JPS Interoperability Solutions SNV-12 Voter Executive Outline

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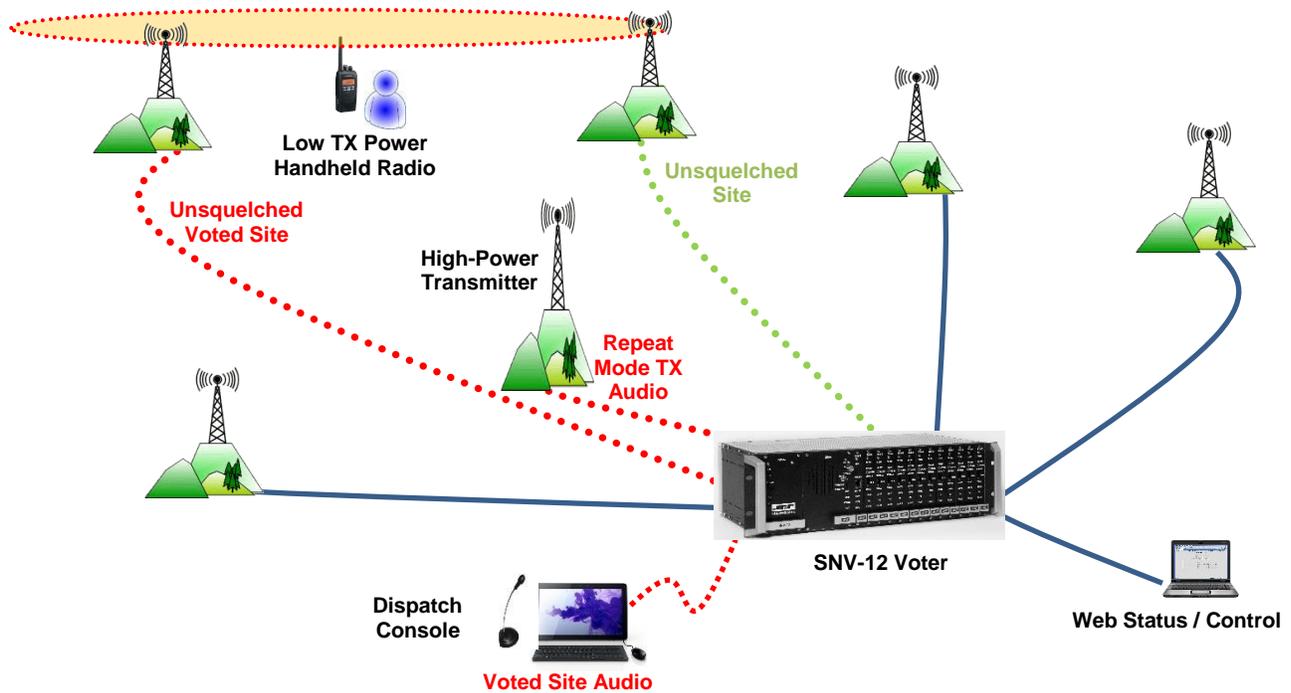(919) 790-1011

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SNV-12 / Receiver Voter

SNV-12 with twelve SVM-2 Modules

Low TX Power
Handheld Radio

Unsquelched
Site

Unsquelched
Voted Site

High-Power
Transmitter

Repeat
Mode TX
Audio

SNV-12 Voter

Dispatch
Console

Voted Site Audio

Web Status / Control

Above: A low power handheld radio is hitting two receive towers at the same time, the voter selects the best signal of the two unsquelched sites, and sends that receive signal to the dispatch console and back out to the transmitter if Repeat Mode is on.

Benefits

- Do you have narrow banding coverage issues; the SNV-12 solves this by easily voting added receive sites

- Do you visit your receiver sites too often for monitoring or disabling sites; remote-computer monitoring through the CPM-3 browser interface allows access to monitor audio, data, and disable problem sites – fewer technical site visits

- 18-month warranty; Public Safeties most reliable voter

- Hot-swappable modular approach reduces single points-of-failure

- Field upgradable firmware capable

- Three SNV-12 chassis can daisy-chain together allowing a single voted channel with up to 36 receiver sites

Overview

- Analog Signal & Noise receiver signal comparator

- Extends coverage by allowing low power radios to link to remote receiver sites rather than the main repeater

- Selects the remote receiver with the best signal quality for dispatcher and/or to be retransmitted to other users in the field

- The SNV-12 uses Digital Signal Processors to continuously sample all remote receiver sites that pick up a mobile/portable transmission and selects the receiver with the best signal quality. A typical application is an LMR system in which mobiles and portables can hear a repeater, but due to their lower transmit power and/or the antenna size or placement, the repeater cannot hear these mobiles and portables

- Remote receivers can be positioned in communication "dead spots" or fringes in the coverage area, with audio from each receiver linked to the voter using microwave, landline, twisted pair, RF link, or fiber optics

- Extremely simple initial setup with minimal test equipment required

- Two decades of solid performance worldwide

- Appropriate for Public Safety, DOD, Private Sector

Advantages

- Uses DSP algorithms for superior receiver signal quality measurements, EIA tone control, audio delay, and AGC functions

Past Performance

- Dominates the market with over 7,500 voters sold worldwide

Signal-and-Noise Voter Features

- FM and AM/HF Voting Modes

- User selectable voting criteria

- Voting lock on COR

- Receiver Unsquelch Indication Types:
  - Hardwire COR (Logic / E&M)
  - Pilot Tone (1950 Hz / 1275 Hz)

- Line Fault Detection (Pilot / Guard Tone)

- Receive Audio Delay (up to 450 msec)

- Transmitter Steering:
  - Manual (Logic / RS232)
  - Function Tone
  - Automatic (STARS)

- Single TX Home Site / TX Multicast

- Receive Groups (up to 7 Groups)

- Key Tones (Continuous / EIA Sequence)

- Console or Field Priority

- Console Audio Delay

- Detection of Console EIA Sequence

- Repeat Audio Mixed with Console Transmit Audio

- COR Lock Onset Delay Timer

- Simplex Repeat when Voted

- Pilot Tone Regulated AGC

- Line Equalization (0 dB thru 9 dB)

- Simplex or Duplex

- Simplex Mode Voting Holdoff after Console Transmission

SNV-12 / Analog Receiver Voter / Network Links Voting – Available March 1, 2018

Overview

- The upcoming SVM-3 module will allow the use of IP networks for transport of receive and transmit audio.

Advantages

- Allows IP networks to be used for transport of analog receiver and transmitter audio
- Both analog and IP voted modules can work together

Past Performance

- Dominates the market with over 7,500 voters sold worldwide

Benefits

- SVM-3s will coexist in recent SNV-12 chassis with the current SVM-2 modules
- SVM-3 implementation allows front panel controls such as force vote and force disable
- Basic timing synchronization algorithms have been proven in challenging lab environment

JPS Interoperability Solutions, Inc., is the industry leader in analog receiver voting. With our new QMT-1 and SVM-3 capabilities, transporting voter receiver and transmitter audio can use the customer's IP network. The IP backhaul voting process uses our SVM-3, and QMT-1 to handle the challenges that network delay and jitter add to the voting process.

The QMT-1, single channel IP Voting Modem Unit, gives an interface to the remote receiver and transmitter and performs these functions at the remote RX/TX sites:

- Analog to digital translation of RX audio, digital to analog translation for TX audio
- Accurate Signal Quality analysis done at receiver site

When an Unsquelch condition occurs, the QMT-1 converts the analog audio to IP for transfer to the SVM-3. Each SVM-3 module can talk to three receivers, and works in conjunction with the CPM-3 to check the arrival timing for an accurate vote between the standard SVM-2 modules and the new IP backhaul SVM-3 modules.

All modules audio, whether SVM-2 or SVM-3 arrive at the voter, and are held by the site voter modules until the CPM-3 receives indication that all unsquelched modules audio have arrived at the SVM-3's. The CPM-3 then coordinates audio alignment with each site voter module allowing the voting process to occur, having held the early arriving audio. Note the SVM-1 cannot work with the CPM-3 and SVM-3 backhaul.

The QMT-1 connects remote receivers to an SNV-12 with SVM-3 modules over internet protocol technology. The QMT-1 interfaces full duplex audio, and offers superior audio quality.

The QMT-1 is an 10/100 BASE-T Ethernet device and each unit has a unique Ethernet address and a RJ-45 physical jack. A 10/100BASE-T device runs at 100Mbps and interconnects to a hub (star topology) using standard CAT 5 twisted pair cable. The greatest cable length between an QMT-1 and its hub port is 100 meters. With the right connective equipment, the QMT-1's Ethernet port can link up with any kind of LAN or WAN, no matter the topology or cable system in use.

SNV-12 Voter for Receive Audio with Backhaul over IP, and Traditional T1/RF Link Connections
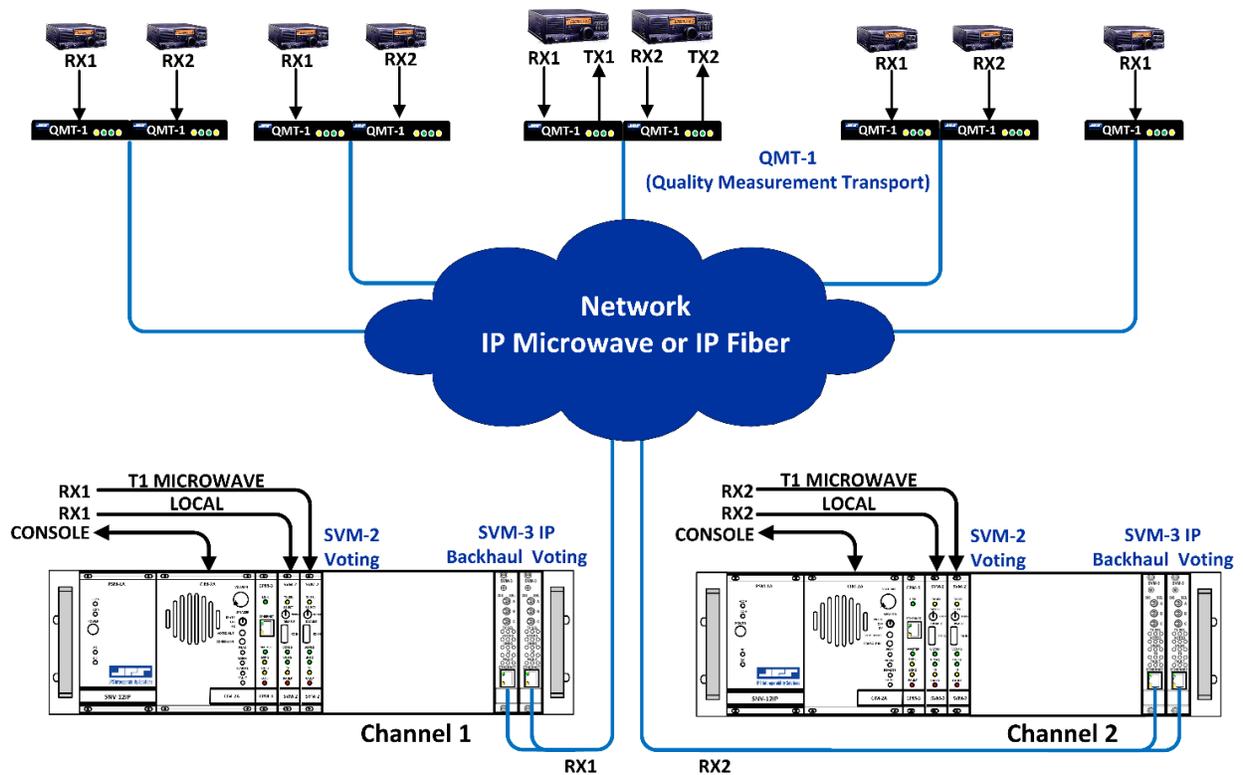
The SNV-12 Voter can retransmit the best quality field radio traffic from a multiple LMR receiver/transmitter environment using the new SVM-3, and the IP Backhaul capability of the QMT-1, and the standard 4-wire audio and signaling interface of the SVM-2.