Winlink

This section outlines how to send and receive messages with Winlink Express. More information about how to configure the hardware can be found on the Signalink How-To.

Operating Modes

When composing a new message, you must choose how the message will be sent:

• Winlink Message: Your station makes a radio connection to a Radio Message Server (RMS). The RMS makes an Internet connection to a Common Message Server (CMS) that is the central message repository. Your messages are sent via radio to the RMS and then through the Internet to the CMS until the recipient connects and downloads messages addressed to themselves. This mode is efficient and highly reliable. Winlink operates multiple CMS that synchronize with each other frequently to provide completely redundancy. If an RMS is down and unable to receive a connection, the client can connect to a different RMS. Since all messages are stored in the central CMS database, it doesn't matter which RMS the sender and recipient connect to.

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- **Radio-Only Message**: Where as the previous mode relies on an Internet connection between the RMS and a CMS, the Radio-Only mode does away with the CMS and the internet connection it relies on. Instead, messages are sent to a designated RMS for storage until it is retrieved by the recipient. This mode of operation can operate with local and total Internet outages.
- **Peer-To-Peer Message**: This mode of operation transfers messages directly from the sender to the recipient without going through an RMS or a CMS and without the Internet. This is like a "simplex" mode, which requires:
 - $\circ~$ Both stations to be on the air at the same time and on the same frequency.
 - $\circ\,$ Both stations to use the same transmission protocol (Packet, Winmor, Pactor, etc).

So the steps to compose a message are to:

- 1. Select how the message will be sent as.
- 2. Enter the recipient's address (usually their callsign, which may or may not require an SSID)
- 3. And lastly, after the message is written, **Post to Outbox**, which saves the message locally and marks it to be sent.

Before initiating a connection (section below), you can write and post multiple messages to the outbox first.

SSID

Before going into more details, it might be worth taking a small detour to learn about SSIDs (the dash number after the callsign) since it has a different meaning depending on whether it's for APRS or Winlink. See the SSID How-To for more info.

Winlink Messages

The type of connection needed is chosen from the Open Session drop down	Open Session:	Telnet Winlink	\sim
menu.		Telnet Winlink	~

0	Teinet Winlink				
	Telnet Winlink	^			
	Packet Winlink				
	Pactor Winlink				
	Robust Packet Winlink				
	Winmor Winlink				
	Ardop Winlink				
	Vara Winlink				
	Vara FM Winlink				
	Iridium GO Winlink				

Messages that are marked to be sent as Winlink Messages require a Winlink connection:

- **Telnet Winlink** sends the message directly to the CMS via the Internet, by-passing the RMS. It's pretty much like sending an email and doesn't require a radio connection.
- **Packet Winlink** is typically a VHF or UHF connection to an RMS, which will then connect to a CMS via the internet.
- **Pactor Winlink** is an HF connection to an RMS. It requires an expensive Description PACTOR TNC between the radio and computer.
- **Winmor Winlink** Winmor is deprecated. See here for more info.
- **Ardop Winlink** is another HF connection to an RMS that doesn't necessarily require a TNC. The IC-7300, for example, can connect to the computer directly with a simple USB cable. The connection is slower than PACTOR however. For more details, see the Winlink Ardop page.

For Winlink connections, the address and frequency of the session must match that of a RMS chosen (not that of the recipient). A list of RMS can be found in the **Channel Selection** table:

🗱 Pa	cket Winlink	Session				— [- ×		
Exit	Settings	Switch to Peer-to	-Peer Session	Channel Sele	ection 120	0 Baud Sta	rt Stop		
Connection type: Direct • VE7DYT-10 Via ,									
Conne	Conne Selector X								
Time t	Time t Exit Select Channel Update Table Via Internet Update Table Via Radio								
•••• Start Stations found within 160 kilometers of your grid square.									
*** Initia *** Initia *** Read	Calleign	Frequency (MHz)	Baud	Grid Square	Group	Distance (km)	Bearing (Degrees)	^	
	VE7GN-10	144.970	1200	CN89CD	PUBLIC	034	200		
	VE7DYT-10	145.790	1200	CN89AD	PUBLIC	040	217		
	VE7DYT-10	440.125	1200	CN89AD	PUBLIC	040	217		
	VA7EOC-10	1/13/125	1200	CN80LG	PUBLIC	047	11/		

Once the table is updated, select an RMS near you, and ensure that the frequency of your radio matches that of the RMS listed in the table and press **Start**. At this point, two things will happen:

- 1. All the Winlink messages in your Outbox will be sent to the RMS and forwarded to the CMS, and
- 2. All the messages that the CMS has for you will be sent to your Inbox.

A few things to note about Winlink Messages:

- You can send a message to a station callsign (mine for example is VA7FI)
- You can send a message to a regular email address since the RMS has access to the internet.
- You can retrieve messages sent to your station callsign
- You can retrieve emails sent to CALLSIGN@winlink.org (mine for example is va7fi@winlink.org)

Peer-to-Peer (P2P) Messages

Messages that are marked to be sent as Peer-to-Peer Messages require a P2P Open Session: Packet P2P connection:

Packet P2P	~
Packet P2P	^
Pactor P2P	
Robust Packet P2P	
Winmor P2P	
Ardop P2P	
Vara P2P	
Vara FM P2P	
Telnet P2P	

- **Packet P2P** is a direct VHF or UHF connection between the two stations exchanging messages.
- **Pactor P2P** is a direct HF connection between the two stations exchanging messages using the PACTOR protocol.
- Winmor P2P Winmor is deprecated. See here for more info.
- Ardop P2P is a direct HF connection between the two stations exchanging messages using the Ardop protocol.

Direct

For a Direct P2P connections, the address and frequency of the session must match that of a recipient (there is no RMS):

Packet Peer-to-Peer Session (VE7HZF) - 🗆 🗙							×			
Exit						nel Selection	1200 Baud	Sta	rt Stop	
Conne	ction type:	Direct	•	VE7SCE		Via		,		

- Ensure that the frequency of your radio matches that of the recipient.
- Ensure that the recipient has a P2P session open.
- There are two different transmit speeds: 1200 Baud and 9600 Baud. You can only use 9600 Baud if your radio can transmit at that speed AND if the other station is also equipped for 9600 Baud and listening at 9600. Otherwise, use 1200 Baud. A rule of thumb if you're unsure what the other station is using is to:
 - $\circ~$ Set to transmit at 1200 Baud (the other station will be able to receive you at either 1200 Baud or 9600 Baud)
 - Set your standby receive mode to 9600 baud (so you'll be able to receive stations transmitting at 1200 Baud or 9600 Baud).
- press Start

At this point, two things will happen:

- 1. All the P2P messages in your Outbox addressed to the recipient will be sent to them, and
- 2. All the messages that the recipient might have in their outbox addressed to you will be sent to your Inbox.

This second point is worth highlighting: the session sends *and* receives messages. This can be useful in the case if the station you're trying to contact is off the air, but you expect that they'll try to connect to you in the near future. In that case, you can write them a message, post it in your outbox, and wait for them to initiate the connection.

Script

It's possible to connect to a station out of reach using a digipeater. On Vancouver Island, multiple digipeaters are setup on 144.970 MHz with an SSID of -8 and require a Script to access. For example, for VE7HZF to send a message to VE7SCE via VE7LSO-8, all three stations need to be on 144.970 MHz:

• The first step is to create a script:

Packet Peer-to-Peer Session (VE7HZF)							
Exit Settings Switch to Wir	nlink Session Channel Select	tion 1200 Baud	Start Stop				
Connection type:	Via		,				
Connection script:	• E	dit script 🛛 🗛 🗛 🗛 🗛	script Remove script				
In this example, I named it SCE (LS0) so I can reuse it easily la	ter:					
🖳 Connection Scri	pt		×				
Name of script:	SCE (LSO)	Save C	ancel				
c ve7lso-8 conn c ve7sce conn							
Once saved, select it and press Start	C:						
🗱 Packet Peer-to-Peer Session			- 🗆 ×				
Exit Settings Favorite Sta	tions 1200 Baud Start	Stop					
Connection type: Script	VE7RBE Via	,					
Connection script: SCE (LS	0)	Edit script Ad	dd script				

If you monitor the traffic as you connect to the digipeater, you'll notice a few things:

- Everything you send to VE7LS0-8 is being repeated by the digipeater for VE7SCE
- Your callsign (in this case VE7HZF), is being retransmitted by the digipeater as VE7HZF-15. See the SSID How-To page for more info.
- The exchange takes more than twice the time of a direct connection because unlike a voice repeater that repeats in real time, a digipeater waits for you to stop transmitting before it repeats it.

As Robert pointed out (see email with Subject: BPQ from Nov 4, 2023), some digipeater require adding a port number (but some don't).

Here is a short list of scripts that work as of Nov 5, 2023 (replace [callsign] with the destination callsign):

c ve7wod-8	c ve7spr-8
conn	conn
c [callsign]	c 2 [callsign]
conn	conn
	conn c [callsign]

Note the 2 on the third line of the last script. Failing to add the port number there will give the following error:

VE7SPR-8} DOWNLINK CONNECT NEEDS PORT NUMBER - C P CALLSIGN Found script connection response CONNECT NEEDS PORT NUMBER - C P CALLSIGN

Digipeaters

From Roberts Creek, VA7FI is able to hear the following digipeater (-8) and RMS (-10) stations on 144.970 MHz:

Important Caveat: My knowledge of these stations is minimal. For more information, see:

- http://www.gorse.ca/crdarea/vhf.html
- http://www.ve7ed.com/projects.html
- https://winlink.org/RMSChannels

Winlink Message via Digipeater

If a Winlink station (-10) is too far to be reached directly, a digipeater station (-8) can be used to relay the message.

- Write your message as a Winlink Message (not P2P Message)
- Open a Packet Winlink session (not Packet P2P)
- Connection type: Script
- Add a script like this one:

```
c ve7lso-8
conn
c ve7gn-10
conn
```

• Select your script and start.

In this example, my message will be sent to VE7LSO-8, which will repeat it to VE7GN-10, which will then send it to the CMS via the internet.

Message Templates

Templates are a way to send complex pre-formatted html forms while keeping the bandwidth low. The basic idea is to:

- Select a template from Winlink, which opens a form in your web browser.
- Use the web browser to fill out the form and "Submit" it back to Winlink.
- The attachment that's actually sent via Winlink is an xml file that contains the information you entered in the form without any of the fancy formatting (thus keeping the size small).
- Once the receiver opens the message, Winlink uses that xml file and puts it into its **local** html form to reconstitute the fancy formatting.

The result is that both the sender and the receiver see the fancy form, but only the actual information is transmitted (not the formatting). Of course, this only works if both stations have the same local template, which is why it's important to keep Winlink templates up-to-date.

If you use the same template often, there are two things you can do to expedite the process.

Template Shortcut

The first is to set a template shortcut:

• Click on Message and select Set favorite tempates...

VA7FI	•	Settings	Mes	sage	Attachments	Move To:	Saved Item	
〕 ♠ 🏠 🖉 Ê	► Ć	ĵ, + ∎		New I	Message			
In Packet P2P session. System Folders Inbox (0 unread)				Reply				
				Reply	to All			
				Forward Forward without change				
Read Items (0)		1						
Outbox (0) Sent Items (0)				Acknowledge receipt				
Saved Items (0) Deleted Items (0) Drafts (0) Personal Folders			Save	message as				
				Edit				
		F		Temp	lates			
				Temp	late settings	_		
				Set fa	vorite templates			
			HTML	. Forms				

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• Click on Browse, select the form you want to save, and give it a name.

Set Defaults

Set Favorite Templates	_		\times
Up to four favorite templates can be specified. These templates will be shown on the message composition menu bar.			
Favorite Template 1			
Display name CVARS			
File name: C:\RMS Express\Standard Templates\GENERAL Forms\Quick Message.txt		Brows	e
Favorite Template 2			
Select Close Add Remove Edit			
Display name: Standard Templates (version 1.0.156.0)			
File name: CA STATE Forms		Brows	e
Favorite Template 3			
Display name: GENERAL Forms			
File name: Bulletin.txt GPS Position Report.txt Incident Action Plan.txt		Brows	e
···· Incident After Action Report.txt			
Favorite Template 4 Information txt			
Display name: Narrative Situation Report.txt Quick Message.txt			
File name: Quick WEB EOC Resource Request.txt Radio Net Log .txt		Brows	e
To use it, open a new message and click on the name you entered earlier.			
Winlink Express 1.5.37.0 - VA7FI			
VA7FI - Settings Message Attachments Move To: Saved Items - Delete	Open Se	ssion:	Packet P2P
In SE Enter a new message	_		×
Close Select Template CVARS Attachments Post to Outbox Spell Check Save in Drafts			

Save Message Data

From:

To: Cc: Subject: Attach:

VA7FI

Int

Re Ot S∉ D∉ Dr

Many templates allow you to save the message body so you can quickly reload it later. In my example:

Send as: Winlink Message

• I first wrote the message I want to save without the date

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Request message receipt

• Then Save Quick Message Data, which will save a basic txt file.

When it's time to use it:

- I click on Load Quick Message Data and
- Click in the Date/Time: field to populate it.
- Then click Submit to send it back to Winlink.

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EasyTerm by UZ7HO

I'm still learning lots about this so please consider this section to be vastly incomplete and probably wrong. – *Patrick, VA7FI 2020/01/01 07:45*

An easy way to connect a radio to a computer using a Signalink is to use the UZ7HO Soundmodem program (see the Signalink How-To for more information). But another really good program by UZ7HO is EasyTerm, which allows you to connect to another station and send specific commands to it.

For example, VE7HZF connected to VE7LS0-8 and typed H:

*** Connected to station VE7LSO-8 2019-09-02 6:33:56 AM :>H 497LS0:VE7LS0-8} TYPE 'HELP' OR ? FOLLOWED BY COMMAND FOR MORE INFORMATION BYE CONNECT C0 HELP **INFO** LINKS MHEARD NODES PORTS ROUTES SYS0P STATS USERS

This is the list of commands that this station accepts. For example, to learn what MHEARD does, type ?MHEARD. To use it, type MHEARD.

Setup

Station Setup (EasyTerm Settings)	Settings (SoundModem Settings -> Devices) \times			
Terminal Callsign VE7HZF-11 Mailbox Callsign VE7HZF-1 Beacon Setup	Sound Card Output device SignaLink (USB AUDIO CODEC) Input device SignaLink (USB AUDIO CODEC) Dual channel TX SampleRate 11025			
Destination BEACON Digipeaters	✓ TX rotation TX corr. PPM 0 ✓ Single channel output RX SampleRate 11025 Color waterfall RX corr. PPM 0 ✓ Stop waterfall on minimize Priority Highest			
TNC Setup Host 127.0.0.1 Port 8000 Paclen 80	Minimized window on startup Server setup AGWPE Server Port 8000 KISS Server Port 8100 Image: Enabled			
OK Cancel EasyTerm Setup screen.	PTT Port Select PTT port NONE Dual PTT SoundModem Settings screen.			
I used -11 for the Terminal Callsign because Winlink Express is already using -0.	The KISS Server Port 8100 had already been enabled for Winlink. Now we need to enable AGWPE Server Port 8000 for EasyTerm.			

Sources

- Overview of the Winlink Hybrid Network
- Introduction to Packet Radio By Larry Kenney, WB9LOZ