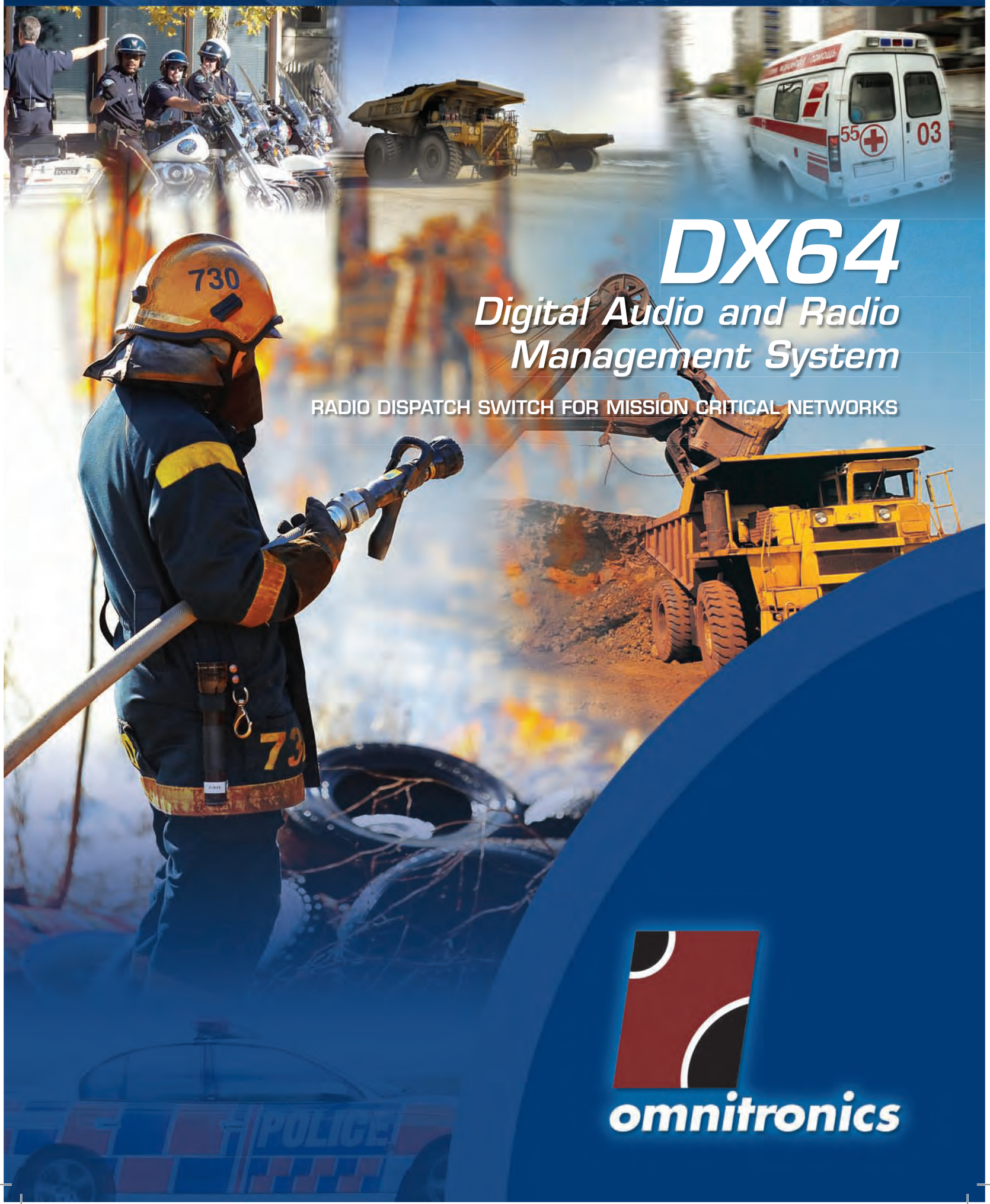


DX64

Digital Audio and Radio Management System

RADIO DISPATCH SWITCH FOR MISSION CRITICAL NETWORKS

omnitronics

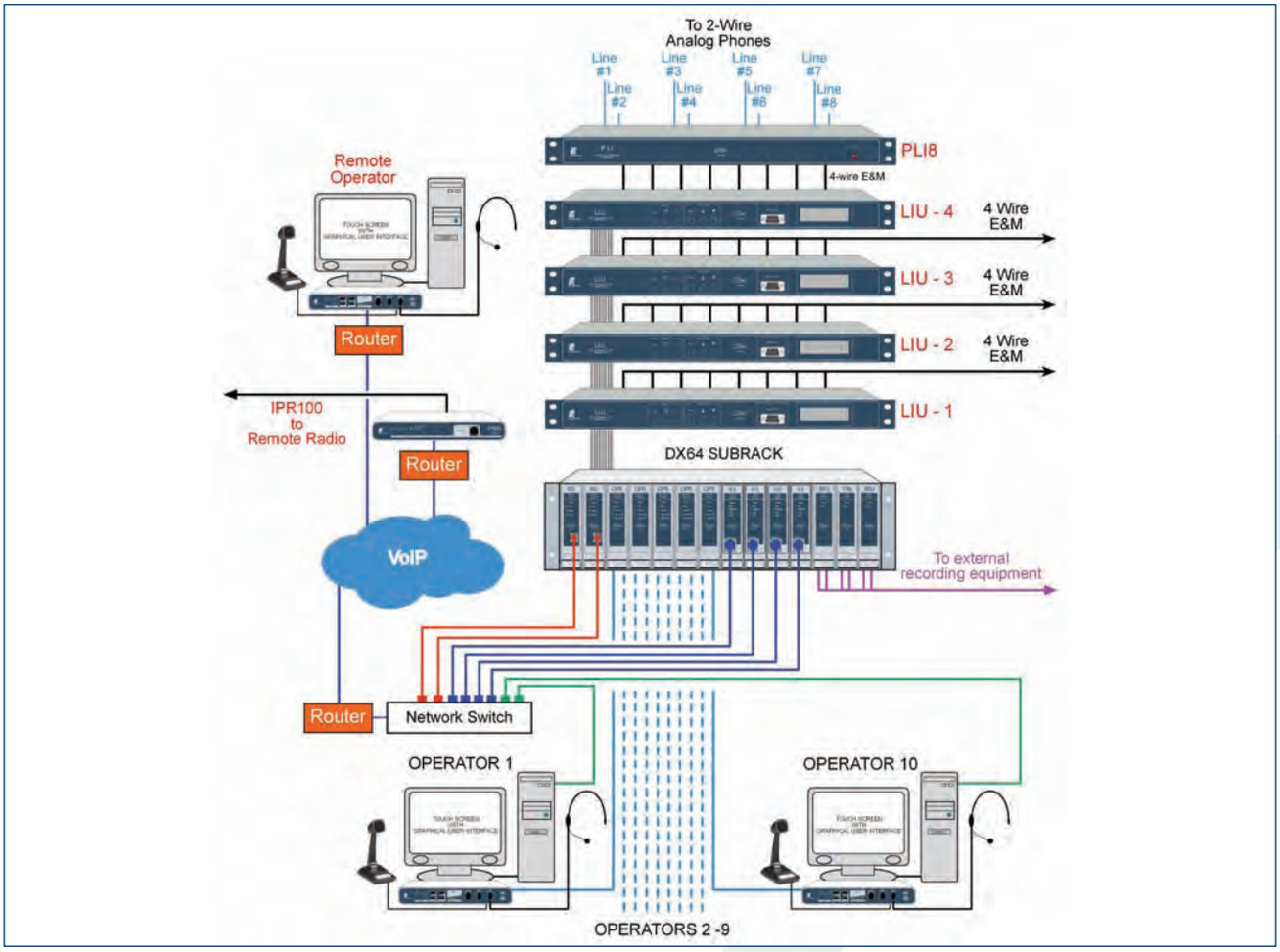
DX64 DIGITAL AUDIO

The DX64, premiere radio dispatch solution, is primarily designed to integrate radio and telephone communications. This product is a culmination of years of experience in providing radio management dispatch to government agencies, public safety organisations, transport, utilities, mining and oil & gas companies. With a fully digital backbone and computer driven user interface this product is packed with features to continually perform under demanding situations. The DX64 offers a flexible and expandable platform that continues to deliver the Omnitronics key product feature - reliability.

Unique Product Features

- Handles up to 32 operator positions
- Control, monitor, group and link up to 56 radio, audio or telephone channels at any one time
- Intuitive operator GUI
- Dual redundant controller units
- Modular design with a digital TDM back-bone
- Hot swap modules
- Integrated rapid recall logger
- Full remote channel change for HF, VHF Marine and Airband
- Touch screen operator GUI that can be customised to suit the client
- PMR, Trunking and PSTN interfaces, with support for P25
- Separate audio and data paths
- DTMF channel change, SELCAL and ANI
- Separate foreground and background audio selections
- Channel linking and radio-telephone patching
- Speed dialling for telephone and SELCAL
- Interconnectivity via E1 and IP
- CMU management tool for simple configuration and performance monitoring
- VoIP compatible with support for multicasting and SIP protocol

MANAGEMENT SYSTEM



Advantages of the DX64

▶ HIGH RELIABILITY & EASE OF MAINTENANCE
Hot standby controller modules, independent data and audio paths and "hot swapping" set new standards for "mission critical" installations.

▶ CUSTOMISATION
We understand that different organisations have different operating requirements. That is why we tailor individual DX64 systems to meet your needs.

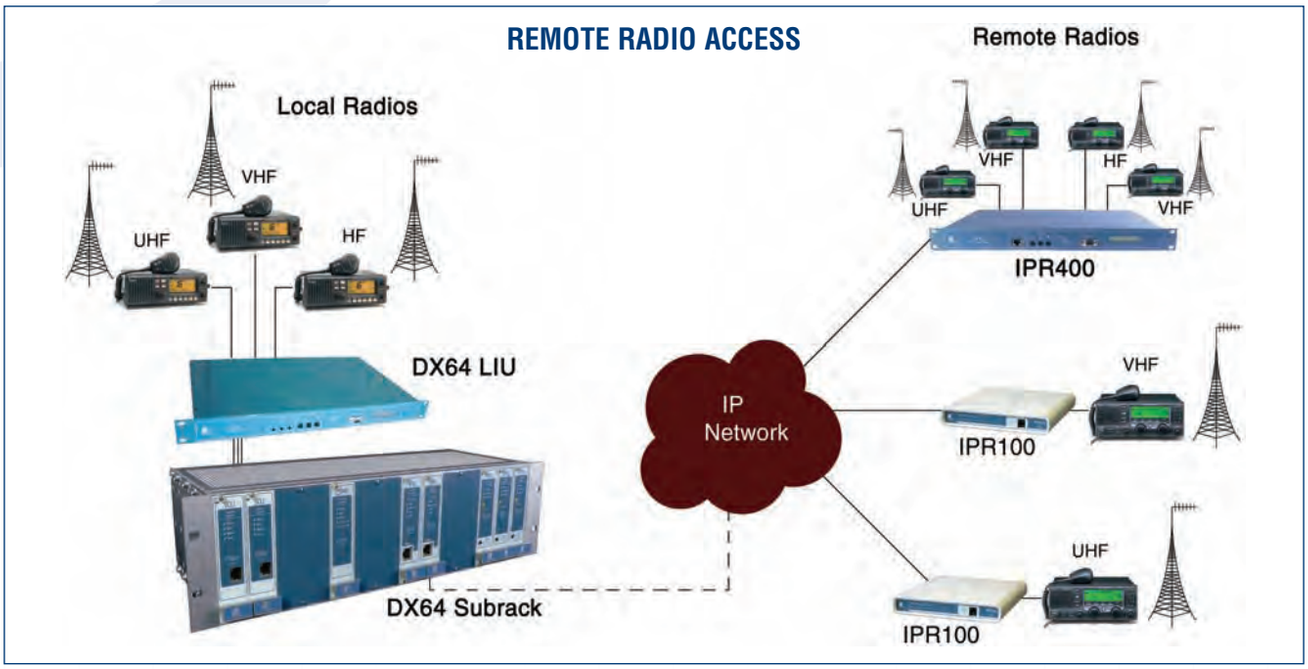
▶ EASE OF INSTALLATION & MANAGEMENT
The product is compact in size and needs minimal wiring between system components. This makes it quick and easy to install and configure.

▶ SCALABLE & FUTURE PROOF
The system architecture allows for expansion to suit the organisation's operational requirements and budget and also ensures that future technologies can be accommodated.

▶ HIGHLY COST-EFFECTIVE
With standard features such as rapid recall logging and interoperability, the DX64 represents value for money.

▶ A REPUTATION FOR DESIGN EXCELLENCE, BACKUP AND SERVICE
Omnitronics has been designing and manufacturing radio management products for more than 28 years.

THE POWER OF VOIP



Voice over IP has become a driving force in the convergence of IT and radio communications. The technology delivers several key benefits to fleet mobile operators, including emergency services and public safety organisations. These include: lower costs, improved reliability and increased interoperability. All of which are derived from the ability of VoIP technology to utilize existing IP infrastructure - the IP backbones that make up both local and wide area networks.

Many corporations and public safety organisations already maintain their own private IP, LAN or WAN. Therefore, no extra cabling or communications paths are required for the installation of a new radio or console. Most cities also provide public IP networks that can be used via VPN's to augment private LANs. This enables significant cost savings to be achieved by replacing leased lines and other expensive links. Once the audio is in the IP domain, it can be routed to virtually any type of radio system. This allows UHF, VHF and HF radios to be easily interconnected, thereby providing interoperability between different organisations and different radio systems.

Omnitronics is a world leader in Voice over IP for radio communications. Through our IPR100 and IPR400 products, customers are able to connect radio systems over IP and access those radios from remote locations. The DX64 is an integral part of the Omnitronics portfolio of radio management solutions that support IP communications. In a DX64 system, VoIP functionality is provided through the IPE adapter card.

Remote Radio's

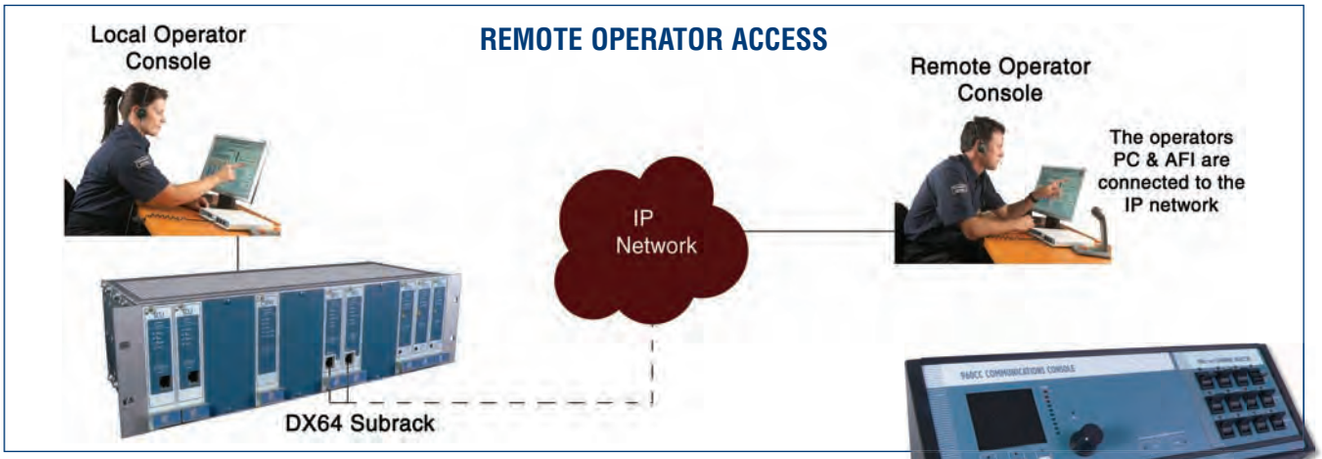
The DX64 supports a mixture of local and IP-remote radios. Local radio connections are made directly into the LIU using 4-wire E&M interfacing. Remote radios are connected to a DX64 using an IP link into an IPE card, bypassing the LIU connection.

Each IPE card supports four radio over IP connections. At the remote radio end, the transceiver device is connected into either an IPR100 or an IPR400 VoIP Adapter. To an operator of the DX64 system, the method of connecting to radios is transparent and all of the normal operator functions, including linking, are available.

The IPR100 and IPR400 products are designed to specifically transport tone signalling schemes, such as SELCAL, over IP and with data compression. These products are also designed to reduce data traffic through voice detection and silence suppression techniques. All of these features are fully compatible with the IPE card and the DX64.

Remote Consoles

The DX64 supports a mixture of local and IP-remote consoles. Local operator consoles can be connected directly to the DX64 through dedicated 2-wire digital circuits. The benefit is that, should the LAN to the operator PC fail, the operator can still continue to work with the last PC setting. This adds a further level of reliability. Or the operator can be connected via a LAN. This means that existing infrastructure can be used.



The IPE adapter card is used to provide this functionality. Each card will enable two operator consoles to be remotely located over an IP link. The operator's PC and AFI are connected to the IP network and provide the operator with the same audio facilities as if they have a dedicated local connection.

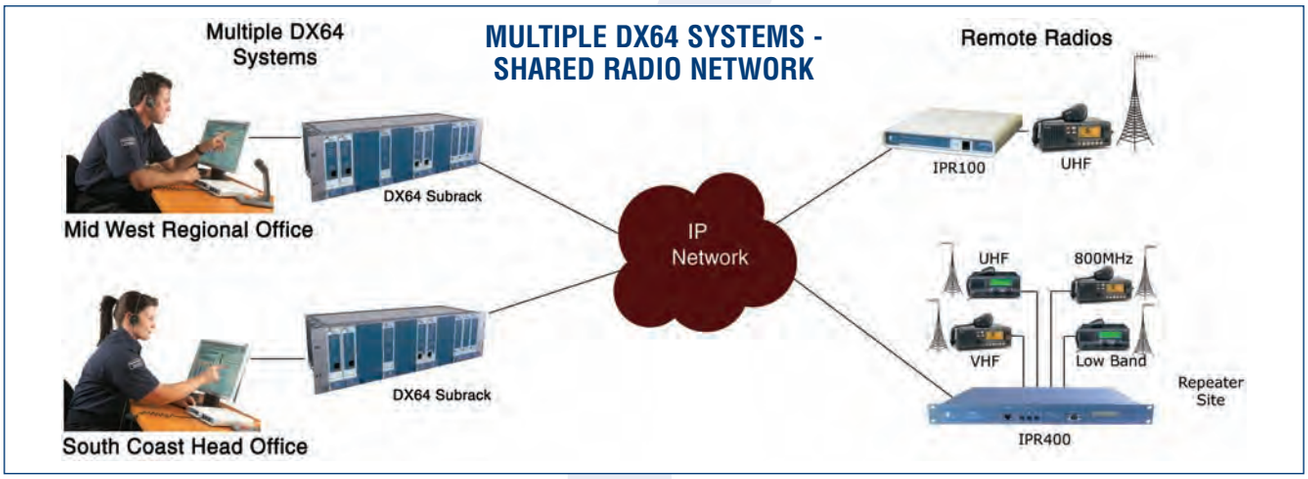
When an operator position is located in a difficult environment where a PC is not acceptable, or the operator just needs simple functionality, a DX64 CC12 console can be used. This provides basic monitoring and control of up to 12 channels. 3 position paddle switches allow the operator to, turn off the channel, monitor the channel or monitor and transmit on the channel. LED indication provides operational status of each channel. This option provides a more robust operator position at a reduced cost.

Networking & Flexibility

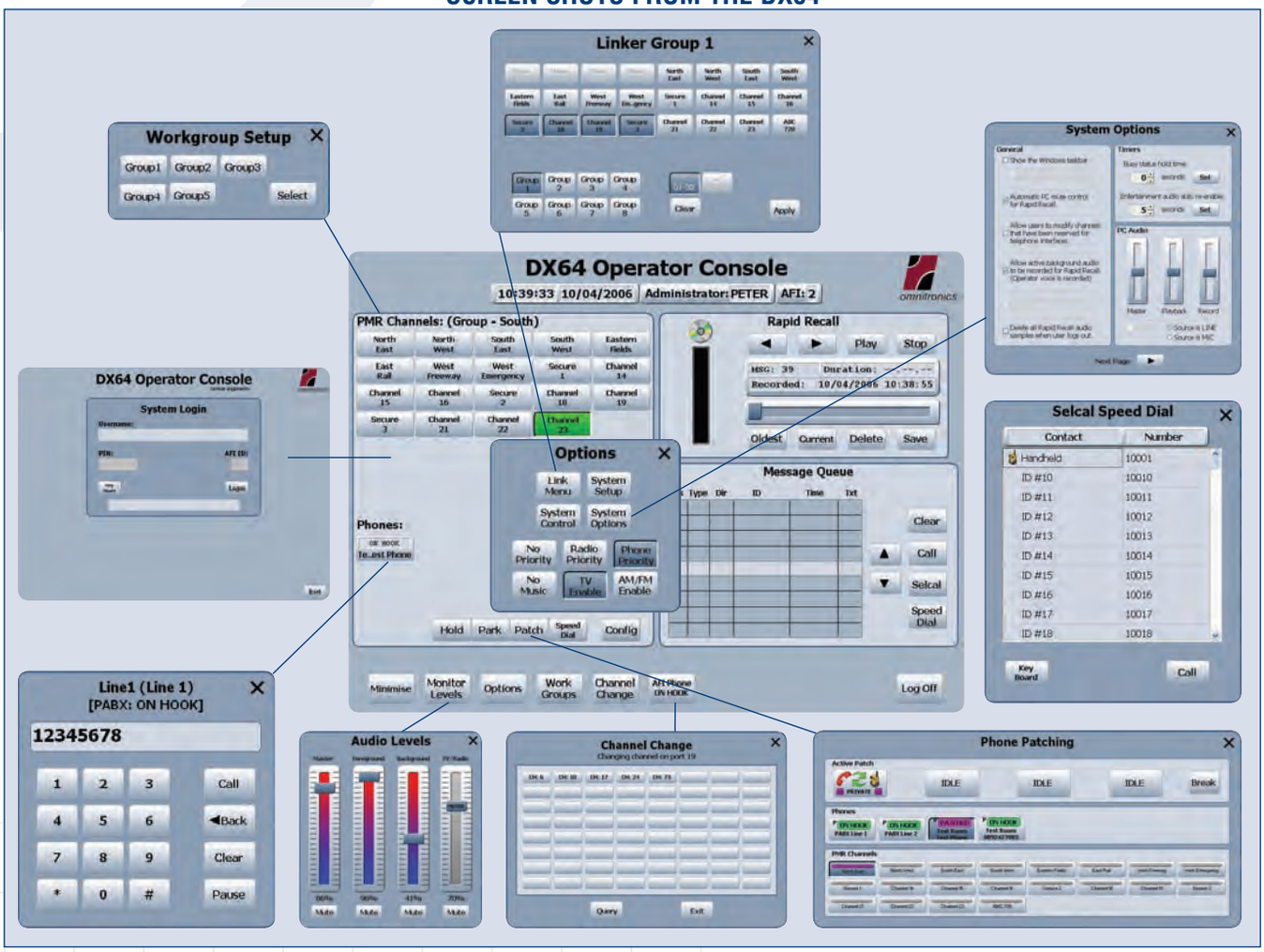
Omnitronics radio over IP technology supports Session Initiation Protocol (SIP). This is a standardised method of making voice connections and allows equipment such as IP phones and PBX's to interoperate. On the DX64, SIP is used to extend the number of radio connections beyond fifty six channels. Normally IP-remote radios are connected to the DX64 using point-to-point unicast or multicast addressing but SIP allows these connections to be dynamically created, depending on whether those channels are in use. Through SIP, the pool of channels available to the operators may be varied to suit operational requirements. This functionality occurs transparently to the operator.

The Omnitronics implementation of SIP is fully integrated into our radio conferencing technology. This enables multiple SIP connections to be made to a particular IP-remote radio. These SIP connections can be made from different DX64 systems. The advantage of the Omnitronics SIP conferencing technology is that each IP-remote radio can receive mixed audio from multiple SIP sources and broadcast received radio audio to multiple destinations.

The benefit of this technology is that it enables organisations to more efficiently use their radio resources to achieve better coverage and flexibility. Multiple DX64 systems can be configured to share IP-remote radios. This enables operators in different communications centres to connect to and communicate over common radios as required. Organisations can then allocate dispatchers and radios depending on their situational needs. Given connections can be made on demand, emergency services and other public safety organisations are also able to implement systems with built-in redundancy.



SCREEN SHOTS FROM THE DX64



Basic Screen Operations:

▶ LOGIN Allows a user who is part of the database to login to the system. Each user needs a 4 digit PIN and is allocated one of three levels of security.

▶ MAIN SCREEN All the important activities are controlled and monitored from this position and all channel activity is visible, at a glance. The main screen also provides access to the rapid recall logger (instantaneous playback of voice activity).

▶ AUDIO LEVELS Level sliders for foreground, background and auxiliary audio levels plus individual mutes.

▶ OPTIONS The Administrator can configure the functions that are available for each user position. Users then have the ability to further tailor certain functions according to their preferences.

▶ TELEPHONE Telephone functions such as manual and speed dialling with Hold and Call Park functions.

▶ PHONE PATCHING Each telephone channel can be patched through to a PMR channel. The operator can then select whether the conversation should be private, monitored or conferenced. Patching also applies to Trunking channels.

▶ WORK GROUP Eight work groups can be configured for each operator and each work group can contain any combination of selected and monitored channels.

▶ LINK GROUP Selection of channels for linked groups. Up to eight groups can be defined using any of the available channels.

▶ SELCAL Incoming SELCALs are displayed in a queue, with corresponding alpha tags where applicable. SELCALs can be generated manually or from the speed dial list.

SPECIFICATION & COMPONENT SUMMARY

CHANNELS

56 channel capacity. These can be any combination of radio (analog PMR and MPT1327), PSTN or entertainment audio. Connection to the DX 64 may be via analog 4-wire plus E & M (LIU), G.703/704 (E1/NIM), MAP27 (STC) or VoIP (IPE).

OPERATORS

Up to 32 concurrent operators from a database of 128 users. Control is via an IBM compatible computer using a graphical interface under a "Windows" operating system. Functions include PTT, monitoring foreground and background channels, grouping, linking and telephone. Connection to the DX 64 is by a standard "10 baseT" cable.

SCU - SYSTEM CONTROL UNIT

The heart of the DX 64 is the SCU card. It collects configuration parameters from the operators and initiates all the system control and switching functions. The SCU, due to its critical role in the system, operates as a main/standby pair. The hot standby SCU automatically assumes system and network control if a failure of the main SCU is detected. The operator is alerted about the changeover but otherwise the change is transparent.

OPR - OPERATOR INTERFACE CARD

This card supports two operator positions and delivers full-duplex audio to each operator via a 2-wire digital link. Using an on-board DSP, the OPR performs audio mixing and level adjustments for each operator, according to their foreground (selected) and background (monitor) audio groups.

TMU - TAPE MONITOR INTERFACE

Any of the 56 channels can be selected for monitoring. The TMU card has an output capacity of eight channels, each of which is a 600ohm, transformer coupled, analog output. The TMU also presents a control output for each group of channels whenever a PTT or Mute is detected on that configured channel. Up to seven TMU cards can be installed.

IPE – VOICE OVER IP INTERFACE

The IPE provides customers with the ability to implement a true distributed radio over IP architecture. Working in conjunction with the Omnitronics IPR100 and IPR400 products, the IPE enables operators to access shared radios through a corporate LAN or WAN.

E1/NIM - NETWORK INTERFACE MODULE

This card provides a trunk remote access capability for the DX64 through a 2.048Mbps full E1 port. The E1/NIM can be used in two scenarios: for internetworking of DX64 systems through third-party routers and to remotely locate a group of radio channels using the DX64 LIE. The card can also be used to interface to digital voice recorders.

AFI AUDIO FACILITIES INTERFACE

The Audio Facilities Interface (AFI) provides a number of options for receiving and transmitting audio. They include dual headsets, external speakers, desk microphone, Omnitronics 960 handset, rapid recall and PABX handset. Provision is also made for a foot switch PTT operation. In addition, switches for "all call' intercom and PTT are incorporated on the A.F.I. front panel. A 2-wire twisted pair cable connects the AFI to the DX 64. The AFI is locally powered by 12Vdc. The dimensions of the unit are 220 X 230 X 40 mm. A rack mount version is also available, ask our sales team for further information.

SPECIFICATION & COMPONENT SUMMARY

PC/TS OPERATOR TOUCH SCREEN CONTROL

Using a standard IBM compatible PC with a Touch Screen, the operator is able to gain access to all audio channels connected to the system. A friendly Graphical User Interface (GUI) has been developed to give the operator full control of audio selection, grouping, selcal and many other system functions. The PC communicates to the SCU via a standard TCP/IP LAN. It should be noted that if the LAN or the PC fails, operation via the AFI would continue uninterrupted. Omnitronics recognise many clients will request customisation of the GUI and this requirement can be met.

A separate Configuration and Maintenance utility is available for System Administrators.

LIU LINE INTERFACE UNIT

The Line Interface Unit (LIU) is a 1RU module which provides the interface between the various channels, (radio, PABX etc), and the DX 64 subrack. Each LIU has eight isolated four wire audio lines, plus associated E and M leads. Electrical connection is identical to the OMNITRONICS 619 audio bridge standard, i.e. audio I/O has 600 ohm transformers operating at 1V p p, the E lead is opto isolated and can be configured as voltage driven or contact driven and the M lead is a relay contact and can be configured as voltage free or voltage out. Up to 7 LIU's can be paralleled together via 25-way ribbon cable that also connects to the DX 64 SCU card. The LIU operates from a nominal 12Vdc 24Vdc source.

RF RACK FRAME

The rack frame housing the SCU, TMU, OPR and E1 cards, is a 3RU, 19" standard configuration rack assembly. The 3RU housing with associated 1RU LIU's ensure the system is very economical on rack space. The cards and subrack all operate from an external 12Vdc 24Vdc supply.

STC

The 8-channel Serial Trunking Controller works in conjunction with the LIU to provide digital control of MPT1327 radios. The interface to the radio is via RS-232 and DB9 connectors using the MAP27 protocol. Up to 7 STC's can be paralleled together via 25-way ribbon cable that also connects to the DX 64 SCU card. The STC is a 1RU module and operates from a nominal 12Vdc 24Vdc source.

PLI

The PLI provides a 4-channel PSTN interface for the LIU. The line side interface allows connection to analog two-wire, ring in/loop out, telephone lines. The equipment side provides a direct 4-wire plus E & M interface to the LIU. The PLI is a 1RU module and operates from a nominal 12Vdc source.

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