

Setting up a Winlink Hybrid Network RMS

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Introduction

Winlink now supports both its traditional, Internet-based system and a new “Hybrid Network” that combines the best of an Internet-based system and a radio-only message forwarding system. The hybrid system takes advantage of the speed and other benefits of the Internet when it’s available, but it continues to function and provide e-mail support if the Internet is not available.

With the hybrid system, RMSs remain connected to the Internet while it’s available, and a client connecting to the RMS is piped directly to a CMS just the same as a normal RMS currently works. However, if a connection comes in from another RMS that is relaying radio-only traffic, the receiving RMS handles the connection itself rather than passing it through the Internet. Incoming messages are stored in the local database the same way it does if you have RMS Relay configured for Local Database operating mode.

Once the connection from the calling RMS is finished, the receiving RMS examines the incoming message(s) and does two things: If it’s got an Internet connection, it checks to see if a copy of the message has been sent to a CMS. If it hasn’t, it sends the messages to a CMS. Next, it queues the message to be forwarded via HF to the next RMS on the path to the destination Message Pickup Station (MPS). When the RMS isn’t busy receiving an incoming call or forwarding messages via HF, it resumes its normal connection to the Internet.

For a PowerPoint presentation about the hybrid system, please see:

http://www.dtreg.com/Winlink_Radio_Network.pdf

Yahoo Discussion Group

A Yahoo discussion group has been created for the Winlink hybrid system. Please click this URL to join the group:

http://uk.groups.yahoo.com/group/WL2K_Hybrid/

RMS System Requirements

- Your RMS must be equipped with a Pactor level 2, 3 or 4 modem to participate in the hybrid network. Note that the Pactor modem is *not* dedicated to message forwarding; it also is used to receive connections from client stations.
- You must run Trimode to control the radio and TNC.
- The callsign of your station must not be longer than 6 characters, and it must *not* contain a SSID extension (i.e., “-nn”).

While Pactor is required to forward messages between RMS, *any* HF mode can be used by clients to connect to the RMS – Pactor, Winmor or Robust Packet. Hybrid RMS also can support packet connections by installing RMS Packet and configuring it to connect to RMS Relay.

Program Updates to Install

RMS Relay uses Trimode to receive incoming calls and also to make outgoing calls to forward messages to other RMS. It uses the VOACAP program to compute propagation estimates which are used to determine the optimum route for messages being forwarded via radio. Normally, Trimode is already installed at RMS that support Pactor and VOACAP is installed at sites that use RMS Express with HF. However, if these programs are not already installed, you should install and configure them before attempting to run the new version of RMS Relay.

Trimode: Make sure Trimode has autoupdated itself to the current released version. You can download Trimode from this site:

<ftp://autoupdate.winlink.org/Sysop%20Programs/>

VOACAP: VOACAP is the propagation prediction program used by both RMS Express and RMS Relay to compute the predicted propagation between two stations. If you don't have it installed, use this URL to download the installation program:

ftp://autoupdate.winlink.org/User%20Programs/itshfbc_120722.zip

RMS Relay: If you have not already installed RMS Relay, you can download the program installation file from this site:

<ftp://autoupdate.winlink.org/Sysop%20Programs/>

RMS Express: On the computers you use to connect to hybrid RMS, make sure you're using the latest released version of RMS Express. RMS Express does not have to be installed on the RMS system.

Configuring Programs

Trimode configuration

Trimode should be installed and configured with the station callsign and channels to scan before RMS Relay is started. RMS Relay will detect that Trimode is installed, and it will configure it automatically to connect to RMS Relay. You can check the File/Site Properties screen in Trimode to confirm that it's set to connect to RMS Relay.

RMS Relay Configuration

The callsign specified for the RMS Registration must be no longer than 6 characters, and it must *not* have a SID extension. For example, NNS4UR is valid, but NNS4UR-1 and NNN0SUR are not valid.

RMS Relay should configure itself automatically for hybrid operation. To confirm this, follow these steps:

Click "Settings" on the menu bar followed by "Operating Mode & HF Forwarding". **MARS stations should set the Operating Mode to "Hold for Internet access"**. It is recommended that **ham stations set the Operating Mode to "If Internet is not available, accept only radio-only forwarding connections and deny CMS connections"**. Set the **HF Message Forwarding Control** to "Operate as a node in the Winlink radio-only HF-relay network". Enable automatic Trimode control and automatic sending. **Note: due to FCC limitations, USA ham RMS are not allowed to use automatic sending.** If you have a P4 Dragon Pactor modem, check the option "Emphasize Pactor signals for busy detection".

Operating Mode and HF Forwarding Control

Operating Mode

- Only accept connections if Internet is available
- If Internet is not available, accept only radio-only forwarding connections and deny CMS connections
- Radio-only, local message hub -- Store messages locally. Do not upload messages through Internet
- Hold for Internet access -- Store messages locally until Internet is available, then upload them

HF Message Forwarding Control

- Do not forward messages via HF
- Forward messages via HF to another RMS connected to the Internet
- Operate as a node in the Winlink hybrid network (Trimode must run)

Minutes to delay after Internet loss before starting radio-only network operation:

Automatic Sending Control

- Enable automatic operation
(May not be used on USA ham bands)
- Seconds before starting:
- Minimum seconds between sends:
- Maximum minutes sending:
- Check for busy channel before transmitting
- Emphasize Pactor signals for busy detection
(Requires P4 modem with 1.17.8 or later firmware)
- Ignore busy after this many minutes:
- Simulate Internet Outage

Trimode Control

- Automatically start and stop Trimode
- Start Trimode minimized
- Folder where Trimode is stored:
- IP: Port:

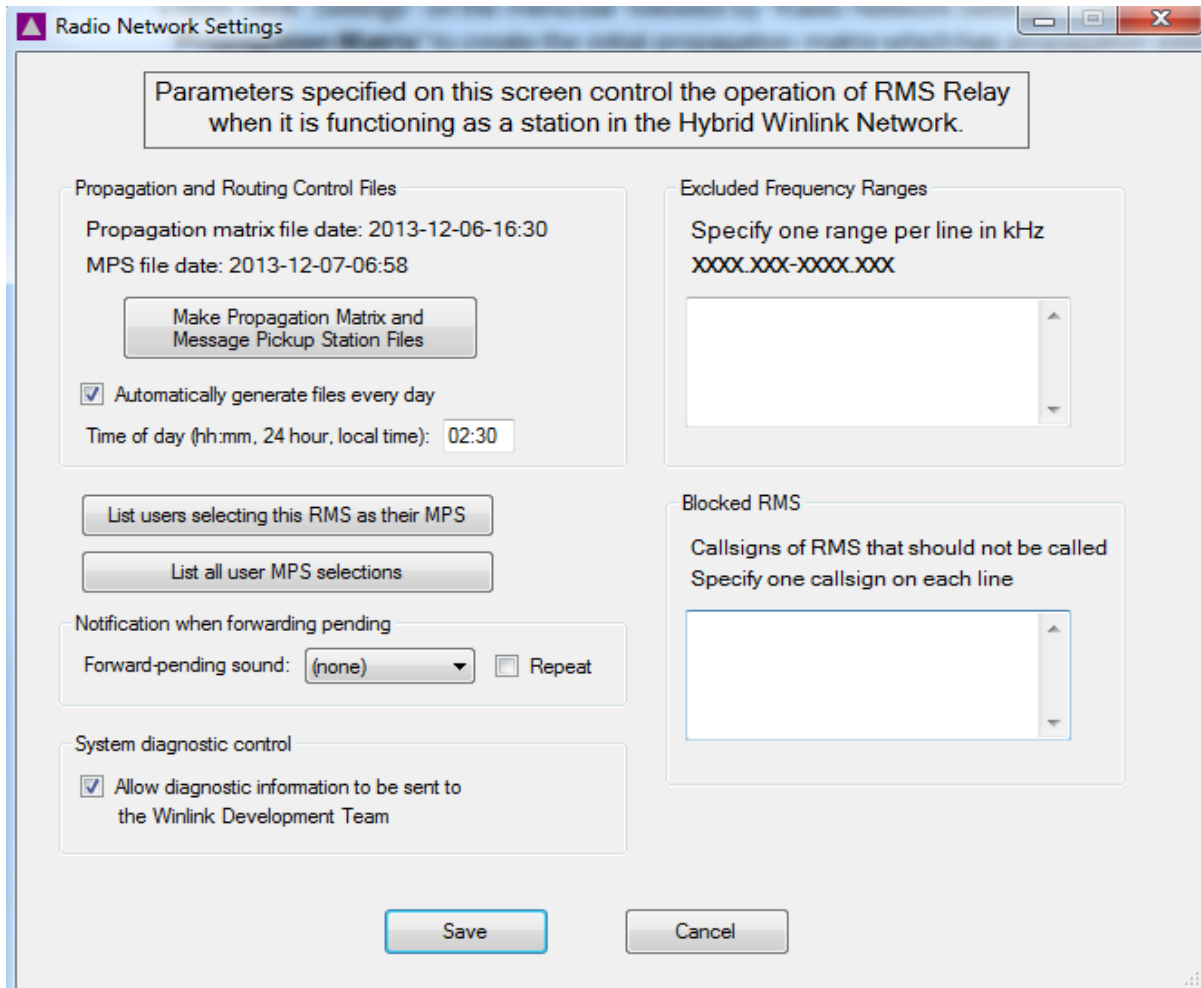
Pactor Level for Forwarding

Minimum: Maximum:

Folder for VOACAP (itshfbc)

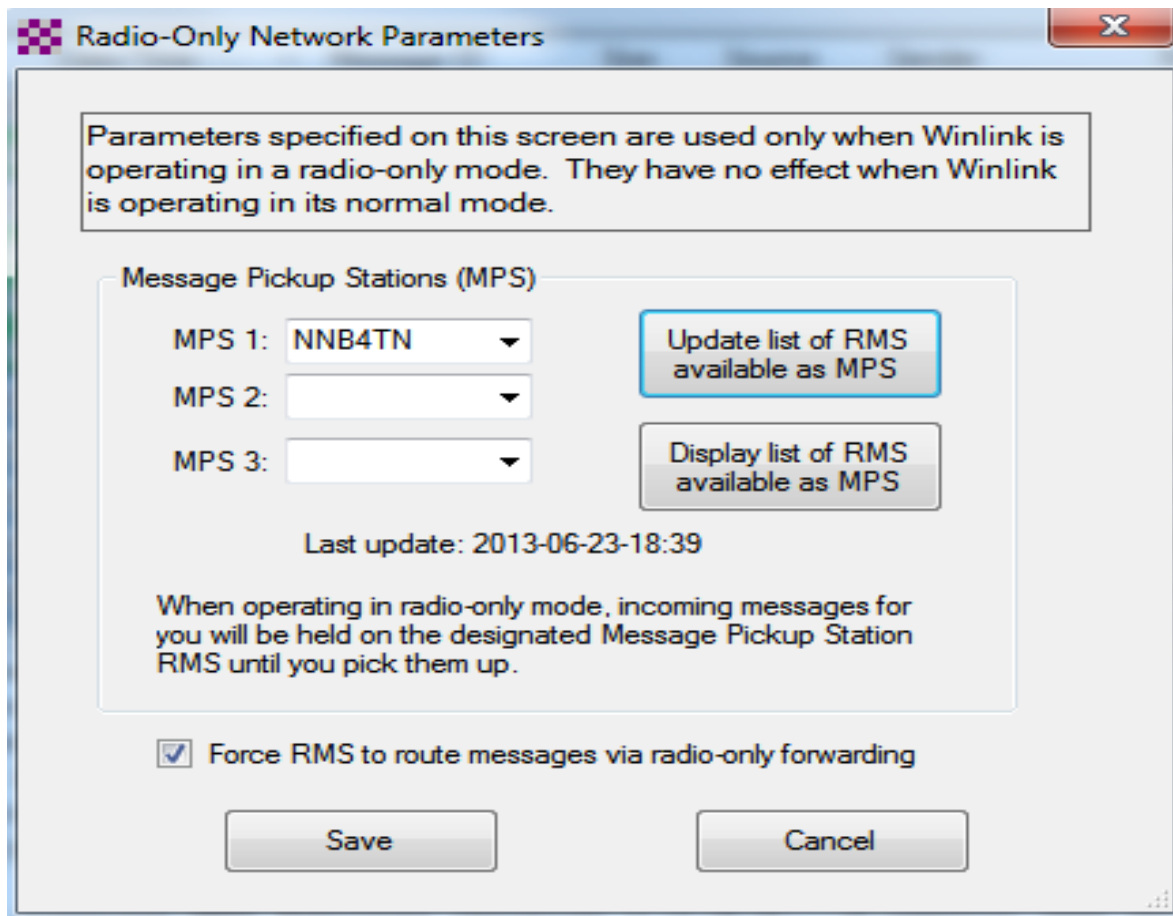
Next, click “Settings” on the menu bar followed by “Radio Network Settings”. Click “**Make Propagation Matrix**” to create the initial propagation matrix which has propagation estimates between each pair of RMS. Make sure you set the option to automatically generate these files every day.

If your station is not capable of operating on some frequency ranges, specify the range(s) in the “Excluded Frequency Ranges” table. Specify one range per line in the form *LowFreq-HighFreq*.



Configuring RMS Express

Click Files followed by “**Hybrid Network Parameters**” to get to a screen that looks like this:



Click “**Update list of RMS available as MPS**” to download a fresh list of RMS that are available to use as Message Pickup Stations. If you have properly configured Trimode and RMS Relay and have them running, your RMS should be listed as an available MPS. Open the drop-down list of RMS in the field next to MPS 1, and select your first MPS station. If you wish, you can specify two additional MPS. It is recommended that you specify your own RMS as one of your MPS. Note: other RMS will not know about your designated MPS until they update the MPS list in RMS Relay or RMS Relay updates the list automatically.

Note the option labeled “**Force RMS to route messages via radio-only forwarding**.” If you check this option, then when RMS Express makes a Pactor or Telnet connection to an RMS, it will signal the RMS that the message you’re sending is to be transferred *exclusively* via HF relaying. The message will *not* be uploaded to a CMS. If you have this option enabled when you connect to one of your MPS stations, you will download messages it’s holding for you that were received via HF forwarding.

If you don't enable this option, then RMS Express will be routed through the RMS to a CMS where you can send and receive mail the normal way.

Configuring Telnet in RMS Express to Connect to a Local RMS

If you are running an RMS on the same computer as RMS Express, you can configure the RMS Express Telnet connection to connect to the local RMS rather than connecting to a CMS. To do this, open a telnet session and click "Setup" on the telnet session menu bar. The setup screen will appear:

Telnet Properties

Telnet Connection
Telnet by default always connects to the first available CMS site. This is normally all that is required and no telnet properties need to be set.

If you have a need to connect to an RMS Relay site then check the box below and enter a path name to the site. If RMS Relay is running on the same machine as this program use the path name 127.0.0.1.

Use RMS Relay

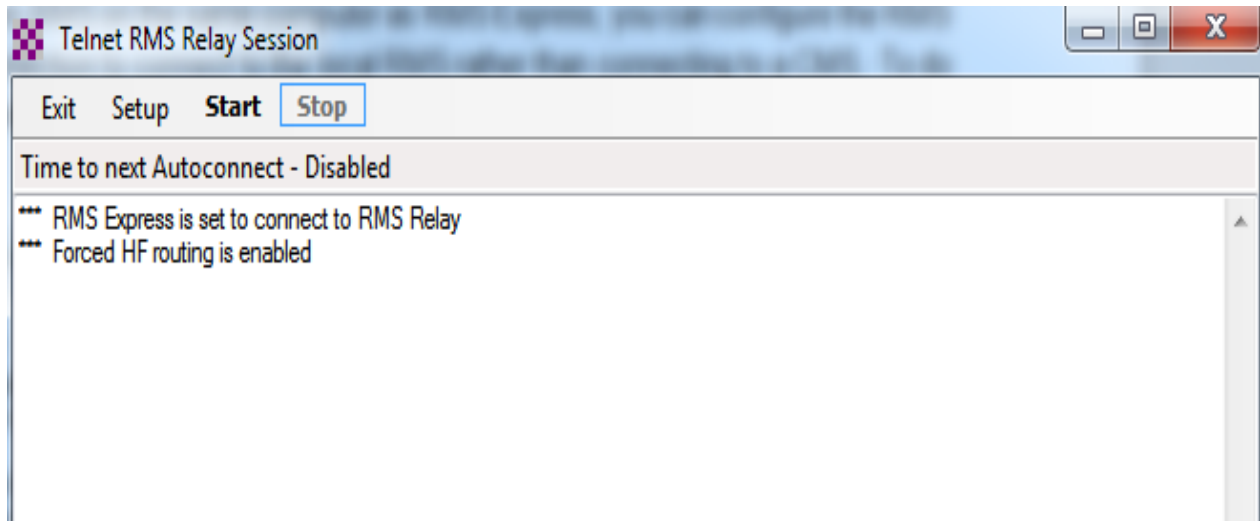
TCP/IP path to the RMS Relay site:

Local IP address:

AutoConnect Time
 Times shorter than 15 minutes should be used only for emergency or priority situations.

Check the box labeled "Use RMS Relay", and then click "Update".

When the telnet session is configured to use RMS Relay and connect in a way that forces HF forwarding, a message line will appear at the top of the telnet session window:



A similar message is displayed in the Pactor session window when the option has been set to force HF forwarding mode.

“Pinging” A Station in the Hybrid Network

You can send a special “ping” message to an RMS that’s part of the hybrid system to test your radio connectivity. To send a ping:

1. Use RMS Express to create a message. Specify the callsign of the RMS as the recipient. Note: the recipient is the callsign of the **RMS**, *not* some person at the RMS.
2. Specify “/ping/” as the subject of the message (without the quote marks). Note that the word “ping” must be enclosed in forward slants (‘/’).
3. Configure RMS Express to make radio-only connections to the RMS on the Radio-only Network Parameters screen.
4. Send the ping message into any RMS that’s part of the hybrid network, or use a telnet connection to send the message into a local copy of RMS Relay.
5. If the ping message reaches the destination RMS, it will generate a reply and send it to all of your MPS.

Example ping message being composed in RMS Express:

Enter a new message

Close Select Template Attachments Post to Outbox Save in Drafts Folder Spell Check

From: NNS4UR Winlink Message Peerto-Peer Message Request read receipt

To: AFB4TN:

Cc: |

Subject: /ping/

Attach:

Example of a reply to a ping:

```
Message ID: D7AB2GGZHWV1
Date: 2013/06/29 02:01
From: AFB4TN
To: NNS4UR
RMS Originator: AFB4TN
RMS Destination: NNB4TN
RMS Routing: Radio-only
RMS Path: AFB4TN@2013-06-29-02:01:49 NNB4TN@2013-06-29-02:03:18
Subject: Echo from AFB4TN for F87VOUCYA1G1
--- Ping reply from AFB4TN for F87VOUCYA1G1 ---

Ping message path: NNB4TN@2013-06-29-02:00:04 AFB4TN@2013-06-29-02:01:49

--- Information about AFB4TN ---
Total connections to AFB4TN = 2
Internet connectivity = True
RMS Relay version 2.2.10.36
```

Setting up a Non-Internet, Radio-Only Winlink RMS

Due to policy or physical location, some RMS may wish to run permanently disconnected from the Internet. To set up a non-Internet RMS, follow these steps:

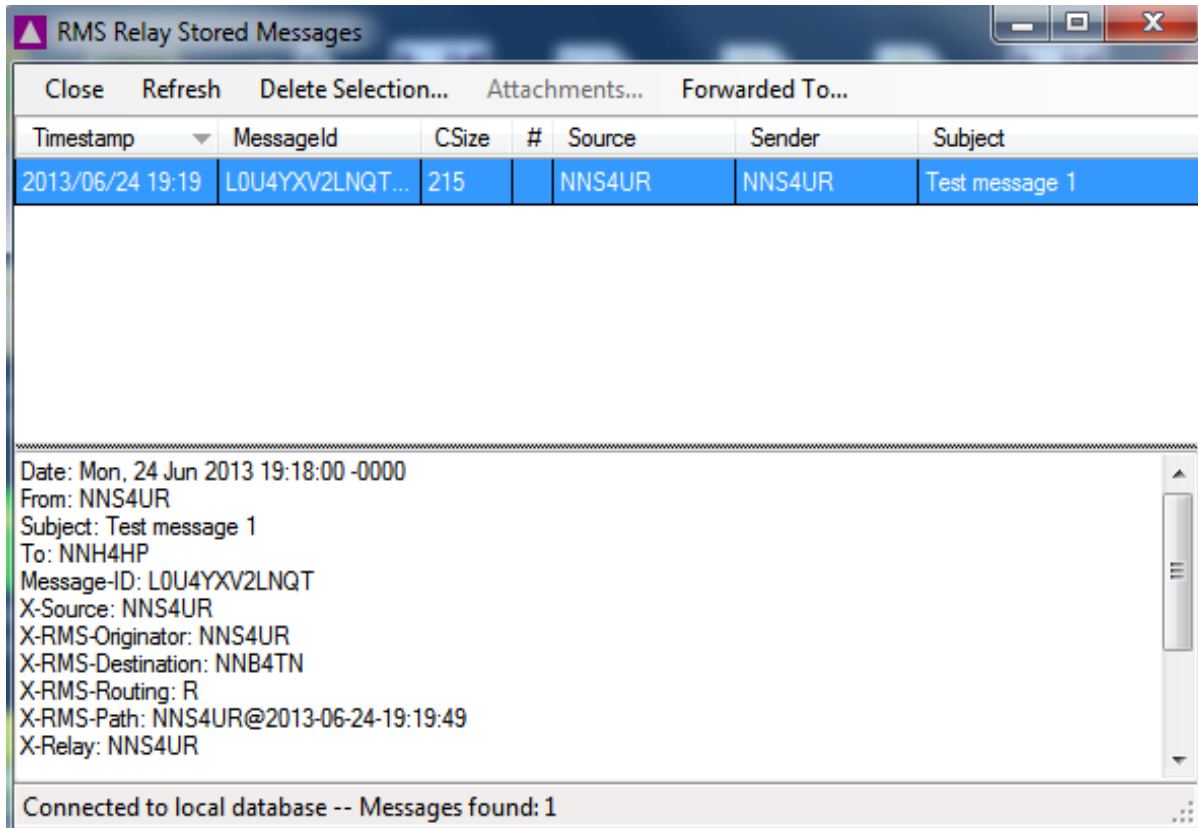
1. Run the setups for Trimode and RMS Relay from a flash drive, CD or other media. You also need the VOACAP program to compute propagation
2. Start Trimode and get it configured with your station information, channels, etc. Make sure it can be stopped and started and it can connect to the radio and modem. Ignore a warning it will display about not being able to update SFI.
3. Start RMS Relay, enter your callsign, service code, etc. Then click the button on the Site Properties screen to enter a manual registration key, and enter the registration key that Winlink team will send you.
4. Go through each of the other setup screens and enter any frequency or RMS exclusions, etc.
5. Get into the “Settings/Station reports and updates via radio” screen and click the button to send a station report. This will send a radio message to another RMS with information about your station including your callsign, channels you are scanning, etc. It also will request that the receiving station send you an update on the state of the network, other RMS in the network, etc.
6. Hopefully it will start sending a message to another hybrid RMS with your report, and hopefully that station will send back a network update in a few minutes.
7. If all of that works, then you should be fully operational as a radio-only station.

Dealing With Problems and Sending Log Files

The hybrid Winlink system is new, and it's complex, so there are almost certainly going to be a number of problems. That's why we test it.

Viewing/Deleting messages in RMS Relay

To view a list of messages being held in the RMS Relay local database, click “**View**” on the main menu bar of RMS Relay.



If there is a “stuck” message that you need to remove, select its entry and click “Delete Selection”.

Deleting *All* RMS Relay Messages

If things really get sick and you need to delete all pending incoming and outgoing messages, stop RMS Relay and use the Windows (DOS) Command window to execute a batch file named “clear.bat” in the C:\RMS\RMS Relay\ folder. This will delete *all* pending messages and log files.

RMS Relay Log Files

RMS Relay log files are stored in a folder named "C:\RMS\RMS Relay\Logs\". An important log file that tracks most information about message forwarding is named "Routing *yyyymmdd*.log". If problems occur, please e-mail this log file to phil@philsherrod.com

If there are any Unhandled Exception log files in the Exceptions folder, please report those also.

Other Issues

SCS modem.

1. Dragon users, Insure that your Dragon modem contains the firmware 1.17.8. If it does not, then go to the <ftp://autoupdate.winlink.org> site and download that firmware version and the SCSUpdate.zip file, and run the program from it to locally put in the firmware version from a directory on your computer.

2. If you are not using a Dragon mode, you may have to uncheck the two checkboxes in the lower left corner of the "Operating Mode and HF Forwarding Control" form in RMS Relay setup under files. Why? Sometimes, the non-specialized busy channel process shows busy when it is not. I will work with SCS to add the more focused busy signal detector to the other SCS modems as we move forward.

Help and Support

For help and support, contact:

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