on 6m ... but those were in fact busted calls. Dealing with that kind of stuff is a priority, and I invest what little free time remains in improving the software rather than maintaining the documentation.”

1.6 About Gary ZL2iFB (scribe & editor)

Gary *claims* to have complementary skills to Lee’s, but you’ll be the judge of that. “I have done a little software development and teaching in the past, way back when I was a genetics researcher and Babbage was a boy, but to be honest I was never much good at it. Despite learning and enjoying Pascal, BASIC, ADA and LISP, I consistently flunked the Turing test.”

I am autistic, with deep but narrow interests, unconventional perspectives and a curious way of communicating. Patently, I *love* writing ... and I sure hope you enjoy the products as much as I enjoyed writing them.

Having written *gigabytes* of cybersecurity materials (security awareness briefings, policies, procedures, standards and textbooks) for work, I have accidentally become a professional technical author. My English, Latin and French teachers may not have thought much of my efforts at school, but mum is proud of her boy, anyway.

By all means email me directly about this manual, the software or whatever, using ZL2iFB@gmail.com. This is a hobby interest and I usually have other more pressing things on the go, plus I do not claim to be an expert in anything, so please be patient and realistic about the amount of help I can offer.

Aside from this manual, I have written in collaboration with friends:

- [FT8 Operating Guide](#).
- [FOC guide to Morse proficiency](#).
- [Logbook of The World new user guide](#).
- [Logger32 user manual](#) (>1,000 pages!)
- [Personal](#), [club](#) and [contest](#) websites.
- ZL’s [HF bandplan](#).

1.7 About the CC User reflector

- [Describe the Google Group for CC Users](#)

1.8 Other contributors

We’re grateful for assorted comments and feedback on this manual through the CC User reflector, mostly, plus some more substantial contributions from the following:

- **Dave Calder N4ZKF** – long time sysop for the DX cluster dxc.n4zkf.com|7373
- **Ron Stordahl AE5E** – long time sysop for the DX cluster DXspots.com|7300
- **Everyone else** running DX cluster nodes, paying for connectivity and power, supplying services and information, designing, building, operating and maintaining the global DX cluster network, defining the protocols, submitting DX spots, activating rare locations and so on. You’re *all* awesome! *We* are awesome! *Amateur radio* is an awesome hobby!

2 CC User installation

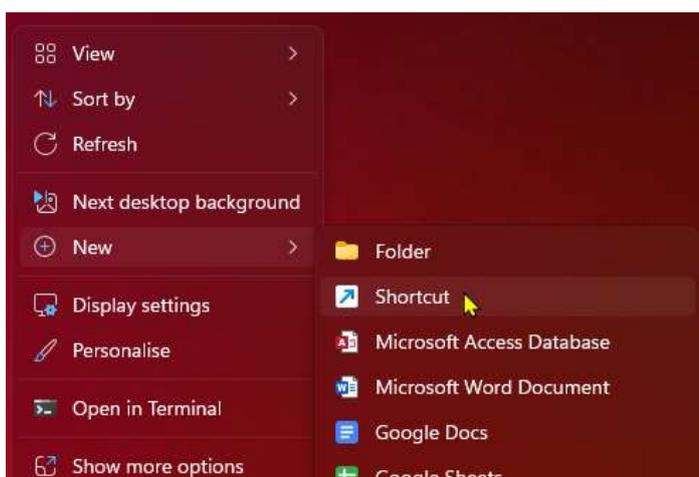
2.1 Prerequisites

CC User is not particularly demanding on hardware and requires nothing special really, just a typical PC running 32 or 64-bit Windows (CC User v2.421 reportedly works on WinXP/2000 and later versions of Windows, but *updates* to v2 and the newer version v3 *may* require more recent Windows e.g. Windows 7, 8, 8.1, 10 or 11).

2.2 Install CC User v2

Start with a full install of CC User version 2:

1. Click [here](#) to download an archived copy of the CC User Full Version (ver 2.421) installer, courtesy of the Wayback Machine.
2. Double-click to open the downloaded *ve7cc_win7.zip* file.
3. Click the **Extract all** button, saving the 5 files to a temporary folder of your choice.
4. Double-click to run setup.exe from the temporary folder.
5. **Do not install the program in the Windows default program folder C:\Program Files** but instead install it in C:\VE7CC\ This should avoid problems later if you update the program files, since Windows viciously guards C:\Program Files\
6. Optionally create a desktop shortcut to C:\VE7CC\ve7cc.exe so you can launch it easily, by right-clicking the Windows desktop then clicking **New** ⇒ **Shortcut**. Follow the prompts ►



2.3 Optionally update CC User v2 manually

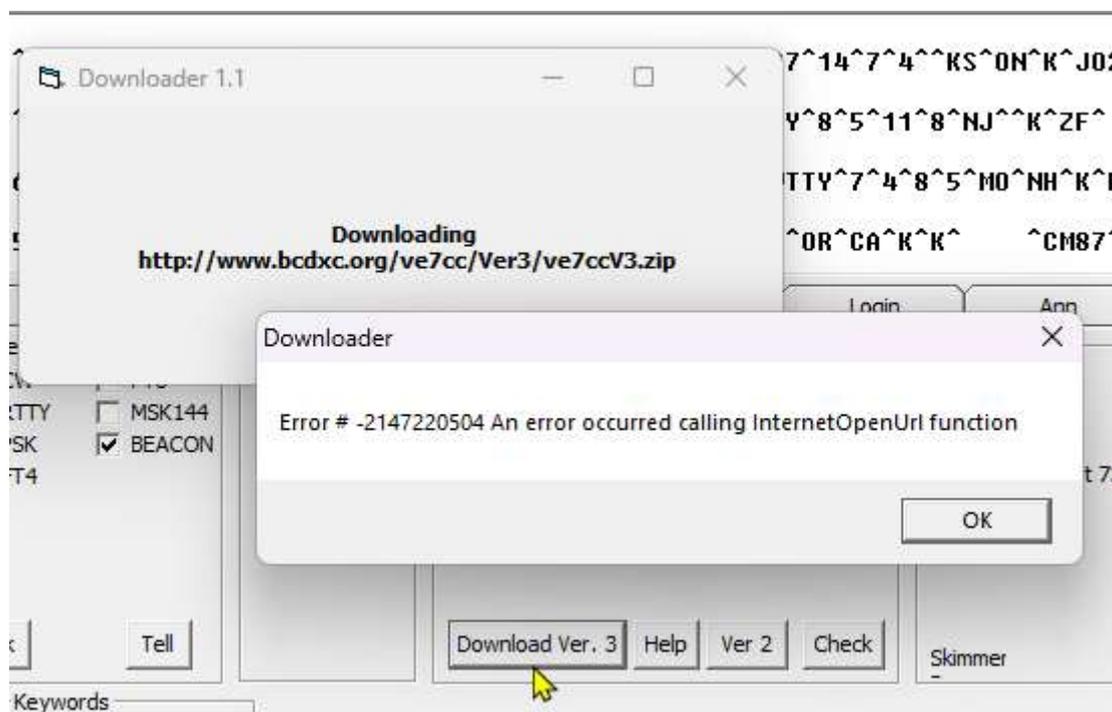
Unless you prefer to jump directly to v3 (see below), you might like to load the latest available v2 update:

1. Close CC User.
2. Download an [archived copy of the CC User v2.441x update](#).
3. Double-click to open the downloaded zip containing the *ve7cc.exe* file.
4. Save *ve7cc.exe* to your c:\VE7CC\ folder, overwriting the existing file.
5. Launch CC User and confirm that you are running an updated v2 release.

2.4 Upgrade to CC User v3

CC User version 3 has additional functionality and is a recommended upgrade from v2. In particular, it lets us connect to up to 6 DX clusters or Skimmer feeds simultaneously⁵, increasing resilience for times when individual clusters or Skimmers go offline.

However, **the v3 download website is currently offline**, giving an error message when we click the automated 'Download Ver. 3' button on the Settings tab of CC User v2 ▼



Here is a manual workaround:

1. Close CC User v2.
2. OPTIONAL: make a backup of your CC User v2 folder, just in case the v3 installation causes problems or doesn't work.
3. Download [an archived copy of the ve7ccV3.zip file](#), courtesy of [ND4X](#).
4. Double-click to open the downloaded *CC-User-Update-Ver30271.zip* file. It contains a single file: *ve7cc.exe*
5. Unzip *ve7cc.exe* to your *C:\VE7CC* folder, overwriting the v2 *ve7cc.exe* file already there.
6. Launch CC User as you normally do (e.g. using your desktop shortcut) and confirm that you are now running v3.0271 – the latest available v3 update.
7. Enjoy!

Hinson tip: the remainder of this guide applies to **CC User v3**. If for some reason you choose not to upgrade, or if the upgrade fails, *some* of it applies to v2 as well ... good luck.

⁵ Multiple connections to a single node can be made e.g. for complex spot filtering where each node connection passes a different set of filtered DX spots, which CC User then combines.

2.5 Update country file

CC User uses a file called **cty.dat** in its folder (typically C:\VE7CC\) to associate amateur callsign prefixes with their countries (DXCC and WAEDC entities), and to identify the locations of those entities on Earth (in order to estimate bearings and distances).

These details change from time to time, mostly due to political reasons such as the reunification of East and West Germany and renaming of Swaziland to eSwatini. However, CC User does not update the file itself. Therefore, it is worth downloading and installing the current, actively-maintained cty.dat file manually from:

www.Country-Files.com/dx-cluster/cc-user/

Hinson tip: do this when you first install CC User and every so often thereafter – I suggest at least once a year. Stick a reminder in your diary for New Year’s Day or your birthday, maybe.

If you hear on the ham grapevine or news about recent country or prefix changes, that’s also a good time to update the file.

Cty.dat is also used by other logging programs e.g. contest loggers use it to identify multipliers or bonus stations. Why not update them at the same time?

Thanks to **Jim AD1C** for maintaining and freely sharing cty.dat – what a star!

3 Get going with CC User

3.1 Quick start: using CC User by itself, 'standalone'

1. Click your CC User desktop shortcut or use the Windows Start menu to run CC User.
2. If you haven't already done it, use the **Settings tab** to set up your [callsign](#) and QTH information etc.
3. Use the **<Configuration>** menu to pick a DX Cluster node:
 - Click **<Node (Telnet)>** on the menu to open this form ►
 - Click the down-arrow selector in the **Node** box.
 - Click to select a cluster, any cluster.
 - Click **<Apply>** to attempt to connect to your chosen DX cluster node, opening the **Node Connections** window ▼



1	X	Disc	ZL2IFB-3	aka VE3EID	N2WQ	CLUSTER.N2WQ.COM	8073	CCC	IP Number	0	0 d 00:13:39	Connected VE3EID-1
2	X	Disc	ZL2IFB	OK	w4mya	dx.c.w4mya.us	7373	CCC		0	0 d 00:13:38	Connected W4MYA
3	X	Conn	ZL2IFB-2	SOTA	MM0FMF	cluster.sota.org.uk	7300	Type	151.236.24.42	0	connect time	Status of link.
4	X	Conn	ZL2IFB-4	RBN	RBN	telnet.reversebeacon.net	7001	Type	IP Number	0	connect time	Status of link.
5	X		ZL2IFB-4		VK4TRS-7	vk4trs.ath.cx	8000					
6	X	Disc	ZL2IFB-5	Comments	N2WQ-1	cluster.n2wq.com	7373	CCC	52.14.178.50	0	0 d 00:06:05	Connected N2WQ-1
7	X	Conn	ZL2IFB-6	Comments	VK5GR-2	gate.vk5gr.id.au	7300	Type	IP Number	0	connect time	Status of link.

- If it connects and shows green, congrats: you are up and running! If it doesn't connect and stays red, go back **Configuration** ⇌ **Node(Telnet)** to pick a different node and **<Apply>**, adding another row to the **Node Connections** table (up to 6 rows).
- Click the **<Conn>** button to repeat the attempt to **connect** to the node listed in any row.
- Each connection to the DX cluster network needs a unique [SSID](#). If you try to connect with a duplicate [SSID](#) (as I did for VK4TRS-7), CC User shows a bright red warning. Simply edit the [SSID](#) (e.g. [call]-16 would have been OK in this case) and try again.

Hinson tip: normally, I connect to just 1 or 2 nodes at once, giving some resilience in case nodes go offline. There's no point connecting to lots of nodes since they mostly share the same spots, plus each connection consumes some resources. Be nice! Stick to just 1 reliable node if your [ISP](#) charges exorbitant fees for Internet traffic.

Here are a few popular DX clusters worth trying:

Sysop	Address	Port	Notes
AE5E	dxspots.com	7300	Ron's DX cluster node is rarely down
EA4URE	EA4URE.com	7300	DX cluster de la Unión de Radioaficionados Españoles
LZ7A	Cluster.LZ7AA.com	7300	Sofia Radio Club
PA4JJ	77.174.195.163	7300	Jan PA4JJ's DX cluster node runs on a Pi
RBN	telnet.reversebeacon.net	7001	Reverse Beacon Network – automated Skimmers and digimoders spew forth a veritable <i>torrent</i> of DX spots that will stress your system ... and test your patience
W4MYA	dxc.W4MYA.us	7373	Central Virginia Contest Club's DX cluster

These DX clusters all worked fine when I last checked them in November 2024

4. DX spots from the cluster now start to flow, as seen on the [DX tab](#) ▼

The screenshot shows the CC User software interface. At the top, there are tabs for Configuration, Set, Reflector, Help, and Donate. The main display area shows a list of spots with columns for Spotter, Freq, DX, and Time. The spots are color-coded by frequency and include call signs and signal reports. On the right side, there is a summary table with columns for ALL, DX, and Skimmer. The summary table shows the following data:

ALL	DX	Skimmer
160		1257
80		
40		
30	56	56
20	800	800
17	37	37
15	194	194
12	6	6
10	164	164
4		

Below the summary table, there are buttons for Log, Alarm, Clear Sound, Ann, Spot, Clear ALL, and Get ALL. The status bar at the bottom shows "GMF: Quiet" and "SFI=117 A=10 K=1".

- The top section shows messages arriving from the connected cluster node/s.
- The DX tab's main grey section shows, on the left, a selection of spots neatly formatted, column-aligned, coloured and de-duplicated according to other configuration settings.
- The righthand side shows band selectors and statistics, plus the latest solar and geomagnetic data from WWV – usually in green unless there are warnings in red.

That's it for this quick-start. By all means get going and have a play. Read-on for guidance on all the other fascinating things you can do with CC User. When you're done, simply close CC User: it will disconnect automatically from all connected clusters.

3.2 Using CC User in conjunction with logging programs

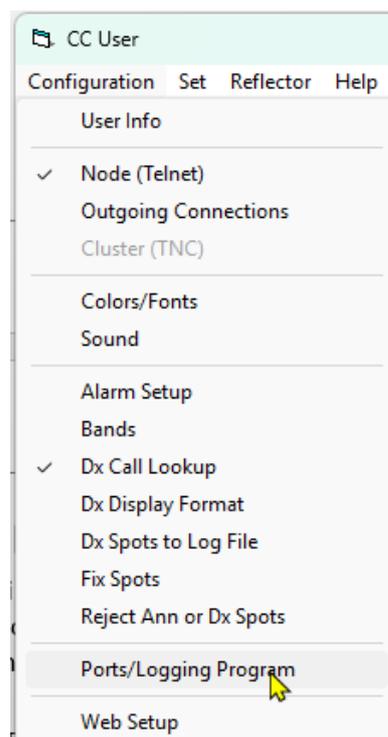
CC User can feed DX spots *etc.* to logging programs or other software running on the same PC, or to our other systems on the shack LAN. Whereas you could connect those loggers and systems directly to the DX cluster network, connecting *via* CC User has advantages:

- CC User's point-and-click interface makes it easier to configure the DX clusters to our liking (e.g. which bands and mode segments to monitor for spots, and what kinds of spots to pass or block), and to copy configurations from cluster to cluster, without having to recall all those obscure commands and settings.
- CC User can automatically connect (and if necessary reconnect) and login to the cluster for us.
- Supports Telnet, DDE for VQlog and RS-232 serial data connections.
- CC User version 3 can connect simultaneously to multiple clusters, providing greater resilience and, potentially, retrieving and merging additional spots (e.g. from public *and* club clusters), even if your logging software only allows a singled DX cluster connection at a time.

3.2.1 Configuration

1. First, tell CC User to allow other programs and systems to connect to it using the Telnet protocol.

On CC User's <Configuration> menu,
click <Ports/Logging Program> ►



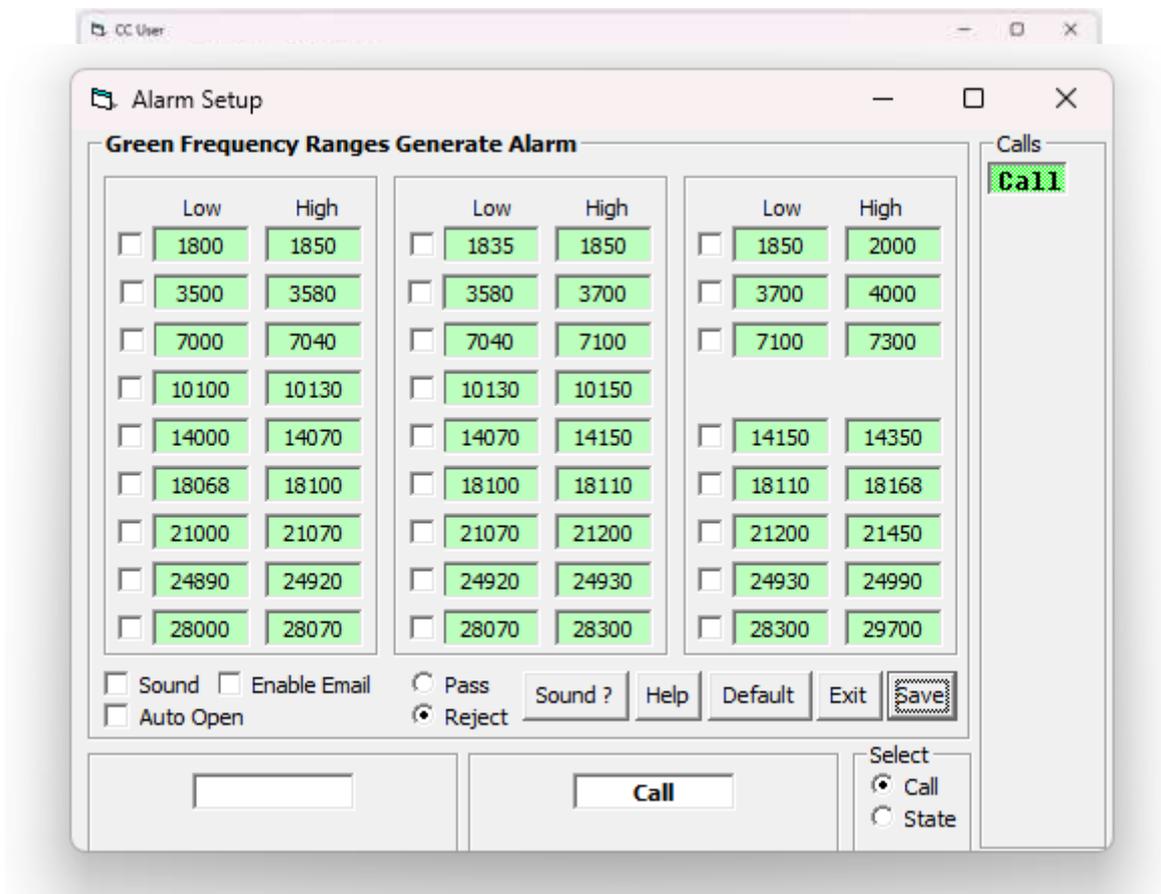
2. [See below to configure CC User using the Ports/Logging Program menu.](#)
3. Configure the DX cluster or spot functions in your logging program/s to *connect to CC User as if it was a DX Cluster node* running in your shack, giving the IP [address](#) for the system running CC User and the Telnet [port](#) number set in the software (7300 by default).

Hinson tip: most of us run CC User on the same shack computer as the logging software. Therefore, in the logging software, we can configure a local virtual DX Cluster using the loopback [address localhost](#) and Telnet [port 7300](#) to connect to CC User, which connects onwards to the actual DX Cluster nodes dotted around the globe.

4. DX spots, talk messages etc. are collected from the global DX cluster network by CC User, collated and passed through to the logging program/s. This avoids the need for multiple Internet or TNC connections to the DX clusters from each program (reducing duplication, delays and charges), and lets you configure the filters etc. for all the connections in one place through CC User's point-n-click interface.
5. Logging programs can make additional use of the DX spots and supplementary information sent though CC User e.g.:
 - Indicating changing activity levels on all bands including openings on marginal bands e.g. 6m, 10m and 160m;
 - Highlighting 'new ones' for us meaning [DXCCs](#), grids, IOTA references etc. that have not yet been logged and confirmed;
 - Prioritizing QSOs with DX stations known to use LoTW or eQSL, implying a greater likelihood of logged QSOs being confirmed;
 - Identifying multipliers in contests (e.g. new countries or states), helping contesters decide when to change bands.

3.3 DX alarms

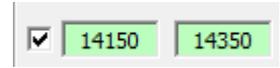
The <Alarm> button at the bottom of the [DX tab](#)'s display lets us configure audio-visual or email alerts for wanted DX stations e.g. needed DX [callsigns](#) or states ▼



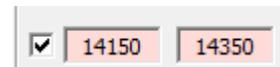
Click the <Alarm> button to configure alarms using the Alarm Setup form ▼

If, for example, you want to be alerted if P5DX is ever spotted on 20m SSB:

- Click to tick the white box just to the left of the green boxes for ► the 20m SSB segment, turning them pink.
- Click <**Pass**> so that spots for the ticked band segment are passed (allowed through to the alarm function) rather than being rejected (blocked). This turns those ticked green band-segment boxes green ►



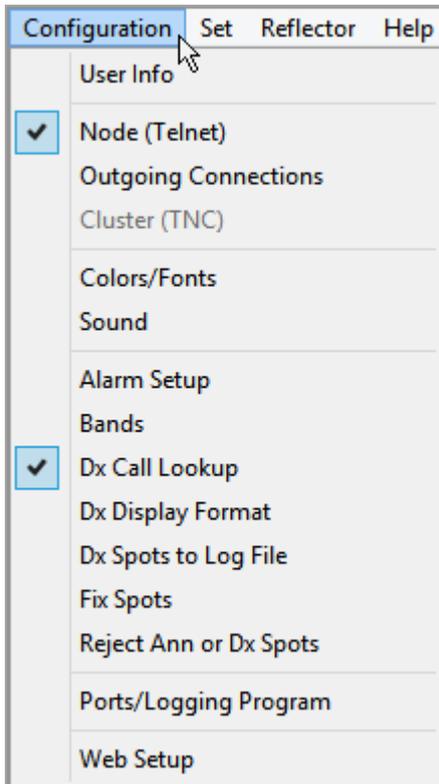
We're still trying to figure out how the rest of the alarm function works – if indeed it does.



4 CC User's top line menu



4.1 Configuration



◀ Clicking <Configuration> opens a menu of 15 items grouped into six sections.

They are described below in the order in which they appear in the menu.

4.1.1 User Info

Configuration ⇔ **User Info** is the place to configure your [callsign](#) and (if required) your password needed to login to DX clusters ▶

Most public DX clusters currently do not require passwords, whereas private DX clusters (run by individuals or by clubs for the benefit of their own members) generally do. CC stores a single cluster password.

Your name and QTH are also required (hence the red text): these let other DX cluster users know who and where you are.

If you wish, you can also disclose your UTC offset (time zone), grid square (Maidenhead

User Info

My Call **Cluster Password (if req)**

Name **GMT Offset**

QTH **Grid Square**

Cluster

E-Mail Address

Latitude **Longitude**
 Deg Min N/S Deg Min E/W

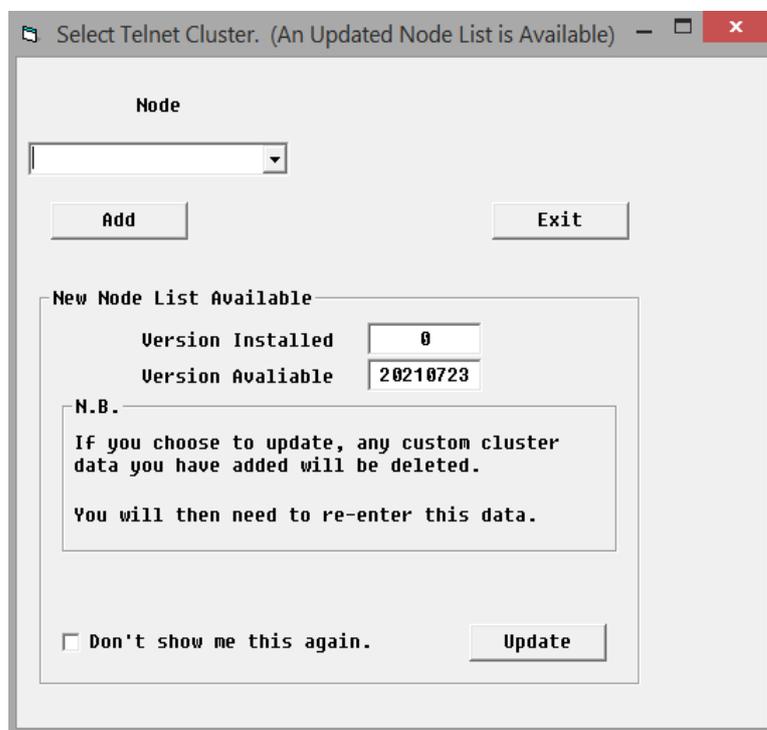
Items in RED are required.
 Other items are optional.

locator), latitude and longitude, cluster (meaning the one you use most of the time) and email [address](#). Or not.

4.1.2 Node (Telnet)

To connect to a specific DX cluster, you can type its details directly into the [Outgoing Connections form](#) provided you know its [address](#) and [port](#) number. There are loads of DX clusters to choose from ... but some of them are only online sporadically (e.g. only when the sysop is in the shack) and details such as their [addresses](#) and [port](#) numbers vary. Keeping up with changes is tricky.

When first installed, the list of DX cluster nodes is empty (version 0). The caption to this window reminds us that “An Updated Node List is Available”.



Click the <**Update**> button to download a list of known DX cluster [addresses](#) from the Internet ►

We can also add DX cluster nodes manually using the <**Add**> button. Loads of DX clusters with Telnet capabilities are listed at DXcluster.info/telnet/ ▼

NOBECALL & IP	LOCATION/GRID	WEB/RF PORT	SYSOP/EMAIL	NOTES/SOFTWARE
BA - Croatia				
SA0CSE iboc ham hr 7300	Siberik JN73wr		Damir SA4NE	DX Spider ver. 1.51
SA0DXC Sušdec.hamradio.hr/8000	Zagreb JN75xt		Thomir SA4GL	Node Information DX Spider ver. 1.55 build 0.115
SA0DXV	Varaždinska Točica			

Hinson tip: the DXcluster.info list lets us filter DX cluster nodes according to the cluster software they are running. Cluster commands and syntax can vary, so if you are familiar with, say, a CC Cluster or DX Spider node, you might like to un-tick the other types then click <**Filter**> to shrink your options to a more easily-digested set.

Also, the NOTES/SOFTWARE column shows which versions of the cluster software each server is using: clusters that are numerous versions behind others of the same type are probably not being actively maintained. Perhaps the sysops have lost the plot.

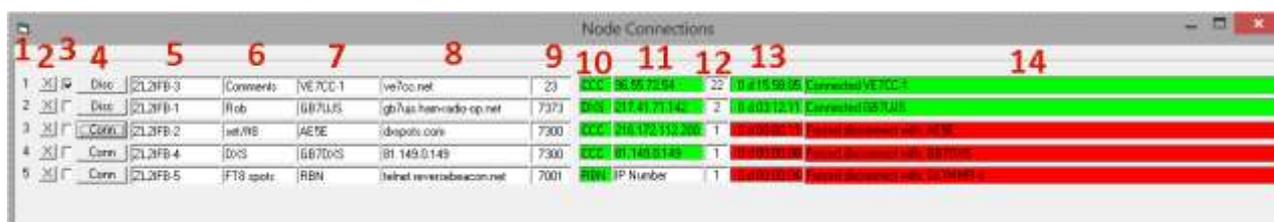
Finally, you *might* find that ‘local’ clusters are more responsive and reflect local radio conditions better than DX ones, although personally I don’t notice any difference since most of them share the same information, so I prefer more over less reliable clusters, regardless of proximity.

For [addresses](#) and [port](#) numbers of private DX Clusters, seek info from club websites, newsletters and fellow members, or ask around.

Hinson tip: web-based DX Clusters such as [DXsubmit](#) and [DXheat](#) use HTML, not Telnet, and are not usable with CC User. However, while you are configuring CC User, it may help to visit a web-based cluster in a browser window to compare the flow of raw, unfiltered spots with the dribble of filtered spots in CC User. Perhaps the real reason your 6m CW filter doesn't *appear* to be working in CC User is that there are no 6m CW spots circulating at the moment!

4.1.3 Outgoing Connections

Configuration ⇌ **Outgoing Connections** opens the Node Connections form ▼



Use this form to configure your DX cluster connections. Its columns are as follows:

1. **Connection number:** the number of the row in this form.
2. **Clear button:** click the <X> button to erase a line. Make it an ex-line, a line no more.
3. **Auto-connect:** tick any line or lines to have CC User connect to this or these clusters automatically when it is launched and starts running. CC also attempt to reconnect if the ticked clusters disconnect for some reason (e.g. a router issue and Internet connectivity failure caused by stray RF in the shack, or an [ISP](#) or server problem).
4. **Connection toggle:** click a <Conn> button to connect and login to the cluster on that line, changing the button to <Disc> once connected. Click a <Disc> button to logout and disconnect from it, changing the button to <Conn>.

Hinson tip: despite being listed somewhere, at any given time, some DX cluster nodes are unresponsive, moribund or dead, perhaps terminally. So, if one doesn't seem to be working when you try to connect to it, simply try another. Through the global DX cluster network, many DX clusters share the same spot information. You may have to reconfigure any server-side filters and settings though ... which is where CC User truly earns its keep.

5. **Call sign:** type the [callsign](#) you will use for the cluster on this line. This must be unique across the DX cluster network, so the convention is to append an [SSID](#) - a hyphen and number to your actual [callsign](#) (e.g. VE7CC-3), using a different number for each simultaneous cluster connection.
6. **Comments:** type up to about 15 characters of free text notes here, for your own benefit. They don't go anywhere or do anything except remind you about stuff (such as why you were keen to use this particular cluster) whenever you open this dialogue.
7. **Cluster name:** this text is shown on the coloured blobs to indicate which clusters they represent.
8. **Cluster address:** most clusters publicise their domain names but some use IP addresses.
9. **Cluster IP port number:** this may be specified as a "port number" but is usually tacked-on after a colon at the end of an Internet [address](#), such as VE7CC.net:23. The [port](#) number is

arbitrarily chosen by the cluster owner or sysadmin when configuring the server software. A few popular cluster port numbers are:

- o 23 – this is the conventional [port](#) number for Telnet.
- o 7300 – a popular Telnet [port](#) number for cluster servers.
- o 7373 – likewise. CC servers tend to favour this [port](#) number.
- o 7000, 7001 *etc.* – other [port](#) numbers are used by some cluster servers.

10. Cluster type:

- o CCC denotes a cluster using Lee VE7CC’s server software.
- o DXS is a DX Spider-based cluster.
- o Etc.?

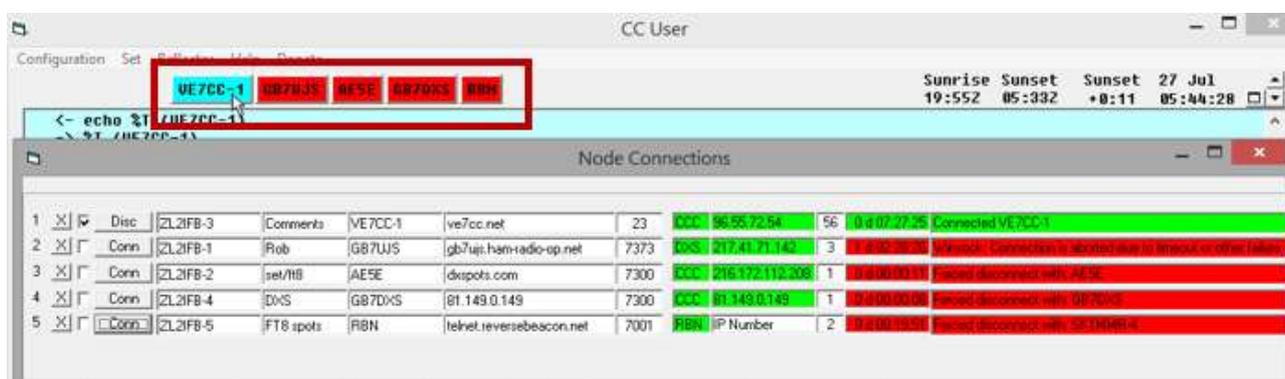
11. Cluster IP address: this dotted numeric IP [address](#) value is generally associated with the domain name using DNS.

12. Number of connections made since CC User was last launched (*possibly - I’m guessing here*).

13. Connection time: counts up the days, hours, minutes and seconds that the Telnet connection to this cluster has been running.

14. Status message: tells you what is going on with that cluster connection. The bright green background indicates going (currently connected), and red means stopped (currently disconnected).

By the way, as well as the **<Configuration>** menu, you can open the exact same dialogue directly by right-clicking any of the colourful cluster blobs near the top of CC User’s window ▼

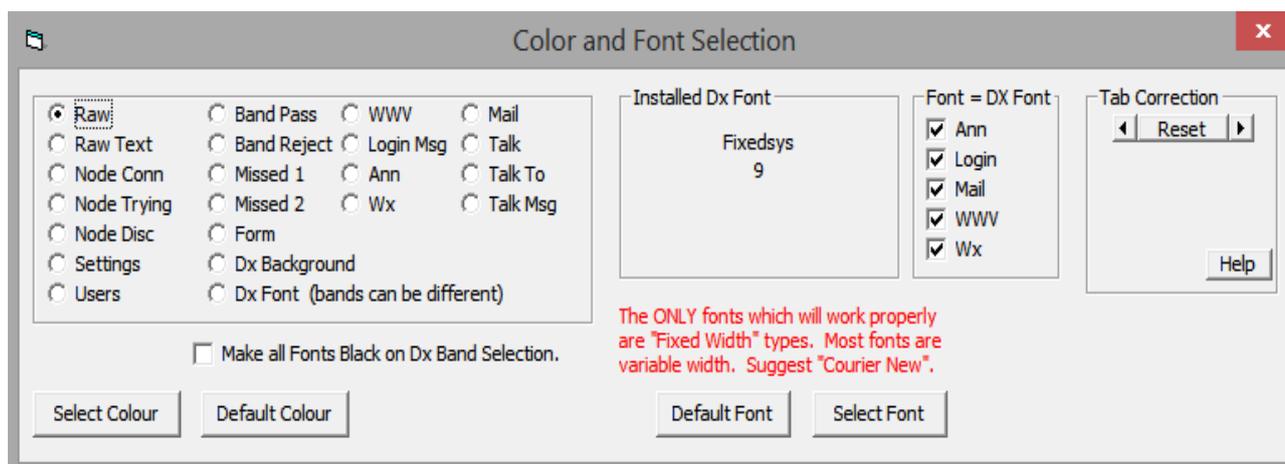


4.1.4 Cluster (TNC)

Presumably in CC User v2 this Configuration menu item catered for those who connect to the DX cluster network via packet radio, using a **Terminal Node Controller ...** but it is greyed-out, nonfunctional and not supported in CC User v3.

4.1.5 Colours/Fonts

Configuration ⇒ **Colours/Fonts** lets us configure the colours and fonts used in CC User ▼



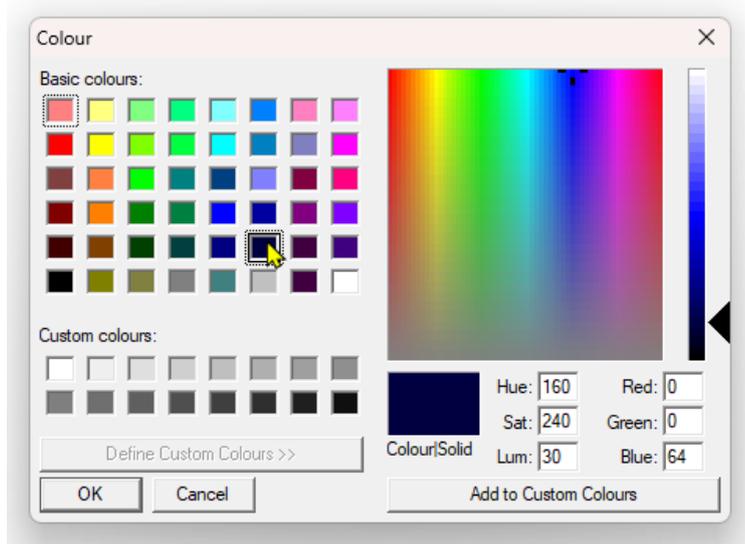
For example, click WWV to select it, then click the <**Select Colour**> button beneath and pick a distinctive text colour that will be used to display the solar and geomagnetic reports from WWV. That way, when WWV reports arrive from the DX cluster networks (once every 4 hours), they should stand out from the usual stream of DX spots.

Installed Dx Font shows the Windows font type and size being used to display DX spots. Click <**Select font**> to pick a different one, preferably (as per the message in red) a **fixed width** one since the data fields in DX spots are neatly column-aligned using spaces. Monospaced fonts installed with Windows such as Courier New and FixedSys are the easy option if you don't mind the *serifs* and plain zeroes that are hard to differentiate from capital Oh's. Otherwise, browse the 50+ 'monospace' fonts offered by Google. Monospaced *sans serif* fonts with slashed or dotted zeros (which most of them have) include: Roboto Mono; Inconsolata; Atkinson Hyperlegible Mono; Source Code Pro; IBM Plex Mono; Jet Brains Mono ... and others.

Hinson tip: IBM Plex Mono is a cool freeware monospaced font set.

Font = DX font allows us to use the same fixed width font for other displays – cluster announcements, login messages, mail, WWV solar reports and Wx reports – rather than the default Windows font. Since these displays are not column-aligned in the same way as the DX spots, proportional fonts are OK for these if you prefer.

Tab Correction: clicking the left or right triangles seems to shift the right hand edge of the DX spots display and the statistics area left or right ... **but I don't know why**. The middle <Reset> button reverts the display to the default positions.



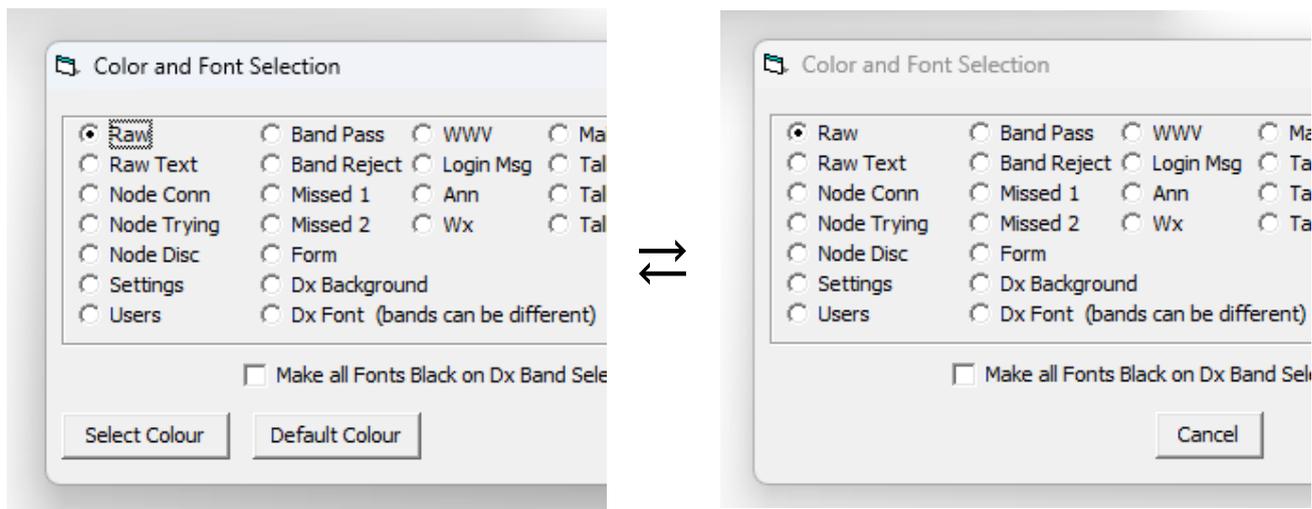
◀ <**Select colour**> lets us pick a colour for the text, using a conventional Windows colour picker form

So, click one of the colourful boxes or on the spectrum, or edit the **Hue**, **Saturation** and **Luminosity** or **Red**, **Green** and **Blue** values, or click and drag the slider, until you are happy with the colour shown in the Colour|Solid block.

Optionally then click **<Add to Custom Colours>** to add your chosen colour to the **<Custom colours>** selection, making it easier to use the same colour elsewhere in Windows.

And finally, click **<OK>** to save and apply your selection and close the colour picker, or click **<Cancel>** if you change your mind.

Hinson tip: having opened the colour picker form, the buttons for **<Select colour>** and **<Default font>** both mysteriously vanish from the **Configuration ⇌ Colours/Fonts** form ▼ To get them back, either close and re-open the form, or click **<Apply>**.



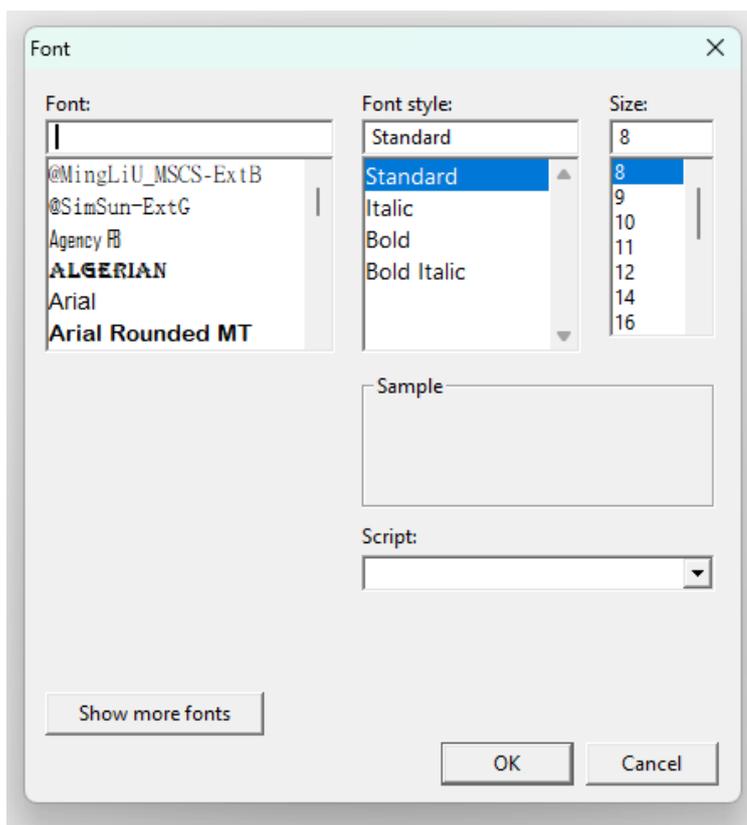
<Default Colour> presumably selects a font colour chosen by VE7CC, hard-coded into the program – namely, jet black.

<Make all Fonts Black on Dx Band Selection> increases contrast and makes it easier to read the bands we have or have not selected, even if we have foolishly chosen a font colour that blends into the background.

<Default Font> resets the font and font size to that chosen by VE7CC, hard-coded into the program, namely Fixedsys 9 point. It is a chunky, bold-looking, angular font with slashed zeroes (see the example on the next page).

<Select Font> opens a conventional Windows font-picker form⁶ ▶

- Drag the slider and click any **Font** to select that font set. The **Sample** box shows how it will look on our screen, including the currently-selected font style, size and script.
- Click <**Show more fonts**> to open the Windows **Personalisation** ⇔ **Fonts** function, with the ability to download and install additional fonts from the Internet if you wish.
- Click if you prefer a **font style** such as bold and/or italics (the available options vary between font sets).
- Click your choice of text **size**: 11 or 12 work nicely for my old eyes but you may prefer smaller or larger text.
- Some font sets support **scripts** (character sets) other than “Western” e.g. Greek, Cyrillic. Optionally click the down arrow and click your choice here.
- Click <**OK**> when you’re done, or <**Cancel**> to, um, cancel, and close the font-picker form.



Fixedsys 9pt

KC1ERO	21022.0	+KP5/NP3UI
XU9R	28468.0	+JG7QKY
PY2MR	28430.0	ZU9MS
PT9TI	28430.0	ZU9MS
OH0M	14035.0	+N7JTT
9Y4M	21035.0	+9Y4M
N6HP0	28380.0	JJ1FXX
LW2D0	28202.5	KA3BWP/BCN
PY1ZU	14010.0	ZU1RJ
N6HP0	28412.0	+JJ0PKS
W3LPL	28030.1	+BU50Q
N4G0	14055.0	+W7PCT
PY1ZU	14010.0	ZU1RJ
K8DJR	28470.0	+UK2FR
ZU2T0	14049.0	+K6TTA

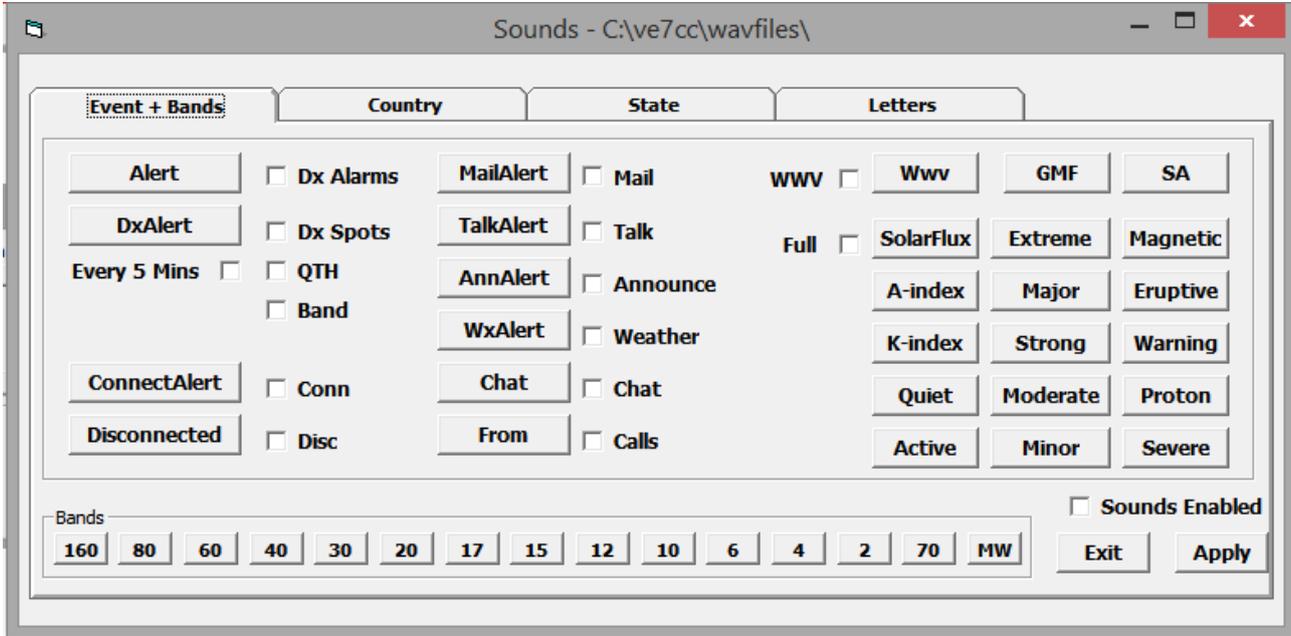
IBM Plex Mono 11pt

ZV8RR	21020.0	+PY1WE
BG8GAM	21022.0	+W7WKR
ZV8RR	21020.0	KT1T
KR6C	21022.0	+KP5/NP3V
N6HP0	28400.0	+ZL1WN
PU9FDO	28430.0	ZV9MS
KC1ERO	21022.0	+KP5/NP3V
XV9R	28468.0	+JG7QKY
PY2MR	28430.0	ZV9MS
PT9TI	28430.0	ZV9MS
OH0M	14035.0	+N7JTT

⁶ Simultaneously, on my system at least, it maximises the CC User window.

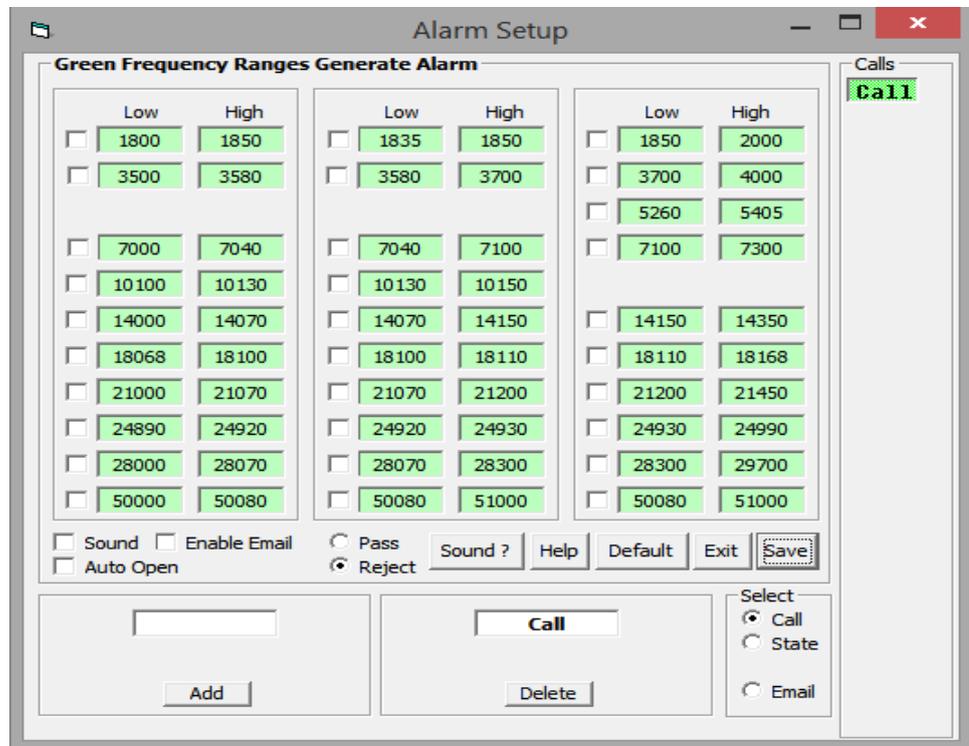
4.1.6 Sound

- I believe this form with its 4 tabs was intended to let us enable audio alerts when various messages are received from the connected cluster/s. In practice however, it appears to be almost entirely nonfunctional. Looks to me as if the coding was started but not completed, or else I'm too thick to figure it out. Clues are welcome!



4.1.7 Alarm Setup

Use **Configuration** ⇒ **Alarm Setup** to have CC User sound audio alarms and/or send you email alerts when particular [callsigns](#) are spotted on the specified band segments ►



4.1.8 Bands

Any inbound DX spots for the bands you have ticked will be discarded when they arrive ►

Click the <WARC> button to tick and thus reject spots for the 30, 17 and 12m “WARC bands”.

Click the <MW> button if you are an HF DXer with no interest in the bands on the right side of this form.

Reject Bands

Bands Selected will be totally rejected and not shown in the "Dx" or "Bands" displays.

Rejected Bands

<input type="checkbox"/> 160	<input type="checkbox"/> 17	<input checked="" type="checkbox"/> 4
<input type="checkbox"/> 80	<input type="checkbox"/> 15	<input checked="" type="checkbox"/> 2
<input type="checkbox"/> 60	<input type="checkbox"/> 12	<input checked="" type="checkbox"/> 1
<input type="checkbox"/> 40	<input type="checkbox"/> 10	<input checked="" type="checkbox"/> 70
<input type="checkbox"/> 30	<input type="checkbox"/> 6	
<input type="checkbox"/> 20		<input checked="" type="checkbox"/> MW

WARC VHF/UHF/MW

Apply

Hinson tip: if you don't want to see, say, 4m spots, it is more efficient (and easy!) to configure the DX cluster server to block spots on that band, at source, than to use CC User's filters at the *client* side. Doing so will reduce the volume of unwanted data flowing from the DX Cluster to your PC.

Within CC User, 'filter' means 'filter out' *i.e.* block DX spots for the specified bands or modes.

The CC User software does very limited spot filtering. Mostly, CC User makes it easy to compose the commands needed to configure filtering by a connected DX Cluster node. DX spots for particular bands or modes can be passed (sent to us) or rejected (blocked, held back) by the connected DX Cluster nodes according the filtering functions and rules applied at the nodes. Filtering at source reduces distractions and cuts the amount of telnet traffic passed from the connected DX Cluster/s through the network to our PCs for processing by CC User.

Hinson tip: If you have a slow Internet connection or PC, or if you are paying a fortune for mobile data, or during major contests and events when DX spots are flooding the DX Cluster network, node-based filtering can make a big difference. It is more efficient than any filtering applied in our logging software.

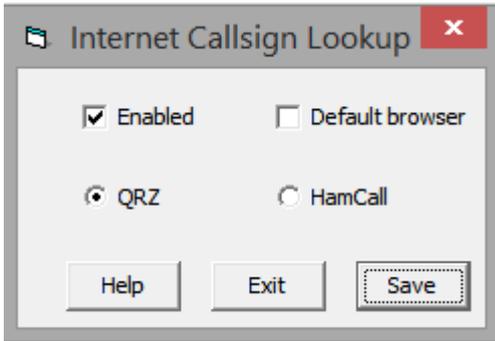
With no filters set, the full stream of DX spots will pass from each connected DX Cluster to CC User.

If the filters are too restrictive (too fine a mesh), few if any spots will be passed.

Generally, we seek a happy medium between those extremes, passing a steady flow of DX spots for interesting stations spotted on bands that may be open using the modes that we prefer.

- [Filtering spot sources e.g. by continent, by spotter ...](#)
- [Time-based filtering](#)
- [Link forward to relevant sections](#)

4.1.9 Dx Call Lookup



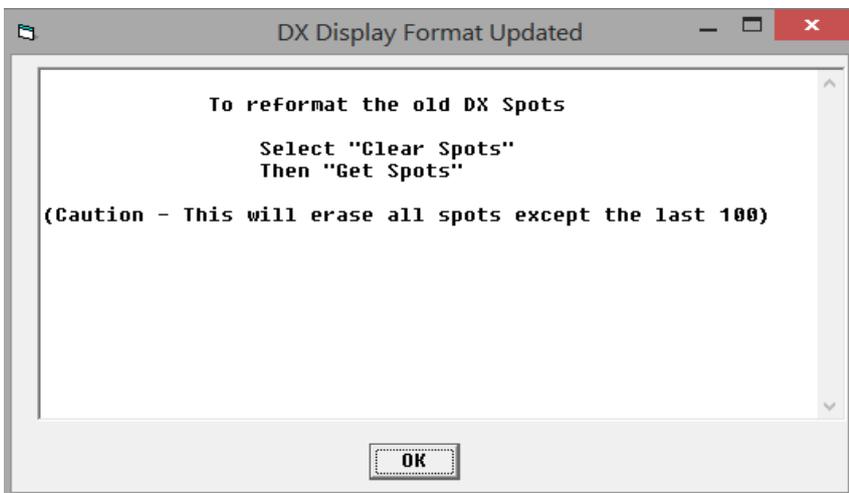
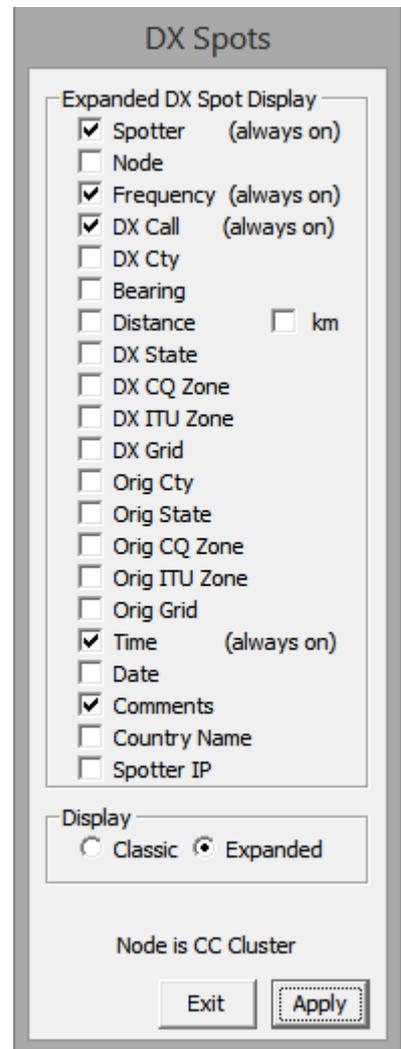
If call lookups are enabled, clicking a spotted DX [callsign](#) in CC User opens a browser window and displays the station's page from QRZ.com or HamCall.net *provided* the corresponding pages actually exist on those sites (some [callsigns](#) – including those for busted callsigns - are unlisted).

Select <**Default browser**> to use whichever browser program you normally prefer (e.g. Chrome or Firefox), otherwise CC User uses a rather basic and nasty browser built-in to Windows.

4.1.10 Dx Display Format

CC User can optionally determine and display additional details, aside from the basic DX spot information (*i.e.* the [callsign](#) of whoever sent the spot - the originator, the frequency and [callsign](#) of the DX station spotted, and the UTC time when the spot was originally received by the DX cluster network) ►

Hinson tip: after changing any settings, any *subsequent* spots will be formatted as configured. To reformat the most recent 100 DX spots in the same way, click <**Clear DX**> then <**Get DX**> on the [DX tab](#) to re-load the spots and format them as now configured.



‘Classic’ display example ▼

Spotter	Freq	DX	Time
DX de W1UU:	18100.0	3D2USU	0226Z
DX de IU2ABU:	14074.0	+SP6QKM	FT8 + 0226Z
DX de UK2HU:	18136.0	KE0ZSU	tnx Tom 56 0226Z
DX de KI5KTU:	7241.0	+W4C	+ 0226Z
DX de ES5QA:	14074.0	KJ6UMY	K038CS<>DM13JI 0226Z
DX de PU2NBI:	3574.8	LU3HZK	MY FRIEND 73 0227Z
DX de W6SDM:	14025.0	+XE1CCB	CW DM32wu -> DK99em + 0227Z
DX de VE2BK:	7012.0	HA8LLK	0227Z
DX de N9RU:	14004.6	+UA3KW	Ulad loud + 0228Z
DX de VE3UTG:	14024.9	+XE1CCB	+ 0228Z
DX de ES5QA:	14074.0	+W6RR	K038CS<>CM95PP + 0229Z

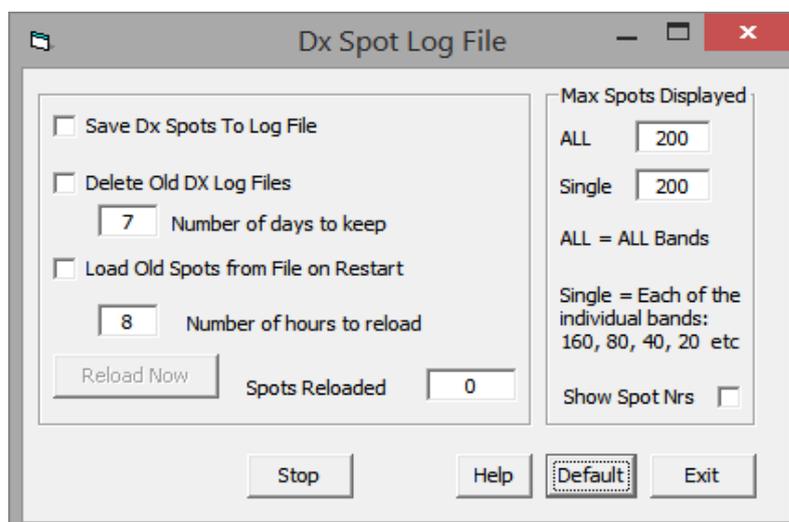
‘Expanded’ display example ▼

Spotter	Freq	DX	Time
AE1P	14253.0	+UA3KW	0224Z 59 in NH
KG0AQ	14076.3	UA9C	0225Z FT8 Sent: -11 Rcvd: -08
UE2IEA	14074.0	+TI2WMP	0225Z -18db
YB1MA	14074.0	JA2BMW	0225Z TNX FT 8 QSO,BANDUNG, INDONESIA
W1UU	18100.0	3D2USU	0226Z
IU2ABU	14074.0	+SP6QKM	0226Z FT8
UK2HU	18136.0	KE0ZSU	0226Z tnx Tom 56
ES5QA	14074.0	KJ6UMY	0226Z K038CS<>DM13JI
W6SDM	14025.0	+XE1CCB	0227Z CW DM32wu -> DK99em
N9RU	14004.6	+UA3KW	0228Z Ulad loud
VE3UTG	14024.9	+XE1CCB	0228Z

4.1.11 DX Spot to Log File

DX spots received from the DX clusters can optionally be saved to a text file on disk ►

Hinson tip: you might like to analyse the spots statistically, for example comparing the mean reported strength of your signals against your peers on different bands.



The file can optionally be deleted automatically after a specified number of days, and spots saved during the specified number of preceding hours can optionally be reloaded when CC starts.

After a specified number of spots have been received, CC User discards the oldest spots to make way for any new spots that arrive (**First In – First Out**). If you want to be able to browse back through previous spots, you can change the **<Max Spots Displayed>** settings, counting either the grand total number of spots for all bands (retain up to the most recent 200 spots

received, by default) or just those on each individual band (retain up to 200 spots *per band* by default).

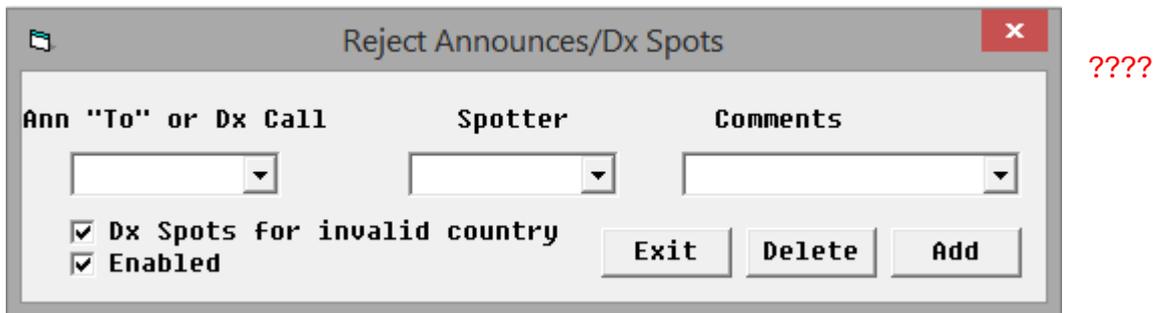
4.1.12 Fix Spots

CC User corrects country, state, CQ zone, ITU zone or grid square errors for some DX stations e.g. most E5 DX stations are in the South Cook Islands, whereas the North Cook Islands are much rarer.

Hinson tip: this function no longer seems to work. I guess it relies on corrections info that is no longer available online. Instead, [Club Log's Call Tester function](#) is a reliable guide and your logging software may be able to download [callsign/DXCC](#) exceptions from Club Log or other DX info sources.

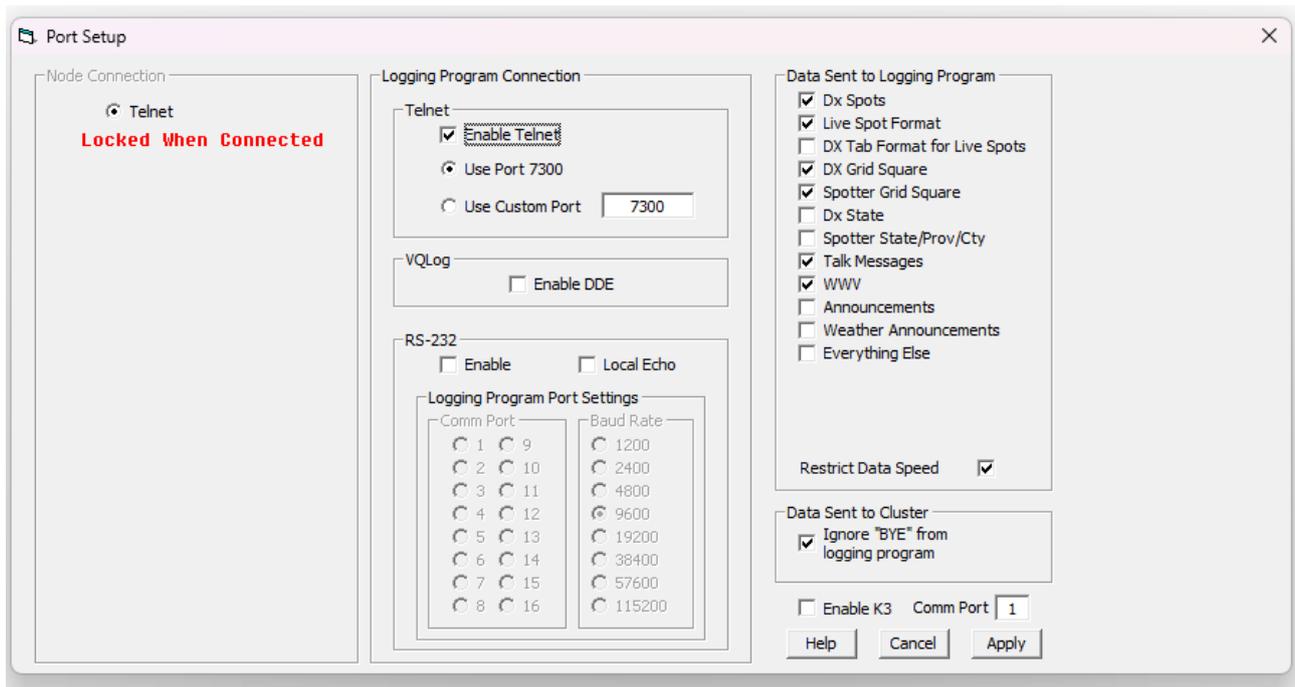
4.1.13 Reject Ann or Dx Spots

If you are distracted by 'announcements' broadcast to all on the global DX cluster network, or by spurious/dubious/annoying DX spots from specific spotters, CC User can block them for you:



4.1.14 Ports/Logging Program

CC User can forward DX spots etc. to logging programs running on the same PC as CC User, or on other systems sharing the shack LAN (e.g. other networked Windows or Linux PCs).



When enabled and running, CC User opens a Telnet service - a virtual DX cluster with the default [address](#) “localhost” or 127.0.0.1 and [port](#) 7300 (normally written as localhost:7300 or 127.0.0.1:7300).

Other programs running on the same shack system as CC User, or on other systems on the shack LAN, can then connect to the virtual cluster via Telnet using the [address](#) and [port](#) details.

In the central column, click to tick whichever connection types you will be using e.g. Telnet on [port](#) 7300 (or a ‘custom’ [port](#) number if, for some reason, 7300 isn’t suitable).

If enabled on the **Port Setup screen**, VQLog can receive DX data via DDE and other systems can receive data via RS-232 serial (COM) ports.

Hinson tip: only enable whichever types of connection you actually need. Even if not being used, each data output requires a bit of processing and marginally slows down the important stuff *i.e.* passing-along spots for DX stations you might want to contact.

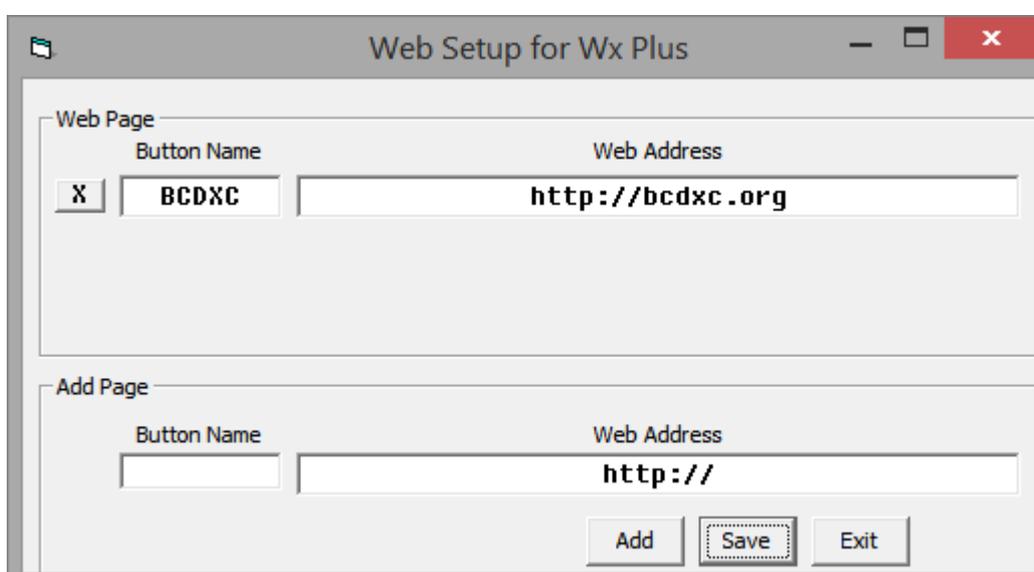
In the right-side column, click to tick the types of data that CC User should pass through to your logging software or other systems:

- Almost everyone will want to pass **DX Spots** across!
- **Live Spot Format ... ?**
- **DX Tab Format for Live Spots ...?**
- **What are “Live Spots” anyway???**
- **DX Grid Square** and **Spotter Grid Square** forward the respective grid squares as part of each spot’s data, provided the information is provided by the cluster node. This is an enhanced “CC” function supported on *some* clusters.
- **DX State** and **Spotter State/Prov/City** forwards additional location information if available. Again, this is a “CC” enhanced function.
- **Talk Messages** forwards any talkies sent to your logged-in [callsign](#) via the DX Cluster network. Your logging software hopefully interprets and displays these, and enables you to respond. You can also read and respond through CC User.
- **WWV** forwards solar and geomagnetic reports, forecasts and warnings that circulate automatically on the DX Cluster network every few hours, from NIST’s WWV or WWVH facilities or the WCY, German equivalent. Most clusters will also send the most recent report on demand, using the SH/WWV 1 command.
- **Announcements** forwards broadcast messages through as they circulate on the DX Cluster network. Announcements vary but may include Telnet [addresses](#) for DX Cluster nodes, news about DXpeditions *etc.* Again, it is up to your logging software to handle announcements.
- **Weather Announcements** forwards a special category of cluster announcement messages concerning weather events (**presumably!**).
- **Everything Else** tells CC User to forward other messages from the connected DX Cluster node/s and network, regardless of message type.
- **<Restrict Data Speed>** **presumably** throttles the throughput if the DX Cluster network gets very busy, such as during a major contest, giving your logging software more of a chance to digest and display the messages without being fire-hosed with fresh spots.

- <Ignore “BYE” from logging program> tells CC User to remain connected to the cluster even if our logging software sends the **BYE** command for some reason, disconnecting it from CC User. It is still possible to disconnect manually from a cluster using the <**DISC**> button on the node list, and of course all connections are dropped if CC User itself is closed.

Hinson tip: the same data are sent through all the enabled connections. Only select whichever data you actually need. Communicating data takes a finite amount of time and computer resources, which can become limiting factors when spots are flowing thick and fast on the cluster networks (e.g. during the CQ WW contests), slowing down the computer and delaying the spots. It’s not much help to discover that you missed a rare multiplier because the DX spot sat in the queue for *ages*, waiting patiently to be delivered to your contest logger!

4.1.15 Web Setup



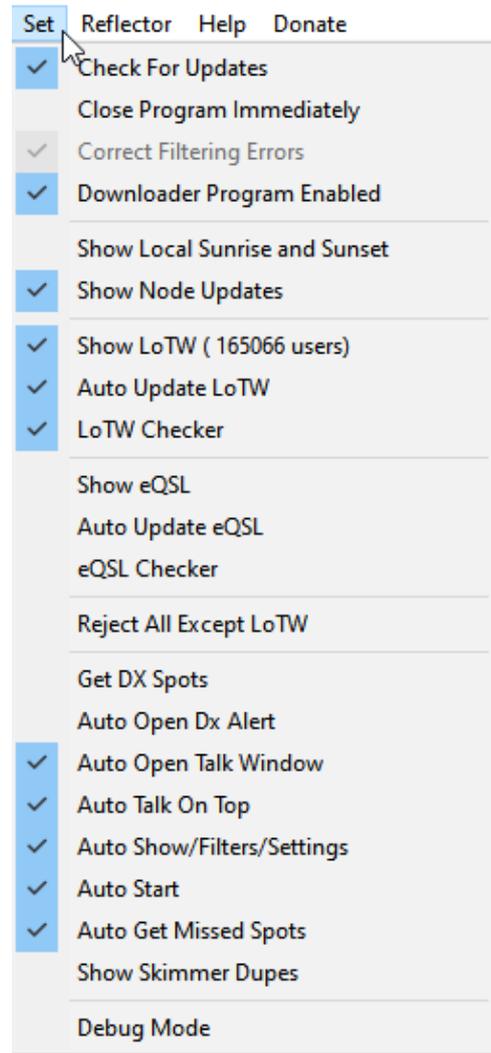
CC’s **Wx Plus tab** simply opens the specified web pages using a basic web browser built-in to Windows.

Hinson tip: your preferred web browser almost certainly makes a better job of it. Bookmark your favourite websites, and set up buttons in your browser if you like.

4.2 Set

This menu lets us configure CC User ►

- **Check for Updates** – looks on the web for an update to the CC User program
- **Close Program Immediately** – pull the plug without running any of the normal closing routines?
- **Correct Filtering Errors** – ??
- **Downloader Program Enabled** – ??
- **Show Local Sunrise and Sunset** – calculates the sunrise and sunset times at the user's QTH
- **Show Node Updates** – ??
- **Show LoTW (nnnnn users)** – displays an X beside DX spots for the nnnn stations known to use Logbook of the World.
- **Auto Update LoTW** – periodically checks for any new LoTW users.
- **LoTW Checker** – ??
- **Show eQSL** – displays an X beside DX spots for stations known to use eQSL.com.
- **Auto Update eQSL** – periodically checks for any new eQSL users.
- **eQSL checker** – ??
- **Reject all except LoTW** – don't even display DX spots for stations that are not listed in the latest LoTW user list and hence probably do not use LoTW
- **Get DX Spots** – *does a SH/DX??*
- **Auto Open Dx Alert** – ??
- **Auto Open Talk Window** – if someone sends us a talk message via the DX Cluster network, the talk window pops into view
- **Auto Talk On Top** – if the talk window appears, it is layered 'on top' of, rather than appearing beneath and being hidden by other windows
- **Auto Show/Filters/Settings** – when we log in to a cluster, it displays the filter settings as reminders of what we're filtering out
- **Auto Start** – ??
- **Auto Get Missed Spots** – ??
- **Show Skimmer Dupes** – normally, after the first one is displayed, the program automatically hides duplicate DX spots for the same station from Skimmers around the world (*for a while?*). Ticking this option shows all the dupes as they arrive.
- **Debug Mode** – the program provides/logs internal information useful for debugging purposes ??



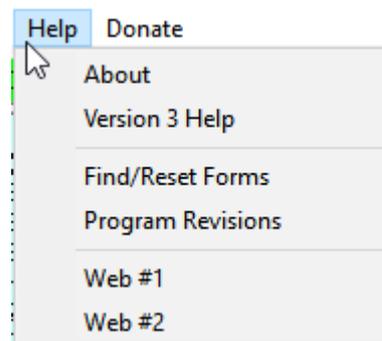
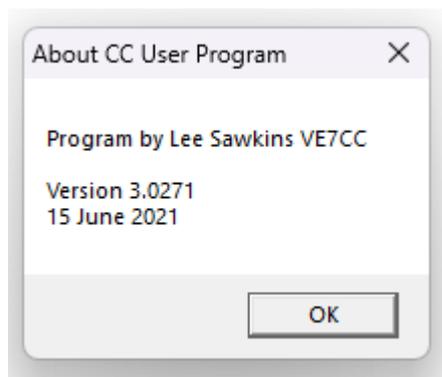
4.3 Reflector

This is simply a hyperlink to <https://groups.io/g/CC-User/topics> that opens in the default Web browser. The CC User support reflector is where questions about CC User are posed and answered by a community of users.

4.4 Help

The help menu is mostly nonfunctional ►

- **About:** tells us a little about the software ▼



- **Version 3 Help:** invokes (opens the following URL in our default web browser) <http://www.bcdxc.org/ve7cc/Ver3/V3Help.htm> ... but the website is presently QRT.
- **Find/Reset Forms:** repositions the program's open window/s top-left of the primary display and on-top in case they were partially or wholly hidden or off-screen.
- **Program Revisions:** invokes <http://www.bcdxc.org/ve7cc/default.htm#Revisions> ... but the site is QRT.
- **Web #1:** invokes <http://www.bcdxc.org/ve7cc/default.htm#prog>, now QRT.
- **Web #2:** invokes http://bcdxc.org/ve7cc/ccc/CCC_Commands.htm, QRT again. It used to list the CC Cluster commands like this ▼

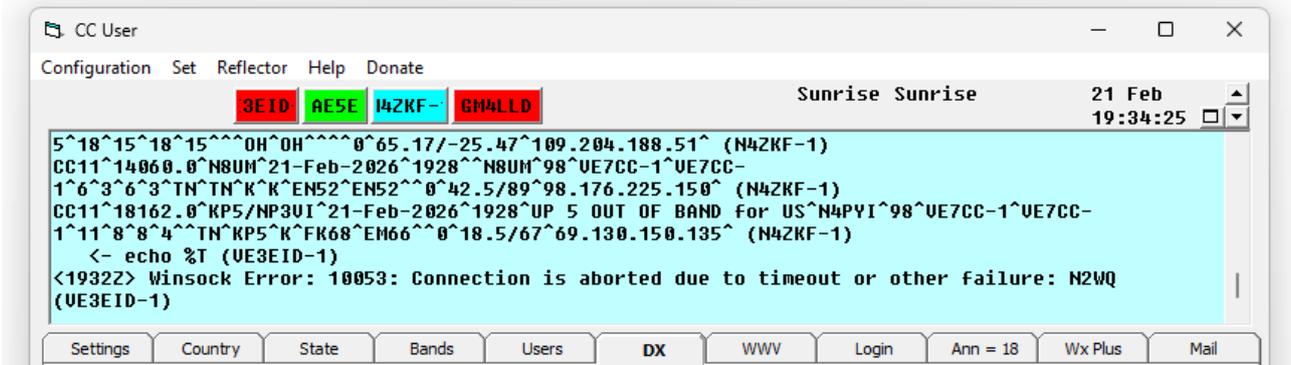
Hinson tip: snapshots (static copies) of those web pages have been archived – search the [Wayback Machine](#) for the URLs if you are curious about what they used to say. The most recent snapshots may be blank but previous ones may still be available from the archive.

4.5 Donate

This is another web hyperlink, this time to <http://bcdxc.org/ve7cc/Donate.htm>, QRT at this time. It *used* to say “If you find the software useful, a donation to help support future development would be appreciated” with a PayPal button. Perhaps there were insufficient donations to justify the time and effort needed to complete the software development and maintain the website.

5 CC User's top section

Before we tackle the 11 tabs, this section explains the area below the window caption and top-line menu and the tabs ▼

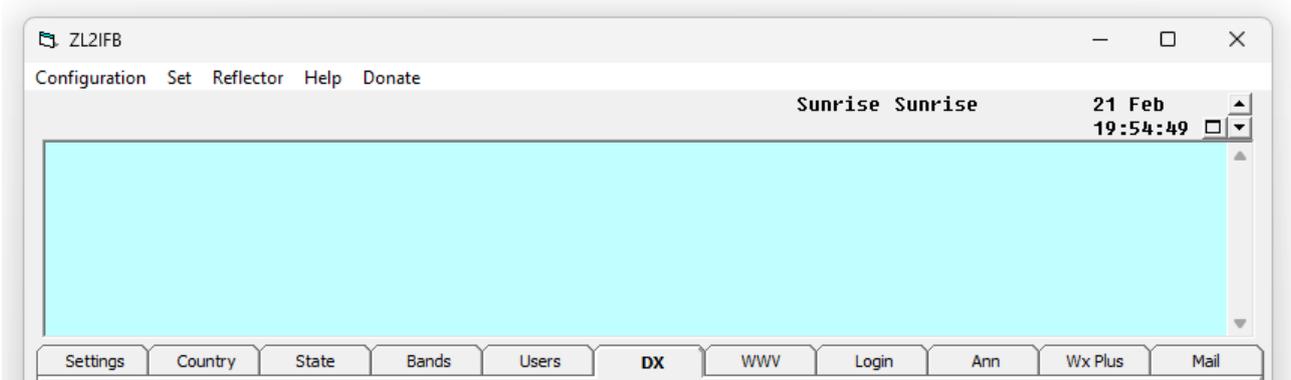


5.1 DC cluster nodes

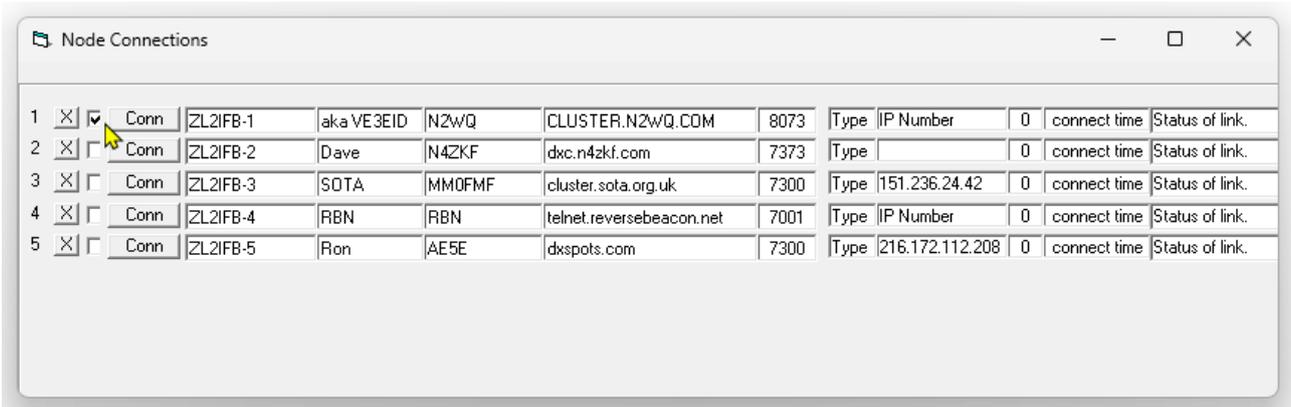


◀ Normally, just below the top-line menu, CC User shows us the DX cluster node or nodes we are using.

When we first launch CC User, however, there are no node connections so this area is blank ▼



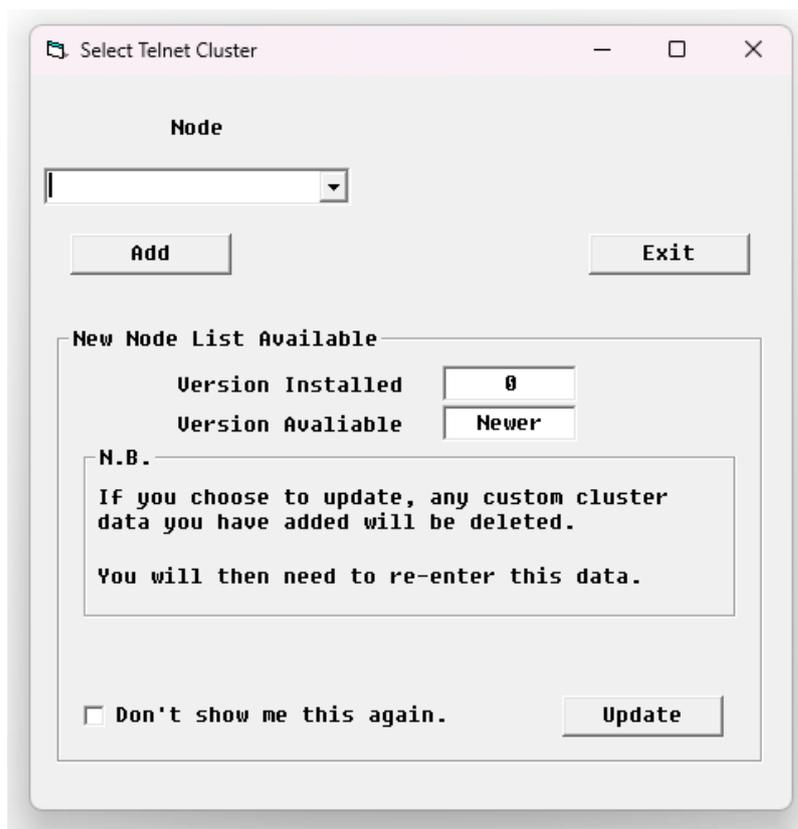
DX cluster nodes first appear here in their coloured boxes when we attempt to connect to them. If any nodes on our **Node Connections** form are [ticked to enable auto-reconnections](#), CC User immediately attempts to connect to them e.g. the topmost node in this case ▼



Once they appear, we can *right*-click any of the brightly-coloured cluster boxes to display the **Node Connections** table with up to 6 rows.

To add new rows to the **Node Connections** table, use **Configuration ⇌ Node (Telnet) ▶**

1. Type a memorable name for the cluster in the white **Node** box.
2. Click <**Add**> to open two more white boxes for the cluster's **Address** and **Port**.
3. Type in the **Address** and **Port** for the cluster you are adding.
4. Click <**Apply**> to add the new cluster to the **Node Connections** form ... or click <**Delete**> to delete the cluster definition and <**Exit**> to close the **Select Telnet Cluster** form.



5.1.1 Update node list

In theory, we can click the <**Update**> button on the Select Telnet Cluster form ▲ to download a new Node List from the Internet provided the relevant source website is online ... which at the moment it is not, so it just hangs.

Hinson tip: do *not* use the <**Update**> button anyway. Even if it does work, the downloaded cluster details will overwrite the current set including any nodes we have configured manually. It is better to update the node details manually ...

5.1.2 Update node details manually

To update cluster node details manually e.g. to change a cluster's name, addi=iio0i0oo09

1. Using **Configuration ⇌ Node (Telnet)** again, open the **Select Telnet Cluster** form ▲ The **Node Connections** form also opens at the same time.
2. Click the down-arrow in the **Node** box on **Select Telnet Cluster** to list the currently configured clusters.
3. Click whichever cluster you want to check or change. The **Address** and **Port** boxes are shown with the current details for that cluster.
4. Check and if necessary correct the text in the **Node**, **Address** and/or **Port** boxes. Alternatively, click the <**Delete**> button if the cluster is dead, offline, gone forever.
5. Click <**Apply**> to save the details and add the cluster to the **Node Connections** form.
6. Repeat for any other nodes.
7. Click the <**Exit**> button or click the corner X to close the **Select Telnet Cluster** form.

5.2 Date/time section

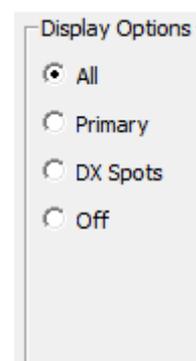
On the right CC User shows the current **UTC** date and time. Amateur contacts are generally scheduled, logged, confirmed and reported using dates and times in Coordinated Universal Time (UTC) rather than local time, summer/daylight savings time, **Greenwich Mean Time**, tea time or any other time reference. So CC User shows us the current values.

- **What is sunrise sunrise about?**

5.3 Display section

Directly above the 11 tab labels is – usually - a mostly blue section showing traffic streaming *from* the connected DX cluster/s (if any), and any commands sent to the current cluster. Here you can – usually - see the raw unformatted DX spot messages, cluster announcements, login messages, commands *etc.*, plain ASCII data packets with fields separated by carets (^).

There are actually 4 configurable options for this section ►



On the <Settings> tab, the Display Options are:

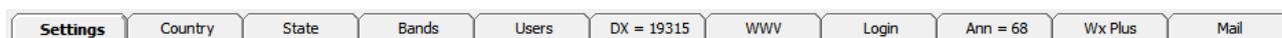
- **All** – show all the traffic arriving and being sent through all the cluster connections.
- **Primary** – show only the traffic for the [primary node](#).
- **DX Spots** – show only DX spot messages, ignoring other message types.
- **Off** – do not display the section at all.

Hinson tip: the messages are generally quite long, so feel free to drag the righthand edge of the CC User window further to the right if the lines are wrapping and difficult to read. Some clusters line-wrap their own messages, so that won't help. Although the vertical height of the blue section cannot be changed to see more or fewer raw messages, there is a slider bar on the right which we can drag up or down to browse them.

The first field in most cluster messages denotes the type of message e.g. DX spots are “CC11” messages.

6 CC User's eleven tabs

Before we explain them individually, notice that the tab labels sometimes contain numbers: these are the counts of new messages in those tabs since they were last closed ▼



In the example here ▲ over 19,000 DX spots have arrived in the **DX tab** plus 68 announcements in the **Announcements tab**. As soon as we open one of those tabs, the count disappears from its tab label.

6.1 Settings tab

The **Settings tab** is where we configure CC User *and* the DX cluster/s to which we connect ▼

CC User is the *client* part of a [client-server](#) system. Some configuration settings (such as whether we check for LoTW or eQSL users) apply locally in the client running on the shack PC, whereas others (such as mode filters) have to be sent to the active (meaning currently-connected and selected) DX cluster server via the network, where they are interpreted and (if valid on that particular cluster) applied.

Hinson tip: although we *can* click <Tell> to send individual settings in a given section to the server one at a time, it is quicker and easier to make a bunch of configuration changes in CC User and *then* click <Tell> to send them all at once.

Click the <Ask> buttons to get the current settings for that section from the active cluster server, for instance to check that the server is configured correctly.

Hinson tip: <Ask> is useful to copy the configuration settings from our initial or normal cluster server to the client, prior to activating a different cluster and then applying the same settings there using <Tell>. The sequence of <Ask> ~ Select cluster ~ <Tell> lets us replicate a bunch of settings without having to configure them individually, provided the destination cluster accepts the particular commands.

6.1.1 Settings @ [DX Cluster callsign] section

The top left section of the **Settings tab** shows the configuration for the presently-connected active cluster [node](#), whose [callsign](#) is given in the section heading (VE7CC-1 in the screenshot above).

Click <**Ask Cluster**> to send the DX cluster a command in the appropriate syntax to disgorge various details of its configuration, placing various ticks in the three columns of boxes:

- **DX Spots:** DX spots are being sent from the DX cluster to CC User, when they arrive for band segments currently enabled;
- **2 dig:** provides DX spots with two digits after the decimal giving a resolution of 10 Hz, rather than the usual single-digit 100 Hz resolution, provided the information was sent by the original spotter to a DX cluster and then may have been forwarded through other DX clusters, all of which need to be capable of handling two digit spots;
- **Announce:** sends cluster announcement messages to the [Announcements tab](#);
- **BoB=Ann:** DX spots with frequencies at the very bottom of a band (e.g. 14000.00 kHz) are treated as announcements, to be shown on the [Announcements tab](#) rather than the [DX tab](#). Some hams use this technique to broadcast comments about specific stations e.g. P5DX When RTTY? or P5DX inaudible here grrrrr;
- **BoB:** if *unticked*, DX spots for the very bottom of a band are simply ignored, not being shown on the [DX tab](#) nor (even if **BoB = Ann** is ticked) on the [Announcements tab](#);
- **Wx Ann:** weather announcements are sent by the cluster to the [Wx Plus tab](#) e.g. warnings about approaching snow storms, I guess;
- **State:** passes state information for North American (and other?) stations that have indicated their states in their DX cluster QTH information;
- **CQ:** passes DX spots containing the string CQ in the message content (?);
- **Talk:** passes talk messages sent to us;
- **Grid:** passes Maidenhead locator information for spotted DX stations that have their locators configured in their DX cluster QTH information;
- **ITU:** passes ITU zones for spotted DX stations that have their ITU zones configured in their DX cluster QTH information;
- **Bell:** when ticked, if someone includes the 'bell' character (ASCII code 7) in a DX spot or message, CC Cluster will ding the Windows chime on receipt, alerting connected users to something the originator feels is important;
- **WWV:** passes along solar and geomagnetic data from WWV when circulated through the DX Cluster network every few hours;
- **WCY:** passes along solar and geomagnetic data from WCY when circulated through the DX Cluster network every few hours;
- **Logins:** messages indicating that someone has logged-in to a cluster are sent – useful, perhaps, if you are expecting a friend to login;

CC User composes and sends the corresponding command to the active cluster whenever these options are changed. See [the appendix](#) for further details about the cluster commands used on CC clusters.

Settings @ W4MYA

<input checked="" type="checkbox"/> DX Spots	<input type="checkbox"/> 2 dig	<input type="checkbox"/> Announce
<input checked="" type="checkbox"/> BoB=Ann	<input checked="" type="checkbox"/> BoB	<input type="checkbox"/> Wx Ann
<input type="checkbox"/> State	<input type="checkbox"/> CQ	<input checked="" type="checkbox"/> Talk
<input type="checkbox"/> Grid	<input type="checkbox"/> ITU	<input type="checkbox"/> Bell
<input checked="" type="checkbox"/> WWV	<input checked="" type="checkbox"/> WCY	<input type="checkbox"/> Logins
		<input checked="" type="checkbox"/> Self
<input checked="" type="checkbox"/> Skimmer	<input checked="" type="checkbox"/> Own	<input type="checkbox"/> Sk Dupe

Ask Cluster Tell Cluster

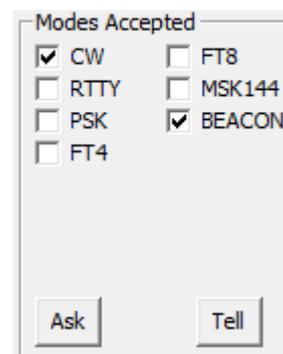
- **Self:** if ticked, when we are spotted, those spots are sent to us – meaning that we have been heard somewhere!
- **Skimmer:** if ticked, DX spots submitted by automated/robotic Skimmer-like systems are to be sent to us;
- **Own:** if ticked, Skimmer-like spots for us are sent to us with potentially interesting information such as our signal strength at the Skimmer sites;
- **Sk Dupe:** duplicate Skimmer spots for the same DX station within a cluster-defined period (maybe a few minutes) are sent to us, rather than being ignored.

To change any of those settings, click the box or boxes, then click **<Tell Cluster>**, telling CC User to compose and send the relevant configuration commands to the active DX Cluster, using the appropriate command syntax for that particular type of DX Cluster node⁷.

Hinson tip: having configured your favourite DX Cluster node to your liking, **<Ask Cluster>** grabs all the configuration settings into CC User’s working memory. Then, if you connect to a different DX Cluster and make it active, simply clicking **<Tell Cluster>** sends the same configuration settings to that cluster as well. This is quicker, easier and less error-prone than manually replicating the settings for each cluster – provided you actually want them all to share the same configuration settings, anyway. If not e.g. if you want only, say, your club’s DX Cluster to send you announcements, tick to enable **Announce** and then **<Tell Cluster>** only when the club’s DX Cluster connection is active, un-ticking it before clicking **<Tell Cluster>** for any other clusters you use.

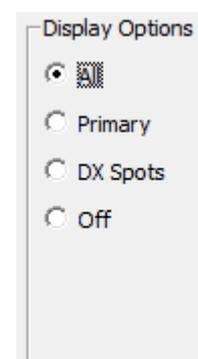
6.1.2 Modes Accepted section

- **CW, FT8, RTTY, MSK144, PSK and FT4:** tick whichever modes for which you would like to receive DX spots;
- **Beacon:** although this is not considered a mode, you can choose whether to receive (tick) or ignore (untick) DX spots for beacon;
- Similarly to the Settings section, click **<Ask>** to grab the mode filtering settings *from* the currently-active DX Cluster, and **<Tell>** to send the ticked/unticked mode settings *to* the currently-active DX Cluster.



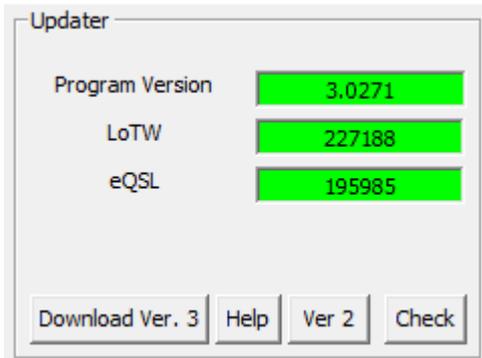
6.1.3 Display Options section

- **All:** all incoming messages from all currently-connected DX Cluster nodes are shown in the box at the top of this window;
- **Primary:** only incoming messages from the currently-active DX Cluster are shown in the box at the top of this window;
- **DX Spots:** only DX spot messages are shown in the box at the top of this window;
- **Off:** the box at the top of this window is turned off, not shown.



⁷ CC User discovers which software DX Cluster nodes are using through their initial responses when it connects to them.

6.1.4 Updater section

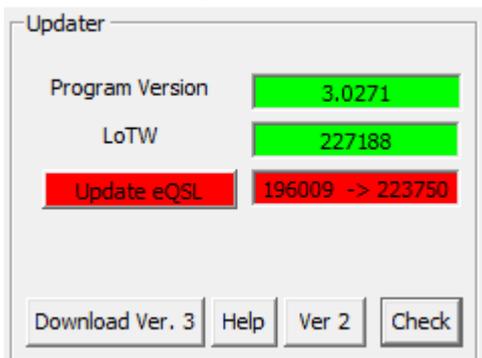
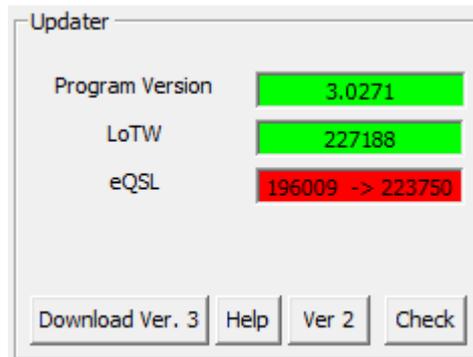


◀ **Program Version** shows, in the top box, the version number for the CC User software we are currently running. As of this writing, version 3.0271 is the latest available, possibly the last ever unless the program is updated.

If the <LoTW Checker> and <eQSL Checker> options are selected (ticked) in the <Set> menu, **LoTW** shows, in the middle box, how many [callsigns](#) known to be using ARRL's **Logbook of The World**, while **eQSL** shows, in the

third box, how many callsigns are known to be using the eQSL system. The actual counts are only shown if the details have been downloaded to CC User.

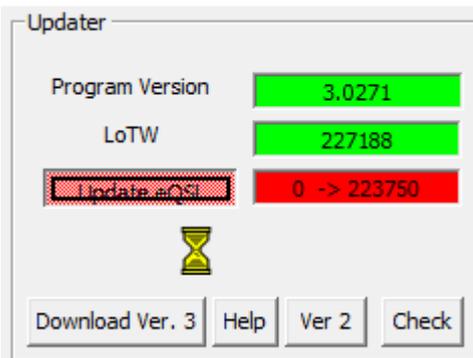
To check the status of CC User plus the downloaded LoTW and eQSL user info, click the <Check> button ▶ If updates are available, the relevant boxes go red and show the changes available. Here, the red eQSL box was showing 0 ⇒ 223750, meaning that the current count was zero (I had not yet downloaded the eQSL user list) but 223,750 [callsigns](#) of known eQSL users were available to download.



◀ Click <Check> again to show a red update button, then click it to get the download ▶

Eventually, all the boxes should go green. However the update process can take a while so wait patiently until it

completes. Thankfully, this is not something we need to do often.



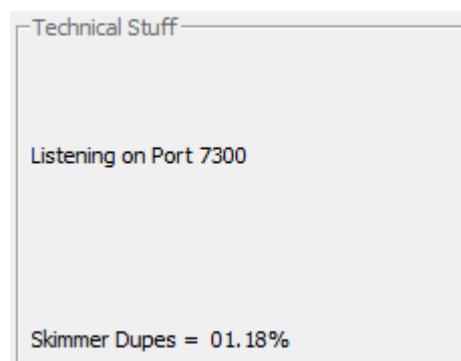
Hinson tip: for some reason on my shack PC, the eQSL update is unreliable and usually stalls, leaving CC User hanging and unresponsive. It doesn't matter to me whether DX stations use eQSL so, after grabbing some images for this manual, I disabled (unticked) the eQSL functions on the **Set** menu.

The other buttons in this section (<Download ver.3>, <Help> and <Ver 2> are presently out of action while the BC DX Group's website is down. Too bad.

6.1.5 Technical Stuff section

Various technical messages from CC User appear here, such as:

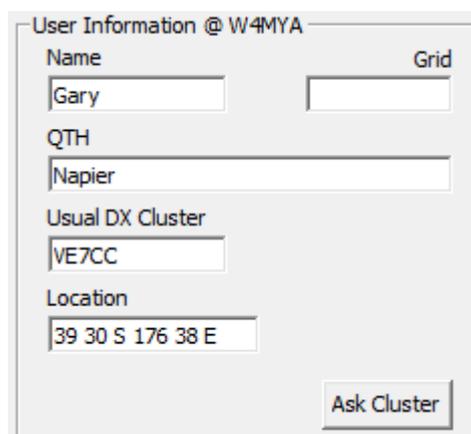
- **Listening on port 7300:** the numbered [port](#) is open and ready to accept a Telnet connection from our logging software;
- **Logging programs x1:** shows when our logging software is connected to CC User as if it was connected to an actual DX Cluster node;
- **Skimmer Dupes = xx.xx%:** the proportion of Skimmer spots identified as duplicates and routinely ignored.



6.1.6 User Information @ [cluster name]

This is a read-only section, showing information about us held by the connected DX Cluster, and shared through the global DX Cluster network. Click **<Ask Cluster>** to query and check the info. If it is wrong or missing, you may be able to compose and send configuration commands to the cluster to update it, or you may need to contact the Sysop for that. *I guess.*

- Why is there no **<Tell Cluster>** button here, I wonder?



6.1.7 Keywords section

DX Spots can be passed (filtered-in) or ignored (filtered-out) according to text strings within the messages. For example, suppose you are only interested in DX spots for an obscure new digimode, provided the spots consistently name the mode, you can add a keyword filter to **<Pass>** only DX spots containing that named mode while ignoring all other DX spots. Conversely, if you don't want to see spots containing inane messages such as "QRT", add that Q-code to the filter, click to select the **<Reject>** option, then click **<Tell>** to configure the currently-active DX Cluster accordingly.

The <Help> button is presently out of action while the BC DX Group's website is down.

6.2 Country tab

This tab lets us filter spots either:

- **For** DX stations in particular countries ([DXCC](#) entities, denoted by their usual prefixes and grouped according to the six continents), or
- DX spots submitted **by** hams in those countries.

We can decide whether **pass** (show) or **reject** (skip) the specified spots.

We can also filter [announcements](#) and [weather reports](#) in the same fashion. Impending storms are unlikely to be of such immediate concern if we are elsewhere in the world.

For greater granularity, we can even customise the filter settings per band e.g. reject 'local' spots (for DX stations on our own continent or from neighbouring countries) on 20m, but pass both local and DX spots on 6m.

Calder tip: since each [SSID](#) is treated by DX cluster nodes as a unique user, we can configure cluster filters using different [SSIDs](#) for different situations e.g. N4ZKF-16 for CQ WW CW contest, N4ZKF-17 for CQ WW SSB, N4ZKF-18 for CQ WPX etc. We can even change the filters on the fly e.g. during the day I might pass worldwide spots on 20m and up, but at night when the high bands are dead, swap [SSID](#) to activate a cluster filter that passes only HF DX spots from spotters in my zone and LF spots from my continent.

6.2.1 Example: show only spots from USA spotters

To show DX spots from spotters based in the USA:

1. Click to select (tick) <NA> in the middle of the form to show [DXCC](#) prefixes for **North America**.
2. Click to select <**Spotter Cty**> in the *Filter Type* section to filter spots by the spotters' countries.
3. Click to select <**Pass**> since you want to pass (show) spots from NA spotters. This turns the background of <**Spotter Cty**> green rather than pink (since <**Reject**> is the default).
4. In the *Band* section, click to select <**All**> to configure the same filter for DX spots on every band, assuming that's what you want to do.

Hinson tip: if instead you want to configure the filters individually per band (e.g. show spots from USA spotters only, on 6m, but from all spotters on other bands), click to select any band on the list and continue with steps 5 to 7 ... then return here to select another band, and so on. You need to configure the filter for each band and each cluster separately: luckily, it's just a few clicks each time.

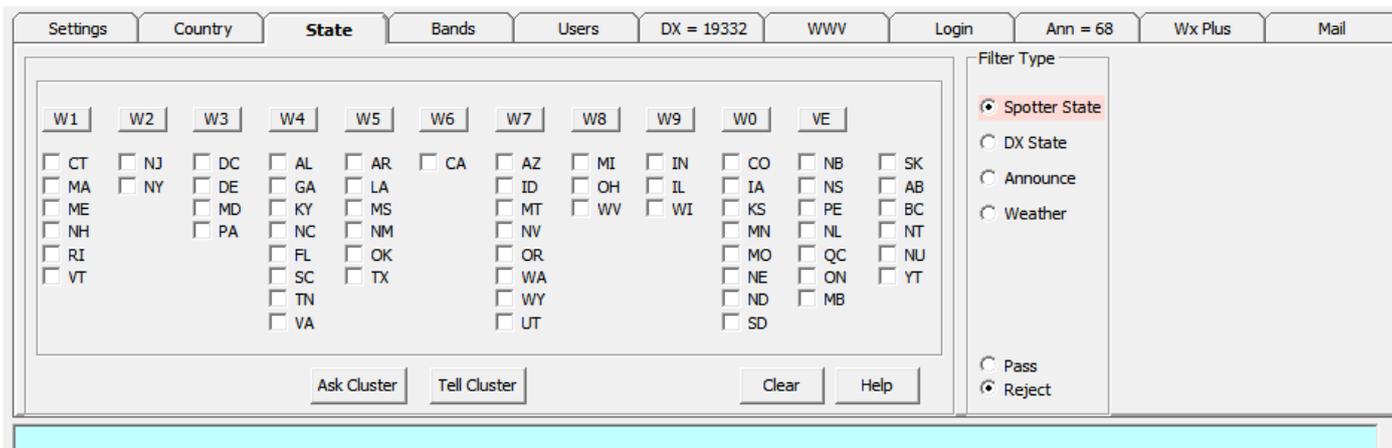
5. Click to select **<K>** for spotters based in USA, plus your choice of other [DXCC](#) entities such as **<VE>** and **<XE>** for Canadian and Mexican spotters, respectively, turning them green as well. Alternatively, click the **<Set>** button to select *all* of the [DXCC](#) entities listed here, or **<Clear>** to clear all the selections.
6. When you're happy with the selections, click **<Tell Cluster>** to have CC User compose and send the requisite filter configuration command to the connected primary cluster (the one with a blue background below the top-line menu).
7. If you use other clusters as well, you can now (if you wish) send the same filtering command to each of them, one-by-one, by clicking to select a connected cluster (turning it blue) and the clicking **<Tell Cluster>**.

Hinson tip: if you do not copy the filter settings across, each cluster will continue using whatever filtering was previously configured – if any. So, in the [DX tab](#), don't be surprised to see DX spots from non-USA spotters that pass through unfiltered or differently configured connected clusters.

8. If the filtering doesn't work as expected, double-check your settings and be sure to **<Tell Cluster>** for each connected cluster in turn. You can check the filter settings on any cluster by sending a command similar to SH/FILTER DOC (the syntax *may* differ on some clusters but it should work for most – [see Appendix B for more commands](#)), simply by clicking the **<Ask Cluster>** button and looking at the messages streaming through the upper blue-background area of the form. You may need to drag the slider back up the screen if lots of messages have arrived since the cluster displayed its filter setting, or click **<Ask Cluster>** again and hope you catch it in a quiet period.

Hinson tip: it is easier to connect to just one favourite cluster node when initially configuring and testing your filters. Once that cluster is working as you wish, by all means connect to additional clusters, then activate and copy the filter settings (using **<Ask Cluster>**) from your favourite cluster, then activating a different cluster and sending the same settings there (using **<Tell Cluster>**). Repeat until exhausted.

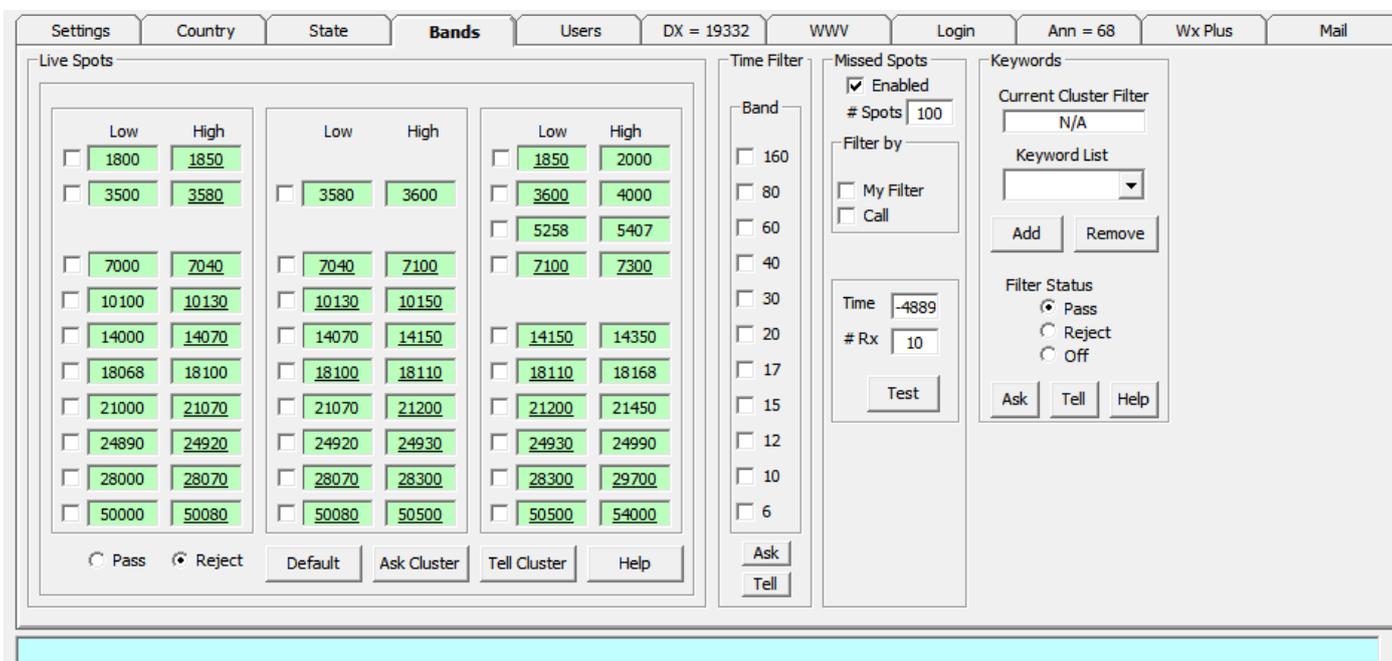
6.3 State tab



We can use the **State tab** ▲ to filter (**pass** or **reject**) DX spots according to the US states or Canadian provinces in which either the spotters or the spotted DX stations are believed to be located.

- Explain how to use all the settings, systematically, illustrated with screenshots
- Explain how CC User knows where the stations are
- Offer hints & tips for this tab

6.4 Bands tab



6.4.1 Configuring bands and band segments

The **Bands tab** lets us configure the connected cluster/s either to **pass** (send us) DX spots for specific bands and band segments, or to **reject** (skip) them.

For example, a 6-metre specialist may *only* want to see spots for *DX* stations on 6m, meaning stations on other continents, while ignoring spots for 'local' 6m stations. The 6m specialist

might also like to see all spots on 10 and 12m, the general level of activity indicating when HF conditions are becoming lively enough for 6m to open to DX.

The “Live Spots” section of the **Bands tab** shows any band and band segments for which DX spots are being passed to us in green, while those that are being rejected are shown in pink. For all except the 160, 60 and 30m bands⁸, there are three columns corresponding approximately⁹ to the CW, data and phone sections of the bands. On 20m for example, CW is normally used from the lower band edge at 14000 up to 14070 kHz, then various digimodes are used from 14070 to 14150 kHz, with phone modes such as SSB and AM above 14150 up to the band edge at 14350 kHz.

While it might be nice if all spots indicated the modes being used by the DX, in practice few human-generated spots mention the mode and even robotic spots can be ambiguous or plain wrong about the mode. Therefore, the clusters use the DX spot frequency (which every spot must have) as a surrogate for mode, split across those three main categories: CW, digital or phone¹⁰.

For more information about the band segments, see [Appendix C](#).

- **More to come – config instructions**

6.4.2 Configuring time-based spot filtering

As well as by bands and modes, we can also filter spots according to the time of day (using the UCT clock). LF DXers, for instance, are most interested in the dawn and dusk greyline periods, but LF DX spots at local noon due are generally distracting to ionospheric absorption.

- **More to come – config instructions**

6.4.3 Other details

- **Missed spots**
- **Keywords - name your band filters to make it easier to swap between them?**
- **Time #RX ??**
- **Hints & tips for this tab**

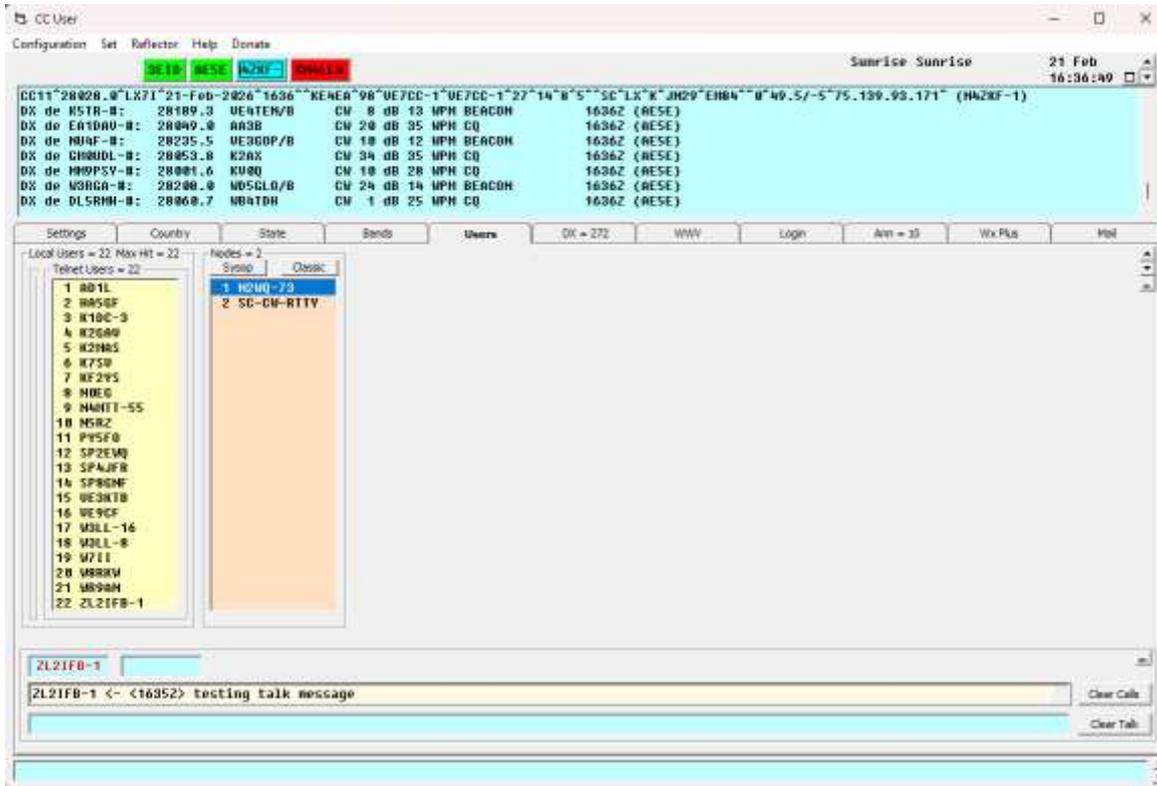
⁸ On those bands, the choice of modes is limited globally by license or by convention, with a few exceptions (e.g. despite being such a narrow band, VK licenses allow the use of SSB on 30m).

⁹ I say ‘approximately’ because hams sometimes stray outside the normal segments (e.g. during a major CW contest, rabid contesters and non-contesters trying to maintain regular CW schedules) may be found from the bottom band edge to 14100 kHz or beyond. Furthermore, some modes are ambiguous e.g. would you class, say, digital voice transmissions as phone or digital? With its on/off carrier and the use of keyers, bugs, keyboards and Morse decoders, is CW the oldest digital mode? You may have a fixed position on this but – right or wrong - others may disagree with your categorisation.

¹⁰ DX spots with frequencies at the precise boundaries between mode segments are still ambiguous, while spots for the very bottom or very top of a band suggest illegal operations given that transmissions are presumably extending partially out-of-band.

6.5 Users tab

The **Users tab** lets us find out who else is currently logged-in to the DX Cluster network ▼



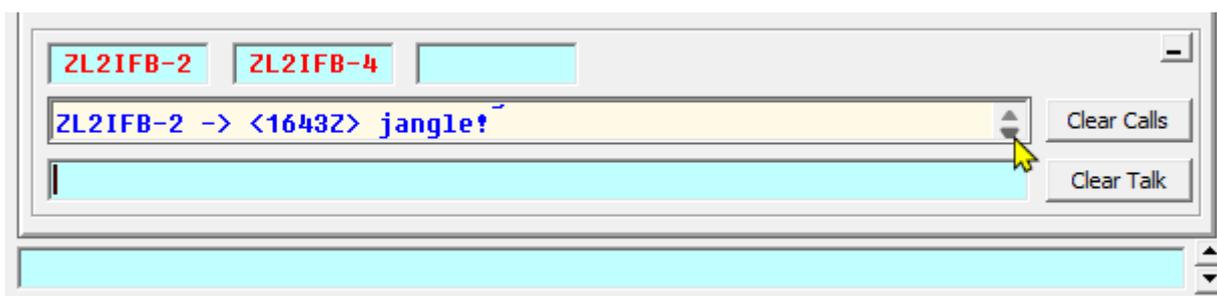
- Explain the buttons along the top: <Talk>, <Sysop>, <Skimmers>, <Nodes>, <All Users> and <Locals>
- Explain the fields and buttons at the bottom: used to compose and swap talk messages within particular users (locally or elsewhere on the cluster network)

6.5.1 Talkies

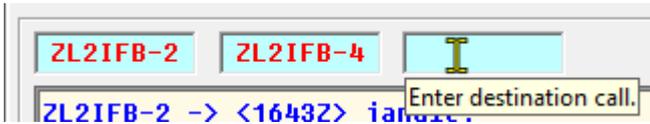
If someone sends us a talkie (a ‘talk’ message passed through the DX cluster network), it appears at the bottom of the **Users tab**. If we were viewing a different tab at the time, the PC sounds a jangly audio alert and the **Users tab** appears.

Talkies are also passed through to the logging software and may (or may not!) be processed and shown there.

To facilitate chatting with one or more other DX cluster users, the [callsigns](#) and [SSIDs](#) of those we are messaging are shown, along with the messages ▼



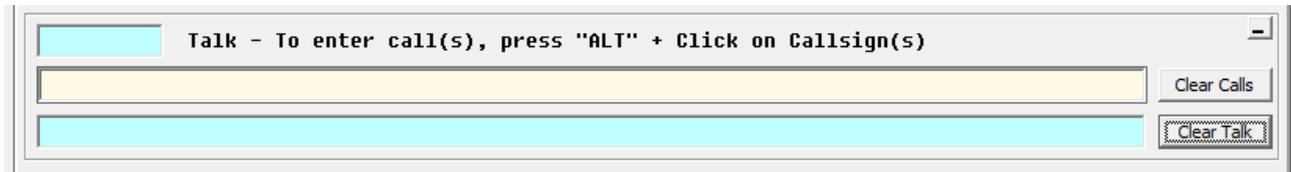
As the fields cannot be expanded vertically to show more than one line at a time, notice the little up/down arrows on the right if there is more than one line of information. Click the arrows to browse back and forth through the information.



◀ The small blue box lets us add additional recipients to those we are currently talking to. Mouse-over it for a popup reminder. With multiple recipients listed, our talk messages are sent to all of them, provided they are currently logged in to the DX Cluster network.

The yellow box shows the most recently talkies – black text for message we have sent, red text for messages received – along with the respective [callsigns](#).

The <**Clear Calls**> button empties the list of recipient and reminds us that we can hold <Alt> and click a recipient's [callsign](#) from the lists shown above to start talking to them ▼



The <**Clear Talk**> button deleted any talk messages received from our display.

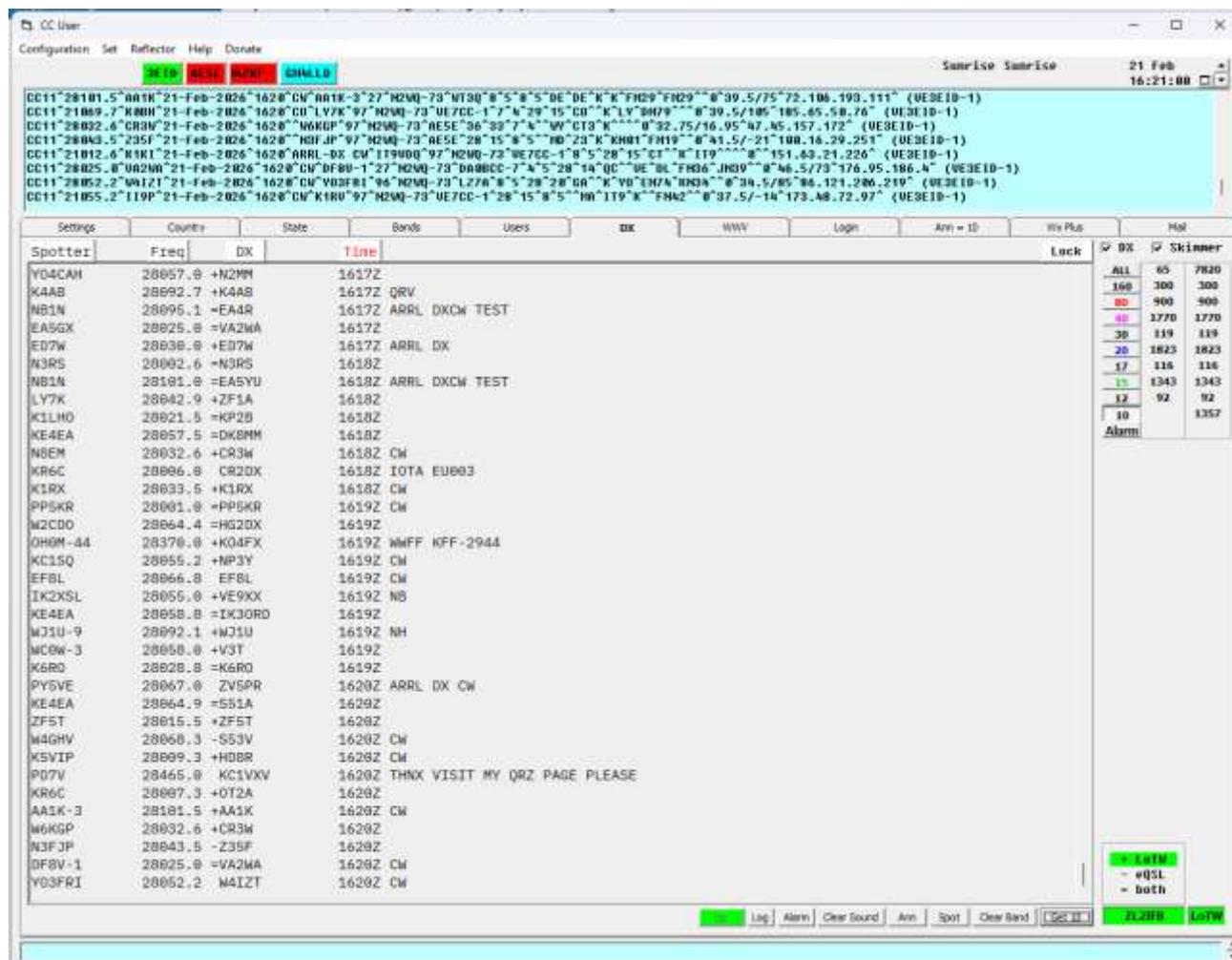
Hinson tip: as with email and SMS TXT messaging, once a talkie is sent and delivered to the recipient/s, it cannot be deleted or changed ... so be careful what you send to whom!

The upper wide blue box lets us type outbound messages to the users listed above – simply click and start typing, make any corrections, then hit <Enter> to send the talkie. There is no need to start with the **TALK** command and recipient [callsign](#) in this box.

The lower wide blue box is for us to enter any DX cluster commands, as usual, while using this tab.

6.6 DX tab

The **DX tab** displays the stream of incoming DX spots that pass through all the filtering, along with other information useful for DXing ▼



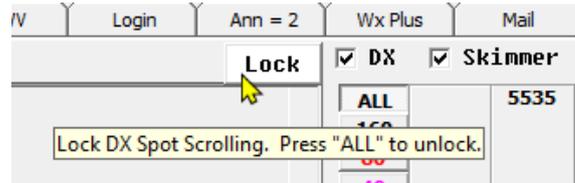
Once you have configured and started using CC User routinely, the **DX tab** is likely to become your default view unless you need to check or change something. It provides a lot of information.

DX spots are shown in sequence:

- One line for each spot (unless the window is too narrow, in which case they line-wrap).
- Each new spot magically appears at the bottom of the list, shifting the list up by a line.
- We can still view older spots that have scrolled off the top of the list by dragging the scroll bar (the grey square) on the right, upwards.
- A row of asterisks (stars) separates previously-viewed DX spots (above the stars) from any newly arrived since you last viewed the tab (below the stars).

Spots are colour-coded by band. Click a band button to show *just* the color-coded spots for that band, hiding those for other bands, or click **<ALL>** to see them all. To change the colours, see [Configuration ⇒ Colors/Fonts](#).

Hinson tip: the white <Lock> button ► lets us pause the scrolling main display of new DX spots in order to browse through those already received. While the raw cluster messages continue scrolling through as normal in the top section, the button changes to **Locked** and the background to the frozen main display section goes yellow. If you missed the pop-up hint, it's not entirely obvious that you must now click the <ALL> bands button – or any single band button in fact – to resume normal display scrolling.



<input checked="" type="checkbox"/> DX	<input checked="" type="checkbox"/> Skimmer	
ALL	100	7855
160	300	300
80	900	900
40	1770	1770
30	119	119
20	1825	1825
17	116	116
15	1357	1357
12	92	92
10		1376
Alarm		

◀ The two columns of numbers on the right of the **DX tab** show the number of spots that have arrived for each band, plus the totals. The column on the left shows

The buttons beneath the main pane send common commands to the current DX cluster.

Key solar and geomagnetic data appear in the green boxes, along with warnings about solar storms, so we don't need to flip to the [WWV tab](#) to see the information.

The blueish/cyan box across the bottom lets us type in DX cluster commands to be sent to the active cluster. Read about commands accepted by DX clusters using the CC Cluster system in [Appendix A](#).

6.6.1 eQSL and LoTW user checks

Spotted DX stations that are known to use LoTW, eQSL or both can be flagged with little +, - or = symbols, respectively, just to the left of the DX [callsigns](#) ► provided that:

- The <LoTW Checker> and/or <eQSL Checker> options are ticked on the [Set menu](#); and
- The LoTW and/or eQSL user lists have been downloaded using the <Updater> [section](#) on the [Settings tab](#).

+S53R
K4NDX
+ED8X
+HD8R
+P49Y
+0M7K
+G6P
=N0AX
-S050

Also, one or two **DX** buttons are added to the button bar, confirming that the eQSL and/or LoTW lists are current ▼



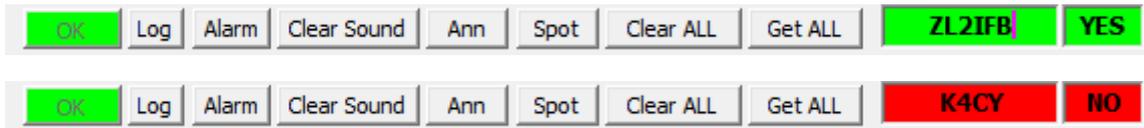
Those buttons go red if updated lists are available. Simply click the red button/s to update.

The blank white box lower right lets us check whether any [callsign](#) is known to be an LoTW or eQSL user:

- Type a [callsign](#) into the white box.
- The [callsign](#) is instantly checked against the downloaded LoTW and/or eQSL user lists, depending on whether they are enabled on the <Set> menu.

Hinson tip: there is no need to hit <Enter> because the check is instantly repeated after each individual character is typed-in.

- If *either* the LoTW or eQSL user list is enabled, a second box appears with **YES** (short for ‘callsign present in the list’ or **NO** (‘callsign missing from the list’) ▼



- If *both* LoTW and eQSL user lists are enabled, the second box (plus an extra section above, provided the window is not too narrow) says which list, if any, contains the callsign ▼



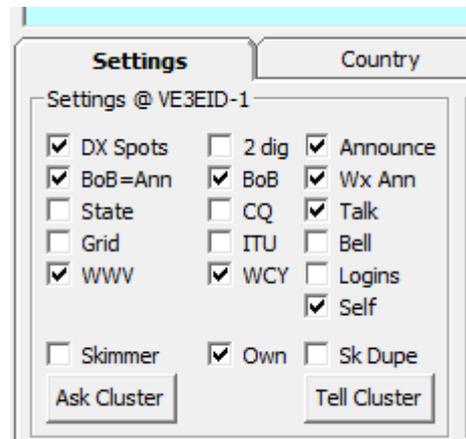
6.7 WWV tab

Settings	Country	State	Bands	Users	DX = 2	WWV	Login	Ann = 68	Wx Plus	Mail
▲	Date	Hour	SFI	A	K	Forecast				
	25-Jul-2021	3	84	4	0	No Storms -> No Storms	<W0MU>			Sunrise 19:56Z
	25-Jul-2021	0	84	4	1	No Storms -> No Storms	<W0MU>			Sunset 05:31Z
	24-Jul-2021	21	84	4	0	No Storms -> No Storms	<W0MU>			Get Sun
	24-Jul-2021	18	87	4	1	No Storms -> No Storms	<W0MU>			5 Spots
	24-Jul-2021	15	87	4	1	No Storms -> No Storms	<VE7CC>			

This tab shows WWV and WCY solar/geomagnetic reports received via the DX cluster network since CC was last opened, the most recent report at the top

If WWV or WCY are ticked on the [Settings tab](#) ► these messages are passed through to our connected logging software in the same stream as DX spots: what happens to them next depends on the logging software.

- Explain how to use all the settings, systematically, illustrated with screenshots
- Offer hints & tips for this tab



6.8 Login tab

The **Login tab** shows the Telnet messages sent to us by a DX Cluster when connect and login to it e.g. ▼

```

*** Connected to UE7CC-1:
Greetings from the UE7CC-1 cluster.
Located near Vancouver BC

To see FT8 spots you MUST enter SET/FT8
To see Skimmer spots you must SET/SKIMMER
To turn OFF RBN CW Spots enter SET/NOCW

Running CC Cluster software version 3.161

*****
*
*   Please login with a callsign indicating your correct country   *
*                               Portable calls are ok.             *
*
*****

New commands:

set/skimmer  turns on Skimmer spots.
set/noskimmer turns off Skimmer spots.

set/noft8    turns off FT8 spots.
set/ft8      turns on FT8 spots.

```

6.8.1 Public vs. Private clusters

Most DX cluster nodes are community-spirited, public-access, generously welcoming connections from any amateurs and sharing DX-related information freely in the tradition of amateur radio. They generally do not need passwords but require our [callsign](#) as **I**dentifiers to retrieve our personal configurations, route any talkies and mails to us, log our activities etc.

Hinson tip: with no password and no authentication, anyone can login as us ... so there is no privacy, no guarantee that talkies and mails will only reach or be sent by us. This is a low-risk minimal-security situation.

Some 'private' clusters only permit access to registered users such as DX or contest club members, in which case a password may be requested:

- Look at the text in the blue area on the **Login tab** for the prompt.
- Type your response into the empty blue box below and hit <Return> to send it.

Hinson tip: ask a committee member/officer or pal at the club, or check the member's area of the club website for the club's DX cluster node [address](#), [port](#) and password. And keep it to yourself! Password authentication is slightly more secure than nothing at all, barely any better to be honest. But then I am a professionally paranoid cybersecurity geek by day.

6.8.2 Login banners

Most clusters send a friendly ‘connected’ message and some sort of greeting banner. Generally they identify the cluster server software and version they are running – clues about the command syntax and functionality available¹¹.

Many clusters list the commands for a few basic operations such as how to get help on the commands and their syntax.

Most end with a status line showing:

- How many cluster nodes are currently connected to this one
- How many users are currently connected to this node and all connected nodes
- How long this node has been QRV (uptime)

For example, here’s the login message from AE5E’s DX cluster at DXspots.com|7300▼

```
Greetings from the AE5E CC Cluster in Thief River Falls MN USA

Running CC Cluster software version 3.397

*****
*
*   Please login with a callsign indicating your correct country   *
*                               Portable calls are ok.             *
*                                                                 *
*****

New commands:
set/skimmer  turns on Skimmer spots.
set/noskimmer turns off Skimmer spots.
set/ft8      turns on FT8 spots.
set/noft8    turns off FT8 spots.
set/own      turns on Skimmer spots for own call.
set/noown    turns them off.
set/nobeacon turns off spots for beacons.
set/beacon   turns them back on.
```

Hinson tip: the login message shown here came from the currently-selected (blue) cluster node at the top of the window. To see the login messages from another cluster (a red or green node), click to select it instead. If the node is currently disconnected and red, CC User will attempt to login, turning it blue. If the node is currently connected and green, it will turn blue, indicating that the connection is ‘active’ or ‘current’, making that the [primary node](#).

¹¹ Clusters running current or recent versions of the software are probably being actively managed and maintained by keen, attentive sysops, unlike those still running old, outdated versions.

6.9 Ann (announcements) tab

Cluster announcements are plain text messages broadcast to connected users via the global

Settings	Country	State	Bands	Users	DX = 10	WVW	Login	Ann	Wx Plus	Mail	
24-Jul	0200Z	ALL	PY3NZ:	PY3NZ-8 Araucaria DX Group Dxcluster - telnet dxc.baependi.com.br 8000							Get Ann
24-Jul	0315Z	ALL	IK5PWJ:	* DXCLUSTER IK5PWJ-6: telnet://ik5pwj-6.dyndns.org:8000 24-Jul-2021 031							Get MyAnn
24-Jul	0330Z	ALL	IZ7AUH:	IZ7AUH DXCLUSTER: telnet://dx.iz7auh.net:8000							Announce
24-Jul	0500Z	ALL	I0INU:	cluster i0inu.dyndns.org 7300 change dns at cluster.i0inu.it 7300 24-Jul-2							Clear
24-Jul	0500Z	ALL	GB7UJS:	CLUSTER: GB7UJS telnet 217.41.71.142 Port 7373 ID at 0500Z on 24-Jul-2							
24-Jul	0500Z	ALL	PI1LAP:	DXspider telnet dx.packet-radio.nl 7300 at 24-Jul-2021 0500Z							
24-Jul	1519Z	BoB	Dx<	K4DY:	EA6BB 18068 CQ						
24-Jul	1555Z	BoB	Dx<	E72A:	N3UA 14000 cq test						
24-Jul	1738Z	BoB	Dx<	2E0CUN:	IQ3ME/P 14000 EU-131						
24-Jul	1851Z	BoB	Dx<	R1BCK:	5B4KH 14000						
24-Jul	1852Z	BoB	Dx<	R1BCK:	HI0I 14000						
24-Jul	2004Z	BoB	Dx<	R1BCK:	DA2W/P 3500						

DX Cluster network. Announcements mostly circulate news about the DX Cluster network, its nodes *etc.*, e.g. their URLs and [port](#) numbers, and website [addresses](#) for further information. Announcements re DXpeditions *etc.* are also broadcast sometimes, along with reminders about possible license infringements.

- A row of asterisks (stars) separates previously-viewed announcements (above the stars) from any new ones received since you last opened the tab (below the stars)
 - Explain how to use all the buttons, systematically, illustrated with screenshots
 - Offer hints & tips for this tab
 - Are these passed through to the logging software, like talkies? I'm not sure.

6.10 Wx Plus tab

The curiously-named **Wx Plus** (weather plus) tab is a rudimentary web browser facility within CC User.

The web page URLs are configured using **Configuration** ⇌ **Web setup** or by clicking the **<Web Setup>** button on the right.

Hinson tip: a modern web browser (e.g. Chrome, Firefox, Opera, Brave ...) is more capable of correctly displaying, navigating and bookmarking modern web sites, and is almost certainly far more secure *provided* you keep it fully patched. Personally, being a professionally paranoid cybersecurity geek by day, I would avoid using the Wx Plus tab like the plague.

6.11 Mail tab



The global DX Cluster network offers a basic emailing facility. The **Mail tab** lets us send and receive cluster mail messages to other cluster users.

Compared to today's Internet-based email services, cluster mail is rudimentary (e.g. plain text only) and insecure (vulnerable to interception, spoofing etc.). It is of limited value, merely of historical interest ... except perhaps if the Internet email services fail due to an incident, perhaps cyber warfare, a virulent network worm or a simple misconfiguration error affecting message routing. Or something. Amateur radio may be a last resort: does your VHF/UHF gear and TNC still work?

Hinson tip: as with the [Wx Plus tab](#), so long as the Internet continues to function, a modern email program or service (such as Outlook or Gmail) is more capable, more secure and more likely to reach the intended recipients.

7 Advanced functions

7.1 Connect simultaneously to multiple DX clusters

- Multiple parallel connections feed spots
- Different clusters for different purposes e.g. RBN for CW, FT8, RTTY ..., club clusters, special interest groups?
- The rules for filtering etc. need to be configured on each connected DX cluster server (“node”): CC User makes it easy to apply similar configs on different servers, or to configure individual servers differently (e.g. one specifically for LF CW spots, another for all mode HF spots. The easiest way is to get one cluster set up as you like, then click a blob to select a different cluster (so further commands go there), and “Tell” it the config settings you want.
 - That’s the reason for those “Ask Cluster” (get the config settings from the current/active cluster) and “Tell Cluster” (send config settings to the current/active cluster) buttons on various CC screens

7.2 Show or hide own spots

Aside from the ego-boosting self-promotional aspect (which might just lead to additional contacts with DXers who monitor the cluster for interesting stations to work, especially ‘new ones’), there are legitimate reasons for seeing your own spots, meaning both (a) DX spots for your [callsign](#), and (b) DX spots that you have sent to DX cluster (or PSKreporter or whatever), such as checking:

- Propagation - DX stations that spot you can evidently copy you, so there appears to be an open, viable path between you. DX spots that include signal strengths or comments may give clues about the quality and direction of the path (e.g. “strong long path”).
- Your transmission system - for example if the frequency you are spotted on does not closely match the frequency of your VFO, there may be a calibration error or spurious, harmonics or something else going on (e.g. a pirate using your [callsign](#)).
- Your connection to the global DX cluster network - are the DX spots you generate and send being received and circulated as expected?
- Your cluster settings - particularly the filters that can be awkward to configure correctly, despite CC User’s point-n-click interface.

‘Show own spots’ is enabled by default. To turn it off, use the cluster command SET/NoOwn or the equivalent UNSET/Own (classical DX Spider command syntax). To re-enable it, use SET/Own.

“I’ve been gradually enhancing this feature I added a while back. It is enabled by default, despite initial pushback from annoyed users. Having explained what was happening and why, most understand and some find it very useful. If not, you can always disable it.”

[Lee VE7CC]

“With both SET/OWN and SET/SKIMMER, you can call CQ in a CW contest or on 6 meter FT8 and you will get spots from everyone who is either skimming or hearing you. In the N1MM+ contest logger, whenever you are spotted by skimmers or human ops who are hearing you, those spots appear in the Info window. While beaming at Europe, for instance, you may find yourself being spotted by a VK/ZL DXer or JA skimmer off the back of your beam (implying a pretty good path in that direction). Maybe it’s an opportunity to turn or reverse the beam.”

[Lee, VE7CC]

“I am on 6 meters FT8 right now. There have been no 6m spots for an hour or so - the band is deserted and appears dead. I called CQ a couple of times and I see I am being heard and spotted on the US East coast. Despite the lack of activity, being spotted tells me the band is actually open, at least in that direction. OK, so no one has answered my CQs, yet, but still it is good to know that there is propagation. I guess I’ll continue CQing for a while longer.”

[Lee VE7CC]

7.3 Other

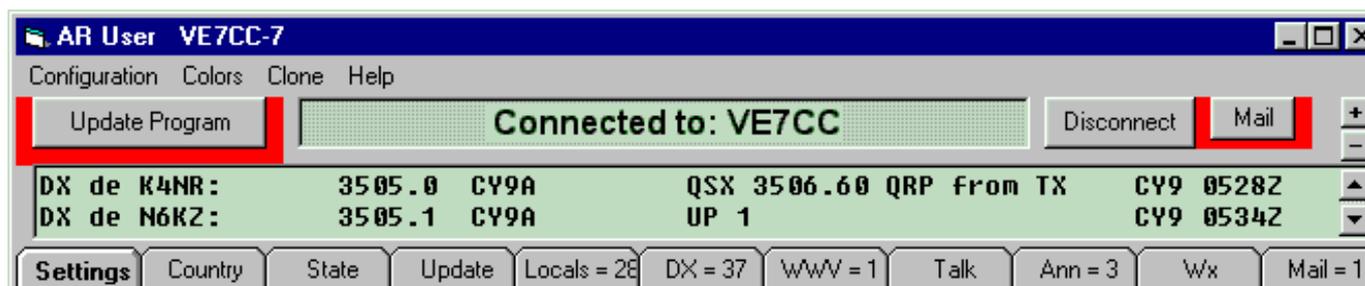
- Chat groups using DX cluster “Talk” messages
- DX spots saved to a log file for statistical analysis, searching for particular DX information, mapping etc. [or for reloading].
- Etc.?

8 Maintaining CC User

CC User is not presently being maintained. It is what it is.

Any information below is probably out of date.

8.1 Updating CC User



- CC User versions/patches
 - CC User shows bright red splashes to alert you when updates are available.
 - Provide brief notes about the history of CC
- Updating the LoTW user database
- Updating the eQSL user database
- Updating the DXCC entity database (e.g. new, changed or deleted countries)
- Updating the Cluster database (available cluster nodes)

8.2 Troubleshooting CC User

- Typical issues e.g. cluster node down, Internet broken, bands/modes missing, long delayed spots, antivirus & firewall issues
- Diagnosing problems
- Resolving problems

8.3 Support for CC User

- Getting help
- Support groups:
 - <https://groups.io/g/CC-User/> - email reflector supporting CC users
 - <https://groups.io/g/CC-Cluster/> - email reflector supporting cluster admins running CC nodes
- Other useful information resources ...

8.4 Further developments

- Future CC development plans or possibilities (if any)
- What's happening with DX cluster e.g. innovative data modes; voice skimmers?
- How to propose, specify/clarify and discuss suggested improvements, changes and fixes, including updates to this CC User Manual

Appendix A: CC Cluster (server) commands

All of these commands should work on DX clusters running recent/current versions of VE7CC's cluster server software. They may also work on other types of cluster (e.g. DXSpider) ... but the command sets and syntax vary, and individual cluster sysops may restrict, modify or extend them.

Hinson tip: CC User generally composes the appropriate commands according to the type of server. We can connect and configure any available DX Cluster through CC User's point-and-click interface, no worries, no need to learn the command syntax. However, individual clusters may not fully support every command, so some may not work as expected.

CC Cluster command	Purpose and syntax
AN nounce	Send an announcement to users connected to this DX Cluster node e.g. AN 6m is wide open to Asia!
AN nounce/ F ull	Broadcast an announcement to all DX cluster nodes e.g. AN/F 6m is lively today!
B ye or BYE or QUIT	Logout and disconnect from the DX Cluster node. Note: if you simply drop the connection, the server logs you out anyway, muttering quietly to itself about rude users ...
DE lete or K ill	Delete the specified mail messages. Specify which message number to delete (e.g. DEL 11 deletes message #11), or a hyphenated range of message numbers (e.g. DEL 4-33 deletes messages #4 through #33 inclusive)
DIR	Lists cluster mail messages stored on the node
DIR/BULLETIN	Lists cluster mail messages sent to "ALL", "BULLETIN" and other addresses that are not callsigns
DIR/NEW	Lists cluster mail messages that have arrived at the node since you last issued a DIR command
DIR/OWN	Lists cluster mail messages addressed to you (including messages sent to ALL), plus mail messages you have sent
DIR/SUBJECT	Shows cluster mail messages with the specified subject e.g. DIR/SUBJECT ARRL lists mails containing ARRL in the subject field
DX	Send a DX spot <i>i.e.</i> DX <Callsign> <Frequency (in kHz)> or DX <Frequency> <Callsign> e.g. DX K1ABC 21030 or DX 21030 K1ABC – either style works
DXT est	Send a DX spot that is returned only to you. It is <i>not</i> circulated to other clusters and users e.g. DXT P5DX 14006-06 .

CC Cluster command	Purpose and syntax
	Hinson tip: use the DXT (or DXTEST) command to check out your filters, alarms, bandmaps <i>etc.</i> by sending fake spots, <i>without</i> annoying other cluster users around the world. Please. Sending actual spots for rare countries may trigger users' DX alarms unnecessarily, causing grief and consternation, a great gnashing of teeth.
List	Lists cluster mail messages on the node
List/NEW	Shows any cluster mail messages received since your last DIR or L command
List/OWN	Shows cluster mail messages addressed to you personally or to ALL, plus mails you have sent
READ	Read cluster mail. (READ <Message #>) See Mail Send/Receive below
REply [#]	RE without a number replies to the mail message that you read last. RE # (e.g. RE 3) replies to that numbered message.
REply/DElete [#]	Replies to a cluster mail message (either the latest or the numbered one) and then deletes that message.
REply/DElete/RR [#]	Replies to a cluster mail message (either the latest or the numbered one), deletes the message, and requests a read receipt.
REply/RR [#]	Replies to a cluster mail message (either the latest or the numbered one) and requests a read receipt message be returned when the recipient opens your reply.
SEND	Sends cluster mail to the specified callsign or group e.g. SEND VE7CC to mail Lee. SEND <LOCAL> sends a message to local users, and SEND <ALL> broadcasts the mail to all nodes and users (take care!). Use SEND <FORSALE> or SEND <DXNEWS> to send mail to all nodes and users with the specified subjects.
SET/ANN	Enable (show) cluster announcements
SET/BEACON	Enable (show) beacon spots, meaning spots for callsigns ending in "/B" or "BCN" (<i>should that be /BCN ???</i>)
SET/BEEP	DX spots and announcement are accompanied by a beep
SET/BOB	Enable (show) 'bottom of band' fake DX spots giving frequencies at the very LF edge of the band, typically used for general comments and queries about or for the spotted station e.g. DX 14000 P5DX When 160m RTTY?
SET/DX	Enable (show) DX spots
SET/DXCQ	Include CQ zones DX spot comments
SET/DXITU	Turn on ITU Zone in DX info for DX spots
SET/DXS	Enable (show) US states, Canadian provinces or DX countries in DX spot comments
SET/FILTER	See band & mode filtering below
SET/GRID	Show grids in spot comments, simultaneously disabling CQ zones, ITU zones, US states and Canadian provinces

CC Cluster command	Purpose and syntax
SET/HOME	Define your home node e.g. SET/HOME K8SMC if you normally use the K8SMC DX cluster. Any cluster mail addressed to you is sent to the home node.
SET/LOCATION	Specify the latitude and longitude of your station in degrees and minutes with N/S/E/W e.g. SET/LOCATION 42 17 N 84 21 W
SET/LOGIN	Enable (show) connect and disconnect messages as users login and logout to the cluster node.
SET/NAME	Specify your name e.g. SET/NAME Lee
SET/NOANN	Disable (stop showing) announcements to you – they still go to other users who haven't disabled them also!
SET/NOBEACON	Block beacon spots, meaning spots for callsigns ending in "/B" or "BCN" ????
SET/NOBEEP	Disable (stop) the beeps when DX spots and announcement arrive
SET/NOBOB	Disable (stop showing) bottom-of-band DX spots
SET/NOCQ	Disable (stop showing) CQ zones in DX spot comments
SET/NODX	Disable (stop showing) DX spots
SET/NODXCQ	Disable (stop showing) CQ zones in DX spot comments
SET/NODXITU	Disable (stop showing) ITU zones in DX spot comments
SET/NODXS	Disable (stop showing) US states, Canadian provinces or DX countries in DX spot comments
SET/NOGRID	Disable (stop showing) grids in DX spot comments
SET/NOITU	Disable (stop showing) ITU zones in DX spot comments
SET/NOLOGIN	Disable (stop showing) user logins and logouts
SET/NOOWN	Disable (stop showing) Skimmer spots for your own callsign
SET/NOSELF	Disable (stop showing) self spots by other users ????
SET/NOSKIMMER	Disable (stop showing) automated Skimmer spots
SET/NOTALK	Disable (stop showing, ignore) talk messages addressed to you
SET/NOUSSTATE	Disable (stop showing) US states and Canadian provinces in DX spot comments
SET/NOWCY	Disable (stop showing) WCY messages
SET/NOWWV	Disable (stop showing) WWV messages
SET/NOWX	Disable (stop showing) weather announcements
SET/OWN	Disable (stop showing) Skimmer spots for your callsign
SET/QRA	Define your grid square e.g. SET/QRA EN72
SET/QTH	Define your city and state or country, separated with a comma e.g. SET/QTH Napier, New Zealand

CC Cluster command	Purpose and syntax
SET/RES 1	Round spot frequencies to 1 decimal place (100 Hz resolution) e.g. 14025.4 kHz
SET/RES 2	Round spot frequencies to 2 decimal places (10 Hz resolution) e.g. 14025.43 kHz <i>Note, most submitted DX spots have zero or one decimal place, rarely two.</i>
SET/SELF	Enable (show) self spots by other users ????
SET/SKIMMER	Enable (show) automated DX spots from Skimmers
SET/TALK	Enable (show) talk messages addressed to you
SET/USSTATE	Enable (show) applicable US states or Canadian provinces in the comments when US or Canadian stations are spotted
SET/USSTATE	Enable (show) US stations' states in DX spot comments. This command simultaneously <i>disables</i> the display of CQ and ITU zones and DX grids.
SET/WCY	Enable (show) WCY spots
SET/WIDTH	Set the maximum message length, in characters, for DX spots. Normally this is 80 characters but your logging program may display spots up to 130 characters long with extended comments.
SET/WWV	Enable (show) WWV spots
SET/WX	Enable (show) weather announcements
SHow/CL	Show cluster node information such as server uptime
SHow/CONF	Show (list) the local nodes (<i>i.e.</i> nodes that the Sysop declares to be 'local') and the callsigns of their logged-in users
SHow/DX	Show the 30 most recent spots (possibly less than 30 if the server has only just restarted)
SHow/DX <callsign>	Show up to 30 of the most recent DX spots for the specified callsign
SHow/DX <frequency-range>	Show spots within the hyphenated range of frequencies in kHz e.g. SH/DX 14000-14063 to see spots for stations in the bottom part of the 20m band (most will be using CW but the modes are not checked, just the frequencies)
SHow/DX <prefix*>	Show DX spots for the DXCC entity corresponding to the stated prefix. Terminal asterisk required e.g. SH/DX W* shows spots for USA stations. <i>Note: this works for standard and non-standard prefixes, based on the official ITU prefix allocations.</i>
SHow/DX n	Show DX spots for the band specified in metres e.g. SH/DX 20 shows 20m spots
SHow/DX 'text'	Show DX spots with comments containing the specified text (regardless of case) e.g. SH/DX 'rtty' to see spots that have rtty, RTTY, Rtty etc. within the spot comments
SHow/DX/n	Show the specified number of spots e.g. SH/DX/100 shows 100 spots

CC Cluster command	Purpose and syntax
SHow/DXBY <callsign>	Show DX spots submitted by the person with the specified callsign e.g. SH/DXBY ZL2IFB shows spots sent to the cluster by Gary
SHow/FDX	Show real-time formatted DX spots ????
SHow/FILTER	Show your filter settings, currently in effect on the server
SHow/HEAD <callsign>	Show the distances and bearings to spotted stations from your station QTH
SHow/MYANN	Show the last 5 announcements that are not blocked by your settings ???
SHow/MYDX	Show the last 30 spots that are not blocked by your filters
SHow/MYDX <band>	Show spots on the specified band, provided they are not blocked by your current filter settings on the server e.g. SH/MYDX 20 shows 20 metre spots that are not blocked by your filters
SHow/MYDX <callsign>	Show up to the 30 latest spots for the specified DX callsign , provided they are not blocked by your filters
SHow/MYDX/<#>	Shows the specified number of recent spots that are not blocked by your filters e.g. SH/MYDX/100 shows 100 spots that pass through your current filter settings on the server
SHow/MYFDX	Shows 30 spots recent that are not blocked by your current filter settings on the server ????
SHow/MYWX	Shows the last 5 weather announcements not blocked by your filter settings
SHow/RES	Shows the DX spot frequency resolution being the number of places of decimals for frequencies in kHz <i>i.e.</i> 1 (100 Hz resolution) or 2 (10 Hz)
SHow/SETTINGS	Shows information held by the server for your callsign , plus your configuration settings – a handy way to check if you are unsure
SHow/STAtion <callsign>	Shows information held by the server for the specified station e.g. SH/STAVE7CC shows Lee's station information
SHow/SUN	Shows your local sunrise and sunset times currently, in UTC, based on your configured QTH – see SET/LOCATION
SHow/SUN <prefix>	Shows the sunrise and sunset times in UTC for stations in the DXCC entity corresponding to the specified prefix e.g. SH/SUN ZL shows when the sun rises and sets in New Zealand at the moment. <i>Note: there are substantial differences across large countries: the sun rises and sets earlier than shown for stations to the East and later for those to the West.</i>
SHow/TIME	Shows the current UTC time
SHow/TIME <callsign>	Shows the local time for the callsign e.g. SH/TIME ZL2IFB shows you the time currently on Gary's wristwatch
SHow/USDB <callsign>	Shows the states for US stations and provinces for Canadians
SHow/USERS	Shows (lists) the callsigns of those currently logged-in to the cluster node

CC Cluster command	Purpose and syntax
SH ow/ VERSION	Shows the server's CCC and Winsock versions, and the Winsock uptime for connections ????
SH ow/ WCY [/n]	Shows solar and geomagnetic reports from DK0WCY
SH ow/ WIDTH	Shows the maximum number of characters allowed for DX spots (80 by default)
SH ow/ WWV [/n]	Shows the 5 most recent WWV reports by default, or the number appended e.g. SH/WWV/99 shows 99
Talk < callsign > < message >	Send a talkie to the user with the specified callsign provided they are presently logged-in to a node and are not blocking talk messages
UNSET /	This is equivalent to SET/NO on CC Clusters, providing compatibility for DX-Spider users who prefer the DX-Spider command format
WHO	Shows (lists) the server's connections alphabetically showing callsign User/Node Name IP/AGW ???
WX	Shows a local weather announcement e.g. WX "Sunny and warm"

Appendix B: CC Cluster filtering commands

The table shows commands and examples specifically for a CC Cluster. DX cluster nodes running other types of DX cluster software (e.g. DX Spider) may have different commands.

Filter setting	Purpose
SH/FILTER	Shows all the filter settings for the currently logged-in user.
SH/FILTER <aaa>	Show the settings for a specific filter, where <aaa> is the filter name <i>i.e.</i> <ul style="list-style-type: none"> • SH/FILTER DOC = DX Originator's (spotter's) Country • SH/FILTER DOS = DX Originator's (spotter's) State • SH/FILTER AOC = Announcement Originator's Country • SH/FILTER AOS = Announcement Originator's State • SH/FILTER WOC = Weather message Originator's Country • SH/FILTER WOS = Weather message Originator's State • SH/FILTER DXCTY = Spotted DX station's CounTrY • SH/FILTER DXSTATE = Spotted DX station's STATE
SET/NOFILTER	Resets all the filters to default. If you are not receiving the expected DX spots, you may have entered invalid filter commands. Either correct the settings individually or reset the lot and start again.
SET/FILTER <aaa>/OFF	Disable a specific filter, where <aaa> is the specific filter name - see SH/FILTER <aaa> above.
SET/FILTER <aaa>/PASS <bbb> -or- SET/FILTER <aaa>/REJECT <bbb>	Set a filter to pass or reject the specified spots, where: <ul style="list-style-type: none"> • <aaa> is the optional filter name (see SH/FILTER <aaa> above); and • <bbb> is the optional DXCC prefix or state (e.g. TX for Texas). Examples: <ul style="list-style-type: none"> • SET/FILTER K,VE/PASS is a typical filter setting for someone in North America to see spots originated by spotters in the US or Canada, only, not those from spotters elsewhere in the world • SET/FILTER DOC /PASS EA,OH,G would set a filter that only passes DX spots from spotters in Spain, Finland and England. • SET/FILTER DXCTY/PASS F,OH would set a filter that only passes DX spots for DX stations in France and Finland.
DX Band Mode filter	The DXBM filter allows us to pass or reject DX spots for DX stations in various band/mode segments (slots) – see the next appendix ...

Appendix C: Filtering band/mode segments (slots) on a CC Cluster

We can tailor the DX spots from a CC Cluster to pass spots for the band segments ('slots') that interest us. On a CC Cluster, we can select any whole band or just the individual band/mode 'slot/s', telling the cluster to either pass or reject the selected item/s.

The easy point-n-click way to do this is through the **Bands tab** in CC User. Alternatively, we can compose and send the commands manually.

- The default setting for new users is to pass everything *i.e.* all DX spots regardless of mode.
- To reset the band/mode filter to the default, enter the command **SET/FILTER DXBM/OFF**.
- To display our current settings, enter the command **SH/FILTER DXBM**.

We can add or change items one at a time, or all at once (separating the parameters with commas). For example:

- To pass spots for 6 meters, enter **SET/FILTER DXBM/PASS 6**.
- To reject spots in the 80 meter *and* 40 meter CW slots, enter **SET/FILTER DXBM/REJECT 80-CW,40-CW**

Although each slot names a mode, it is in fact selecting the **frequency range** shown in the table that corresponds to the slot name, regardless of the mode or modes being used there ▼

Slot	LF	HF	Slot	LF	HF	Slot	LF	HF
160-CW	1800	1850	-			160-SSB	1850	2000
80-CW	3500	3580	80-RTTY	3580	3700	80-SSB	3700	4000
-						60-SSB	5260	5405
40-CW	7000	7040	40-RTTY	7040	7100	40-SSB	7100	7300
30-CW	10100	10130	30-RTTY	10130	10150	-		
20-CW	14000	14070	20-RTTY	14070	14150	20-SSB	14150	14350
17-CW	18068	18100	17-RTTY	18100	18110	17-SSB	18110	18168
15-CW	21000	21070	15-RTTY	21070	21200	15-SSB	21200	21450
12-CW	24890	24920	12-RTTY	24920	24930	12-SSB	24930	24990
10-CW	28000	28070	10-RTTY	28070	28300	10-SSB	28300	29700
6-CW	50000	50080	6-SSB	50080	50500	6-FM	50500	54000
-						4-MTR	70000	70650
2-CW	144000	144100	2-SSB	144100	144500	2-FM	144500	148000
1-CW	220000	221000	1-SSB	222000	224000	1-FM	221000	222000
-						MW-MW	500000	47000000

Spots for DX stations using *any* actual mode within a particular frequency range (e.g. various digimodes, some SSB and maybe some CW in the 40-RTTY slot) will be passed or rejected according to the filter settings. This is because many DX spots do not state the actual mode being used by the DX, but they *all* state the frequency: it is a mandatory field for a valid DX spot.