Model 6300 Radio-over-IP Gateway
Spec Sheet

FEATURES

- Transports voice (3-wire unbalanced or 4-wire balanced), I/O (PTT & COR) and Data (RS-232) for up to two radio circuits
- Console IP Gateway version transports voice, I/O and data for a remote Series 4000 console position.
- Handles Tone Remote Control (TRC) and Local/E&M radio circuits.
- Remote PTT operation controlled by VOX or COR.
- Use of TCP and Unicast UDP allows operation over standard IP networks.
- Compatible with many IP-based RTP voice recorders.
- Field-selectable voice compression includes PCM (64 kbps), and ADPCM (16-32 kbps).
- Fully configurable via web browser, including all audio levels.
- Embedded operating system, and no moving parts. Designed for harsh, unattended radio site environments.
- Optional 1U x 19" rack mount for two units.
- Operates from 12 Volts DC.

INTRODUCTION

The Land Mobile Radio industry is increasingly relying on IP-based transport of two-way radio communications. But many users retain a large installed base of legacy control equipment not inherently capable of connecting directly to an IP network. Zetron's Radio-over-IP (RoIP) Gateway is designed to solve this problem. With the RoIP Gateway, you can continue to leverage your investment in operator control equipment, such as consoles and desktop remotes.

Zetron's RoIP Gateway allows legacy Tone Remote Control (TRC) or E&M wireline control equipment to operate over modern IP networks.

The RoIP Gateway is compatible with the following Zetron consoles and remotes:

- Model 4010 Console
- Series 4000 Console, both Button-Based and Integrator RD
- DCS-5020 Console
- AcomEVO System
- Model 280/284 Desktop Remote

The RoIP Gateway can also be used with many other manufacturer's TRC/E&M wireline control equipment, as well as many non-radio, specialty voice applications (e.g. hoot-n-holler and intercom lines). By connecting radios at both ends, it can also be used to bridge two geographically diverse radio systems together.

Radio-over-IP using Model 6300 RoIP Gateway
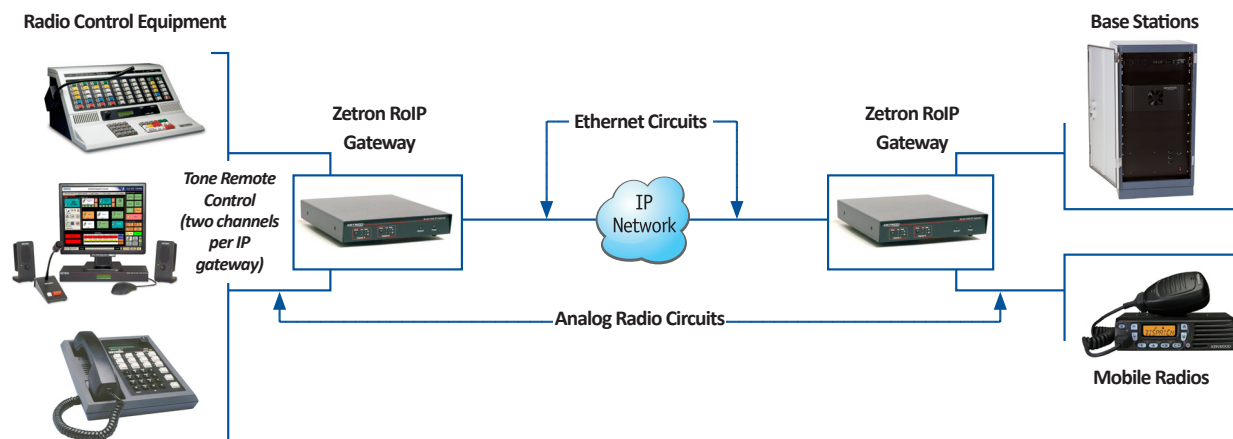
Radio dispatch console or desktop remote (up to two positions) extended over IP.

ZETRON

GENERAL

Zetron's RoIP (Radio-over-IP) Gateway is designed to transport analog wireline two-way radio control circuits over IP networks. Each RoIP Gateway connects to a radio circuit that supports analog audio, binary control (PTT & COR) as well as RS-232 serial data. The analog audio is field selectable between a balanced 4-wire connection suitable for most fixed station radios, and unbalanced transmit and receive audio suitable for direct connection to most mobile radios. In some cases, a mobile radio's programming and/or control head serial data can be transported over IP as well (contact Zetron for radio serial data compatibility).

A pair of RoIP Gateways, one at each end of the IP network, facilitates the conversion from radio to IP and back. Three variations are available:

- Model 6301 = supports one radio channel
- Model 6302 = supports two radio channels
- Model 6304 = supports a remote console for the Series 4000 dispatch system.

SPECIFICATIONS

NETWORK REQUIREMENTS

Device Payload:	1 Kbps idle, 104 Kbps active (136Kbps Ethernet) using G.711 per channel.
Network Loading:	< 40% (< 30% mission critical). Bandwidth Ratio of IP bearer should be 2 to 3 times actual payload to ensure optimum voice quality
Packet Loss:	< 0.1%
Packet Error:	< 0.01%
Packet Delay:	< 400 ms (< 40 ms mission critical)
Packet Jitter:	< 50 ms (< 20 ms mission critical)
Network Type:	Fully switched Ethernet, full-duplex, capable of passing unicast UDP. Sharing the network with other IP traffic may negatively impact voice quality and therefore should not be considered for mission-critical applications.

GENERAL

Dimensions:	1.5 x 7.75 x 10.25 inches, 1.75 x 19.0 x 10.25 inches optional rack panel (H x W x D)
Weight:	1.9 lbs
Operation Temperature Range:	0 to +60 Celsius
Power Input:	10.6 to 16 Vdc, 0.5 ampere max. (initial power-on surge exceeds 2A)
Network Connection:	10-Base-T Ethernet connection using RJ45. HTTP compatible with Microsoft Internet Explorer 6 or later.
Vocoder Support:	G.711 (64 kbps) and G.726 (32-24-16 kbps) & GSM (13 kbps)

RADIO CIRCUIT AUDIO

Frequency Response:	300 Hz to 3400 Hz +1/-3 dB
Hum, Noise & Cross-Talk:	45 dB below full rated output
Distortion:	3% or less
Line Balance:	60 dB @ 1004 Hz
Line Impedance:	Nominal 600 ohms for Tx and Rx pairs with alternate setting of 5000 ohms
Line Pairs:	4-Wire (separate transmit and receive) or 2-Wire (combined transmit & receive), half or full duplex
Line Transmit Output Level:	-35 dBm to +10 dBm
Line Receive Input Level:	-35 dBm to +10 dBm
Line VOX Sensitivity:	-35 dBm to 0 dBm
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.

RADIO CIRCUIT CONTROL

PTT/M-Lead Signal:	50 mA maximum to ground, 24 volts open circuit max.
COR/E-Lead Signal:	Active < 0.8V, Inactive > 2.0V 10Ω pull-up to 5V

RADIO CIRCUIT DATA

Format:	7-bit or 8-bit, serial, asynchronous data
Electrical:	RS-232 or TTL compatible
Data Rate, Parity & Stop Bits:	300 to 38.4k bps, odd-even-no parity, and 1 or 2 stop bits

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