Wheatstone WheatNet-IP for Radio Broadcast & Production

OVERVIEW/PRODUCT PLANNING GUIDE

Wheatstone
BROADCAST AUDIO PERFECTIONISTS®

THE INTELLIGENT 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.

LXE

Advanced Modular Completely Customizable Networkable Console Control Surface

Taking LX-24 technology to new territory, LXE is the first radio console that gives you the power to program the entire surface. All knobs and buttons can be assigned whatever functions you need. Of course, we'll pre-configure it any way you want, but you can always change it yourself using our new ConsoleBuilder software. Each module has full color OLEDs that will reflect the function of your setup. Plus, there's an all-new touchscreen GUI that comes with ScreenBuilder-LXE.

The Evolution Of The Lx Radio Control Console

Wheatstone's new LXE console brings control surface configuration to a new level. Going far beyond the usual "any source to any fader" network concept, the LXE is a fully flexible control interface, where every switch and rotary control is programmable to perform any desired function. This means console architecture is completely customizable to client requirements, and limitations to functionality are no longer a factor. Physically compact, the LXE is available in several different form factors including countertop, countertop sunken, and split frames (split sections are not confined to one room; they can actually be in different studios).

Any Way You Want It

ConsoleBuilder™ software allows every switch on the surface to be programmed for function, mode, and even color (switches are RGB led illuminated). In fact, built-in software allows every button to be scriptable, letting you create powerful macros for as many controls as you want. Multiple full color OLED displays on each panel keep pace with ongoing operations, and event recall allows painless one touch console reconfiguration at the press of a button. With its inherent control flexibility and ability to access thousands of signals (sources and destinations are limited only by the size of the network), the LXE takes facility workflows and audio control to a new level.

The World At Your (Motorized) Fingertips

The LXE can have up to 32 physical motorized faders, with full DSP processing available on all 32 channels. Surfaces interface seamlessly into the WheatNet-IP Intelligent Network, and utilize BLADE-3s for audio, control and associated logic data flowing on single CAT6 interconnecting cables. The system can ingest and convert virtually all audio formats: mic and line level analog, AES/EBU, SPDIF, AoIP, MADI, SDI and even AES67. Loudness metering, phase control, and full EQ/Dynamics are included.

All New Graphical User Interface

LXE's new GUI is has pre-built screens for everything you normally use – metering, clocks, timers, dynamics, EQ, assigns, and more. All are touch-screen accessible with gestures you're used to using on your smart devices. And, the GUI is just as customizable as the LXE surface. Using our ScreenBuilder™LXE software, you simply drag and drop objects and define their functions via a simple wizard interface. You can store multiple custom screens, if you like, to go with your custom LXE setups.

Physical Surface:

- Several form factors available with mainframe configuration flexibility:

– Tabletop with meterbridge

– Wedge low profile (no meterbridge, pairs with separate HDMI monitor)

– Countertop drop (flushmount)

All three choices can be split consoles connected via network in same room or different rooms/locations

- Fully Programmable/Configurable via ConsoleBuilder™

– Every button configurable via setup GUI, can be scriptable, or a variety of other functions

– Every encoder/knob configurable from the setup GUI, Can be scripted (if X then Y) or assigned to other knob or encoder functions.

– Fader is scriptable to control things via ACI like Utility mixer channels.

– Multicolored fully programmable LED buttons throughout (blue, cyan, green, yellow, red, magenta)

– Two full color OLED displays per channel configurable for contextual display

- Optional meterbridge for tabletop version with high-resolution LED meters and digital timer, all assignable from ConsoleBuilder™
- Built in Ethernet switch for plugging in accessories or other host panels
- True IP – connects directly to switch
- Four stereo Program busses
- Four stereo Aux busses
- Four mono or stereo Mix-Minus busses
- Headphone stream to surface - up to one per panel host
- Each input channel offers Phase control, Panning, Fader mode Left, Right, Mono, Stereo - each assignable to any knob/button
- Stereo or mono cue speaker depending on frame size
- Up to 32 physical faders (virtual faders can be controlled via ACI for third-party flexibility)
- Every fader has bus-minus or direct out and is configurable as stereo or mono
- Fader mirroring – allows faders to mirror one another in different locations
- Motorized fader option
- 8 layers (to accommodate up to 32 input fader channels) – completely customizable and configurable for each layer.
- 16 monitors (include Control Room, Headphones, Studio 1, Studio 2, etc), each with monitor dimming (all with friendly names)
- Monitor mix capable – mix all busses together for monitor output
- Monitor Linking (example: Headphone follow Control Room)
- Level lock for Monitors
- Dynamics, including Compressor, Expander, Gate, controlled via touchscreen or optional panel
- Full Parametric EQ controlled via touchscreen or optional panel (EQ GUI screen with color coded knobs), with high pass and low pass filters
- Flexible Metering Options:

– Loudness metering

– Phase Correlation metering

– Input metering on each channel

- Info screen on surface for current status
- User management:

– Logging in and out

– User based access to controls

– Vdip saved per user settings

- Unlimited number of events
- Support for remote mix engine (off premises, for use with At-Home systems)
- Time sync to NTP via mix engine
- Display brightness controls
- Accessory panels powered internally
- Tone generator
- Clip player option

Touchscreen GUI:

- Complete set of screens provided to allow control over every aspect of the LXE control surface
- ScreenBuilder™LXE with support for unlimited number of screens (which run one at a time) allows you to build any type of custom screen you need
- Configurable Home screen with up to 8 Monitor, 4 Aux, 4 Mix-Minus meters
- Linux based OS with touchscreen support accessible via HDMI video output
- Full screen XY controller built in
- Multiple Cue feeds if required
- Digital timer and clock on home screen
- Add custom logo to clock background
- Front end app can be used on Windows, Linux, or Mac for additional display of surface functions.

GLASS LXE & REMOTE LXE

Advanced Modular Completely Customizable Networkable Virtual Console Control Surface

Glass LXE

Virtualization is a lot more real with Glass LXE virtual console for our popular WheatNet-IP Intelligent audio network.

Glass LXE is a multi-touch UI that operates as a standalone virtual console into the WheatNet-IP audio network, a complete IP audio ecosystem of consoles, talent stations, I/O units, accessories and SIP phone and codec distribution appliances.

Similar in function, feel and layout to the network's flagship LXE hardware control surface, Glass LXE is fully functional and studio-ready as a user interface with familiar buttons, knobs and multi-touch navigation and menuing for setting EQ curves, filtering and other custom settings.

As a standalone multi-touch console interface into the WheatNet-IP audio network, Glass LXE can be used anywhere there's a PC touchscreen or several touchscreens connected over that network. You can run it on a laptop or on multiple PC screens from a cloud. Glass LXE can be used alone or combined with the physical LXE surface to give broadcasters full console control anywhere that's needed, and on a UI that is very familiar.

Glass LXE utilizes a mix engine to handle mixing and processing as part of the WheatNet-IP audio network. The virtual console is one of several new WheatNet-IP additions this NAB, adding to the hundreds of software and hardware elements that make up the WheatNet-IP audio network, any of which can be connected together for any sized operation or purpose. WheatNet-IP is a complete AoIP infrastructure that includes AES67 compatiblility.

Glass LXE is modeled after WheatNet-IP's flagship LXE console, which is known for its flexibility as a reconfigurable, compact control surface that is available in one main frame or in split-frame configuration for multiple operators.

Remote LXE

Multi-touch virtual console mirrors the LXE control surface for an independent, yet shared user experience during fast-paced, multi-operator shows and productions.

LXE, the IP audio console that broke new ground as the industry's first reprogrammable control surface, adds a multi-touch remote UI for multiple operators sharing board duties during fast-paced productions.

Remote LXE mirrors the LXE hardware surface as a fully functional and studio-ready user interface, complete with like buttons and knobs as well as familiar navigation and menuing options for setting EQ curves, filtering and other custom settings.

Working in conjunction with the LXE hardware surface, Remote LXE provides complementary production functions for separate operators using an LXE board in the same location or in another location over an IP connection. Real-time fader tracking and live synchronization of buttons and controls between the virtual surface and the physical LXE board offer an independent, yet shared user experience for multiple operators – or as a tool for engineers to remote in to correct operator setup issues.

The LXE console is known for its advanced flexibility as a reconfigurable, compact board that is available in one frame or in a split-frame configuration. It can be configured for up to 32 physical motorized faders, with full DSP processing available on each. Physical controls such as buttons and knobs on the console can be user defined using a simple menu interface. LXE is the flagship IP audio console for the WheatNet-IP audio network, a complete IP audio ecosystem of consoles, talent stations, I/O units, accessories and SIP phone and codec distribution appliances.

LX-24

Advanced Modular Networkable Console Control Surface

The LX-24 is a compact, table-top, modular control surface designed from the ground up to operate with WheatNet-IP. Its look and impressive array of features, including a built-in high resolution meter bridge, make this control surface a great fit in any control room.

While it's a feast for the eyes, its core design elements are what make Wheatstone's LX-24 really stand out. For starters, it's conceived for people who work in radio. Pull up a chair and you'll feel right at home.

The LX-24's totally modular design lets you configure it exactly as you like. And you can hot-swap any module at any time. There are no electronics in the pan below the modules – in the event one needs to be replaced, simply reassign the audio to another module and you're up and running in seconds. Pop in a replacement module at your convenience. It's that simple.

The LX-24 can be anywhere you need. It's already part of the WheatNet-IP Intelligent Network – the IP88E Mix Engine BLADE provides audio mix functionality and can be anyplace on the network. Additional BLADEs can be added for inputs and outputs in a variety of digital and analog formats, and this I/O can be shared with other consoles and devices, such as AirAura and Aura8-IP, throughout the Intelligent Network.

The LX-24 is an intelligent surface that can store and recall all your settings. It even remembers settings if you have to hot-swap a module. Snapshots of the LX-24's configuration can be saved and recalled at the touch of a button, making setup for different shows or dayparts a snap.

The LX-24 modular control surface has a low-profile, table-top design that allows it to fit into almost any studio situation. The meter bridge features up to four sets of bright, high resolution LED meters, as well as circular LED displays for auxiliary send levels and pan control. A digital count-up/count-down timer is also included.

Each input channel can be assigned to four stereo busses, plus four pre/post-selectable aux sends, a stereo CUE bus, four mix-minuses and the panel's own bus-minus. An LED source name display, an A/B source selector, and two programmable soft buttons are included and a SET button provides access to assignable controls in the master section.

Control room and headphone outputs with level control and source selection are provided, as well as two independent studio monitor outputs. Stereo CUE speakers are built into the meter bridge. Headphones and CUE are delivered to the surface right from the IP network, so there's no tying up BLADE outputs for the headphone and cue audio.

On-board VGA and USB Mouse connectors allow a monitor and mouse to be connected to the console for configuration and advanced console functions.

As with all Wheatstone products, the LX-24 is made in the USA at our New Bern, NC facility and is supported by Wheatstone on both sides of the country (and around the world).

OLED Switch Panel

The all-new OLED Switch Panel is available for the LX-24, the L-8 and the L-12. Each button has a high-resolution OLED screen that can easily be customized to indicate its function.

The buttons are programmable to handle anything you can script.

- Low-profile table-top design
- Meter bridge with up to four bright, high-res LED meter sets
- Each input channel features:
  - Four stereo bus assigns
  - Four pre/post-fader aux sends
  - Four mix-minuses
  - Bus-Minus®
  - Source name display
  - A/B source selector
  - 2 programmable buttons
  - Vorsis EQ and Dynamics including 4-band parametric EQ, High- and Low-Pass filters, Compressor and Expander/Noise gate
- Control room and headphone outputs with level control and source selection
- Two independent studio outputs
- Stereo cue speakers and amplifier, built-into meter bridge
- Onboard VGA and USB Mouse connectors
- Event storage (snapshots) and recall
- Mix Engine BLADE included

L-12 & L-8

Compact Modular Networkable Console Control Surfaces

Make it happen with these sleek new control surfaces scaled just right for producing news and voiceovers. Like their bigger LX-24 cousin, the L-8 and L-12 have all the latest goodies plus are hot swappable down to the individual fader.

These cousins to the popular LX-24 are big in capability but scaled for news production, voiceover work and all those applications requiring a solid control surface that will deliver under deadline. The L-8/L-12 are based on all the same design principles as the LX-24 – a precision-built, low-profile, tabletop IP control surface that offers assignable sources to any fader and with hot-swappable individual fader modules.

Each fader provides access to four stereo busses, a stereo cue bus, and its own individual Bus-Minus. An OLED source name display, an A/B source selector, and one programmable soft button are also available, and a SET button provides access to assignable controls in the master section. Snapshots of the L-8/L-12's configuration can be saved and recalled at the touch of a button, making setup for different working sessions a snap.

The L-8/L-12 meter bridge features three sets of bright, ultra-high resolution LED meters. A digital timer is also included. Both consoles have control room and headphone outputs with level control and source selection, as well as an independent studio monitor output. The L-12 even has a built-in cue speaker.

These surfaces are designed for use with the WheatNet-IP Intelligent Network. An IP88CBL Console Audio BLADE provides the audio mix functionality as well as power to the L-8/L-12; additional BLADEs can be added for inputs and outputs in a variety of digital and analog formats. This new IP console is sleek, versatile, and low profile. No tabletop cutouts needed. Just plug the L-8/L-12 into your WheatNet-IP Intelligent Network, and quickly assign any source of any type to any fader from anywhere in your network.

OLED Switch Panel

The all-new OLED Switch Panel is available for the LX-24, the L-8 and the L-12. Each button has a high-resolution OLED screen that can easily be customized to indicate its function.

The buttons are programmable to handle anything you can script.

- Eight (L-8) or Twelve (L-12) inputs
- Low-profile, tabletop form factor allows clear sight lines and requires no furniture cutouts
- Any source to any fader
- Four stereo busses
- A/B dual input switching
- Bus Minus (N-1) on each input channel
- Hot-swappable fader modules
- Event preset recall
- Built-in headphone amplifier and level control
- Built-in cue speaker (L-12 only)
- Includes IP88CBL Console BLADE

E-6

Full-Featured Console Control Surface

The E-6 brings tremendous horsepower to a very compact footprint. It's created to bring maximum control to minimum space with exceptionally intuitive operation. A touchpad and user-supplied monitor allows you complete access to an incredibly rich range of features.

E-Series E-6 is a console control surface that interfaces with Wheatstone's WheatNet-IP networking and routing system via a single CAT6 cable. No audio is routed or mixed in the surface itself. As a networked system, the console can access any source in the entire complex, sharing remote codecs or bringing up another studio's program bus on your console.

A user-supplied high-resolution graphic display monitor can provide vivid VU and peak level indication, as well as in-depth control and programming of the console.

The E-6 control surface provides power and functionality for any radio on-air or production requirement, whether fast-action news, talk, and network origination, or major market music. The E-6 is also designed from the ground up for mixing surround for radio (or even TV). Its master panel provides comprehensive control of module functionality as well as monitoring and talkback for two studios. A popular feature is Vorsis-quality EQ, filtering, and dynamics processing on every fader!

The E-6 surface provides extensive functionality for telephone talk and news formats, with four console-wide mix-minus busses as well as a dedicated mix-minus output from each channel with a talkback button right above the fader.

E-6 surfaces can be intermixed with other surfaces in the same system, such as the E-1 or Sideboard. All surfaces include event save and recall. Set events for the morning show, normal programming, special events, remotes, weekly shows, whatever you desire. Easily recall the event to completely reconfigure the console: sources, bus assignments, and settings. Set levels of access so that the more experienced operators can accomplish even the most complex tasks, while keeping the part-time weekend op out of trouble.

- Surfaces from 4 to 24 input faders
- Graphic VGA display with comprehensive metering, clock and timer, less frequently accessed control functions, and for console programming
- Touchpad for control of functions on the VGA monitor
- Dynamics, EQ, high- and low-pass filtering
- Four AUX output busses
- Control of source select, pan, mix-minus assign, and AUX 1-4 send level from the master panel – accessed by the SET switch on each input channel strip
- Two programmable buttons per input channel strip — use for hot source select or mode change
- Mode display on each input channel strip – stereo, left, right, mono
- Control Room, Headphone, Studio 1 and Studio 2 monitoring controls
- 14 general-purpose programmable buttons
- LED display of active source on every input channel strip
- Four program busses
- Four assignable global mix-minus busses
- Individual channel mix-minus outputs
- Talkback to mix-minus button on every channel strip
- SET switch to access secondary functions such as source selection, mix-minus assign, panning
- EVENT console snapshot recall and save from the front panel
- Passcode-protected access for four levels: Intern, Operator, Production, and Engineering
- Front-panel timer control
- Low-profile design drops into a countertop cutout – about 2”/4cm above counter top and 3”/8cm below
- Available with optional meterbridge
- External rack-mounted power supply; add a second for redundancy
- Mix Engine BLADE included

E-1

Self Contained, Ultra Powerful, Cost-Effective Control Surface

With the E-1, we wanted to create a control surface that brings the most popular features of our E-Series to a self-contained chassis that includes a monitor and trackpad. In doing so, we've created a very compact control surface which, when coupled with our IP88CB Console BLADE creates a complete, standalone broadcast mixer that's ready to network whenever you are.

Whether you need to outfit one control room or several, using minimum space and adhering to a tight budget, the E-1 is for you. With its small footprint, built-in touch pad, and full feature set, the E-1 puts the power of a much larger console into a size appropriate for even the most cramped news booth or voice tracking room.

Comfortable as a standalone workstation (when used with an IP88CB) or as a part of the WheatNet-IP network along side our E-6, E-4 and Sideboard, the E-1 is ready for the future. The compact E-1 Control Surface Console and included IP88CBE Console Audio BLADE provide all the networked control, mixing, I/O and DSP needed for small to mid-sized studios at a price comparable to similar sized standalone analog consoles.

The E-1 features an integrated LCD Monitor for metering and control, a streamlined user interface with password-protected access to complex functions via LCD display and touchpad, and 4 Main Mix busses as well as Control Room and Studio Monitor outputs with selectable sources from the audio network. Complex mix-minus setups are made simple thanks to per channel mix-minus outputs with selectable reference mix and talkback interrupt.

The E-1 is designed and built completely in our New Bern, NC facility. Utilizing the finest components available - from the electronic components to the P+G faders – no corners have been cut to bring you our best at a price that works for your budget. The way we see it, regardless of price point, you deserve the absolute best we can give you.

- Digital Control Surface in new compact frame
- Integrated LCD Monitor for metering and control
- Monitor / Channel Display area is angled for better ergonomics and display view
- Streamlined user interface with password protected access to complex functions via LCD display and touchpad
- 4 Main Mix Busses
- Control Room and Studio Monitor Outputs with selectable sources from Audio Network
- Per Channel mix-minus Output with Selectable Reference Mix and Talkback Interrupt. Complex mix-minus setups made simple.
- Auto Switching between Off Line Mix and On-Line mix-minus per channel
- 99 Show Presets
- Includes IP88CBE Console Audio BLADE

IP-16 AND IP-12

Cost-Effective Modular Control Surfaces

The IP-12 and IP-16 utilize the WheatNet-IP intelligent network with access through their Console Audio BLADEs. Their modular design makes it a breeze to customize as a standalone unit or as part of the network. Both are compact, cost-effective ways to get into WheatNet-IP.

The IP-12 and IP-16 offer a great way for a small to medium radio operation to enter the world of networked audio. By moving the audio, logic and interface functions out of the board and into a single rack-space unit (called a BLADE), we are able to provide a significant boost to the flexibility, power and futurability of this console.

Tapping into the power of WheatNet-IP Intelligent Network technology through the use of the included IP88CB Console Audio BLADE, it's a perfect low-cost, small-footprint solution. AND it's a great way to start or expand a WheatNet-IP network.

The IP-12/IP-16 starts with a 12- or 16-fader control surface that looks and feels exactly like a self-contained console. Each of the input modules is equipped with an LED source name display and an A/B source selector whose sources can be set via a rotary encoder in the master section.

Each input module has access to four program busses and has cue and talkback switches. A 100mm high-quality long-throw fader and lighted channel ON/OFF switches round out the module.

The master section offers control room, studio, and headphone controls with source selection, as well as an onboard amplifier and headphone jack. Timer controls, a master talkback button, and a built-in cue speaker with level control are provided. There are four event switches and six programmable buttons available for user functions.

The meter bridge has three stereo pairs of bright 30-segment horizontal LED bar graph meters, as well as an on-board timer with controls located in the master section.

- 12- or 16-fader compact control surface
- 4 stereo program busses
- LCD source name displays
- LED-illuminated switches
- A/B source selector on each input module
- Guarded channel ON/OFF switches
- Headphone output with built-in amplifier and level control
- Control room and studio monitor outputs with independent source selectors and level controls
- Four event switches
- CUE bus with built-in amplifier and speaker
- Three pairs of bright, 30-segment stereo bargraph meters
- Six programmable buttons
- Individual Channel Mix-Minus outputs with talkback interrupt
- Source Selectable Studio Output with talkback interrupt
- On-board timer
- Uses the IP88CB Console Audio BLADE, WheatNet-IP compatible
- Modular control surface design

AUDIOARTS DMX

Cost-Effective WheatNet-IP Control Surface

Unique to DMX is its built-in networking (5-port switch) that lets you create a smaller local network, adding I/O and another console without needing an external switch. This gives you the speed and flexibility to have a complete, self-contained setup and the ability to add-on without the need for an external switch. It's an ideal setup for a two- or three-studio facility where each studio can act independently as a separate standalone entity, but the studios are linked together through an IP network. To accommodate this, DMX provides 1Gb connectivity via its built-in five-port switch for robust routing of sources and destinations between studios and integrates easily into most existing radio automaton systems.

Need more? Simply take advantage of all the WheatNet-IP Intelligent Network has to offer.

The DMX control surface is a fully integrated standalone console for on-air and production applications. It is available in an 8-fader (DMX-8) or 16-fader (DMX-16) frame with four program busses and bus-minus on every fader as well as convenient multi-function knob on each channel for adjusting pan, mode, dynamics, and input sources. The console has talkback and cue functions, EQ/dynamics, and control room, studio and headphone monitors, plus LED metering, built-in timer, and four-event recall.

Audioarts Mix Engine uses RJ45 connectors for all audio (StudioHub+ format), logic (WheatNet-IP-format), and network connections, except for the 2 mic preamp inputs (XLR).

With two sizes of control surface (8- or 16-channel) available, DMX puts a lot of radio control into a very small footprint – everything you need to take it to the air.

Connections include Mic Preamps Out; 4 stereo/dual mono analog inputs; 4 stereo/dual mono digital inputs; four stereo Program outputs (both analog and digital); 4 stereo analog Monitor outputs (Control Room, Studio, Cue, and operator headphones); 6-port logic GPIO; Engine Ethernet port; 5-Port Ethernet switch to network the Surface, Engine, and three additional devices.

DMX utilizes WheatNet-IP to access, control, and process any and all audio sources on the network. Each of the Razor I/O Interfaces pictured above provides you with 8 analog, digital, or analog/digital inputs and outputs, as well as logic and Ethernet connections on RJ45 connectors. Additionally, the Analog Razor gives you a pair of mic preamps, complete with phantom power and processing presets.

Literally Plug & Play...

1. Using standard CAT-6 cables, plug the DMX control surface and engine into the built-in switch on the Audioarts Mix Engine
2. Plug in your computer running Audioarts Navigator software to configure your network
3. If you like, add DMX Razor I/O modules to add more sources or plug into a switch and access BLADEs and the WheatNet-IP Network
4. Plug your own audio sources into the Audioarts Mix Engine and Razor(s)
5. Turn it all on and hit the airwaves

- Standalone production or on-air console with local inputs and outputs
- 5-port Ethernet switch built into Audioarts Mix Engine - no need for an external switch
- Control surface sizes for 8-, 16-fader channels
- WheatNet-IP protocol with 1Gb connectivity - any source to any fader
- Bus Minus (N-1) on each input channel
- Four program output busses
- Four event buttons for recalling entire console setups at the touch of a button
- Pre-programmed processing presets for mic/voice
- Control room, studio, and headphone jack (with built-in amplifier w/level control)
- Full EQ functions (4-band parametric with high/low pass and high/low shelving) and full dynamics (compression, limiting, and expansion) on every channel
- Multi-function channel-encoder knob with OLED display on each channel for control of EQ, dynamics, sources, pan, mode, and more
- Talkback and cue functions
- Built-in timer
- Six logic GP I/O ports for network control
- 100% WheatNet-IP compatible with all BLADEs, Consoles, Processors, and Software
- Audioarts Mix Engine is configured: 2 mic inputs on XLRs, with all additional I/O on RJ-45 connectors: 4 analog inputs, 4 digital inputs, 4 analog outputs, 4 digital outputs, 2 analog mic outputs, Headphone output, Cue output, Studio output, and Control Room output. There are also 5 ethernet ports that will interface directly with optional I/O Razor Interfaces, and a 1 Gb ethernet port for networking.
- Optional Razor I/O Interfaces can expand the system I/O with 8 stereo or 16 mono in and/or out; available in analog, digital or analog/digital version

SIDEBOARD

Tiny, turret-style or rackmount control surface

Our versatile WheatNet-IP BLADEs each have two built-in 8-channel utility mixers. We've designed SideBoard to allow you to access these utility mixers so you can use them wherever a small, purpose-driven mixer is needed.

Each SideBoard fader channel has an ON/OFF switch, PGM and AUD bus assign buttons, a programmable button that can be used for source preset, talkback, etc. and a SET switch for accessing the central source selection rotary control. Each fader has its own 8-character input source display. The stereo PGM output is metered with dual 20-segment LED bargraphs.

The monitor section has a headphone output with level control, and six programmable monitor source hot buttons for instant selection. There is also a source encoder knob with a TAKE switch, and an associated display that, as with the input channels, can access any signal in the Intelligent Network.

- Ultra-compact table-top control surface
  – Also available as a rackmount control surface
- 8 faders with ON/OFF switches
- PGM and AUD busses
- Source selector with rotary encoder and display
- 20-segment stereo LED bargraph metering
- Headphone output with amplifier and level control
- Six programmable buttons
- Works in conjunction with any WheatNet-IP BLADE
- Also available in a 4-fader version

TALENT STATIONS

REALLY tiny, turret-style or counter-mount control surfaces

The talent stations you've been waiting for. These networked control panels put talent mic controls, headphone volume and source selection, and much more at the talent's fingertips. No more having to wire together a talent station with mic, amp, headphone and speaker controls.

TS-22

All new from Wheatstone, the TS-22 Talent Station is a first for radio broadcast studios. This single panel controller plugs into the WheatNet-IP Intelligent Network to provide controls for mic, headphone, amplifier and speaker levels all in one turret. No outboard equipment required and no wiring it all together. It's all right here in one IP-accessed turret.

TS-4

The smaller TS-4 talent station provides lighted on/off/cough and talkback switches for a single talent microphone. A rotary headphone source selector is provided along with an OLED display for identifying the selected source. The source selector doubles as a volume control. The TS-4 connects to the WheatNet-IP network via a single Ethernet cable.

TS-22 & TS-4 FEATURES

- Lighted mic ON/OFF switches
- Built-in headphone amplifier
- Headphone level control
- Headphone source selector
- Mic talkback switch
- Works in conjunction with any WheatNet-IP BLADE
- Available in a desktop turret or as a countertop flushmount

TS-22 ADDITIONAL FEATURES

- A/B source selector
- Built-in timer
- Six programmable buttons
- Mounting turret
- Speaker level control

MEET BLADE-3

Everything you need to put music on the air... all the way from audio input to your transmitter, in a single box.

When we invented modern radio audio networking, we vowed to build the first truly intelligent IP audio system. One where every interface held the DNA of the entire system for recovery. A system with true Gigabit connectivity. One that required only a single CAT-6 cable to interface any network piece – to carry audio AND control information. A system that could actually be up 24/7/365 and handle everything you need, yet so simple to interface as to be virtually foolproof. Well, here ya go...

Gigabit Connectivity

All BLADE-3s use Gigabit Ethernet. This makes all the difference in network capacity, near-zero latency, throughput, reliability – in short, everything.

Virtually All Audio Formats

BLADEs are built to handle native analog, microphone, AES/EBU, SPDIF, AOIP, MADI, SDI and AES 67. Once any type of audio is ingested into the WheatNet-IP network, any type of audio input can be converted to any other type of output. Example: analog to digital, AES to IP, MADI to AES 67, mics to AOIP, etc.

Two 8x2 Utility Mixers

Each BLADE has two 8x2 utility mixers that can be configured in many different formats. Two 8x2, four 4x1, etc. These internal mixers are full featured and include panning, channel ON/OFF, fader levels, and access to any source signal in the system. They also include a full ACI (Automation Control Interface) allowing remote control, ducking, auto fade, channel on/off, levels, source assign, etc.

Audio & Control Routing Matrix

You can take any audio input and route it to any output or all outputs. You can take any GPI and send to multiple GIO's or you can marry GPIO's to an audio source and have it follow that source through the system. All through one RJ45 connector for each device.

Dual OLED Displays*

Each BLADE has two small full color displays for monitoring and control of most functions right from the front panel. Setup, monitoring, network information, alarm status, enabling and operating utility mixes, setting input and output gain, enabling audio processing – and whatever else we can think of in the years to come.

Silence Detection

In case of an operator error, this can be programmed as a "source" or "input" for the failover. If an operator misses a cue or leaves a fader down when the system senses silence it can take the automation system directly to air or use the integral clip player to play music and ads until the operator catches up. Every single audio output channel can be programmed with a silence detection and automatic switch-over function.

Source & Destination Control

Each BLADE has the ability to route any source to the destinations on that BLADE.

Built-in Audio Clip Player*

There is an optional built-in audio clip player that can be used to put emergency audio on the air. The files are managed in Navigator where you can add files, organize the playlist, and fire playback with a logic port. Silence or LIO can trigger this playback or it can be manually controlled from Navigator.

Front Panel Logic Indicators*

Status indicator for active logic and the direction (in or out) of the BLADE.

12 Universal GPI/O Ports

Each BLADE is equipped with RJ45 connectors to provide 12 Universal Logic Ports which can be individually designated during set up as inputs or outputs. These ports are used to interface the various external switches, indicators, and control functions you need.

128 Software Logic Ports*

Used to interface with software switches, indicators, and control functions throughout the system.

LIO/SLIO Logging*

This logging app tracks LIO/SLIO activity throughout the system and shows the user when any input comes into the system and when it is sent, via multicast, across the network and to the output. A comprehensive Sort Section and Activity Visualizer let the user see a detailed view of what happened in the system.

Stereo Audio Processor*

Each BLADE-3 has a stereo multiband processor with the following: 4-band parametric equalizer, 3-way crossovers, 3 compressors, 3 limiters, and a final lookahead limiter. This is a "routable processor," meaning it is not limited to the local I/O on the BLADE – it can be considered a network resource.

AES67*

Ability to support AES67 compliant devices. Allows WheatNet-IP system to synchronize to IEEE1588 from a PTP grandmaster clock and ingest /stream AES67 compliant packets.

Associated Connections*

This is a great feature in BLADEs for callers, codecs, networks, remote broadcast & live talk shows that require a mix-minus. You can create a predetermined back haul, IFB feed or mix-minus for each device based on its location in the system or on a fader. If you have 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 destination. When a base connection is made, up to ten additional connections can be made. This significantly helps streamline studio routing, phone and codec selection.

Aliases*

Allows the same source to be identified by different names. A signal can now be given an alias(es) which can be a more friendly name that operators understand. Multiple aliases can be used so different operators can share logic functions, source feeds, routing, etc.

44.1, 48K, External Sync or AES 67 Operation*

This is the overall clocking for your digital system. The system clock rate can be either 44.1K, 48K, External Reference or AES 67.

Clock/Sync Indicators*

The 1588 Clock Loss Indicator notifies the user when the AES67 clock source has been lost.

The AES Sync Loss Indicator notifies the user when an AES input has lost its clock source. Also generates Alarms for any AES3 input that becomes disconnected.

Onboard Intelligent OS

Each BLADE has its own intelligence/ operating system that allows it to be a powerful standalone router, be part of a larger system, or control the entire routing system. WheatNet-IP is an embedded system that does not require outside intervention or control from 3rd party software running on PC's. The configuration of the entire network is stored in each BLADE.

44.1K or 48K Sampling Rates

System operates at 44.1K or 48K while converting incoming signals up or down as needed.

Auto Mono Summing

Any stereo signal sent to a mono output is automatically summed: If you route a stereo source or stereo mix to a mono destination such as hybrid or codec, the system will automatically "sum" the left and right channels together.

Signal Splitting

The BLADE can take any Stereo AES /EBU or Analog input or output and split it into two mono channels.

Gain Control on Every Input & Output

Gain control on every input and output. This allows the user to calibrate the input level for each source or destination.

Balance Control

There is a balance control on every stereo input and output.

Flexible Signal Configuration

Signal can be defined as up to 16 mono, 8 stereo or any combination of mono and stereo totaling 16 channels.

Studio Bypass

With the push of a button or a command from the automation system, this output can feed the transmitter, freeing the on-air studio up for production or voice tracking.

Front Panel Input and Output Metering

There is metering for every input and output on the system – 12-segment, multi-color LEDs that can be used for metering inputs and outputs as 8 pairs or 16 mono signals.

Front Panel Headphone Jack and Source Selection

This is a self-powered headphone jack with volume control. It allows you to select and monitor any source or mix on that BLADE or in the entire system.

Salvos/Macros

There are an unlimited number of salvos and macros, used when more than one route needs to take place. These are preprogrammed events or a series of switched events that can happen within a BLADE or thoughout an entire WheatNet-IP network.

Automation Control Interface (ACI)

This is a "tool box" in every BLADE that allows full control functions such as routing, ducking, panning, full logic control, mixing and silence detection. Each BLADE supports up to 20 ACI connections which can be used with devices like Talent Stations, GP panels, Sideboards, etc. It also allows control of our partners'/third party equipment.

Screen Builder*

While not built into a BLADE, the screen builder app offers the scripting capability of a GP16, the control of GlassE, monitoring and metering of the IP Meters app, and ACI protocol. This will allow a user to build a custom screen to fit many needs in specific applications. Will work with any version BLADE.

SNMP

Wheatstone's enhanced Simple Network Management Protocol (SNMP) management systems use SNMP to monitor network attached devices such as BLADEs for conditions that may require action by the end user. This tool gives you centralized monitoring over large distributed systems. You can configure alarms and set thresholds to get notified if and when a problem occurs. The instant alarms and notifications help you take quick corrective actions through e-mail, SMS, and executing custom scripts.

Connection Choices

Has both DB25 to make transitional wiring easy for existing BRIDGE TDM customers and RJ45 – Studio Hub compatible RJ connectors for input and output.

Info Screen

Each signal has a new info screen allowing the user to add text to signals such as wire numbers, termination locations, etc.

LIO Test

LIO Outputs can be tested from the front panel of each BLADE.

Backup

Due to its distributed intelligence, the system has automatic backup capability.

Alarm Notification

Using Alarm doc or LED status, BLADEs can report on a wide variety of error and alarms.

NTP

System can lock to a NTP server on the network for time of day synchronization.

Front Panel Locking

All BLADEs' front panels can be locked for security

Version Checker

Built in version checker to aid in update process.

Crosspoint Save

Can save a current copy of all crosspoints in the system. This is done in Navigator.

Debugging

A comprehensive logging application is included for every BLADE to aid in system debugging.

No Cooling Fans

They don't need them!

Specific Functions for Specific BLADES

Mic Pre

Using the 88m you have 8 Mic preamps

Mic Processor

using the M4 you have 4 Mic preamps, but also 4 M1 mic processors.

Eight Audio processors

The Aura8-IP has 8 stereo processors that allow user to process any audio in the WNIP system and route that processed audio to any output.

High density ingest

Using a MADI BLADE user can connect to a variety of 3rd party devices and ingest up to 64 channels of audio over a single coaxial cable.

External Clock reference

88d, 88ad, Aura8-IP BLADEs can accept an AES reference into port 8 to use a master clock reference for the system.

I/O BLADE-3s

IP-88A Analog, IP-88D Digital, IP-88AD Analog/Digital and IP-88M Microphone

I/O BLADEs are far more than mere access units connecting studios, elements and Wheatstone control surfaces in the WheatNet-IP Intelligent Network. Yes, I/O BLADEs convert audio and logic inputs to data streams on the network and convert outgoing data streams to hardware outputs. But these 1RU I/O units – which come in analog, digital and analog/digital I/O units - also have intelligence inside. Each I/O BLADE comes with a CPU and operating system so you can do amazing things with your audio network, starting with routable mixing, logic-follow-audio and a whole lot more.

IP88A Analog I/O BLADE-3

The IP88A is an analog input/output BLADE. It handles input and output, each with 8 stereo channels, 16 mono channels, or any combination totaling 16 discrete channels.

IP88D Digital I/O BLADE-3

The IP88D is an AES digital input/output BLADE. It handles input and output, each with 8 stereo channels, 16 mono channels, or any combination totaling 16 discrete channels.

IP88AD Analog/Digital I/O BLADE-3

The IP88AD is a combined analog and AES digital input/output BLADE. It handles input and output, each with 8 stereo channels, 16 mono channels, or any combination totaling 16 discrete channels. Half of these are analog, the other half AES digital.

IP88M Microphone I/O BLADE-3

The IP88M is an analog input/output BLADE with microphone-level inputs. It has eight built-in microphone preamplifiers complete with pad, phase switch, and phantom power. It provides eight analog line-level outputs.

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.

- CPU with OS and standalone operation
- 24-bit A/D and D/A convertors
- 1RU, no fans
- AES67 compatible
- One Gigabit Ethernet port
- Two stereo 8x2 utility mixers
- Stereo multiband processor
- Embedded audio playback (optional)
- Silence sensing can be applied to any outputs
- 16 analog input channels
- 16 analog output channels
- RJ45 connectors for audio (8 in, 8 out)
- Four D-Sub connectors for audio (2 in, 2 out)
- 12 universal logic ports (GPIO) on 2 RJ45 connectors
- 128 software logic ports
- Front panel headphone jack
- Two full color OLED displays on front

STAGEBOX 1

High Density I/O

The 4RU StageBox One extends console I/O, providing 32 mic/line inputs, 16 analog line outputs, and 8 AES3 inputs and 8 AES3 outputs as well as 12 logic ports and dual Ethernet ports. Its heavy duty construction makes it adept for on-the-go applications, such as remote sporting events. StageBox One works with all WheatNet-IP audio networked consoles.

MIX ENGINE BLADE-3

IP-88E

Every nerve center needs a brain. For many Wheatstone control surfaces, the IP88E Mix Engine BLADE-3 is it. This is the unit that handles the audio mixing for most E-Series control surfaces and the Wheatstone Glass-E Virtual Console.

Unique to Wheatstone's console engine approach is its true IP connectivity. The control surface networks directly into the network switch itself, giving it access to mix engine functions as well as direct access to automation systems, network applications and other control surfaces that make true system interoperability possible. Other IP audio systems tie the control surface and the console engine together using CAN bus, thereby filtering all outside communications through the console engine first and isolating the control surface from other elements and functions in the network.

The IP88E BLADE-3 houses all the DSP processing power for an individual control surface and distributes the four stereo PGM busses, four stereo AUX sends, per-channel mix-minus feeds, monitor outputs, and other bus signals to the network. Once on the network, bus signals are available as sources and destinations anywhere. This creates an extremely flexible system in which program outputs from one surface can be sources on any other surface; for example, a news mixer's program bus can be brought up 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 for interfacing various external switches, indicators and devices for control purposes.

The IP88E is AES67 compatible for use with other AES67-compatible devices and signals in the WheatNet-IP Intelligent Network.

- True IP connectivity: Includes DSP processing
- 12 universal logic ports (GPIO) on 2 RJ45 connectors
- AES67 compatible
- Front panel headphone jack
- OLED front panel display with graphical menu
- One Gigabit Ethernet port

CONSOLE AUDIO BLADE-3

IP-88CB

Console Audio BLADE-3s provide audio I/O and DSP mix engine functions for WheatNet-IP control surfaces through the network switch. Unique to Wheatstone's console engine approach is its true IP connectivity. The control surface connects directly into the network switch itself, giving it access to mix engine functions as well as direct access to automation systems, network applications and other control surfaces that make true system interoperability possible.

The IP88CB Console Audio BLADE-3 comes standard with L-8, L-12, E-1, IP-12 and IP-16 control surfaces. A single Console Audio BLADE-3 is all that is needed for most studio operations, but busy studios often require additional I/O BLADEs or an upgrade to Wheatstone's newer 2RU model with double the I/O.

At double the I/O, the new 2RU Console Audio BLADE-3 comes with 8 AES inputs, 8 stereo analog inputs, 8 AES outputs, and 8 stereo analog outputs on StudioHub+ RJ45s, plus 4 mic level inputs with gain trim and switchable phantom power on XLRs. 1RU Console Audio BLADE-3s are also available for the same control surfaces, and come with standard I/O (4 AES inputs, 4 stereo analog inputs, 4 AES outputs, 4 stereo analog outputs, and 2 mic level inputs).

Both the 2RU and 1RU Console Audio BLADE3 provide control room and studio stereo analog outputs on XLRs as well as cue and headphone outputs on both RJ45 and 1/4" TRS and 12 GPI logic ports on RJ45.

Paired with Wheatstone's L-8, L-12, E-1, IP-12 or IP-16 control surface consoles, the IP88CB provides an economical standalone/networkable solution.

With XLRs for mic inputs and monitor outputs, 1/4" TRS for sends to headphone and cue amps, and StudioHub+ compliant RJ45's for all the general purpose analog and digital I/O, the Console Audio BLADE-3 is essentially a plug-and-play console system in a box. Just plug the Console Audio BLADE-3 and the related WheatNet-IP control surface into an Ethernet switch and you're ready to go.

All Console Audio BLADEs are AES67 compatible for use with other AES67-compatible devices and signals in the WheatNet-IP Intelligent Network.

There are three types of IP-88 Console Audio BLADES:

CB:	Used with IP-12 and IP-16 consoles
CBE:	Used with E-1; includes DSP processing
CBL:	Used with L-8 and L-12 consoles

- True IP connectivity
- 24-bit A/D and D/A convertors
- 12 Universal Logic ports (GPIO) on 2 RJ45 connectors
- Integrated I/O Mix Engine BLADE
- AES67 Compatibility
- Cue and headphone outputs on RJ45 and 1/4" jack
- Control room and studio monitor outputs on XLRs
- OLED front panel displays with graphical menu
- Gigabit Ethernet port

I/O STANDARD 1RU ENCLOSURE:

- 2 Mic Preamps w/ XLR inputs, phantom power and gain trim
- 4 Stereo (8 Mono) Analog Line inputs on RJ45
- 4 AES inputs on RJ45
- 4 Stereo (8 Mono) Analog Line Outs on RJ45
- 4 AES Outputs on RJ45

I/O CB32 2RU ENCLOSURE:

- 4 Mic preamps w/ XLR inputs, phantom power and gain trim
- 8 Stereo (16 Mono) analog line inputs on RJ45
- 8 AES inputs on RJ45
- 8 Stereo (16 Mono) analog line outs on RJ45
- 8 AES outputs on RJ45

** NOTE: Control Room, Studio, Cue and Headphone outputs are part of the total of AES and stereo analog outputs. These may be reassigned for use as other outputs as desired.*

SPECIALTY BLADE-3s

BLADES that are made to address specific applications

MADI BLADE-3

The MADI BLADE-3 is a high-density multichannel I/O BLADE for converting a 64-channel MADI input to data streams on the WheatNet-IP Intelligent Network, and converting network data stream to 64-channel MADI outputs.

With this, you can now ingest into WheatNet-IP audio from any system that utilizes MADI. You don't need a full blown control surface to use the MADI BLADE-3, either. With WheatNet-IP NAVIGATOR, you can control routing all of your MADI gear in ways that can breathe new life into your existing infrastructure. Or, use our SideBoard control surface to take advantage of the MADI BLADE-3's built-in utility mixers.

As a bridge to the WheatNet-IP audio network, this 1RU box interfaces to intercom systems, TDM routers, ProTools systems and DAWS that are MADI-capable. It provides 64 bidirectional channels (AES 10) between the WheatNet-IP audio network and a TDM or intercom system over one coaxial cable.

The MADI BLADE-3 uses BNC connectors for coaxial MADI inputs and outputs (1 each), and an SFP (small form-factor pluggable) transceiver slot for fiber connectivity. It has a 1000-base-T (Gigabit) network interface 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.

Like all BLADE-3s, the MADI BLADE-3 has its own CPU and operating system, is AES67 compatible, and has two built-in 8x2 stereo mixers. It comes with 12 universal logic (GPIO) ports for interfacing various external switches, indicators and devices for control purposes – as well as 128 software logic ports for routing and controlling devices anywhere on the network.

- 64-channel bidirectional MADI interface
- BNC connectors for coaxial MADI inputs and outputs (1 each)
- One SFP transceiver slot for fiber connectivity
- CPU with OS
- 24-bit A/D and D/A converters
- 1RU, no fans
- AES67 compatible
- One Gigabit Ethernet port
- Two stereo 8x2 utility mixers
- Silence sensing can be applied to any output
- 12 universal logic ports (GPIO) on 2 RJ45 connectors
- 128 software logic ports
- Two full color OLED displays on front
- Front panel headphone jack

LIO-48 LOGIC BLADE

The LIO-48 is a high-density logic BLADE that can be added to any WheatNet-IP audio network to give you more of what you need in a modern studio: control. The LIO-48 Logic BLADE provides 48 universal logic I/O ports, each individually configurable, for machine control of devices and elements in the network.

LIO-48 logic ports can output to closures for machine control of on-air lights, mic tallies, transmitter remote control and the like. The LIO-48 also can receive machine closures from external devices like satellite receivers, remote mic panels or the automation system for triggering channels ON/OFF.

The LIO-4's logic I/O meter provides drill-down information for each of the 48 ports.

- 48 universal logic ports, individually configurable
- Front panel LED status indicators
- Ethernet port

HD-SDI BLADE-3

The HD-SDI BLADE-3 is a specialty BLADE for extracting encapsulated audio from a serial digital interface (SDI). With the HD-SDI BLADE-3, you can ingest audio into the WheatNet-IP Intelligent Network from video production automation systems, routers, and other professional video equipment that use HD-SDI.

Our new specialty HD-SDI BLADE-3 for the WheatNet-IP Intelligent Network de-embeds multiple audio channels from HD-SDI streams so you can mix, process or simply route audio to your console for final broadcast. This 1RU is capable of de-embedding up to four HD-SDI streams, and up to 8 AES/EBU pairs (16 audio channels) per stream.

The HD-SDI BLADE-3 has four BNC connectors for coaxial input, and includes logic control, onboard utility functions and the dedicated controller that is at the core of its intelligence. Like other BLADEs, the HD-SDI BLADE-3 has its own CPU and operating system and provides a 1000BaseT (Gigabit) network interface for optimum network QoS and reliability. The HD-SDI BLADE-3 is AES67 compatible for interoperability with other AES67 compatible systems and devices, and has two built-in 8x2 stereo mixers. It comes with 12 universal logic (GPIO) ports for interfacing various external switches, indicators and devices for control purposes – as well as 128 software logic ports for routing and controlling devices anywhere on the network.

- De-embeds audio from four HD-SDI streams
- De-embeds 8 AES/EBU pairs (16 audio channels) per stream
- 4 BNC connectors for coaxial input and 4 BNC loop connectors
- CPU with OS
- 1RU, no fans
- AES67 compatible
- One Gigabit Ethernet port
- Two stereo 8x2 utility mixers
- 12 universal logic ports (GPIO) on 2 RJ45 connectors
- 128 software logic ports
- Front panel headphone jack

SWITCHBLADE

AoIP Appliance

SwitchBlade combines the power of AoIP control with SIP connectivity and codec bandwidth optimization, removing barriers to combining studio operations in separate locations

Wheatstone introduces a revolutionary AoIP appliance that removes the barriers to seamlessly sharing studio operation and high-quality programming between facilities, sports venues, and other sites in separate locations.

SwitchBlade is a 1RU appliance for the WheatNet-IP audio network that includes audio codecs, SIP messaging and ACI control interface. It is the first product of its kind to combine the power of AoIP logic control with SIP connectivity and codec bandwidth optimization to transport both high-quality programming and the control logic critical for full studio operation between sites.

SwitchBlade is the missing link for connecting WheatNet-IP facility to WheatNet-IP facility from city to city or across the world. Not only will it carry the audio, it carries the control, which means you can send and receive router commands, automation control, and even fader levels across the two locations. This is a real game changer because Switchblade finally makes it possible to monitor each point of the audio chain and switch audio locally from Network Operation Centers around the world.

Previously, broadcasters were able to transfer high-quality programming across public or private links but had to leave logic control of elements back at the studio with the AoIP system. SwitchBlade includes WheatNet-IP's Application Control Interface (ACI) for remotely triggering events and elements in the WheatNet-IP environment, such as turning mics on or off, setting levels and adjusting EQ dynamics through software logic (SLIO) control. ACI is unique to WheatNet-IP and is used by more than 60 technology brand partners to seamlessly integrate automation systems, monitoring and clocking systems, and more into the WheatNet-IP audio network environment. Along with control commands supported via the WheatNet-IP ACI, specialized virtual interfaces for SwitchBlade can be developed using ScreenBuilder virtual development tools.

SwitchBlade has two ethernet connections, one for connecting to a SIP service provider or SIP-enabled PBX phone system and the other for connecting directly into the WheatNet-IP audio network. SIP is a messaging protocol used for establishing connectivity over public and private IP links and establishing interoperability between codecs. SwitchBlade comes with major codecs, including 256 Kb/s stereo Opus and G.711, for high quality program distribution between studios, networks, and affiliates or news gathering or sports venues.

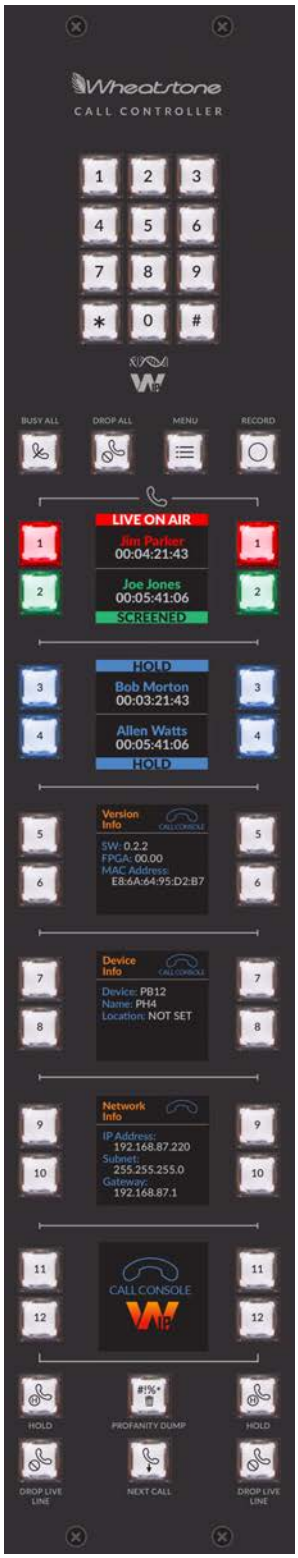
Once connected, SwitchBlade offers multiple modules that show up as sources/destinations in the WheatNet-IP NAVIGATOR software, and are therefore available on every WheatNet-IP console surface and monitor selector in the system. Each module can carry ancillary signaling embedded in the audio streams for equipment activation and control, and each can be controlled, configured and even reset without interfering with the operation of the others. In addition, each of the modules can link up to any remote SIP-compliant Opus or other codec – or even another SwitchBlade – to enable broadcast-quality program contributions to be delivered direct to all channels on the WheatNet-IP network.

SwitchBlade can be used in conjunction with WheatNet-IP for a number of applications, including:

- Consolidating program operations for several stations scattered across a region.
- Live remote production, including high-quality programming and console/mic control between home studio and sports or concert venues.
- Sharing program and operating control between sister studios over an IP link.
- One-to-many STL codecs between one studio and several transmitter sites; 1RU SwitchBlade at the studio feeds two, four, six or more existing SIP-compliant codec units at each transmitter site.
- Transferring high-quality music between two facilities or from a cloud-based automation system over the common Internet.

CALL CONTROLLER

Control Panel for SwitchBlade Telco Applications



Wheatstone Call Controller is an optional hardware panel that provides control of the SwitchBLADE for managing telco via OLED displays for line status indication as well as a dial keypad and buttons for recording, profanity delay dump, answer next, hold, busy all, and drop call.

Call Controller fits select Wheatstone consoles or can be ordered in a turret-style mount.

SwitchBLADE has two network connections: one for connecting to one or more SIP phone providers via the Internet or to an internal SIP PBX, and the other for connecting directly into the WheatNet-IP audio network. Once connected, SwitchBlade offers multiple lines that show up as sources/destinations in WheatNet-IP NAVIGATOR software, and are therefore available on every WheatNet-IP console surface and monitor selector in the system. Indication of each line is available throughout the WheatNet-IP audio network and answer/hangup can be done by direct software logic (SLIO) control.

The built-in bus minus functionality on every console channel returns a clean feed to the caller without the need for a telephone hybrid.

Each of the lines can be set up for a number of unique shows or applications, including as a hotline or information line that records calls automatically and routes the recording to storage. Phone lines and setup can follow shows automatically, with indication of each line available through the WheatNet-IP audio network. Along with status reports and control commands supported via the WheatNet-IP ACI.

SwitchBLADE includes all the major VoIP phone codecs, including G.711, G.722, G.729 and many others for high-quality voice contributions on multiple platforms.

SPECIALTY NETWORK INTERFACE

Network EDGE

With the growing use of IP wireless radios and other commercial connectivity options for STLs, the new Network EDGE introduced by Wheatstone at NAB offers a broadcast-quality interface into these inexpensive transport methods.

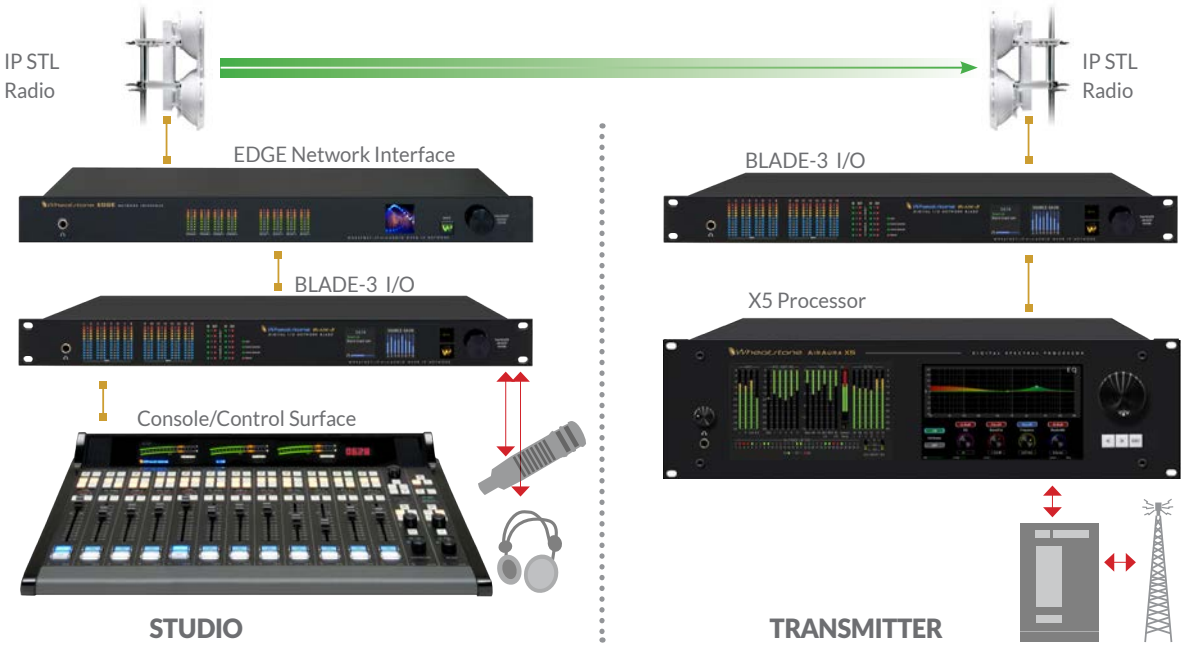
Network EDGE is designed specifically as a translator between high-quality, low-latency studio networks such as WheatNet-IP and low-bandwidth STL connectivity options such as IP wireless radios.

IP wireless radios in the unlicensed 5 or 24 GHz range are priced from a few hundred to several thousand dollars.

Typically located at the studio, the Network EDGE interfaces directly to an IP wireless radio or commercial leased line for point-to-point connectivity between locations. Network EDGE can be used with any of the major IP radio brands currently on the market. When used within the WheatNet-IP system, with a Network EDGE at one end and a BLADE at the other, this opens up a world of possibilities based on BLADE I/O functionality such as silence detection, clip player, logic for automation, et al.

The Network EDGE includes local I/O (two AES and two stereo analog) and 12 programmable logic ports.

- IP Wireless STL (half-duplex) compatible
- 2 programmable logic ports (GPIO)
- 4 audio inputs: 2 AES/2 analog
- Compatible with WheatNet-IP BLADEs for control functions
- Front panel headphone jack
- 1RU, no fans
- Ethernet port



HIGH-SPEED BIDIRECTIONAL IP DATA THROUGHPUT

When you put up an IP link from the studio to the transmitter, your transmitter site immediately becomes part of your Ethernet network. Audio from a WheatNet-IP audio network I/O BLADE or EDGE unit connects directly into the IP wireless radio through RJ-45 connectors, and because it's all IP, that means you can carry audio, video, voice-over-IP, and data of all kinds. Back and forth. Both ways. If you have video surveillance at your tower site, you can carry that data back. If you have a Burk or other transmitter remote control system, you can carry that data back. And, if your transmitter is remotely located with spotty or no cellphone coverage, you can put VoIP out there and carry that back and forth over wireless IP. Your remote tower site is now part of your network, even though it's miles down the road.

Wireless IP systems can go some distance, too. The longest shot on wireless IP microwave is 55 miles, though most average in the 20 to 25 mile range. The make or break rule is, as always, line of sight.

As for throughput, IP microwave has plenty of that, too. For example, a WheatNet-IP audio IP-88D BLADE into an IP wireless radio can run 8 stereo channels across a wireless IP link and still have enough bandwidth left over for all those things we just talked about: video surveillance, VoIP, remote control and other periphery functions.

M4IP-USB BLADE-3

Four Channel Mic Processing BLADE

This single rack unit BLADE-3 gives you four mic processors that are accessible from anywhere in your WheatNet-IP network. The M4IP-USB offers four completely independent channels of DSP-based high quality voice processing as well as four independent USB ports.

The M4IP-USB Microphone Processor BLADE combines four high-quality microphone preamps, four channels of Vorsis Embedded microphone processing, four independent USB ports, and a WheatNet-IP BLADE interface, allowing you to place four microphone inputs anywhere in your WheatNet-IP Intelligent Network (although it also works just fine as a standalone processor). The preamps and processors are accessed and controlled from any point on the network via its Windows-based GUI.

The M4IP-USB is a great way to maximize your investment in on-air talent by combining four mic processors into a single rack space, accessible from anywhere.

The M4IP-USB microphone processor is equipped with four matched Super-Quiet (SQ) microphone preamplifiers featuring an extremely low noise floor, very wide dynamic range, faithfully accurate transient response, and ruler flat frequency response. Operating in harmony with high quality 24-bit A/D converters and a 96kHz base sample rate, the M4IP-USB adds absolutely no undesired coloration to the signal and faithfully preserves the sound of any microphone and talent combination. It also features a four-section equalizer with high and low shelving EQ and two bands of fully parametric EQ, high and low pass filters, and de-esser and expander functions.

The signal path of the M4IP-USB includes four completely independent channels of Wheatstone's smooth-sounding Vorsis dynamics processing. Adjustable from anywhere on your network, the M4IP-USB offers the security of password protected TCP/IP-based remote control and no front panel controls.

Wheatstone-designed Equalization

Based on great-sounding designs built for Wheatstone's other high performance professional audio applications, the M4IP-USB's equalization section operates predictably and adds no noise, ringing, phasiness or other undesirable coloration to the sound.

Wheatstone-designed Dynamics Processing tools

A high performance and fully adjustable downward expander, de-esser, and smooth sounding broadband compressor and selectable low distortion final look-ahead limiter round out the M4IP-USB to create powerful and authoritative presence to production or on-air microphones.

Processing Presets

A variety of ready-to-use factory processing presets are provided, carefully tailored for different processing goals and formats. You can select a factory preset, confident that it will sound great just as it is. Or use a factory preset as a starting point and create a custom sound for each announcer, then save the new settings as a personalized user preset. In a facility with multiple microphone processors, presets saved in one unit can be easily copied to the others.

WheatNet-IP Native

The M4IP-USB is a WheatNet-IP BLADE which gives it a great deal of additional functionality. All Wheatstone's BLADEs are single rack-space interfaces that talk directly to WheatNet-IP control surfaces, other BLADEs and compatible third-party equipment. They contain features such as router control, logic control, gain control, two 8-channel utility mixers, silence detection and switching (among other things).

Wheatstone Talent Control Interface and GUI

Voice talent can activate his or her own personal sound at the press of a button using the Talent Control Interface, a special GUI designed for preset recall only. The Wheatstone Talent Control Interface software can reside on an air studio/control room PC and gives talent the ability to recall presets from any Wheatstone microphone processor without allowing processing adjustments.

All parameters of the M4IP-USB are controlled using the included Windows-based GUI (see page 10).

- Four extremely high performance microphone preamplifiers with 48V phantom power
- Four completely independent processing channels
- Four independent USB ports
- Four stereo analog line level outputs
- Four stereo AES outputs
- All digital, field proven Wheatstone-designed advanced processing algorithms
- Phase Scrambler to correct asymmetrical voice waveforms
- High- and low-pass filters
- Fully adjustable downward expander
- Precision de-esser sibilance controller
- Four-bands of EQ: low-frequency shelving, two-band parametric, high-frequency shelving
- Broadband compressor
- Final precision peak limiter – can be defeated if desired for lower latency
- TCP/IP-based remote control from anywhere via M4IP-USB Remote Control Software
- Talent Control Interface software for preset recall without processor control
- Front panel metering of input and output levels

WheatNet-IP BLADE-3 features include:
—12 Universal Logic ports (GPIO)
— Front panel headphone jack
— Front panel LED bargraph metering
— Built-in routing control
— Two built-in 8-channel utility mixers
— Gigabit Ethernet
— Silence sensing can be applied to any output
— Built-in Audio Clip Player
— Front Panel Logic Indicators
— LIO/SLIO Logging
— Aliases
— Associated Connections
— Dual OLED Displays
— Clock/Sync Indicators and more

AURA8-IP BLADE-3

Eight-Channel Vorsis Audio Processing BLADE

Rack up eight audio processors in one networkable unit. Convenient, cost-effective, and more than able enough, the Aura8-IP audio processing BLADE-3 has I/O onboard and eight fully independent Vorsis multiband stereo audio processors. This 1RU BLADE-3 offers processing control and network connectivity through the WheatNet-IP Intelligent Network and full AGC, compression and limiting functions for HD, streaming or podcasting separate channels of programming in one unit.

The Aura8-IP BLADE-3 audio processor brings two of Wheatstone's core technologies together: Vorsis ultra-high resolution audio processing and the WheatNet-IP Intelligent Network. Merging these technologies in a single product provides a convenient and cost effective way to access audio processing wherever you need it on your WheatNet-IP network. The Aura8-IP occupies a single rack space, but packs in an impressive eight fully independent Vorsis® multi-band stereo audio processors.

Each processing chain consists of a 4-band parametric equalizer followed by a crossover and three bands of compression. The compressors each feed their own limiters, whose outputs are then fed to a broadband lookahead limiter for tight peak control. The Aura8-IP has its own local I/O, with four stereo pairs of AES digital audio and four stereo pairs of analog line level audio in and out, and can function as a standalone processing engine. Because it's a BLADE-3, it can also instantly configure itself as part of a new or existing WheatNet-IP Intelligent Network, making its processing power available throughout that network.

Like all BLADE-3 access units, the Aura8-IP BLADE-3 is AES67 compatible.

The Aura8-IP is configured and controlled over Ethernet using a laptop or desktop computer. Included with the unit is Wheatstone's acclaimed "Guru" GUI software, which allows easy setup of the processing using familiar, straightforward controls. Also available is a more sophisticated control interface called "GUI Pro," which provides access to every individual processing parameter for expert-level adjustments.

- Highest performance 24-bit A/D and D/A convertors
- 8 complete Vorsis multiband processors, each with:
  - 4-band parametric equalizer
  - 3-way crossover
  - 3 compressors
  - 3 limiters
  - Final lookahead limiter
- Two 8-channel utility mixers
- 4 AES digital inputs on RJ45 and "D" connectors
- 4 stereo analog inputs on RJ45 and "D" connectors
- 4 AES digital outputs on RJ45 and "D" connectors
- 4 stereo analog outputs on RJ45 and "D" connectors
- Built-in router control
- AES67 compatible
- Full color OLED front panel displays
- Front panel headphone jack
- Front Panel Metering
- Rugged Power Supply
- Can be used standalone or as part of a WheatNet-IP Intelligent Network
- Silence sensing can be applied to any outputs
- One Gigabit Ethernet port

What can you do with the Aura8-IP? Virtually anything you want! These are just a few of the ways you might use Aura8-IP. As a standalone processor, you get eight stereo channels of jaw-dropping Vorsis ultra high resolution processing power for under $500 per channel. That alone is worth the price of admission. But when you take advantage of Aura8-IP being a BLADE with its built-in utility mixers, full logic, SNMP messaging and silence detection, and use all that with its eight channels of processing, its power is really unleashed. How many ways can YOU think of to use the Aura8-IP?

Low Latency Talent Headphone Processing

Often, the key to talent turning in their best performances is what they hear in their headphones. Give them a sound that drives them to brilliance with Aura8-IP.

Remote Feed Conditioning

The great and hard thing about radio is that you can tie the world together on your broadcast. That means you can have audio flying in from all over. Aura8-IP is exactly what you need for all of it, at a price that will make you very happy!

Talkshow Call-Ins

Processing can make a huge difference in the on-air quality of call-ins on your talk shows. Aura8-IP is up to the task.

Mic Processing

Every microphone does a better job when it's processed not only for the voice that's speaking into it, but for the path it's taking on the way to someone's ears. Aura8-IP does a superb job processing microphone audio.

Satellite Uplink Peak and Spectral Control

The key here is keeping signals under control. Aura8-IP is perfect for the job, keeping an eye (or ear) on the peaks as well as ensuring the spectral range stays consistent.

IFB Conditioning

Clear communications between director, engineering and talent is key to presenting successful sports and multiple-report shows. Aura8-IP is perfect for cleaning up IFB.

STL Pre-Processing and Protection-Processing

There are a lot of dedicated STL systems out there. Or, if you have a WheatNet-IP, it's the perfect solution. No matter HOW you handle STL, let Aura8-IP handle processing to ensure the audio is optimized for it.

Multiple HD Feeds

HD Radio gives you the option of broadcasting multiple audio streams of varying quality. Make the most of each by giving them processing that will make them stand out.

Sweetening Incoming Commercials and Newsroom Feeds

Keeping your revenue sources sounding compelling can really help with audience perception and acceptance. Aura8-IP is a cost-effective solution for ensuring your entire audio stream sounds SWEET!

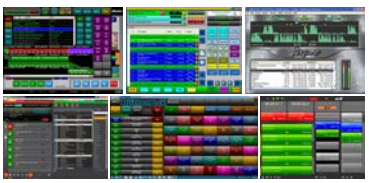
Codec Pre-Processing

Audio from codecs is subject to environmental conditions - at the source and through the connection. Processing with Aura8-IP can clean it up nicely.

Web Streams

Whether you are streaming now or getting ready to, there's no better investment you can make in your station than to ensure those streams sound great. That's exactly what Aura8-IP does.

Automation Streams



Wheatstone enjoys technology partnerships with the leaders in broadcast today. Use the AGC in Aura8-IP to keep your automation streams clean and under control.

AIRAURA X5

Digital Spectral Audio Processor

Meet X5, Wheatstone's new flagship FM and HD audio processor.

Built from the ground up, it's based on several breakthroughs, including an innovative new approach to dynamics control and pre-emphasis management.

In more traditional audio processing designs, pre-emphasis is either managed by specialized limiting or carefully designed clipping that merely tolerated the pre-emphasis curve. Thinking about this problem, and the fact that it's been over a decade since there has been a major development about dealing with pre-emphasis, Wheatstone set out, through our work with DSP, to come up with the ultimate solution to the problem.

We have seen what the power of DSP can do to restore audio and video over the years. What if we found a way to apply that thinking to FM pre-emphasis and peak control?

Enter LIMITLESS. FM peak control technology that reconstructs the audio after the application of pre-emphasis. No more dull smeary highs or spitty audio. Just clean and clear high end that's perfectly matched to the texture of your HD audio.

X5 also leads the way with Unified Processing®, which allows the processor to share information between ALL stages. In the X5, the iAGC, Dynamics and Limitless Clipper work together no matter which control a user adjusts. Changes are made automatically, in real time, in ways never envisioned before.

The X5 also includes a totally redesigned limiter. As part of the Unified Processing system, this unique limiter, designed as 31 independent filter banks with no crossovers to colorize the audio, works directly with the X5's Limitless clipper, providing an audio blueprint for how the clipper should behave.

Additionally, X5 offers a full suite of static and dynamic RDS features along with with multi-stream UECP support.

The X5 adds a number of other state of the art features, including LIVE LOGGER which documents everything from remote logins to audio failover to preset changes. Our redesigned bass processor and enhancement controls in the iAGC that allow you to safely equalize your audio for maximum consistency. The days of "maybe it will sound better on the next song" are over. Your audio signature is preserved cut after cut, element after element.

Wheatstone's popular HD/FM audio alignment makes the jump to the X5 with our FM&HD LIVELOCK. The system works either with third-party HD/FM modulation monitors or by itself, using the FM/HD tuner built in to the X5.

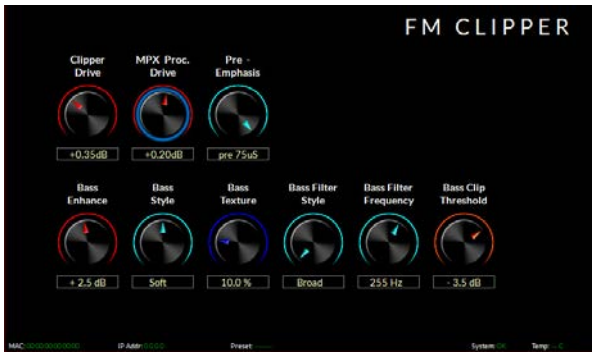
Additionally, you can now keep the processor at the studio and still keep HD and FM audio in perfect alignment to the transmitter with our optional MPX SYNC-LINK receiver. MPX SYNC-LINK manages multiple audio streams to keep them in perfect sync, preventing any possibility of the FM and HD audio getting out of alignment.

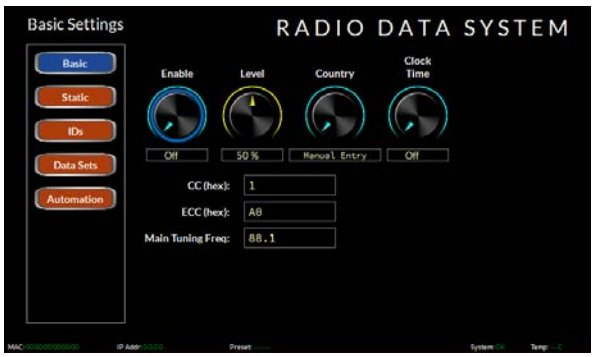
AES insert points are also available via PPMport. Users can now insert their ratings encoder into the processing system instead of placing it in front of the processor. This allows the X5's specialized front end to deliver a steady audio diet to the encoder and increase the instances of watermark embedding. What's more, the sonic transparency of the LIMITLESS clipper preserves the watermark for more reliable detection at the meter.

X5 also offers built-in watermark encoding for the Kantar Media ratings measurement system.

We've spoken a lot about what's new in X5, but Wheatstone processing users will be happy to know that many of the features we've pioneered in previous models have been incorporated and improved on in the X5, including our legendary Multipath Mitigation algorithm, our composite processing system with selectable look ahead limiting or clipping, baseband192 composite AES connectivity, and a full set of analysis displays.

The X5. Processing for the needs of radio TODAY!





- Processor shares information between ALL stages – iAGC, limiters and clipper all share information and changes can be made automatically, in real time, in ways never envisioned before.
- Redesigned bass processor and enhancement controls in the iAGC that allow you to safely equalize your audio for maximum consistency.
- Full RDS capabilities.
- Works either with third-party HD/FM modulation monitors or by itself, with the new FM/HD tuner built in to the X5.
- AES insert points (PPMport) are also available for customers who wish to insert their ratings encoder into the processing system instead of placing it in front of the processor.
- New look and feel, with an intuitive GUI and dual touch screens on the front panel.
- Experienced users of Wheatstone processing will be happy to know that many of the popular features in previous models have been incorporated in the AirAura X5, including:
  - an improved Multipath Mitigation algorithm
  - redesigned composite processing with selectable look ahead limiting or clipping,
  - baseband192 composite AES connectivity
  - full set of analysis displays.

Features Unique to the X5

PPM PORT INSERT LOOP FOR PEOPLE METERS

X5 features an insert loop to interface your ratings encoder AFTER the processing. This delivers a signal with greatly reduced audible artifacts, which ensures you'll be moving all those meters out there.

LIVE LOGGER LIKE THE NSA FOR YOUR X5

Live Logger keeps track of everything happening on your X5. Preset takes? Remote login? Audio failover? Every event is date and time stamped so you can review it. X5 takes audio to a whole new level and, with Live Logger, gives you absolute and complete peace of mind.

UNIFIED PROCESSING®

Each X5 function in the chain interacts closely with other functions to deliver just the right amount and type of processing needed, letting you create a sound that's as close to the original as possible while still dominating the dial.

LIMITLESS CLIPPER INTELLIGENCE KNOWS ITS PLACE

Limitless Clipper uses proprietary high-frequency distortion canceling technology to pass the highs, but not the overshoot. No more "spitty" highs or pops from clipping; no IM distortion whatsoever. This clipper will take all the highs you can give it and never give you back IMD. This clipper, along with X5's Phase Linear dynamics, gives you the most powerful FM processor on earth.

FM/HD LIVELOCK FM/HD SIGNAL SYNC

Integrated HD and FM analog signal alignment keeps listeners tuned in to your station even during extreme HD/FM blending conditions. No external boxes needed and no more "dip and skip" in reception that can cause tune out, affecting TSL.

MPX SYNCLINK STUDIO-TRANSMITTER LINK

MPX SyncLink extends the X5 with HD/FM alignment from your studio to your transmitter site. It carefully keeps the HD and FM packets in sync so time alignment done with the processor at the studio is maintained straight through to the receiver.

AIRAURA X1

Digital Spectral Audio Processor

AirAura X1 brings our proven technology for FM and HD processing to a very friendly price point.

Compromise. It's something you find yourself doing when you need to buy something but have to stick to a budget. The hope is that it will be good enough. In broadcasting today, with the connected dash and so many options, good enough is NO LONGER good enough, no matter what your budget. It was that thinking that inspired the creation of a line of budget priced audio processors from Wheatstone. The FM25 and the FM55 experimented in territory never before seen in an entry level processor. The secret got out, and the result? The FM25 and FM55 brothers are the fastest selling budget audio processors on the market today.

With that in mind, it was time to take the next step. Bring new features and new technology into a mid-priced audio processor for FM and HD stations while keeping the price just right. And with that, Wheatstone proudly presents the AirAura X1.

X1: intelligent Audio management

The AGC (Automatic Gain Control) in a modern broadcast facility works harder than ever before. More and more often, studios are unmanned and the levels on your console become set it and forget it. If your sources aren't carefully controlled it's up to the AGC to make those corrections. But even then a competent AGC is not enough. Differences in amplitude AND dynamic range must be considered for an AGC to properly operate in "the zone". That's where iAGC comes in. Not just a leveler, the iAGC is an amplitude AND dynamics manager that helps ensure the right amount of processing is added to your source material.

Is it too dense? The iAGC relaxes the processing so that dense material doesn't sound "double processed". Does your audio need more punch? If there is a lot of dynamic range in your audio, you can choose to leave it alone, or let the iAGC make real time adjustments to "program match" your audio to yield a consistent audio signature.

The choice is ultimately yours, but the possibilities are endless!

X1: 5-band Spectral Controller

Competitive audio in any market requires the use of multiband. Since the dawn of the multiband AGC/Compressor, the goal has been to improve tonal consistency and increase loudness by making algorithms smarter and, in turn, making the effects of multiband control less audible. We have something very new and very exciting in X1 that takes that control to a new level.

Most processors have AGC or Compression or maybe both. At any given time, these algorithms are working based on user settings, regardless of the type of audio being fed to them. We sat and thought about that for a bit. We also have AGC and Compression in our 5 band processing and it's really a good performer. But how can it be better?

The iAGC in the FM55 and AirAura X1 is a very smart algorithm and we collect a lot of data from it. We can slow down and speed up the processing based on dynamic range and amplitude. But what if we could also use that data in our 5 band AGC/ Compressor to make IT even smarter?

Introducing our 5 Band Spectral Controller. Calling it an AGC or Compressor is not really valid anymore because it's both… or one or the other… or sometimes neither. In our effort to minimize processing artifacts wherever and whenever possible, the development of the 5 band Spectral Controller allows us to use the iAGC technology built into X1 to map not just amplitude and dynamic range, but also to chart spectral history. This data can be used to dynamically adjust our 5 band spectral controller to yield unprecedented tonal balance cut to cut WITHOUT the audio sounding over-equalized, artificial or "boxed in" to a signature. Of course, if consistency to the SOURCE is what you are after, that can easily be attained as well. What's the purpose of having your cake if you can't eat it?

X1: 10-band Master Limiter

New challenges bring new ideas. It's behind everything we do at Wheatstone, and processing is no exception. You've read about how we customize audio for consistent level and tonal balance, now it's time to really get serious. Peak management that doesn't distract from the sound you're after.

Introducing another first in a Wheatstone audio processor – the 10-Band Master Limiter. There's one for FM and one for HD.

It starts with something that sounds pretty simple: a 10 band limiter. What's so special about that? When the limiter works in conjunction with the data pulled from the iAGC and 5 band spectral controller, things start to sound more interesting. When we tell you that the 10 band limiter makes on-the-fly decisions from the real world data we have collected to maximize clarity, things become exciting. And when we tell you the audio from each band of the 5 band Spectral Controller is managed by not ONE but TWO limiter bands to allow for more precision, the choice is obvious.

X1: Matching the Medium

The HD and FM side of your audio processor require much different approaches for peak control and bass management. What sounds good on FM may be too much for the HD component. You want to emulate your FM signature on HD, but also make it stand out on its own. When the receiver blends to HD, the sound should have more detail and should be engaging to listen to but not SO different that it becomes distracting.

With X1, you have the tools to create on your audio canvas on both the FM side and the HD. There's no real worry that adjustments made to the 5 Band Spectral Controller will improve one path and degrade the other. With our separate 10-Band Master Limiters, the right amount of virtually everything is applied, matching your signature sound to the medium.

We've already gone over your audio foundation that applies to both the FM and HD path, now let's talk about the controls that help you customize your audio for each mode. You have separate 10-Band Master Limiters, separate dynamic bass enhancement, separate parametric equalizer controls and specialized final overshoot controllers for FM and HD. Our dual processing paths truly give you the power and control you need so that your listeners have the ultimate FM and HD experience.

Exclusive Multipath Control

Exclusive to the Wheatstone line of audio processors is the Multipath Limiter. This single user control can help mitigate the audible effects of multipath as well as reduce receiver-induced stereo blend by managing the stereo image for a more consistent and predictable sound.

- iAGC Intelligent Audio Management measures amplitude and density for perfect leveling
- 5-Band Spectral Controller perfects tonal consistency
- 10-Band Master Limiter auto adjusts attack and release times based on program content
- Separate bass enhancement, EQ and Peak Control for FM and HD processing paths
- Integrated diversity delay of 0-10 seconds, adjustable in 100 µS steps Codec conditioning to maximize the HD radio listening experience
- FM peak control via oversampled distortion masked clipper
- Precision FM stereo MPX generator with multiplex mask filters and dual composite outputs
- Composite audio processor increases competitiveness without MPX degradation
- Digitized SCA inputs for reliable subcarrier generation and recovery
- HD Radio Automatic Time Alignment (with compatible monitoring system)
- Analog, digital and WheatNet-IP audio I/O with automatic 'failback to primary'
- BS412 Loudness Management
- Exclusive stereo multipath controller technology for enhanced stereo reception
- Remote processor control via wired Ethernet and Windows based GUI
- Front Panel touchscreen control with Guru GUI for easy setup and processing adjustments
- Wheatstone® baseband192 built in for digital link to transmitter

Wheatstone® baseband192:

Wheatstone® baseband192 digitizes the entire multiplex spectrum up to and including the RDS, doing away with an analog composite interface between processing and transmission.

A single AES/EBU cable carries the digitized signal between the AirAuraX1 and any FM transmitter equipped with a digital baseband input, bypassing the need for multiplexing in the exciter and eliminating the resulting signal overshoot and its associated loudness tradeoff.

SCREEN BUILDER 2.0

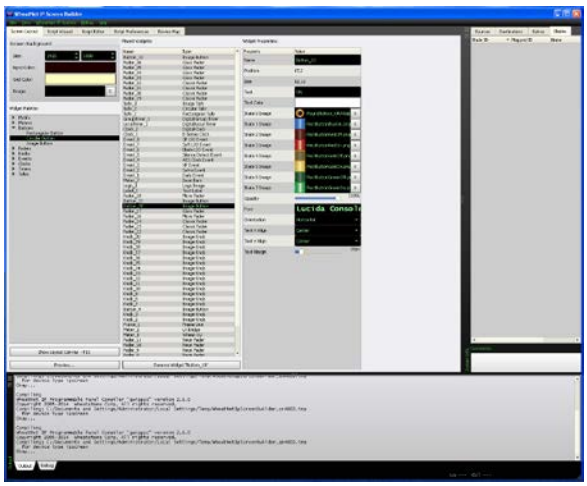
Control Your Entire WheatNet-IP Network. Create Custom Screen Builder Apps.

Admit it. You've always wanted complete control of everything and everyone. You've always wanted to be able to know what's happening at all times in all places in your world. Well, here you go. Welcome to ScreenBuilder (should we have called it World Builder?)

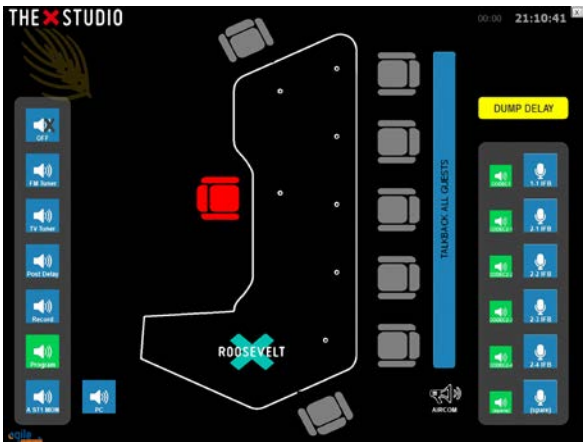
Build your own on-screen virtual control interface for just about any purpose. Our new Screen Builder app has faders, meters, labels, buttons, clocks, timers and other widgets that you can arrange on a PC screen to create your own custom control panels and touchscreens with quick-access buttons, faders and meters for level adjusting and monitoring, and more.

Add your own graphics and logos, even images. Custom panels made with Screen Builder have access to our complete AoIP network, the WheatNet-IP Intelligent Network and all of the BLADEs, control surfaces, processors, and partner devices on it so you are only limited by your imagination. Once created, your custom panels and touchscreen interfaces can be password protected to prevent unauthorized manipulation of the special graphics and functions you've designed.

- Widgets include Faders, Knobs, Buttons, Graphics Tools, Clocks, Timers, Meters, and programmable events
- Easy to use layout environment
- Drag, drop and assign values to each widget
- Completely scriptable
- Control all aspects of your WheatNet-IP environment including all third party gear that's interfaced
- Password protection
- Use your own graphics
- Access from anywhere

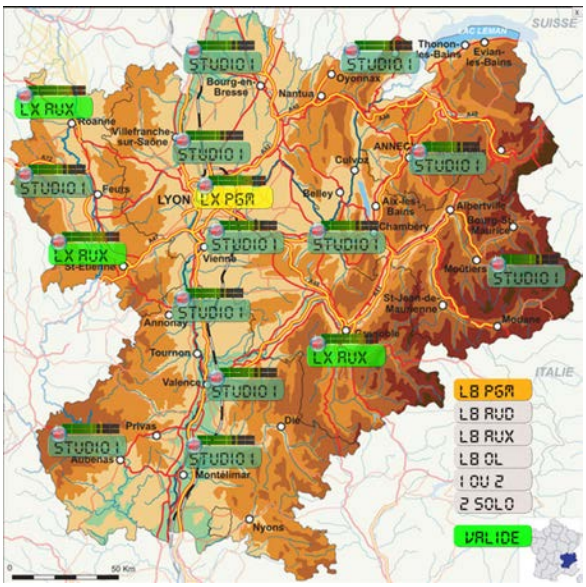


Screen Builder Environment Window



Custom Project from Agile Broadcast, Australia, created with Screen Builder

Screen Builder Script Wizard



ScreenBuilder 2.0 screen featuring RSS feeds

Two Custom Projects from Save Diffusion, France, created with Screen Builder

IP-METERS GUI

AoIP Software BLADE

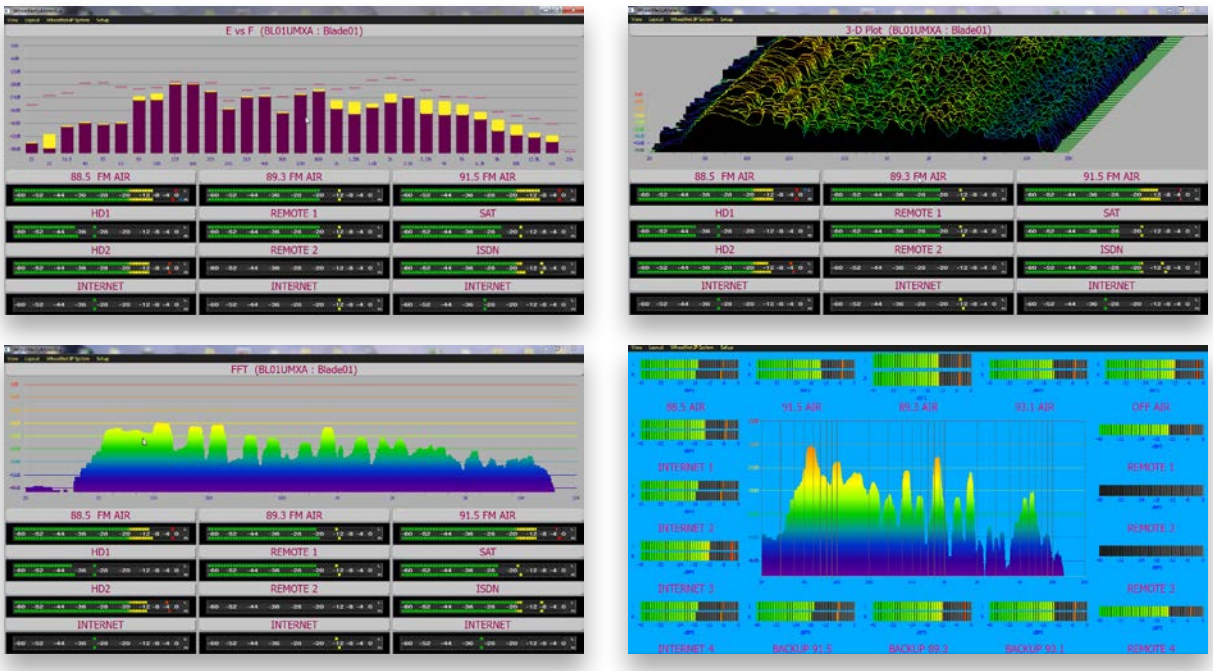
Get a quick read of any audio source, destination or stream in your WheatNet-IP Intelligent Network. Our new IP Meters GUI app displays a "wall of meters" on your computer screen for ongoing monitoring of audio peak levels and average levels at selected points throughout the entire network. Included 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

REMOTE SOLUTIONS

Control Your Entire WheatNet-IP Network. Create Custom Screen Builder Apps.

Wheatstone is committed to keeping our broadcasters up and running at all times. Our WheatNet-IP intelligent network offers an array of tools that can facilitate virtually any broadcast solution from just about anywhere you happen to be.

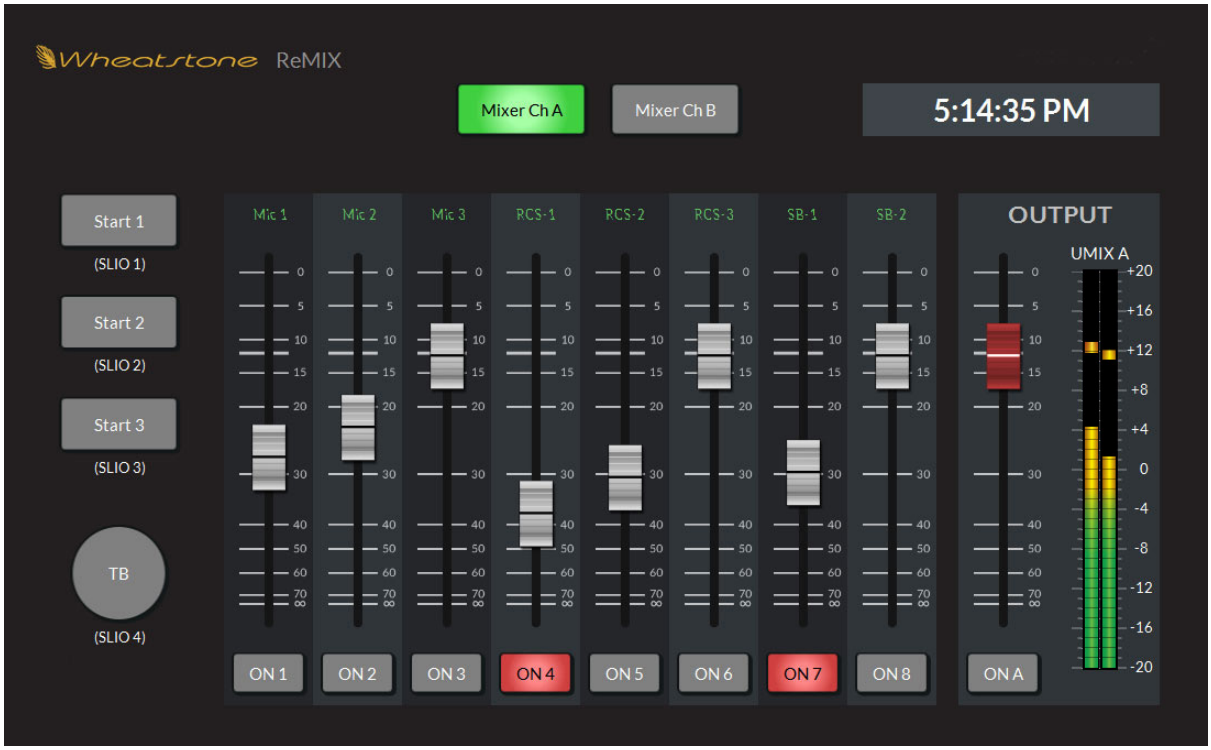
It can be as easy as linking up to the station via your laptop with remote control software. Or using BLADES and codecs along with hardware/software control solutions to set up a full studio at home that taps into the network at the station. Or, for large scale, the SwitchBlade, using SIP and it's built-in codec can handle huge remote infrastructures, handling phones as well.

And with AES67 capabilities, combining equipment from different manufacturers is relatively seamless.

Many of our WheatNet-IP stations are already set up for remote broadcasting, with different locations around the city, the state, the country, or the world.

This page is a table of contents to our existing solutions. Just click on an image to learn more about that product.

We are also here to assist with your ideas for custom solutions. Just contact us.



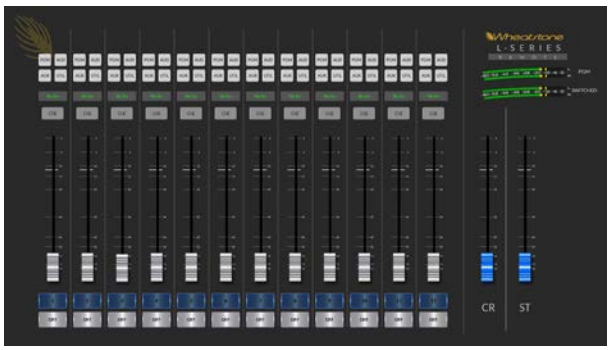
REMIX

To enable quick and easy remotes, Wheatstone has the new ReMIX. It's a standalone WheatNet-IP Windows™ application that works with any Wheatstone BLADE to provide access to a utility mixer and SLIO logic in the BLADE. You can use it locally at a remote location and connect to a WheatNet-IP network anywhere via a VPN. Or, you can use your favorite remote-access software to run it at the studio from your remote location.

Setting up ReMIX is fast and easy. Using the BLADE setup in Navigator, simply assign the sources you want to the BLADE's utility mixer. Point ReMIX at the BLADE and you are done. All the sources pop up where they are supposed to be. SLIO buttons are equally easy to set up.

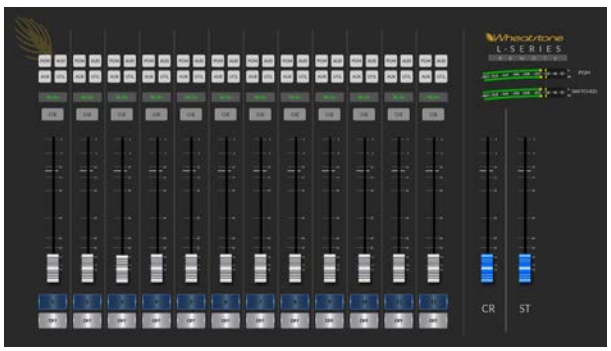
REMOTE LXE

Remote LXE mirrors the LXE hardware surface as a fully functional and studio-ready user interface, complete with like buttons and knobs as well as familiar navigation and menuing options for setting EQ curves, filtering and other custom settings.



REMOTE L-SERIES

Our L-Series Remote virtual mixer gives you control over your L-8, L-12, or L-16 mixer. Source select, channel on/off, buss assign, cue, and fader volume are the options available. Requires an L-Series mixer running the latest software.

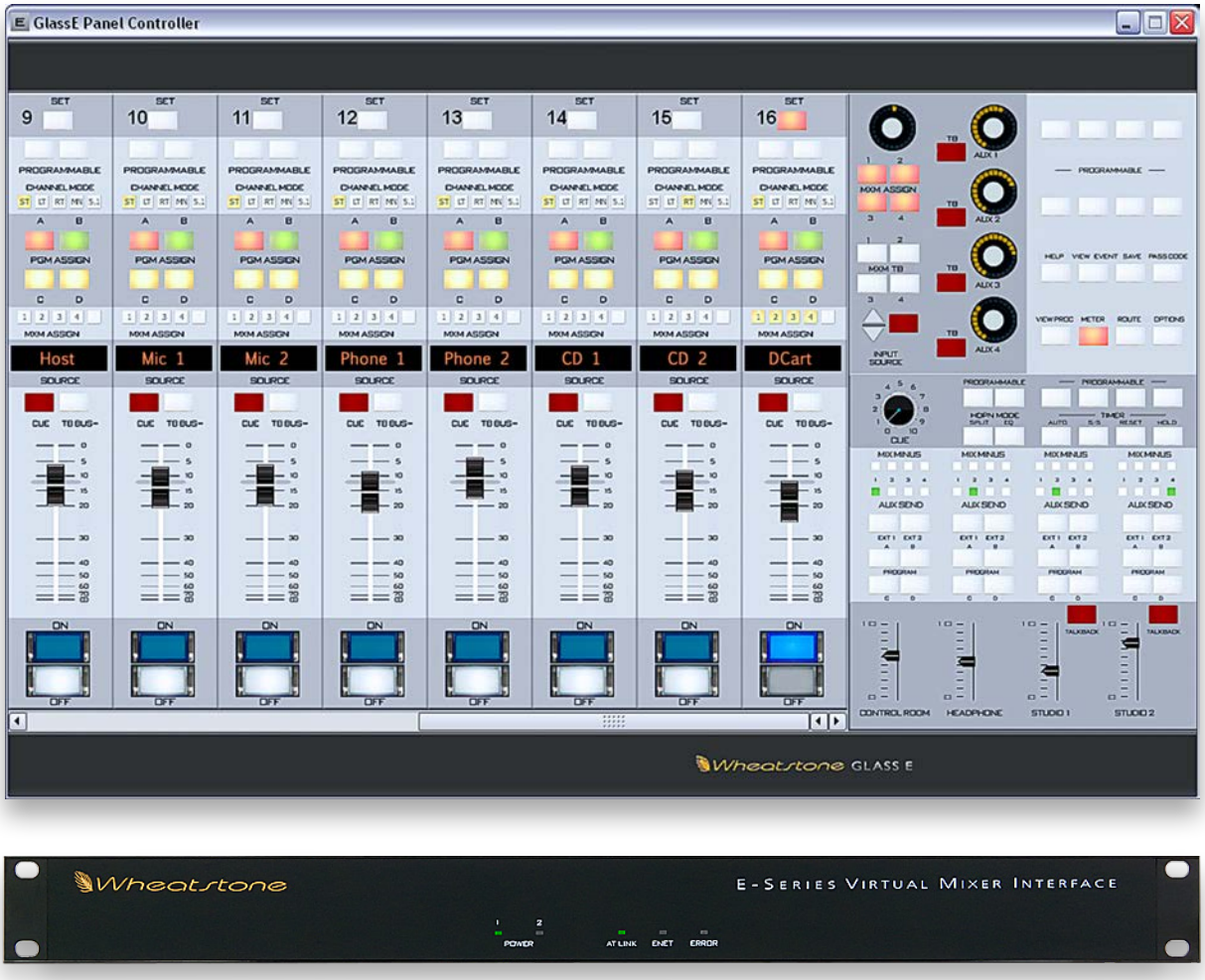


REMOTE GENERATION SERIES

Our Generation-Series Remote virtual mixer gives you control over your legacy G-3, G-4, G-5, G-6. G-7, G-8, and G9 mixers. Source select, channel on/off, buss assign, cue, and fader volume are the options available. Requires an Generation-Series mixer.

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 LX-24 or 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!

Think of it as a glass cockpit for your control room. With it, any of our LX-24, E-6 and E-1 control surfaces can be controlled remotely.

(Note: GLASS-E is not compatible with Wheatstone L-8/L-12 or IP-12/IP-16 series consoles.)

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.

OLED Switch Panel

Our new Scriptable OLED Switch Panels includes our versatile scripting engine and up to eight switches, each of which has a multi-colored graphical OLED display, for customizing WheatNet-IP access and control. Our easy scripting menu lets you map devices and functions to each switch for firing salvos, establishing network crosspoints, toggling between on/off, and more -- all of which can be represented in graphical and colorful detail on OLED displays.

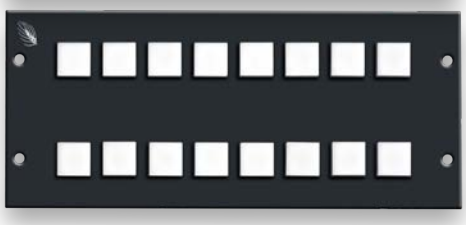
OLED SWITCH PANEL

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.

GP8

GP16



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.

GP3

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.

GP4

GP Turret

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

GP TURRET

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.

THE WHEATSTONE TOUCH

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.

HBX8-R

XYE-R IP Controller

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

XYE-R IP

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.

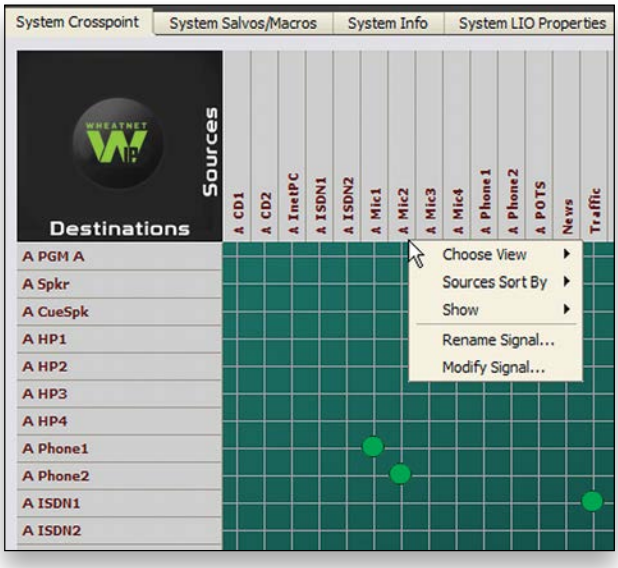
NAVIGATOR

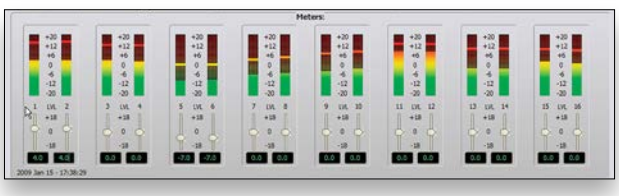
Administration and Control Software

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.





SCHEDULER

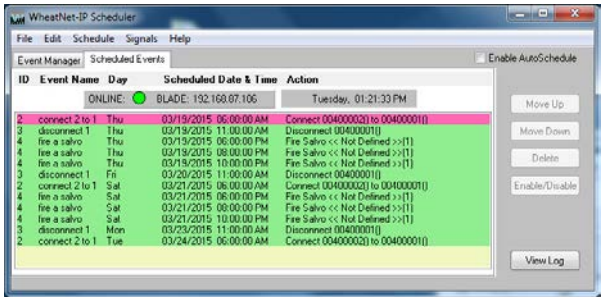
Schedule Events on the Network

SCHEDULER tells your WheatNet-IP system when to switch between live and automated programming, turn on/off microphones and perform other events at predetermined times.

The WheatNet-IP SCHEDULER program triggers events at predetermined times by connecting or disconnecting signal routing. It fires off commands to send a satellite feed direct to air or to turn on mic feeds for the morning show at regularly scheduled times, for example.

SCHEDULER is a PC program that works in conjunction with BLADE logic ports, which can output to closures for machine control, on-air lights, mic tallies, and transmitter remote control. Each I/O BLADE can store hundreds of customized salvos, or sequence of commands for connecting/disconnecting signal routing, which can be scheduled as events by SCHEDULER. Users can group any audio source, logic and destination together that can be triggered by event or time.

SCHEDULER also can trigger events based on satellite closures, and works with any of the major automation systems through Wheatstone's Automation Control Interface (ACI). SCHEDULER makes/breaks single crosspoints or multiple crosspoints in the network, and triggers GPI closures or programmed salvos by the hour, day or week. All scheduled events are kept in a log activity file for reference.



- Windows ® compatible
- Hourly, daily, weekly, monthly scheduling
- Triggers salvo events
- Triggers events for third-party systems/devices
- Activity log
- ACI compatible

PC-XY CONTROLLER SOFTWARE

Manage your network

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

PC-XY is an easy-to-use PC application that facilitates audio and logic cross-point control of a WheatNet-IP audio network. The software connects to any host BLADE in the system via the PC's Ethernet connection and provides customizable routing of audio or logic. Source and Destination windows display user-defined signal lists that give the broadcast engineer tight control over access to system resources. Eight fully-programmable "hot" buttons can act as source selectors for rack room or desktop speakers, control room-to-air chain selectors, recorder source selectors – the possibilities are endless!

VOXPRO

Real-time broadcast digital audio recording/editing/playback system

VoxPro digital audio editing system is the de facto standard for live radio recording, editing and airing of clips in control and newsrooms worldwide. With it, clips can be recorded, edited and aired in moments.

With VoxPro you can play back and edit audio in the foreground while recording in the background. You can detach your Hotkeys window and configure it with any number of pages and Hotkeys per page. Full Unicode support allows you to localize Hotkey titles to virtually any language. WheatNet-IP is now natively supported, so selecting sources from anywhere in your network is a breeze. There's a GapBuster effect that can automagically trim silence from your tracks.

VoxPro offers classic advanced features including Auto-Import, Auto-Record, EZ-Export, Automatic Gain Control, networked file access, customizable folders, and our trademark VoiceSlip™ effect for handling host/caller talk-over. Additionally, there's BackSlip™, which is the opposite of VoiceSlip – it creates talkover where it doesn't exist. And there's Channel Paste which lets you apply copy/paste to a single channel (rather than both together).

Fast, reliable, and easy-to-learn, the VoxPro system consists of VoxPro software and a USB hardware control panel. Users can create password protected folders for their own work. User accounts are managed by means of simple ASCII text files, and user audio files are maintained in a standard Windows format.

Unlimited undo and redo, remote start, and one-button insert record are just a few of VoxPro's more used features. 10GB of hard drive storage holds about fifteen hours of stereo files.

Using intuitive icons and transport keys, the control panel allows users to speedily record and edit audio. VoxPro digitally records and edits voice, sound effects, and music clips on two tracks.

All popular file formats, including MP3, M4A, MP2, WAV, AIFF and WMA files can be imported individually or in groups. Audio can exported as WAV, MP3 or native VoxPro files, individually or in groups.

- Rich set of playback options
- Editable recordings with several ways to create and use edit points
- Infinite undo/redo capability persists for the lifetime of a file
- Audio effects including normalization, mute, bleep, reverse, pitch change, and time stretch
- Import and Export files in standard formats
- Customizable scrubbing for fast and accurate positioning while editing
- Password protected user accounts
- Optional control panel with most commonly used controls, including jog wheel
- Any number of Hotkeys available for immediate one-button playback
- MultiTrack panel allowing additional support files overlaid on title track
- Simultaneous playback and record (record in background while playing and editing in foreground)
- GapBuster effect (automatic silence removal)
- WheatNet-IP (WNIP) routing controls and playback tally with end warning flash
- Detachable Hotkeys window, ability to hide Editor and File List panels
- Support for Unicode labels in Hotkeys and Markers
- Color-coded Markers, new graphical method to precisely position location of markers
- Ability to copy/move/delete/rename files from the Search panel
- User option for exclusive Hotkey playback mode
- User option to apply effects to one channel only
- ClipCleaner toolset for unsurpassed audio
- FX Macros for tighter-than-ever on-air effects AND brand new high-end effects
- QuikSearch box for faster navigating
- Support for 24-bit files
- AutomationExport for one-button integration with automation systems

The VoxPro Control Surface may be sporting a sleek new matte black finish, but that's all we've changed. It's still the intuitive and ergonomically solid piece of hardware your fingers have memorized.

Keys are mapped to specific functions in the software, permitting exceptionally fast recording and editing without having to go to a mouse. One touch starts a new recording while saving the one you are working on, instantaneously. The scrub jog wheel as well as the transport buttons make editing simple and precise.

- Measures 8.25" x 10" – takes up very little real estate
- Ruggedly built to professional specifications to withstand normal control room abuse
- Hotkey titles appear five at a time in the backlit LCD directly above corresponding keys
- USB device

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 mic 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.

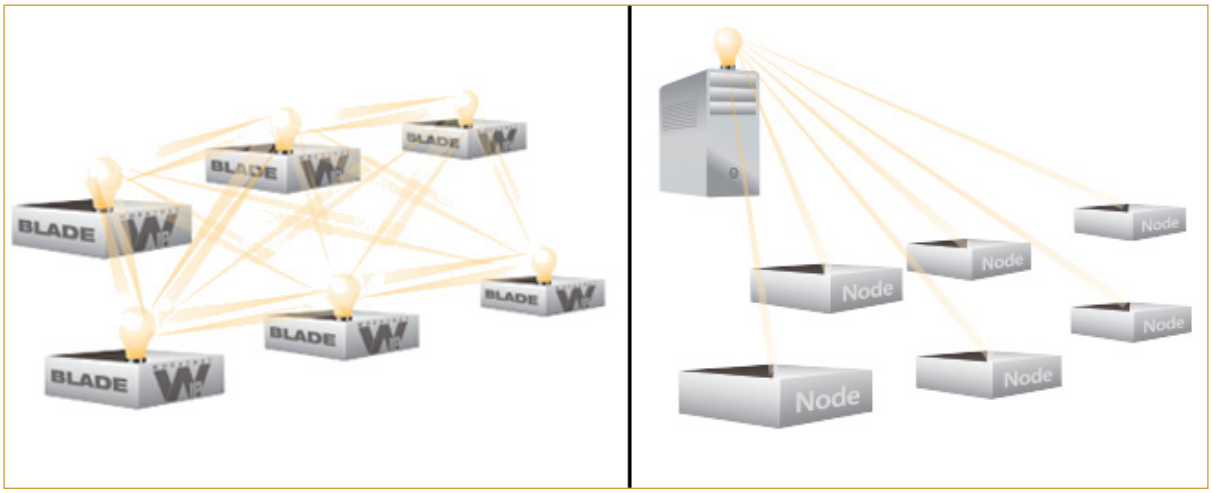
A distributed and intelligent network means no more centralized points of failure to go wrong, plus more points of recovery. Every WheatNet-IP BLADE access unit is self-aware, and can reconfigure itself in an emergency. In fact, each BLADE in the network can recover settings for your entire studio operation!

MODERN

(WHEATSTONE)

NOT SO MODERN

(NOT SO 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.

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.

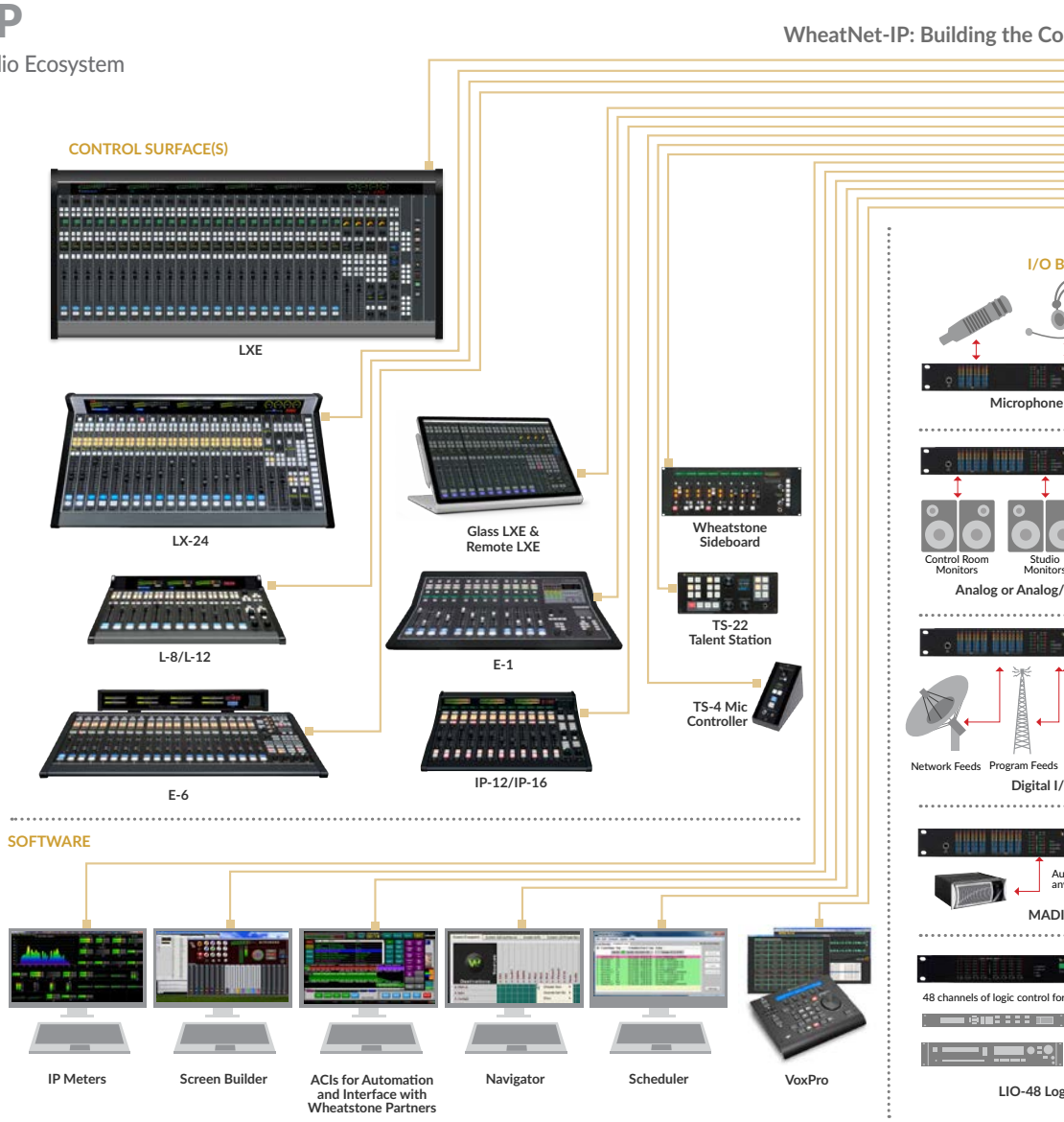
We're talking full-featured routable mixers, stereo processor, and automation control in each BLADE-3 I/O unit , so operators can pan audio, turn channels ON/OFF, set fader levels, and do audio fades, ducking, source assignments – and lots more. The possibilities are mind-boggling.

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

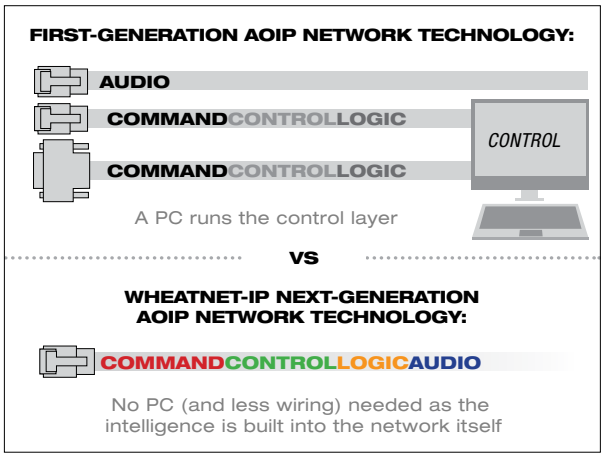
An Overview of the AoIP Audio Ecosystem

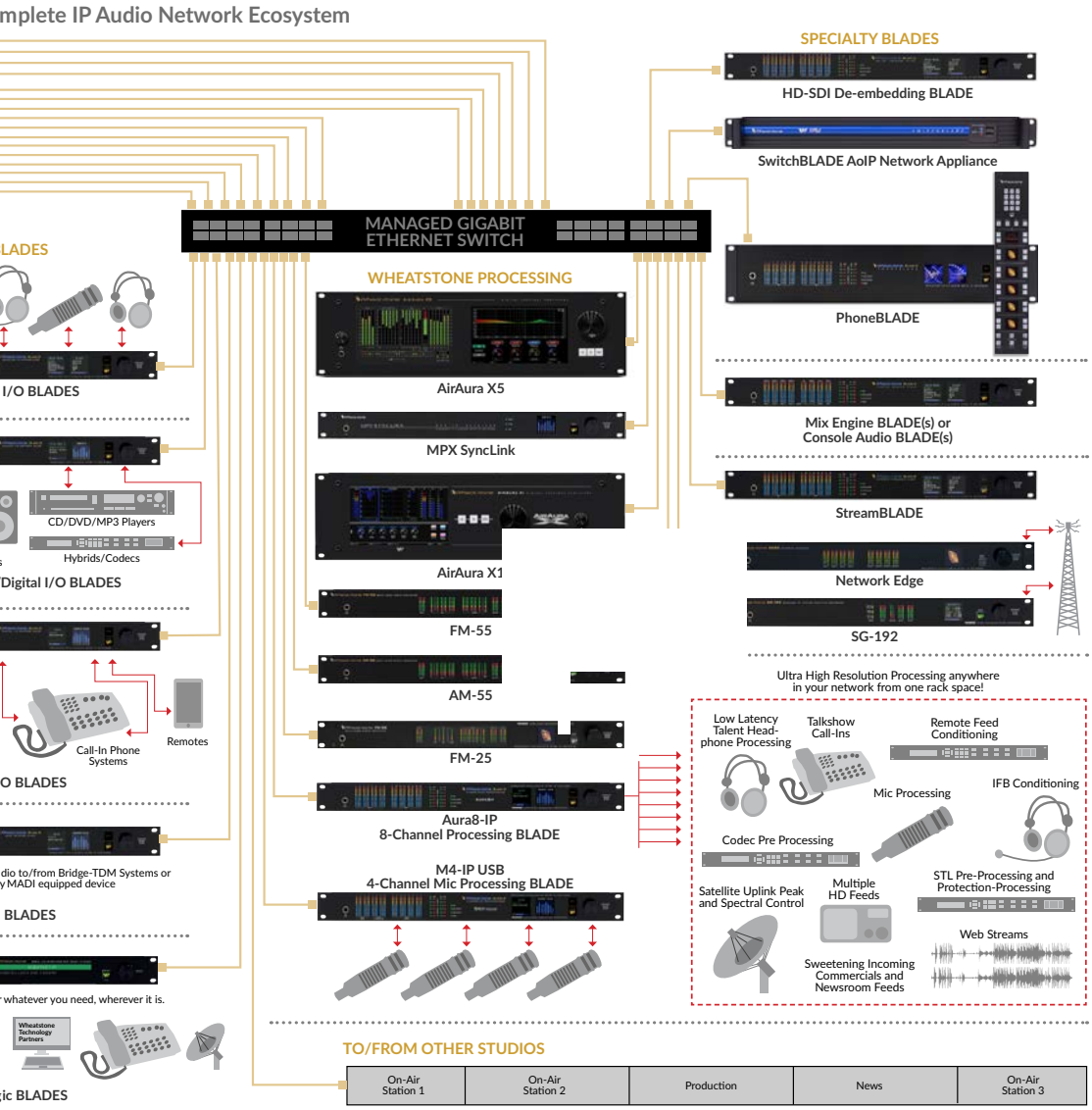


Why the Integrated Control Layer is Important

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.

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.

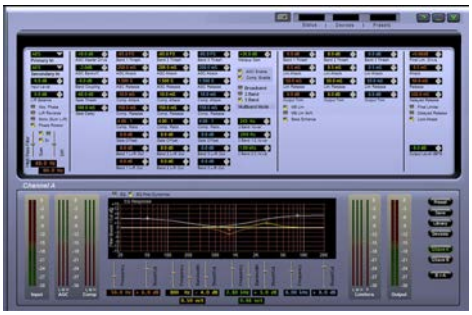
Logic follows audio like a puppy on a leash

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

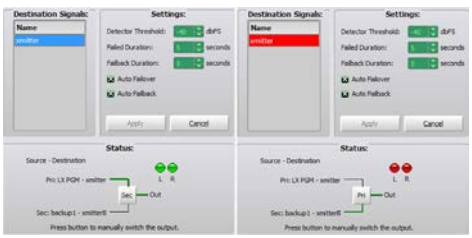
I/O BLADEs include two built-in 8x2 stereo mixers. In addition, newer third-generation BLADE-3 I/O units include a stereo multiband processor with 4-band parametric equalizer, 3-way crossovers, 3 compressors, 3 limiters, and a final, look-ahead limiter. By routing mixing and audio processing, these functions 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.

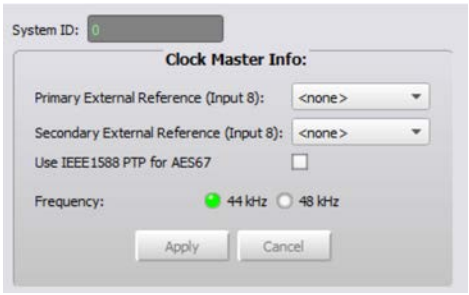


Silence detection, emergency audio

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

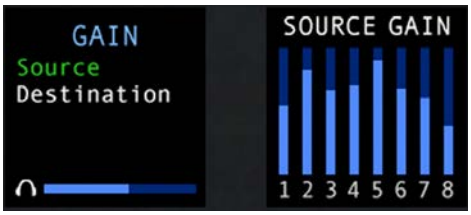


I/O BLADEs operate at 44.1k or 48k sampling rates while converting incoming signals up or down as needed. Newer third-generation I/O BLADE-3s provide selectable system clocking at 44.1kHz or 48kHz, External Reference or AES67.

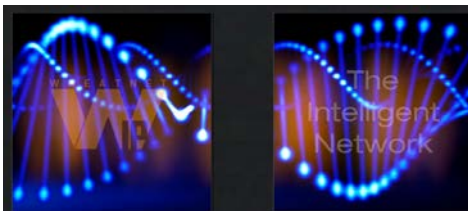
I/O BLADE-3s support AES67 compliant devices using an IEEE1588 PTP grandmaster clock for synchronizing to and ingesting /streaming AES67 compliant packets. A 1588 Clock Loss Indicator is included for notifying operators when the AES67 clock source has been lost; an alarm is also generated when an AES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



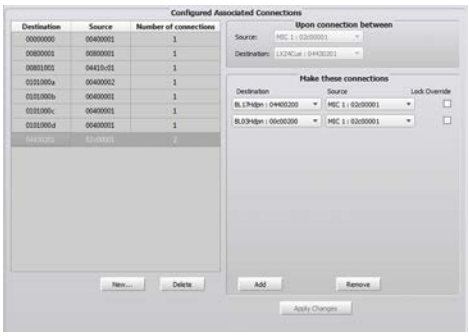
Activating the I/O BLADE is as easy as plugging it in. No need to assign it an IP address or prioritize packets. Once plugged in, it will instantly recognize that it's been connected to a functioning network and configure itself into that network with almost no human intervention at all! All of its resources 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.



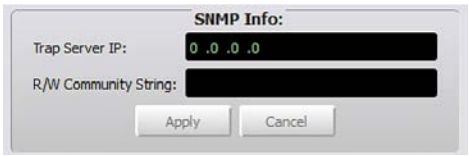
New I/O BLADE-3s come with dual OLED displays for monitoring and control of most functions right from the front panel, including audio routing setup, monitoring, network information, alarm status, enabling and operating utility mixes, setting input and output gain, and connecting audio processing. Settings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

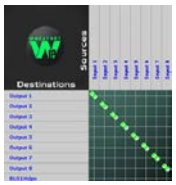


The I/O BLADE comes with maintenance and diagnostic tools, including built in SNMP capability for network management, statistics, and alerts. Newer BLADE-3s also include a new logging app that can be used for tracking LIO/SLIO activity throughout the system. This app shows time-stamped location activity 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.

BETTER WAYS TO DO AUDIO

BLADEs can do things that mere I/O nodes can't because of their embedded CPU and OS that make routable utilities such as audio mixing and processing possible. But what does that mean to you? For starters, it means faster, better and easier ways of doing audio. Here are some practical ways you can put BLADEs to use in your broadcast facility.

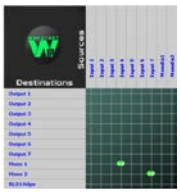


Audio Routing and Control

Route any audio input to any output or all outputs. Send one GPI to multiple GPOs or marry GPIOs to an audio source and have them follow that source through the system. All BLADEs in the network live on a simple crosspoint matrix.

Auto Mono Summing

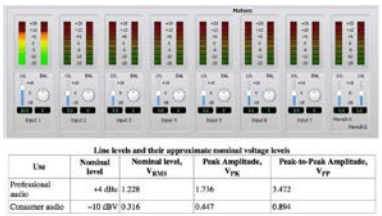
BLADEs have the onboard processing and intelligence to auto sum and level match a stereo output that is routed to a mono output or destination. If, for example, you want to feed a stereo console bus down a hybrid or codec, the audio will be available in both mono and stereo on the receiving end. If you route a mono source such as field recording device or remote interview through the router it will put that mono source on both channels.



Left: The above shows a mono source being routed to both stereo and mono destinations in a BLADE.

(Two dots indicate a stereo or dual channel connection. A single dot indicates it's a mono to mono connection.)

Right: The above shows a stereo source being routed to mono destinations.



Line levels and their approximate nominal voltage levels

Use	Nominal level	Nominal level, V_{RMS}	Peak Amplitude, V_{PK}	Peak-to-Peak Amplitude, V_{PP}
Professional audio	+4 dBu	1.228	1.736	3.472
Consumer audio	−10 dBV	0.316	0.447	0.894

Input Gain Control

Calibrate levels for each source or destination using bargraph metering. Shown, audio levels for the individual channels color coded over a 40dB range, with the highest level being "+20" VU, corresponding to +24dBu, 0dBFS, and the onset of clipping. These meters show the actual input signal level as modified by the input gain setting. The bouncing bar at the top shows the peak audio level while the solid column shows the short-term average audio level using VU time constants. Adjusting source levels ensures that they have enough volume to keep noise levels low in comparison, but not so high that they overload the equipment and cause distortion.

Output Gain Control

Destination gain adjustments are useful for output signals known to be too low or too hot, such as those feeding headphones or amplified speakers with no gain control of their own, to bring them to the correct listening level. As shown, the audio gain of individual output channels can be adjusted over a range of +/-18dB in .1dB steps. The nominal setting is 0, corresponding to an output level of +4dBu analog, or -20dBFS digital, providing for 20dB of headroom.

Mixers for Mic Groupings, Talkback

Each I/O BLADE contains two stereo 8x2 internal mixers that become a source or input to the system. This can be useful for grouping several mics to a single output. You can use the output of each mixer as a talkback source.

Mixers for Panning Mic and Caller Feeds

The BLADE's two stereo 8x2 internal mixers are independent of each other, so they can feed audio to each other or another BLADE. The output of mixer #1 can be brought up on a fader in mixer #2, for example. With balance control on each fader, this can be useful for recording a telephone mix with the "callers" on the left channel and the "announcers" on the right channel. The output of the mixer feeds the recording device.

Automation Mix-Down

The BLADE's stereo 8X2 internal mixers can be used to mix down multiple channels to a single output. Shown is a BLADE utility mixer being used to mix down multiple RCS automation channels to a stereo output, which can then be programmed as the automatic failover source in an emergency. This is also useful as a way to bypass the studio, so that with the push of a button or a command from the automation system, this output can feed the transmitter and free up the on-air studio for production or voice tracking, for example.

Unlimited Salvos or Macros

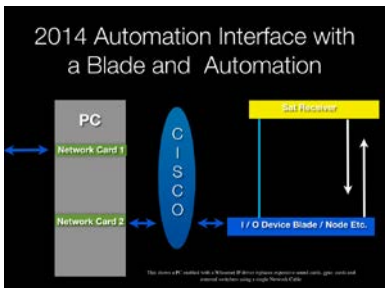
Each I/O BLADE can store hundreds of customized salvos, which can be useful for assigning feeds to codecs or hybrids and switching between studios. Group any audio source, logic and destination together that can be triggered by event or time.

Logic on RJ45 Connectors

Each I/O BLADE is equipped with 12 logic ports on RJ45 connectors, which can be individually designated during set up as inputs or outputs for interfacing to various external switches and indicators. Logic ports can output to closures for machine control, on-air lights, mic tallies, transmitter remote control and the like. They can also receive closures from external devices like satellite closures, remote mic panels or triggers from your automation system for channel ON/OFF.

Selectable Master Clock

Automation PCs and other digital devices that require a specific sample rate are no problem. New I/O BLADE-3s provide system clock rates selectable at 44.1kHz or 48kHz, External Reference or AES67. While all AES inputs in I/O BLADE-3s are equipped with sample rate converters, the master clock sets the sample rate of all of the system's AES digital outputs.



Automation Interface. One Cable

One cable is all it takes to integrate your automation system with a network of BLADEs. WheatNet-IP audio drivers replace expensive sound cards, GPIO cards and external switches.

Monitor Devices with SNMP (Simple Network Management Protocol)

BLADEs include SNMP agent software for centralized monitoring of all BLADEs in a large distributed network. You can configure alarms and set thresholds in order to be notified should a problem occur and therefore respond with quick corrective actions through e-mail, SMS, traps and executing custom scripts. SNMP is part of the Internet protocol suite defined by the Internet Engineering Task Force (IETF). Network management systems use SNMP to monitor network-attached devices such as BLADEs for conditions that may require action by the end user.

Quick Source and Destination Changes

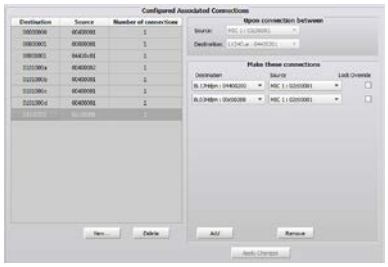
Each BLADE can act as an X-Y controller sending any system source or input to any of its outputs. This comes in handy when changing feeds to monitors, codecs, hybrids or recording devices.

Silence Detection and Failover

Every single audio output channel can be programmed with silence detection and automatic switchover function. Showing on the left is the console PGM channel being routed to the station transmitter during normal operation. On the right shows a failover state after silence was detected.

Routable Audio Processing

New I/O BLADE-3s include a multiband processor useful for processing incoming audio from callers, remotes, codecs, satellite feeds and microphones. You can also use it to process output audio for headphones, web streams, pre-processors, IFB, or for level protection for STL applications. This is a routable processor that includes 4-band parametric equalizer, 3-way crossover, 3 compressors, 3 limiters, and final look-ahead limiter.

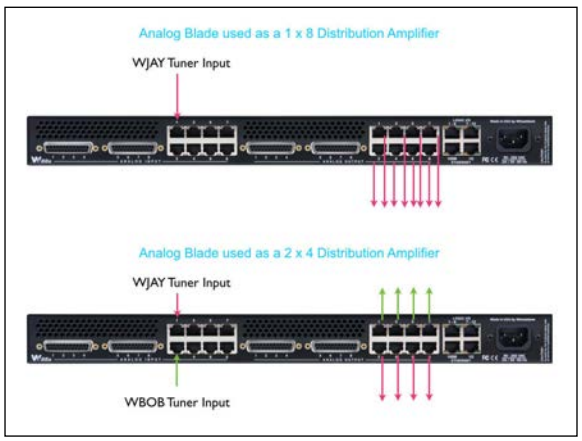


Share Resources, Connections

Create a predetermined back haul, IFB feed or mix-minus for each device based on its location in the network or on a fader. For shared resources like a codec, new I/O BLADE-3 software will 'automagically' give the proper return feed to the codec based on its destination. So, if you pull up the codec in Studio One, the mix-minus from Studio One will automatically and magically be routed to the return feed. Later, when you call up the same codec on the console in Studio Two, the Studio Two mix-minus will be routed to that Codec. This is useful for call-ins and live talk shows that require a separate mix-minus.

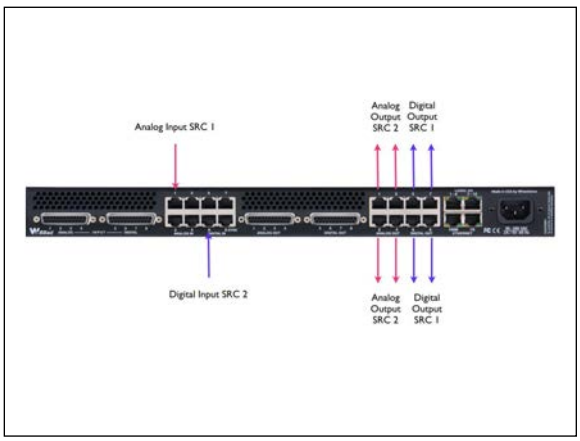
APPLICATIONS & CONFIGURATIONS

Here are just a few unique uses, configurations and applications for our BLADE access units that our customers have told us about. If you have a unique BLADE application, we'd like to hear from you. Drop us an email at wehearyou@wheatstone.com.



Analog BLADE as a 1x8 distribution amplifier

Analog BLADE as a 2x4 distribution amplifier

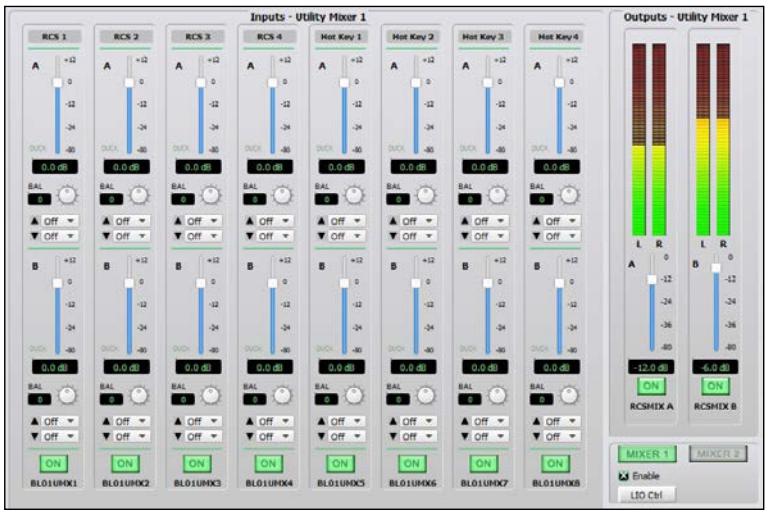


BLADE as an A/D and D/A converter

With a single IP88AD I/O BLADE, you can easily convert from analog to digital audio.

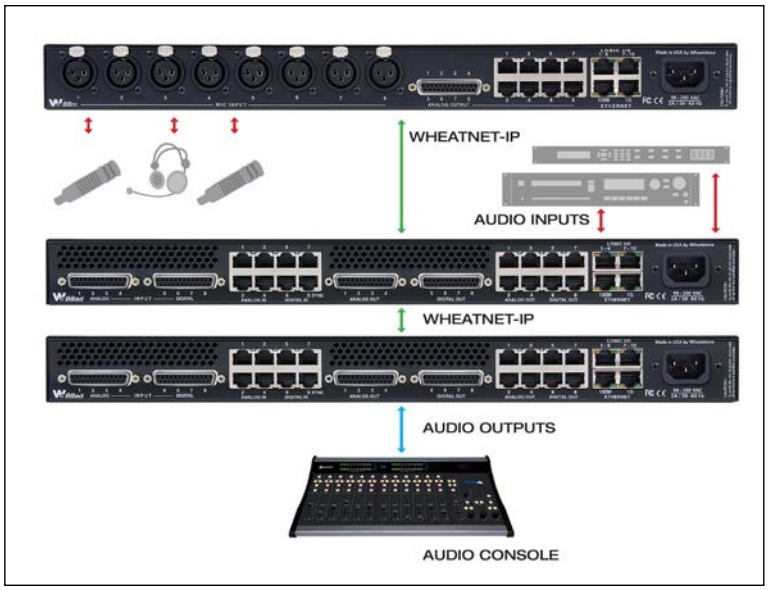
BLADE plus meter app = failover monitoring

You can wire your sources to the inputs of the BLADE 3 and then using the WheatNet-IP's meter app, build a meter screen to monitor all of the sources and destinations in the system. If silence is detected, the BLADE will failover and the particular meter will change color to give you a visual notification. Each time a failover is detected on an output, a logic signal is generated that can be routed to any logic port in the system.



BLADE as a mixer

With two built-in 8x2 stereo utility mixers, the BLADE has more flexibility than some hardware solutions.



BLADE 3 as an audio snake

Use BLADEs to transport audio between the on-air or production studio and a performance studio using CAT6, wireless link or optical fiber. Carry the mic and direct feeds from the stage area to the network. Do separate mixes using the BLADE's 8x2 stereo mixers, or capture multitrack recordings that could be saved for future mixing projects (such as the CD or DVD release). All this can be done without the need for a conventional audio snake with transformer splits for the various feeds.

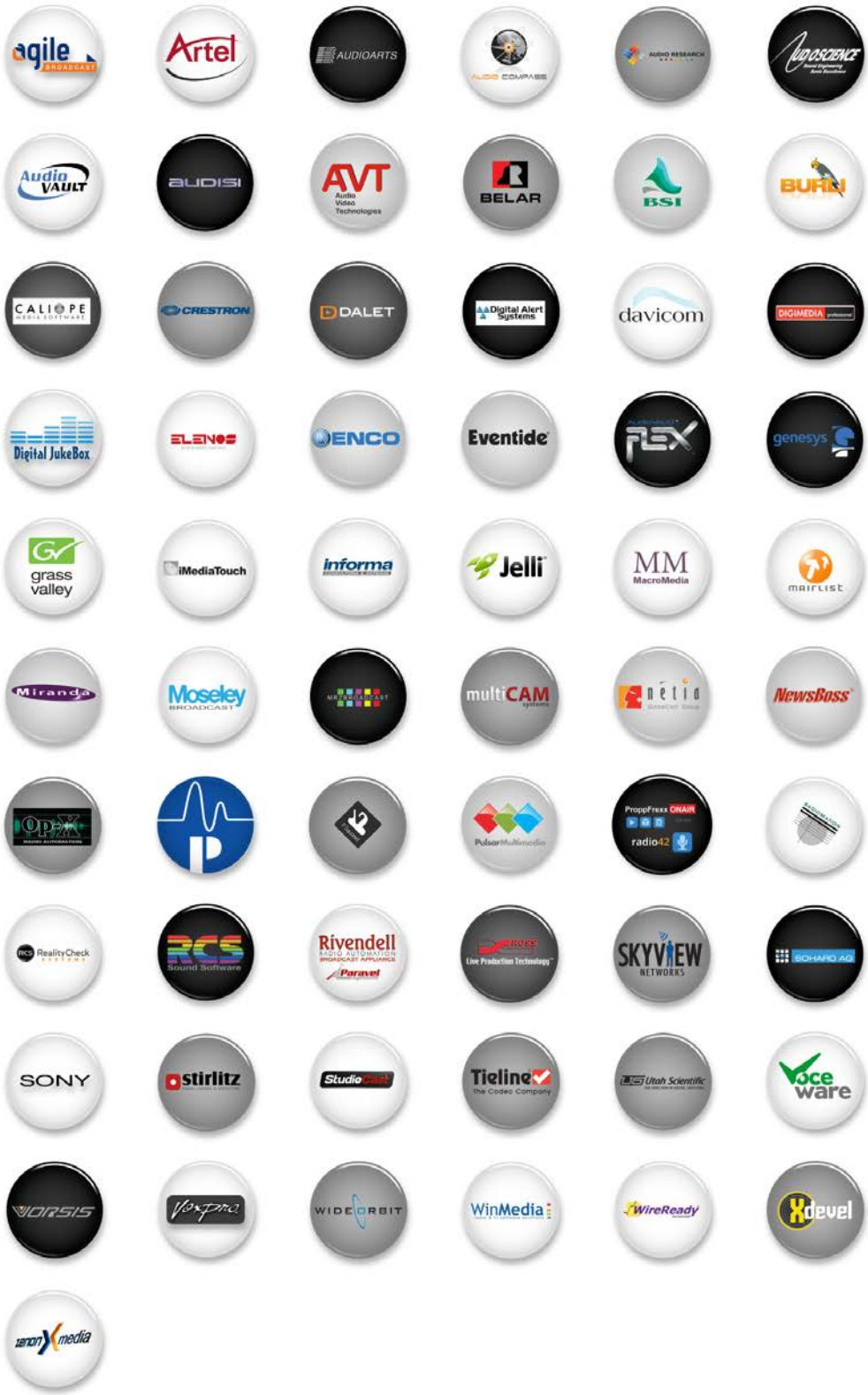
BLADE as part of an IP STL

Continue IP audio from the studio to the transmitter with BLADEs on both ends of an IP wireless audio STL. Newtwork EDGE facilitates connection to IP radios which connect to the switch on each end, which are connected to the BLADE for managing audio and any devices hanging off the network. If the IP radio should lose connection, the new BLADE-3 will not only detect silence, it can trigger the startup of playback audio stored on the BLADE-3 itself.

PARTNERS & WHEATSTONE

It's our partnerships that open WheatNet-IP to the world

To be truly effective in the radio world, it takes working with the entire community to make the Intelligent Network all that it can be. We are thankful for our technology partners and their commitment to seamless interoperation. We consider it a privilege to work closely with them to achieve superior solutions.



CUSTOM HARDWARE

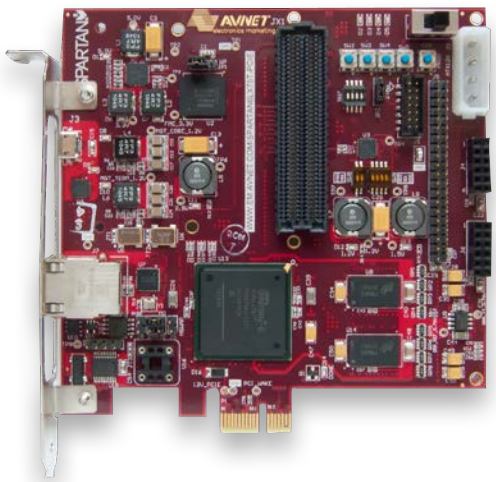
Case Study: Tieline Genie/WheatNet-IP Interface:

At Wheatstone, it's always our mission to find the most open, transparent, partner-friendly solutions; ones that take the direct design route and lock no one into a proprietary situation.

- With Tieline, the most efficient way to interface their Genie codec with WheatNet-IP was to create hardware that was the same size, shape and specs as their existing AES board, but with Wheatstone's Intelligent Network technology built in.
- Designed and fabricated by Wheatstone, these plug-in cards are provided to Tieline for installation into their Genie.
- Because Wheatstone uses modular design, universal standards, and non-patented technology with built-in provisions for interoperability, it was quick to engineer and put into production. The result is a seamless, plug-and-play solution.

PLUG-IN PCI CARDS

Our philosophy is straight-forward: utilize proven, off-the-shelf technology wherever possible to ensure 100% compatibility with our customers' existing hardware. This approach eliminates proprietary lock-out — even with custom solutions designed to fit our partners' technical and physical needs.



- Often a systems interface can reside directly on an off-the-shelf PCI Card with Wheatstone software code burned onto the card's programmable logic chip; an ideal solution with no increase in footprint size for those that use embedded PC cards in their designs.
- Wheatstone's built in provisions for 3rd party device integration and our use of universal standards (IP, TCP, UDP, IGMP, RTP, NTP, FTP) make these plug-and-play solutions seamless and easy to adapt into your designs.

CUSTOM SOFTWARE

Wheatstone's take on software is simple: work with open standards — such as Linux — to facilitate non-proprietary solutions that can be easily adapted and modified by our partners.

- Creating plug-ins and drivers that enable our partners in automation and other technologies to communicate with Wheatstone's Bridge-TDM and WheatNet-IP networks often requires generating code to handle the process. Here at Wheatstone we anticipated this in our initial designs, and the result is that every router, processor, and control surface we make has been designed from the ground up for external interface and control by other devices on a network.
- We've developed test applications and provide sample source code to make it easy for our partners to take full advantage of the power of these Automation Control Interfaces (ACIs).

- Due to Wheatstone's ACIs, libraries, test tools, and source code, and our adherence to open standards, our partners have had great success in developing the most innovative and powerful integration solutions.

SYSTEM PREPARATION

Working with Wheatstone

While it's incredibly easy to install, interface and operate, proper planning can make all the difference with your WheatNet-IP system.

Before we even begin to think about the gear you are going to need, we think about where it's going and consider the most efficient way to meet your needs.

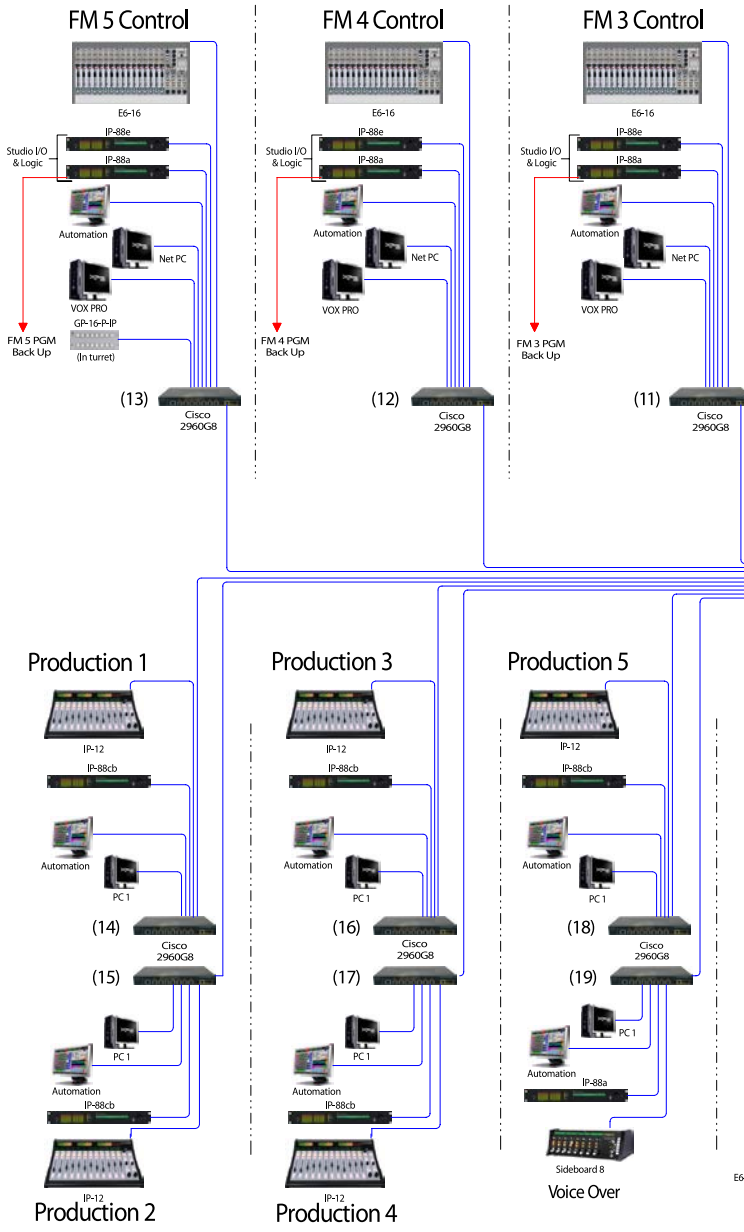
Wheatstone professionals work with you to ensure your system is perfect for your application and facility. Working very closely with you, we plan the entire system to determine the right gear for each room/need.

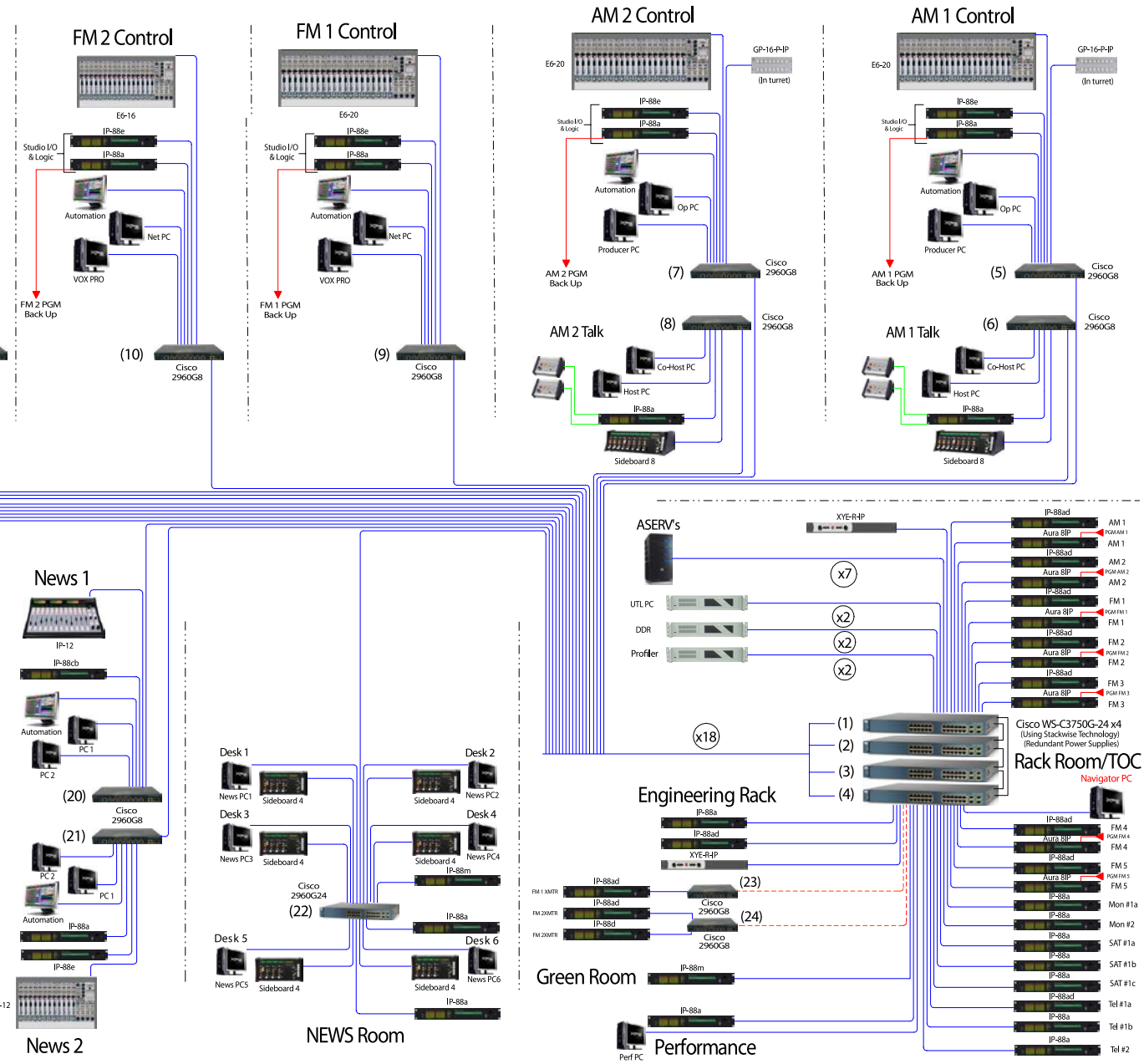
What you see to the right is a final plan for a customer in Portland, Oregon. Installation went exactly as pictured. Before the system ever got to Portland, it was completely set up in New Bern and fully tested for functionality.

Recently, during a test setup in New Bern, we decided to see how long it would take to completely reboot all the BLADES in the system at once. Over 60 BLADES, many control surfaces and a ton of peripherals were involved. The time from live to down to live? Just under 1 minute and 13 seconds! No kidding. You can see that video and many other informational videos about WheatNet-IP here:

https://wheatstone.com/wheatnet-ip-videos

Of course we show this same level of commitment to every customer regardless of the size of their network. We look forward to working with you!




FM 2 Control
E6-16
IP-88e
Studio I/O & Logic
IP-88a
Automation
Net PC
VOX PRO
FM 2 PGM Back Up
(10)
Cisco 2960G8
FM 1 Control
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Producer PC
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Cisco 2960G8
AM 2 Talk
(8)
Cisco 2960G8
Co-Host PC
Host PC
IP-88a
Sideboard 8
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Host PC
IP-88a
Sideboard 8
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IP-88cb
Automation
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PC 2
(20)
Cisco 2960G8
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PC 2
PC 1
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IP-88e
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Desk 6
Sideboard 4
News PC6
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Profiler
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Navigator PC
Engineering Rack
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XYE-R-IP
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Cisco 2960G8
IP-88ad
FM 2XMTR
IP-88d
FM 2XMTR
(24)
Cisco 2960G8
Green Room
IP-88m
IP-88a
Perf PC
Performance
IP-88ad
AM 1
Aura 8IP
PGM AM 1
AM 1
IP-88ad
AM 2
Aura 8IP
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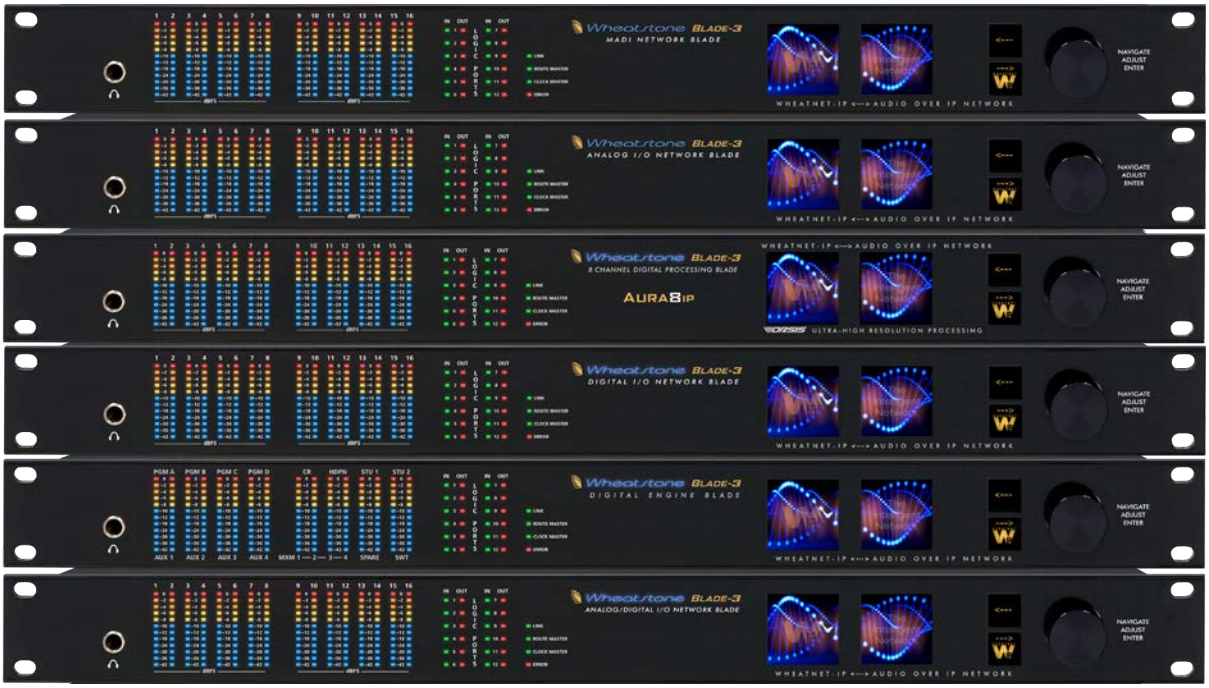

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