



THE INTELLIGENT NETWORK



Wheatstone BROADCAST AUDIO PERFECTIONISTSSM

OVERVIEW/PRODUCT PLANNING GUIDE



THE INTELLIGENT NETWORK

Yesterday's IP audio network just doesn't cut it anymore. You need a modern, smarter audio network. It's all in the WheatNet-IP Intelligent Network: audio routing, mixing, processing, silence detection, logic control, 24/7/365 reliability, and third-party equipment integration, from your program automation to your transmitter link. Only WheatNet-IP distributes intelligence across all access points in one unified, robust Gigabit Ethernet network for reliability, scalability and extreme studio programmability. Best of all, WheatNet-IP is the driving engine under the hood for a wide range of control surfaces made by Wheatstone, which you'll also need for your modern network.

CONTROL SURFACES	4-15
BLADE INTERFACES	16-27
AUDIO PROCESSING	23-33
SOFTWARE	34-38
ACCESSORY PANELS	38-39
WHEATNET-IP OVERVIEW	40-45
BLADE-3 TECHNOLOGY	44-49
TECHNOLOGY PARTNERS	50-51
SAMPLE SYSTEM	52-53

IP-METERS GUI

AoIP Software BLADE



Get a quick read of any audio source, destination or stream in your WheatNet-IP Intelligent Network. Our new IP Meters GUI app displays a “wall of meters” on your computer screen for ongoing monitoring of audio peak levels and average levels at selected points throughout the entire network. Included is a separate FFT meter for spectral readings plus visual alerts should a channel go dark.

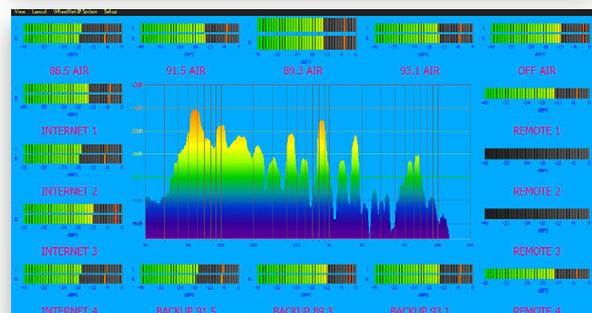
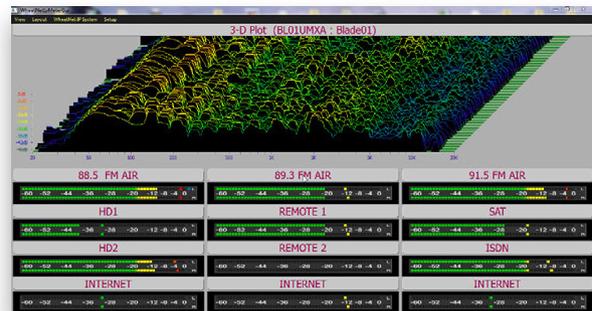
In today’s connected world of AoIP, it’s nice to know what’s going on with your audio. Not just the audio at local sources and destinations, either, but all audio at every point in your network. You could haul out all that expensive test gear for a look, but who has time for that? It’s much easier to drop in an app like our new IP Meters GUI for the WheatNet-IP network, which gives you ongoing metering of audio levels, signal density, FFT readings – the works.

Fully customizable, the IP-MTR64 Meters GUI lets you display an almost limitless array of metering and analysis on the monitor of any computer connected to the WheatNet-IP Intelligent Network. Plus, meters have silence detection, so you can see at a glance if an audio stream has gone down, and where.

Each meter – or cell – in your IP “wall of meters” can be set up as a horizontal, vertical or eyebrow bargraph meter. You can set up two or 20 or 60 or more cells in one “wall.” You determine where and what to meter: console inputs, mic outputs, the satellite receiver, studios, web streams, you name it. In addition, a

separate analysis window allows you to view one audio stream in a variety of informative ways, including FFT, 3-D plot, oscilloscope, energy vs. frequency, spectral dynamic range, and more.

Meters are arranged in a grid layout with the individual cells placed where you want. You can also choose the size and location of the analysis window. Style of metering can be curved, horizontal or vertical bargraph (you determine the number of bars) for mono or stereo, and for reading peak levels, average levels and peak over average levels. Set up one or two bright VU or PPM meters for instant loudness verification of on-air studios from across the room, for example, and add five or 10 or 30 side meters for checking levels of players and mics feeding those studios. Size, background color and text labeling for each cell is fully customizable by you. One meter at a time can be zoomed to a full-screen view for detailed observation. Multiple layouts, complete with source selection, metering choices, colors, labels, and analysis settings, can be saved and recalled for use in various situations.

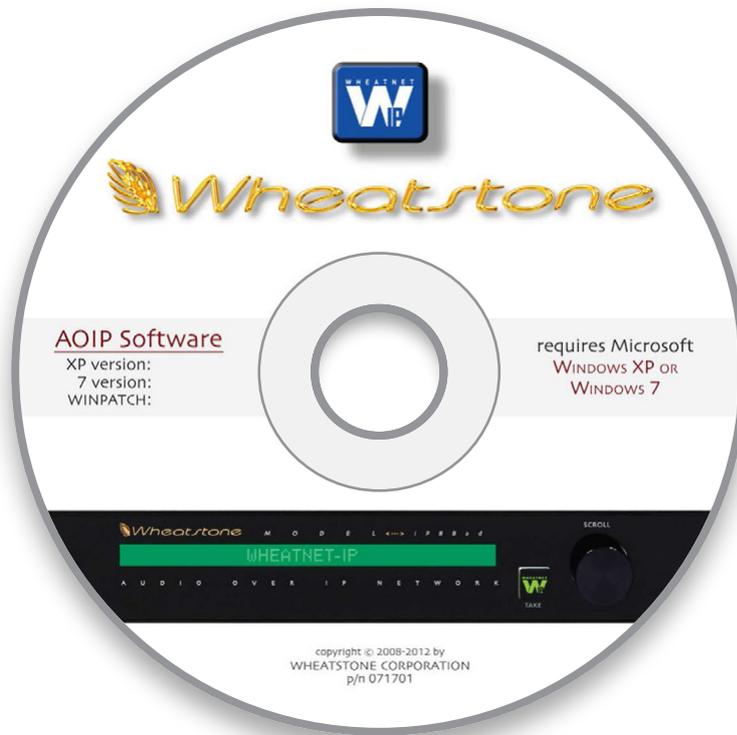


Easily customize the look and functionality of IP-Meters to your specific applications

- Multiple bargraph meters in one computer display for checking levels of any source, destination or audio path in a WheatNet-IP network
- Separate analysis window for detailed signal evaluation using FFT, 3-D plot, oscilloscope, energy vs. frequency, spectral dynamic range, and other tools
- Real-time metering of audio peak levels, average levels and peak over average levels; stereo or mono
- Two to more than 60 meter cells in a single display screen
- Style of metering can be curved “eyebrow,” horizontal or vertical bargraph (you determine the number of bars)
- Silence detection/failover at a glance for alerting you if an audio stream has failed
- Customizable as an overall grid layout of meters with color options and font selections for metering in a way that makes sense to you

WHEATNET-PC

AoIP Software BLADE



The WheatNet-IP Driver is software which allows bi-directional streaming of PC audio to and from a WheatNet-IP network via an Ethernet port on the computer.

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 because there's no need for an expensive sound card or the associated 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 computers, limiting their selection lists to only those sources you authorize.

- Available in single (stereo) channel, four stereo pair, and eight stereo pair versions.
- ASIO-compliant version now available.
- Versions included on the CD for Windows XP and Windows 7.

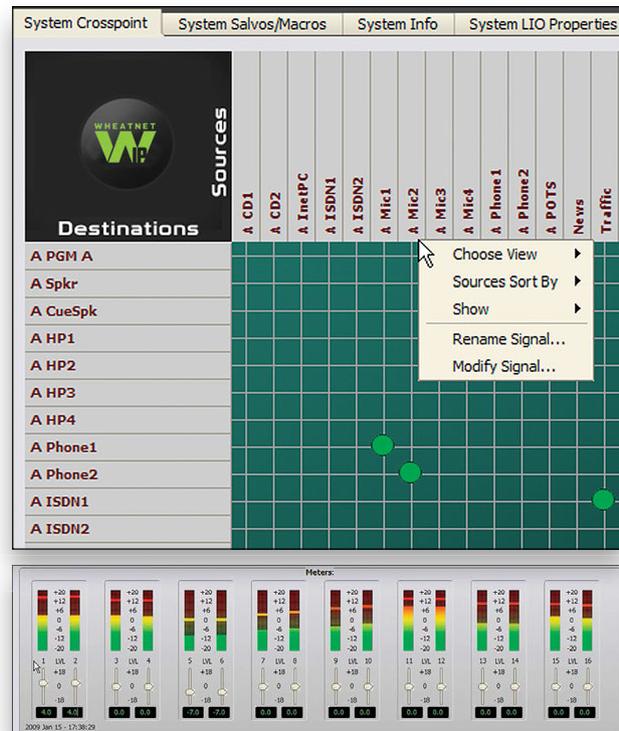
NAVIGATOR

Administration and Control Software

WheatNet-IP NAVIGATOR is administration software that is installed on a PC running Windows®. It can be accessed directly on the WheatNet-IP network or remotely over VNC.

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.



PC-XY-IP

XY Controller Software

Software XY controller that is installed on standard PCs connected to the Wheatnet-IP network. Provides source/destination control. It can also access and take system salvos. Can be installed on multiple PCs with a site license.

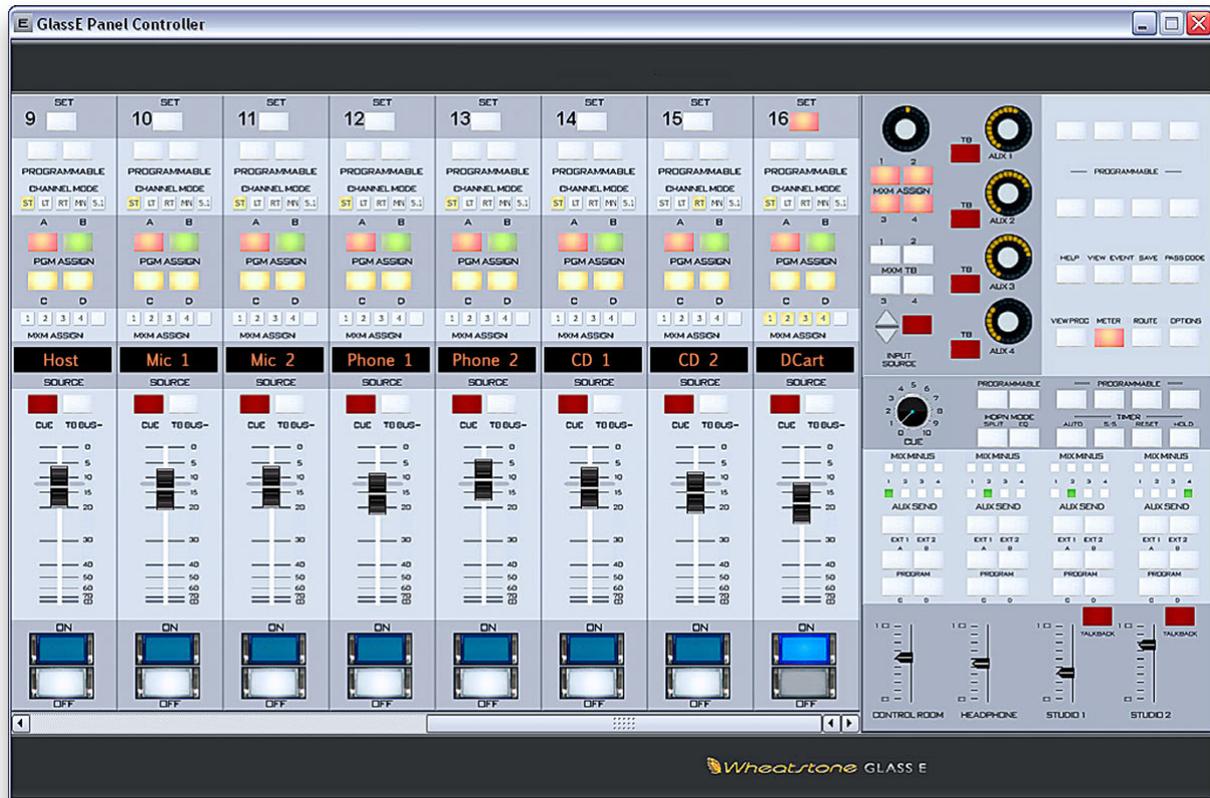
EVENT SCHEDULER

Router Event Programming Software

Allows programming of router events to occur on a daily, weekly or monthly basis. The software can make/break single cross points or multiple cross points, and trigger GPI closures or trigger programmed salvos.

VMI AND GLASS-E SOFTWARE

Ultimate Remote Access - For Use Where You Don't Need A Physical Control Surface



Wheatstone's Glass-E is the ultimate remote access tool. Use it where you don't need a physical control surface, or to augment one that already exists. Think of it as a glass cockpit for your control room.

With our E-Series Virtual Mixer Interface, you can place mixing consoles in places they'd never fit. A single rack space is all you need to give you the full power of an E-Series Control Surface without actually having one.

The brains behind it is our optional Glass-E software. With it, any of our control surfaces can be controlled remotely. Use GLASS-E to take command of the console from anywhere that has network access to the system - ideal for running the board from a remote or for assisting an unfamiliar operator from the engineer's home!

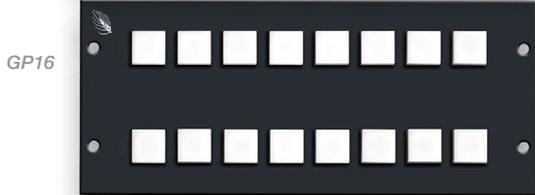
GP SERIES CONTROL PANELS

Panels and controllers for expanding and customizing

We all know the devil is in the details. Putting the right controls in front of your talent will put the finishing touches on a well designed facility. To that end Wheatstone provides you with a series of exceptionally functional panels.

GP8 and GP16 Panels

More than simple switch arrays, these 8 and 16 button panels come with their own scripting wizard. At the simplest level they can do source selection, push-to-talk, and preset/salvo activation. But the intelligence in each panel allows them to query the entire network and make switching decisions based on what they find. Conditional switching using Boolean logic functions allows for complex switching scenarios such as IF Studio B has requested the airchain, AND Studio A has acknowledged, THEN fire the Studio Change salvo.



GP3 Panel

A straightforward headphone panel with either hi or lo-z level control, 1/4" headphone jack and a switch with LED tally (typically used for the COUGH function, but can be custom wired). Connectorized with both RJ45 and Phoenix screw terminals.



GP4 Panel

A 4 button switch array for remote mic functions (typically ON, OFF, COUGH, TALKBACK). Interfaces with any available BLADE GPIO ports. Of course, all four switches can be custom wired for other functions as well.



GP Turret

A compact desktop turret designed to house up to three (or six in our doublewide version) GP Panels.



The Wheatstone Touch

Our protocol allows us to interface with commercially available third party touchscreens. You can create customized touch panels that are perfect for your application.



HBX8-R Controller

An eight button rackmounted source controller for rapid access to eight preprogrammed sources. An encoder knob with associated display also allows access to any signal on the network.



XYE-R IP Controller

A rackmounted controller with full dialup source and destination control. Any signal accessible in a networked system is fully programmable.

WHEATNET-IP

Why WheatNet-IP Intelligent Network Is SO Much Better

With the modern, intelligent WheatNet-IP audio networking, you can:

Make wholesale studio changes...

...or switch studios from any seat, reconfigure control surfaces for multiple purposes, and even change audio processing settings automatically when, say, a certain mix turns on. It's all in the WheatNet®.

Bring on the devices.

WheatNet-IP gets along with everyone, including MADI gear like ProTools and TDM systems, and interfaces to more than 40 third-party brands and/or products for end-to-end, seamless operation from the microphone to the stick. In addition, new third-generation WheatNet-IP access units are AES67 compatible, which means you can integrate your audio network with other AES67 compatible devices and systems.

Integrate audio routing and automation.

Imagine interfacing your audio network to your automation system with no sound cards, external logic connections or added routers. Or, better yet, imagine fully integrated audio automation and routing so an announcer seated at the playout system can set a fader for a console located anywhere in the facility. That's WheatNet-IP.

Access any audio, anywhere.

WheatNet-IP handles native analog, microphone, AES/EBU, SPDIF, AoIP, MADI, SDI and even AES67, which is now included in our third-generation access units. Ingest any audio format into the WheatNet-IP, and convert to any audio output — analog to digital, AES to IP, microphone to AoIP or MADI to AES67.

Control and route audio all on the same cable.

No more having to chase down or create new logic commands for sources every time you change control surfaces or studios. Logic follows audio. Audio and control for that audio travel down the same cable, so you can pick up feeds and the logic for those feeds anywhere along the network. Route any audio input to any or all outputs in the network.

Relax, you have switch-over silence detection.

Let's say an operator misses a cue or leaves a fader down. No problem. When WheatNet-IP senses silence, it can take the automation system directly to air until the operator catches up. Every single audio output channel can be programmed with silence detection and automatic switch-over function.

Simplify things.

No need to assign IP addresses or allocate bandwidth or pay someone else big money to do it. Just plug it into your managed gigabit Ethernet switch and let WheatNet-IP do the rest. Add codecs, processors and controllers or change I/Os in a snap. You spend less time configuring the system, and more time on what's important: creating awesome sound.

Call the shots.

You call the shots, not some PC. WheatNet-IP distributes the workload to all access points in the system for better overall network stability. Each WheatNet-IP BLADE access unit has its own embedded processor with operating system that allows it be a powerful standalone router or part of a larger system. WheatNet-IP is an embedded system that does not require outside intervention or control from 3rd party software running on PCs. The configuration of the entire network is stored in each BLADE.

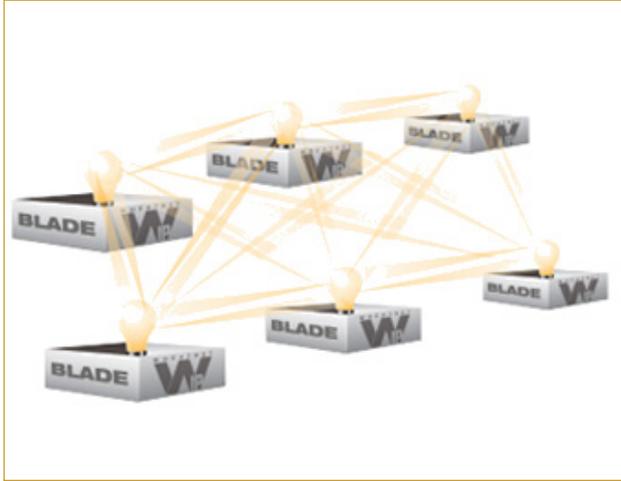
Self-pruning multicast trees.

A lot of older IP audio networks don't manage the multicast streams, which could require you having to periodically manage this yourself or getting a bigger, more expensive switch to handle the mounting volume of streams. Not WheatNet-IP, which continually prunes unused source groupings from the network so that you never run out of switch or time having to delete unused channel assignments that are no longer in use.

Avoid costly system failures.

A distributed and intelligent network means no more centralized points of failure to go wrong, plus more points of recovery. Every WheatNet-IP BLADE access unit is self-aware, and can reconfigure itself in an emergency. In fact, each BLADE in the network can recover settings for your entire studio operation!

MODERN (WHEATSTONE)



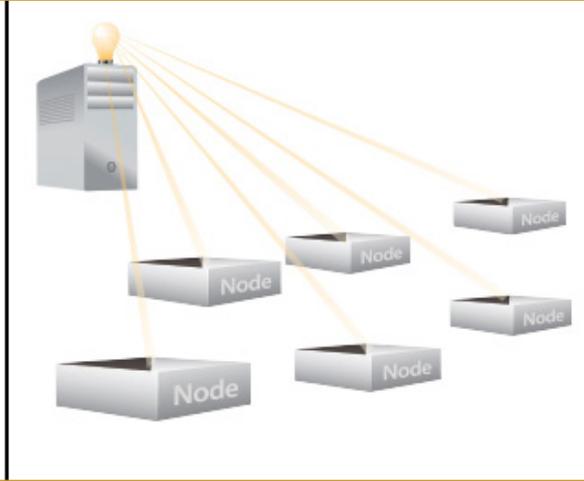
Stay ahead of the curve with Gigabit Ethernet architecture.

You might not be in a hurry now with 100mbps throughput, but we promise you'll want the system that has 1 gigabit/second Ethernet throughput once you get your audio network up and running. All WheatNet-IP BLADEs use gigabit Ethernet. This makes all the difference in network throughput, near-zero delay, reliability – and a whole lot more.

Get more on the network for less cost.

Some IP audio nodes are mere input/output devices. Each WheatNet-IP BLADE I/O access unit, by comparison, comes standard with routable utility mixers for mixing, summing and controlling audio in lieu of costly DAs, plus newer BLADE-3s include a multi-band stereo processor for “spot” processing satellite feeds, headphone audio, web streams or any audio feed routed throughout the network. Also included in our new BLADE-3 access units is embedded audio playback that can be used to put emergency audio on the air, and much, much more. With all that functionality built in, WheatNet-IP can save you substantially in hardware costs alone.

NOT SO MODERN (NOT WHEATSTONE)



Eliminate audio latency problems.

Finally, an audio IP system that can keep up with audio, which means your automation system won't ever drop a satellite feed or skip a commercial because of delay again. Gigabit Ethernet is why.

Get way more for less.

We're talking full-featured routable mixers, stereo processor, and automation control in each BLADE-3 I/O unit, so operators can pan audio, turn channels ON/OFF, set fader levels, and do audio fades, ducking, source assignments – and lots more. The possibilities are mind-boggling.

Expand your network at any time, for less.

With control and intelligence built into every WheatNet-IP BLADE I/O access unit, you already have most of the networkability you need to grow with the times.

WHEATNET-IP

An Overview of the AoIP Audio Ecosystem

Why the Integrated Control Layer is Important

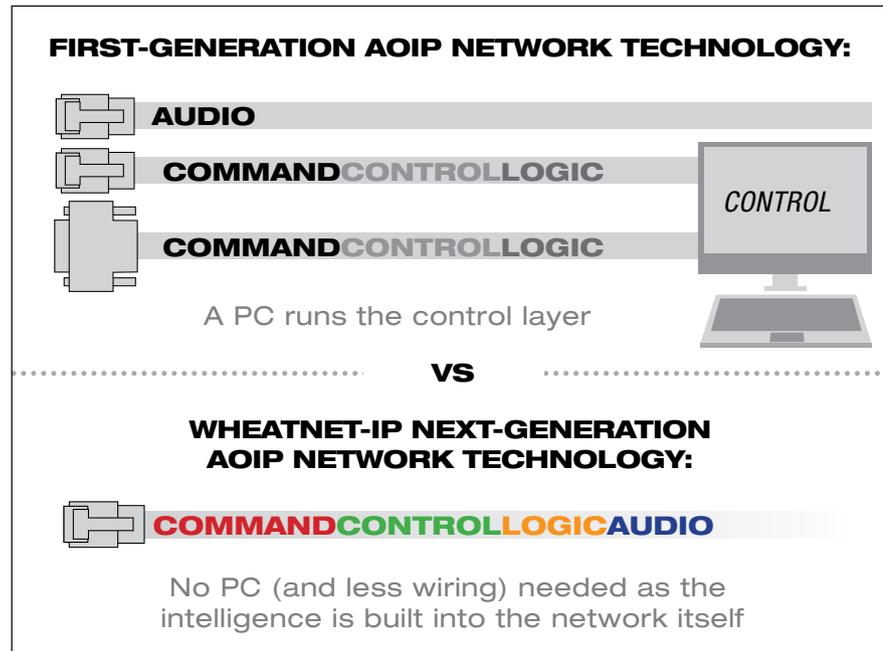
Broadcasters who connect their studios with an AoIP network can make their facilities more efficient and flexible. But to take full advantage of the capabilities of these networks, a second control layer is needed. Up until now, AoIP technology has been deployed in two steps: first the transport layer, which carries the IP audio is built, and then a second, optional control layer, usually running on networked PCs, is added on top. But the next generation of AoIP networks combine the two from the start.

The system becomes one integrated audio ecosystem. Users interact with it as an entity and have greater control and capability because each component of the system is always linked in and available from anywhere on the network. Just as a large computer network benefits from centralized administration and control, so does an AoIP network. Any node, control surface, or application that is not directly controlled becomes time consuming and difficult to deal with, just as orphaned printers, drives, or modems do in a computer network. Devices isolated from networked control ultimately limit flexibility, reliability, and creativity.

When all of the devices in the system are true IP devices, installation and maintenance are simplified. Every device uses a common Ethernet cable and plugs into an Ethernet switch. No special serial cables and distribution systems or logic adapter cards and breakout boxes are needed. Changing logic functionality means clicking on a computer screen, even from a remote location, rather than punching down wires or sending configuration files as is needed in older systems.

Because each member of the system is able to see and interact with all of the other members, complex features and dynamic, conditional functionality can be user programmed; things like wholesale station reformatting, studio switching, or changing audio processing when a certain mic turns on can be easily achieved, all over the single CAT6 cable that is already in place for the audio connection.

Just as audio processing has evolved beyond a simple equalizer or compressor, today's most advanced AoIP systems have progressed beyond simply sending audio over a network. They can provide unparalleled control for unleashing the creativity, responsiveness and flexibility needed to succeed in the most competitive of environments.



Control Surface(s)



Wheatstone LX-24



Wheatstone L-8/L-12



Wheatstone E-6



Wheatstone E-1

Wheatstone TS-4 Mic Controller

Wheatstone TS-22 Talent Station

Wheatstone Sideboard

Wheatstone IP-12/IP-16

Automation, Etc



Wheatstone IP Meters

Wheatstone Technology Partners

Vorsis Processing

Wheatstone AirAura X3



Wheatstone FM-531HD



Wheatstone VP-8 IP



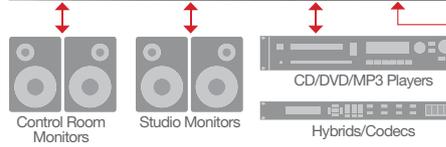
I/O BLADES



Microphone I/O BLADES



Analog or Analog/Digital I/O BLADES



Control Room Monitors

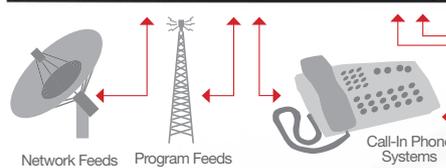
Studio Monitors

CD/DVD/MP3 Players

Hybrids/Codecs



Digital I/O BLADES



Network Feeds

Program Feeds

Call-In Phone Systems

Remotes



MADI BLADES

Audio to/from Bridge-TDM Systems or any MADI equipped device



LIO-48 Logic BLADES

48 channels of logic control for whatever you need, wherever it is.



Wheatstone Technology Partners



Managed Gigabit Ethernet Switch

Specialty BLADES

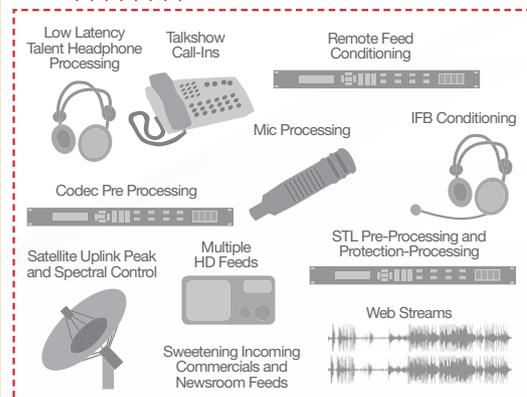


Mix Engine BLADE(s) or Console Audio BLADE(s)



Aura8-IP 8-Channel Processing BLADES

Vorsis Ultra High Resolution Processing anywhere in your network from one rack space!



Low Latency Talent Headphone Processing

Talkshow Call-Ins

Remote Feed Conditioning

Mic Processing

IFB Conditioning

Codec Pre Processing

Satellite Uplink Peak and Spectral Control

Multiple HD Feeds

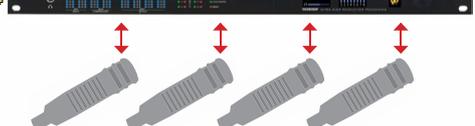
STL Pre-Processing and Protection-Processing

Web Streams

Sweetening Incoming Commercials and Newsroom Feeds



M4-IP 4-Channel Mic Processing BLADES



To/From Other Studios



On-Air Station 2

On-Air Station 3

Production

On-Air Station 1

News

I TO O, BLADE-3 IS AMAZING

BLADE I/O access units make up the audio routing backbone of the WheatNet-IP Intelligent Network and use RJ45 StudioHub+ compatible connectors for input and output, and also have DB25 connectivity for transitioning from BRIDGE TDM networks.

But there's more inside their sleek, all-metal housing than mere I/O. The I/O BLADE has its own CPU and operating system; no additional PC required. It can operate alone or as part of a network, and can be located anywhere in the studio (no noisy fans inside). Each BLADE has a 1000-base-T (Gigabit) network interface. This single network connection is used to send and receive audio, logic, and communications from the I/O BLADE to the rest of the WheatNet-IP network. Gigabit Ethernet provides very low latency while allowing the use of readily-available switches and infrastructure for connectivity. Connect automation and production PC's, codecs, audio processors, controllers, and other devices directly to the network without installing specialized sound cards, A/D-D/A converters, audio wiring, or control connections. The I/O BLADE communicates at the speed of Gigabit Ethernet connectivity for optimum network QoS and reliability, and includes logic control, onboard utility functions and the dedicated controller that is at the core of its intelligence. Each individual I/O BLADE can hold the brain trust of the entire system's operation for exceptional network redundancy and scalability.

Logic follows audio like a puppy on a leash

I/O BLADEs come with universal logic (GPIO) for interfacing various external switches, indicators and devices for control purposes – as well as software logic ports for routing and controlling devices anywhere on the network. Send any GPI to multiple GIOs or marry GPIOs to an audio source and have them follow that source through the system -- all through one RJ connector. Audio and the logic controls for that audio are all on the same CAT6 cable, to be used anywhere in the network. When routing the audio of a CD player to a console fader, for example, the START button logic is routed right along with it. These logical associations reside within the I/O BLADE itself, and do not require a PC or other controller to work.



Mixers and Audio Processing Included

I/O BLADEs include two built-in 8x2 stereo mixers. In addition, newer third-generation BLADE-3 I/O units include a stereo multiband processor with 4-band parametric equalizer, 3-way crossovers, 3 compressors, 3 limiters, and a final, look-ahead limiter. By routing mixing and audio processing, these functions are no longer limited to a location in the studio and instead are resources available anywhere in the network.



The I/O BLADE's internal mixers are full-featured, stereo mixers implemented within its internal hardware. The inputs and output busses of these mixers are available as resources on the network, accessible anywhere and don't use up any of the inputs or outputs of the BLADE itself. From simple features like summing, splitting, and level adjustment all the way to creating custom mixes and intercom systems under automatic control and performing fades and segues, the potential uses for these mixers are nearly endless. The I/O BLADE includes the Wheatstone ACI (Automation Control Interface) "tool box" for third party control of its functions, such as routing ducking, panning, logic control, mixing and silence detection. Each I/O BLADE supports up to 20 ACI connections that can be used with devices like Talent Stations, GP panels and SideBoard surfaces as well as to integrate with automation systems and other Wheatstone partners for control purposes.



Silence detection, emergency audio

Each I/O BLADE comes with a headphone jack with volume control and source selection for local monitoring of any sources or mixes anywhere in the network. Each of its output channels can be programmed for silence detection and for automatic switchover and switchback to/from a standby device – or to the unit's onboard audio player – in an emergency. In addition, new I/O BLADE-3s come with embedded audio storage and playback for emergency or utility applications, or any other application requiring an hour or more of 24-bit, uncompressed audio. Silence alarms or LIO/SLIO can trigger playback or this can be manually controlled from the NAVIGATOR configuration and crosspoint software.



Interoperable and flexible

I/O BLADEs operate at 44.1k or 48k sampling rates while converting incoming signals up or down as needed. Newer third-generation I/O BLADE-3s provide selectable system clocking at 44.1kHz or 48kHz, External Reference or AES67.

I/O BLADE-3s support AES67 compliant devices using an IEEE1588 PTP grandmaster clock for synchronizing to and ingesting /streaming AES67 compliant packets. A 1588 Clock Loss Indicator is included for notifying operators when the AES67 clock source has been lost; an alarm is also generated when an AES input has lost its clock source or becomes disconnected.

All BLADEs can take any analog and/or digital input or output and split it into two mono channels. Any stereo signal sent to a mono output is automatically summed. When routing a stereo source or stereo mix to a mono destination such as a hybrid or codec, for example, the unit will automatically “sum” the left and right channels together. It has gain control on every input and output, and balance control on every stereo input or output.

Easy to configure and maintain, with failsafe

Activating the I/O BLADE is as easy as plugging it in. No need to assign it an IP address or prioritize packets. Once plugged in, it will instantly recognize that it’s been connected to a functioning network and configure itself into that network with almost no human intervention at all! All of its resources are instantly available so it can be pushing out or bringing in audio in little more than a minute after it is first plugged in.

New I/O BLADE-3s come with dual OLED displays for monitoring and control of most functions right from the front panel, including audio routing setup, monitoring, network information, alarm status, enabling and operating utility mixes, setting input and output gain, and connecting audio processing. Settings can also be done remotely using a PC.

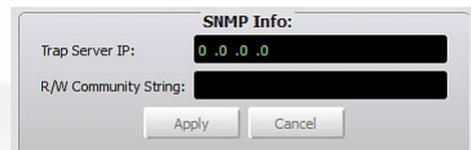
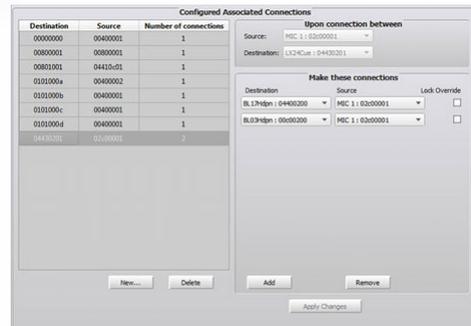
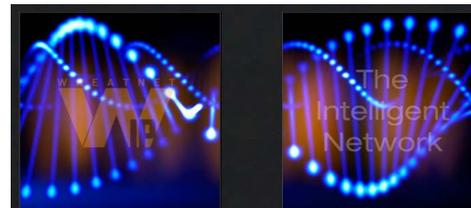
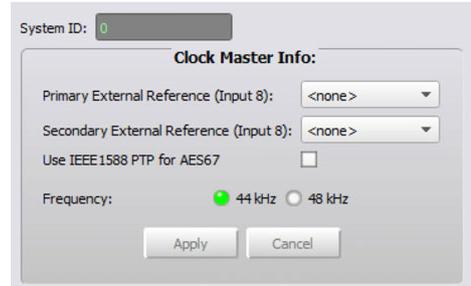
Ongoing changes and updates are just as easy. Change a signal name on the fly and it is instantly updated in every device on the network; no reboots or configuration file gymnastics required.

The I/O BLADE-3s’ new Aliases feature allows the same source to be identified by different names. A signal can be given an alias that’s more familiar to a particular operator, and multiple aliases can be used so different operators can share logic functions, source feeds and routing while using signal names they recognize.

Another new I/O BLADE-3 feature, Associated Connections, is useful for callers, codecs, networks, remote broadcasts and live talk shows that require a mix-minus. With this, operators can create a predetermined back haul, IFB feed or mix-minus to each device based on its location in the system and the fader to which it is connected. For a shared resource connected to your system, such as a codec, the software will ‘automagically’ give the proper return feed to the codec based on its source connection. When a base connection is made, up to ten additional connections can automatically follow. This significantly helps streamline studio routing, phone and codec work flow.

The I/O BLADE comes with maintenance and diagnostic tools, including built in SNMP capability for network management, statistics, and alerts. Newer BLADE-3s also include a new logging app that can be used for tracking LIO/SLIO activity throughout the system. This app shows time-stamped location activity messages in high resolution for when inputs come into and leave the system, and provides sophisticated filtering functions for revealing relevant information that otherwise might be buried in the clutter of system data.

Any I/O BLADE can restore the settings for the entire network and allow remaining segments of the network to continue to operate in the event of a facility-wide disaster. Only the section of the network that has been brought down by a power failure, for example, is affected. When power is restored, affected BLADEs will seamlessly rejoin the network, all without any user interaction.





Designed and built by
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 **Wheatstone**
BROADCAST AUDIO PERFECTIONISTSSM