RoIP Gateways

Radio over IP for Optimal Analog & Digital Radio Network Performance

omnitronics

Radio over IP (RoIP)

Radio over IP offers a cost effective way to interconnect radio systems and operators together. It is a technology that enhances and adds value to radio communications networks.

The IPR Range of Gateways provide IP access to existing analog radios whilst the DRG Range provides advanced networking features and interoperability to digital radios.

Omnitronics gateways are designed to be used in conjunction with our range of Dispatch Solutions. They provide operators with voice and data from the radios, enabling operators to take advantage of the advanced functionality each radio provides. Alternatively, the gateways may be used without dispatch consoles to provide site–to-site connections over IP.
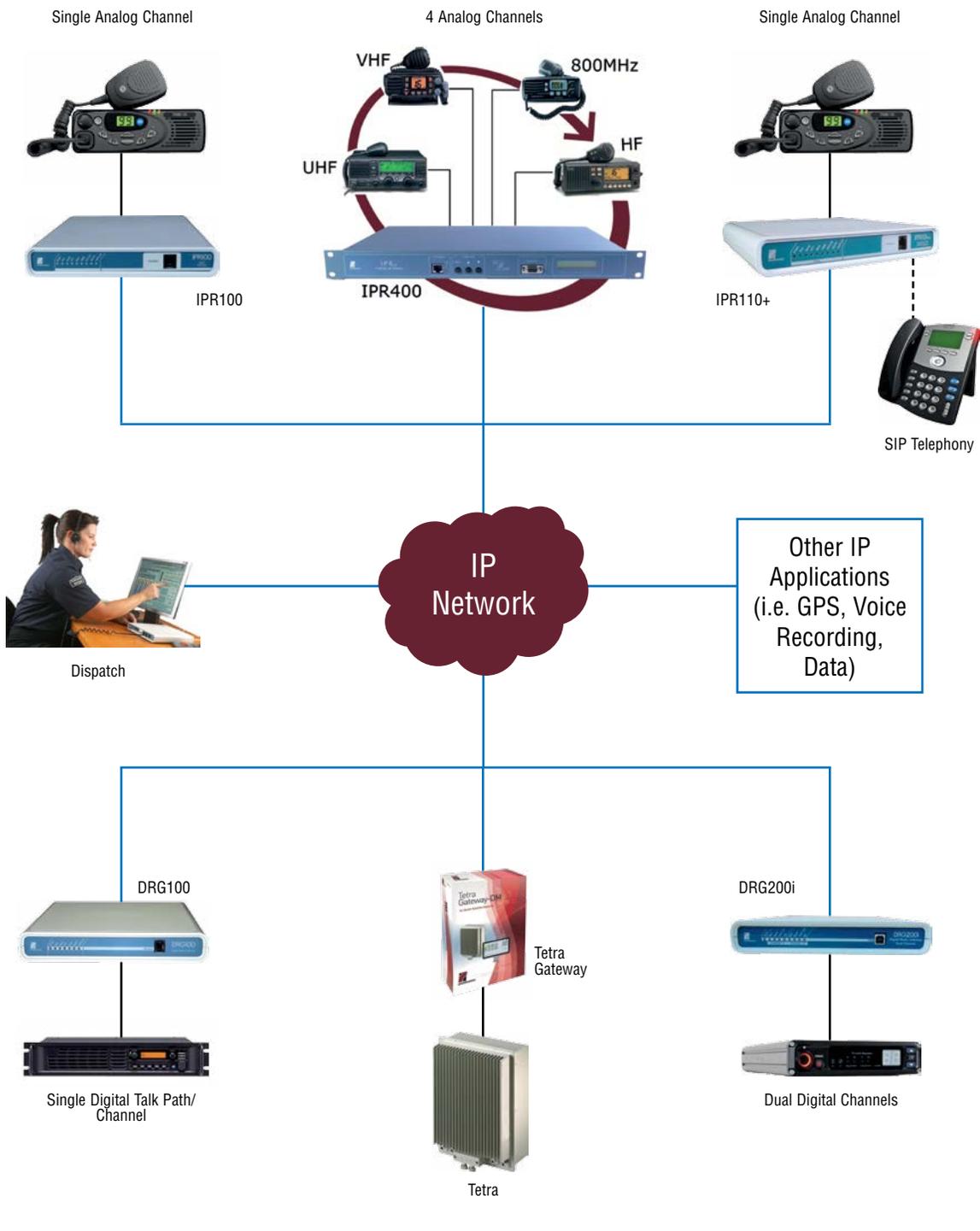
All of the Omnitronics gateways are vendor agnostic and will generally work with most brands and models of two-way radio.

BENEFITS OF OMNITRONICS ROIP GATEWAYS

- **Lower Overheads:** Through the use of an existing IP Infrastructure and replacement of expensive leased lines & microwave links. Additionally, gateways allow radios with point-to-point protocols to be shared amongst a number of operator positions.

- **Increased Interoperability:** Across multiple frequency bands, radio technologies (analog & digital; conventional & trunked) and telephony.

- **Network Flexibility:** Simple addition of repeater sites and dispatch locations across wide geographical areas.

- **IT Networking Choice:** By providing a translation of communications between the radio side protocol and the operator/console, protocols and mechanisms that are Internet friendly and designed to work through routers can be used at the operators side.

- **High Security:** Separating the radio IP communications from the console IP network, creates a natural firewall between the consoles and the radio system.

- **Improved Reliability:** Through a highly resilient Mesh IP Network Infrastructure and the ability to carry multiple talk paths and independent channels.

- **Simpler Maintenance:** Changes to proprietary consoles, such as loading time critical and proprietary functions, are more easily managed and confined to the Gateway.

- **Vendor Independent:** Devices may be reprogrammed and reconfigured for different radios. The common platform eliminates the need for re-learning.

Single Analog Channel   4 Analog Channels   Single Analog Channel

VHF   800MHz

UHF   HF

IPR100   IPR400   IPR110+

SIP Telephony

Dispatch

IP Network

Other IP Applications (i.e. GPS, Voice Recording, Data)

DRG100   DRG200i

Tetra Gateway

Single Digital Talk Path/ Channel   Dual Digital Channels

Tetra

IP Gateways for Analog Radios

The Omnitronics IPR Series of Radio over IP (RoIP) interfaces are designed to merge the power and flexibility of IP with analog radio equipment and networks. This greatly increases communication reach and offers many benefits including:

• Interoperability
• Scalability
• Low Cost of Ownership
• Ease of Implementation.

IPR100

The IPR100 VoIP (Voice over IP) gateway is designed to provide Voice over IP extensions for analog radio equipment. Each device enables an analog two-way radio to be remotely controlled over an IP link complete with support for legacy tones.

IPR400

The IPR400 enables up to four two-way radios to be remotely controlled over an IP link. The IPR400 provides a superset of the features found in the IPR100 including isolated 4-wire E&M interfaces, multi-casting, voice activity detection, voice compression, CTCSS, SELCALL & DTMF signaling, encryption and RS-232 data tunneling. In addition to these standard features, the IPR400 also provides:

• Site Monitoring via SNMP
• Audio Bridging/Cross-Banding
• Linking Radio Groups and IP Channels site monitoring
  via SNMP and audio bridging (cross-banding).

Linking Analog Radios over IP

960CSD Console

IPR100

VHF Repeater

IP Network

VHF Repeater

IPR100

IPR100
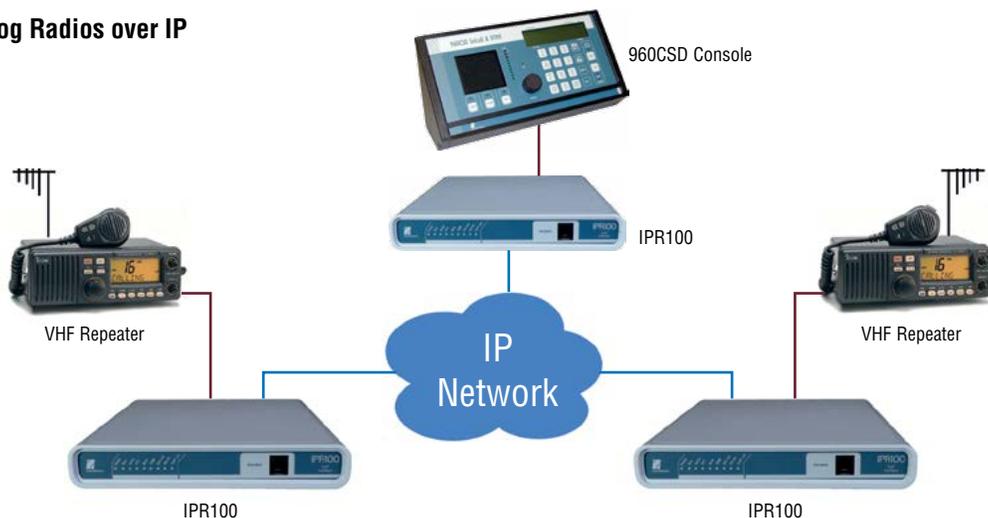
IPR110PLUS

The IPR110Plus is a SIP based Radio over IP gateway. It provides an interface between two-way analog radios and SIP compatible telephony systems, making radio communications more accessible and easy to use.

The IPR110Plus enables users to connect to remote radio networks from their existing office based SIP compatible PBX systems whilst also enabling users of two-way radios to dial SIP phones or telephone extensions from their mobile or portable.

It also builds on the IPR100 by providing enhanced features such as remote RS-232 channel change, tone signalling and higher levels of security.

Manage Radio Connections Using a SIP Phone
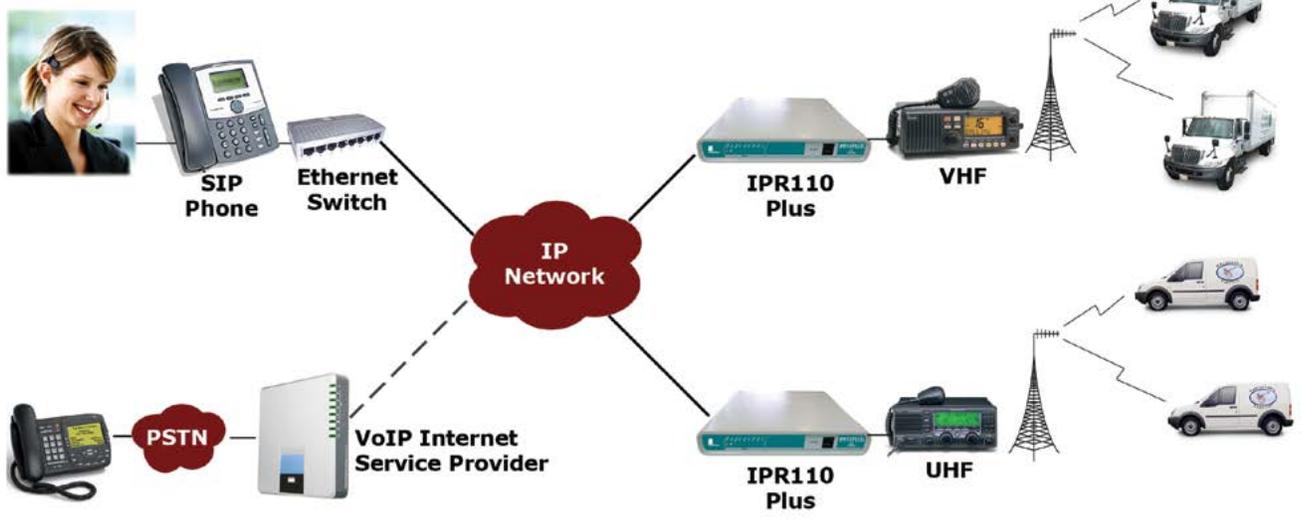
COMMON ROIP APPLICATIONS

- Remote Radio and Operator Access

- Leased Line Replacement

- Radio Bridging over IP

- Radio or Microwave Link Replacement

- SIP Phone to Radio Interfacing

- Communication Redundancy and Rationalisation

- Interconnecting Radios from Different Vendors and Different Models

Digital Radio Gateways

The Omnitronics series of Digital Radio Gateways (DRG) primarily operate as an interface between Omnitronics' dispatch solutions and a range of digital Conventional and Trunk radio systems. The gateways will operate with radio equipment from a variety of manufacturers including Tait, Motorola, Kenwood, Hytera, Simoco and Icom, and a number of technologies are supported including DMR, NXDN, P25 and Tetra.

The Digital Radio Gateways translate voice and data into a common protocol, meaning differing radios and protocols will all be able to interoperate within a common communications network. Users are no longer restricted in their choice of protocol nor need to convert their entire network in one swoop. True interoperability is now within reach.

The DRG may also be used independently of the Omnitronics dispatch solution to provide site-to-site radio connections over IP, even between disparate radio systems.

DRG100

The DRG100 uses proprietary hardware and operating system software to provide a secure, reliable and flexible gateway between dispatch consoles and digital radio networks. A variety of radio interfaces are provided (including Ethernet, analog, RS-232 and USB) to support connection to many radio technologies such as DMR, MotoTRBO, iDAS, P25-DFSI and NEXEDGE.

DRG200i

The DRG200i is designed to address the need for accessing both channels on Tier II (Conventional) digital radios such as DMR, NXDN and dPMR. It will to interface in controllers, repeaters and base radios that support an IP console interface such as DMR–AIS. The device can simultaneously and independently receive from and transmit to both channels. The DRG200i can also support Tier III (Trunked) radios.

DID YOU KNOW?

For IP capable radios, the DRG forms a natural firewall between the console IP network and the radio IP network and provides an unsurpassed level of flexibility for integration into your IP infrastructure.

WHY USE AN IP GATEWAY FOR DIGITAL RADIO?

- **Saves Costs:** Gateways allow radios with Point to Point Protocols to be Shared Amongst a Number of Operator Positions.

- **Flexibility:** Networks can easily be added to and expanded when RoIP Gateways are used.

- **IT Networking Choice:** Simpler Integration of the Radio into IT Infrastructures.

- **Increased Reliability:** Improved Bandwidth and IP access for Operator Positions and Repeaters in Remote Locations.

- **High Security:** Separation between Radio IP Communications and the Console IP Network creates a Natural Firewall.

- **Greater Interoperability:** A Mixture of Radio Types can interconnect on one Network, supporting Migration but also Advanced Digital Radio Features such as Location Services.

- **Simpler Maintenance:** Changes in Proprietary Consoles such as loading Time Critical and Proprietary Functions are more easily managed and confined to the Gateway.

TETRA GATEWAY

Software based IP gateway that interconnects Tetra* networks onto one common RoIP Network.

CHOICE IN IP CONNECTIVITY METHODS

Omnitronics' range of gateways can be interconnected by a variety of IP Connectivity methods enabling simple integration with the existing IT network.

- **Unicast Real Time Protocol (RTP):** Constantly connected using static IP addresses for all parties

- **Multicast RTP:** Constant point to multipoint connection using static IP addresses.

- **Session Initiated Protocol (SIP):** Simplified Configuration with ad hoc connectivity.

- **Conferencing Mode:** Omnitronics' proprietary connectivity method that enables point-to-multipoint communications (even over the Internet) without the need for multicast support.

Contact Omnitronics for the latest list of compatible Tetra radios.

Challenging Communication Boundaries

Specifications

	IPR100	IPR110Plus	IPR400
Radio Type	Analog	Analog	Analog
Channels	1	1	4
Power	300mA (@12V)	300mA (@12V)	400mA (@12V)
Connections			
Maintenance Port	RS232	RS232	RS232
4 Wire E&M	Y	Y	Y
Serial (channel change)	Y	Y	Y
Ethernet Ports	1	1	1
Handset/Console Port	Y	Y	-
Vocoders	G.711, G.726 ADPCM, GSM (13Kbps)		
Style & Weight	Desk (0.7kg/1.54lb) or 1RU 19" Rack Mount (1.4kg/3.09lb)	Desktop (0.7kg/1.54lb) or 1RU 19" Rack Mount (1.4kg/3.09lb)	1RU 19"Rack Mount (1.7kg/3.75lb)

	DRG100	DRG200i	
Radio Type	Digital	Digital	
Supports Analog Audio	Y	-	
Channels	1	2	
Power	700mA (@12V)	400mA (@12V)	
Connections			
Maintenance port	RS232	USB	
4 Wire E&M	Y	Y	
Serial (channel change)	Y	-	
Ethernet Ports	1	3	
Handset/Console Port	Y	-	
Radio Codec	IMBE on DRG100-P25, AMBE on all other DRG models.		
Vocoders	G.711, G.726 or GSM		
Style & Weights	Desktop (0.7kg/1.54lb), 1RU 19" Rack Mount (1.4kg/3.09lb) and Dual Rack Mount (1.4kg/3.09lb)	Desktop (0.75kg/1.65lb)	

Dimensions	
Desk Mount	220mm(W) x 35mm (H) x 230mm (D)/8.66"(W) x 1.37"(H) x 9.05"(D)
Rack Mount	484mm(W) x 44mm(H) x 265mm(D)/19.06"(W) x 1.73"(H) x 10.43"(D)
Environment	
Temperature	0-60°C
Humidity	0-95% non-condensing

Note: Specifications are subject to change without notice

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