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JPS Communications

NXU-2A Network eXtension Unit

The **NXU-2A** uses RoIP technology to send and receive digital voice audio. RoIP stands for Radio over Internet Protocol, which is a means of digitizing voice signals and sending them over a digital network. The digital network can be a LAN (Local Area Network), WAN (Wide Area Network), or the Internet itself. The NXU-2A embodies this RoIP technology in a way that enables communications radios to be interconnected across the room or around the world.

ADVANTAGES

- ■ **Enables the formulation of low cost, extremely flexible radio communications networks.**

- ■ **Multiplexes voice audio and data over a standard Ethernet network.**

- ■ **Uses existing network infrastructure eliminating the need for leased lines and microwave sites.**

- ■ **Eliminates the requirement for pilot tones and other inband signalling.**

- ■ **Facilitates centralized control of a communications network from a single computer.**

- ■ **An upgraded version of the popular NXU-2, the NXU-2A offers significant enhancements including: adjustable transmit and receive audio delay, VMR COR Type, SNMP support, connectionless mode (WAIS), multicast mode, factory reset, and QoS Support of DSCP.**

- ■ **Fully compatible with our ACU DSP-2 modules and PCNXU RoIP technologies.**

One of the JPS NXU family of products, the NXU-2A connects communications equipment to a digital network using RoIP (Radio over Internet Protocol) technology. It is intended for use with radio communications consoles, communications radios, and JPS products such as the ACU-1000 Interconnect Unit and the SNV-12 Voter.

The NXU-2A is a general-purpose standalone device that interfaces full duplex audio, one RS-232 port, and four status bits onto an Ethernet network. A pair of NXU-2As can form a simple system that creates a transparent communications link between the two. The unit at the far end is the server, the one at the near end is the client. The audio, RS-232, and status bits appear to be simply extended between the server and the client. The NXU-2A offers superior audio quality with a minimal use of network bandwidth and now is a 10/100 BASE-T Ethernet device.

NETWORK EXTENSION UNIT
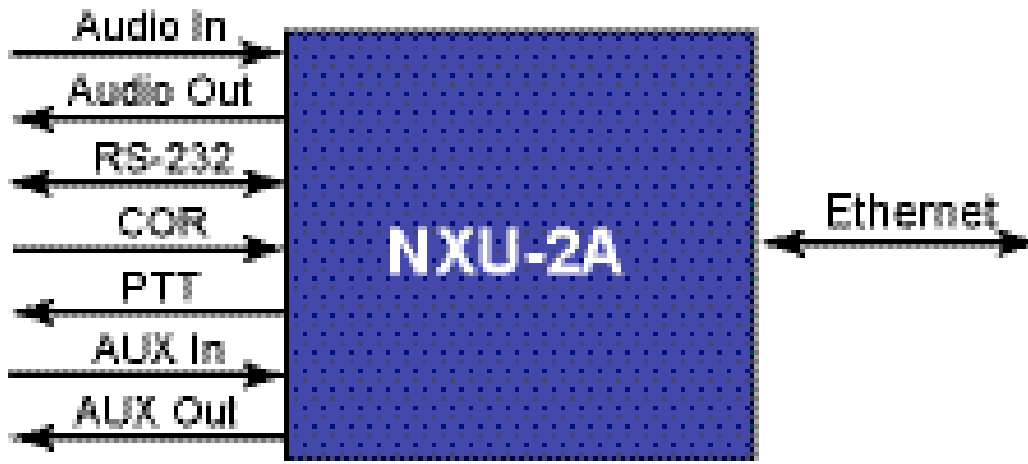
Figure 1. Basic NXU-2A Block Diagram.

SIMPLE NXU-2 RADIO SYSTEM

Figure 2. Illustrates a basic NXU-2A application in which a communications transceiver is connected via a network to a remote audio console. The transmit/receive audio and the PTT/COR signals are transported digitally across the network and appear transparently at the other end. The operator at the audio console can use the radio as if it were located right beside him.

NETWORK DETAILS

The NXU-2A is an 10/100BASE-T Ethernet device and each unit has a unique Ethernet address and an RJ-45 physical jack. A 10/100BASE-T device operates at 100Mbps and interconnects to a hub (star topology) using standard CAT 5 twisted pair cable. The maximum cable length between an NXU-2A and its hub port is 100 meters. With the right connective equipment (recommended or supplied by JPS), the NXU-2A's Ethernet port can be linked up with virtually any other kind of LAN, WAN, or the Internet, no matter which topology or cabling system is in use.

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MULTIPLE RADIO CONTROL
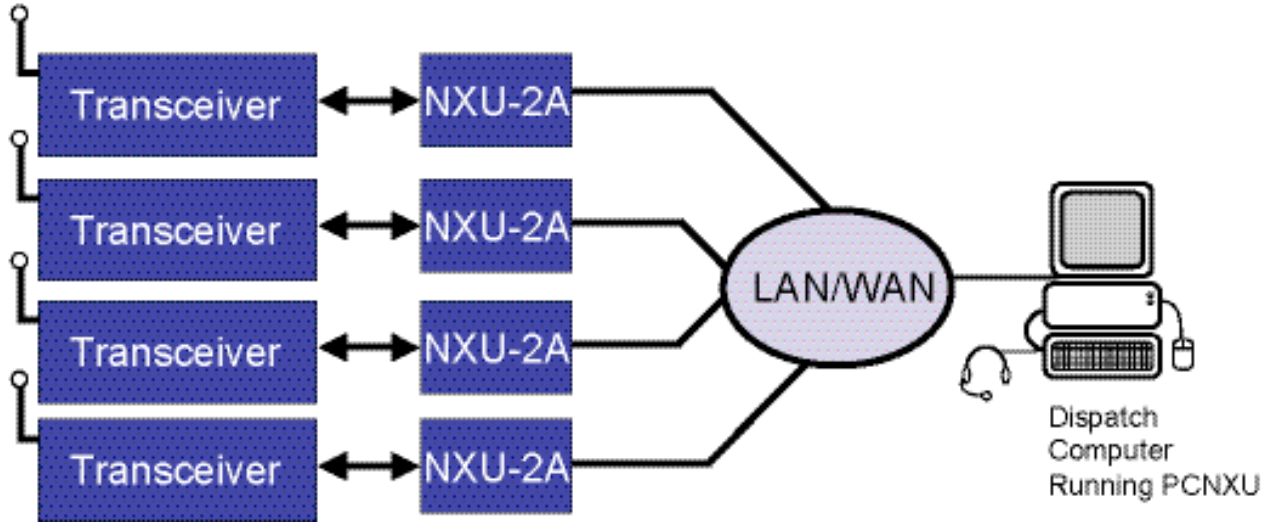
Figure 3. Illustrates an application in which several remotely-located communications transceivers are connected over a network to a dispatch computer. The computer is running PCNXU software, which allows the operator to manage connections to any of the radios in the network.

Remote Extension in WAIS
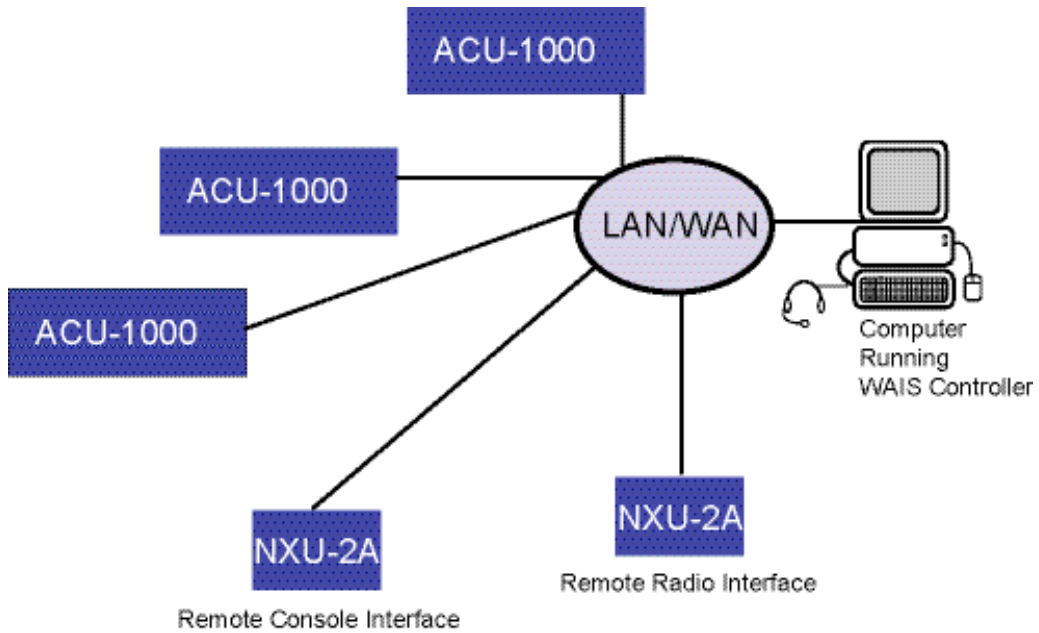
Figure 4. Illustrates an application where the NXU-2A serves as a remote extension in a Wide Area Interoperability System (WAIS) application.

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SYSTEM OVERVIEW

Any NXU-2A can be set up as a server or a client depending on system needs. The RS-232 connection allows for different baud rates between the server and client.

The NXU-2A monitors its network connection and adjusts its parameters automatically to provide optimum performance under varying network conditions. Front Panel indicators display the unit's status. Initial configuration is done through the NXU-2A's serial port, but once set up, a standard web browser can be used over the network to monitor and change the unit's settings and to perform diagnostics.

The NXU-2A provides a number of different voice compression settings to accomodate a wide range of applications from voice-only to voice plus tone signalling.

Designed for years of continuous operation in mission-critical applications and remote locations, the NXU-2A has no moving parts and requires no periodic shutdown or maintenance. Start up upon power on is typically 5 seconds.

SPECIFICATIONS

RX Audio Input	
Input Impedance	Balanced 47k ohms, Transformer Coupled.
Input Level	0 dBm nominal; +15 dBm clipping.
Frequency Response	10 Hz to 3600 kHz $\pm$ 2dB.

TX Audio Output	
Output Impedance	unbalanced 10 ohms, AC Coupled.
Output Level	0 dBm nominal; +15 dBm clipping into a 600 ohm load.
Frequency Response	10 Hz to 3350 Hz $\pm$ 2dB.
Distortion	0.5% or less (excepting Vocoder).

COR and AUX Input	
Input Impedance	47k ohm pullup to +5V.
Polarity	Active low or high, selectable.
Threshold	+2.5V nominal.
Protection Up To	$\pm$100 VDC.

PPT and AUX Output	
Output Type	Open drain, 47k ohm pullup to +5V.
Maximum Sink Current	100 mA.
Maximum Open Circuit Voltage	+60 VDC.

Serial Interface	
Interface Type	RS-232, Assynchronus, Full Duplex.
Baud Rates	300, 1200, 2400, 4800, 9600, 19,200, 38,400, 57,600, 115,200bps.
Connector	DB-9 Male, Standard PC/AT DCE Pinout.

Network Interface	
Interface Type	10/100BASE-T Ethernet, 100 Mbps; RJ-45 Connector.
Protocols	Audio-UDP, RS-232-TCP.
Audio Vocoder	GSM compliant (13Kbps), G.723 ADPCM (16,24,32 Kbps), G.711 (64Kbps) selectable.

General/Environmental	
Programming/Configuration	RS-232, HTTP(Web), or Telnet.
Front Panel	Power, Busy, Link Active, and Channel Active LEDs.
Rear Panel	Audio data, Serial, Network, and Power Connectors.
Audio/Data Connector	DB-15 Female.
Input Power (12V DC Nominal)	+11 to +15 VDC @ 0.5A max. 12VDC Wallcube supplied.
Power Connector	Coaxial jack, 2.5mm ID, 5 to 5.5mm OD; Center Pin Positive; Reverse Polarity protected.
Size and Weight	1.7" H x 7" W x 9" D (4.3 x 17.8 x 22.9cm) 1.1 lbs. (2.4kg).
Temperature	Operating; -20 to +60 degrees C. Storage; -40 to +85 degrees C.
Humidity	Up to 95% @ 55 degrees C.
Shock	MIL-STD-810D, Method 516.3, Procedure VI.
Vibration	MIL-STD-810D, Method 514.3, Category I.

APPLICATIONS

- Simple NXU-2A Radio System
- Multiple Radio Control
- Lease Line Eliminator
- Additional application notes with detailed system applications are available on our website, www.jps.com.

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