Spec Sheet VoIP Radio Dispatch System

Model 6002
VoIP Radio Gateway

FEATURES

- Inherently distributed – avoids concentrating equipment in a single vulnerable site – improves survivability.
- Flexible edge placement – does not require IP connectivity all the way to the radio sites. Can avoid costly firewall traversal.
- Available with Telephone Radio Headset Interface (TRHI).
- Optional Instant Recall Recorder (IRR).
- Optional Kenwood radio interface resides in VoIP Radio Gateway (VRG).
- Reliable radio gateways – designed for harsh RF site environments – no moving parts, no PC operating system.
- Professional grade – supports full range of dispatcher audio devices with predictable audio quality. Able to monitor 20 or more radios simultaneously.
- Interfaces to analog and digital conventional and trunked radio systems.

INTRODUCTION

Zetron's VoIP Radio Dispatch System (RDS) is a pure, end-to-end VoIP radio dispatching solution designed for applications requiring dispatcher access of multiple radios from geographically diverse, remote or backup locations. It is ideal for utilities, and air & rail transportation companies, and others whose radio networks and dispatching points are geographically dispersed. The system consists of PC operator positions running application software and Series 6000 VoIP Radio Gateways. The connection between the operator positions and gateways is an IP Local Area Network (LAN) or Wide Area Network (WAN). The architecture of the system makes it inherently distributed, avoiding the requirement to concentrate equipment in a single vulnerable site. The VoIP RDS is available in configurations that assure the high voice quality required for mission critical communications.

FLEXIBLE EDGE PLACEMENT

Providing Wide Area Network (WAN) IP connectivity to a remote radio site is often difficult and expensive to achieve. Zetron's VoIP RDS allows flexible placement of the IP end-point. Zetron's VoIP Radio Gateways may be placed local to the radio, or at any location where 4-wire circuits to remote radios terminate. In many cases, this allows the entire system to reside within a LAN without traversing firewalls. Firewall traversal is usually the most difficult installation issue for any VoIP system. In addition, the IP-based console is compatible with Zetron's iRIMs, allowing the system to control conventional and fixed stations at remote sites, including those conforming with the Project 25 TIA102.BAHA Fixed Station Interface, AFSI standard.

RELIABLE REMOTE EQUIPMENT

For installations where the radio gateways must reside at radio sites, Zetron's VoIP Radio Gateways are designed to handle the harsh site environment. The Series 6000 VoIP Radio Gateways have a wide temperature range, good RF immunity, no moving parts and uses a reliable embedded operating system.

At the same time the IP Radio Gateways allow full remote maintenance via a web browser, including the ability to perform firmware upgrades and make fine and coarse level adjustments without the need for a trip to the site.

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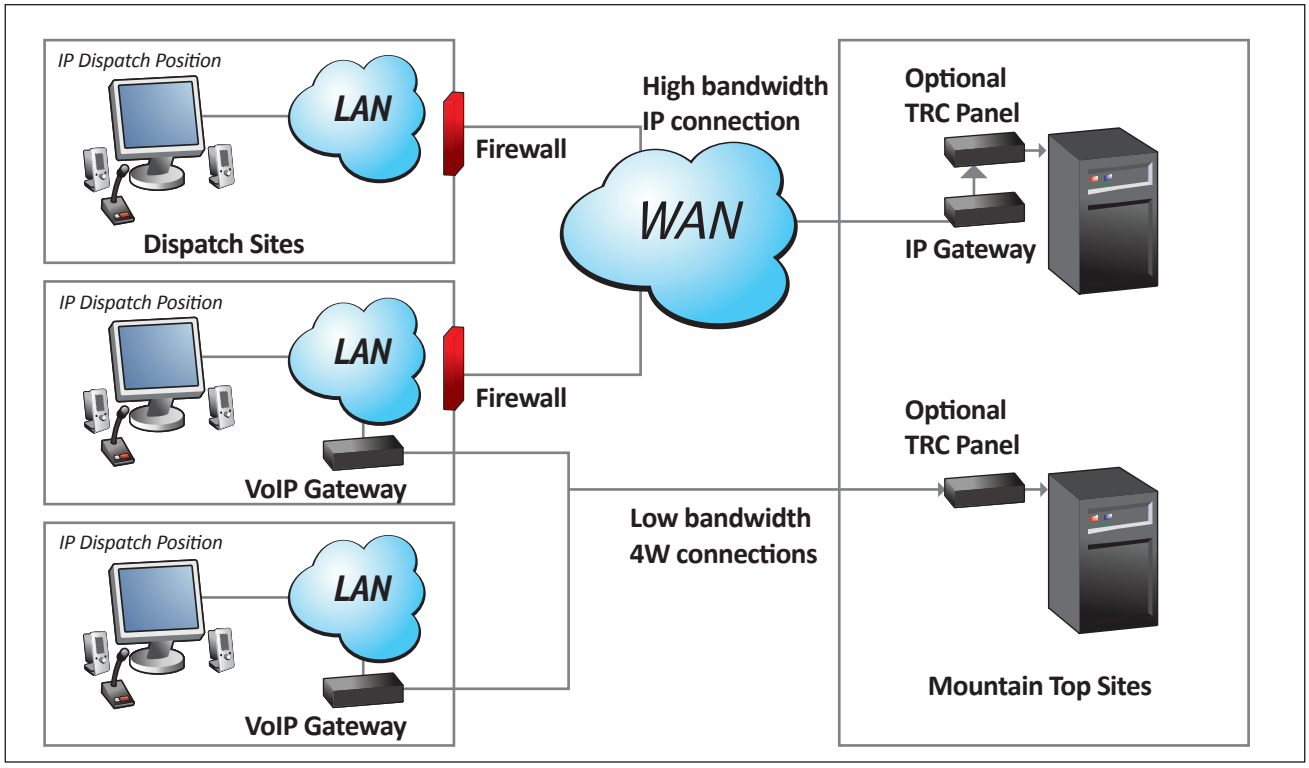

The VoIP Radio Gateway may be local or remote from the radio.

IP NETWORK ASSESSMENT

An IP network serves as the "back-plane" for the VoIP RDS traffic between IP Radio Gateways and dispatching workstation. As such, if the IP data flowing between these end-points is disrupted, the voice and/or performance becomes less than acceptable for mission critical applications. For mission critical applications, it is imperative that the network be able to handle the needs of the VoIP RDS.

COST-EFFECTIVE SOLUTION

The radio dispatch system uses the host PC for its VoIP communications, resulting in a significantly lower cost per operator position compared to traditional circuit-switched, central electronic-based systems. Combined with IP network assessment and the ability to avoid high-bandwidth IP connections to the radio sites, both the up-front costs and total cost of ownership are greatly reduced.

PROFESSIONAL GRADE

The Zetron VoIP RDS is a notch above many other IP-based radio dispatching products because it is designed for 24 x 7 use. Operator positions consists of a Windows host PC with a Zetron supplied sound card, VoIP RDS application software and Zetron's high-quality, 5-watt amplified speakers. The speakers are tuned for voice communications and include voice modulated LEDs and adjustable minimum volume level so that the chances of missing a call are reduced. Audio options include headset or handset via one or two headset jacks, and a desk-mic. Headsets and handsets are connected using rugged dual-prong connectors commonly used in dispatch centers. The use of the Zetron-supplied sound card and audio accessories ensure that audio levels and audio quality are consistent and within spec.

FUTURE-READY

The VoIP radio dispatch system is designed to easily adapt to the ever changing needs of private and land mobile radio systems. The Series 6000 VoIP Radio Gateway platform comes in various sizes and capabilities supporting various levels of firmware. Periodic releases will add more capacity and features.

FEATURE SET

The following are the list of operational features supported by the VoIP RDS software and firmware.

- Select and Unselect 5-watt high-quality speakers
- On-screen speaker volume controls
- Receive and transmit on-screen level meter
- Handset/Headset or Deskmic operation
- Individual channel volume control
- Individual channel mute
- All-mute
- Cross-console mute
- Monitoring of parallel transmissions
- Site intercom
- Select channel PTT
- Instant transmit (unselect channel)
- Simul-select
- Group select
- Group transmit
- Cross-channel patch
- Voice transmit delay (for TRC)
- Visual status of network connectivity
- 24-hour clock display
- Support for three-button mouse
- Support for touchscreen
- Manual and Instant Call Tone Paging
- Stacked paging with page list
- Two-Tone standard & custom-call paging
- Quick-Call I (2+2) paging
- Stored DTMF paging
- Multiple alert tones
- Paging side-tone
- Channel-steered paging
- Local and Tone Remote Control (TRC)
- DC Remote Control option
- Parallel TRC decode w/ LOTL
- MDC-1200 PTT-ID
- Transmit & Receive AGC
- Radio receive VOX detection
- TRC Positive Mode Control
- Full duplex audio
- VoIP Radio Gateway configuration using web browser
- Third-party voice logger support
- Up to 12 operator positions and 40 radio channels
- Telephone Radio Headset Interface (TRHI) option
- Instant Recall Recorder (IRR) option
- Paging option includes Knox paging
- Graphical User Interface supports both English and Japanese
- Expanded feature support for Kenwood radios

VOIP RDS SPECIFICATIONS

HOST PC REQUIREMENTS

Operating System:	Microsoft Windows 7 Professional (32 & 64 bit), Microsoft Windows XP, Professional SP2
Multi-Tasking:	Operation with non-Zetron supplied software may impact voice quality
Processor:	2 GHz Intel Pentium 4 or equivalent or better
Hard Drive:	20 GB or more free space
RAM:	512 MB or as recommended by the operating system, whichever is more
Removable Media:	24x or better CDROM drive for software installation
Pointer:	2- or 3-button mouse or trackball and/or touchscreen
Keyboard:	Keyboard or numeric keypad suggested for manual paging
Video/Display:	1280 x 1024 pixel display size or larger. 17" LCD or larger recommended.
	4MB or more video memory
I/O:	One free USB 2.0 port, two or more if touchscreen is used (USB hub, if used, must be externally powered)
Audio:	Requires Zetron-supplied sound card
Card Slots:	One or more PCI full-height slots
Network:	RJ45 Ethernet. Must be capable of 100-Base-T speed and auto-negotiation

NETWORK REQUIREMENTS

VoIP Radio Gateway Payload:	1 Kbps idle, 104 Kbps active (136Kbps Ethernet)
VoIP RDS Workstation Payload:	1 Kbps idle, 104 Kbps per active monitored radio (136Kbps Ethernet)
Payload to Bandwidth Ratio:	< 40% (< 30% mission critical). Bandwidth of IP bearer should be 2 to 3 times actual payload to ensure optimum voice quality
Packet Loss:	< 5% (< 0.1% mission critical)
Packet Delay:	< 500 ms (< 40 ms mission critical)
Packet Jitter:	< 100 ms (< 20 ms mission critical)
Network Type:	Fully switched Ethernet, full-duplex, capable of passing multicast UDP. Sharing the network with other IP traffic may negatively impact voice quality and therefore should not be considered for mission critical applications.

SERIES 6000 VoIP RADIO GATEWAY

Dimensions:	1.5 x 7.75 x 10.25 inches (HxWxD)
Weight:	1.9 lbs
Operation Temperature:	0 to +60 Celsius

RANGE

Power Input:	10.6 to 16 Vdc, 1 ampere max.
Network Connection:	10-Base-T Ethernet connection using RJ45
Compliances:	FCC Part 15, RoHS
Vocoder Support:	G.711 mu-law
DSP Resources:	16K Words Data Memory, 16K Words Program Memory, 72 MIPS

VoIP RADIO GATEWAY AUDIO

Frequency Response:	300 Hz to 3400 Hz +1/-3 dB, except for TRC guard tone notch
Hum, Noise & Cross-Talk:	45 dB below full rated output
Distortion:	3% or less
Line Balance:	60 dB @ 1004 Hz
Line Impedance:	Normal 600 ohms. Optional 3500 ohms or more for transmit pair while not transmitting, 3500 ohms or more for 4-wire receive pair.
Line Pairs:	4-Wire (separate transmit and receive) or 2-Wire (combined transmit & receive), half-duplex
Line Transmit Output Level:	35 dBm to +10 dBm
Line Receive Input Level:	-35 dBm to +10 dBm
Call Indicator Sensitivity:	-35 dBm to 0 dBm
TRC Guard Tones:	2100 Hz, 2175 Hz, 2300 Hz, 2325 Hz, 2600 Hz, 2800 Hz, or 2970 Hz, +/- .2%.
	HLGT: 0 dB to +10 dB in level (relative), 60 ms to 600 ms in duration
	LLGT: –30 dB to –10 dB in level (relative)
TRC Function Tones:	350 Hz to 2050 Hz in 100 Hz increments (18 total) +/- .2%
	-6 dB to +3 dB in level (relative), 20 ms to 100 ms in duration.
Local Receive Input:	50K ohm impedance ground referenced, 40 mVpp to 5 Vpp
Local Transmit Output:	50 ohm impedance ground referenced, 40 mVpp to 3.6 Vpp.
PTT/M-Lead Signal:	50 mA maximum to ground, 24 volts open circuit max.

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See Zetron price list for option pricing. Specifications subject to change without notice.

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