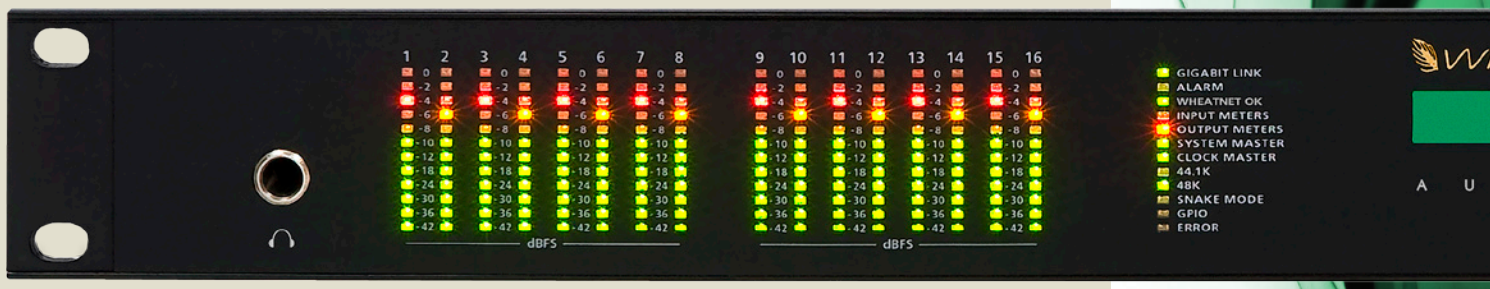
WheatNet-IP

AUDIO-OVER-IP

WHEATNET IP

Wheatstone

Audio Networking—Simply Evolved



WheatNet®-IP
AUDIO-OVER-IP

Creating a network to link audio and control many different sources in many different locations — studios, control rooms, production suites, newsrooms, TOC, automation, streaming, STL penthouse — is a daunting task. Doing it on a budget is even tougher. Prior to WheatNet-IP, doing it without a graduate degree in IT was pretty much impossible.

WheatNet-IP is THE rock-solid, ultra-fast solution for bringing your traditional broadcast engineering functions into an IT-based network. Setup is easy, intuitive, and takes only a few minutes until you're on the air.

The front panel setup wizard in each BLADE gets you up and running in moments. Extensive front panel metering and status indicators provide quick confirmation that all is well.

WheatNet-IP's NAVIGATOR Administration and Control Software and web interface let you further customize and control your system, locally or remotely.

Each BLADE carries a complete map of the entire connected network in its onboard CPU flash RAM — this allows BLADEs to be quickly and easily replaced in a network. Assign an ID # to a BLADE and connect it to the network — it will query the other connected BLADEs and import all the necessary configuration settings. No external PC required!

FEATURES

- WheatNet-IP is comprised of five hardware BLADEs — four handle I/O in various configurations and one is a digital mix engine
- All BLADEs are linkable units that communicate with each other via a single CAT5E/6 over Gigabit/1000BASE-T protocol using standard layer 2 or 3 Ethernet switches
- All BLADEs are designed to interface seamlessly with Wheatstone's existing Evolution series Console Control Surfaces, the Wheatstone GLASS-E Virtual Console, Wheatstone console control panels, most of the popular automation systems, and streaming audio
- With Wheatstone's WheatNet-PC driver installed in your automation system computers, you can eliminate the expensive sound card and tons of wiring with a single CAT5E/6 cable to your WheatNet-IP network for two-way audio, console control, and routing
- Start with a single BLADE as a 16x16 router, add a studio control surface with two or three BLADEs and a Gigabit Ethernet switch, then expand your WheatNet-IP network to thousands of channels

The 1U BLADE is a stand-alone 16x16 router, a 16x16 audio I/O plus logic access point on an WheatNet-IP network, or a mix engine for a Wheatstone console control surface.

WHEATNET-IP NAVIGATOR

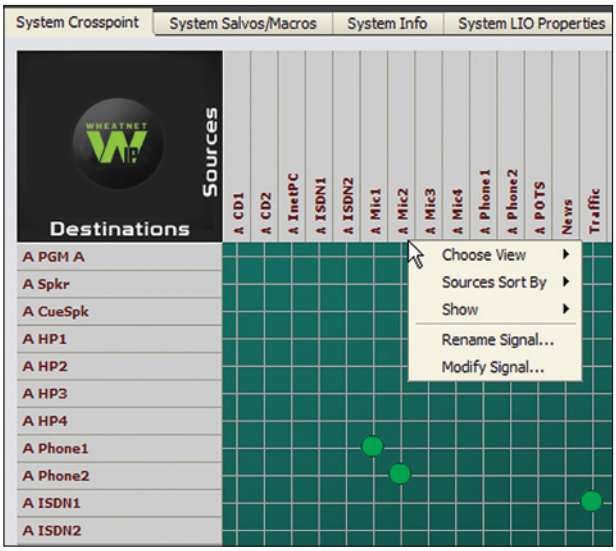
ADMINISTRATION AND CONTROL SOFTWARE

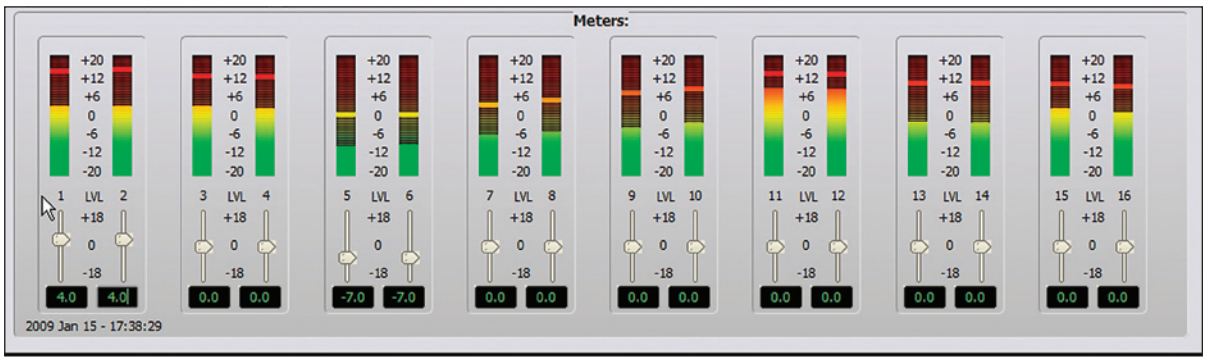
WheatNet-IP NAVIGATOR is optional software that is installed on a PC running Windows® XP. It can be connected directly on the WheatNet-IP network or remotely over VPN.

While much of the basic configuration of WheatNet-IP can be done easily from a BLADE's front panel, WheatNet-IP NAVIGATOR offers a more convenient way to do comprehensive system configuration, to enter source and destination names, perform other system setup functions, program salvos and macros, and control audio paths (cross-points). You can also control and monitor real-time levels.

When connected, WheatNet-IP NAVIGATOR continuously queries the network so that it's always showing the current configuration and status. You can even run up to four copies of WheatNet-IP NAVIGATOR at the same time to monitor and control the system from multiple locations simultaneously.

Every hardware BLADE also includes a built-in web server, so you can use a standard web browser to perform many of the functions of WheatNet-IP NAVIGATOR.





Hardware BLADEs

FEATURES

- Two 8x2 stereo virtual Utility Mixers that can be used for a wide range of applications; for example, using Wheatstone's ACI Automation Control Interface, your automation system can control the mix for satellite or local insertion switching
- Built-in web server, so you can configure and control locally or remotely without having to run dedicated software
- Front panel bar graph meters switchable to display source input level or destination output level after gain trim
- Front panel routing control — any system source to any destination on that BLADE
- Front panel headphone jack with source select and level control — monitor any system source
- Silent — no fans — can safely be located in a studio with live mics
- Flexible GPI logic — 12 universal logic ports, programmable as inputs or outputs, routable throughout the entire system
- SNMP messaging for alerts
- Silence detection on each output that can trigger alarms or make a routing change
- DB25 and StudioHub®-compatible RJ45 interconnect; XLR for mic inputs

ip88e DIGITAL ENGINE

Every nerve center needs a brain. The ip88e is it, handling all of the mixes from Wheatstone Evolution series Console Control Surfaces and the Wheatstone GLASS-E Virtual Console.

The ip88e BLADE houses all DSP power for an individual control surface and distributes the four stereo PGM, four stereo AUX SEND, per-channel MIX-MINUS, monitor outputs and other bus signals to the network. Once on the network, they are available as sources and destinations anywhere. This creates an extremely flexible system, where program outputs from one surface can be a source on any other surface; for example a news mixer's program bus as a source on the air studio surface. While the ip88e doesn't house audio I/O, it does include 12 universal logic (GPIO) ports.

Software BLADE

WHEATNET-PC

Software that installs on any Windows® 2000 or XP computer to interface eight stereo channels of audio in each direction plus control. WheatNet-PC connects to the WheatNet-IP network with a standard NIC card and a single CAT5E/6 cable.

Install WheatNet-PC on automation PCs to allow them to play audio to the entire WheatNet-IP network without using a sound card, and control console functions such as channel on/off without the need for separate control wiring. There is a huge savings in hardware cost (no need for an expensive sound card!) and wiring time and complexity.

There are many more uses for WheatNet-PC: Install it on news reporters computers to allow them to record and edit any audio in the system. Install it on program directors and managers computers to allow them to listen to system sources directly on their computer, limiting their selection list to only those sources you authorize.

ip88a — ip88d — ip88ad — ip88m

AUDIO and LOGIC INPUT/OUTPUT BLADEs

The I/O BLADEs are access points on the WheatNet-IP network, converting each hardware physical input — audio or logic — to a data stream on the network, and converting data streams to hardware physical outputs.

The ip88a/d/ad I/O BLADEs provide connectivity for 16 input channels and 16 output channels (8 in/8 out on the ip88m MIC BLADE), and 12 universal logic (GPIO) ports that are programmable as inputs or outputs, routable throughout the system. Greatly reduce wiring time and complexity by installing a BLADE in each equipment rack, studio, and control room furniture.

ip88a ANALOG I/O BLADE

16 analog input channels and 16 analog output channels (8 stereo, 16 mono, or any combination totaling 16 channels); 12 universal logic (GPI) ports

ip88d AES DIGITAL I/O BLADE

8 AES two-channel inputs and 8 AES two-channel outputs; 12 universal logic (GPI) ports; the AES channels can be routed in the network as stereo or two independent mono channels (for example, a two-channel digital phone hybrid or mic preamp)

ip88ad ANALOG and AES DIGITAL I/O BLADE

Half analog/half digital — 8 analog input channels/8 analog output channels and 4 AES inputs/4 AES outputs; 12 universal logic (GPI) ports

ip88m ANALOG MIC I/O BLADE

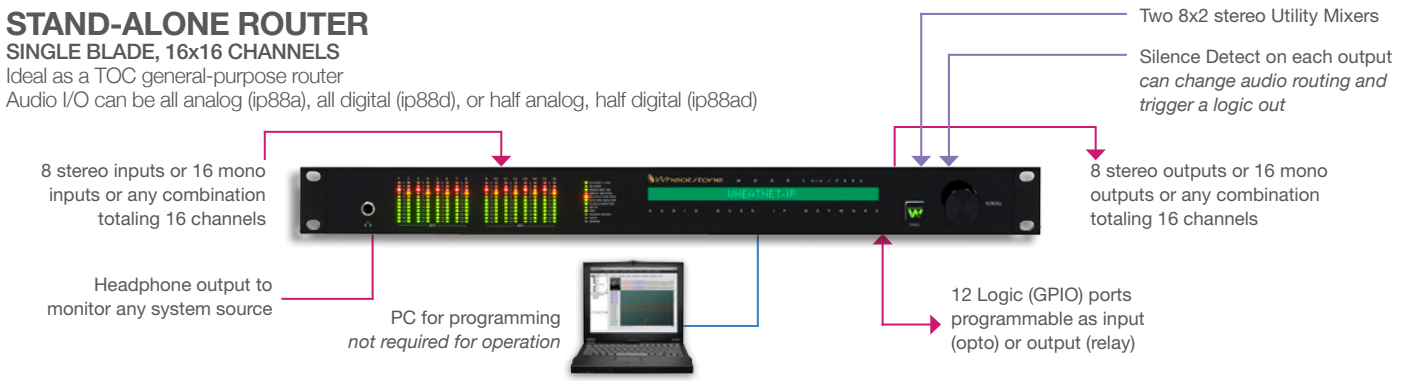
8 analog microphone input channels; 8 analog output channels (4 stereo, 8 mono, or any combination totaling 8 channels); 12 universal logic (GPI) ports

STAND-ALONE ROUTER

SINGLE BLADE, 16x16 CHANNELS

Ideal as a TOC general-purpose router

Audio I/O can be all analog (ip88a), all digital (ip88d), or half analog, half digital (ip88ad)

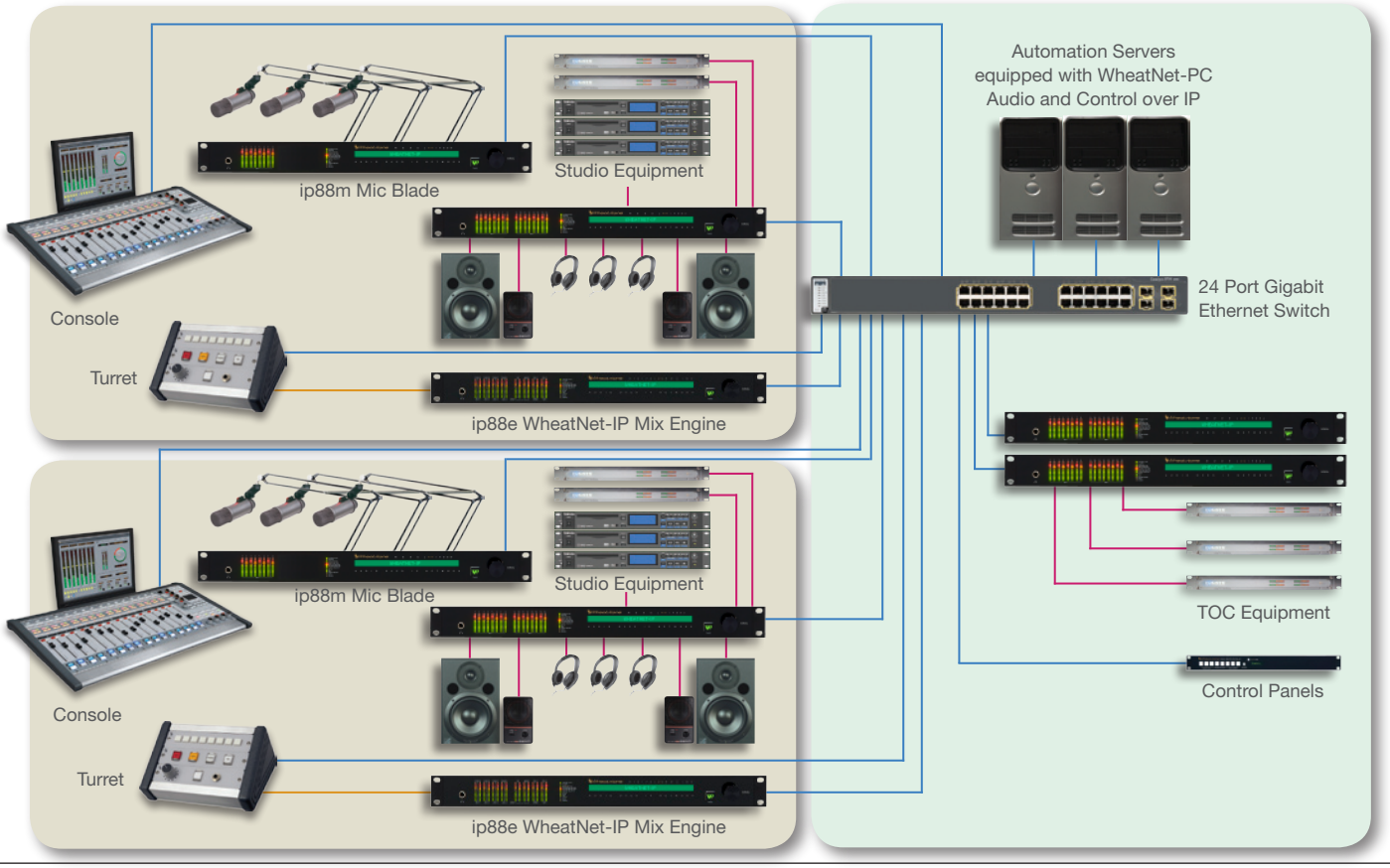


SMALL FACILITY

ONE or TWO STUDIOS and TOC

One Ethernet Switch—up to 24 Ethernet Ports

One ip88e Mix Engine per console, ip88a/ip88d/ip88ad/ip88m I/O BLADEs as needed



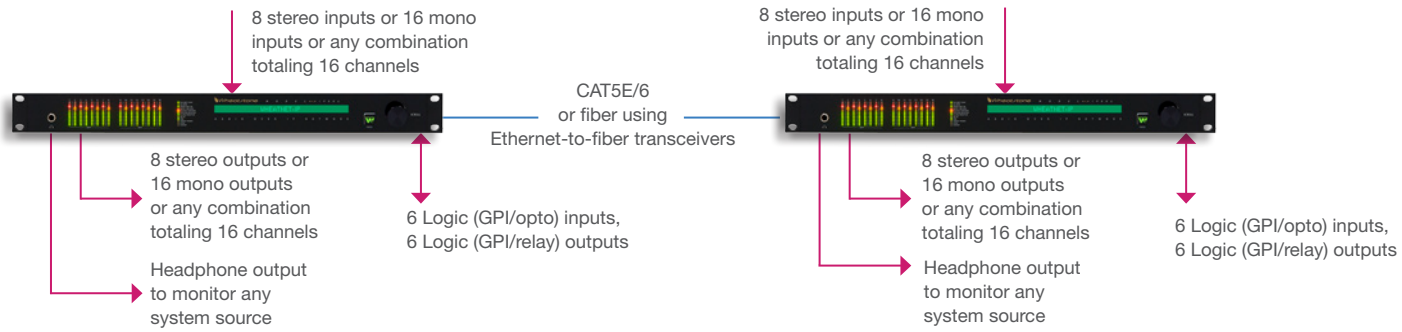
DIGITAL SNAKE

BI-DIRECTIONAL 16 AUDIO CHANNELS

Source channels 1-16 of BLADE A appear as destination channels 1-16 on BLADE B

Source channels 1-16 of BLADE B appear as destination channels 1-16 on BLADE A

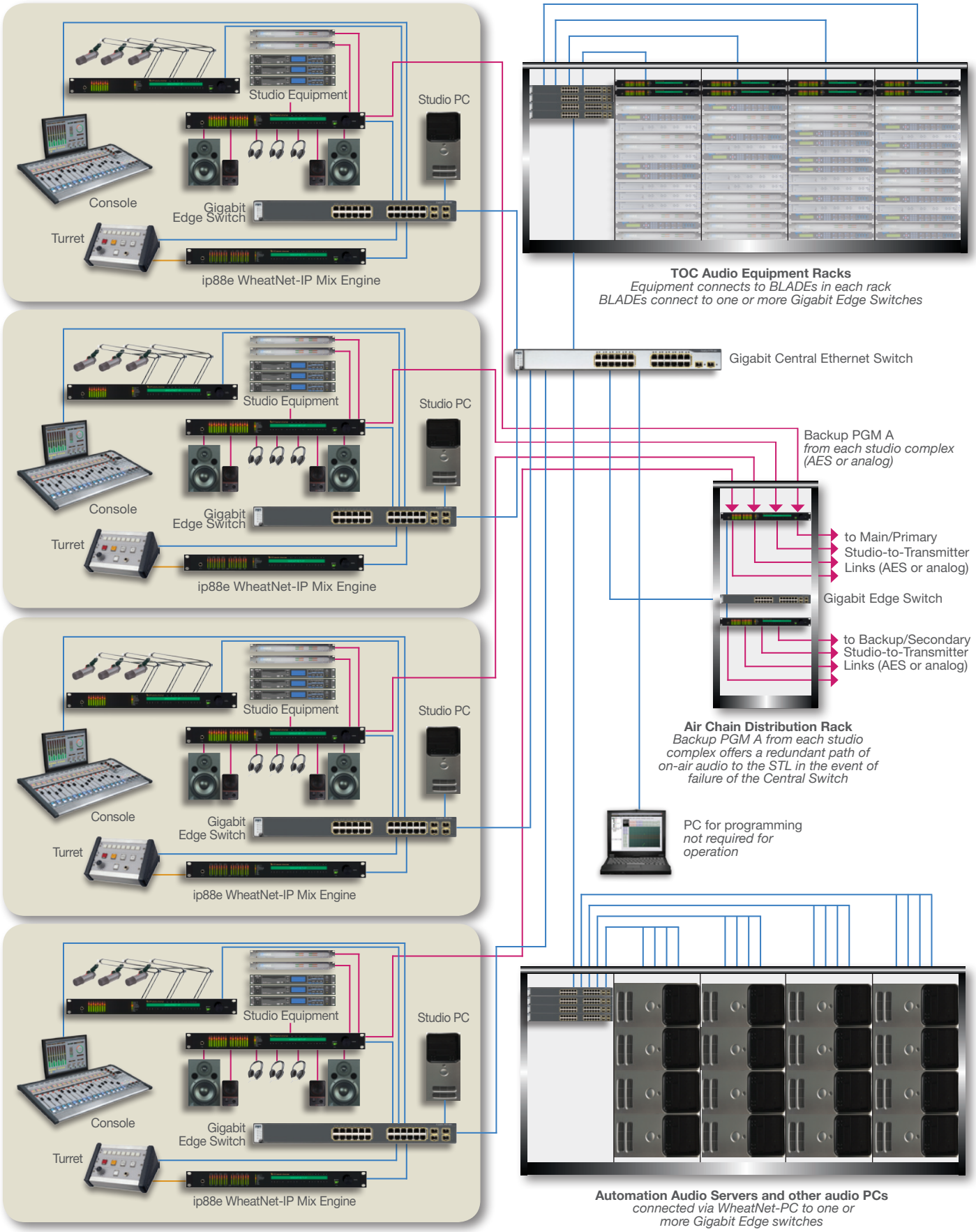
Audio I/O can be all analog (ip88a), all digital (ip88d), half analog, half digital (ip88ad)



LARGE SYSTEM

MAJOR MULTI-STATION FACILITY or NETWORK

Each studio complex equipped with a dedicated Gigabit Edge Switch, permitting it to stand alone
Central Ethernet Switch to network all studio complexes and TOC



SPECIFICATIONS FOR WHEATNET-IP

ANALOG BLADE I/O

Inputs	Electronic differential, >10KΩ (bridging) Optimum source impedance <1KΩ
Outputs	<10Ω, 20Hz-20kHz Optimum load impedance >600Ω
Connectors	DB25 Female, requires DB25 Male cable end connectors RJ45, requires straight-wired RJ45 plugs
Frequency response	±0.5dB, 20Hz-20kHz, ref +4dBu
THD+n	0.02%, 20Hz-20kHz, ref +4dBu
Noise	-85dBu; -109dBr ref max level out
Gain range	±18db, inputs and outputs
Maximum input	+24dBu
Maximum output	+24dBu
A>D converter	ADC enhanced dual bit
D>A converter	DAC 24bit Advanced ΣΔ

DIGITAL BLADE I/O

Inputs	Balanced 110Ω AES-3, S/PDIF compatible
Outputs	Balanced 110Ω AES-3 only
Connectors	DB25 Female, requires DB25 Male cable end connectors RJ45, requires straight-wired RJ45 plugs
Frequency response	Flat, 20Hz-20kHz, ref -20dBFS, +4dBu
THD+n	0.0009%, 20Hz-20kHz, ref -20dBFS, +4dBu
Noise	-141dBFS, ref max level out
Gain range	±18db, inputs and outputs
Maximum input	0dBFS
Maximum output	0dBFS
Sample rate converters	32-96kHz, 16-24bit, on all inputs
AES channel status	Standard implementation

MIC BLADE I/O

Inputs	Electronic differential, >2KΩ (bridging) Optimum source impedance <200Ω
Outputs	<10Ω, 20Hz-20kHz Optimum load impedance >600Ω
Connectors	XLR-F, requires XLR-M cable connector (microphone inputs) DB25 female, requires DB25 Male cable end connectors (analog outputs) RJ45, requires straight-wired RJ45 plugs (analog outputs, logic ports, & gigabit Ethernet
Frequency response	±0.5dB, 20Hz-20kHz, ref +4dBu
THD+n	0.02%, 20Hz-20kHz, ref +4dBu
Noise	-85dBu; -109dBr ref max level out
Reference level	-50dBu = -20dBFS
Gain range	+20 to +80dB, inputs; ±18db, outputs
Maximum input	-10dBu
Maximum output	+24dBu
A>D converter	ADC enhanced dual bit, 24 bit resolution
D>A converter	DAC 24bit Advanced ΣΔ

LOGIC I/O

Connector	RJ45
Voltage	+5VDC to GND +5VDC and GND provided
Current	100mA max source/sink

ETHERNET

Connectors	RJ45
Cable	CAT5E or CAT6
Audio transport	Gigabit Ethernet 1000BASE-T, used for all BLADE-to-BLADE audio traffic
Utility interface	100BASE-TX for future use

SYSTEM

Sample rate	44.1 or 48kHz, user selectable in software
Sync	Internal or external External sync input on each I/O BLADE
Reference level	0dBFS=+4dBu (+4dBu=1.23VRMS)
Latency	0.5mS, BLADE to switch to BLADE

PHYSICAL

Dimensions	1RU 19"/48.3cm wide, 1-3/4"/4.5cm high 13-1/4"/33.7cm deep 15-1/4"/38.7cm deep with connectors
Shipping weight	14lbs/6.4kg
Power consumption	ip88a: 49VA, 30W ip88d: 23VA, 12W ip88ad: 35VA, 19W ip88m: 35VA, 19W ip88e: 18VA, 10W

Specifications and features subject to change without notice

WheatNet® is a registered trademark of Wheatstone Corporation

WHEATNET IP

Wheatstone Corporation
600 Industrial Drive | New Bern NC 28562-5440 USA
phone 1.252.638-7000 | fax 1.252.635-4857
www.wheatstone.com | sales@wheatstone.com

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