RVI-600 User Guide

Last Updated on July 20, 2017
Rev 1

Table of Contents

1 Initial Setup

1.1 Package Contents

- One RVI-600 (47860A-600)
- One Power Cable and Power Adapter
- Two Flanges and Mounting Screws

1.2 Operation

By default, the RVI-600 operates in S-TAC mode as a multi-link receiver voter in multicast mode. Receivers remain in the idle state while detecting 2175Hz status tone from distant transceivers at -13dB. Upon the drop of the status tone from any of these transceivers, the RVI-600 will begin the voting process.

Voting occurs when any of the un-squelched links achieve a higher signal-to-noise ratio (SNR) of 3dB or less from any other link. This will lock in the channel as the preferred receiver and route audio to the default transmitter (TX1), the console, and any connected TX pair on the designated RVI-600 TX/TX ports.

Voting elections remain available throughout the inbound transmission and if any other receiver achieves a higher SNR value than the currently voted one, that channel will become the new voted channel.

1.3 Connecting the RVI-600 Voter

To configure the RVI-600 Voter for first use, access the RVI-600 using a PC and the supplied Ethernet cable. This direct-connection procedure only needs to be done once. After this procedure, accessing the RVI-600 will be done through the network and over any network port.

Figure 1-1: RVI-600 Back Plane

1. Refer to Figure 1-1 to connect the power cable, provided, to the AC input receptacle and then plug the other end of the cable into the AC socket.

2. Connect the yellow ground tab, shown on the left, to the ground source for other equipment in the rack.

3. Connect a CAT 5 Ethernet straight network cable to the "network" port labeled, shown on the right. Connect the other end to your network. *The other ports, labeled TX 1, RX 1, RX/TX 2 through RX/TX 6, and Console will be covered later in this guide.*

Figure 1-2: RVI-600 Front Panel

4. Refer to Figure 1-2 and press the power button on the front of the RVI-600 to start the unit. A fan will start and the power button will have blue backlighting.

Once the unit is powered on, it is time to configure the RVI-600 Voter. The unit is configurable through a web-based software which is accessible by using any browser on your computer. Please refer to Figure 1-3.

The RVI-600 is IP6 compatible and supports SSDP (Simple Service Directory Protocol). Your initial IP address will be determined by your local DHCP server or default to a link-local address on your network. You can use your file manager and browse your network to find the Raven-RVI-600 as shown below in figure 1-3.
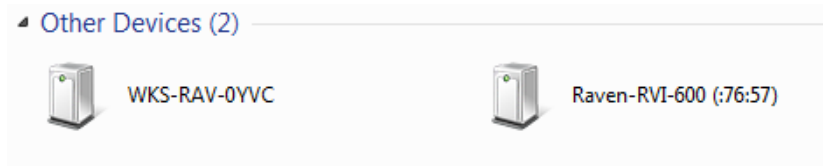
Figure 1-3: RVI-600 Network

Right-clicking on the RVI-600 Icon allows you to view device parameters and traverse to its configuration webpages

1. Figure 1-4 shows the login screen for the RVI-600 Configuration webpage. Use the default username and password. *These can be changed later.*
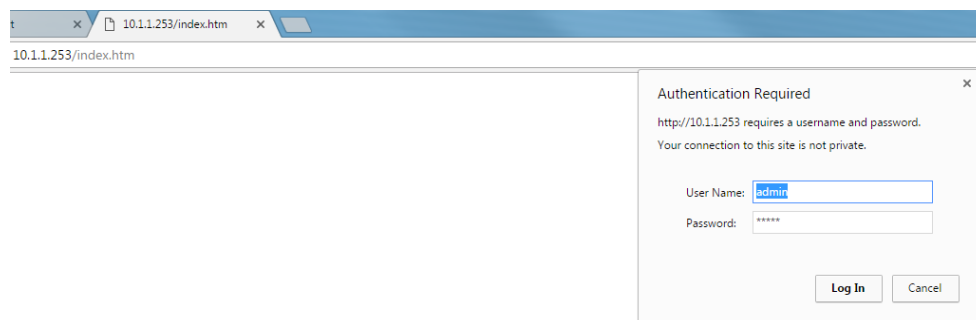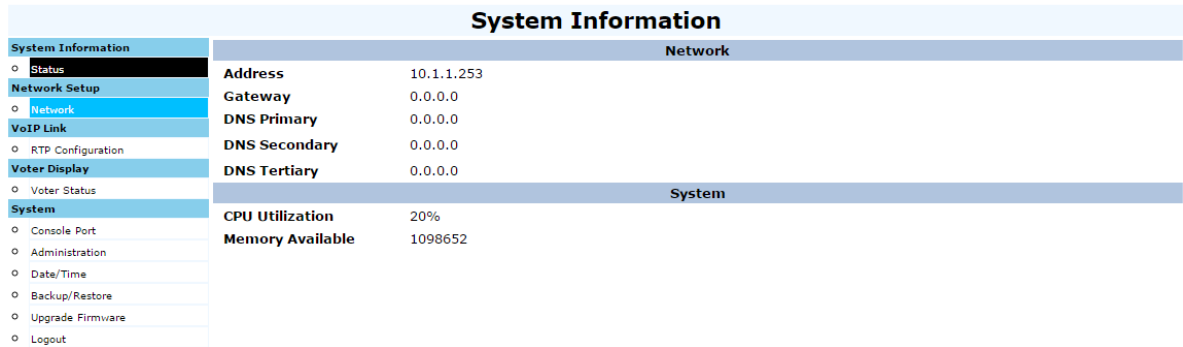   - Username: a**dmin**
   - Password: **admin**

Figure 1-4: Login Screen

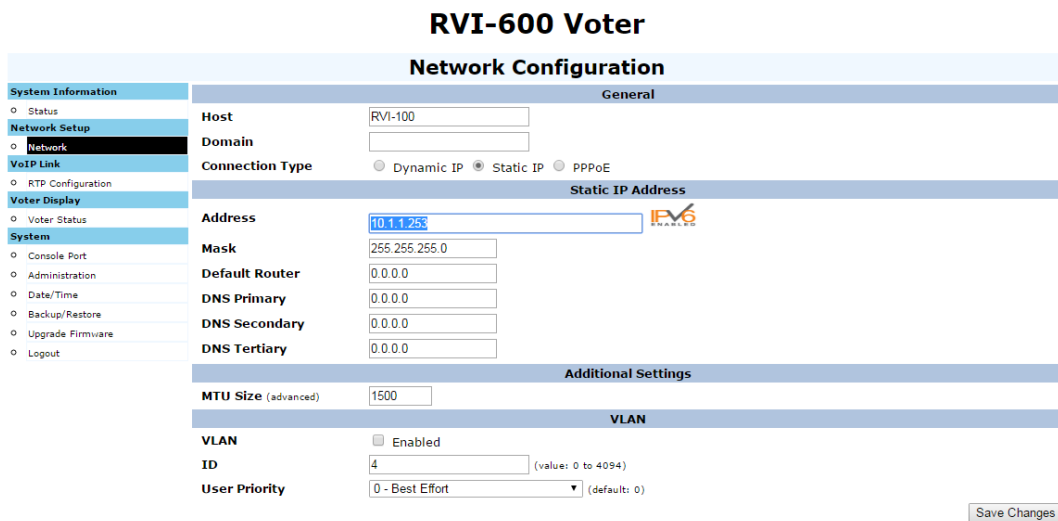2. Press **Enter** or click on the **Login** button at the bottom of the screen. Figure 1-5 will appear.

Figure 1-5: RVI-600 System Screen

1.4 Change IP Address of RVI-600

To change the IP address of the unit, select the **Network** menu on the left. Please refer to Figure 1-6.

Figure 1-6: Network Configuration

1. In the address section change it to the preferred IP Address if necessary.

2. Click on **Save Changes**, in the lower right of the screen.

Figure 1-7: Applying Changes

3. After selecting Save Changes, the yellow popup in Figure 1-7 will appear.

4. Click on the **Apply Now** button on the right of the yellow box. Please note that this will restart the unit.

5. The RVI will automatically restart to have the settings saved.
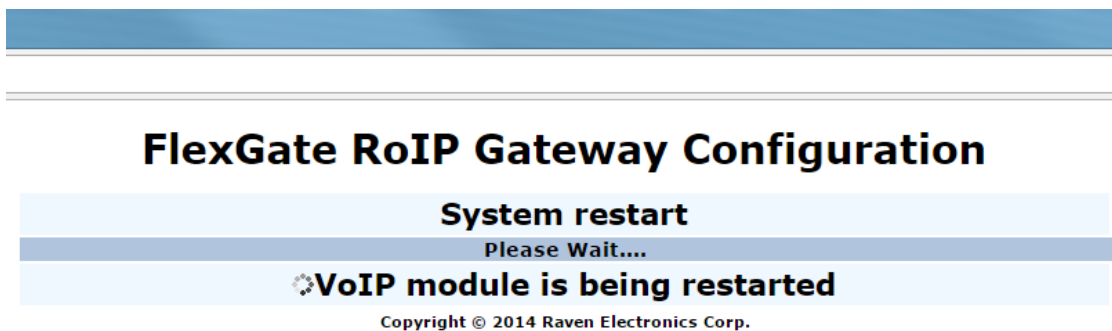
Figure 1-8: VoIP Restarting

6. After the system has rebooted a screen as shown in Figure 1-4 will appear to enter the login and password.

7. The IP Address will now show the IP Address configured in this section.

1.5 Change Login and Password

To change the default Login and Password, select **Administration** from the menu.

1. Change the Username, Password, and then Confirm the Password.

2. Select the **Save Changes** button.

3. A prompt will appear as in Figure 1-4 to enter the new Username and Password.

4. After a successful change and login, Figure 1-9 will appear.

Figure 1-9: Administration

2 Connections and Status Indicators

2.1 RVI-600 TX and RX Connections

Refer to Figure 2-1 for Connection descriptions.

TX1 is a default transmitter port. Voted audio is routed out of this port along with PTT or tone keying depending on how the transmitter port is configured.

RX1 and RX/TX 2 through RX/TX 6 are receiver ports, or ports that vote. By default, all six are configured to vote on loss of status tone (2175 Hz at -13 dB). Options for other status tones as well as to vote on COR detect are also available with additional advanced setup which can be found in section 3.

RX 1 is a receiver port only but RX/TX 2 through RX/TX 6 are configured as combination transmitter and receiver ports providing a multicast voting capability as needed.

The console port provides an input to any console as well as an output for voted audio. When the console port has inbound audio it will be routed to the default transmitter (TX1).

If tone keying (default), the RVI-600 turns off its keying when console audio comes in and allows the keying tone sequences from the console to key the transmitter. If relay keying, the transmitter port will provide the PTT for keying of the radio when the console is active.

By default, the console has transmit priority for TX1 over any voted audio path. Console priority allows the dispatcher to take priority over the transmitter from a port previously voted and using the transmitter

Figure 2-1: RVI-600 Back Plane

2.2 TX and RX Pin-Outs

The pin assignments for RX, TX, and Console ports (RJ45) is outline below.

Pin 1   RX A   Input audio from Customer Equipment.
Pin 2   RX B   Input audio from Customer Equipment. **Note 1**
Pin 3   PTT or M-Lead Out   Output switch closure to customer equipment.
Pin 4   TX A   Output audio to Customer Equipment.
Pin 5   TX B   Output audio to Customer Equipment. **Note 2**
Pin 6   PTT or M-Lead Ground Return   PTT ground return to customer equipment. **Note 3**
Pin 7   COR or E-Lead In   Active low input from customer equipment. **Note 4**
Pin 8   COR or E-Lead Ground   Ground connection to customer equipment.

Note 1: For unbalanced radio connections, this pin typically connects to a ground pin in the radio. Otherwise pins 1 & 2 are a balanced pair and polarity need not be observed.

Note 2: For unbalanced radio connections, this pin typically connects to a ground pin in the radio. Otherwise pins 4 & 5 are a balanced pair and polarity need not be observed.

Note 3: PTT is by default set for Active Closed (normally open) but can be changed to Active Open (normally closed).

Note 4: COR input by default is set for Active Low, but can be changed to Active High.

2.3 I/O's

Refer to Figure 2-1 for a picture of the I/O locations.

I/O Pin	Description	Default: Open/Closed
1 - 6	Vote Indication, ports 1-6	Open (Closed if Voted)
7-12	Receiver Fault, ports 1-6	Open (Closed if Faulted)
13	Ethernet Link Up/Down	Open, if Down
14	Unused	
15	System Power	Closed (Open if Power is Off)

2.4 LED Status Indicators

As shown in Figure 2-2, there are seven LED's. One for the transmitter and one for each receiver port. The LED's change colors to indicate the status of a port. There are four possible LED states.

Figure 2-2: RVI-600 Front Panel

Transmitter Status LED Status Indicator (refer to Figure 2-2)

> **Off** = Idle

> **Red** = Transmit

Voter Receiver Status LED Status Indicators (refer to Figure 2-2)

> **Red =** Fault (RCVR)
> This indicates a receive port fault. A fault condition can exist if a receiver port goes to un-squelch (loss of status tone or COR detect) but no audio is detected for a period of time indicating a fault condition. For the transmitter port the red LED indicates TX activity.

> **Green** = Receive
> This indicates a receive port has gone to the un-squelch condition (status tone drops or COR detected). There is no green state indicator for the transmitter port.

> **Blue** = Voted
> This indicates a receive port is voted. There is no blue state indicator for the transmitter port.

> **Off** = Idle
> This indicates a squelch status (status tone being detected or no COR detected) on a receiver port. For the transmitter port this indicates no TX activity.

2.5 Voter Display

The RVI-600 can be monitored remotely for voter operation as shown in figure 2-3. Transmit, receive, COR, PTT, vote state and fault indications are shown.
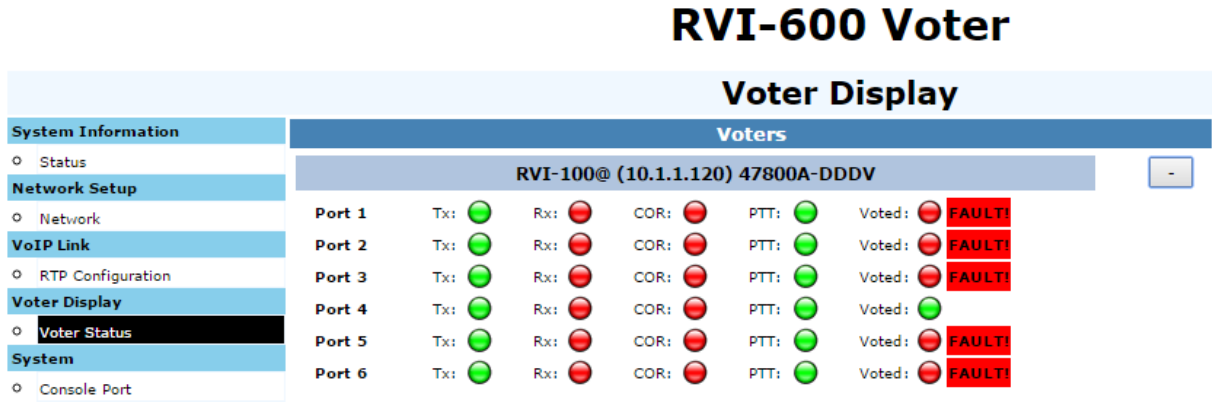

Figure 2-3: RVI-600 Voter Display

3 Advanced Setup
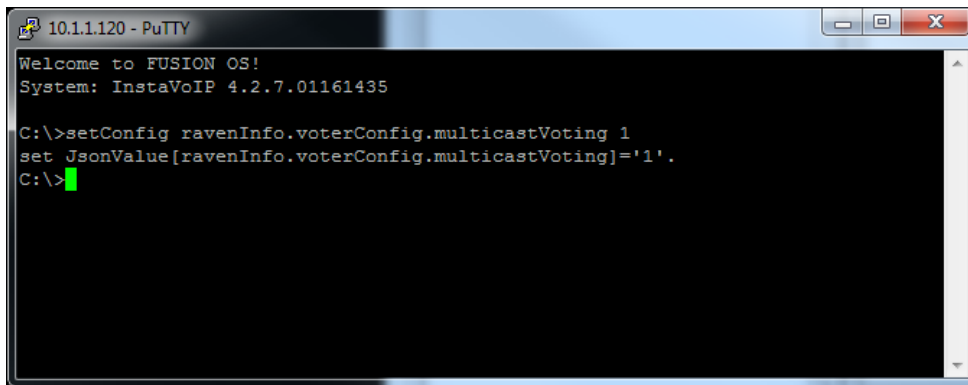
3.1 Telnet Configuration

Additional parameters can be set via a telnet session. Use a telnet client such as putty (www.putty.org) or use the Windows Telnet client. These settings are advanced and used in fewer voting environments. Use with some caution or contact Raven for assistance. User credentials follow the same as configured through the web interface.

Users can read or set configuration values using the following telnet commands (**note that paths are case sensitive!**):

setConfig – sets a value per the tables below.

Example:

getConfig – gets a value according to the tables below.

Example:

Once a setting has been changed, a reboot command ("reboot") must be initiated or simply power cycle the device.

3.2 System-Wide Settings

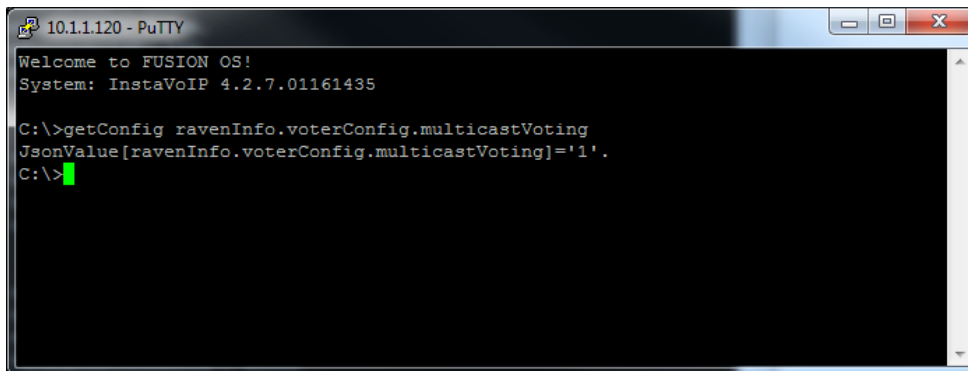| Parameter	Path	Setting	Description
multicastVoting	ravenInfo.voterConfig.multicastVoting	1	0 = do not transmit on all channels 1 = multicast voted audio on all transmit channels
voteHoldOff	ravenInfo.voterConfig.voteHoldOff	10	Propagation time, in 5ms increments, for all vote receivers to wait before a vote election occurs. 10 = 50ms
freeVote	ravenInfo.voterConfig.freeVote	2	Time, in 50ms increments, that each receiver can fight for the vote election after the voteHoldOff timer expires. 2 = 100ms
voteLock	ravenInfo.voterConfig.voteLock	0	Time, in 50ms increments, that an elected vote receiver is guaranteed a vote period. A setting of 0 allows any channels to be elected without a wait period. A value of 65535 will lock the vote on a single channel for the duration of the transmission and no other channel can be elected. Individual channels also have their own vote period setting which is set to 500ms by default and begins when this timer expires.

3.3 Channel Specific Settings

Each receiver/transmitter channel has specific settings that can be manipulated via telnet. The configuration path for each channel follows the format of {path}.{setting}:

Path = ravenInfo.m150.port[X]. where 'X' is channels 0 – 5.

To set the votedB on the first voter port one would use the following syntax:

Setconfig ravenInfo.m150.port[0].voteDB 2

Parameter	Setting	Description
voteDB	3	The difference in SNR results, in dB that this channel must achieve to be elected as the voted channel.
faultTimeoutPeriod	200	The time, in 50ms increments, where this channel enters receiver fault when no audio and no status tone is detected. 200 = 10 seconds.
votePeriod	10	Time, in 50ms increments, that this channel must remain voted before another channel can be elected as the voted channel. 10 = 500ms
disableVote	0	0 = this channel can be voted. 1 = this channel will never be voted.
disableVoteOnCOR	1	1 = When COR is detected on this channel (pins 7,8), the channel can no longer be voted. 0 = This channel can always be voted regardless of COR condition.
unsquelchMode	0	0 = voting begins on loss of status tone. 1 = voting begins on loss detection of COR on pins 7,8. 2 = voting begins on VOX (not recommended for most applications).
corPolarity	0	0 = COR is active low (requires unsquelchMode = 1) 1 = COR is active high (requires unsquelchMode = 1)
statusTone	16	16 = 2175Hz 14 = 1950Hz 13 = 1850Hz
useKeyingTonesForTransmit	1	1 = standard EIA keying tones are used to key the transmitter of this port. 0 = PTT/wireline on pins 3 and 6 are used to key the transmitter of this port.