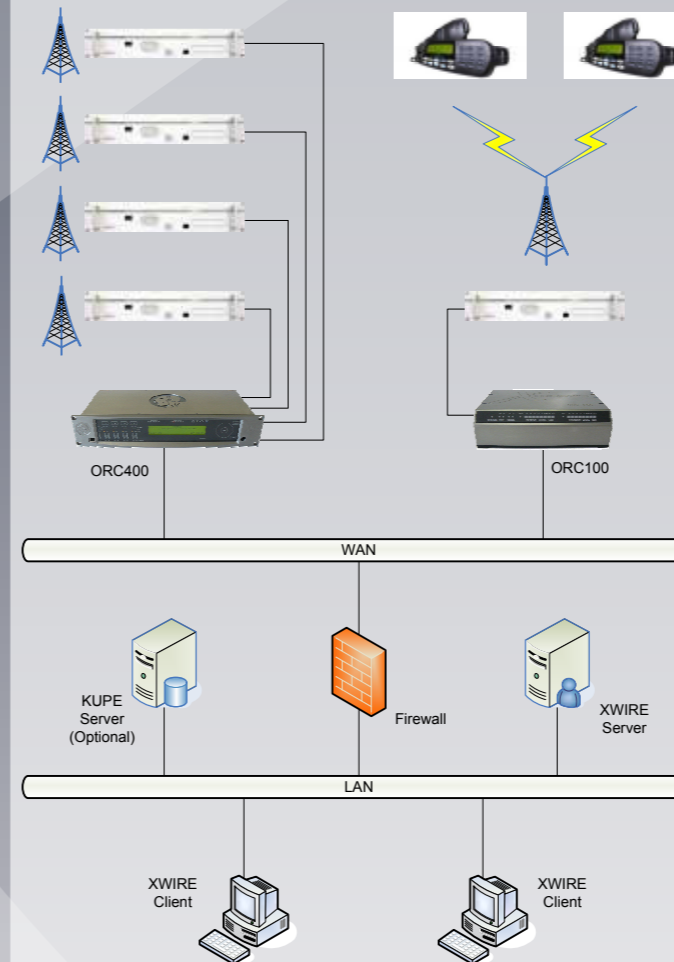


SPECIFICATIONS

Server Software Requirements	
Operating System	Microsoft Windows Server, Linux
Java Runtime Environment	Standard Edition, Version 2 or later
Server Hardware Recommendations	
Processor	2GHz Intel Xeon or equivalent rack mount server
RAM	At least 2GB
Disk Space	250MB + additional storage if voice recording is enabled
Network Interface	100Mbps or better
Client Software Requirements	
Operating System	Microsoft Windows XP or later, Linux
Java Runtime Environment	Standard Edition, Version 2 or later
Java Media Framework (JMF)	2.1.1
Client Hardware Recommendations	
Processor	2GHz Intel Pentium or equivalent desktop workstation
RAM	At least 2GB
Disk Space	250MB
Network Interface	100Mbps or better
Audio Interface	Sound blaster compatible for Windows machines without built-in audio support
Desks	
Number of desks supported	63 - Controlled by license agreement and server performance.
Lines	
Number of lines supported	255 - Controlled by license agreement and server performance.
Nodes	
Number of nodes supported	1023 - Controlled by license agreement and server performance.
VoIP	
Protocols	IP, UDP, RTP
Vocoders	G.711, G.729
Transcoding	Yes
Voting	
Voting support	Yes
Voting basis	Single stream selected per line
Voting methods	Race (first in- first served), RSSI, RTA (Real-time Signal Quality)
Matrix Switching	
Matrix switching support	Yes
Number of matrices supported	Unlimited
Runtime matrix selection	Yes, by receipt of Selcall
Selcall Processing	
Selcall support	Yes.
User definable status codes	Yes.
Incoming call display	Yes. In prioritised call window
Outgoing call display	Yes. In prioritised call window
Incoming call acknowledgement	Yes. Incoming calls can be automatically acknowledged.
Outgoing call acknowledgement	Yes. Outgoing calls have an acknowledgement timeout.
Call expiration timers	Yes. All calls can have an expiration timer associated with them. When the timer has expired the call is removed from the prioritised call window.
Configuration	
File format	Plain text

OVERVIEW

XWIRE (pronounced 'cross-wire') is a platform independent, IP based radio dispatch system. Its client-server architecture is designed for fast and efficient switching of digital audio streams between multiple operator dispatch consoles and radio repeater sites. When used in conjunction with Xworks range of Radio over IP (RoIP) gateways it provides a cost effective and flexible alternative to traditional analogue systems.

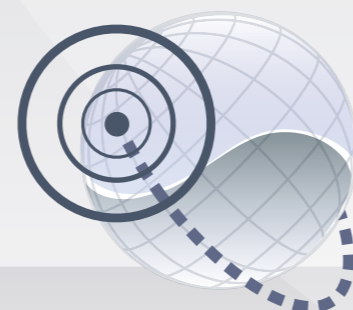


RADIO OVER IP

The emergence of Voice over IP (VoIP) technology has led to a convergence of radio and telephone communications. It is now possible to bridge disparate radio networks using existing IP infrastructure with a technology now commonly referred to as radio over IP (RoIP). This provides several key benefits and implications to organisations operating radio networks in terms of cost and interoperability.

Many public service agencies and large corporations already have in place their own private networks for interconnection of branch offices and satellite sites. The capital investment in these networks can be recovered in part by utilising them as a backbone for radio communications. Rather than using expensive leased lines and UHF links to extend radio network coverage to geographically diverse locations. It is now just a matter of connecting radio equipment to the IP network at the location where coverage is required.

Providing shared access to a common IP network enables a new level of interoperability between organisations. By converting all radio communication to digital format at the network edge, cross-band communication between mobile radio users from different agencies is possible. This can be a potential lifesaver to emergency response and public safety organisations.



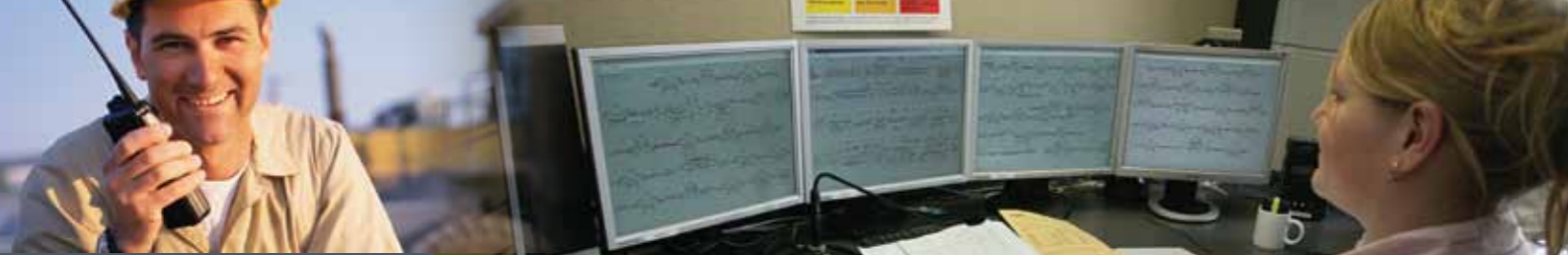
XWIRE ADVANTAGES

Easy Installation - XWIRE is simple to install and does not require special hardware or complex wiring in order to function. For performance and reliability reasons it is recommended that a server class computer be used to run XWIRE. Once operational, a simple network connection is all that is required to provide remote access to XWIRE clients and interface with RoIP hardware.

Simple Deployment - The XWIRE client is easily deployed as a standalone application on any PC with suitable audio hardware installed (microphone, speakers etc.) and is available for Microsoft Windows or Linux platforms.

Scalable - XWIRE is highly scalable. You can add additional dispatch consoles or RoIP hardware to the system as and when required. Just connect the devices to the network and define them in the XWIRE configuration.

Cost Effective - XWIRE is a cost effective alternative to traditional hardware based dispatch systems. Existing IP infrastructure can be utilised to obtain radio links to remote and geographically diverse locations.



XWIRE SERVER

At the heart of Xworks radio dispatch system is the XWIRE server. It provides a scalable, high performance IP switching fabric through which audio streams are routed between radio dispatchers and mobile radio users.

The server runs on either Microsoft Windows or Linux operating systems and is fully configurable to suit your specific needs. Key server features include:

- Virtual audio line support
- Line based stream voting
- Matrix switching
- Audio transcoding
- Selcall processing
- Voice recording

XWIRE server is optimised for use with Xworks range of RoIP hardware and is the only software able to take full advantage of the unique features offered by these devices.

Unlike other systems on the market, XWIRE makes no distinction between local and remote radio interfaces or dispatch terminals. You decide where the radio network stops and the IP network starts by placement of your RoIP hardware.

You also have flexibility when it comes to selecting RoIP devices to work with XWIRE. If you need to connect a single site to multiple radios, a cost effective solution is the ORC400 4-port RoIP device. If you have a few sites with a single radio each, choose ORC100 single-port devices instead.

XWIRE CLIENT

The XWIRE client is the user interface to the radio dispatch system. It provides a window through which the dispatcher can communicate with mobile radio users on multiple remote networks from their personal computer.

Before using the client, the dispatcher must logon to the XWIRE server. This process involves the selection of a connection endpoint (termed "desk" in XWIRE). The desk defines which virtual audio lines the dispatcher can access and provides a convenient mechanism for allocating various radio network segments amongst a group of dispatchers.

Incoming and outgoing Selcall are displayed in a prioritised queue indicating the date and time of each call, call type, mobile ID and repeater ID. Each call also has an associated call timer that can be manually adjusted by the dispatcher. Selecting an incoming call allows the dispatcher to immediately communicate with the mobile user. They can also place a call with a simple click of the mouse.

Controls are provided for microphone and speaker level, along with signal strength indicators for each radio interface. Stereo speakers connected to the dispatch console provide foreground and background audio on independent channels. Foreground audio is sourced from the line currently selected by the dispatcher. Background audio is derived from all other unselected lines. The relative level of the two audio sources can be adjusted by simple slider controls.

TECHNICAL FEATURES

Desks

XWIRE clients connect to virtual endpoints in the server known as desks. Each desk has an associated set of lines to monitor. Once connected to a desk, streaming audio originating from any of the monitored lines is switched through the server to the client. Conversely, streaming audio originating from the client is switched through the server to the appropriate destination.

Lines

Lines are virtual endpoints for receipt of streaming audio from one or more RoIP nodes. XWIRE server supports multiple virtual lines on which it listens for streaming audio. These virtual lines are analogous to a standard analogue line.

Nodes

Nodes are physical RoIP gateways identified by IP address. Each node can have multiple interfaces (e.g. ORC400 4-port RoIP appliance).

Interfaces

Interfaces are the source or destination for streaming audio and are identified by port number. Some interfaces may be connected to radio transceivers; others may be 'order-wire' or public address systems.

Stream Voting

XWIRE server performs voting between incoming audio streams on a line-by-line basis. If two streams are received on the same line at the same time, XWIRE will automatically select one of them using the configured voting method. Voting is useful if two repeater sites are receiving the same audio transmission and streaming it through to XWIRE independently. The server can then select the first or best stream to pass through to clients.

Audio Transcoding

XWIRE server is able to perform transcoding on received audio streams before they are retransmitted. This facility can be useful for allowing a low bandwidth codec (e.g. G.729) to be used for communication over a WAN with remote RoIP devices and a higher bandwidth codec (e.g. G.711) to be used for communication on a LAN with XWIRE clients.

Matrix Switching

XWIRE server can be configured to automatically retransmit received audio streams to multiple destinations using pre-defined matrix configurations. Not only can streams be sent to all clients monitoring a line, but also to other RoIP interfaces on the line. This facility can be used to force all repeaters on a channel to broadcast the same audio stream.

Selcall Processing

Selcall messages decoded by Xworks RoIP gateways are forwarded to the XWIRE server for processing. Different call types are identified by their status code and result in different actions within XWIRE. Some calls may appear in a prioritised list on XWIRE clients for action by the dispatcher. Other calls may result in less visible actions, such as changing the matrix switch configuration. The server may also request any Xworks RoIP gateway to generate a Selcall on a specific interface. This might occur automatically in response to an incoming Selcall (i.e. acknowledgement) or at the end of an audio stream. Each call presented to the dispatcher has an associated call timer that can be manually adjusted. When the timer expires the call is automatically removed from the system.

Voice Recoding

An optional voice-recording module is available for XWIRE that enables storage of audio streams in standard audio formats.

KUPE Integration

XWIRE is able to take advantage of services offered by Xworks KUPE position monitoring and vehicle management system if required.

