IP-12 · IP-16

ADVANCED MODULAR NETWORKABLE CONSOLES

Wheatstone

BROADCAST AUDIO PERFECTIONISTS®

Wheatstone consoles and control surfaces

Between 2000 and 2013 Wheatstone has sold over 10,000 consoles. Virtually every one of them is still in service. As are the many thousands sold before 2000. Wheatstone carved a niche for itself, pushing the radio console into the modern age. Today, we're considered the standard in audio consoles for radio.

Our IP-12 and IP-16 extend Wheatstone' reach into the world of the WheatNet-IP Intelligent Network. With its modular design, it is quickly adaptable to be an on-air or production board, customized to any configuration you need. WheatNet-IP compatibility extends its reach outside the studio and opens it to unlimited sources from virtually anywhere.

WheatNet-IP: The Intelligent Network

We looked at the world of AoIP Networking and thought long and hard before jumping in. The stuff that was out there was OK, but left a LOT of room for improvement. For starters, the way the workload was distributed had to change. Rather than having a single point call the shots, we thought it important to have distributed intelligence built into WheatNet-IP. What this means is that every BLADE (or node) has the DNA of the entire network and can operate in any position on the network. It means that the network can configure itself, as every BLADE is self-aware. It means the network can heal itself - if a BLADE fails (fat chance) just put a new one in its place and watch it set itself up. We also incorporated gigabit Ethernet speed throughout the entire network, giving you 10 times the bandwidth of the common stock.

WheatNet-IP's Intelligent Network is what the industry has been waiting for – WheatNet-IP is what YOU'VE been waiting for!

Wheatstone
AUDITION
AUDITION
SWITCHED

the surface

all the fit, feel, function, and flexibility in an affordable control surface

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

cool stuff about the IP-12 and IP-16

it's exceptionally powerful while being exceptionally easy to use...

Modular Architecture

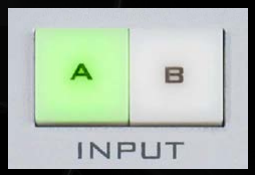
For the IP-12/IP-16, we've moved the logic, audio and interface to a single space rack unit we call the IP88CB Console Audio BLADE. This mix engine node handles all the interfacing and heavy lifting. It connects to the IP-12/IP-16 control surface via standard Ethernet. The two of them together make an incredibly powerful self-contained console. But there's more – they enable you to become a part of the WheatNet-IP network (if you have one, of course). This means that with the IP-12/IP-16, you've got the first building block to a networked facility or you've got another station on your existing network. Either way, the functionality you get with the IP-12/IP-16 is pretty breathtaking.

Modular Construction

We've built the IP-12/IP-16 (in New Bern, NC USA, by the way) to be easily accessed by you. No 'one-surface, gotta take the whole thing apart construction' here. If you need access to a channel, all it takes is two screws and you're in. Makes it a breeze to service or simply swap out a module.

Source Select

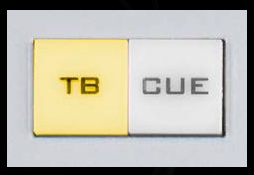
Any input can be called up on any channel on the IP-12/IP-16. This means that the feed you've got plugged into input 7 on the back of the BLADE (or ANY BLADE), for instance, can show up on channel 2...or any channel. Same with any input! Not only that, you can assign a backup or different source to the same channel and switch on the fly by using the SOURCE A/B buttons. As if this isn't cool enough by itself, think about the flexibility if/ when you decide to link the IP-12/IP-16 up to a network. Imagine having any source on the network at your fingertips, with no patching.



Mix-Minus / Direct Outputs

Each fader has a dedicated Mix-Minus output (activated by the TB switch) that includes all active faders on its selected source bus, except for itself. These auto generated monaural Mix-Minus signals may be routed to feed telephone hybrids or other devices as required.

Alternately, these outputs may be set to provide a separate direct output from that channel-only, that consists of the source assigned to that channel. This is very useful for multitrack production work.



1. Using standard CAT-6 cables, plug the IP-12/IP-16 control surface and the BLADE into a managed gigabit Ethernet switch.

2. Plug some of your own audio sources into the Console Audio BLADE. Take the output of the BLADE to wherever you want your audio.

3. Turn it on and start mixing! That's it!

the network

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. Each 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!

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.

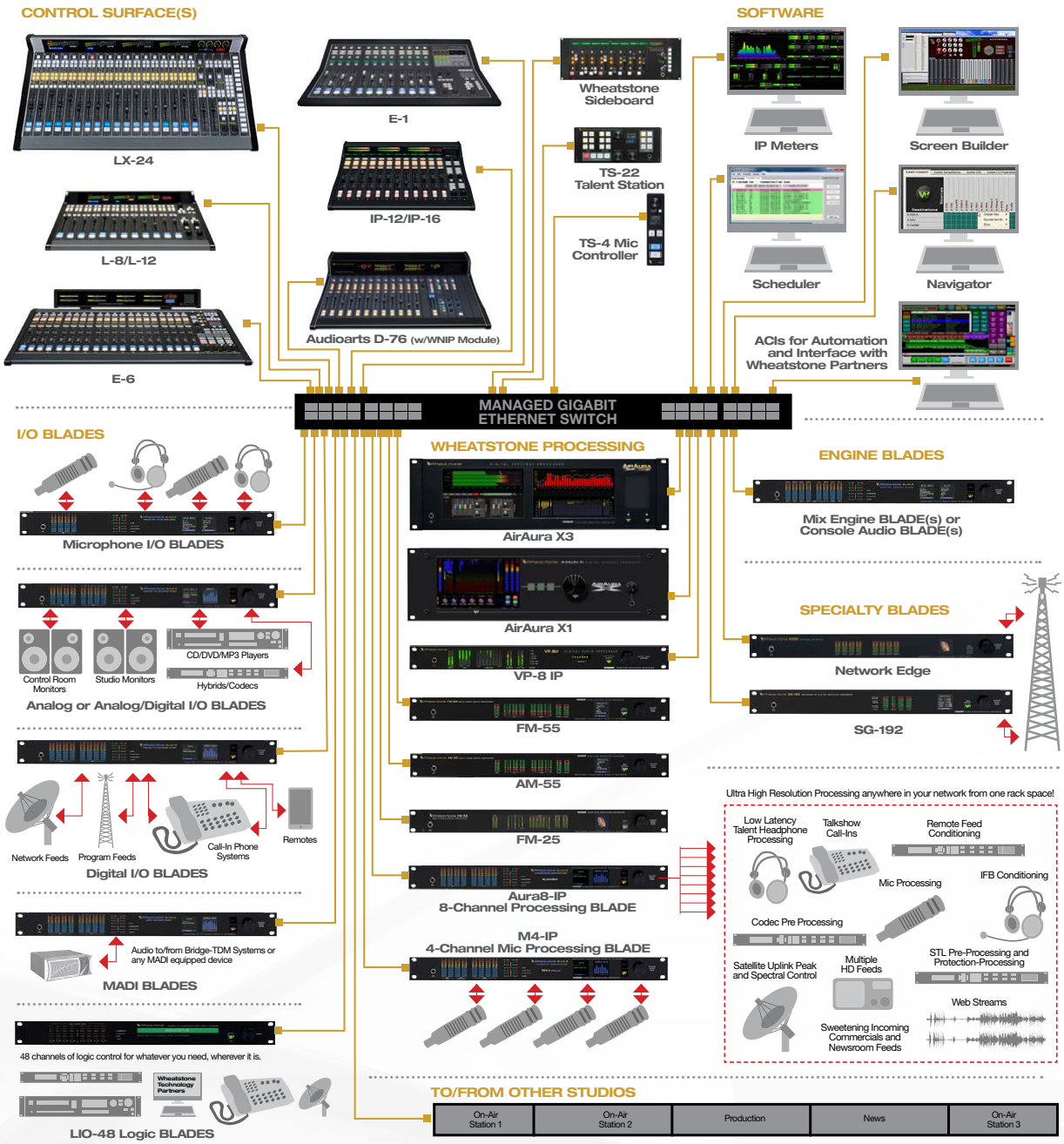
Eliminate audio latency problems.
Finally, an audio IP system that can keep up with audio, which means your automation system won't ever drop a satellite feed or skip a commercial because of delay again. Gigabit Ethernet is why.

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.

the network

building the audio ecosystem



beyond the surface

there's a world of Wheatstone smart control panels, software, BLADE-3s and other surfaces for you to put to work.

I/O BLADE-3s

I/O BLADEs are access points on the WheatNet-IP Intelligent Network, converting each hardware physical input — audio or logic — to a data stream on the network, and converting data streams to hardware digital outputs. They provide the means of interfacing and controlling all of the audio equipment on your network.

The IP88A (analog), IP88D (digital), IP88AD (analog/digital) and IP88M (mic level) BLADEs handle your standard audio I/O requirements. Each has 8 stereo channels, 16 mono channels, or any combination totaling 16 discrete channels. The A/D versions are half analog, half digital. And the mic BLADE has 8 XLR inputs with high-quality mic preamps.

Special Purpose BLADE-3s

Another I/O BLADE is the MADI BLADE, which converts a 64-channel MADI input to data streams on the network, and converts data streams to 64-channel MADI outputs.

The LIO-48 Logic BLADE provides 48 universal logic I/O ports, each individually configurable, for turning devices on or off by time or event, for automatically adjusting the audio processing settings when a certain mic turns on, and for any other logic control you need in your studio operation.

Mix Engine & Console Audio BLADE-3s

We have several BLADES built to handle specific tasks. First are the Engine BLADES: IP88E and IP88CB. The IP88E is a BLADE that houses all DSP power for an individual control surface or Glass-E virtual mixer, 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, they are available as sources and destinations anywhere. This creates an extremely flexible system, where program outputs from one surface can be a source on any other surface. For example, a news mixer's program bus can come up as a source on the air studio control surface. While the IP88E doesn't house audio I/O, it does include 12 universal logic (GPIO) ports.

The IP88CB provides powerful interface options, including four AES inputs, four stereo analog inputs, four AES outputs, and four stereo analog outputs on RJ45s; control room and studio stereo analog outputs on XLRs, two mic level inputs with gain trim and switchable phantom power on XLRs; cue and headphone outputs on both RJ45 and 1/4" TRS, and 12 GPI logic ports on RJ45.

Audio Processing BLADE-3s

Placing a processor everywhere you'd like one has been costly and impractical. Until now. A single Aura8-IP gives you up to eight processors to use as you wish. Use it as a standalone processor with analog and digital inputs or make it a part of your WheatNet-IP network. Either way, the Aura8-IP is a powerhouse.

The M4-IP Microphone Processor BLADE combines four high-quality microphone preamps, four channels of Vorsis embedded microphone processing, and a WheatNet-IP BLADE interface, allowing you to place four microphone inputs anywhere in your WheatNet-IP Intelligent Network. The preamps and processors are accessed and controlled from any point on the network via its Windows-based GUI.

There are several other processors that are WheatNet-IP native as well. These include the VP-8IP, AirAura X3 and FM-531HD.

NOTE: As of August 2014, our original BLADEs are still available. Please contact your Wheatstone sales engineer for further info.

WheatNet-IP Overview & Planning Guide

Get a good overview of the Intelligent Network. Learn about all of your console options, details about all BLADEs and compatible processors, all accessories, details on WheatNet-IP technology, interface ideas and more.

This guide is downloadable from any WheatNet-IP product page on our website.

Or, just go to:
http://ip-overview.wheatstone.com

Small Control Surfaces

1. 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.

2. TS-22 Talent Station
This full featured Talent Station turret plugs into the WheatNet-IP intelligent network to provide microphone control, headphone (with built-in amplifier) and speaker levels, plus source select, programmable soft buttons and timer control. No outboard equipment required and no wiring it all together; a single CAT6 cable handles it all. Also available as a flush-mount countertop panel.

3. Sideboard Control Surfaces
This small control surface is available in 4 or 8 input, tabletop or rack versions and provides an extensive tool set, yet simple operation. Includes built-in headphone amp and controls, source select, and programmable buttons. As with the Talent Stations, just plug it into the WheatNet-IP network and go.

Controllers

HBX8-R Controller
An eight button rackmounted source controller for rapid access to eight preprogrammed sources. An encoder knob with associated display allows access to any signal on the network.

XYE-R IP Controller
A rackmounted controller with full dialup source and destination control. Any signal accessible in a networked system is fully routable.

IP Meters GUI Software

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 analysis meter for spectral readings plus visual alerts should a channel go dark.

Glass-E Software
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 it, any of our LX-24, E-6 and E-1 control surfaces can be controlled remotely. Use GLASS-E to take command of a 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!

(Note: not compatible with Wheatstone IP-12/IP-16 series consoles.)

GP Series Control Panels

GP8 and GP16 Panels
More than simple switch arrays, these 8 and 16 button panels come with their own scripting wizard. At the simplest level they can do source selection, push-to-talk, and preset/salvo activation. But the intelligence in each panel allows them to query the entire network and make switching decisions based on what they find. Conditional switching using Boolean logic functions allows for complex switching scenarios such as IF Studio B has requested the airchain, AND Studio A has acknowledged, THEN fire the Studio Change salvo.

GP3 Panel
A straightforward headphone panel with level control, 1/4” headphone jack and a switch with LED tally (typically used for the COUGH function, but can be custom wired). Connectorized with both RJ45 and Phoenix screw terminals.

GP4 Panel
A 4 button switch array for remote mic functions (typically ON, OFF, COUGH, TALKBACK). Interfaces with any available BLADE GPIO ports. Of course, all four switches can be custom wired for other functions as well.

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

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

the details

all the panels – everything you need to mix - right there at your fingertips

input

INPUT:
Selects between two preset sources. A and B sources allow a redundant source to be preset for immediate backup use.

ASSIGN:
Directs the module's signal to any of three stereo output busses, plus "OL" (off line), a prefader stereo bus.

TB:
Routes the selected talkback mic to the module's individual Mix-Minus output.

CUE:
Routes the module's prefader signal to the CUE bus.

FADER:
100mm Long-throw Penny + Giles fader for module level control.

ON/OFF:
Switches the module's audio on and off.

master

CUE:
Sets the volume of the cue speaker.

METERS:
Sets the switchable meter pair to display the AUX or offline bus, or one of two external sources.

SOFT KEY:
Six programmable keys to handle frequently utilized user functions.

ENCODER:
Rotary control used to select sources for the selected channel "A" or "B" preset.

TAKE:
Assigns the source selected on the rotary encoder.

SOURCE:
Selects one of four busses or two external sources for listening in the control room.

CONTROL RM:
Level control for the control room output.

monitor

EVENT:
Recalls one of four user-programmable console snapshots.

SOURCE:
Selects one of four console busses or two external sources to feed the studio monitors.

STUDIO:
Level control for the studio monitor output.

TB:
Engages talkback to the studio monitors.

TIMER:
Buttons for auto-start, start/stop, reset, and hold for the built-in timer in the meter bridge.

HEADPHONE:
Level control for headphone amplifier output.

the nitty gritty

specifications and other important stuff you should know about

PHYSICAL DIMENSIONS IP-12:

Dimensions (tabletop mount)	22.625”/57.5cm wide 16.5”/42cm deep 5”/13cm high (rear) 1.75”/4.5cm high (front)
Weight	18.1lbs/8.2kg

PHYSICAL DIMENSIONS IP-16:

Dimensions (tabletop mount)	28.625”/73cm wide 16.5”/42cm deep 5”/13cm high (rear) 1.75”/4.5cm high (front)
Weight	21.5lbs/9.75kg

Rear Panels: IP-12 (top), IP-16 (bottom)

IP-88CB Console Audio BLADE

The IP88CB provides powerful interface options, including four AES inputs, four stereo analog inputs, four AES outputs, and four stereo analog outputs on RJ45s; control room and studio stereo analog outputs on XLRs, two mic level inputs with gain trim and switchable phantom power on XLRs; cue and headphone outputs on both RJ45 and 1/4" TRS and 12 GPI logic ports on RJ45.

Specifications and features subject to change without notice
WheatNet® is a registered trademark of Wheatstone Corporation

Wheatstone & WheatNet-IP Are Automation and Control Ready

The power of Wheatstone’s advanced mixing router includes handshaking technology with many of the broadcast industry’s leaders: Agile, Audioarts, AudioVault, Audio Compass, AVT, Burli, BSI, Calliope, Crestron, Dalet, Davicom, DE Broadcast Shop, Digital Jukebox, Enco, Eventide, FLEX, Genesys, Grass Valley, iMediaTouch, Macromedia, Miranda, Moseley, MRZ Broadcast, Netia, NewsBoss, Op-X, Pulsar Multimedia, RCS, Reality Check Systems, Rivendell, Ross, SkyView, Sony, StreamSolution (XDEVEL corp.), Tieline, Utah Scientific, Vorsis, VoxPro, WideOrbit, WinMedia, Wire Ready, and Zenon X Media.
And more are partnering with us every day.

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WHEATNET IP

LXE

ADVANCED MODULAR PROGRAMMABLE NETWORKABLE CONSOLE

Wheatstone
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VeSource
VeLoc
leSource
leLoc
oSource
oLoc
oSource
oLoc
STEREO
STEREO
STEREO

Meet the LXE Console/Control Surface

The LXE is designed to be *your* console. Every knob, every button, every display can be programmed to accommodate virtually any application you come up with. No need to compromise anymore.

LXE is our most modular console ever. Simply group the modules into bays and connect them to your network with a single CAT6 cable. This allows you to use them in tabletop frames, with or without a meterbridge, with no need to cut furniture. Or, you can flush mount them right into your table, easily splitting them as you need.

Full color OLEDs reflect your programming, and the touchscreen GUIs let you interact with your audio in fresh new ways to do everything from pinching and dragging EQ to setting up router crosspoints in your network. ScreenBuilder™ LXE is included so you can create your own touchscreens. And ConsoleBuilder™ is a GUI-based app that allows you to program and configure your hardware surface.

Simply put, there's never been a more customizable way to work.

the surface

set it up to be YOUR surface - this much control has never been this easy

Wheatstone's LXE console takes 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).

LXE console 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 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.

pictured: Tabletop with meterbridge

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 audio network, and utilize Blade I/Os 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.

LXE's GUI is has pre-built screens for everything you normally use – metering, clocks, timers, dynamics, EQ, assigns, and more. All are touchscreen 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.

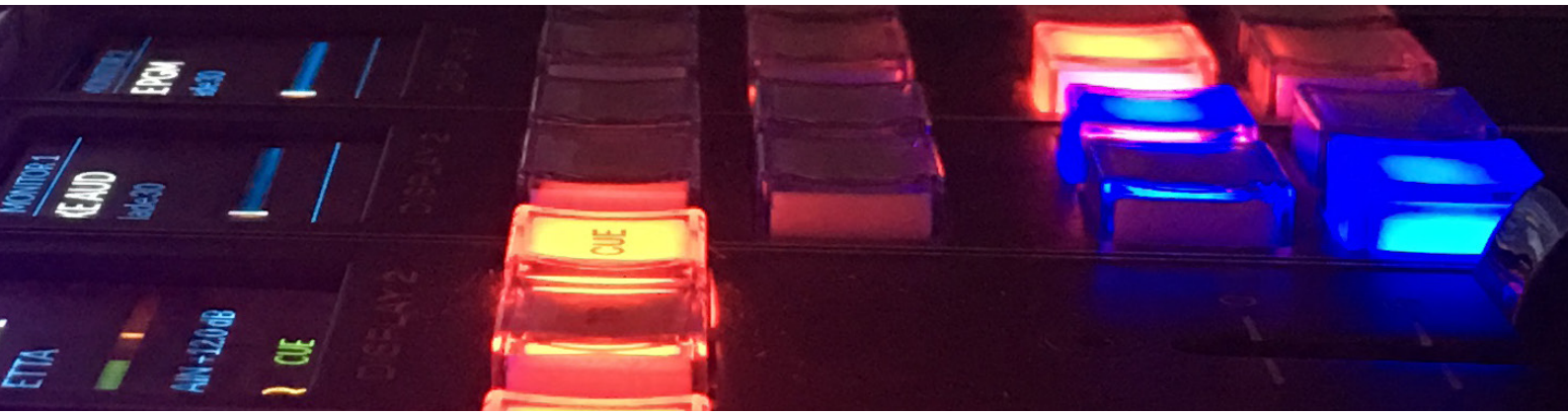
the surface

what can you do with it?

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 LXE Console Builder Software:
  - 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 LXE console software
- Built in Ethernet 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 (includes 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, and 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.
- Optional Glass LXE and Remote LXE touchscreen access over any IP connection with realtime fader tracking

layers = compact + huge

with layers, you can get up to 32 input channels with as few as four physical faders

pictured: low-profile tabletop wedge with eight physical faders

LXE has layers of accessibility and functionality. You can have, for example, 8 physical faders, each with four layers. So, you can have up to 32 actual input channels - 8 per layer. Push a button, and the motorized faders and your entire input channel are immediately reconfigured. Up to 8 layers are available to give you a maximum of 32 input channels. This gives you enormous power in a VERY compact space.

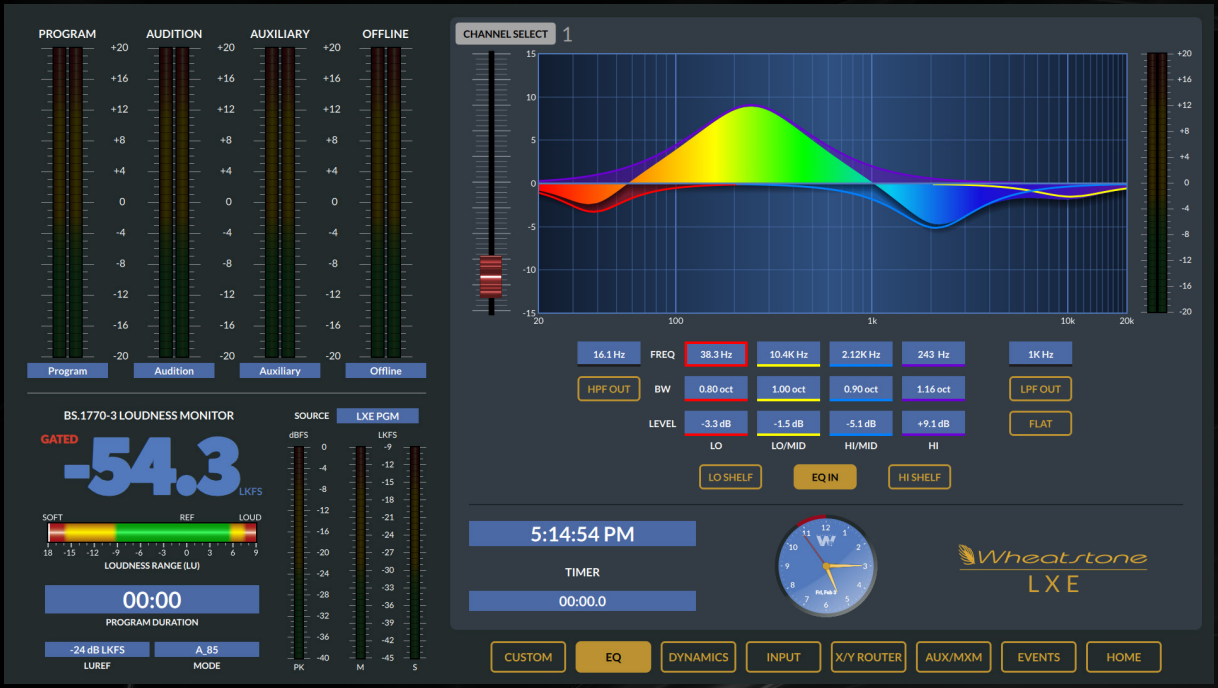
flush, for our global partners

a fully modular control surface that's completely customizable for your workflow

Different parts of the world have different ways of working. Popular around the world, split consoles allow you to position the different parts of the console wherever you like - even in different studios. LXE makes it easy. Simply group modules into bays, and connect those bays to the switch with standard CAT6 cables.

the big picture(s)

LXE comes with the most comprehensive and gorgeous touchscreen GUI ever (and you can build your own!)



The LXE GUI features a "button" navigation architecture to easily access features with a minimum number of clicks. These function buttons are located across the bottom of the function display area. You may access any desired screen by simply clicking or touching the appropriate buttons.

Custom Button
Launch custom built screens based on our popular ScreenBuilder™ product.

EQ Button
Set the available EQ settings for the selected channel. EQ In, High and Low Pass Filters, Lo and High Shelf settings are set based on the Input fader's SET button.

Dynamics Button
Set the available dynamic settings for the selected channel. Expansion and Compression settings are set based on the Input fader's SET button.

Input Button
Displays interactive Source, Mode, Phase, Pan, and Aux Send settings for the selected channel. Note you must press an Input fader's SET button to show the settings for that channel, or click to access any fader.

X/Y Router Button
Gives you an overview of the network routing and the ability to alter crosspoints and routing.

Aux/MixMinus Button
Displays controls for the four Aux Master outputs and the Mix-Minus Outputs.

Events Button
The LXE can store a "snapshot" of the entire control surface in a file called an EVENT. The Event Pane is divided into two sections. The *Event Recall* section lets you recall previously saved Events. The *Event Editor* is a manager for creating, editing, and deleting Events.

Home Button
Displays Timer, Clock, Current Event, Switched Meter, Headphone Mode controls, and the External Source for monitors.

paint with numbers

build customized screens that give you enormous power to handle your specific needs

ScreenBuilder™LXE

LXE's pre-built screens provide everything you normally use – metering, clocks, timers, dynamics, EQ, assigns, and more. All are touchscreen accessible with gestures you're used to using on your smart devices.

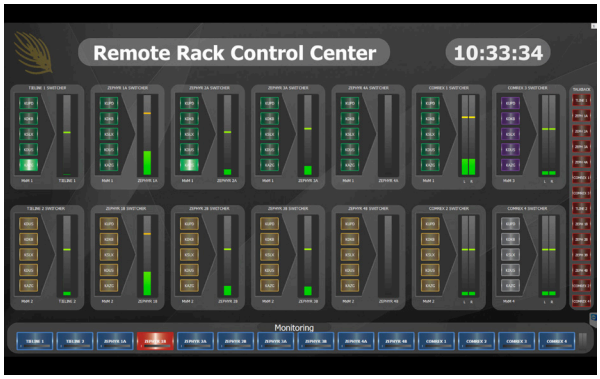
And, what's more, the GUI is just as customizable as the LXE surface. Using our ScreenBuilder™LXE software, you simply drag and drop objects and define their functions via a simple wizard interface. You can store multiple custom screens to go with your custom LXE setups.

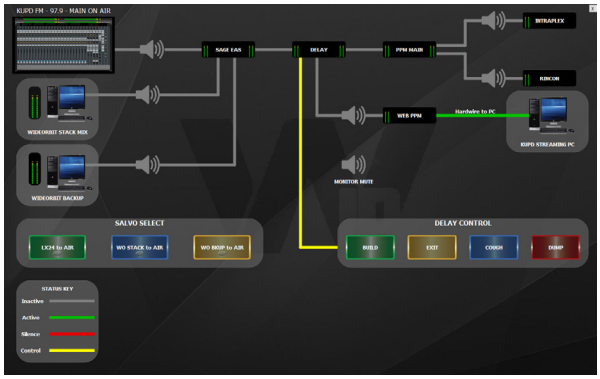
ScreenBuilder™LXE comes stocked with meters, faders, knobs, buttons, tallies, etc. ready to drag, drop, and configure. You can also add your own graphics and assign functions to them using our Script Wizard. We've seen studio mic plots, maps of entire countries with transmitter locations, simple on/off talent panels – it's pretty much wide open. If you can conceive it, you can achieve it.

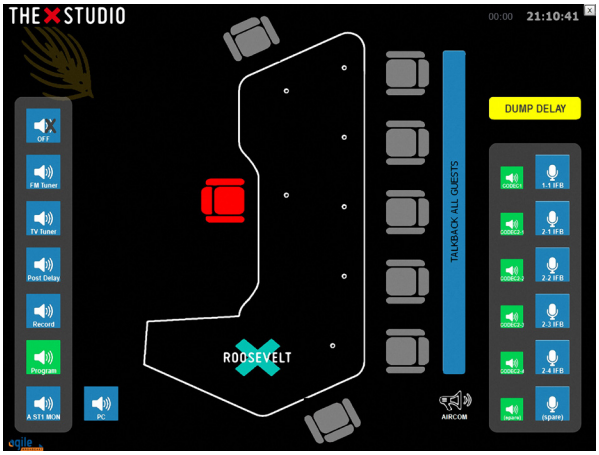
Cool feature: ScreenBuilder™LXE lets you customize the clock on your home screen to add your logo...

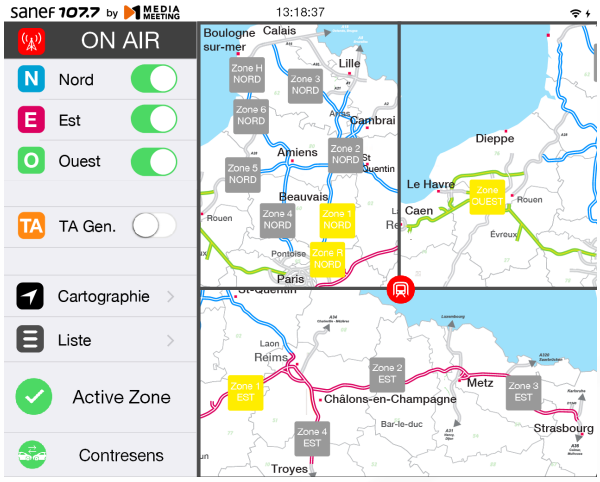
Across the page - over there on the right - are a handful of examples of the many diverse projects people have been crafting using ScreenBuilder™. If you can dream it, you can screen build it.

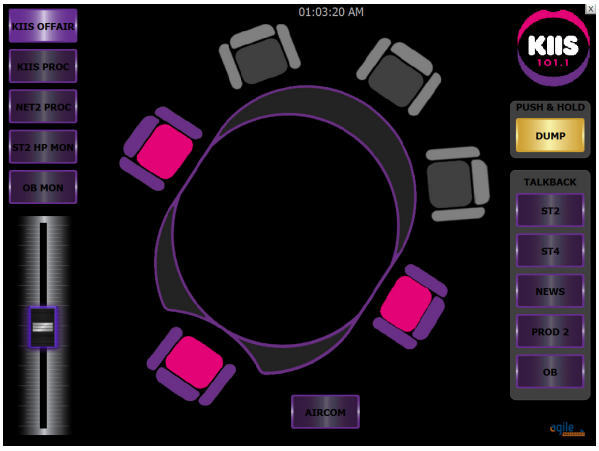
ScreenBuilder™ Gallery - a collection of screenshots from builds around the world.











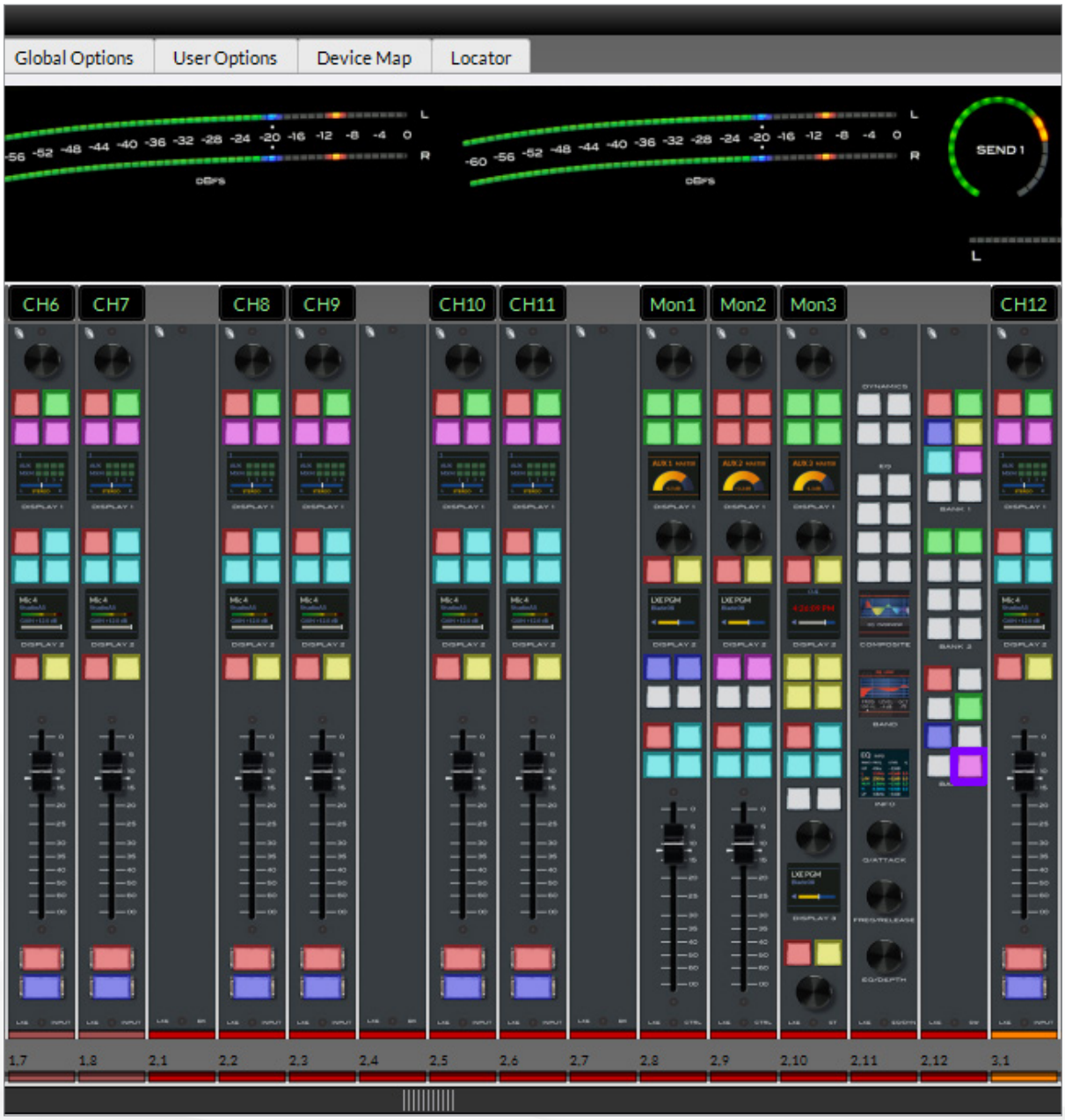
when you need to seize control...

all the panels – everything you need to mix - right there at your fingertips and a way to make them yours

input | monitor 1 | monitor 2 | studio 1 | studio 2 | equalization | accessory | OLED w/ Smart Switches

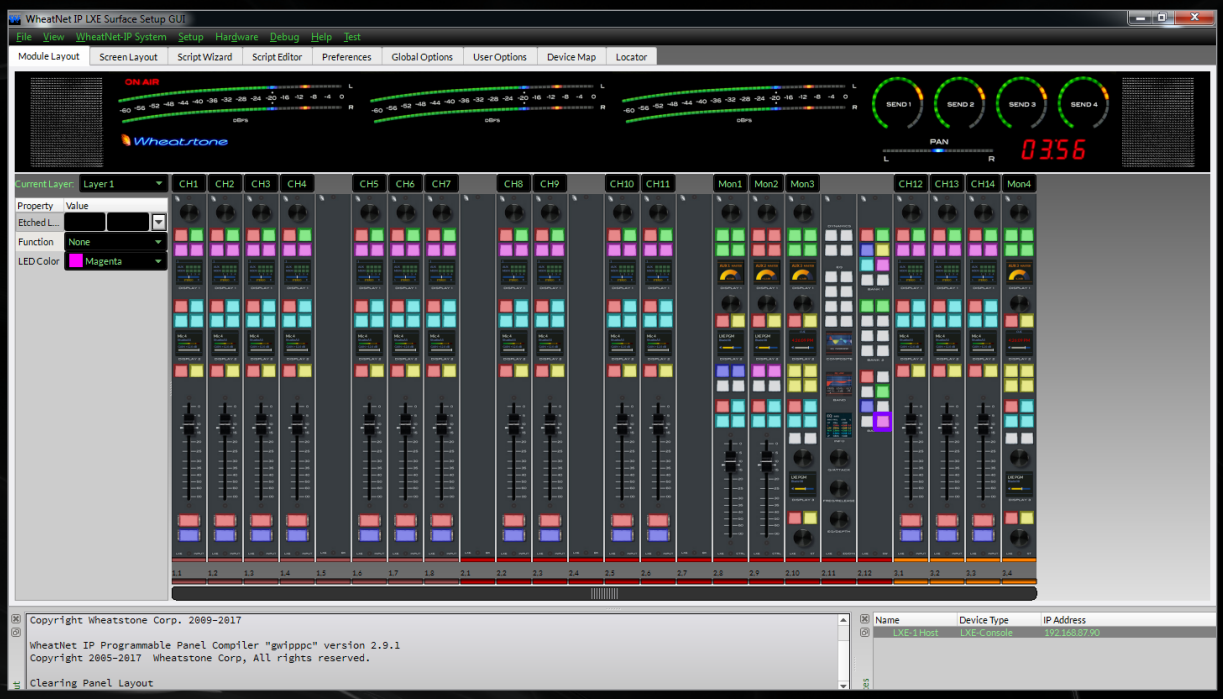
LXE Console Builder

The LXE comes ready-to-go and pre-configured to be useable for standard applications out of the box. But with broadcast audio becoming anything but 'standard', LXE's magic is revealed when you use its console builder software to configure and program the LXE to do exactly what you need it to do. This is a drag/drop/script GUI that puts an exceptional amount of power into an easy-to-use interface. PGM Assign, Set, EQ ON/Off, Talkback – any of over 25 functions can be assigned to just about any knob, button, or fader. Pretty amazing.

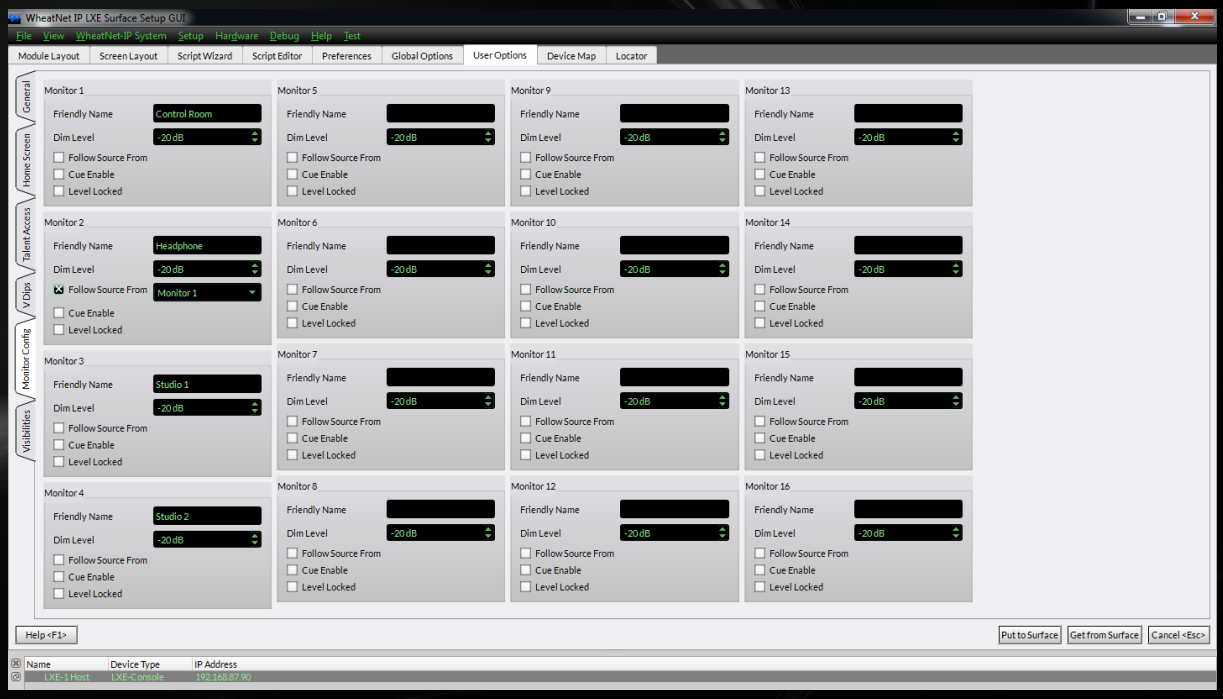


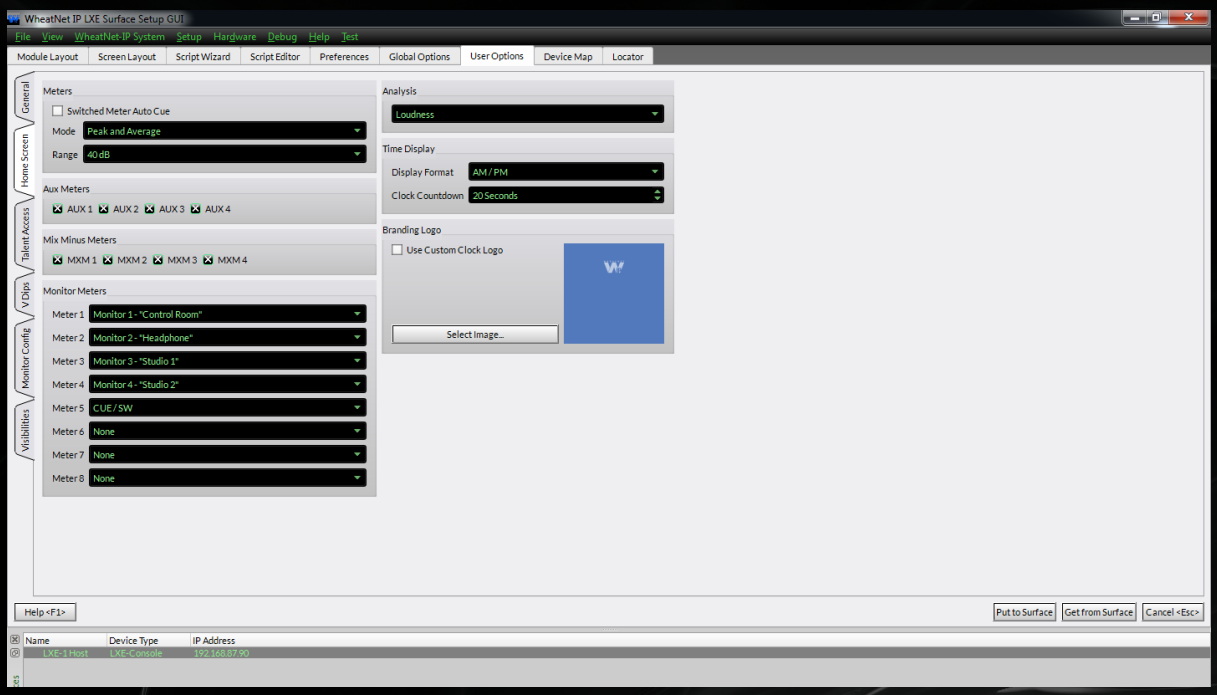
the flexible surface

Console Builder GUI lets you program and configure the LXE to accommodate virtually any application



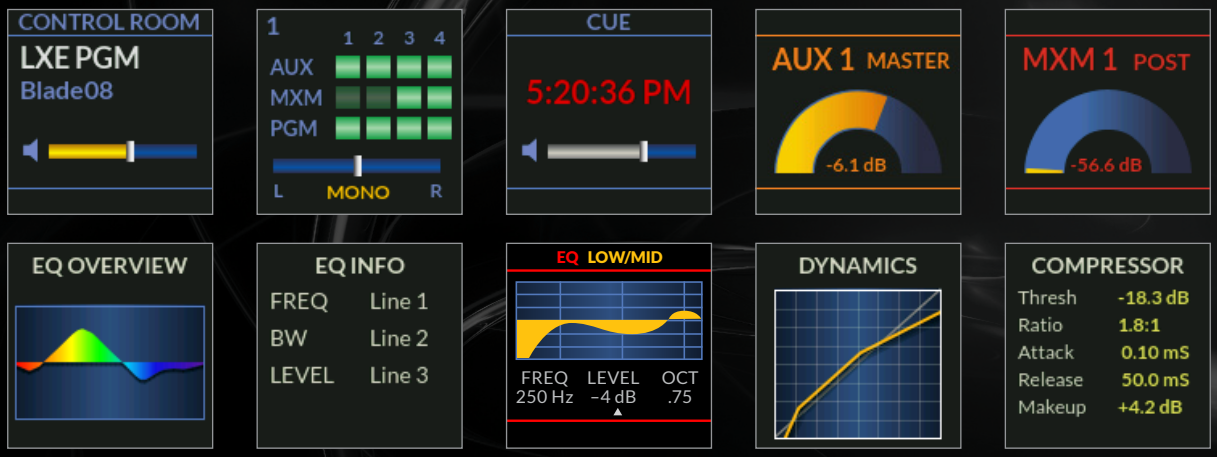
Here's how it works. Not surprisingly, it's an exceptionally powerful interface that's incredibly easy to use. A display shows you the layout of your console – just double click on the button, knob, or OLED you want to configure and a series of screens and tabs lets you program it to be what you need.





Above is an example of how easy it is to configure your console. Simply pick a meter and select the function you'd like from a drop-down menu. For more complex things, you can script to achieve the control you need.

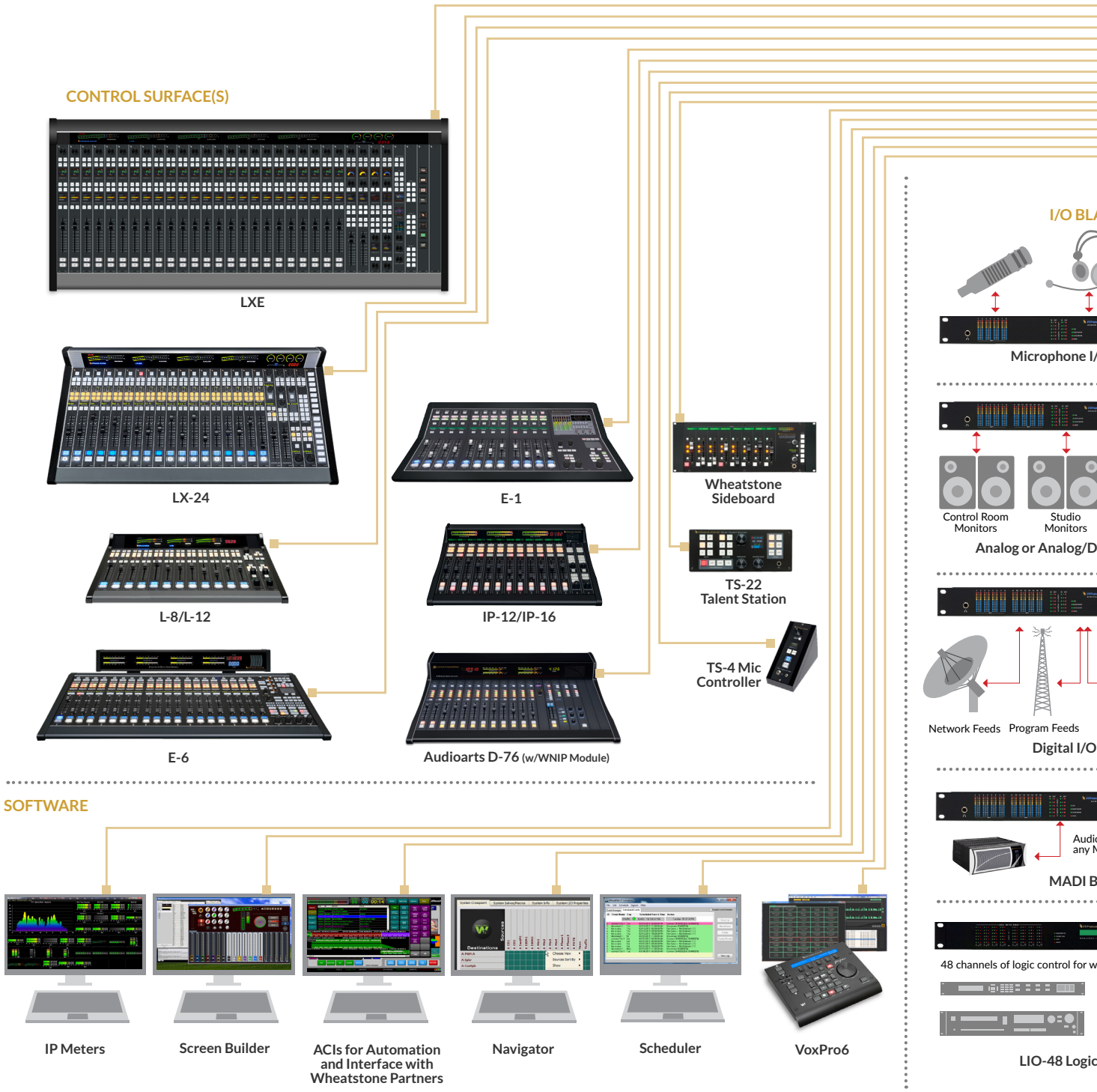
On-Board OLED Screens

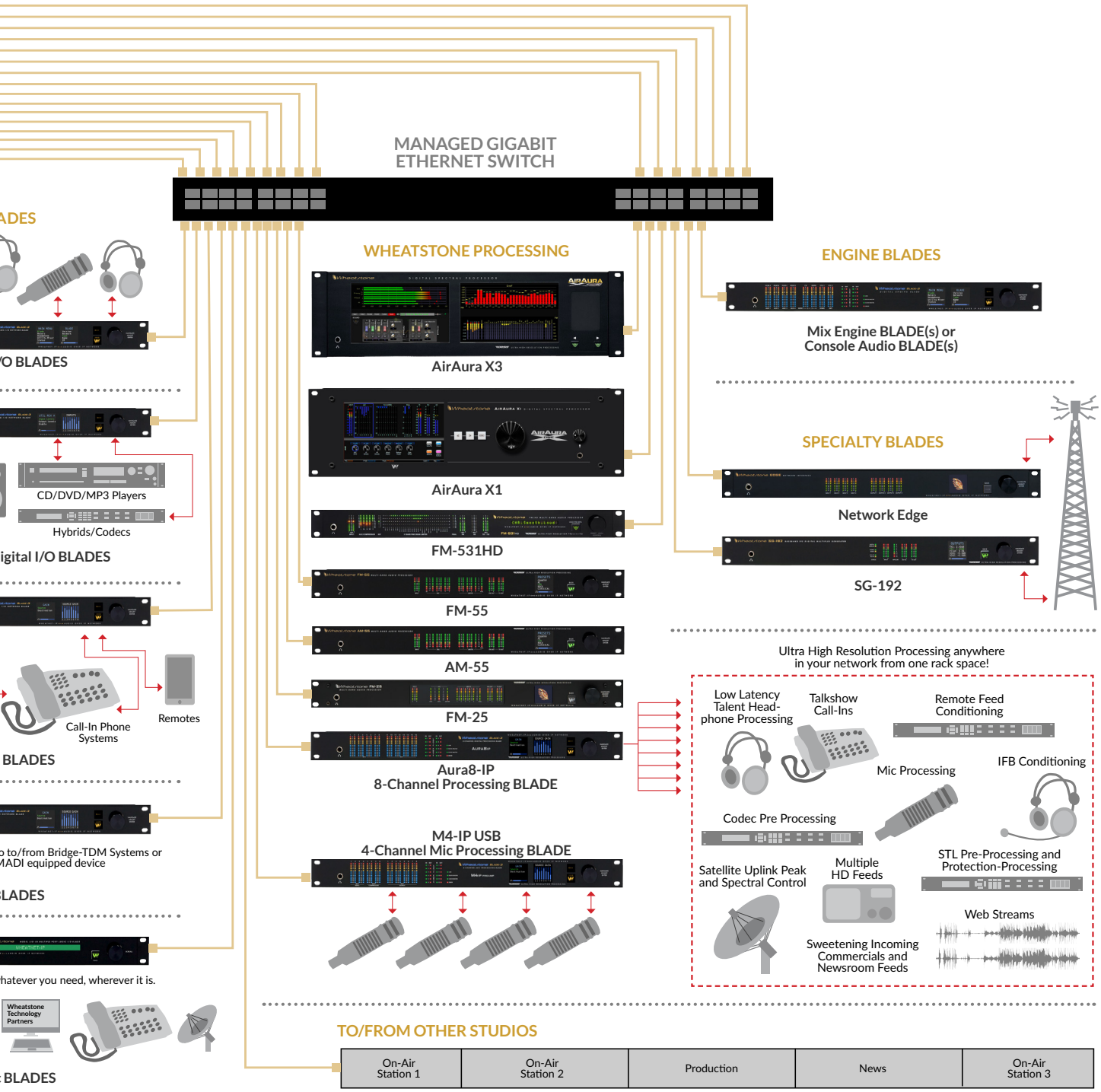


The small, full-color OLEDs in the modules on the surface provide whatever information is pertinent to what you are doing at any point in time. Turn a knob or push a button and a screen will provide the info you need. These are fully scriptable to present the data you need, when you need it.

the network

LXE is the front end to a vast network, all controllable from its surface




MANAGED GIGABIT ETHERNET SWITCH
ADES
/O BLADES
CD/DVD/MP3 Players
Hybrids/Codecs
igital I/O BLADES
Call-In Phone Systems
Remotes
BLADES
o to/from Bridge-TDM Systems or MADI equipped device
LADES
hatever you need, wherever it is.
Wheatstone Technology Partners
BLADES
WHEATSTONE PROCESSING
AirAura X3
AirAura X1
FM-531HD
FM-55
AM-55
FM-25
Aura8-IP
8-Channel Processing BLADE
M4-IP USB
4-Channel Mic Processing BLADE
ENGINE BLADES
Mix Engine BLADE(s) or
Console Audio BLADE(s)
SPECIALTY BLADES
Network Edge
SG-192
Ultra High Resolution Processing anywhere
in your network from one rack space!
Low Latency Talent Head-phone Processing
Talkshow Call-Ins
Remote Feed Conditioning
Mic Processing
IFB Conditioning
Codec Pre Processing
Satellite Uplink Peak and Spectral Control
Multiple HD Feeds
STL Pre-Processing and Protection-Processing
Web Streams
Sweetening Incoming Commercials and Newsroom Feeds
TO/FROM OTHER STUDIOS
On-Air Station 1
On-Air Station 2
Production
News
On-Air Station 3

beyond the surface

there's a world of Wheatstone smart control panels, software, Blade I/Os and other surfaces for you to put to work.

I/O Blades

I/O Blades are access points on the WheatNet IP Intelligent Network, converting each hardware physical input — audio or logic — to a data stream on the network. They provide the means of interfacing and controlling all of the audio equipment on your network.

Forming a dynamic, distributed network, Blades have onboard intelligence so one Blade can control the whole system by itself. During initial set up, one of the Blades in the system is automatically selected to be Route Master, which gathers all of the information from the other Blades, control surfaces, and PCs that belong to the system and redistributes all of this information back to every Blade. Every Blade is fully capable of running the entire system at any moment, providing a depth of backup and redundancy that is limited only by the number of Blades in the system.

Furthermore, I/O Blade 4s include AoIP routing, audio tools and intelligence for everything from routing sources/destinations, mixing sounds and processing feeds, to turning mics on or off, controlling consoles and triggering mix-minus presets by show, location or talent.

Blades come in analog, digital or analog/digital I/O versions and are available for specialty uses such as for MADI or HD/SDI applications. Fourth generation Blade 4s are fully AES67 compliant for interoperability with a wide range of AES67 networks and devices and support SMPTE ST 2110, including the NMOS discovery standard for AES67 and next generation television networks.

Mix Engine

LXE surfaces come with a powerful mix engine that houses all the mixing and processing functions plus essential distribution of signals. This creates an extremely flexible system, where program outputs from one surface can be a source on any other surface. For example, a news mixer's program bus can come up as a source on the air studio control surface.

I/O Blades. The intelligent building blocks of the WheatNet IP Audio Network:

- Plug-and-play setup with automatic IP addressing and configuration. No prioritizing packets needed.
- Each Blade has its own intelligence/ operating system that allows it to be a powerful standalone router, be part of a larger system, or to control the entire routing system.
- Integrates seamlessly with all major playback and production automation systems.
- Onboard CPU with GPU graphics for adding customized scripts and specialized software, metering apps and virtual interfaces as needed. No external PC needed.
- I/O, control and audio tools in one RU for reducing rackroom real estate and associated cooling, cabling and other expenses.
- Supports associated connections for quickly automating mix-minus and IFB feeds by event or microphone.
- Built-in utility mixers for online mixing, performing fades and segueing between feeds or creating a network-wide intercom system.
- Routable stereo processor with parametric equalizer, compressor and limiter for spot processing incoming or outgoing program feeds.
- Audio codecs optional (Blade 4) for integrating workflows from remote venues or home studios. All codecs are routable in native AoIP; no additional studio hardware required.
- SNMP capability for network management, statistics and emergency alerts.
- Logging app for tracking system activity with time-stamped messages and sophisticated filtering.
- AES67 compliant (Blade 4). AES67 compliance is from .125 ms to 5 ms packets, for a wide range of interoperability with other AES67 devices and networks.
- Supports SMPTE ST 2110 (Blade 4), including the NMOS discovery standard for AES67 and next generation television networks.
- Interoperable with third-party codecs, camera automation systems, and more than 60 other technology partners.
- Plug-and-play setup with automatic IP addressing and configuration of Blades in a network. No prioritizing packets needed.
- Each Blade has its own intelligence/ operating system that allows it to be a powerful standalone router, be part of a larger system, or to control the entire routing system.
- Integrates seamlessly with all major playback and production automation systems as well as 60 other third party brands.
- Onboard CPU with GPU graphics for adding customized scripts and specialized software, metering apps and virtual interfaces as needed. No external PC needed.
- Routable utility mixers, audio processing and optional audio codecs inside.
- I/O, control and audio tools in one RU for reducing rackroom real estate and associated cooling, cabling and other expenses.

Small Control Surfaces

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.

TS-22 Talent Station

This full featured Talent Station turret plugs into the WheatNet IP audio network to provide microphone control, headphone (with built-in amplifier) and speaker levels, plus source select, programmable soft buttons and timer control. No outboard equipment required and no wiring it all together; a single CAT6 cable handles it all. Also available as a flushmount countertop panel.

Controllers

HBX8-R Controller

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

XYE-R IP Controller

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

IP Meters GUI Software

Get a quick read of any audio source, destination or stream in your WheatNet IP audio network. The 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 analysis meter for spectral readings plus visual alerts should a channel go dark.

Glass LXE and Remote LXE

Use Remote LXE or Glass LXE 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 Remote LXE, you can control your LXE remotely from anywhere that has network access to the system – ideal for running the board from a remote or for assisting an unfamiliar operator from the engineer's home!

GP Series Control Panels

More than simple switch arrays, these control 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.

ScreenBuilder

ScreenBuilder is a virtual development suite of tools for creating virtual mixers and other touchscreens that tap directly into the WheatNet IP audio network as additions or updates to existing studios. Choose from controls, clocks, faders and dozens of other widgets, and apply basic scripting using Script Wizard for a variety of functions. Or add your own widgets and specialized scripts for even more customized touchscreens.

Streaming Appliances

Wheatstone makes streaming appliances and server software for stream provisioning and audio processing as well as for managing the metadata of those streams. Wheatstone streaming solutions are WheatNet IP audio network compatible and employ audio processing designed specifically for optimizing the quality of encoded/decoded audio streams.

The WheatNet IP Touch

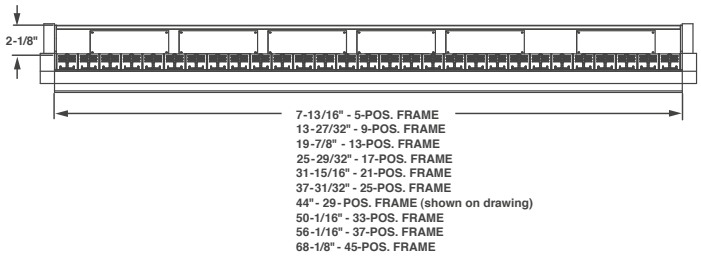
Interface your WheatNet IP system to automation systems, codecs, and commercially available third party touchscreens.

the nitty gritty

specifications and other important stuff you should know about

The LXE modular control surface is designed for countertop mounting or drop-in installation in counter top. Although the rubber feet on the bottom keep the surface from being easily moved when simply placed on the counter, pre-drilled holes have been provided so that screws may be used to mount the surface securely to the countertop.

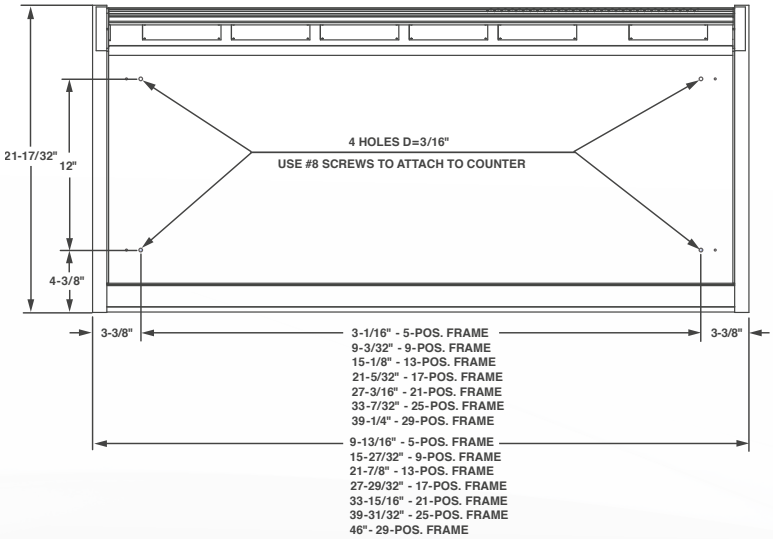
Countertop Frames

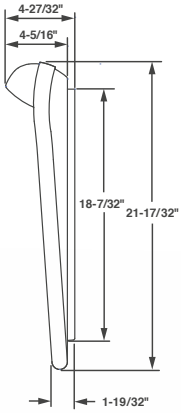


CUTOUT DIMENSIONS

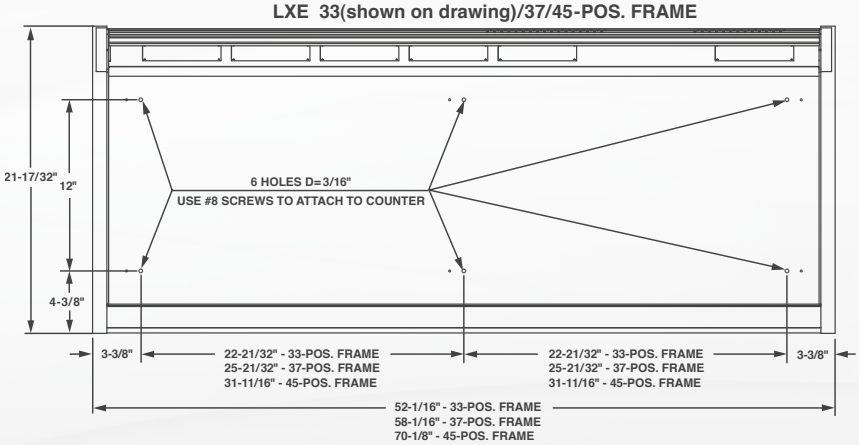
5-POS. FRAME - 8-1/16" x 18-1/2"
9-POS. FRAME - 14-3/32" x 18-1/2"
13-POS. FRAME - 20-1/8" x 18-1/2"
17-POS. FRAME - 26-1/4" x 18-1/2"
21-POS. FRAME - 32-3/16" x 18-1/2"
25-POS. FRAME - 38-7/32" x 18-1/2"
29-POS. FRAME - 44-1/4" x 18-1/2"
33-POS. FRAME - 50-3/8" x 18-1/2"
37-POS. FRAME - 56-5/16" x 18-1/2"
45-POS. FRAME - 68-3/8" x 18-1/2"

LXE 5/9/13/17/21/25/29(shown on drawing)-POS. FRAME

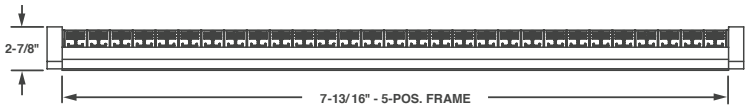




LXE 33(shown on drawing)/37/45-POS. FRAME



Wedges Frames

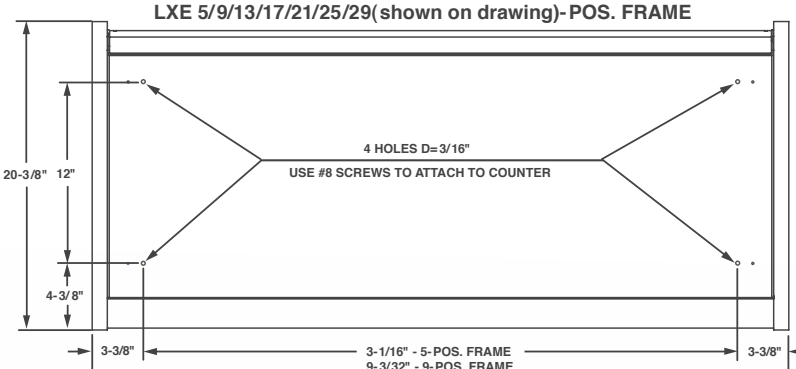


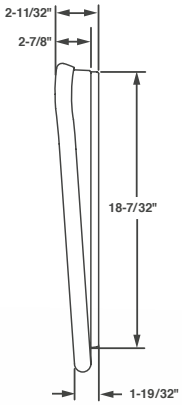
7-13/16" - 5-POS. FRAME
13-27/32" - 9-POS. FRAME
19-7/8" - 13-POS. FRAME
25-29/32" - 17-POS. FRAME
31-15/16" - 21-POS. FRAME
37-31/32" - 25-POS. FRAME
44" - 29- POS. FRAME (shown on drawing)
50-1/16" - 33-POS. FRAME
56-1/16" - 37-POS. FRAME
68-1/8" - 45-POS. FRAME

CUTOUT DIMENSIONS

5-POS. FRAME - 8- 1/16" x 18-1/2"
9-POS. FRAME - 14-3/ 32" x 18-1/2"
13-POS. FRAME - 20- 1/8" x 18-1/2"
17-POS. FRAME - 26-1/4" x 18-1/2"
21-POS. FRAME - 32-3/16" x 18-1/2"
25-POS. FRAME - 38-7/32" x 18-1/2"
29-POS. FRAME - 44- 1/4" x 18-1/2"
33-POS. FRAME - 50- 3/8" x 18-1/2"
37-POS. FRAME - 56- 5/16" x 18-1/2"
45-POS. FRAME - 68- 3/8" x 18-1/2"

LXE 5/9/13/17/21/25/29(shown on drawing)-POS. FRAME

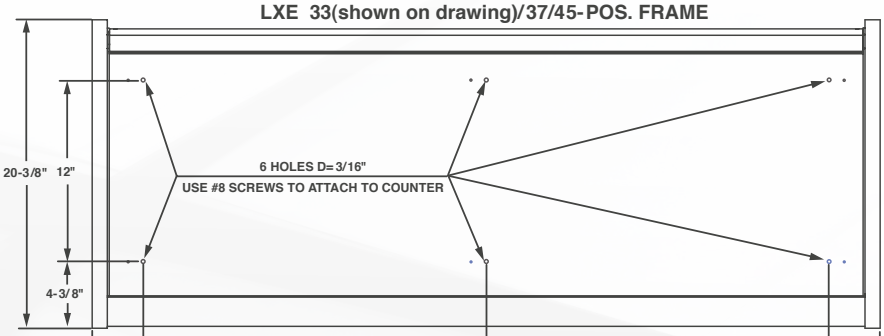




3-3/8"
3-1/16" - 5-POS. FRAME
9-3/32" - 9-POS. FRAME
15-1/8" - 13-POS. FRAME
21-5/32" - 17-POS. FRAME
27-3/16" - 21-POS. FRAME
33-7/32" - 25-POS. FRAME
39-1/4" - 29-POS. FRAME
3-3/8"

9-13/16" - 5-POS. FRAME
15-27/32" - 9-POS. FRAME
21-7/8" - 13-POS. FRAME
27-29/32" - 17-POS. FRAME
33-15/16" - 21-POS. FRAME
39-31/32" - 25-POS. FRAME
46" - 29-POS. FRAME

LXE 33(shown on drawing)/37/45-POS. FRAME



3-3/8"
22-21/32" - 33-POS. FRAME
25-21/32" - 37-POS. FRAME
31-11/16" - 45-POS. FRAME
22-21/32" - 33-POS. FRAME
25-21/32" - 37-POS. FRAME
31-11/16" - 45-POS. FRAME
3-3/8"

52-1/16" - 33-POS. FRAME
58-1/16" - 37-POS. FRAME
70-1/8" - 45-POS. FRAME

stuff you should know

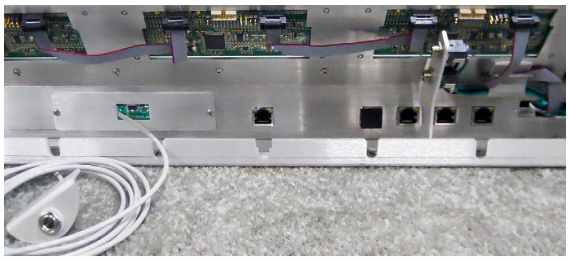
here is some stuff you should pay attention to...

SPS-1600 Power Supply

Clean and proper power is key to the great performance you've come to expect from Wheatstone. It would be easy to just purchase over-the-counter power supplies for our LXE. But we don't. In order to maintain our high level of quality we've designed and built a dedicated separate rackmount supply. We recommend running two power supplies simultaneously as a redundant backup power source.

Headphone Pigtail

We know that headphone jacks are seldom located where you need them to be, so every LXE comes with this handy pigtail and heavy-duty flange with a TRS jack. Just plug it into the 3-pin JST plug that plugs into the Panel Host board and mount the brushed steel flange where you need it (such as under your desk, as pictured above). Voila! Your headphone jack is exactly where you want it.



Connectors

There are several RJ45 connectors on the rear of the LXE control surface. This number will vary depending on the size of the surface. Chose any open connector for the connection to a standard Ethernet network switch via a straight (pin to pin) CAT5e/6 cable.

Wheatstone & WheatNet IP Are Automation and Control Ready

LXE by extension of Wheatstone's WheatNet IP audio network includes handshaking technology with many of the broadcast industry's leaders: Agile, Audioarts, AudioVault, Enco, Eventide, Grass Valley, Moseley, multiCAM, NewsBoss, Radio.Cloud, RCS Zetta, Ross, SkyView, Sony, Tieline, VoxPro, WideOrbit, and many more.

Specifications and features subject to change without notice

CUE
ZROCK 1
ZETTA
GAIN +120 dB
DISPLAY 2
MONITOR 1
LXE AUD
Blade 30

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

Wheatstone
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GSX

ADAPTABLE EXPANDABLE NETWORK IP AUDIO CONTROL SURFACE

Wheatstone

BROADCAST AUDIO PERFECTIONISTS℠

PROGRAM
AUDITION
AUXILIARY
OFFLINE
AUX 1
AUX 2
AUX 3
AUX 4
MXM 1
MXM 2
MXM 3
MXM 4
CURRENT EVENT
Afternoon
Fri, Feb 3
5:07:42 PM
TIMER
00:00.0
EXT 1
EXT 2
NoSource
MONITOR 1
MONITOR 2
MONITOR 3
MONITOR 4
SWITCHED
BS.1770-3 LOUDNESS MONITOR
-23.8
LUFS
SOFT
REF
LOUD
LOUDNESS RANGE (LU)
00:00
PROGRAM DURATION
-24 dB LKFS
LUREF
A_BS
MODE
SOURCE
LXE PGM
dBFS
LKFS
PK
M
S
LXE OL
LXE PGM
NoSource
CUSTOM
EQ
DYNAMICS
INPUT
X/Y ROUTER
AUX/MXM
EVENTS
HOME
Wheatstone
GSX
FOCAL

FOCAL
applause
bomb-falling
explosion
heartbeat
laughter
machine-gun_2

THE SURFACE

Our GSX console behaves and feels exactly the way a surface like this should...perfect

GSX brings all of Wheatstone's innovations together into a ready-to-go console/control surface that can easily handle the fast-changing roles of modern broadcast studios. It's a turnkey console that's based on our LXE – the first completely customizable control surface for IP audio systems.

While it's delivered fully configured and ready to fly, GSX is customizable. Virtually every knob, every button, every display can be programmed to accommodate virtually any application you come up with using our optional ConsoleBuilder™ software.

Additionally, features such as Automix, Layers, ScreenBuilder™, Smart Switch panels, and IP accessories can be added at any point to adapt your GSX to your evolving needs.

GSX's modular design makes for flexible installations. The 4-fader input modules (or 2-fader/3-space master module) can be flush mounted right into your table, easily splitting them as you need, and connected to your network with a single CAT6 cable.

GSX interfaces seamlessly into the WheatNet-IP Intelligent Network, and utilizes BLADEs 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.

Physical Surface:

- Form Factors:
  - Wedge low profile (no meterbridge, surface pairs with separate HDMI monitor)
  - Countertop drop (flushmount)
  - Both choices can be split consoles connected via network in same room or different rooms/ locations
- Option: 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) (talkback and cue are red only)
  - Full color OLED display on each channel configurable for contextual display
- Built in Ethernet switch for plugging in accessories or other host panels
- PureIP – 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
- Mono cue speaker
- Up to 24 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
- Option: 8 layers (to accommodate up to 32 input fader channels) – completely customizable and configurable for each layer.
- Separate Control Room, Headphone, and Studio monitors, each with monitor dimmable (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. Includes highpass and lowpass filters
- Flexible Metering Options:
  - Loudness metering
  - Phase Correlation metering
  - Input metering on each channel
- Option: Automix function controlled via touchscreen GUI
- 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

METERS ARE ON THE SCREEN

Up front and laid out to give you all the info you need in exactly the right place

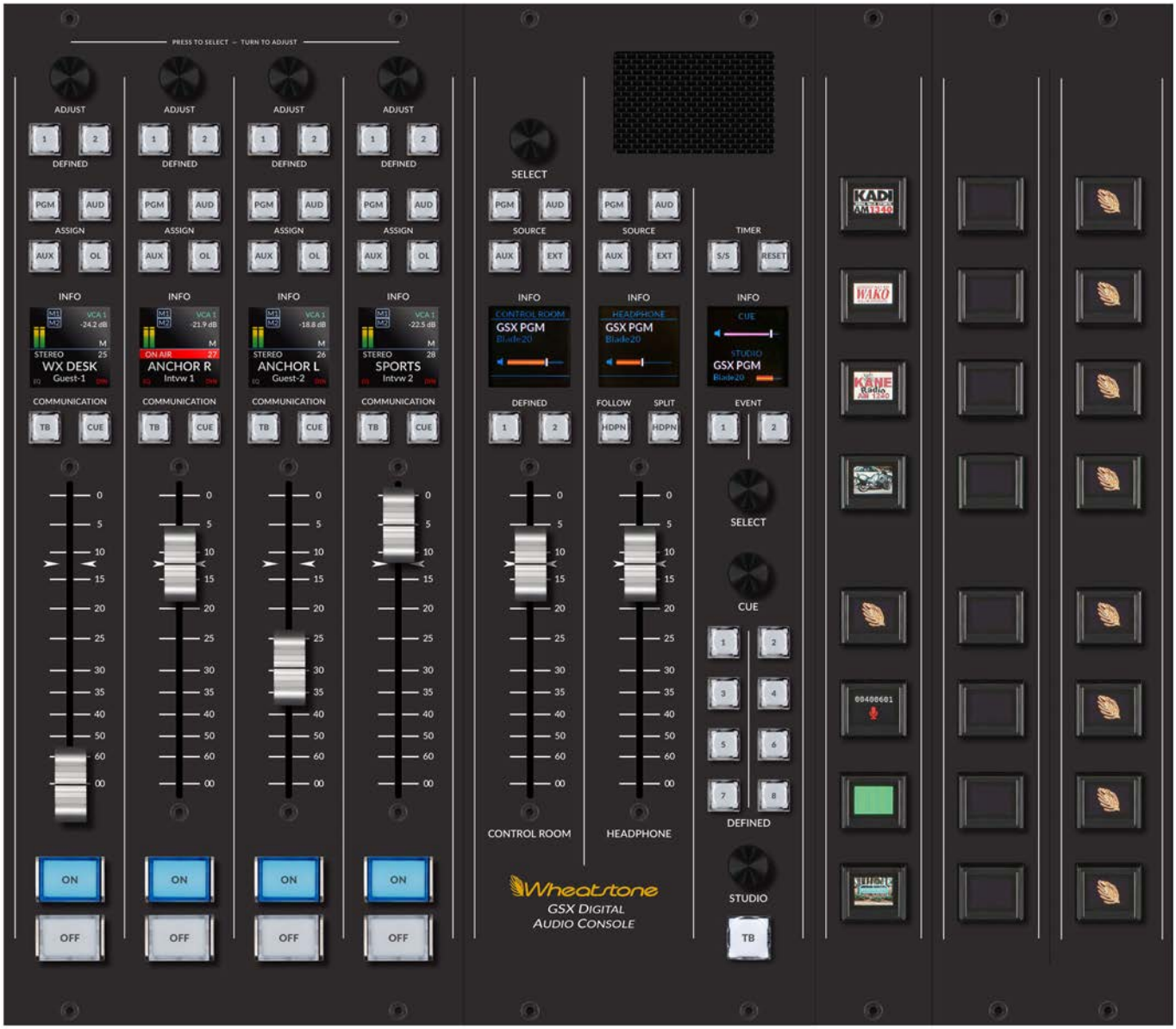
GSX has moved the meters from the console to the graphic interface on-screen, giving you a low-profile workspace that lets you focus your attention where your eyes spend most of their time. The touchscreen GUIs let you interact with your audio to do everything from pinching and dragging EQ to setting up router crosspoints in your network. Optional ScreenBuilder™ GSX software enables you to create your own touchscreens. And optional ConsoleBuilder™ is a GUI-based app that allows you to program and configure your hardware surface.

Touchscreen GUI:

- Complete set of screens provided to allow control over every aspect of the GSX control surface
- Option: ScreenBuilder™GSX with support for unlimited number of screens (which run one at a time) allows you to build any type of custom screen you need
- Full screen XY controller built in
- 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
- Digital timer and clock on home screen
- Add custom logo to clock background

THE MODULES

Everything you need to mix - right there at your fingertips



There are two basic modules on the GSX - a four fader input module, and a master section with two faders. Each module is programmed to be a functional radio console out of the box. Each module is also completely customizable using optional ConsoleBuilder™ software to set GSX up exactly as you need it to function for your workflow. And, there's space in the frame for additional modules, such as the SS-8 with programmable OLED buttons.

GSX OPTIONAL EXPANSION

Make GSX exactly the control surface you need for your workflow

GSX's architecture, with a built-in Ethernet switch, lets you add functionality to your console at any time. Add panels to manage phones, or the SS-8 with OLED buttons that can be programmed to do just about anything you want. Or, add functions, like AutoMix or Layers. And, for personalizing your workflow, there's ConsoleBuilder and/or ScreenBuilder to customize your physical surface or your touchscreen interfaces.

GSX Automix - Ultimate Control

When airing a panel discussion, forum, or other program where many microphones are located close together, audio operators have their work cut out for them. Simply leaving all the mics open all the time will result in an ugly, comb-filtering effect that will make the room sound hollow. The operator must constantly pay attention to the discussion in progress, and keep unused mics pulled down. There are many opportunities for errors which are obvious to the audience. Optional Automix (Automatic Microphone Mixing) takes this difficult task out of the hands of the operator.

By engaging this feature on each of the microphones, the operator allows the console to monitor the level coming from each microphone and automatically reduce the gain on mics not being addressed. The level of all participating mics is determined by the weighting assigned to each channel by the weight sliders in the Automix screen. This allows hosts to be assigned a higher weight in order to speak over guests in a lively discussion. It also allows “loud talkers” to be assigned a lower weight so they are more evenly balanced with other speakers. Conversely, “soft talkers” can be assigned higher weighting to compensate for their lower level. The Automixer also does gain sharing, so the overall level will not exceed nominal levels when multiple participants are speaking at once.

Remote GSX - Control from Anywhere

Optional Remote GSX is a multi-touch virtual console that mirrors the GSX control surface for an independent, yet shared user experience during fast-paced, multi-operator shows and productions.

It remotely controls the GSX 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 GSX hardware surface, Remote GSX provides complementary production functions for separate operators using an GSX 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 GSX 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.

Layers = Compact + Huge

With optional LAYERS, you can get up to 32 input channels with as few as four physical faders. You can have, for example, 8 physical faders, each with four layers. So, you can have up to 32 actual input channels - 8 per layer. Up to 8 layers are available to give you a maximum of 32 input channels. This gives you enormous power in a VERY compact space.

ConsoleBuilder™ GSX

The GSX comes ready to go out of the box, pre-configured for standard broadcast workflows. But with broadcast audio becoming anything but 'standard', GSX's powerful flexibility is fully revealed when you use the optional ConsoleBuilder™to configure and program it to fit your own studio. ConsoleBuilder is a drag/drop/scripting software GUI that packs an exceptional amount of power behind an easy-to-use interface. With it, any of over 25 functions can be assigned to just about any knob, button, or fader on the control surface.

Here's how it works: the display shows you the layout of your physical console – just double click on the surface feature you want to customize (switch, knob, fader, OLED display) and using the drop-down menu, select the function you'd like to assign to it. If you require more complex programming, you can even script things to achieve the exact level of control you need. Many GSX GUI functions can be customized as well.

ScreenBuilder™ GSX

GSX's GUI has pre-built screens for everything you normally use – metering, clocks, timers, dynamics, EQ, assigns, and more. All are touchscreen accessible with the same gestures you're used to using on your smart devices.

However, this touchscreen GUI is just as customizable as the GSX surface. Using our ScreenBuilder™ GSX software, you simply drag and drop objects to build custom touchscreens, defining their functions via a simple wizard interface. You can then easily store these custom screens to go with your custom GSX setups.

ScreenBuilder™GSX comes stocked with widget graphic elements: meters, faders, knobs, buttons, tallies, etc., all ready to drag, drop, and configure. You can also add your own graphics, and assign functions to them using our script wizard. We've seen studio mic plots, simple on/off talent panels, even maps of entire countries showing all transmitter locations – it's pretty much wide open. If you can conceive it, you can achieve it.

THE NETWORK

With modern, intelligent WheatNet-IP audio networking, you can...

Make wholesale studio changes.
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 WheatNet®.

Bring on the devices.
WheatNet-IP gets along with everyone, including MADI gear like ProTools, 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.

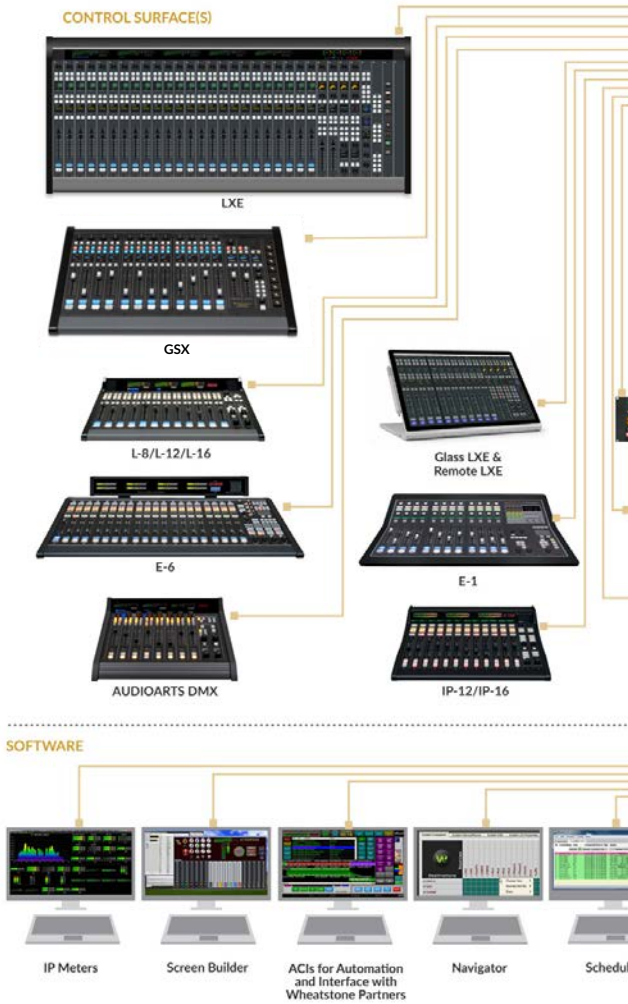
Access any audio, anywhere.
WheatNet-IP handles native analog, microphone, AES/EBU, SPDIF, AoIP, MADI, SDI and even AES67, which is now included in our third-generation access units. Ingest any audio format into the WheatNet-IP, and convert to any audio output — analog to digital, AES to IP, microphone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

Avoid costly system failures.
A distributed and intelligent network means no more centralized points of failure to go wrong, plus more points of recovery. Each 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!

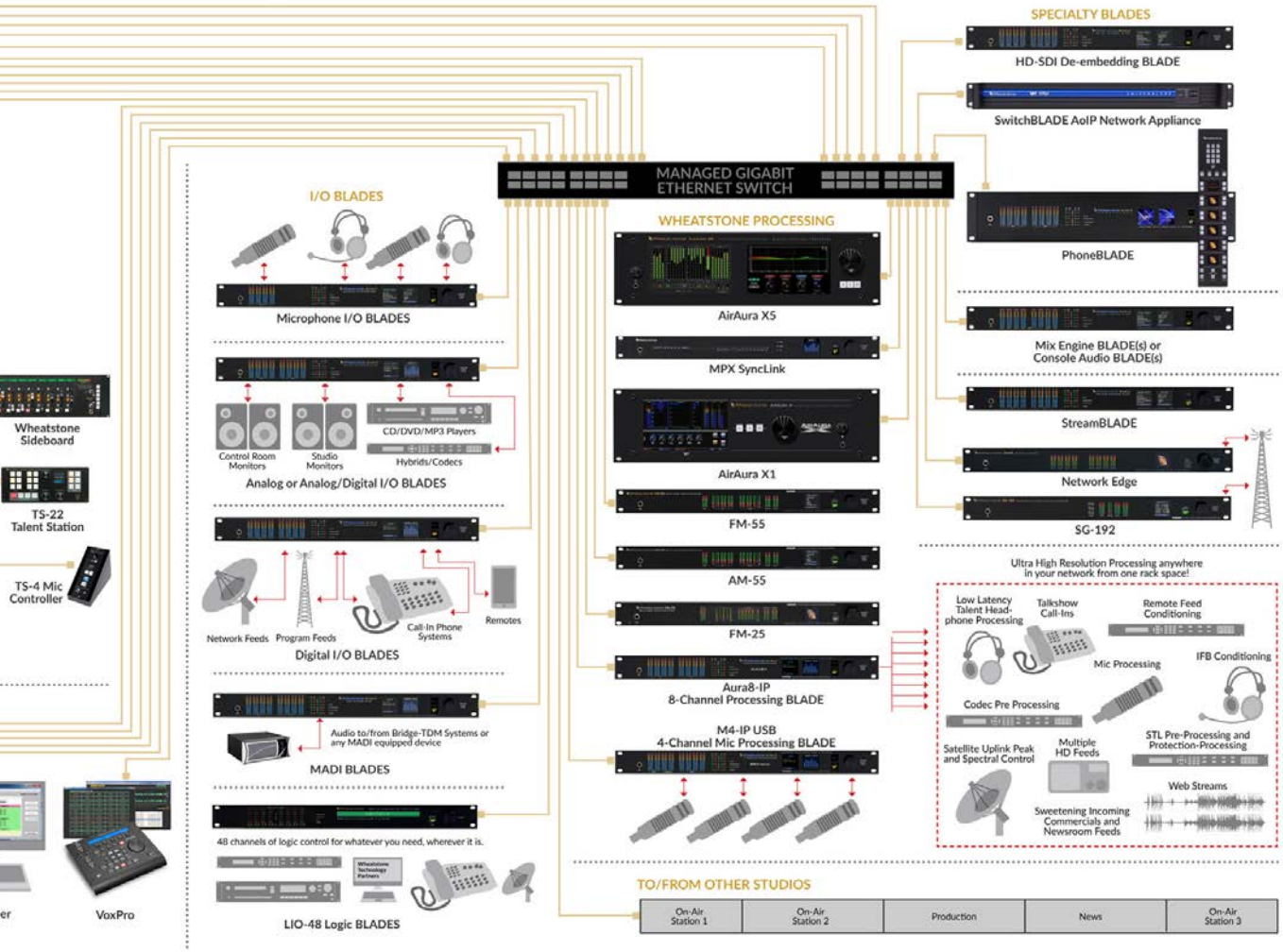


Call the shots.
You call the shots, not some PC. WheatNet-IP distributes the workload to all access points in the system for better overall network stability. Each WheatNet-IP BLADE access unit has its own embedded processor with operating system that allows it be a powerful standalone router or part 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 and every 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 you don't run out of switch capacity or time having to delete unused channel assignments.

BUILDING THE AUDIO ECOSYSTEM

The building blocks of the intelligent AoIP network



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.

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 way more for less.
We're talking full-featured routable mixers, stereo processor, and automation control in each BLADE 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.

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 BLADEs 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 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.

Expand your network at any time, for less.
With control and intelligence built into every WheatNet-IP BLADE I/O access unit, you have the networkability you need to grow with the times.

BEYOND THE SURFACE

There's a world of Wheatstone smart control panels, software, BLADEs and other surfaces for you to put to work

I/O BLADEs

I/O BLADEs are access points on the WheatNet-IP Intelligent Network, converting each hardware physical input — audio or logic — to a data stream on the network, and converting data streams to hardware digital outputs. They provide the means of interfacing and controlling all of the audio equipment on your network.

The IP88A (analog), IP88D (digital), IP88AD (analog/digital) and IP88M (mic level) BLADEs handle your standard audio I/O requirements. Each has 8 stereo channels, 16 mono channels, or any combination totaling 16 discrete channels. The A/D versions are half analog, half digital. And the mic BLADE has 8 XLR inputs with high-quality mic preamps.

Special Purpose BLADEs

Another I/O BLADE is the MADI BLADE, which converts a 64-channel MADI input to data streams on the network, and converts data streams to 64-channel MADI outputs.

The LIO-48 Logic BLADE provides 48 universal logic I/O ports, each individually configurable, for turning devices on or off by time or event, for automatically adjusting the audio processing settings when a certain mic turns on, and for any other logic control you need in your studio operation.

Mix Engine & Console Audio BLADEs

We have several BLADES built to handle specific tasks. First are the Engine BLADES: IP88E and IP88CB. The IP88E is a BLADE that houses all DSP power for an individual control surface or Glass-E virtual mixer, 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, they are available as sources and destinations anywhere. This creates an extremely flexible system, where program outputs from one surface can be a source on any other surface. For example, a news mixer's program bus can come up as a source on the air studio control surface. While the IP88E doesn't house audio I/O, it does include 12 universal logic (GPIO) ports.

The IP88CB provides powerful interface options, including four AES inputs, four stereo analog inputs, four AES outputs, and four stereo analog outputs on RJ45s; control room and studio stereo analog outputs on XLRs, two mic level inputs with gain trim and switchable phantom power on XLRs; cue and headphone outputs on both RJ45 and 1/4" TRS, and 12 GPI logic ports on RJ45.

Audio Processing BLADEs

Placing a processor everywhere you'd like one has been costly and impractical. Until now.

A single Aura8-IP gives you up to eight processors to use as you wish. Use it as a standalone processor with analog and digital inputs or make it a part of your WheatNet-IP network. Either way, the Aura8-IP is a powerhouse.

The M4-IP Microphone Processor BLADE combines four high-quality microphone preamps, four channels of Vorsis embedded microphone processing, and a WheatNet-IP BLADE interface, allowing you to place four microphone inputs anywhere in your WheatNet-IP Intelligent Network. The preamps and processors are accessed and controlled from any point on the network via its Windows-based GUI.

All Wheatstone processors are WheatNet-IP native as well.

WheatNet-IP Overview & Planning Guide

Get a good overview of the Intelligent Network. Learn about all of your console options, details about all BLADEs and compatible processors, all accessories, details on WheatNet-IP technology, interface ideas and more.

This guide is downloadable from any WheatNet-IP product page on our website.

Or, just go to: **wheatstone.com/wheatnet-ip**

Small Control Surfaces

1. 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.

2. TS-22 Talent Station
This full featured Talent Station turret plugs into the WheatNet-IP intelligent network to provide microphone control, headphone (with built-in amplifier) and speaker levels, plus source select, programmable soft buttons and timer control. No outboard equipment required and no wiring it all together; a single CAT6 cable handles everything. Also available as a flush-mount countertop panel.

3. Sideboard Control Surfaces
This small control surface is available in 4 or 8 input, tabletop or rack versions and provides an extensive tool set, yet simple operation. Includes built-in headphone amp and controls, source select, and programmable buttons. As with the Talent Stations, just plug it into the WheatNet-IP network and go.

Controllers

HBX8-R Controller
An eight button rackmounted source controller for rapid access to eight pre-programmed sources. An encoder knob with associated display allows access to any signal on the network.

XYE-R IP Controller
A rackmounted controller with full dial-up source and destination control. Any signal accessible in a networked system is fully routable.

IP Meters GUI Software

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 analysis meter for spectral readings plus visual alerts should a channel go dark.

Software and Software-Based Control Surfaces

In addition to hardware, Wheatstone also offers software-based control surfaces and applications.

Our Glass LXE can be configured to be exactly the console you need and can operate on any PC-based touchscreen device.

Glass-E software provides remote capabilities to other console lines, such as the LX-24 and E-Series.

We also offer ScreenBuilder - an app that lets you build custom touchscreen interfaces to accomplish just about any task in your WheatNet-IP environment.

Wheatstone has plenty of other software solutions to provide you the tools you need to get the job done.

GP Series Control Panels

GP8 and GP16 Panels
More than simple switch arrays, these 8 and 16 button panels come with their own scripting wizard. At the simplest level they can do source selection, push-to-talk, and preset/salvo activation. But the intelligence in each panel allows them to query the entire network and make switching decisions based on what they find. Conditional switching using Boolean logic functions allows for complex switching scenarios such as IF Studio B has requested the airchain, AND Studio A has acknowledged, THEN fire the Studio Change salvo.

GP3 Panel
A straightforward headphone panel with level control, 1/4" headphone jack and a switch with LED tally (typically used for the COUGH function, but can be custom wired). Connectorized with both RJ45 and Phoenix screw terminals.

GP4 Panel
A 4 button switch array for remote mic functions (typically ON, OFF, COUGH, TALKBACK). Interfaces with any available BLADE GPIO ports. Of course, all four switches can be custom wired for other functions as well.

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

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

Wheatstone
BROADCAST AUDIO PERFECTIONISTS℠

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L-8 • L-12 • L-16

ADVANCED MODULAR NETWORKABLE CONSOLES

Wheatstone

BROADCAST AUDIO PERFECTIONISTS℠

THE SURFACE

Our L-Series consoles feel exactly the way a surface like this should...perfect

Make it happen with this sleek control surface scaled just right for producing news and voiceovers. Like the LX-24, the L-8/L-12/L-16 has all the latest goodies plus is 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, and L-16 are based on all the same design principles as the LX-24: precision-built, low-profile, tabletop IP control surfaces with hot-swappable individual fader modules that offer assignable sources to any fader.

Each fader can access four stereo output 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 provided, and a SET button gives access to assignable controls in the master section. Snapshots of the L-8, L-12, or L-16 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/L-16 meterbridge features three sets of bright, high resolution LED meters. A digital timer is also included. The console has control room and headphone outputs with level controls and source selection, as well as an independent studio monitor output. The L-12 and L-16 each have a built-in cue speaker.

These control surfaces are designed for use with the WheatNet-IP Intelligent Network. A Console Audio BLADE provides the audio mix functionality as well as power to the L-8 (the L-12 and L-16 have dedicated power supplies); additional BLADEs can be added for I/O in a variety of digital and analog formats. These IP consoles are versatile and low profile (no tabletop cutout needed). Just plug the L-8, L-12, or L-16 into your WheatNet-IP Intelligent Network, and quickly assign any source of any type from anywhere in your network to any channel fader.

- 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 on L-12 or L-16
- Includes IP88CB(L) Console Audio BLADE or IP88CBE(L) for optional EQ functions

OLED SWITCH PANEL

The optional OLED Switch Panel is available for the L-8, L-12, and the L-16. Each button has a high-resolution OLED display screen that can easily be customized to indicate its function.

The buttons are programmable to handle anything you can script.

High-definition OLED displays on every channel are dynamic to give you exactly the information you need.

02:34
L
R
SWITCHED
DBFS
HOLD FOR SET
A/B SET
SOFT
ASSIGN
PGM
AUD
AUX
UTIL
TB
CUE
Tel 1
-17.4 dB
STEREO
INFO
Mic 1
-3.3 dB
STEREO
INFO
Mic 2
-6.3 dB
STEREO
INFO
TAKE
PAN
MODE
EVNT
No Event
INFO
METER
EXT SET
TIMER
S/S RST
CR/HDPN

Elegance and sophistication are not solely for expensive consoles. Whatever size your needs dictate, there's no reason to not have the best. Our L-8, L-12, and L-16 bring the exceptional feel, appearance, response and functionality of our LX-24 to a compact frame.

THE DETAILS

All the panels – everything you need to mix - right there at your fingertips

These are modular console designs that accommodate multiple input channel faders.

All modules feature sealed-contact illuminated LED switches. ON/OFF switches have stainless steel guards.

INPUT

A/B SET One press of this button toggles between the channel's A and B source inputs. Press and hold (SET) to program the channel's source signals and to access PAN and MODE functions.

SOFT A programmable one-press button; typically used to access hot source preset selection or channel mode settings.

ASSIGN Assign the channel's signal to the four console output busses: Program, Audition, Auxiliary and Utility.

INFO An OLED color display that shows the channel's signal source, fader and mode settings.

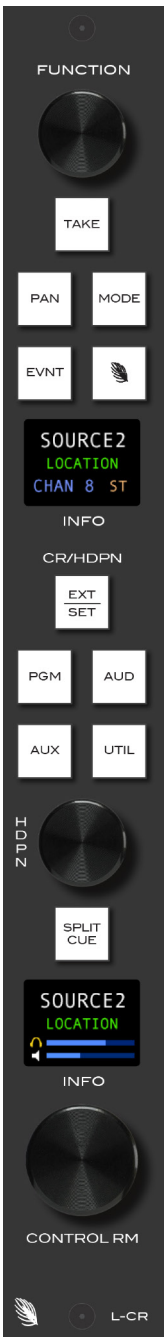
TB A momentary switch that activates talkback to the bus-minus/IFB output associated with the channel's source signal.

CUE Places the channel's signal on the console's cue bus.

FADER A long-throw Penny + Giles fader sets the channel's output level.

ON/OFF These switches turn the channel signal on and off. Can trigger external source feeds.

CONTROL ROOM



FUNCTION A rotary encoder that scrolls through various control choices whenever a SET button is pressed on the console.

TAKE Once the function control has selected the desired result (source, mode, pan, event, etc.) pressing the TAKE button activates that choice.

PAN Pans the selected channel's signal in the stereo field.

MODE Sets the selected channel's signal as left, right, stereo or mono.

EVENT The L-8 console can store 8 named events (console control surface snapshots) for instant recall.

INFO Displays information associated with a SET button – input panels, events, etc.

CR/HDPN Five source select buttons (EXT, PGM, AUD, AUX, UTIL) that determine the control room/headphone monitor feed. If the EXT/SET button is pressed and held, any source in the network can be selected (source visibility software controlled).

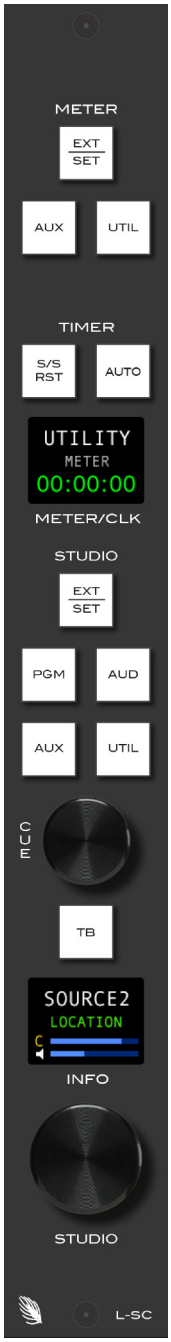
HDPN Sets the output level of the built-in headphone amp (output jack located in the righthand console endpiece).

SPLIT CUE Sums the current monitor source L+R and sends it to the right channel; CUE appears in the left channel.

INFO Displays source and location information for the current CR/HDPN monitor signal, as well as bargraph indicators for the headphone and CR output levels.

CONTROL RM The level control for the control room monitor output signal.

STUDIO CONTROL



METER Similar to the CR/HDPN source select switchbank. Determines the monitor source for the console's switched meter pair.

TIMER Start/Stop toggle or RESET (press and hold) for the meterbridge digital timer. The AUTO switch starts the timer from zero when a programmed input channel's ON switch is pressed.

METER/CLK Displays the switched meter pair's signal info; includes a time of day digital clock.

STUDIO Similar to the CR/HDPN source switchbank.

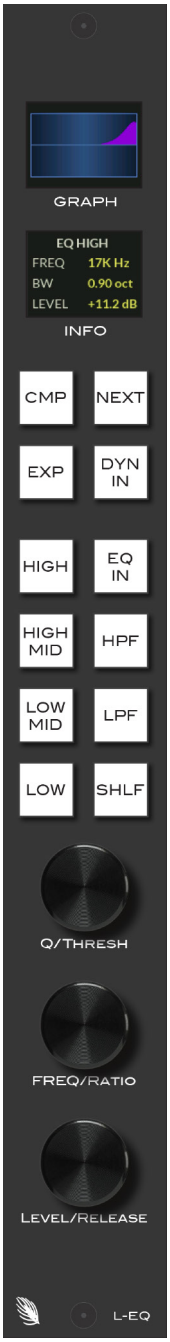
CUE Sets the master level of the console's CUE bus.

TB A momentary action switch that sends the console operator's microphone signal to the studio monitor output.

INFO Displays source and location information for the studio monitor signal, as well as bargraph indicators for cue and studio monitor output levels.

STUDIO The level control for the studio monitor output signal.

EQ/DYNAMICS (OPTIONAL)



GRAPH Displays EQ curves or dynamics settings visually.

INFO Displays the textual data associated with changes being made to EQ or dynamics.

CMP/EXP Selects compression or expansion for editing of dynamics, controllable from three knobs at the bottom of the panel.

NEXT Navigates the EQ/DYN panel to the next fader from the current one, making it easier to cycle through EQ and dynamic settings on the console.

DYN IN Activates dynamics and applies it to the selected audio.

HIGH/HIGH MID/LOW MID/LOW Selects which frequency band will be affected by the panel's control knobs.

LPF/HPF Activates high or low pass filter settings.

SHLF Activates shelving control curves instead of peak boost/cut for HIGH and/or LOW EQ bands.

EQ IN Activates equalization and applies it to the selected audio.

Q/THRESH Controls the width of the range curve for the selected EQ band or the threshold setting for dynamics.

FREQ/RATIO Sets the center frequency for the selected EQ band or the ratio setting for dynamics/expansion.

LEVEL/RELEASE Controls the boost/cut level for the selected EQ band or the release setting for dynamics/expansion.

(**NOTE:** EQ for L-8/L-12/L-16 consoles is optional and requires an IP88-CBE console engine BLADE).

THE NETWORK

With modern, intelligent WheatNet-IP audio networking, you can...

Make wholesale studio changes.
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 WheatNet®.

Bring on the devices.
WheatNet-IP gets along with everyone, including MADI gear like ProTools, 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.

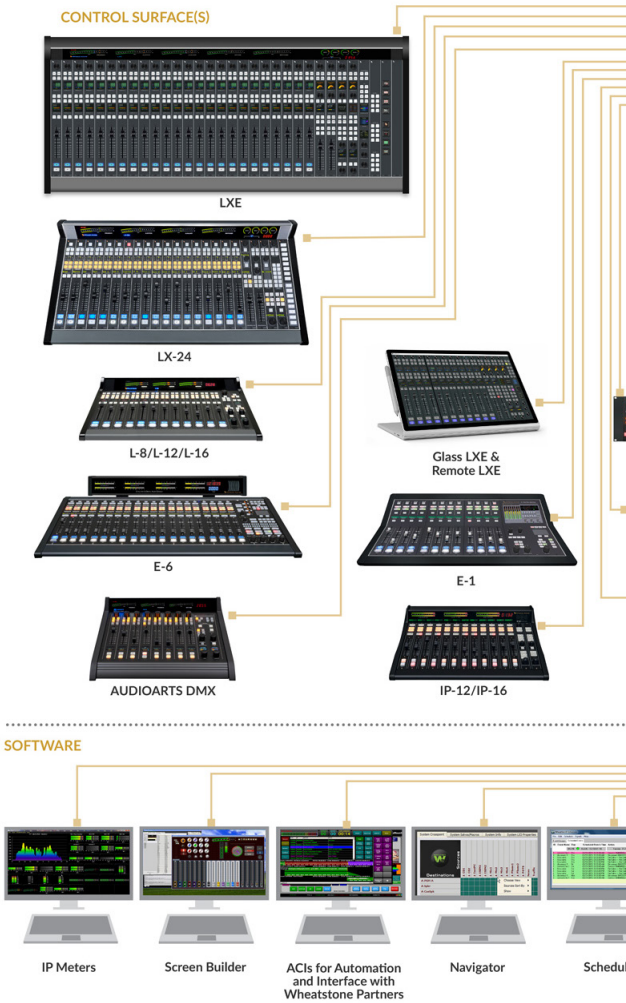
Access any audio, anywhere.
WheatNet-IP handles native analog, microphone, AES/EBU, SPDIF, AoIP, MADI, SDI and even AES67, which is now included in our third-generation access units. Ingest any audio format into the WheatNet-IP, and convert to any audio output — analog to digital, AES to IP, microphone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

Avoid costly system failures.
A distributed and intelligent network means no more centralized points of failure to go wrong, plus more points of recovery. Each 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!

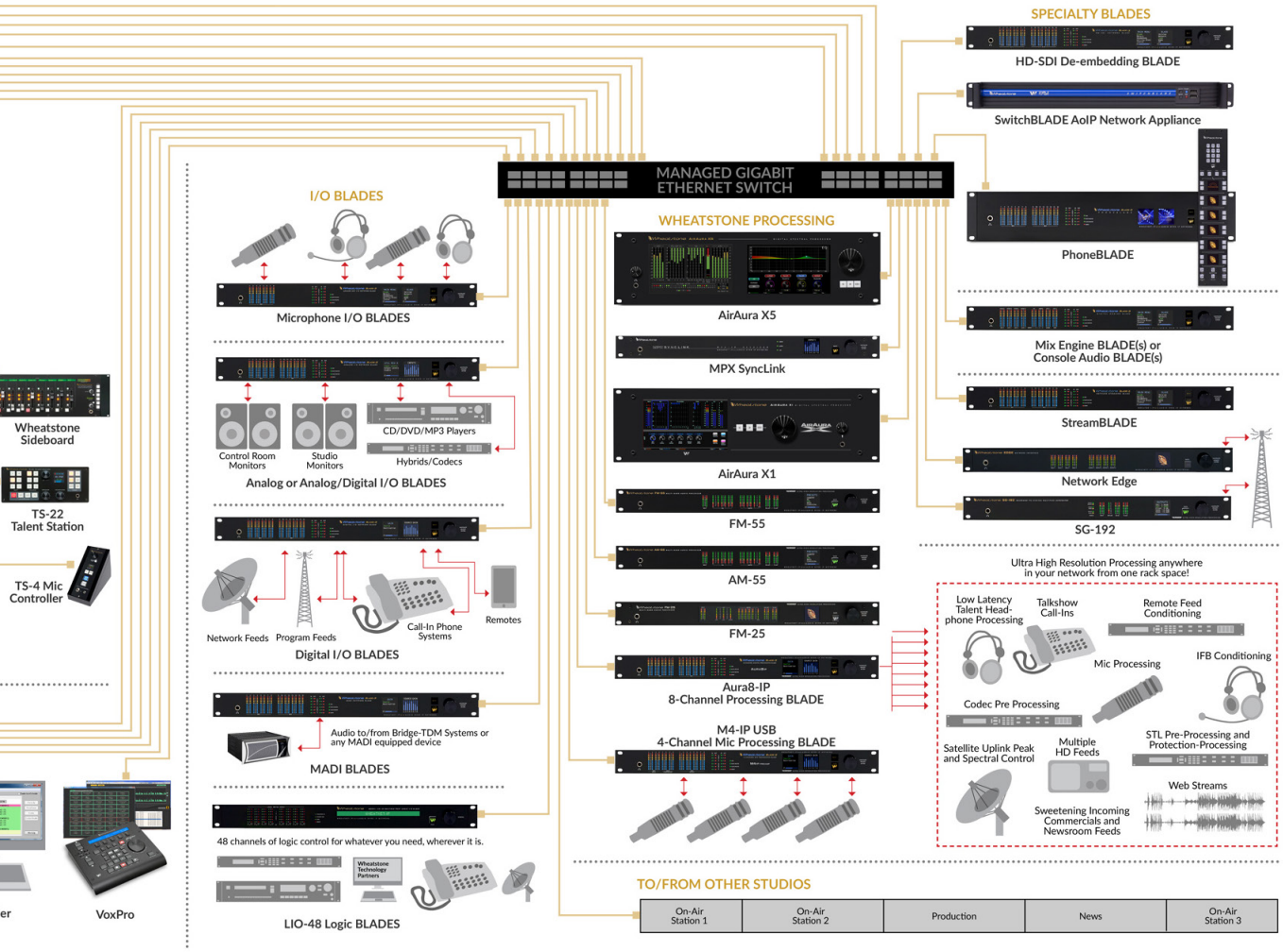


Call the shots.
You call the shots, not some PC. WheatNet-IP distributes the workload to all access points in the system for better overall network stability. Each WheatNet-IP BLADE access unit has its own embedded processor with operating system that allows it be a powerful standalone router or part 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 and every 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 you don't run out of switch capacity or time having to delete unused channel assignments.

BUILDING THE AUDIO ECOSYSTEM

The building blocks of the intelligent aoip network



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.

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, reliabiliy, and a whole lot more.

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.

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 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.

Expand your network at any time, for less.
With control and intelligence built into every WheatNet-IP BLADE I/O access unit, you have the networkability you need to grow with the times.

BEYOND THE SURFACE

There's a world of Wheatstone smart control panels, software, BLADE-3s and other surfaces for you to put to work

I/O BLADE-3s

I/O BLADEs are access points on the WheatNet-IP Intelligent Network, converting each hardware physical input — audio or logic — to a data stream on the network, and converting data streams to hardware digital outputs. They provide the means of interfacing and controlling all of the audio equipment on your network.

The IP88A (analog), IP88D (digital), IP88AD (analog/digital) and IP88M (mic level) BLADEs handle your standard audio I/O requirements. Each has 8 stereo channels, 16 mono channels, or any combination totaling 16 discrete channels. The A/D versions are half analog, half digital. And the mic BLADE has 8 XLR inputs with high-quality mic preamps.

Special Purpose BLADE-3s

Another I/O BLADE is the MADI BLADE, which converts a 64-channel MADI input to data streams on the network, and converts data streams to 64-channel MADI outputs.

The LIO-48 Logic BLADE provides 48 universal logic I/O ports, each individually configurable, for turning devices on or off by time or event, for automatically adjusting the audio processing settings when a certain mic turns on, and for any other logic control you need in your studio operation.

Mix Engine & Console Audio BLADE-3s

We have several BLADES built to handle specific tasks. First are the Engine BLADES: IP88E and IP88CB. The IP88E is a BLADE that houses all DSP power for an individual control surface or Glass-E virtual mixer, 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, they are available as sources and destinations anywhere. This creates an extremely flexible system, where program outputs from one surface can be a source on any other surface. For example, a news mixer's program bus can come up as a source on the air studio control surface. While the IP88E doesn't house audio I/O, it does include 12 universal logic (GPIO) ports.

The IP88CB provides powerful interface options, including four AES inputs, four stereo analog inputs, four AES outputs, and four stereo analog outputs on RJ45s; control room and studio stereo analog outputs on XLRs, two mic level inputs with gain trim and switchable phantom power on XLRs; cue and headphone outputs on both RJ45 and 1/4" TRS, and 12 GPI logic ports on RJ45.

Audio Processing BLADE-3s

Placing a processor everywhere you'd like one has been costly and impractical. Until now.

A single Aura8-IP gives you up to eight processors to use as you wish. Use it as a standalone processor with analog and digital inputs or make it a part of your WheatNet-IP network. Either way, the Aura8-IP is a powerhouse.

The M4-IP Microphone Processor BLADE combines four high-quality microphone preamps, four channels of Vorsis embedded microphone processing, and a WheatNet-IP BLADE interface, allowing you to place four microphone inputs anywhere in your WheatNet-IP Intelligent Network. The preamps and processors are accessed and controlled from any point on the network via its Windows-based GUI.

All Wheatstone processors are WheatNet-IP native as well.

WheatNet-IP Overview & Planning Guide

Get a good overview of the Intelligent Network. Learn about all of your console options, details about all BLADEs and compatible processors, all accessories, details on WheatNet-IP technology, interface ideas and more.

This guide is downloadable from any WheatNet-IP product page on our website.

Or, just go to: **wheatstone.com/wheatnet-ip**

Small Control Surfaces

1. 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.

2. TS-22 Talent Station
This full featured Talent Station turret plugs into the WheatNet-IP intelligent network to provide microphone control, headphone (with built-in amplifier) and speaker levels, plus source select, programmable soft buttons and timer control. No outboard equipment required and no wiring it all together; a single CAT6 cable handles everything. Also available as a flush-mount countertop panel.

3. Sideboard Control Surfaces
This small control surface is available in 4 or 8 input, tabletop or rack versions and provides an extensive tool set, yet simple operation. Includes built-in headphone amp and controls, source select, and programmable buttons. As with the Talent Stations, just plug it into the WheatNet-IP network and go.

Controllers

HBX8-R Controller
An eight button rackmounted source controller for rapid access to eight preprogrammed sources. An encoder knob with associated display allows access to any signal on the network.

XYE-R IP Controller
A rackmounted controller with full dial-up source and destination control. Any signal accessible in a networked system is fully routable.

IP Meters GUI Software

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 analysis meter for spectral readings plus visual alerts should a channel go dark.

Software and Software-Based Control Surfaces

In addition to hardware, Wheaststone also offers software-based control surfaces and applications.

Our Glass LXE can be configured to be exactly the console you need and can operate on any PC-based touchscreen device.

Glass-E software provides remote capabilities to other console lines, such as the LX-24 and E-Series.

We also offer ScreenBuilder - an app that lets you build custom touchscreen interfaces to accomplish just about any task in your WheatNet-IP environment.

Wheatstone has plenty of other software solutions to provide you the tools you need to get the job done.

GP Series Control Panels

GP8 and GP16 Panels
More than simple switch arrays, these 8 and 16 button panels come with their own scripting wizard. At the simplest level they can do source selection, push-to-talk, and preset/salvo activation. But the intelligence in each panel allows them to query the entire network and make switching decisions based on what they find. Conditional switching using Boolean logic functions allows for complex switching scenarios such as IF Studio B has requested the airchain, AND Studio A has acknowledged, THEN fire the Studio Change salvo.

GP3 Panel
A straightforward headphone panel with level control, 1/4" headphone jack and a switch with LED tally (typically used for the COUGH function, but can be custom wired). Connectorized with both RJ45 and Phoenix screw terminals.

GP4 Panel
A 4 button switch array for remote mic functions (typically ON, OFF, COUGH, TALKBACK). Interfaces with any available BLADE GPIO ports. Of course, all four switches can be custom wired for other functions as well.

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

Headphone Jack

Back of L-8

Console Audio BLADEs – IP-88CB (L) (E)

The IP88CB provides powerful interface options, including four AES inputs, four stereo analog inputs, four AES outputs, and four stereo analog outputs on RJ45s; control room and studio stereo analog outputs on XLRs, two mic level inputs with gain trim and switchable phantom power on XLRs; cue and headphone outputs on both RJ45 and 1/4" TRS, and 12 GPI logic ports on RJ45.

The L-8 uses the IP-88CBL which adds a power supply via a DC output jack.

The L-12 and L-16 utilize the IP-88CB and a compact external power supply.

The IP-88CBE or IP-88CBLE adds EQ and dynamics capabilities to the L-8/ L-12/L-16 which are controlled by the optional L-EQ panel. This EQ/Dynamics Console BLADE and panel can be configured when ordering new consoles, or added to existing consoles, by contacting our sales department.

CONSOLE CONNECTORS:

Ethernet: RJ-45
Headphone: RTS 1/4” phone
Power: DC connector jack w/locking ring

CONSOLE PHYSICAL DIMENSIONS:

Front to back: 16-1/4” (41.275 cm)
Front height: 1-1/2” (3.81 cm)
Rear height: 4-1/4” (10.8 cm)
Width L-8: 16-5/8” (42.23 cm)
L-12: 25 5/8” (65.09 cm)
L-16: 31 5/8” (80.33 cm)

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

Wheatstone
BROADCAST AUDIO PERFECTIONISTS℠

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GSX

ADAPTABLE EXPANDABLE NETWORK IP AUDIO CONTROL SURFACE

Wheatstone

BROADCAST AUDIO PERFECTIONISTS℠

PROGRAM
AUDITION
AUXILIARY
OFFLINE
AUX 1
AUX 2
AUX 3
AUX 4
MXM 1
MXM 2
MXM 3
MXM 4
CURRENT EVENT
Afternoon
Fri, Feb 3
5:07:42 PM
TIMER
00:00.0
EXT 1
EXT 2
NoSource
MONITOR 1
MONITOR 2
MONITOR 3
MONITOR 4
SWITCHED
BS.1770-3 LOUDNESS MONITOR
-23.8
LUFS
SOFT
REF
LOUD
LOUDNESS RANGE (LU)
00:00
PROGRAM DURATION
-24 dB LKFS
LUREF
A_BS
MODE
SOURCE
LXE PGM
dBFS
LKFS
PK
M
S
LXE OL
LXE PGM
NoSource
CUSTOM
EQ
DYNAMICS
INPUT
X/Y ROUTER
AUX/MXM
EVENTS
HOME
Wheatstone
GSX
FOCAL

FOCAL
applause
bomb-falling
explosion
heartbeat
laughter
machine-gun_2

THE SURFACE

Our GSX console behaves and feels exactly the way a surface like this should...perfect

GSX brings all of Wheatstone's innovations together into a ready-to-go console/control surface that can easily handle the fast-changing roles of modern broadcast studios. It's a turnkey console that's based on our LXE – the first completely customizable control surface for IP audio systems.

While it's delivered fully configured and ready to fly, GSX is customizable. Virtually every knob, every button, every display can be programmed to accommodate virtually any application you come up with using our optional ConsoleBuilder™ software.

Additionally, features such as Automix, Layers, ScreenBuilder™, Smart Switch panels, and IP accessories can be added at any point to adapt your GSX to your evolving needs.

GSX's modular design makes for flexible installations. The 4-fader input modules (or 2-fader/3-space master module) can be flush mounted right into your table, easily splitting them as you need, and connected to your network with a single CAT6 cable.

GSX interfaces seamlessly into the WheatNet-IP Intelligent Network, and utilizes BLADEs 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.

Physical Surface:

- Form Factors:
  - Wedge low profile (no meterbridge, surface pairs with separate HDMI monitor)
  - Countertop drop (flushmount)
  - Both choices can be split consoles connected via network in same room or different rooms/ locations
- Option: 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) (talkback and cue are red only)
  - Full color OLED display on each channel configurable for contextual display
- Built in Ethernet switch for plugging in accessories or other host panels
- PureIP – 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
- Mono cue speaker
- Up to 24 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
- Option: 8 layers (to accommodate up to 32 input fader channels) – completely customizable and configurable for each layer.
- Separate Control Room, Headphone, and Studio monitors, each with monitor dimmable (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. Includes highpass and lowpass filters
- Flexible Metering Options:
  - Loudness metering
  - Phase Correlation metering
  - Input metering on each channel
- Option: Automix function controlled via touchscreen GUI
- 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

METERS ARE ON THE SCREEN

Up front and laid out to give you all the info you need in exactly the right place

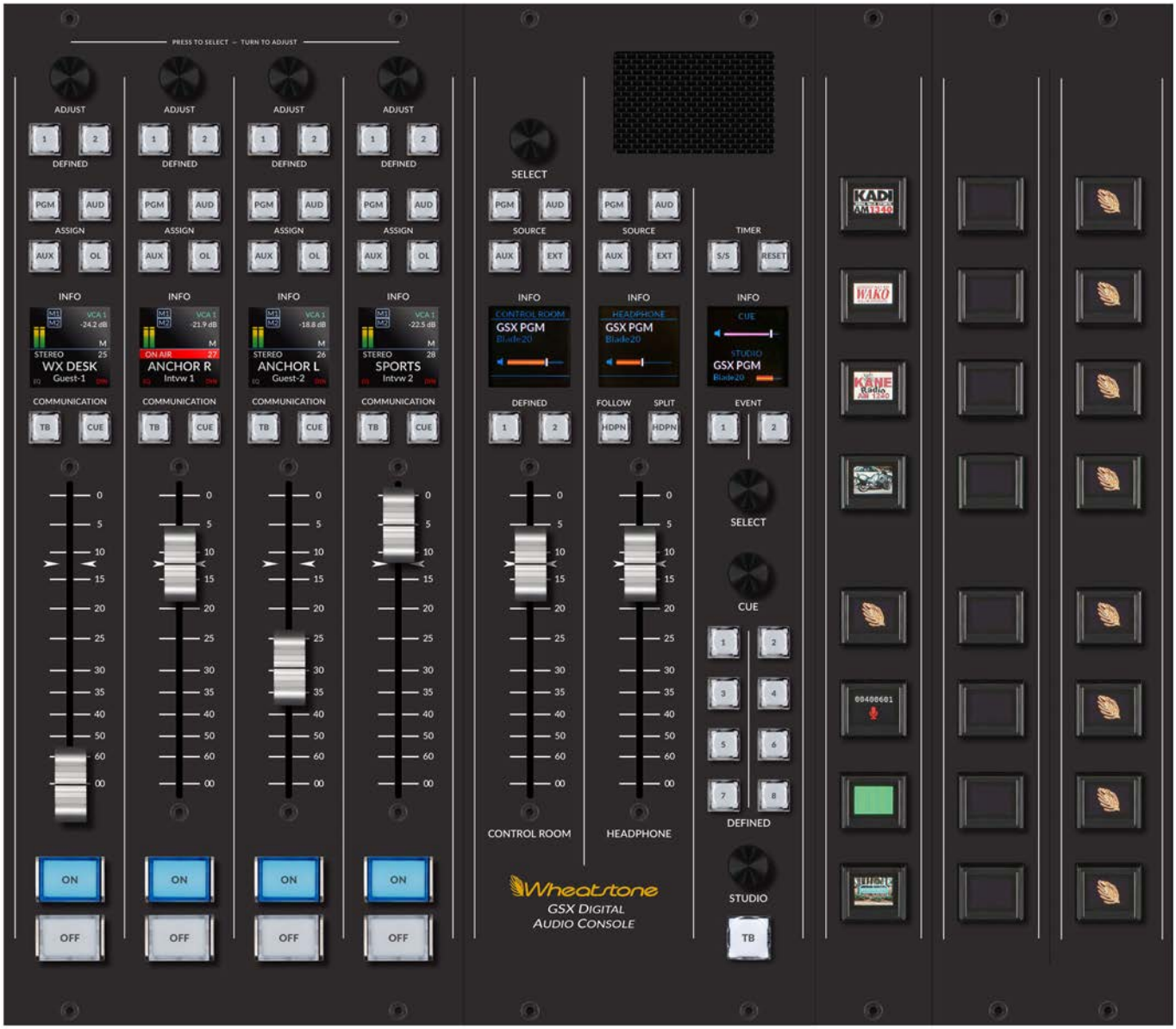
GSX has moved the meters from the console to the graphic interface on-screen, giving you a low-profile workspace that lets you focus your attention where your eyes spend most of their time. The touchscreen GUIs let you interact with your audio to do everything from pinching and dragging EQ to setting up router crosspoints in your network. Optional ScreenBuilder™ GSX software enables you to create your own touchscreens. And optional ConsoleBuilder™ is a GUI-based app that allows you to program and configure your hardware surface.

Touchscreen GUI:

- Complete set of screens provided to allow control over every aspect of the GSX control surface
- Option: ScreenBuilder™GSX with support for unlimited number of screens (which run one at a time) allows you to build any type of custom screen you need
- Full screen XY controller built in
- 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
- Digital timer and clock on home screen
- Add custom logo to clock background

THE MODULES

Everything you need to mix - right there at your fingertips



There are two basic modules on the GSX - a four fader input module, and a master section with two faders. Each module is programmed to be a functional radio console out of the box. Each module is also completely customizable using optional ConsoleBuilder™ software to set GSX up exactly as you need it to function for your workflow. And, there's space in the frame for additional modules, such as the SS-8 with programmable OLED buttons.

GSX OPTIONAL EXPANSION

Make GSX exactly the control surface you need for your workflow

GSX's architecture, with a built-in Ethernet switch, lets you add functionality to your console at any time. Add panels to manage phones, or the SS-8 with OLED buttons that can be programmed to do just about anything you want. Or, add functions, like AutoMix or Layers. And, for personalizing your workflow, there's ConsoleBuilder and/or ScreenBuilder to customize your physical surface or your touchscreen interfaces.

GSX Automix - Ultimate Control

When airing a panel discussion, forum, or other program where many microphones are located close together, audio operators have their work cut out for them. Simply leaving all the mics open all the time will result in an ugly, comb-filtering effect that will make the room sound hollow. The operator must constantly pay attention to the discussion in progress, and keep unused mics pulled down. There are many opportunities for errors which are obvious to the audience. Optional Automix (Automatic Microphone Mixing) takes this difficult task out of the hands of the operator.

By engaging this feature on each of the microphones, the operator allows the console to monitor the level coming from each microphone and automatically reduce the gain on mics not being addressed. The level of all participating mics is determined by the weighting assigned to each channel by the weight sliders in the Automix screen. This allows hosts to be assigned a higher weight in order to speak over guests in a lively discussion. It also allows “loud talkers” to be assigned a lower weight so they are more evenly balanced with other speakers. Conversely, “soft talkers” can be assigned higher weighting to compensate for their lower level. The Automixer also does gain sharing, so the overall level will not exceed nominal levels when multiple participants are speaking at once.

Remote GSX - Control from Anywhere

Optional Remote GSX is a multi-touch virtual console that mirrors the GSX control surface for an independent, yet shared user experience during fast-paced, multi-operator shows and productions.

It remotely controls the GSX 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 GSX hardware surface, Remote GSX provides complementary production functions for separate operators using an GSX 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 GSX 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.

Layers = Compact + Huge

With optional LAYERS, you can get up to 32 input channels with as few as four physical faders. You can have, for example, 8 physical faders, each with four layers. So, you can have up to 32 actual input channels - 8 per layer. Up to 8 layers are available to give you a maximum of 32 input channels. This gives you enormous power in a VERY compact space.

ConsoleBuilder™ GSX

The GSX comes ready to go out of the box, pre-configured for standard broadcast workflows. But with broadcast audio becoming anything but 'standard', GSX's powerful flexibility is fully revealed when you use the optional ConsoleBuilder™to configure and program it to fit your own studio. ConsoleBuilder is a drag/drop/scripting software GUI that packs an exceptional amount of power behind an easy-to-use interface. With it, any of over 25 functions can be assigned to just about any knob, button, or fader on the control surface.

Here's how it works: the display shows you the layout of your physical console – just double click on the surface feature you want to customize (switch, knob, fader, OLED display) and using the drop-down menu, select the function you'd like to assign to it. If you require more complex programming, you can even script things to achieve the exact level of control you need. Many GSX GUI functions can be customized as well.

ScreenBuilder™ GSX

GSX's GUI has pre-built screens for everything you normally use – metering, clocks, timers, dynamics, EQ, assigns, and more. All are touchscreen accessible with the same gestures you're used to using on your smart devices.

However, this touchscreen GUI is just as customizable as the GSX surface. Using our ScreenBuilder™ GSX software, you simply drag and drop objects to build custom touchscreens, defining their functions via a simple wizard interface. You can then easily store these custom screens to go with your custom GSX setups.

ScreenBuilder™GSX comes stocked with widget graphic elements: meters, faders, knobs, buttons, tallies, etc., all ready to drag, drop, and configure. You can also add your own graphics, and assign functions to them using our script wizard. We've seen studio mic plots, simple on/off talent panels, even maps of entire countries showing all transmitter locations – it's pretty much wide open. If you can conceive it, you can achieve it.

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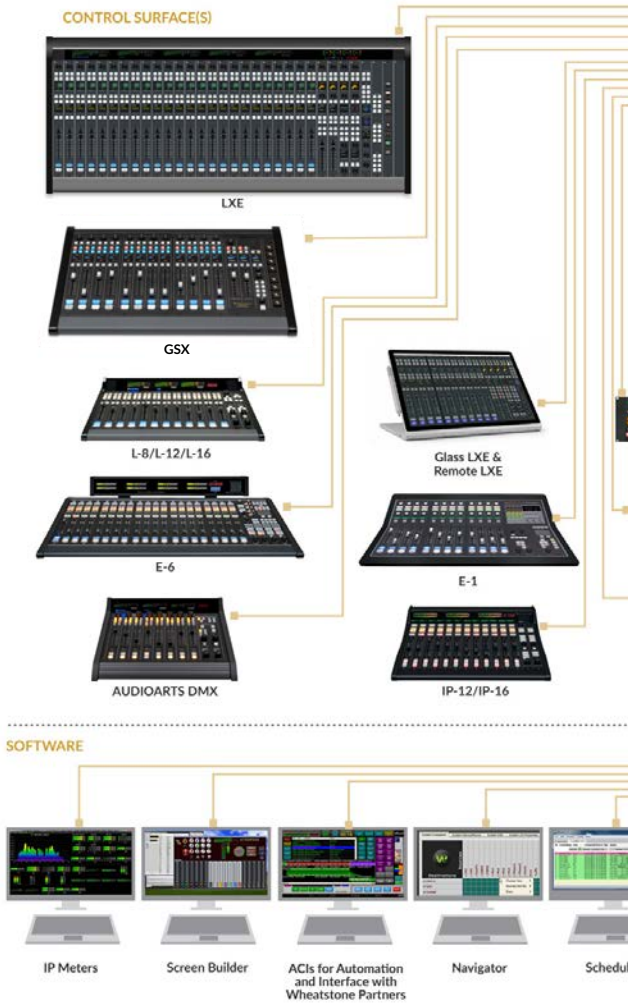
No need to assign IP addresses or allocate bandwidth or pay someone else big money to do it. Just plug into your managed gigabit Ethernet switch and let WheatNet-IP do the rest. Add codecs, processors and controllers or change I/Os in a snap. You spend less time configuring the system, and more time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

Avoid costly system failures.
A distributed and intelligent network means no more centralized points of failure to go wrong, plus more points of recovery. Each 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!

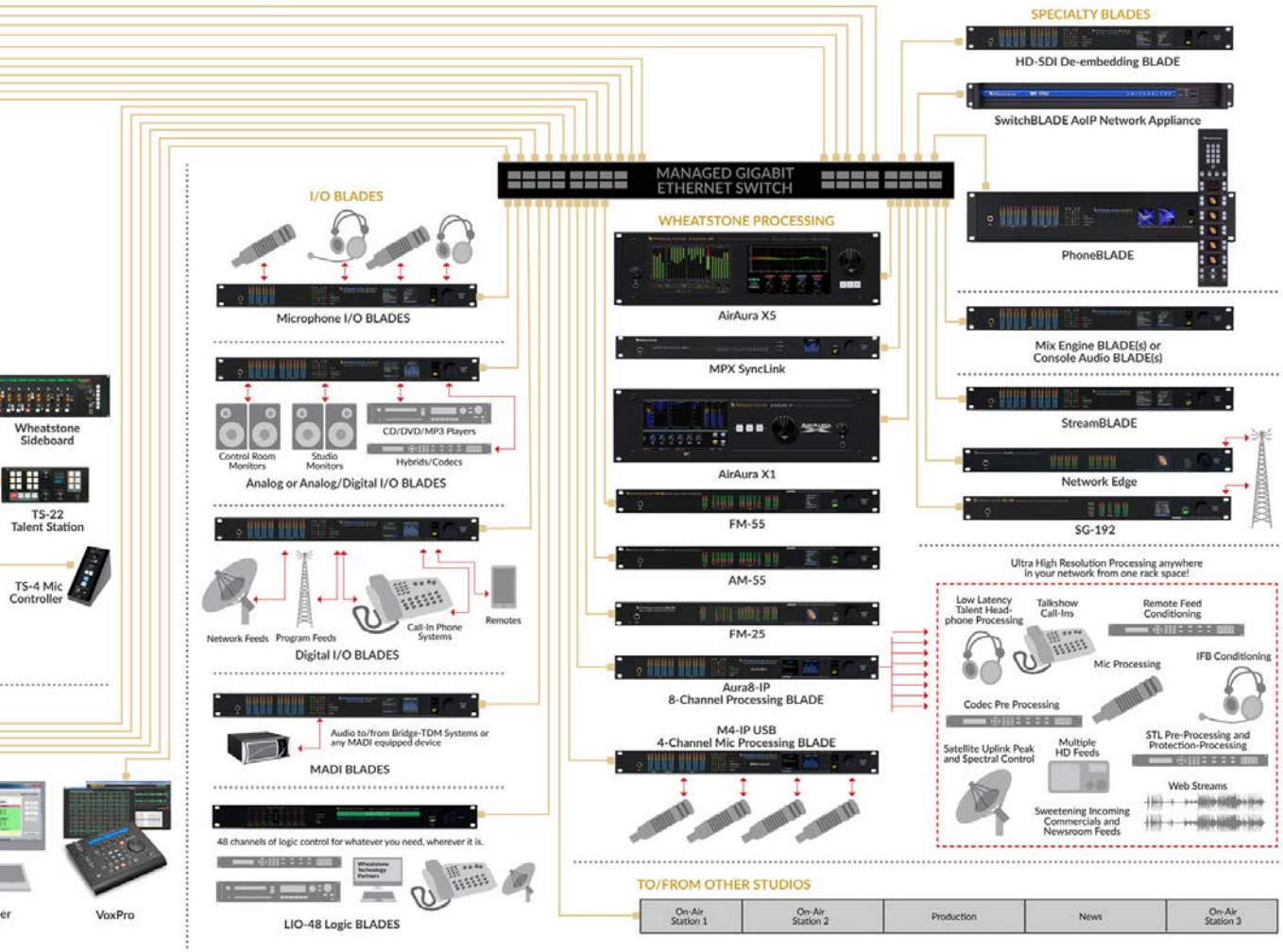


Call the shots.
You call the shots, not some PC. WheatNet-IP distributes the workload to all access points in the system for better overall network stability. Each WheatNet-IP BLADE access unit has its own embedded processor with operating system that allows it be a powerful standalone router or part 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 and every 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 you don't run out of switch capacity or time having to delete unused channel assignments.

BUILDING THE AUDIO ECOSYSTEM

The building blocks of the intelligent AoIP network



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.

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 way more for less.
We're talking full-featured routable mixers, stereo processor, and automation control in each BLADE 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.

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 BLADEs 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 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.

Expand your network at any time, for less.
With control and intelligence built into every WheatNet-IP BLADE I/O access unit, you have the networkability you need to grow with the times.

BEYOND THE SURFACE

There's a world of Wheatstone smart control panels, software, BLADEs and other surfaces for you to put to work

I/O BLADEs

I/O BLADEs are access points on the WheatNet-IP Intelligent Network, converting each hardware physical input — audio or logic — to a data stream on the network, and converting data streams to hardware digital outputs. They provide the means of interfacing and controlling all of the audio equipment on your network.

The IP88A (analog), IP88D (digital), IP88AD (analog/digital) and IP88M (mic level) BLADEs handle your standard audio I/O requirements. Each has 8 stereo channels, 16 mono channels, or any combination totaling 16 discrete channels. The A/D versions are half analog, half digital. And the mic BLADE has 8 XLR inputs with high-quality mic preamps.

Special Purpose BLADEs

Another I/O BLADE is the MADI BLADE, which converts a 64-channel MADI input to data streams on the network, and converts data streams to 64-channel MADI outputs.

The LIO-48 Logic BLADE provides 48 universal logic I/O ports, each individually configurable, for turning devices on or off by time or event, for automatically adjusting the audio processing settings when a certain mic turns on, and for any other logic control you need in your studio operation.

Mix Engine & Console Audio BLADEs

We have several BLADES built to handle specific tasks. First are the Engine BLADES: IP88E and IP88CB. The IP88E is a BLADE that houses all DSP power for an individual control surface or Glass-E virtual mixer, 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, they are available as sources and destinations anywhere. This creates an extremely flexible system, where program outputs from one surface can be a source on any other surface. For example, a news mixer's program bus can come up as a source on the air studio control surface. While the IP88E doesn't house audio I/O, it does include 12 universal logic (GPIO) ports.

The IP88CB provides powerful interface options, including four AES inputs, four stereo analog inputs, four AES outputs, and four stereo analog outputs on RJ45s; control room and studio stereo analog outputs on XLRs, two mic level inputs with gain trim and switchable phantom power on XLRs; cue and headphone outputs on both RJ45 and 1/4" TRS, and 12 GPI logic ports on RJ45.

Audio Processing BLADEs

Placing a processor everywhere you'd like one has been costly and impractical. Until now.

A single Aura8-IP gives you up to eight processors to use as you wish. Use it as a standalone processor with analog and digital inputs or make it a part of your WheatNet-IP network. Either way, the Aura8-IP is a powerhouse.

The M4-IP Microphone Processor BLADE combines four high-quality microphone preamps, four channels of Vorsis embedded microphone processing, and a WheatNet-IP BLADE interface, allowing you to place four microphone inputs anywhere in your WheatNet-IP Intelligent Network. The preamps and processors are accessed and controlled from any point on the network via its Windows-based GUI.

All Wheatstone processors are WheatNet-IP native as well.

WheatNet-IP Overview & Planning Guide

Get a good overview of the Intelligent Network. Learn about all of your console options, details about all BLADEs and compatible processors, all accessories, details on WheatNet-IP technology, interface ideas and more.

This guide is downloadable from any WheatNet-IP product page on our website.

Or, just go to: **wheatstone.com/wheatnet-ip**

Small Control Surfaces

1. 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.

2. TS-22 Talent Station
This full featured Talent Station turret plugs into the WheatNet-IP intelligent network to provide microphone control, headphone (with built-in amplifier) and speaker levels, plus source select, programmable soft buttons and timer control. No outboard equipment required and no wiring it all together; a single CAT6 cable handles everything. Also available as a flush-mount countertop panel.

3. Sideboard Control Surfaces
This small control surface is available in 4 or 8 input, tabletop or rack versions and provides an extensive tool set, yet simple operation. Includes built-in headphone amp and controls, source select, and programmable buttons. As with the Talent Stations, just plug it into the WheatNet-IP network and go.

Controllers

HBX8-R Controller
An eight button rackmounted source controller for rapid access to eight pre-programmed sources. An encoder knob with associated display allows access to any signal on the network.

XYE-R IP Controller
A rackmounted controller with full dial-up source and destination control. Any signal accessible in a networked system is fully routable.

IP Meters GUI Software

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 analysis meter for spectral readings plus visual alerts should a channel go dark.

Software and Software-Based Control Surfaces

In addition to hardware, Wheatstone also offers software-based control surfaces and applications.

Our Glass LXE can be configured to be exactly the console you need and can operate on any PC-based touchscreen device.

Glass-E software provides remote capabilities to other console lines, such as the LX-24 and E-Series.

We also offer ScreenBuilder - an app that lets you build custom touchscreen interfaces to accomplish just about any task in your WheatNet-IP environment.

Wheatstone has plenty of other software solutions to provide you the tools you need to get the job done.

GP Series Control Panels

GP8 and GP16 Panels
More than simple switch arrays, these 8 and 16 button panels come with their own scripting wizard. At the simplest level they can do source selection, push-to-talk, and preset/salvo activation. But the intelligence in each panel allows them to query the entire network and make switching decisions based on what they find. Conditional switching using Boolean logic functions allows for complex switching scenarios such as IF Studio B has requested the airchain, AND Studio A has acknowledged, THEN fire the Studio Change salvo.

GP3 Panel
A straightforward headphone panel with level control, 1/4" headphone jack and a switch with LED tally (typically used for the COUGH function, but can be custom wired). Connectorized with both RJ45 and Phoenix screw terminals.

GP4 Panel
A 4 button switch array for remote mic functions (typically ON, OFF, COUGH, TALKBACK). Interfaces with any available BLADE GPIO ports. Of course, all four switches can be custom wired for other functions as well.

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

Designed and built by
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600 Industrial Drive | New Bern NC 28562-5440 USA
phone 1.252.638-7000 | fax 1.252.635-4857
wheatstone.com | sales@wheatstone.com

Wheatstone
BROADCAST AUDIO PERFECTIONISTS℠

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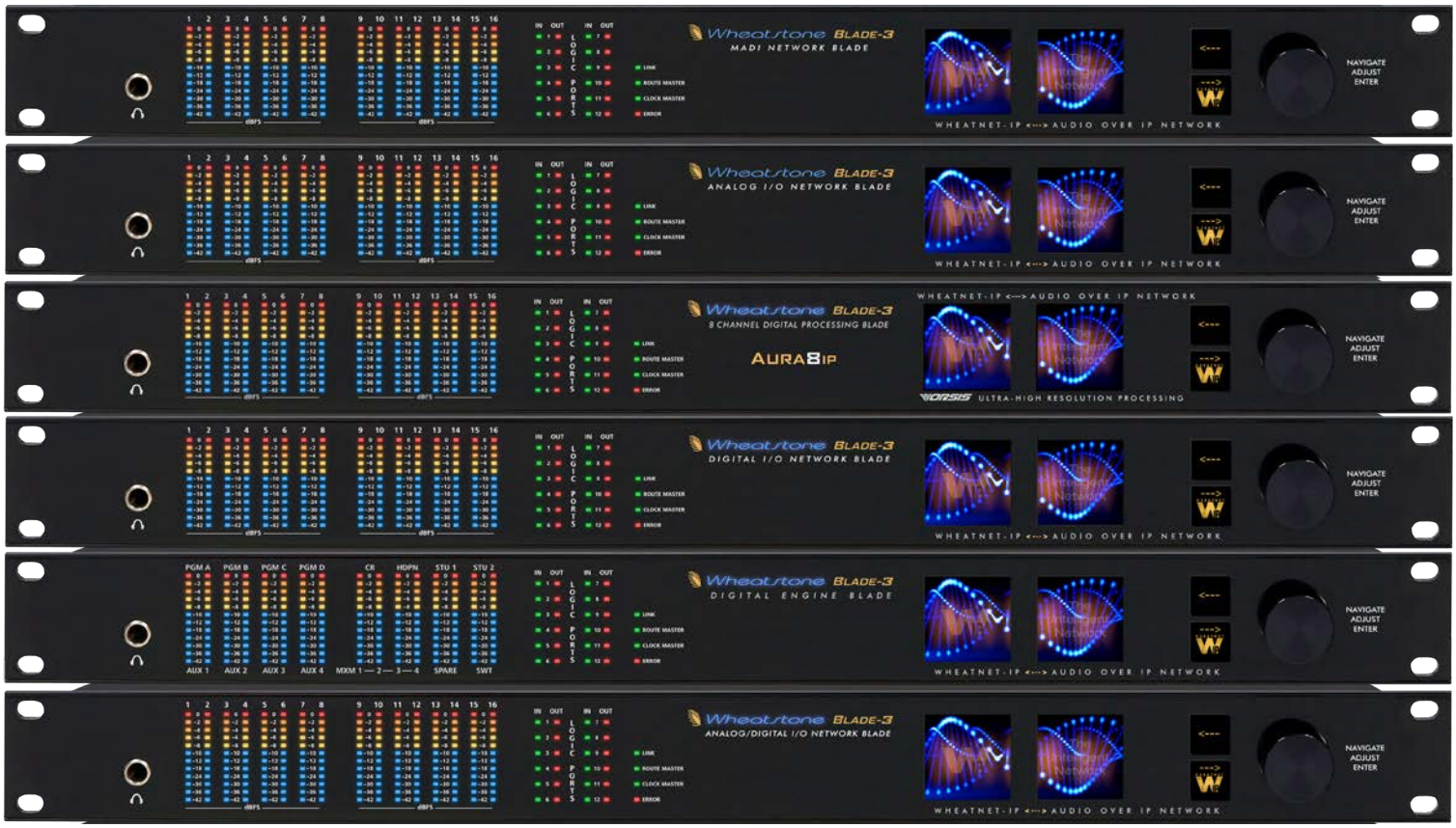


Wheatstone WheatNet-IP BLADE-3

OVERVIEW/PRODUCT PLANNING GUIDE

Wheatstone
BROADCAST AUDIO PERFECTIONISTS®

BLADE-3s Are Different

BLADE-3s are what some people might call misfits. They almost fit that class of IP audio products called nodes because these are the access units and elements that make up the WheatNet-IP Intelligent Network. But there's a whole lot more going on inside a BLADE than mere I/O...Like a powerful CPU complete with operating system.

You told us that you wanted to stop chasing after logic, too, so we did it. No more chasing down a particular microphone setting when you call up the morning show's host mic from Studio A, or Studio B for that matter. In the BLADE world, the settings for devices and particular feeds follow audio like a puppy on a leash.

There's no PC running the show here. When we sat down to build a modern IP audio network, we wanted something that could think for itself so you wouldn't have to give system reliability and redundancy a second thought.

We also had in mind really, really smart I/O units that included logic control and onboard utility functions, like audio processing and utility mixing. Imagine that: routable channel mix-downs and microphone groupings, plus spot processing where you need it, for those loud callers, finicky codecs, and hushed satellite feeds.

And because broadcasters can be an impatient lot, we went with the fastest networking throughput we could get our hands on: Gigabit Ethernet. Every BLADE has a Gigabit Ethernet port, and this is why our WheatNet-IP Intelligent Network has been able to outrun audio where other IP audio systems haven't — and why our friends have been able to take advantage of readily-available, affordable network switches. (We can't remember the last time we even saw a 100BaseT switch for sale, can you?)

BLADEs are know-it-alls. Each individual BLADE I/O access unit has the tools to be a radio studio all on its own, yet it also holds the brain trust of the entire network operation for exceptional redundancy and scalability. They're smart and they're independent. But don't worry. BLADE I/O units are also very civilized, and even hold elections to determine which one in the network has the longest uptime record, for example, in order to assume the role as master over the rest. You won't have to bother with seating assignments, either. All BLADEs know what they're supposed to do — and what all their other BLADE friends are supposed to do.

We have BLADEs for just about every purpose that can be networked together with our control surfaces to make one smart, WheatNet-IP audio network. Our new third-generation BLADE-3s, now available in a smart new enclosure with some cool new features, come in a combination of analog and digital I/O models, and are available for MADI audio and for microphone inputs. All you have to do is plug them into an Ethernet switch, add the control surfaces you want, and WheatNet-IP does the rest.

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

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.

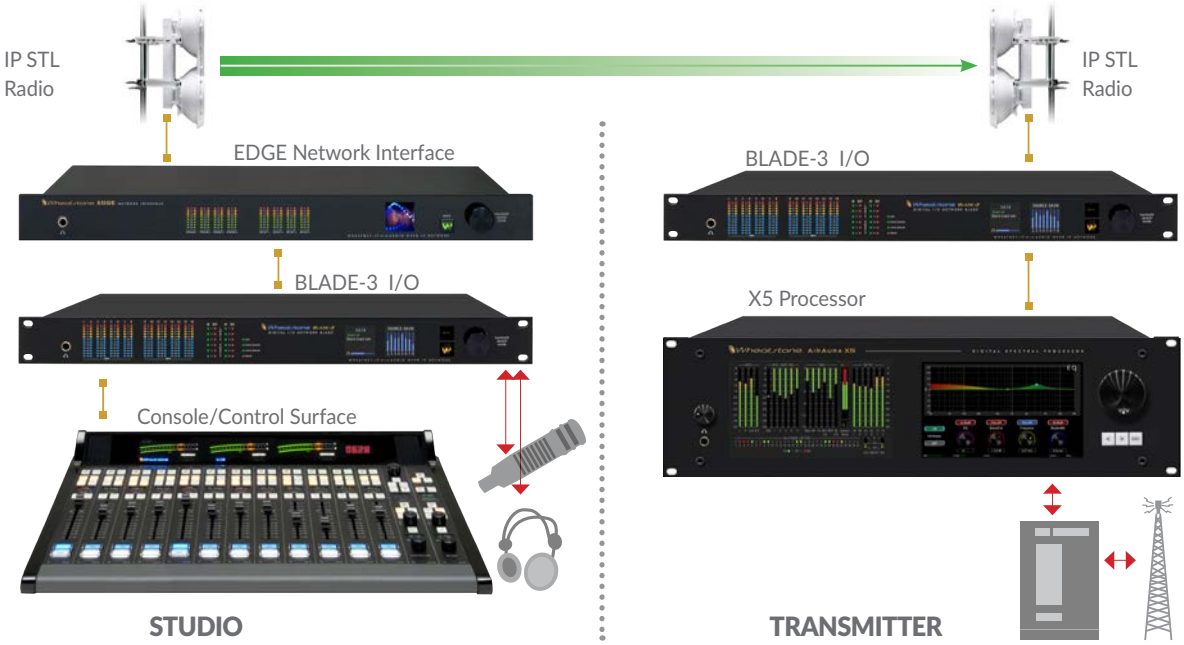
Network EDGE is designed specifically as a translator between high-quality, low-latency studio networks such as WheatNet-IP and low-bandwidth STL connectivity options such as IP wireless radios.

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!

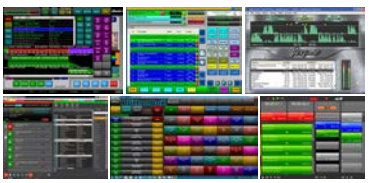
Codec Pre-Processing

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.

SCREEN BUILDER 2.0

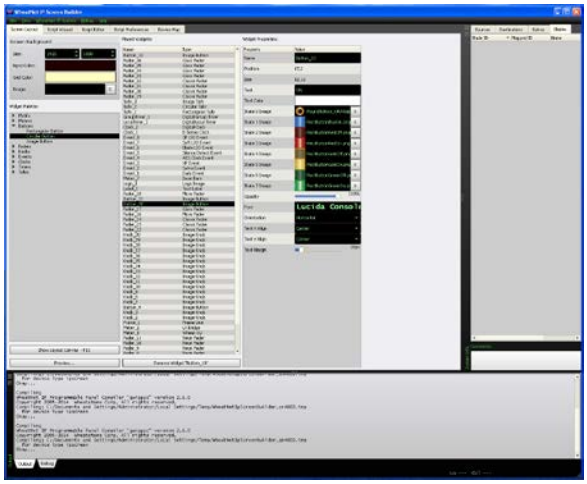
Control Your Entire WheatNet-IP Network. Create Custom Screen Builder Apps.

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?)

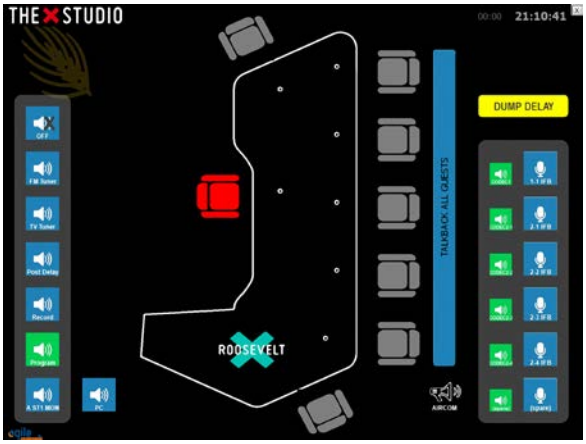
Build your own on-screen virtual control interface for just about any purpose. Our new Screen Builder app has faders, meters, labels, buttons, clocks, timers and other widgets that you can arrange on a PC screen to create your own custom control panels and touchscreens with quick-access buttons, faders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



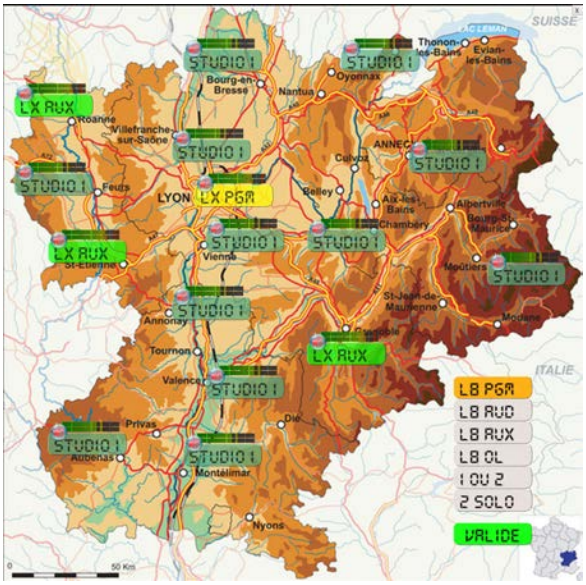
Screen Builder Environment Window



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

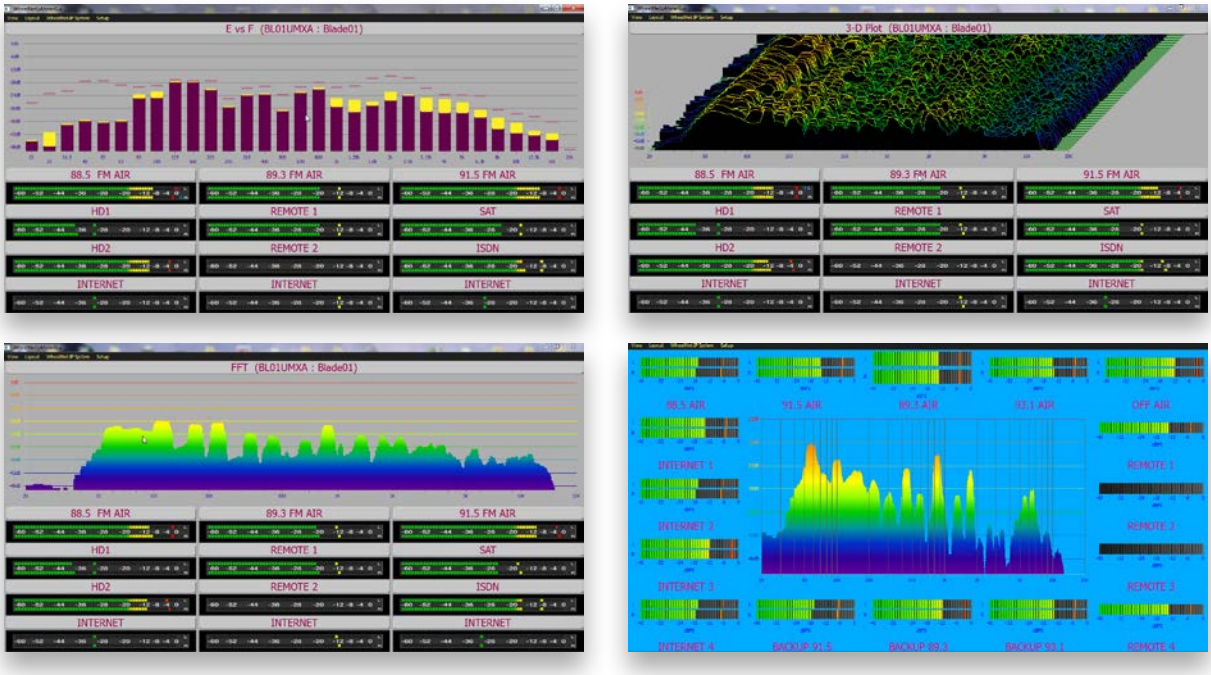
Get a quick read of any audio source, destination or stream in your WheatNet-IP Intelligent Network. Our new IP Meters GUI app displays a "wall of meters" on your computer screen for ongoing monitoring of audio peak levels and average levels at selected points throughout the entire network. Included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

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.

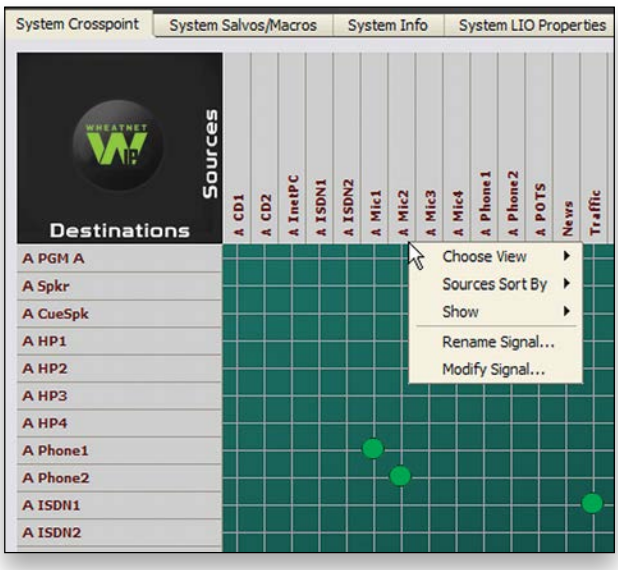
NAVIGATOR

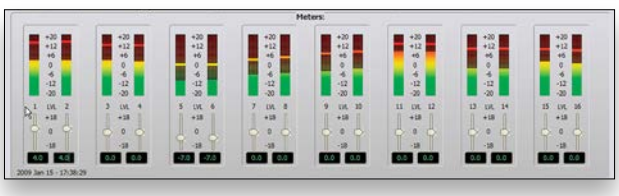
Administration and Control Software

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

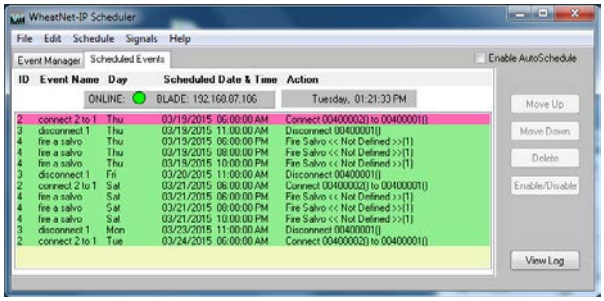
Schedule Events on the Network

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!

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.

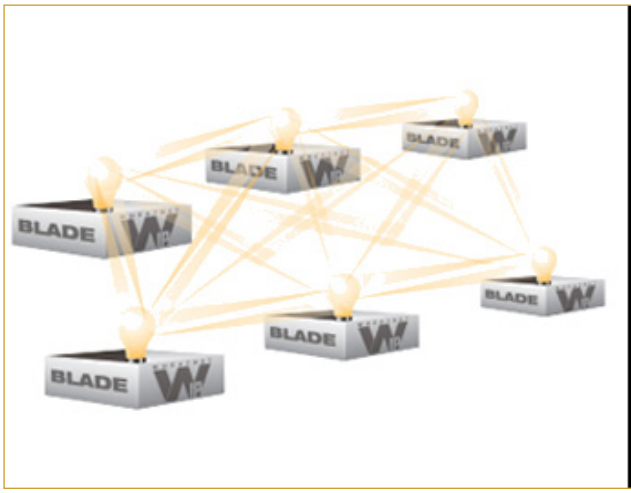
A lot of older IP audio networks don't manage the multicast streams, which could require you having to periodically manage this yourself or getting a bigger, more expensive switch to handle the mounting volume of streams. Not WheatNet-IP, which continually prunes unused source groupings from the network 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!

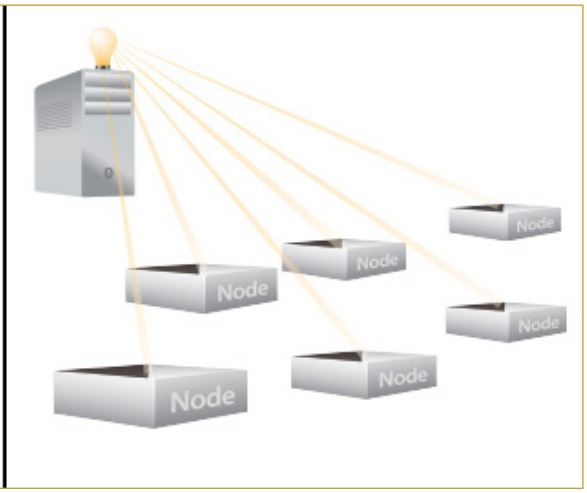
MODERN

(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.

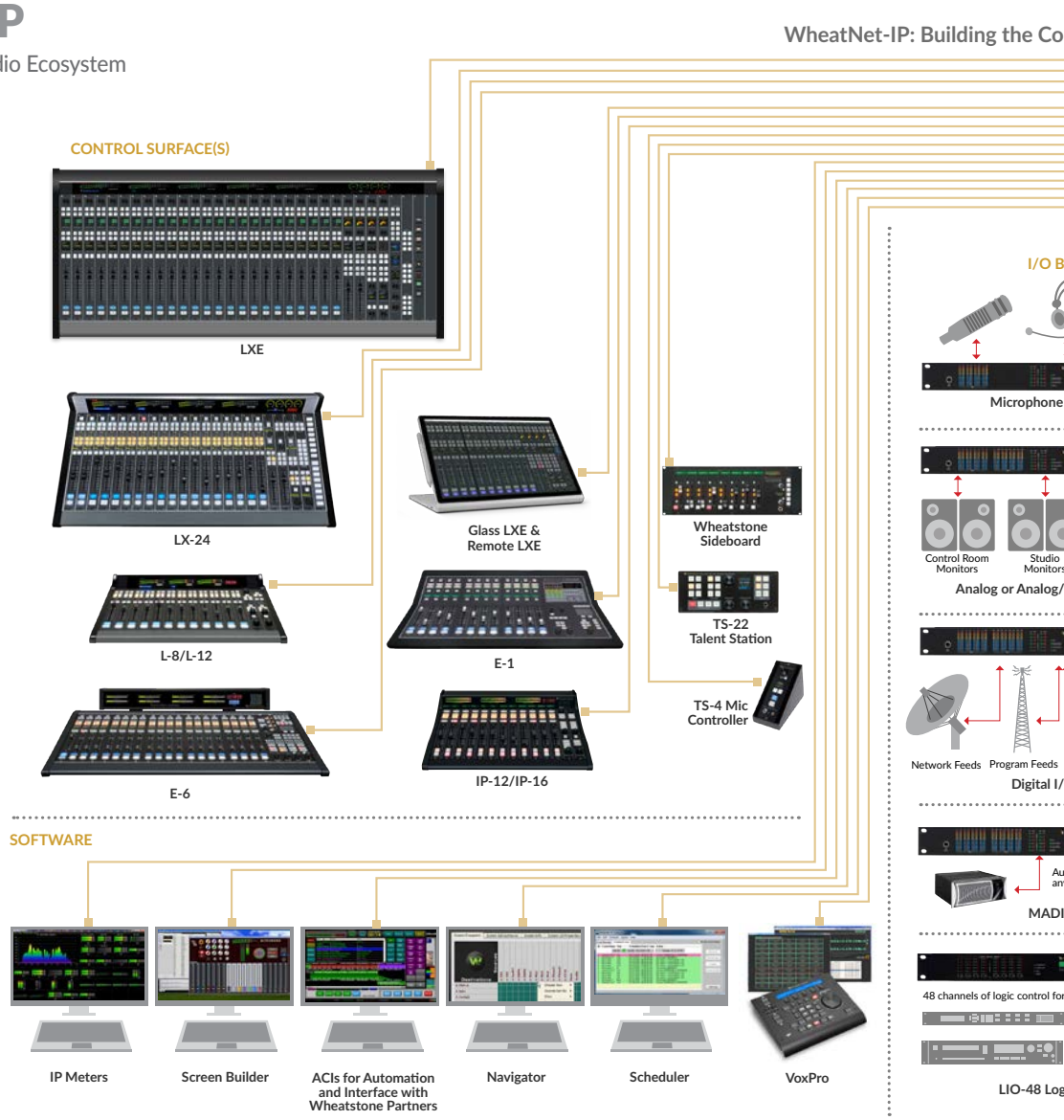
We're talking full-featured routable mixers, stereo processor, and automation control in each BLADE-3 I/O unit , so operators can pan audio, turn channels ON/OFF, set fader levels, and do audio fades, ducking, source assignments – and lots more. The possibilities are mind-boggling.

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

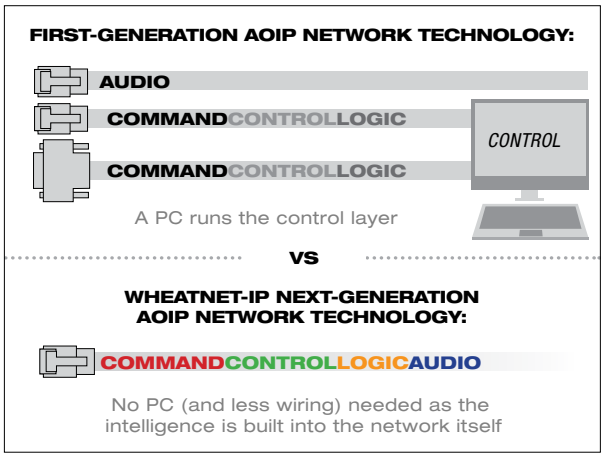
An Overview of the AoIP Audio Ecosystem

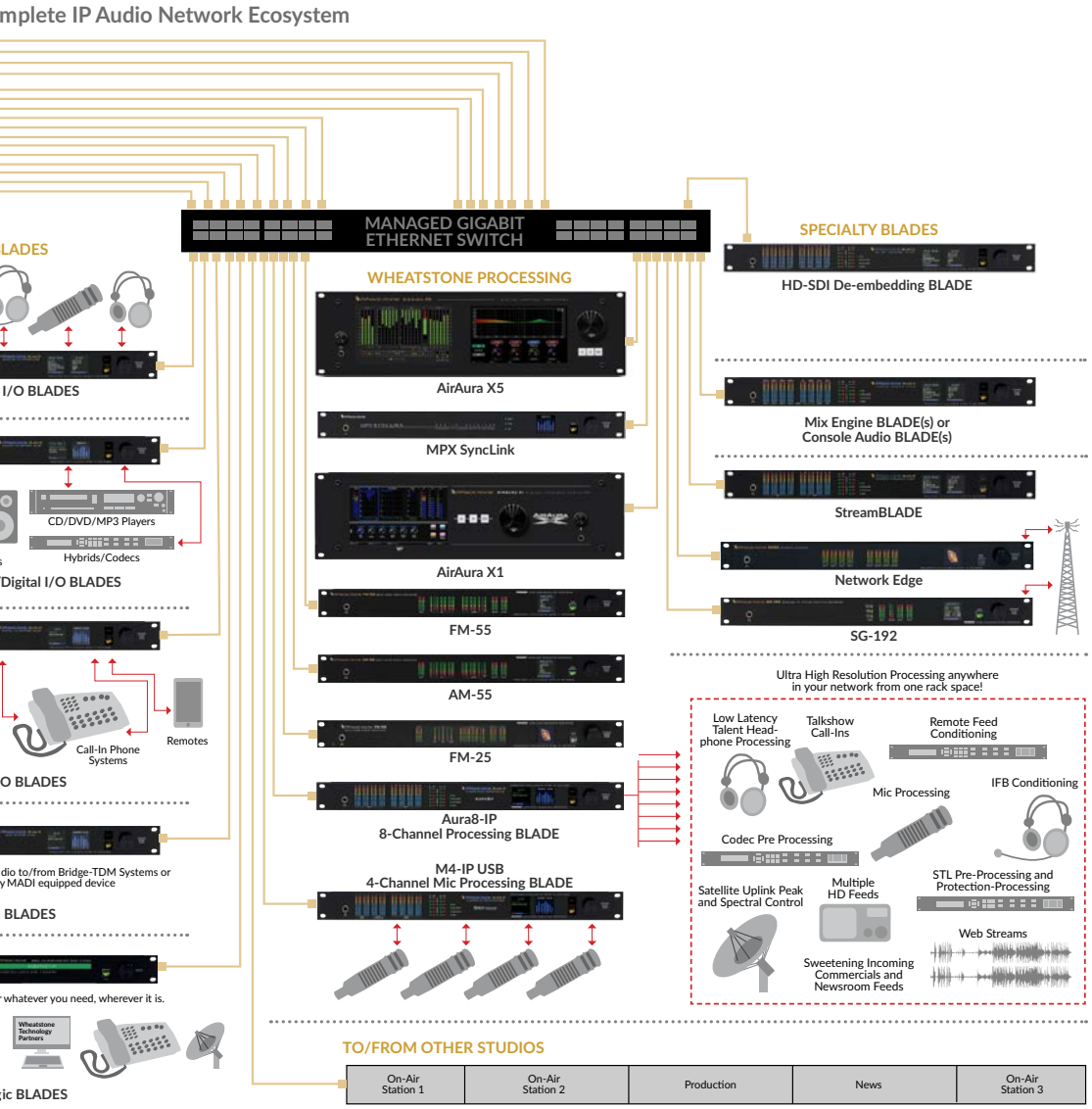


Why the Integrated Control Layer is Important

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.

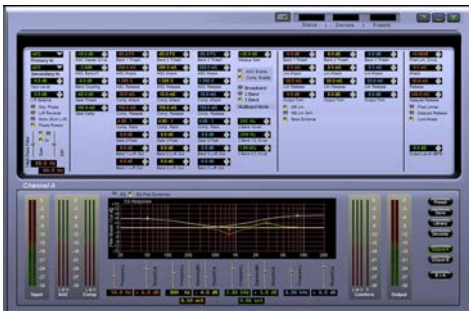
Logic follows audio like a puppy on a leash

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

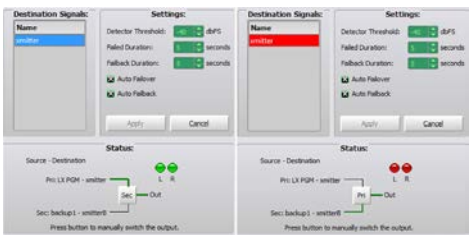
I/O BLADEs include two built-in 8x2 stereo mixers. In addition, newer third-generation BLADE-3 I/O units include a stereo multiband processor with 4-band parametric equalizer, 3-way crossovers, 3 compressors, 3 limiters, and a final, look-ahead limiter. By routing mixing and audio processing, these functions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

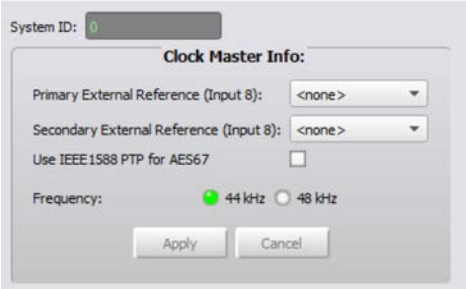


Silence detection, emergency audio

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

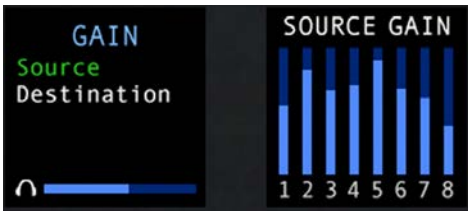


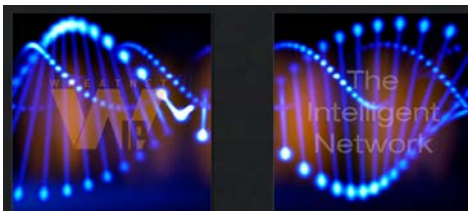
I/O BLADEs operate at 44.1k or 48k sampling rates while converting incoming signals up or down as needed. Newer third-generation I/O BLADE-3s provide selectable system clocking at 44.1kHz or 48kHz, External Reference or AES67.

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



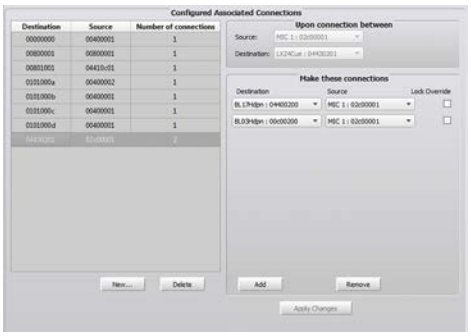


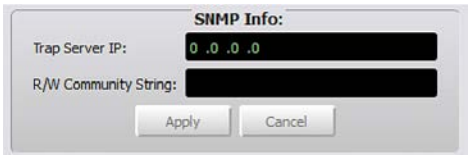
Activating the I/O BLADE is as easy as plugging it in. No need to assign it an IP address or prioritize packets. Once plugged in, it will instantly recognize that it's been connected to a functioning network and configure itself into that network with almost no human intervention at all! All of its resources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





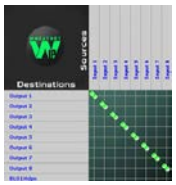
Another new I/O BLADE-3 feature, Associated Connections, is useful for callers, codecs, networks, remote broadcasts and live talk shows that require a mix-minus. With this, operators can create a predetermined back haul, IFB feed or mix-minus to each device based on its location in the system and the 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.

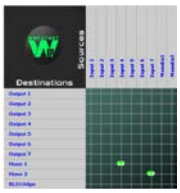


Audio Routing and Control

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

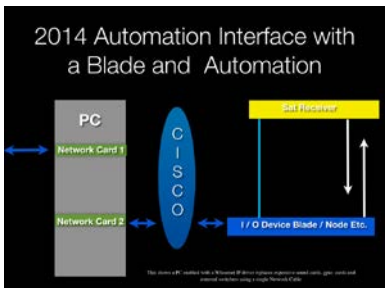
Each I/O BLADE can store hundreds of customized salvos, which can be useful for assigning feeds to codecs or hybrids and switching between studios. Group any audio source, logic and destination together that can be triggered by event or time.

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.

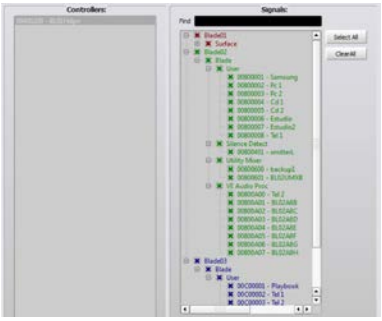


Automation Interface. One Cable

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

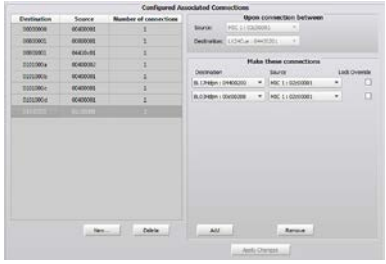
Each BLADE can act as an X-Y controller sending any system source or input to any of its outputs. This comes in handy when changing feeds to monitors, codecs, hybrids or recording devices.

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.

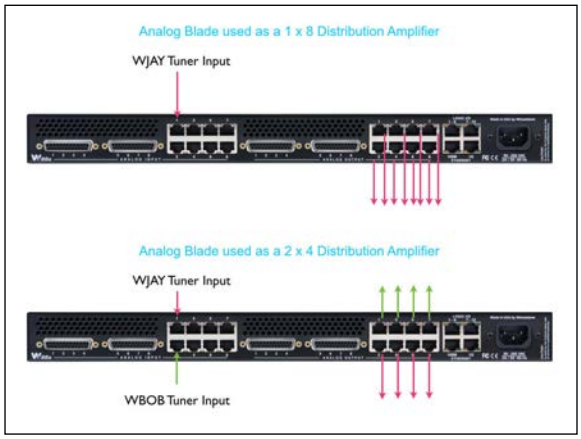


Share Resources, Connections

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.

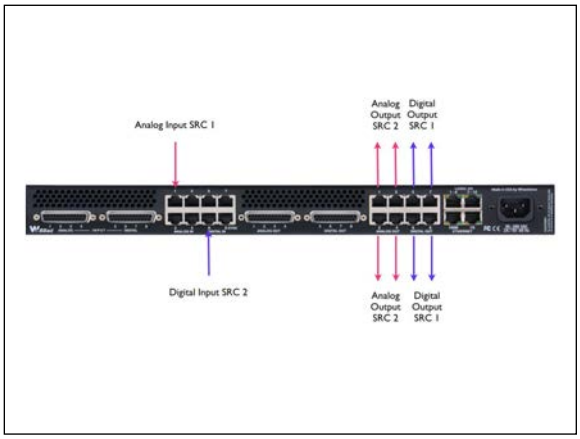
APPLICATIONS & CONFIGURATIONS

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.



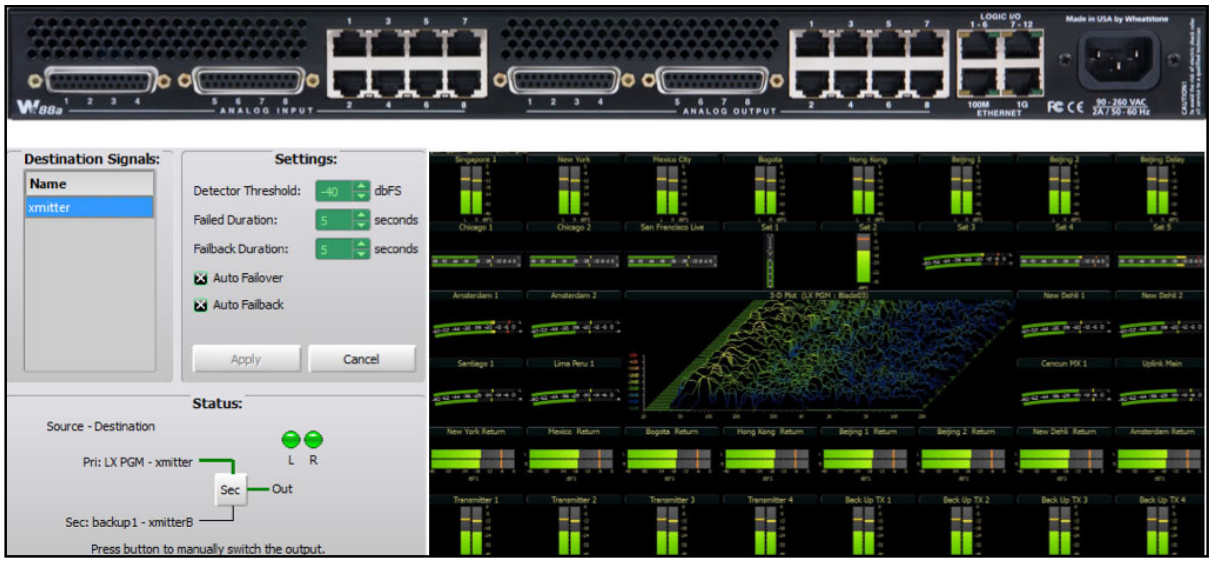
Analog BLADE as a 1x8 distribution amplifier

Analog BLADE as a 2x4 distribution amplifier



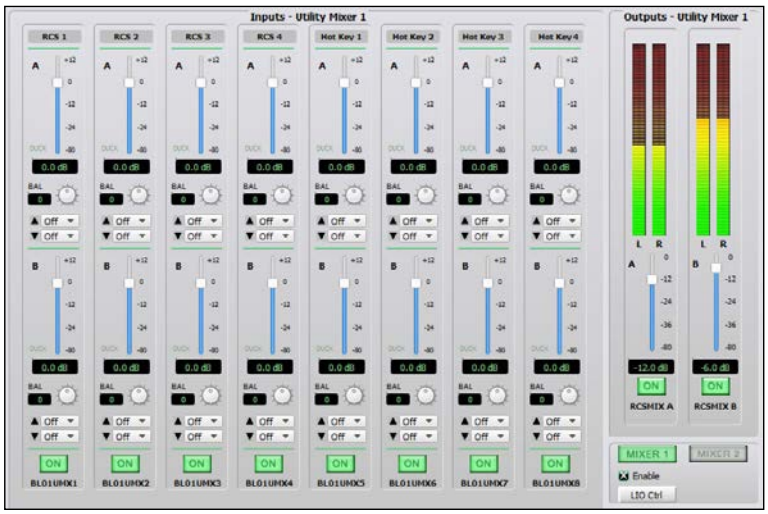
BLADE as an A/D and D/A converter

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



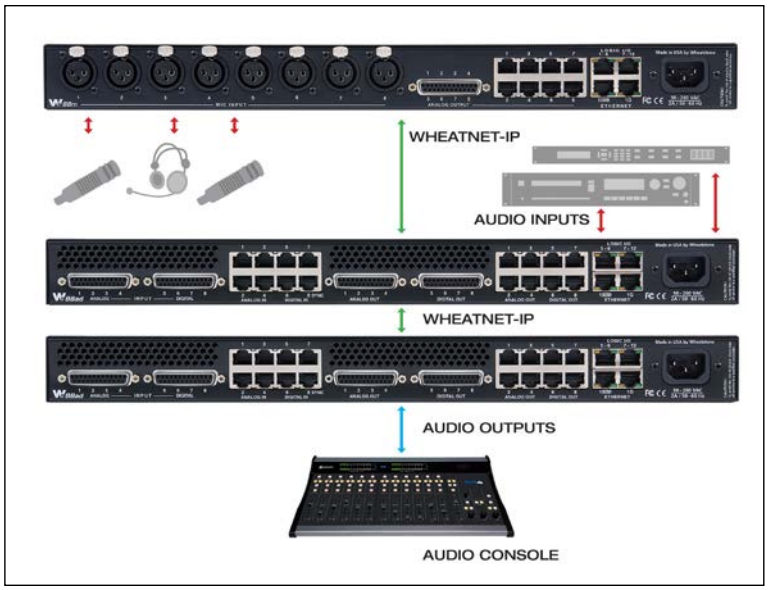
BLADE plus meter app = failover monitoring

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.

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.

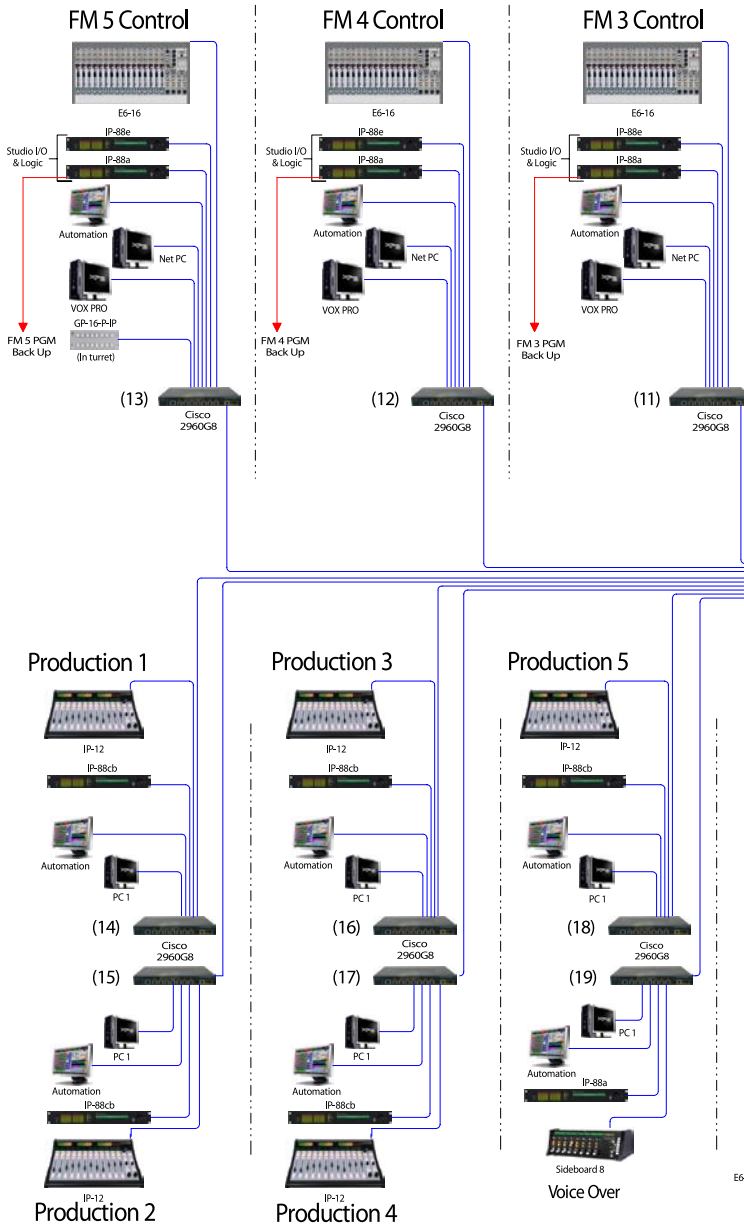
Wheatstone professionals work with you to ensure your system is perfect for your application and facility. Working very closely with you, we plan the entire system to determine the right gear for each room/need.

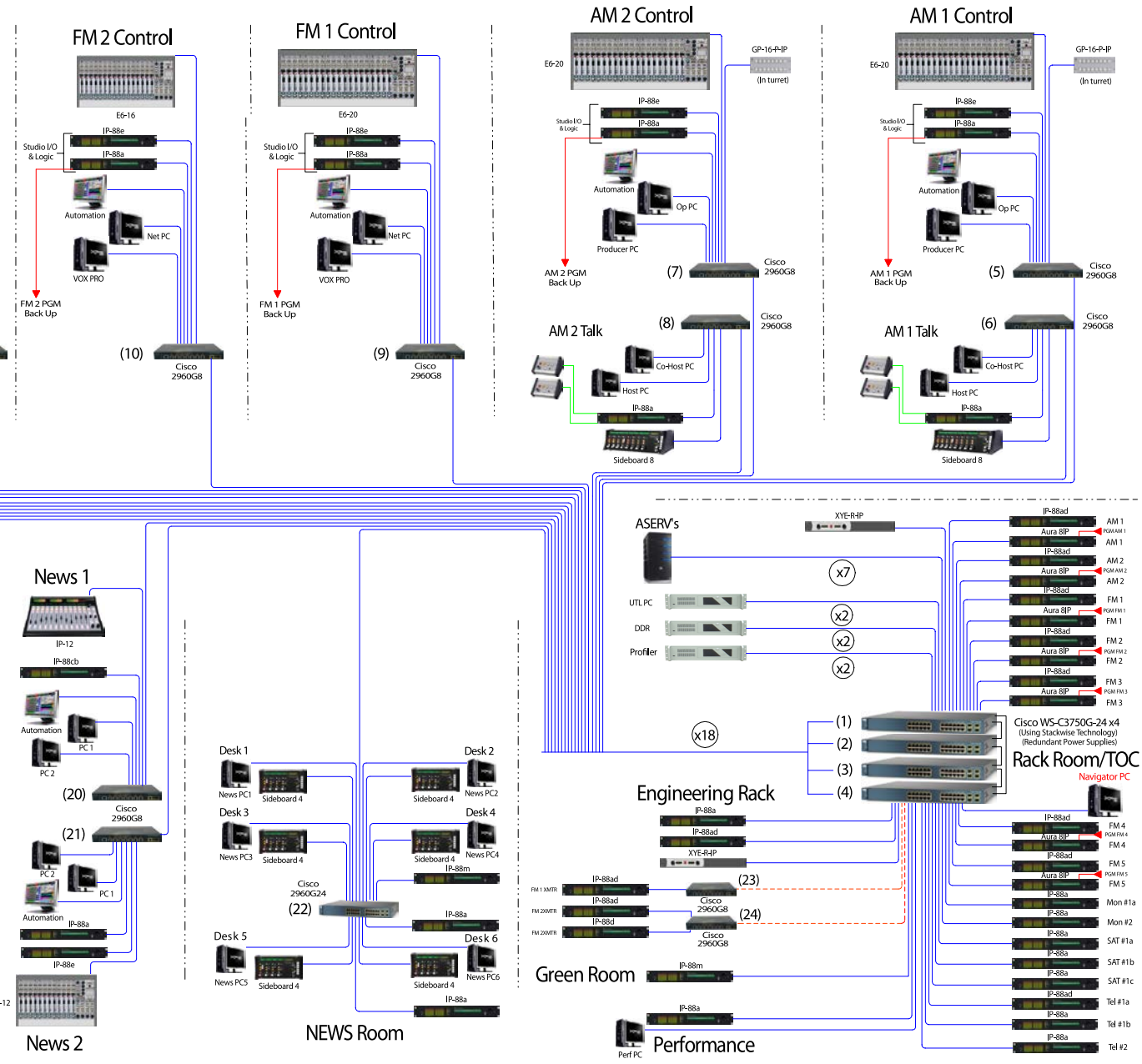
What you see to the right is a final plan for a customer in Portland, Oregon. Installation went exactly as pictured. Before the system ever got to Portland, it was completely set up in New Bern and fully tested for functionality.

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
E6-20
IP-88e
Studio I/O & Logic
IP-88a
Automation
Net PC
VOX PRO
FM 1 PGM Back Up
(9)
Cisco 2960G8
AM 2 Control
E6-20
GP-16-P-IP
(In turret)
IP-88e
Studio I/O & Logic
IP-88a
Automation
Op PC
Producer PC
AM 2 PGM Back Up
(7)
Cisco 2960G8
AM 2 Talk
(8)
Cisco 2960G8
Co-Host PC
Host PC
IP-88a
Sideboard 8
AM 1 Control
E6-20
GP-16-P-IP
(In turret)
IP-88e
Studio I/O & Logic
IP-88a
Automation
Op PC
Producer PC
AM 1 PGM Back Up
(5)
Cisco 2960G8
AM 1 Talk
(6)
Cisco 2960G8
Co-Host PC
Host PC
IP-88a
Sideboard 8
News 1
IP-12
IP-88cb
Automation
PC 1
PC 2
(20)
Cisco 2960G8
(21)
PC 2
PC 1
Automation
IP-88a
IP-88e
News 2
Desk 1
News PC1
Sideboard 4
Desk 2
News PC2
Sideboard 4
Desk 3
News PC3
Sideboard 4
Desk 4
Sideboard 4
News PC4
IP-88m
Cisco 2960G24
(22)
IP-88a
Desk 5
News PC5
Sideboard 4
Desk 6
Sideboard 4
News PC6
IP-88a
NEWS Room
ASERV's
XYE-R-IP
(x7)
UTL PC
DDR
Profiler
(x2)
(x2)
(x2)
(x18)
(1)
(2)
(3)
(4)
Engineering Rack
IP-88a
IP-88ad
XYE-R-IP
IP-88ad
FM 1 XMTR
(23)
Cisco 2960G8
IP-88ad
FM 2XMTR
(24)
IP-88d
FM 2XMTR
Cisco 2960G8
Green Room
IP-88m
IP-88a
Perf PC
Performance
IP-88ad
Aura 8IP
AM 1
PGM AM 1
AM 1
AM 2
PGM AM 2
AM 2
FM 1
PGM FM 1
FM 1
FM 2
PGM FM 2
FM 2
FM 3
PGM FM 3
FM 3
Cisco WS-C3750G-24 x4
(Using Stackwise Technology)
(Redundant Power Supplies)
Rack Room/TOC
Navigator PC
FM 4
PGM FM 4
FM 4
FM 5
PGM FM 5
FM 5
IP-88a
Mon #1a
Mon #2
SAT #1a
SAT #1b
SAT #1c
IP-88ad
Tel #1a
IP-88a
Tel #1b
IP-88a
Tel #2

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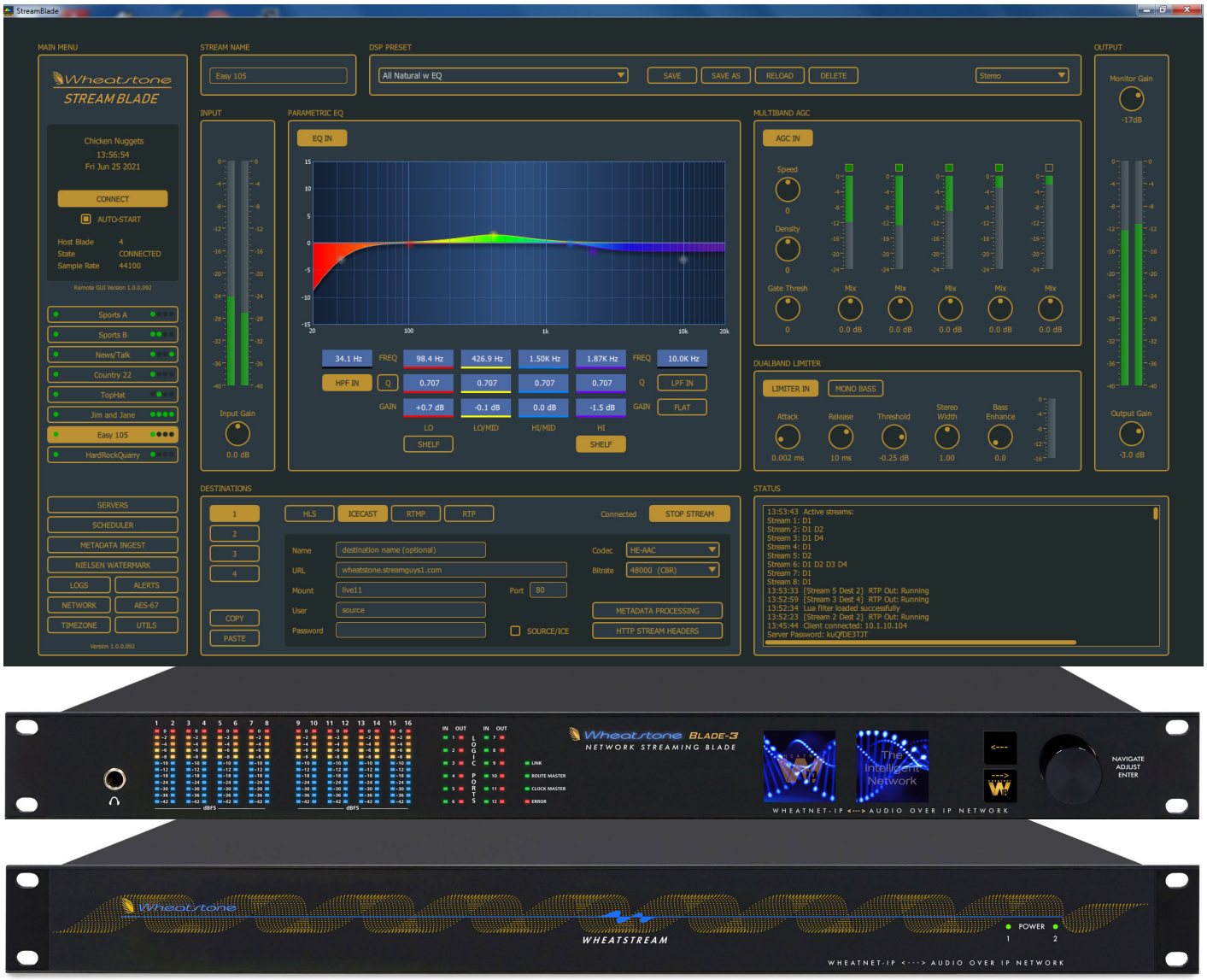
081320

STREAMBLADE & WHEATSTREAM

MULTI-CHANNEL IP STREAMING AND PROCESSING INTERFACES



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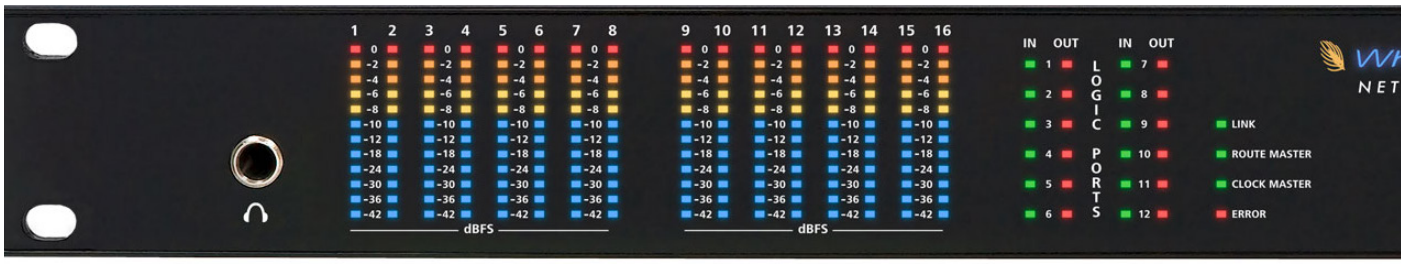
STREAMBLADE & WHEATSTREAM

Multichannel IP streaming and processing that sounds amazing



StreamBlade addresses the unique challenges of multiple program streams. It is a 1 RU BLADE unit for streaming applications that features key Wheatstone AoIP, audio processing and codec bandwidth optimization technology.

"Putting all processing and bandwidth optimization functions in one box that talks native IP audio just makes sense for studios today that are managing five, six or more streams," said Rick Bidlack, Wheatstone systems and lead StreamBlade design engineer.

Unique to StreamBlade is its five-band AGC with RMS density driven time constants for establishing tonal balance and level consistency between incoming music sources. Unlike the conventional approach of applying multiband gain control followed by fast compression to build uniform loudness and density from one music source to the next, this AGC is designed specifically for streaming applications and eliminates aggressive RMS attack times that can interfere with codec performance.

"Fast time constants (compression) can add intermod sidebands around a sustained note or bass note, which the codec has to spend bits on instead of the signals that are actually part of the program. That can be bad for any stream, but it's especially bad for low bit-rate streams that don't have a lot of data bits to begin with," explained Jeff Keith, Senior Product Development Engineer for Wheatstone's audio processing line.

Also unique to StreamBlade is a two-band final limiter section made for streaming that removes hard limiting or clipping from the processing chain. "Clipping creates harmonics that the encoder wants to throw bits at, and much of that isn't particularly pleasant to the ear," added Keith.

Also onboard is a stereo width management section that produces a perceived stereo field yet eliminates the big swings in dynamic L-R that can skew the codec algorithm as well as bass boost and monaural bass features for optimizing the quality of the bit stream.

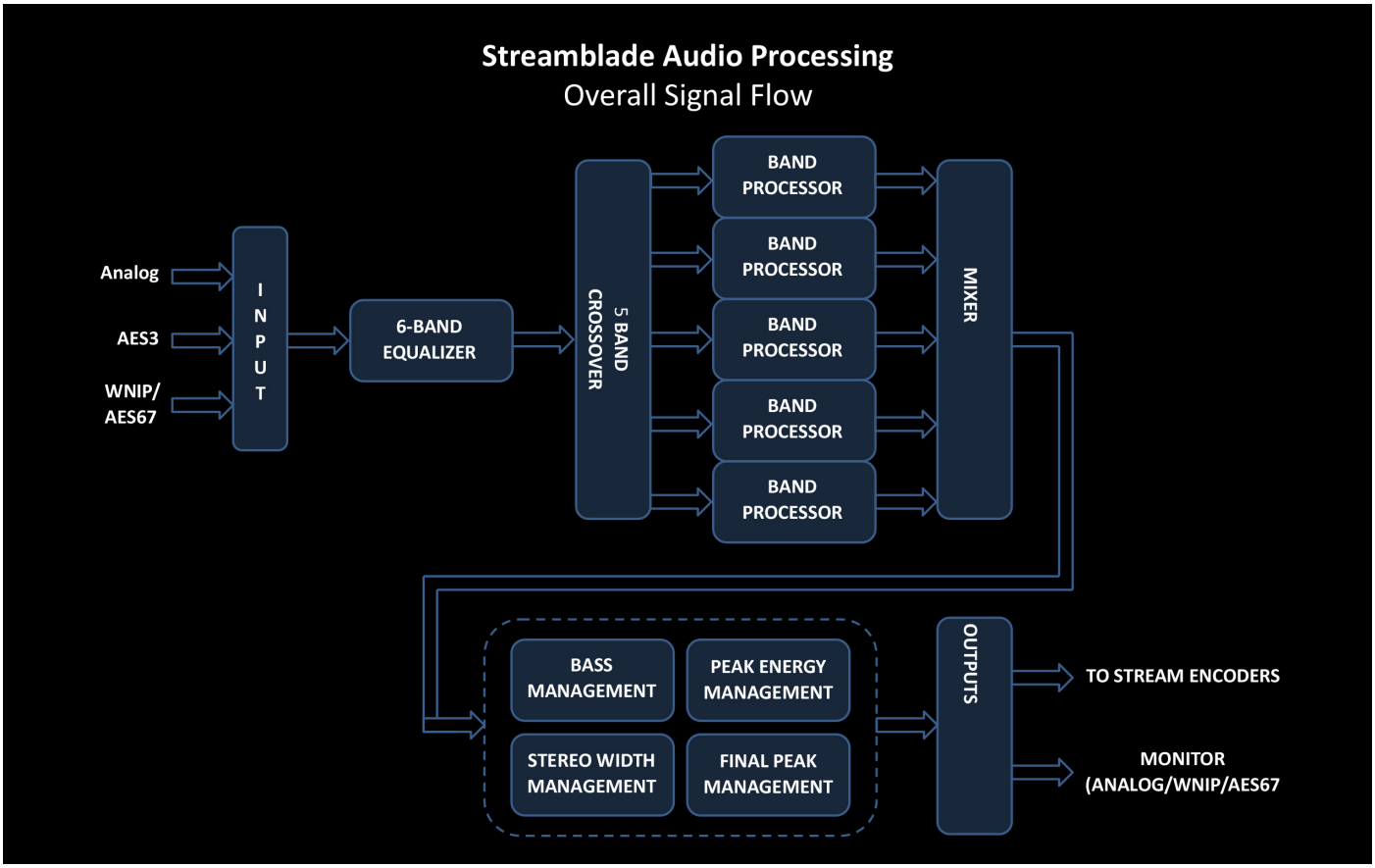
A selectable six-band parametric equalizer with peak and shelf functions, high and low pass filtering for removing noise or hum, and two-stage phase rotator to correct voice asymmetry are also included in StreamBlade.

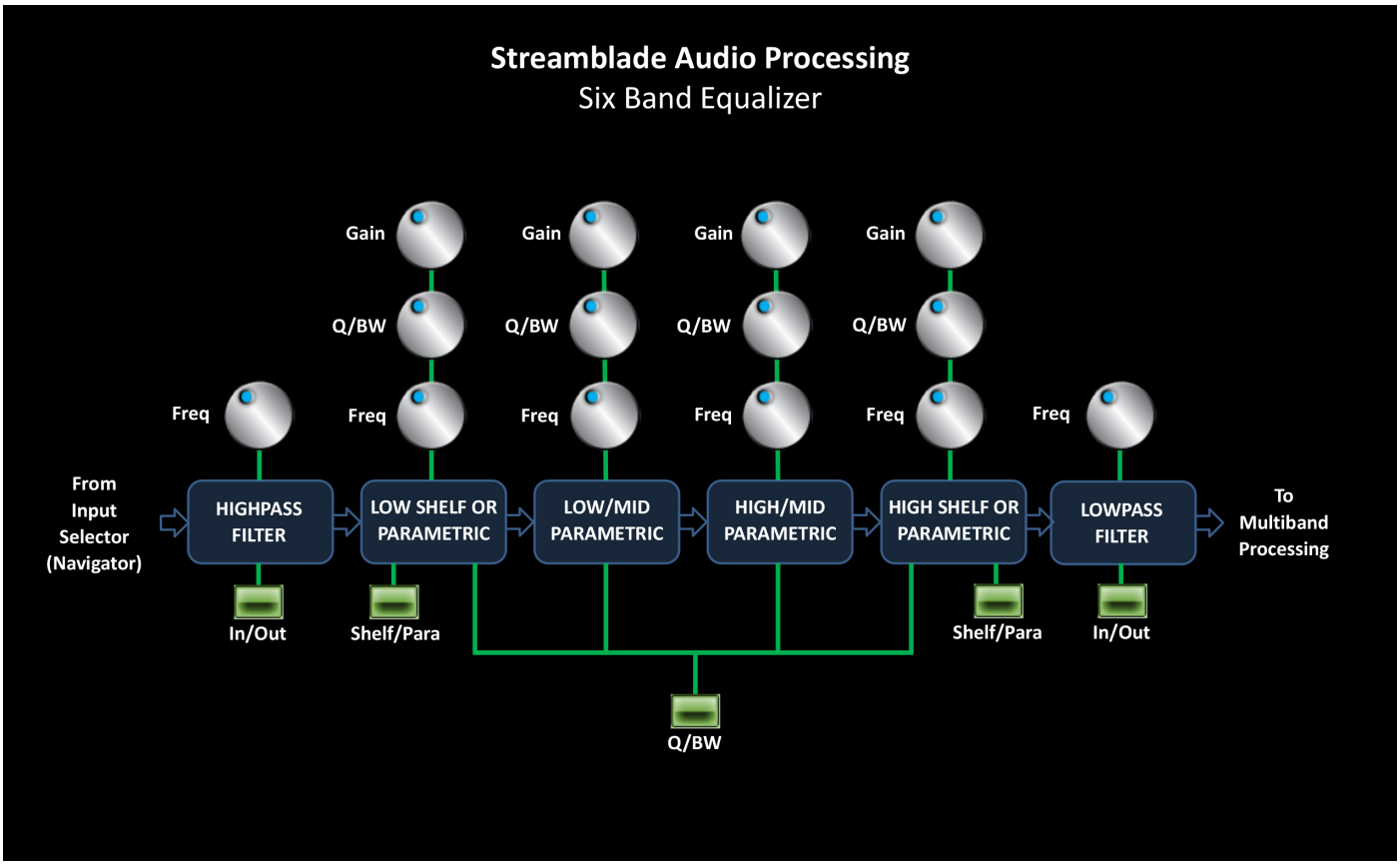
StreamBlade can be configured and managed from a laptop and web browser using WheatNet-IP NAVIGATOR software. It has two Ethernet ports, one for direct connectivity into the WheatNet-IP audio network on one end and another for connectivity into a WAN for streaming to a CDN or other service provider.

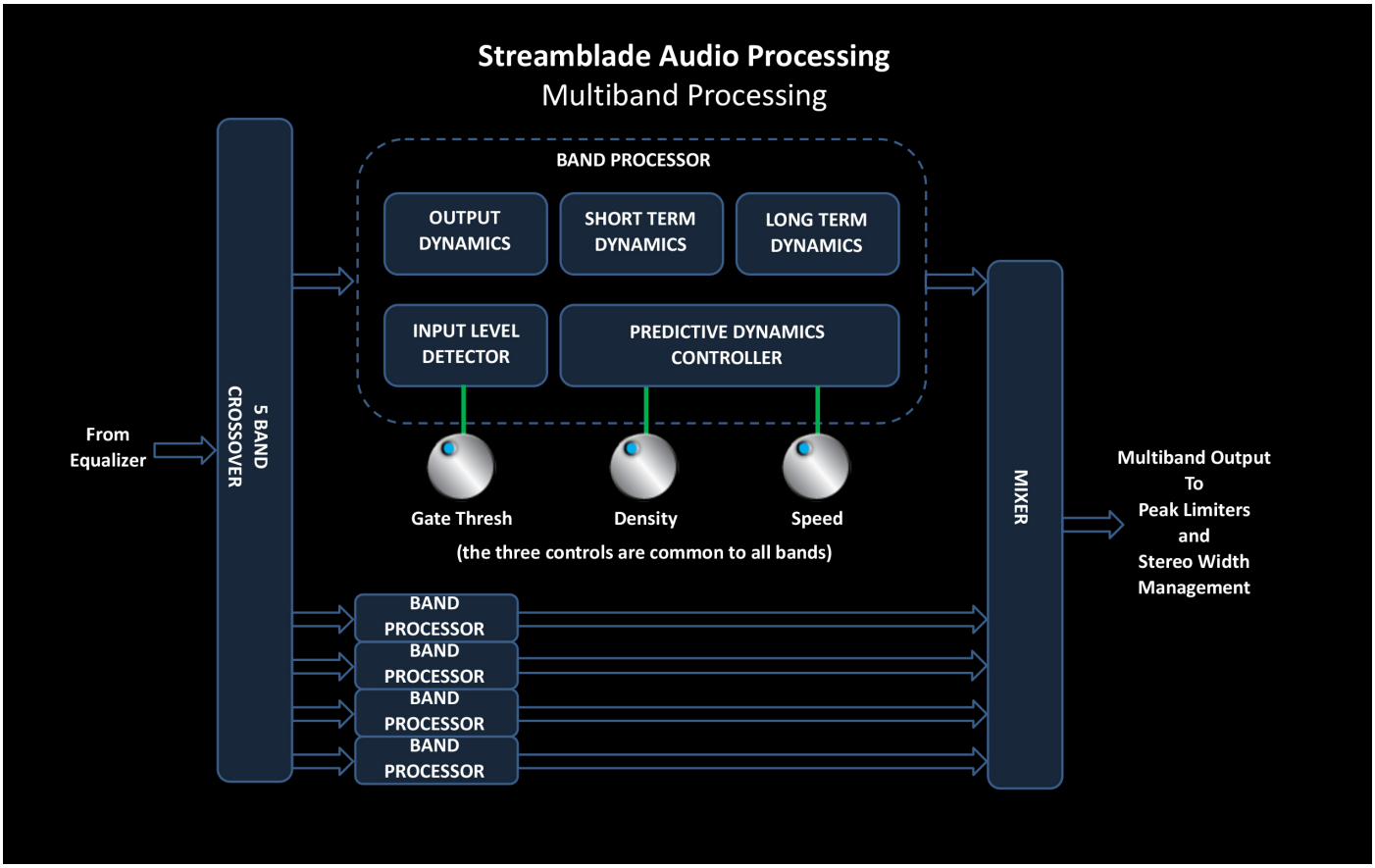
WHEATSTREAM

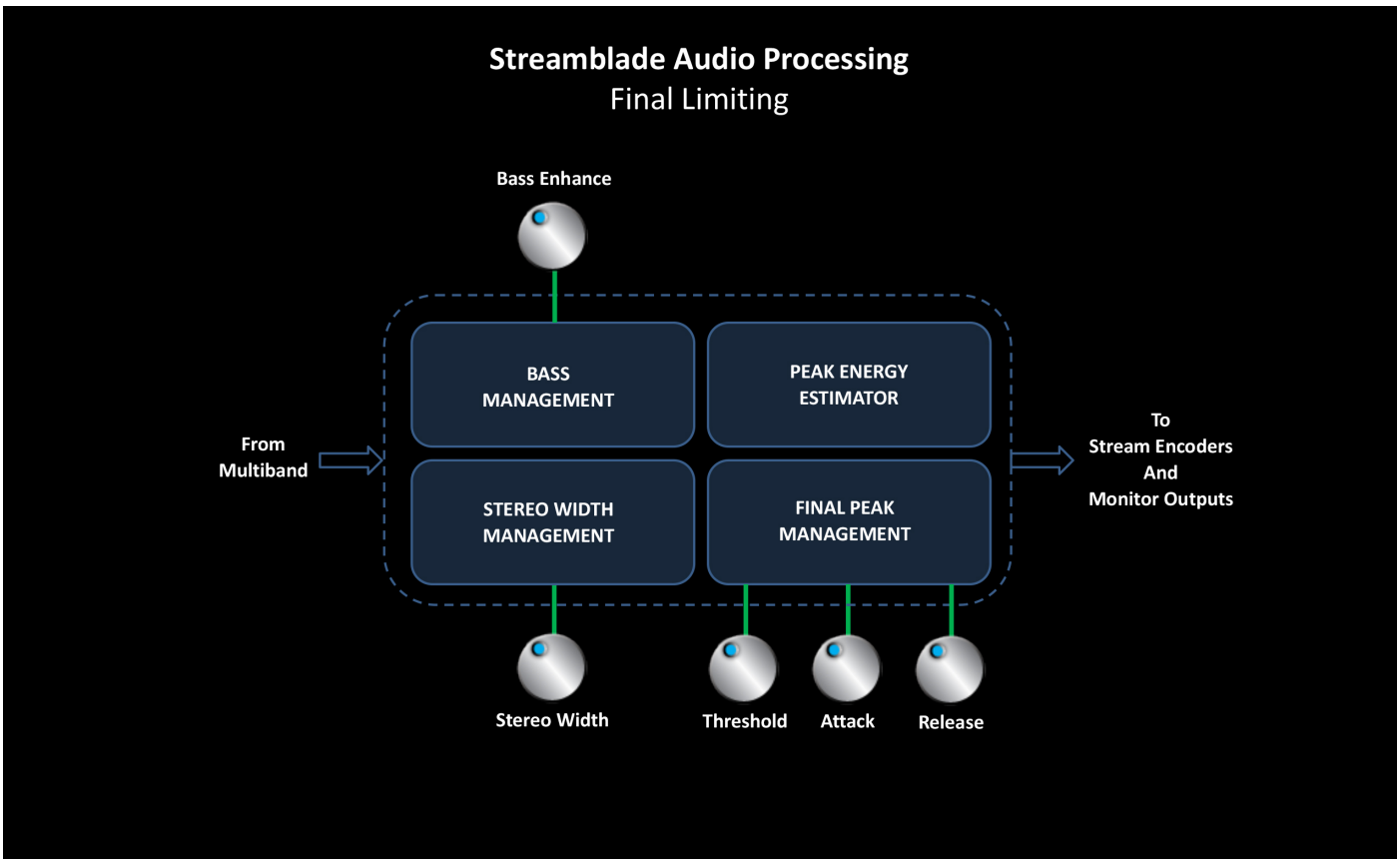
Need the power of Streamblade, but not the rest of the marvelous functions of a Blade? Wheatstream is just what you're after. It too is a single rack space device that has the streaming and processing functionality of Streamblade, but without all of the usual Blade functions and I/O, for a lower cost. Wheatstream features WheatNet-IP and AES67 input (via IP).

- Selectable AAC, Opus, and MP3 encoders targeting high to low bit rates for reaching a broad range of end user devices and players.
- Accepts eight input streams of native WheatNet-IP audio directly from a soundcard or AoIP driver as well as RTP sources, each capable of four outputs for a total of 32 total output streams.
- Five-band intelligent AGC, dual-band limiter and other audio processing designed to optimize the performance of encoded audio content.
- Cloud-ready and compatible with standard CDN and streaming platforms. Supports HLS, Icecast, RTMP, and RTP streaming protocols.
- Lua transformation filters adapt metadata input from any automation system into any required output format for transmission to the CDN server.
- Local I/O connectivity for other than WheatNet-IP audio network applications.
- Streamblade: WheatNet-IP, Analog, AES3 and AES67 inputs
- Wheatstream: WheatNet-IP and AES67 input (via IP)
- Nielsen encoder optionally available. The PPM watermark is inserted after the dual-band limiter to avoid interference with codec performance
- BS.1770-compliant loudness control manages loudness between -24 and -10 LUFS
- Wheatstone's streaming appliances and Layers cloud streaming software are now available with Triton Digital's streaming protocol.


Streamblade Audio Processing
Overall Signal Flow
Analog
AES3
WNIP/
AES67
INPUT
6-BAND
EQUALIZER
5 BAND
CROSSOVER
BAND
PROCESSOR
BAND
PROCESSOR
BAND
PROCESSOR
BAND
PROCESSOR
BAND
PROCESSOR
MIXER
BASS
MANAGEMENT
PEAK ENERGY
MANAGEMENT
STEREO WIDTH
MANAGEMENT
FINAL PEAK
MANAGEMENT
OUTPUTS
TO STREAM ENCODERS
MONITOR
(ANALOG/WNIP/AES67


Streamblade Audio Processing
Six Band Equalizer
Gain
Gain
Gain
Gain
Q/BW
Q/BW
Q/BW
Q/BW
Freq
Freq
Freq
Freq
Freq
Freq
From
Input
Selector
(Navigator)
HIGHPASS
FILTER
LOW SHELF OR
PARAMETRIC
LOW/MID
PARAMETRIC
HIGH/MID
PARAMETRIC
HIGH SHELF OR
PARAMETRIC
LOWPASS
FILTER
To
Multiband
Processing
In/Out
Shelf/Para
Shelf/Para
In/Out
Q/BW


Streamblade Audio Processing
Multiband Processing
BAND PROCESSOR
OUTPUT DYNAMICS
SHORT TERM DYNAMICS
LONG TERM DYNAMICS
INPUT LEVEL DETECTOR
PREDICTIVE DYNAMICS CONTROLLER
From Equalizer
5 BAND CROSSOVER
Gate Thresh
Density
Speed
(the three controls are common to all bands)
BAND PROCESSOR
BAND PROCESSOR
BAND PROCESSOR
BAND PROCESSOR
MIXER
Multiband Output To Peak Limiters and Stereo Width Management


Streamblade Audio Processing
Final Limiting
Bass Enhance
BASS MANAGEMENT
PEAK ENERGY ESTIMATOR
From Multiband
STEREO WIDTH MANAGEMENT
FINAL PEAK MANAGEMENT
To Stream Encoders And Monitor Outputs
Stereo Width
Threshold
Attack
Release

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LAYERS SOFTWARE SUITE

Layers Mix, Layers FM, and Layers Stream in an Instance

Wheatstone LAYERS

Wheatstone

BROADCAST AUDIO PERFECTIONISTS℠

LAYERS SOFTWARE SUITE

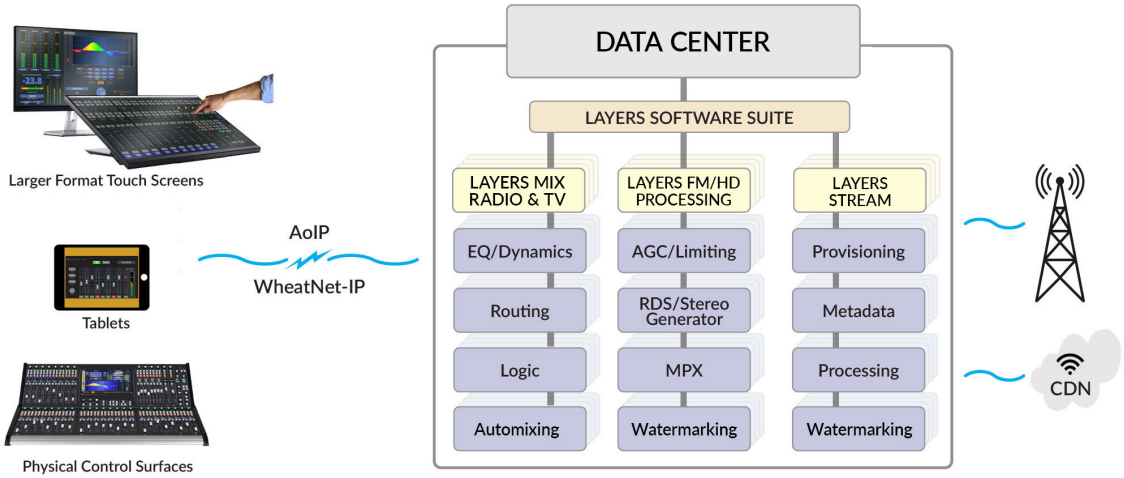
Layers Mix, Layers FM, and Layers Stream in an Instance

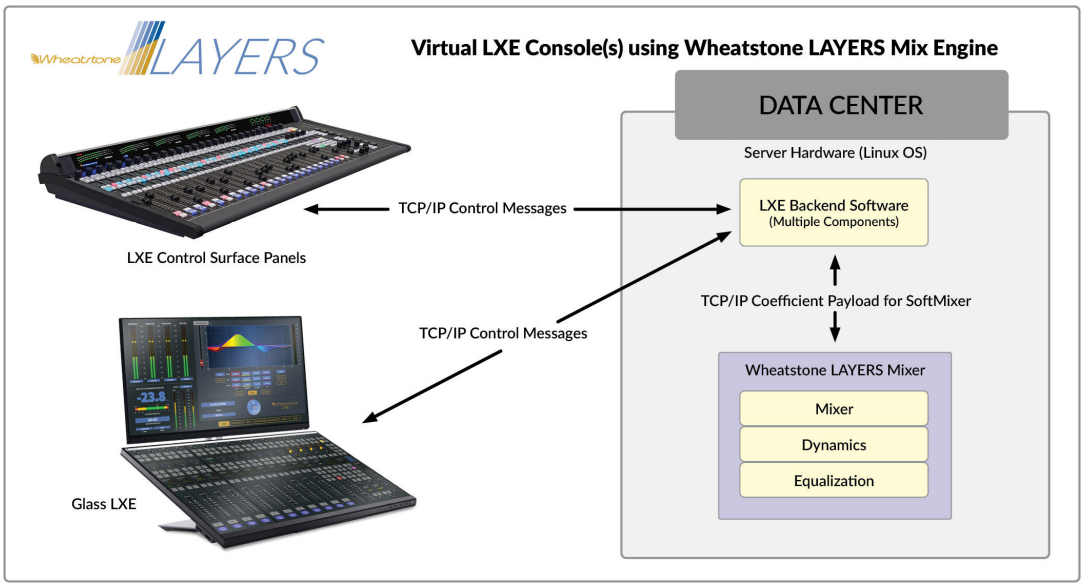
Introducing Layers Software Suite with Wheatstone SystemLink®. Add mixing, FM/HD processing and stream instances to any server in your rack room or off-site at an AWS or other cloud data center. Available with Wheatstone SystemLink® option, an FM MPX over IP transporter with RIST connectivity for robust, secure and reliable transport over any IP link.

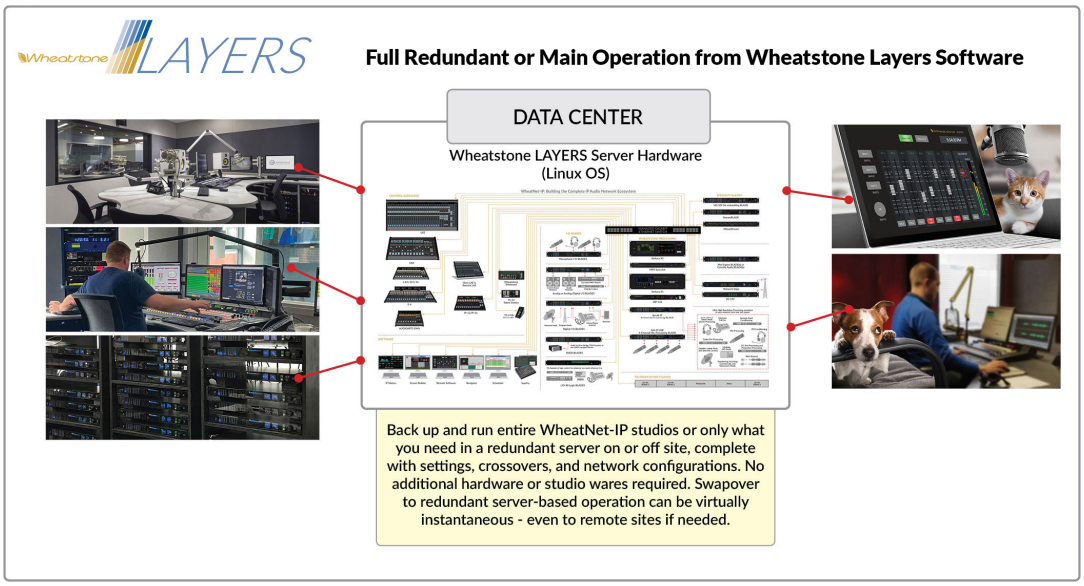
LAYERS GLASS SOFTWARE

For the laptop, tablet or other glass surface includes full-function radio and television virtual consoles with familiar buttons, knobs, and multi-touch navigation and menuing. Layers Mix handles all the mixing and processing required by the control surface, virtual or fixed, for radio and television applications.surface, virtual or fixed, for radio and television applications.

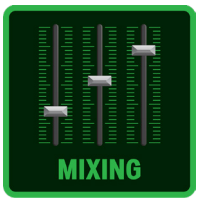
- Spin up or down streaming, FM/HD processing and mixing as needed, your server or AWS'. Pay for only the cloud services you use.
- Add to any server in your rack room or off-site at an AWS or other cloud extension of your WheatNet-IP audio network.
- Extend studio failover redundancy across multiple AWS or Google cloud data centers. No additional hardware infrastructure required.
- Centralize audio processing for all streams and FMs on-premise or offsite at cloud data centers. Finally, the best ears in your organization can set audio processing for each stream and each FM with MPX out to the transmitter.
- Consolidate mixing, processing and stream provisioning for several stations and studios into one server location for shared resources and redundancy.
- Replace racks of processors, PCs and mix engines. One onsite server can run multiple Layers mixing instances for several consoles throughout your facility, plus serve Layers FM audio processing instances as well as provisioning, processing and metadata for multiple streams out to the CDN provider.
- Combine the scalability of Linux and enterprise technology with the deep reliability of WheatNet-IP AoIP, mixing, processing and streaming software designed by a dedicated, broadcast-only company.


Larger Format Touch Screens
Tablets
Physical Control Surfaces
AoIP
WheatNet-IP
DATA CENTER
LAYERS SOFTWARE SUITE
LAYERS MIX RADIO & TV
LAYERS FM/HD PROCESSING
LAYERS STREAM
EQ/Dynamics
AGC/Limiting
Provisioning
Routing
RDS/Stereo Generator
Metadata
Logic
MPX
Processing
Automixing
Watermarking
Watermarking
CDN


Wheatstone LAYERS
Virtual LXE Console(s) using Wheatstone LAYERS Mix Engine
DATA CENTER
Server Hardware (Linux OS)
LXE Control Surface Panels
TCP/IP Control Messages
LXE Backend Software
(Multiple Components)
TCP/IP Coefficient Payload for SoftMixer
TCP/IP Control Messages
Wheatstone LAYERS Mixer
Mixer
Dynamics
Equalization
Glass LXE


Wheatstone LAYERS
Full Redundant or Main Operation from Wheatstone Layers Software
DATA CENTER
Wheatstone LAYERS Server Hardware
(Linux OS)
Back up and run entire WheatNet-IP studios or only what you need in a redundant server on or off site, complete with settings, crossovers, and network configurations. No additional hardware or studio wares required. Swapover to redundant server-based operation can be virtually instantaneous - even to remote sites if needed.

FEATURES



LAYERS MIX

Routing • Logic • EQ/Dynamnics

Layers Mix includes full-featured mix engine and Glass virtual mixers for the laptop, tablet or touchscreen monitor.

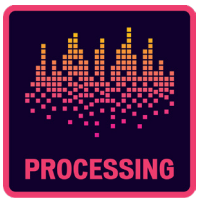
Layers Mix Engine:

- Spin up mixing instances for all your LXE or Strata glass or console surfaces and replace racks of hardware.
- As many as 20 mix engine instances in one on-premise server, saving racks of mix engines and the associated engineering, electrical and real estate space.
- Native IP audio integration with all major production automation systems (TV)
- Native IP audio integration with all major playback automation systems (radio)
- Linux based OS with touchscreen support accessible via HDMI video output
- Full screen XY controller for routing destination and source feeds
- Signal sources and destinations limited only by the size of the network
- Manage via virtualization software like VMWare or container software like Docker, on-premise on your own server or onsite by cloud provider data centers
- Works with fixed console surfaces such as LXE and Strata as well as Mix Glass for laptops, tablets and PC monitors

Layers Mix Glass for laptops, tablets and PC touchscreens

- Complete virtual console interface with familiar navigation, menuing, fader movement and controls for setting EQ curves, filtering, and other settings
- Predetermined presets ideal for television or radio workflows
- Unlimited subgroups, VCA groups, aux sends and bus, mix-minus, channel and output assigns
- Unlimited cue feeds as required
- Dynamics, including compressor, expander and gate, controlled via touchscreen
- Full parametric EQ controlled via touchscreen
- Loudness meter, phase correlation included
- Unlimited number of events that can be created, edited and recalled as snapshots of the control surface
- Prebuilt screens for metering, clocks, timers, dynamics, EQ assigns
- Easy to use scripting tools for customizing screens
- Runs on any Linux OS laptop, tablet or PC client from an on- or off-premise server or third party cloud provider
- Multi-access, multi-touch and synchronized between multiple operators sharing board duties during fast-paced, remote productions
- Real-time fader tracking and live synchronization of buttons and controls for separate operators connected over an IP connection
- All sources accessible in the WheatNet-IP audio network
- Ultimate in smart control with options like Automix for automatically reducing gain on mics nearby an addressable mic
- Control devices and trigger events anywhere in the WheatNet-IP audio networked studio.

FEATURES



LAYERS FM

AGC/Limiting • RDS/Stereo Generator • MPX Output

Layers FM/HD Processing. Centralize processing settings across multiple markets via virtualization software like VMWare or container software like Docker, on-premise on your own server or onsite by cloud provider data centers.

Each processing instance includes:

- Multiband AGC utilizes AI for smooth transitions between commercials and programming
- Limitless clipper performs perfect peak control without generating annoying IM distortion
- Specialized bass management tools deliver accurate, articulate bass regardless of program format
- Exclusive Wheatstone Unified Processing means each stage in the processing chain intelligently interacts with the other processing stages to create a dynamic and dominant on the dial presence.
- Multipath mitigation for delivering quality programming to more radios
- Full RDS capabilities with data import from popular automation systems
- BS412 MPX Power Management assures compliance with European standards
- Intelligent stereo enhancement for a consistent stereo sound field experience
- Nielsen audio software encoder included. The PPM watermark is inserted after all multiband processing to deliver a consistent and robust watermark
- Part of the WheatNet-IP audio network, a complete AoIP ecosystem of 200+ interconnected devices and elements
- Available with Wheatstone SystemLink® FM MPX over IP transporter with RIST connectivity for robust, secure and reliable transport over any IP link.

FEATURES

STREAMING

LAYERS STREAM

Provisioning • Metadata support • Audio processing

Layers Stream features key Wheatstone AoIP, audio processing and codec bandwidth optimization technology.

- Audio processing designed specifically to optimize the performance of audio codecs:
  - Five-band intelligent AGC with AI for a smooth transition between commercials and program content. iAGC uses program-derived time constants to establish tonal balance and level consistency rather than aggressive attack and release times that can interfere with codec performance.
  - Two-band final limiter is optimized for streaming and avoids the hard limiting and clipping which can interfere with codec performance
  - Stereo image management preserves an artistic stereo image while preventing over-enhancement that can skew the codec algorithm
  - Bass boost and monaural bass features for optimizing the quality of the bit stream
  - A selectable six-band parametric equalizer with peak and shelf function
  - Two stage phase rotator to correct voice asymmetry
  - High and low pass filtering can remove noise and hum to optimize codec bit performance
- Selectable AAC, Opus, and MP3 encoders and a wide range of bit rates for reaching a broad range of end user devices and players
- BS.1770-compliant loudness control manages loudness between -24 and -10 LUFS
- Cloud-ready and compatible with standard CDN and streaming platforms. Supports HLS, Icecast, RTMP, and RTP streaming protocols
- Direct a stream from anywhere in the world as a cloud instance that can be brought up in a second and torn down in a second. Pay per use.
- Lua transformation filters convert metadata input from any automation system into any required output format for transmission to the CDN server
- Nielsen audio software encoder included. The PPM watermark is inserted after the dual-band limiter of each stream for a robust, consistent signal that can be picked up by the PPM without interfering with the performance of the audio codec
- Part of the WheatNet-IP audio network, a complete AoIP ecosystem of 200+ interconnected devices and elements
- Wheatstone's streaming appliances and Layers cloud streaming software are now available with Triton Digital's streaming protocol.

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LAYERS SOFTWARE SUITE

Layers Mix, Layers FM, and Layers Stream in an Instance

Wheatstone LAYERS

Wheatstone

BROADCAST AUDIO PERFECTIONISTS℠

LAYERS SOFTWARE SUITE

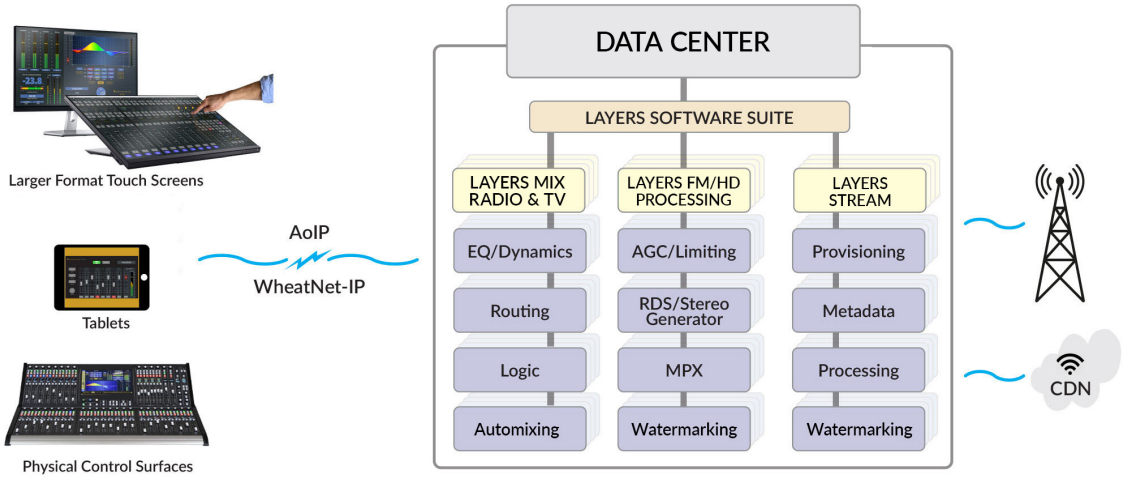
Layers Mix, Layers FM, and Layers Stream in an Instance

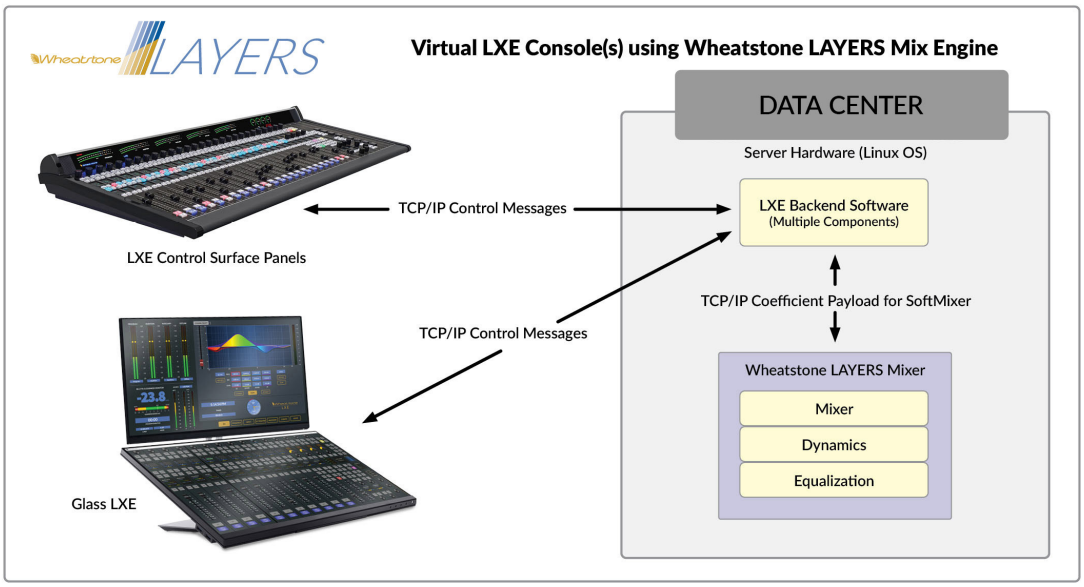
Introducing Layers Software Suite with Wheatstone SystemLink®. Add mixing, FM/HD processing and stream instances to any server in your rack room or off-site at an AWS or other cloud data center. Available with Wheatstone SystemLink® option, an FM MPX over IP transporter with RIST connectivity for robust, secure and reliable transport over any IP link.

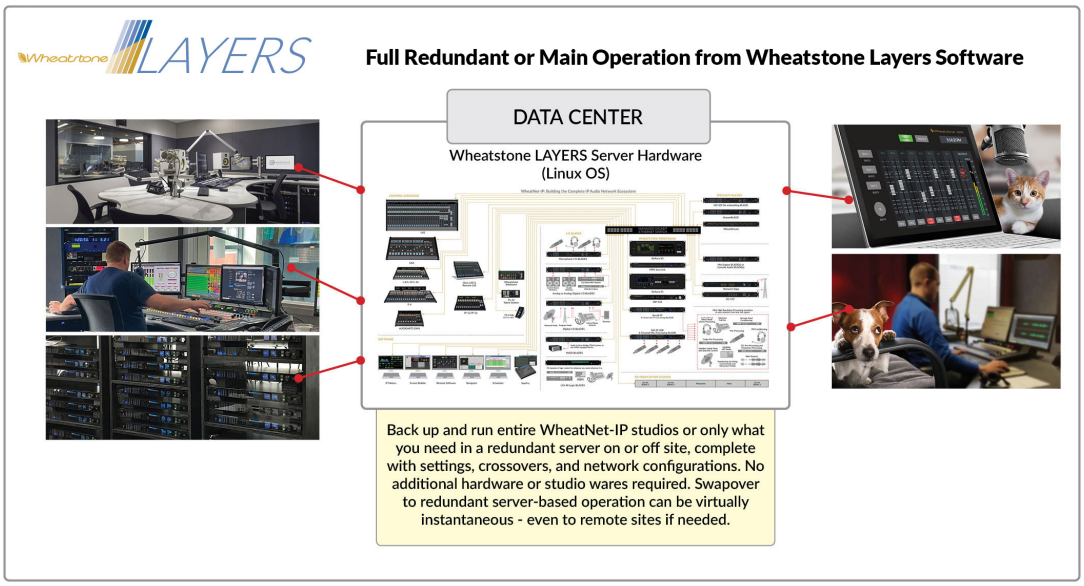
LAYERS GLASS SOFTWARE

For the laptop, tablet or other glass surface includes full-function radio and television virtual consoles with familiar buttons, knobs, and multi-touch navigation and menuing. Layers Mix handles all the mixing and processing required by the control surface, virtual or fixed, for radio and television applications.surface, virtual or fixed, for radio and television applications.

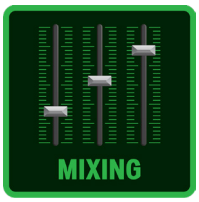
- Spin up or down streaming, FM/HD processing and mixing as needed, your server or AWS'. Pay for only the cloud services you use.
- Add to any server in your rack room or off-site at an AWS or other cloud extension of your WheatNet-IP audio network.
- Extend studio failover redundancy across multiple AWS or Google cloud data centers. No additional hardware infrastructure required.
- Centralize audio processing for all streams and FMs on-premise or offsite at cloud data centers. Finally, the best ears in your organization can set audio processing for each stream and each FM with MPX out to the transmitter.
- Consolidate mixing, processing and stream provisioning for several stations and studios into one server location for shared resources and redundancy.
- Replace racks of processors, PCs and mix engines. One onsite server can run multiple Layers mixing instances for several consoles throughout your facility, plus serve Layers FM audio processing instances as well as provisioning, processing and metadata for multiple streams out to the CDN provider.
- Combine the scalability of Linux and enterprise technology with the deep reliability of WheatNet-IP AoIP, mixing, processing and streaming software designed by a dedicated, broadcast-only company.


Larger Format Touch Screens
Tablets
Physical Control Surfaces
AoIP
WheatNet-IP
DATA CENTER
LAYERS SOFTWARE SUITE
LAYERS MIX RADIO & TV
LAYERS FM/HD PROCESSING
LAYERS STREAM
EQ/Dynamics
AGC/Limiting
Provisioning
Routing
RDS/Stereo Generator
Metadata
Logic
MPX
Processing
Automixing
Watermarking
Watermarking
CDN


Wheatstone LAYERS
Virtual LXE Console(s) using Wheatstone LAYERS Mix Engine
DATA CENTER
Server Hardware (Linux OS)
LXE Control Surface Panels
TCP/IP Control Messages
LXE Backend Software
(Multiple Components)
TCP/IP Coefficient Payload for SoftMixer
TCP/IP Control Messages
Wheatstone LAYERS Mixer
Mixer
Dynamics
Equalization
Glass LXE


Wheatstone LAYERS
Full Redundant or Main Operation from Wheatstone Layers Software
DATA CENTER
Wheatstone LAYERS Server Hardware
(Linux OS)
Back up and run entire WheatNet-IP studios or only what you need in a redundant server on or off site, complete with settings, crossovers, and network configurations. No additional hardware or studio wares required. Swapover to redundant server-based operation can be virtually instantaneous - even to remote sites if needed.

FEATURES



LAYERS MIX

Routing • Logic • EQ/Dynamnics

Layers Mix includes full-featured mix engine and Glass virtual mixers for the laptop, tablet or touchscreen monitor.

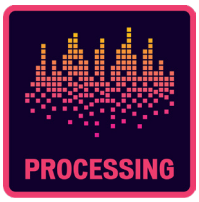
Layers Mix Engine:

- Spin up mixing instances for all your LXE or Strata glass or console surfaces and replace racks of hardware.
- As many as 20 mix engine instances in one on-premise server, saving racks of mix engines and the associated engineering, electrical and real estate space.
- Native IP audio integration with all major production automation systems (TV)
- Native IP audio integration with all major playback automation systems (radio)
- Linux based OS with touchscreen support accessible via HDMI video output
- Full screen XY controller for routing destination and source feeds
- Signal sources and destinations limited only by the size of the network
- Manage via virtualization software like VMWare or container software like Docker, on-premise on your own server or onsite by cloud provider data centers
- Works with fixed console surfaces such as LXE and Strata as well as Mix Glass for laptops, tablets and PC monitors

Layers Mix Glass for laptops, tablets and PC touchscreens

- Complete virtual console interface with familiar navigation, menuing, fader movement and controls for setting EQ curves, filtering, and other settings
- Predetermined presets ideal for television or radio workflows
- Unlimited subgroups, VCA groups, aux sends and bus, mix-minus, channel and output assigns
- Unlimited cue feeds as required
- Dynamics, including compressor, expander and gate, controlled via touchscreen
- Full parametric EQ controlled via touchscreen
- Loudness meter, phase correlation included
- Unlimited number of events that can be created, edited and recalled as snapshots of the control surface
- Prebuilt screens for metering, clocks, timers, dynamics, EQ assigns
- Easy to use scripting tools for customizing screens
- Runs on any Linux OS laptop, tablet or PC client from an on- or off-premise server or third party cloud provider
- Multi-access, multi-touch and synchronized between multiple operators sharing board duties during fast-paced, remote productions
- Real-time fader tracking and live synchronization of buttons and controls for separate operators connected over an IP connection
- All sources accessible in the WheatNet-IP audio network
- Ultimate in smart control with options like Automix for automatically reducing gain on mics nearby an addressable mic
- Control devices and trigger events anywhere in the WheatNet-IP audio networked studio.

FEATURES



LAYERS FM

AGC/Limiting • RDS/Stereo Generator • MPX Output

Layers FM/HD Processing. Centralize processing settings across multiple markets via virtualization software like VMWare or container software like Docker, on-premise on your own server or onsite by cloud provider data centers.

Each processing instance includes:

- Multiband AGC utilizes AI for smooth transitions between commercials and programming
- Limitless clipper performs perfect peak control without generating annoying IM distortion
- Specialized bass management tools deliver accurate, articulate bass regardless of program format
- Exclusive Wheatstone Unified Processing means each stage in the processing chain intelligently interacts with the other processing stages to create a dynamic and dominant on the dial presence.
- Multipath mitigation for delivering quality programming to more radios
- Full RDS capabilities with data import from popular automation systems
- BS412 MPX Power Management assures compliance with European standards
- Intelligent stereo enhancement for a consistent stereo sound field experience
- Nielsen audio software encoder included. The PPM watermark is inserted after all multiband processing to deliver a consistent and robust watermark
- Part of the WheatNet-IP audio network, a complete AoIP ecosystem of 200+ interconnected devices and elements
- Available with Wheatstone SystemLink® FM MPX over IP transporter with RIST connectivity for robust, secure and reliable transport over any IP link.

FEATURES

STREAMING

LAYERS STREAM

Provisioning • Metadata support • Audio processing

Layers Stream features key Wheatstone AoIP, audio processing and codec bandwidth optimization technology.

- Audio processing designed specifically to optimize the performance of audio codecs:
  - Five-band intelligent AGC with AI for a smooth transition between commercials and program content. iAGC uses program-derived time constants to establish tonal balance and level consistency rather than aggressive attack and release times that can interfere with codec performance.
  - Two-band final limiter is optimized for streaming and avoids the hard limiting and clipping which can interfere with codec performance
  - Stereo image management preserves an artistic stereo image while preventing over-enhancement that can skew the codec algorithm
  - Bass boost and monaural bass features for optimizing the quality of the bit stream
  - A selectable six-band parametric equalizer with peak and shelf function
  - Two stage phase rotator to correct voice asymmetry
  - High and low pass filtering can remove noise and hum to optimize codec bit performance
- Selectable AAC, Opus, and MP3 encoders and a wide range of bit rates for reaching a broad range of end user devices and players
- BS.1770-compliant loudness control manages loudness between -24 and -10 LUFS
- Cloud-ready and compatible with standard CDN and streaming platforms. Supports HLS, Icecast, RTMP, and RTP streaming protocols
- Direct a stream from anywhere in the world as a cloud instance that can be brought up in a second and torn down in a second. Pay per use.
- Lua transformation filters convert metadata input from any automation system into any required output format for transmission to the CDN server
- Nielsen audio software encoder included. The PPM watermark is inserted after the dual-band limiter of each stream for a robust, consistent signal that can be picked up by the PPM without interfering with the performance of the audio codec
- Part of the WheatNet-IP audio network, a complete AoIP ecosystem of 200+ interconnected devices and elements
- Wheatstone's streaming appliances and Layers cloud streaming software are now available with Triton Digital's streaming protocol.

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Wheatstone
BROADCAST AUDIO PERFECTIONISTS℠

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WHEATSTREAM DUO

EVERYTHING YOU NEED TO PROVISION, PROCESS AND MANAGE TWO CHANNELS

Wheatstone

Meet Wheatstream Duo

Wheatstream Duo is designed for every broadcaster, podcaster, or content streamer who has ever wanted a professional audio streaming appliance but couldn't afford it. This full-featured streaming appliance has all the reliability, audio processing, and metadata tools found in the high-capacity Wheatstream appliance, but for one or two channel applications.

As a Linux appliance, there is no need to run a dedicated software application to configure the box. Wheatstream Duo has an easy-to-navigate HTML 5 web browser interface, is compatible with standard CDN and streaming platforms, and can adapt metadata input from most playback automation systems for one simple workflow from automation to content delivery.

Wheatstream Duo can be added to any analog, digital or AoIP studio, including WheatNet IP and AES67-compatible systems.

WHEATSTREAM DUO
WHEATNET-IP <---> AUDIO OVER IP NETWORK

Overview

Wheatstream Duo is a Linux appliance for provisioning, processing and managing the metadata for two program channels, each capable of four output streams for a total of 8. Wheatstream Duo can adapt metadata input from most major automation systems and is compatible with standard CDN and streaming platforms for one easy workflow from automation to content delivery.

Like all Wheatstone streaming appliances, Wheatstream Duo includes audio processing tools designed specifically to optimize the performance of streamed audio through the streaming encoder and across a wide variety of Internet links.

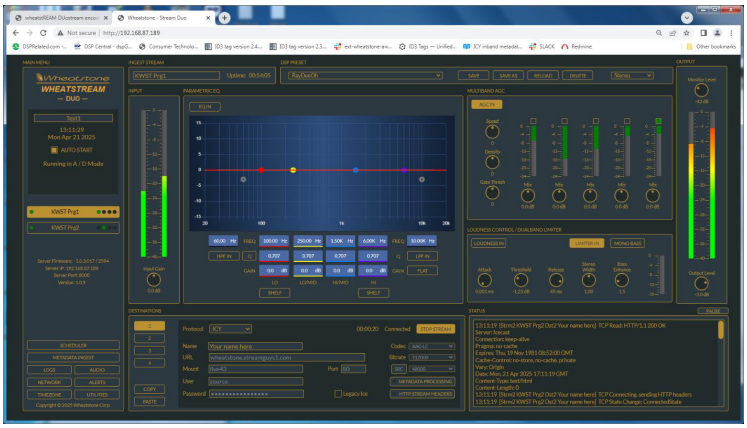
Wheatstream Duo can be added to any analog, digital or AoIP studio, including WheatNet IP and AES67-compatible systems.

Features

- **All-Inclusive Linux and AoIP Appliance:** No Windows® drivers or need to run a dedicated software application to configure the box.
- **Easy to Navigate:** HTML 5 web browser interface
- **8 Output Streams:** Accepts two input streams of analog, AES3, AES67 or native AoIP such as WheatNet IP, each capable of four output streams for a total of 8 output streams.
- **Audio Processing Designed Specifically for Streaming:** Full suite of audio processing tools developed specifically for streaming. Optimize the performance of encoded audio content with the right amount and type of processing for maintaining uniform levels, spectral balance and absolute peak control.
- **Optimized Quality/Loudness for the Bitstream:** Final limiting occurs separately in two bands, above and below 180Hz, to provide the ideal balance between perceived quality and loudness for a given finite bitstream. For low bitrate streams especially, separately managing low frequencies means being able to selectively remove them in the stereo difference channel (L-R). This leaves more bits available for encoding those frequencies that are more perceptible.
- **Multiple Encoding Options:** Provides selectable AAC, MP3 or Opus encoders targeting high to low bit rates for reaching a broad range of end user devices and players.
- **Metadata Agnostic**: Lua transformation filters adapt metadata input from any automation system into any required output format for streaming of song title, artist and album art.
- **Compatible With Standard Protocols, CDNs and Streaming Platforms:** Supports Triton, HLS, Icecast, RTMP, and RTP streaming protocols.
- **BS.1770 Compliant Loudness Control:** Manages loudness from -24 to -10 LUFS.
- **Add to Any Studio:** Add to any analog, digital or AoIP studio, including WheatNet IP and AES67-compatible systems.

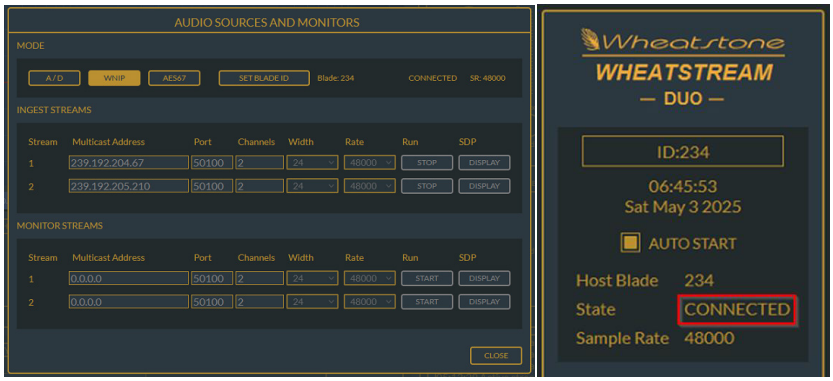
WHEATSTREAM DUO GUI'S

EASY ACCESS HTML 5 BROWSER INTERFACE



Remote into Wheatstream Duo from anywhere through an HTML 5 web browser interface for easy and ready access to provisioning, processing, metadata management and more.

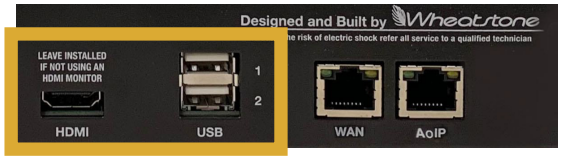
ADD WHEATSTREAM DUO TO ANY STUDIO



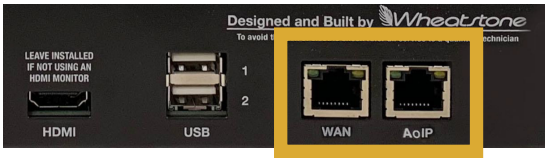
Wheatstream Duo can be added to any analog, digital or AoIP studio, including WheatNet IP and AES67-compatible systems.

As part of the WheatNet IP audio network, Wheatstream Duo has access to all routing, logic and elements in the studio.

HDMI AND USB CONNECTIVITY



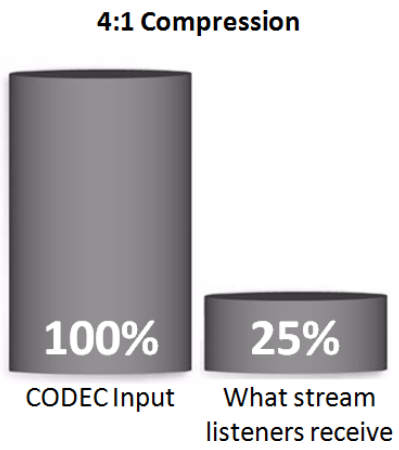
WAN AND AOIP CONNECTIVITY



PEAK LIMITING, GAIN CONTROL AND PROCESSING DESIGNED SPECIFICALLY FOR STREAMING

Streamed audio requires audio processing to keep levels consistent and to maintain absolute peak control. These tasks encounter unique challenges due to the role of the streaming codec, whose job is to remove bits from the audio stream to get it to "fit" within the constraints of the typical internet link. The lower the bitrate, the more aggressively it must remove data to make the data fit. Furthermore, problems arise when introducing noise, hum, and distortion byproducts, which the codec can mistake for perceptible audio. Not only does the codec often pass these on as listenable content, but it can also multiply these artifacts to the exclusion of listenable audio.

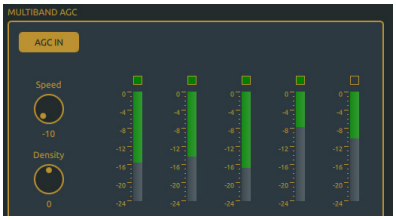
Wheatstone streaming appliances use audio processing techniques designed specifically to optimize the performance and achieve the best sound across even the lowest bitrates.

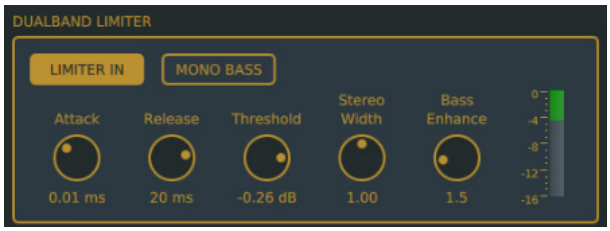


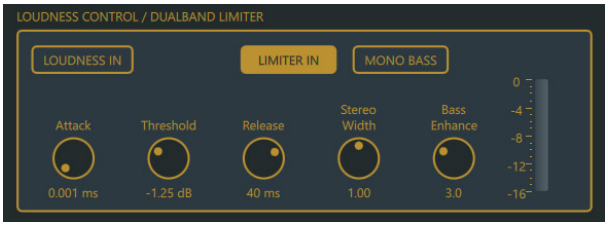
Codecs can remove up to 75% of the audio "data" in a bitstream depending on the internet link. It's the job of Wheatstone streaming appliances to optimize the listenability of the remaining bitstream.

WHAT MAKES WHEATSTONE STREAMING APPLIANCES DIFFERENT?

- Consistent loudness across widely varied program levels and content.
- Consistent spectral balance under all program conditions.
- Absolute peak control to keep the codec input level away from 0dBFS (there's nothing above 0dBFS but distortion, i.e. you're "out of bits!").
- All without excessive audio byproducts that can set off the perceptual codec.







CODEC FRIENDLY AUDIO

Unlike other techniques that can cause distortion, Wheatstone streaming appliances use RMS density algorithms as part of a five-band intelligent AGC to smooth out source transitions and feed a steady diet of consistent audio levels.

Also unique to Wheatstone streaming appliances is a two-band final limiter section that removes hard limiting or clipping from the processing chain, yet keeps programming within the codec's 0dBFS limit. Also included is a stereo width management section that eliminates the dynamic left-right (L-R) stereo swings that can skew the codec algorithm at the expense of quality programming. It also includes bass boost and monaural bass features for optimizing low bitrate streams.

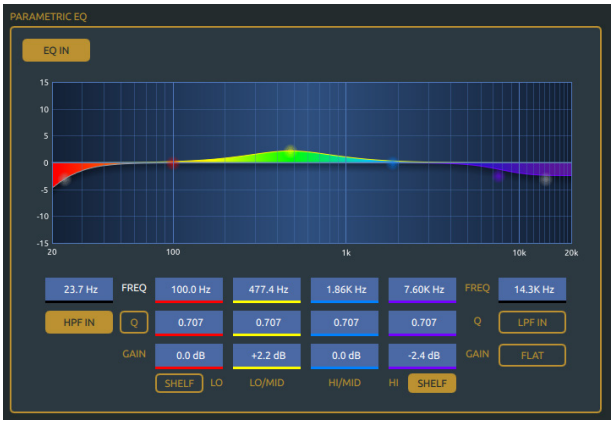
TOOLS FOR LOW BITSTREAMS

Mono bass:

This helpful feature removes energy below 250Hz in the L-R stereo difference channel only! With such energy removed, the codec doesn't see or try to encode it, leaving more bits available for encoding those audio frequencies that are more perceptible. Your listeners will never know what's missing because our ears are less sensitive to stereo separation at low frequencies anyway.

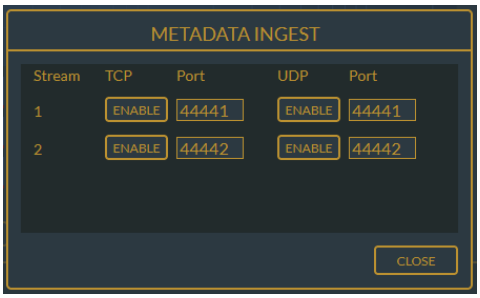
Six-Band Equalizer and phase rotator:

A two-stage phase rotator that corrects voice asymmetry and removes noise and hum and a four-band parametric equalizer with peak and shelf functions help you stream the best quality possible at various bitrates.



The six-band EQ can be used in shelf mode for boosting overall bass or brightness or in parametric mode for enhancing or reducing a narrow band of energy.

METADATA ADAPTABILITY



Wheatstone streaming appliances ingest 'now playing' and other relevant metadata from most playback automation systems for one simple workflow from automation to content delivery. Raw metadata is ingested via TCP or UDP and adapted to the accepted format of the CDN, which then passes on standard metadata such as song titles and artist names as well as specialty metadata such as album art, song lyrics, and clickable URLs as part of the streamed content.

To adapt metadata to any of the variety of formats used by CDNs, Wheatstream Duo uses Lua transformation filters to re-format metadata from any automation system into any required CDN format.

Lua is a programmable scripting language embedded into Wheatstream Duo and excels at the kind of search and pattern-matching tasks required to extract the desired information from the incoming text and then to rearrange it according to the requirements of the CDN.

SUPPORT FOR A VARIETY OF STREAMING STANDARDS AND PLATFORMS:

TRITON (MRV2):

MRV2 is the proprietary streaming protocol developed by Triton Digital to provide a high degree of resilience to errors and packet loss, built-in redundancy, and accurate synchronization of metadata with the audio stream. Metadata values are collected from the incoming event messages and arranged into a string of simple key=value pairs, which is then passed to the MRV2 manager for injection into the audio stream.

HLS:

In HLS streams, metadata is primarily conveyed by means of ID3v2 frames interjected between AAC frames, which keeps the metadata synchronized with the audio stream with a precision of about 20 milliseconds. Each HLS segment is also prefixed with the most recent ID3v2 frame, so that players connecting to the stream between metadata events are nonetheless updated immediately.

ID3v2 frames may carry common metadata such as artist, title, album, duration, ISRC, and URL. They may also carry custom data of any sort, a capability which may be used to trigger ad insertions.

ICY:

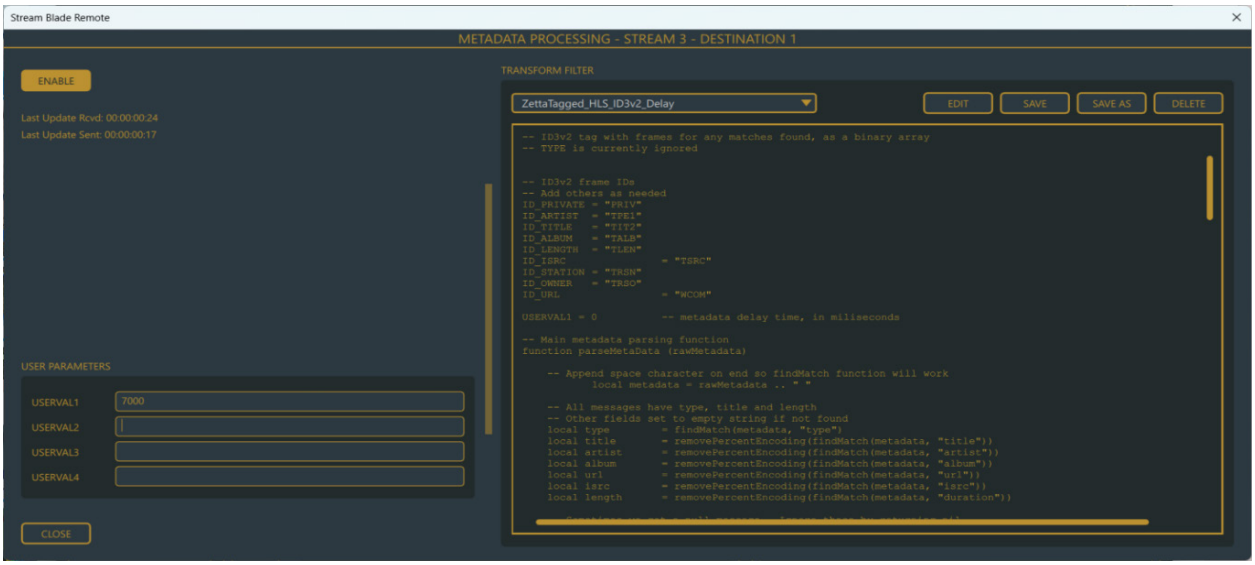
Icecast is an open-source streaming protocol that has proliferated as one of the first streaming protocols introduced. Many variations on the original server architecture exist, which has led to an equal number of variations in the structure of metadata updates. Metadata is conveyed to the Icecast server as out-of-band data – that is, it is neither part of, nor embedded into, the audio stream, but rather takes its own route over the public internet to the server, without benefit of timestamps or any other synchronization mechanism.

RTMP:

The Real-Time Messaging Protocol (RTMP) developed originally by Adobe (Macromedia) for transport of Flash video is still widely used to transport audio data of any format, although most commonly used for backhaul up to a CDN or distribution center. Metadata can be embedded into the audio stream by means of so-called "setDataFrame" packets. These packets have a particular format which involves setting values for three different "properties," which are Title, Artist and URL.

METADATA DELAY IN SYNC WITH AUDIO

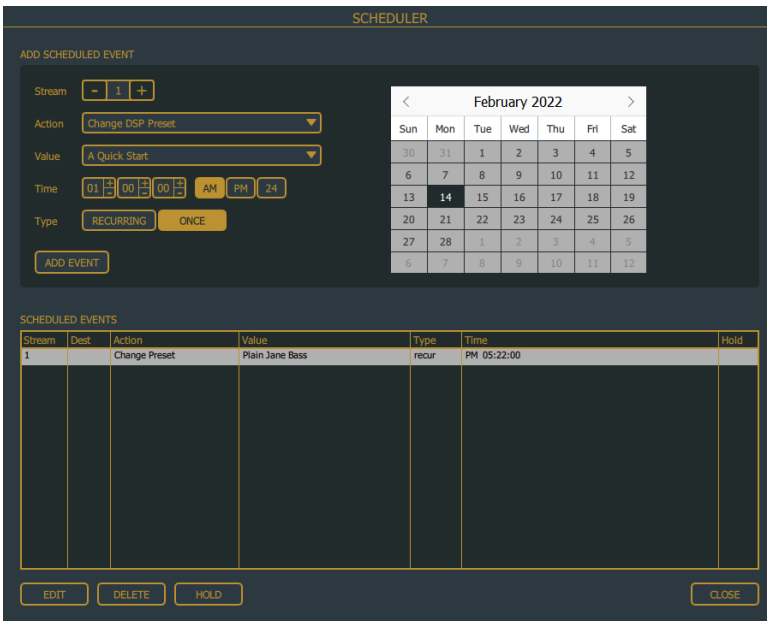
Wheatstream Duo provides for metadata to remain in sync with audio being delayed during certain conditions, such as profanity delay.

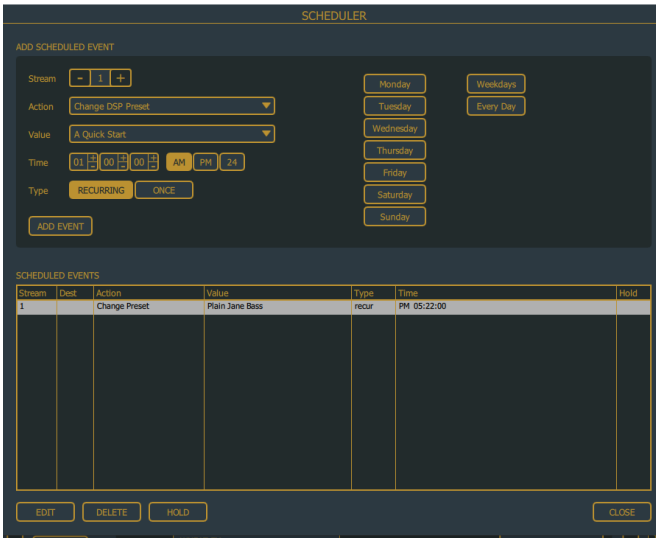


POWERFUL SCHEDULER INCLUDED

While most stations will stream whatever is on their terrestrial on-air signal all the time, performance rights rules sometimes make things more complicated. For example, if your station carries sporting events, some leagues won't allow you to stream that programming. Or perhaps your station streams local sporting events that aren't carried on your on-air signal several times a week, or your station carries a mix of music and talk, and you want to optimize the stream's processing to match the source material.

With the scheduling software that's built into Wheatstream Duo, you don't need to count on a board operator going in to click the right button at the right time.





EVENTS THAT YOU CAN SCHEDULE

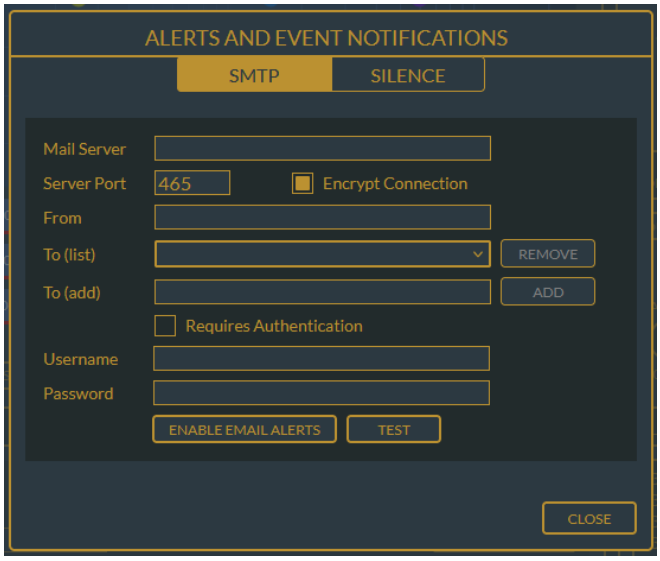
- Change DSP Preset
- Start Destination Stream
- Stop Destination Stream
- Set Metadata Filter (4 user variables available)

Events can be scheduled to happen once at a specific day and time, or to happen on a recurring basis. Recurring events can happen at a time on a specific day of the week, or at a specific time on weekdays only, or at the same time every day.

SILENCE DETECTION AND ERROR ALERTING

Wheatstream Duo's silence detection feature monitors input levels on a per-ingest-stream basis. An alert is issued based on a silence threshold as well as how long the signal remains below that threshold.

Email (SMTP) alerts can be set up to send notifications about socket errors, send and receive errors, and silence detection as well as stream starts, disconnects and restart attempts.



SOUND. SIMPLE. SMART.

Wheatstone Corporation makes broadcast quality control surfaces, on-air audio processors, virtual mixers, audio editors, streaming appliances, voice/mic processors, and 200+ interconnected AoIP studio elements — all engineered, manufactured, and supported under one roof by industry pros. Celebrating 50 years of innovating audio solutions for broadcast, commercial, and live sound excellence, Wheatstone markets products under VoxPro, Wheatstone, and Audioarts Engineering brand names.

Designed and built by

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wheatstone.com | sales@wheatstone.com

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08072025

Voice 1

Voice 1 processor, for that larger-than-life broadcast voice

Wheatstone

BROADCAST AUDIO PERFECTIONISTS℠

AUDIOARTS VOICE PROCESSOR

Voice 1 processor, for that larger-than-life broadcast voice!

The Audioarts Voice 1 has all the tools and secret sauce of the Wheatstone M-1 microphone processor. But it's got more: WheatNet-IP, AES67, remote GUI control, password protection, real time clock and presets—complete with scheduler. It can be controlled from the OLED display and, of course, your desktop computer.

Voice 1 features peak vocal performance across the entire vocal range, with no undesirable coloration added. Voice 1 utilizes Super Quiet mic preamps and high quality 24-bit A/D converters. Voice 1 is a WheatNet-IP audio network device with routable I/O, and logic control.

Peak Vocal Performance in a half-width, single-channel device

Benefit from our design experience
CONTROL YOUR SOUND

DYNAMICS PROCESSING TOOLS

A high-performance and fully adjustable downward expander, de-esser, and smooth sounding broadband compressor create a powerful and authoritative presence on-air.

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.

WHEATSTONE-DESIGNED EQUALIZATION

Based on great-sounding designs built for Wheatstone's other high-performance professional audio applications, the Voice 1's equalization section operates predictably and adds no noise, ringing, phasiness, or other undesirable coloration to the sound.

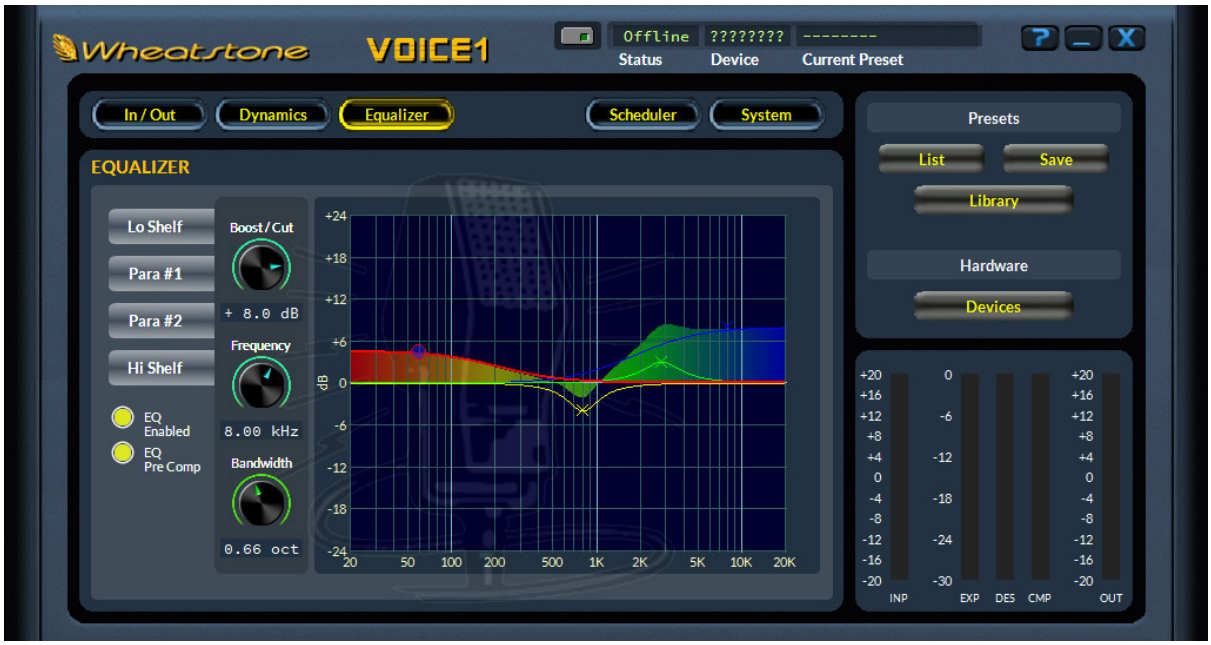
SQ (SUPER QUIET) MIC PREAMPS

Found in all Wheatstone processors, Voice 1's SQ mic preamps ensure that your audio begins its journey to your listeners in the cleanest environment available. Wheatstone has taken its 30-year history of clean console microphone preamps and married it with advanced audio tools for EQ, Expansion, Compression, and De-Essing for mic processors that have quickly become the industry standard.

NETWORKABLE: WHEATNET-IP AND AES67 COMPATIBLE

Voice 1 can be used as a standalone voice processor, or it can be used as part of your WheatNet-IP audio network or as part of any AES67 compatible network. Setup is easy. When enabling the WheatNet-IP or AES67 option, Voice 1 will present you with the information you need for configuration, including multicast address, port number and packet type. As a WheatNet-IP audio network device, Voice 1 includes routable I/O and logic control to trigger settings based on events, microphones, and talent.

IT'S EASY TO CREATE YOUR OWN UNIQUE VOICE



For the ideal sound, no adjustment is more than two mouse clicks away. And unlike other processors, every processing control is available and labeled for exactly what it does, giving you the ultimate power to create your ideal sound.

The Voice 1 remote control screen includes real-time displays of gain reduction as well as a frequency-domain graph that shows the spectral characteristics of your audio. Every screen also includes accurate metering of input and output peak and average levels. Tabs across the top of the GUI software allow immediate access to each section of the processing.

You have control over parametric EQ, de-esser, filters, compressor, and downward expander. There are also high and low pass filters and an overall output limiter (so you are ready if a screamer steps behind the mic). Voice 1 Control Software is password protected and runs on an external PC as well as from the front panel OLED display and can be controlled remotely from anywhere there is an internet connection.

FEATURES

- Peak vocal performance across the entire vocal range. Asymmetrical voice correction, optimized high-frequency EQ, targeted filtering, and the latest in proven psychoacoustical algorithm technology for a warm, yet robust vocal presence.
- No undesirable coloration added with high quality 24-bit A/D converters.
- Super Quiet™ mic preamps for extremely low noise floor, wide open dynamic range, faithfully accurate transient response, and ruler-flat frequency response.
- Precision sibilance correction. Unlike the wholesale broadband attenuation of many mic processors, Voice 1's de-esser looks at the spectrum where "esses" are typically found to reduce the energy above a given threshold without sacrificing other frequencies. The result: robust, yet tonal detail.
- Supports a variety of microphones with high input impedance, high available gain and 32dB of input headroom comparable to recording consoles.
- Adjustable from anywhere in your WheatNet-IP audio network. Voice 1 is a WheatNet-IP audio network device with routable I/O, and logic control.

DECENT MICROPHONE INPUT

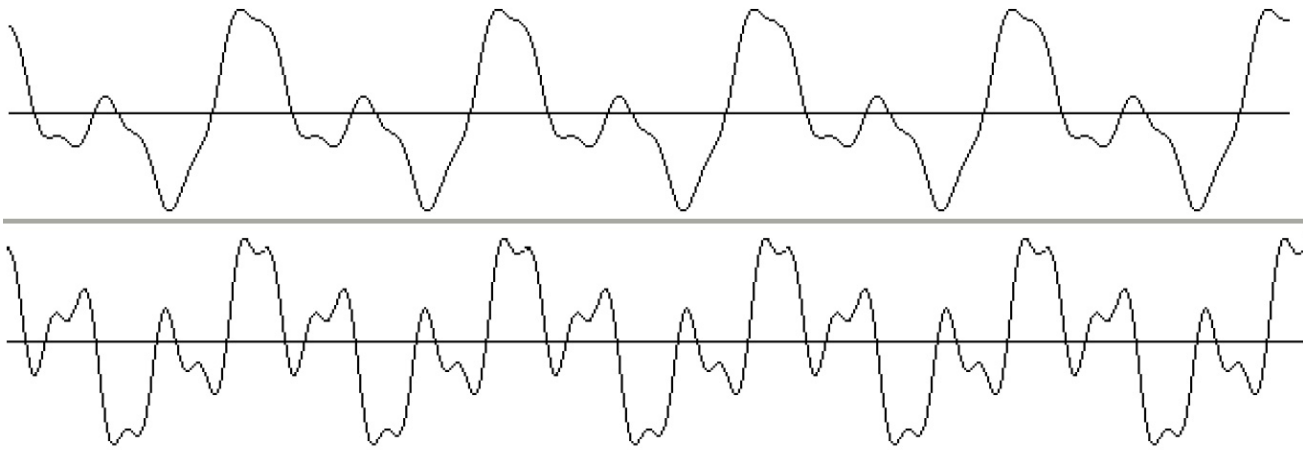
With noise figures within 1dB of the theoretical minimum, Wheatstone mic processors have a fairly high input impedance, high available gain and substantial headroom. The gain setting is digitally recallable, and can follow changes in presets. 48V phantom power (for most condenser microphones and a small handful of active ribbon microphones) is selectable.

PLENTY OF INPUT HEADROOM

As an example, Voice 1 has 32dB of input headroom, which is comparable to the best recording consoles — meaning one has to try very hard to break it!

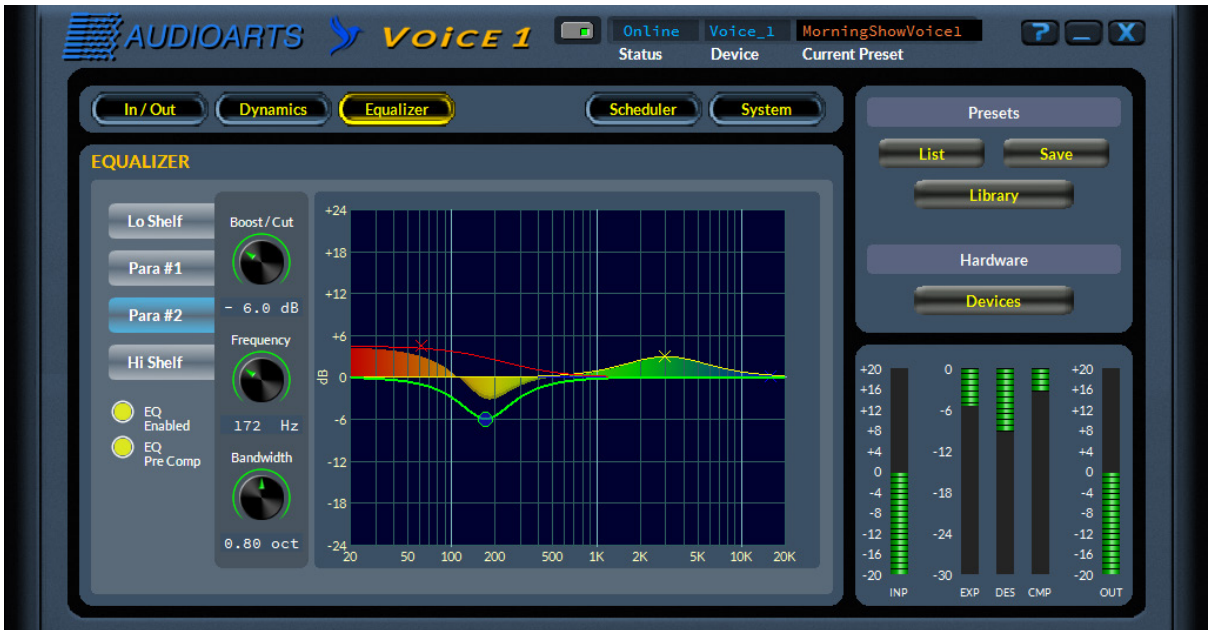
CAREFULLY CHOSEN DECORRELATOR PARAMETERS

These allow good performance over all voices, not just males. The 24dB/octave high-pass and low-pass filters (steep!) are constructed using lower 'Q's than is usual, rendering them sonically less disruptive. (Time-smearing has always been an issue with aggressive filters otherwise.)



NO FALSE-TRIGGERED GATING

The Voice 1 gate's sidechain is filtered to voice frequencies, radically reducing false triggering with those attendant annoying bursts of noise. In particular, table and microphone 'bumps' won't wake up the gate. Fine control over attenuation depth, threshold, and closing time affords transparent operation.



EQUALIZATION, A MIXTURE OF OLD AND NEW

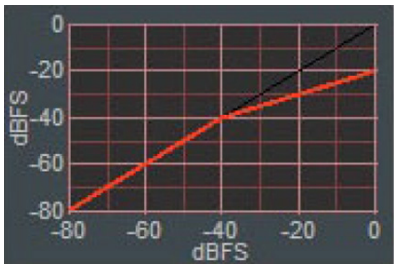
The shelving sections are a mathematically exact emulation of a classic (1950s) Baxandall tone-control circuit, but with modern twists. The turnover frequencies are continuously variable, allowing fine-tuning of proximity-effect reduction at the low-frequency end, and choice of 'air' EQ (extreme high frequencies) or far more aggressive 'presence' EQ (high mids) — or anything in between. This is a highly versatile combination. Two fully parametric sections permit more surgical sonic control; although operationally identical to others, these circuits are more complex than standard 'cookbook' parametric sections, with the intention of offering EQ that does what one would expect equalization to do, rather than baldly perform as normal. The key to the equalizer overall is that through carefully chosen defaults, 'shapes', and sonic characteristics, things just fall to hand nicely to accomplish what the operator wants with minimum effort, rather than making him fight for it.

SUBTLE AND SELECTIVE DE-ESSING

Rather than just a button, there is full control over the de-esser's threshold (where it decides how much 'ess' is enough), the center frequency, and recovery time. Not so obvious is that the Voice 1 de-esser attenuates only the frequency range sensed, unlike the wholesale broadband attenuation of many other units. This makes its action much less obvious.

COMPRESSION, ANOTHER BLEND OF CLASSIC AND MODERN

The Voice 1 compressor design started out as a challenge to make 'the most analog-sounding digital compressor possible'. This it does, if not by direct emulation of classics, then certainly with serious nods to their salient characteristics — but with modern sensibilities applied. Signal sensing that algorithmically blends between peak- and power-sensing detectors, a very graceful soft-knee characteristic, and compound program dependent multiple release rates assure a smooth-sounding sonic result. Underlying the compressor itself is a slow-rate AGC, which allows the section to perform both level correction and more rapid compression effects simultaneously and transparently. The sidechain is subtly filtered to avoid 'bass build-up' and other sonic undesirables. The equalizer is switchable to be either before or after the compressor, as each style of operation has its own benefits.



SUPER-RATE PROCESSING

In Voice 1, the A/D converter and all the processing runs at 96kHz. This is done for three reasons, none of which involve extended bandwidth:

1. **Reduced latency.** This is the time delay through the processor, end-to-end. An unfortunate aspect of digital systems is that such delays are endemic and cumulative, so any opportunity to reduce them must be seized. It is particularly crucial where presenters are involved: any significant delay can be seriously disturbing to them, and even short delays can produce comb-filter coloration when the talent's own voice, heard via bone-conduction, mixes with the headphone audio. This colors their perception of what they sound like. Mess with an artist's self-perception at your peril. In short, running at a super-rate halves the conversion times - the major source of latency in a processor - shaving a big chunk off the delay.

2. **Improved high-frequency EQ.** Not generally appreciated outside the lab is that the top octave (say from 10kHz on up) in a 48kHz system is dominated by the tyranny of inevitable 'zeroes' (notches) at 24kHz, half the sample rate. These zeroes affect the calculation for and accuracy of digital filters in this upper range, taking some questionable heroics to beat them into acceptable sonic shape. Alternatively, running the EQ at 96kHz blows right past the problem (the nettlesome top-octave is now in inaudible-land). Subsequent reduction to 48kHz does not meaningfully affect the now wholly accurate EQ characteristics.

3. **Accurate dynamics behavior.** Certain spot frequencies (sub-multiples of the sample rate) can suffer serious detection inaccuracies, particularly with peak-sensing detectors found in limiters or fast compressors. Running these dynamics at super-rate forces the worst of these 'black holes' an octave up and generally out of harm's way, with any remaining stragglers far easier to contain.

These three results of high-rate processing confer obvious operational benefits and superior sonic performance. An adjective commonly used about the Voice 1 sound is "sweet." High-rate processing is a large part of the reason.

Designed and built by
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Wheatstone
BROADCAST AUDIO PERFECTIONISTS℠

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08072023

VOX PRO 7

RECORD/EDIT/PLAYBACK AUDIO – LIVE, IN REAL-TIME, ON THE AIR

WHEATNET IP

Wheatstone

BROADCAST AUDIO PERFECTIONISTS®

Wheatstone
B Movie Boos
Good Evening
Mexican Hat dance
VoxPro
HOT 1
HOT 2
HOT 3
HOT 4
HOT 5
INSERT RECORD
COPY
PASTE
CUT
DELETE
DESELECT
CONTROL
SHIFT
OPTION
ZOOM
PLAY SELECTION
MARK RIGHT
MARK LEFT
UNDO
CANCEL
STOP
RECORD
OKAY
PLAY
SCRUB
PLAY BEGINNING

VoxPro is unique.

Of all the recorder/editors in the world, ONLY VoxPro integrates a dedicated ergonomic controller with purpose-created software designed expressly for use on-the-air to record, edit, and play clips in real time.

Whether you use it for call-ins, interviews, ad hoc comments or spots, or whatever you can think of, all you need is a few minutes with it to realize why it has become the universal standard.

VoxPro IS radio editing

there is no other recorder/editor built specifically to be used on live radio

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.

VoxPro Features

- 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 control surface...

a dedicated VoxPro surface lets you work at the speed of sound...

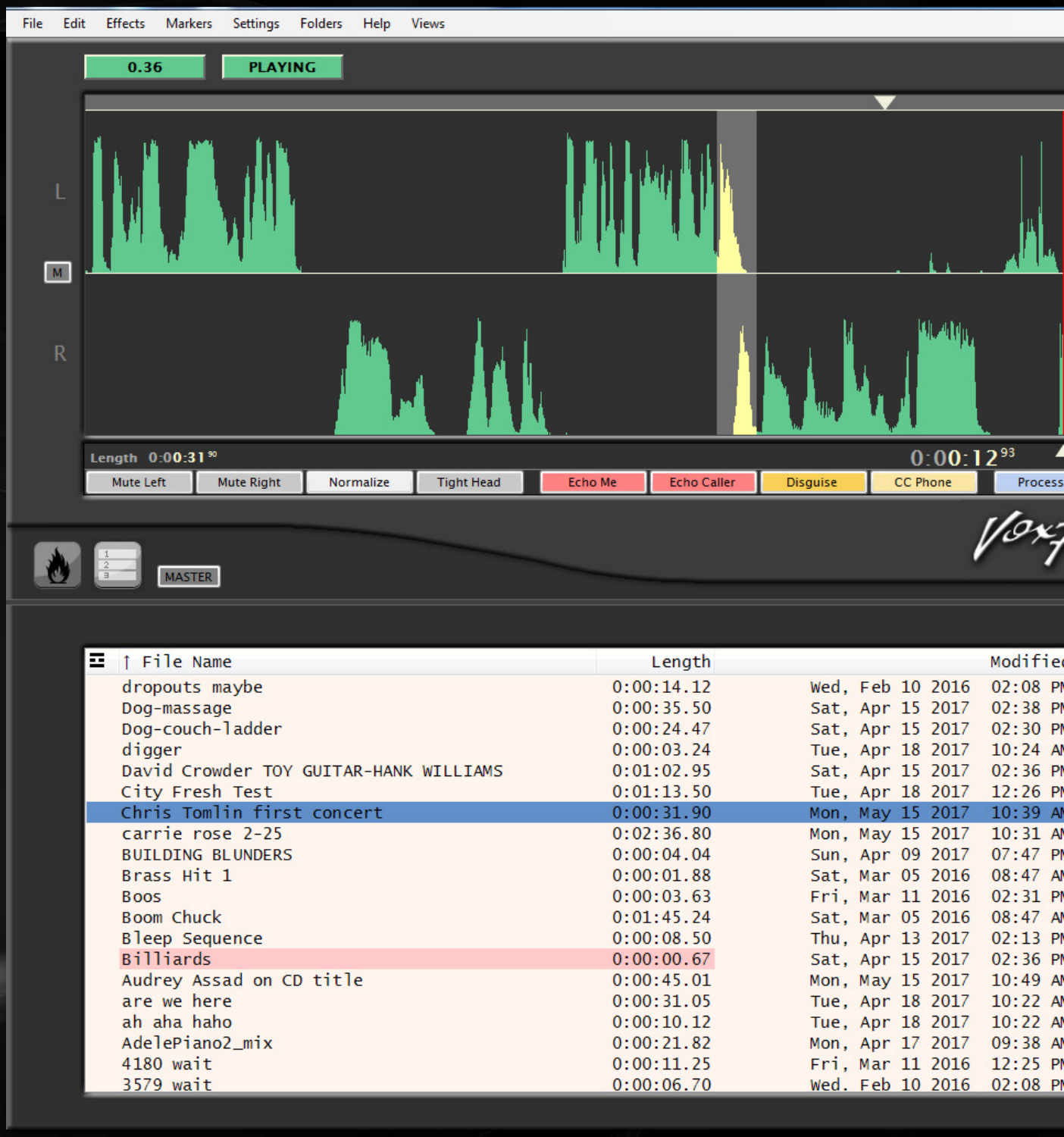
The VoxPro Control Surface may be sporting a sleek new matte black finish, but that's all we've changed. It's still the intuitive and ergonomically solid piece of hardware your fingers have memorized.

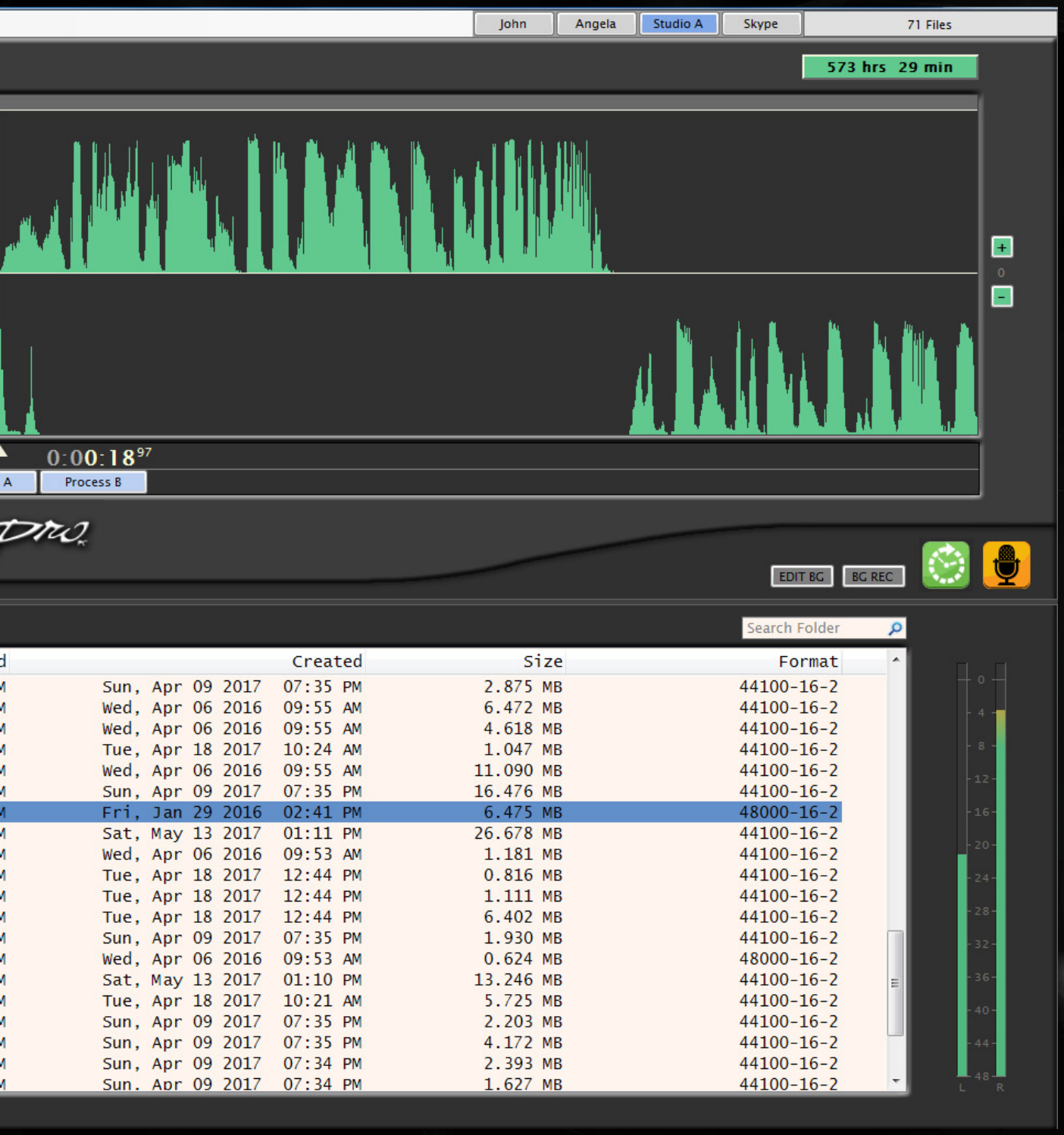
Keys are mapped to specific functions in the software, permitting exceptionally fast recording and editing without having to go to a mouse. One touch starts a new recording while saving the one you are working on, instantaneously. The scrub jog wheel as well as the transport buttons make editing simple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

the software

designed expressly for live, real-time, on-air recording, editing, and playback

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Angela
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Skype
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573 hrs 29 min
0:00:18 97
Process B
EDIT BG
BG REC
Search Folder
Created
Size
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Wed, Apr 06 2016 09:55 AM 6.472 MB 44100-16-2
Wed, Apr 06 2016 09:55 AM 4.618 MB 44100-16-2
Tue, Apr 18 2017 10:24 AM 1.047 MB 44100-16-2
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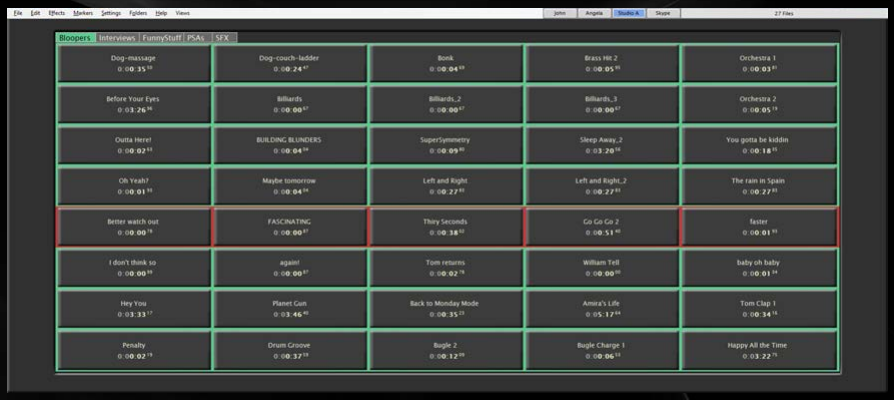
Sun, Apr 09 2017 07:34 PM 2.393 MB 44100-16-2
Sun, Apr 09 2017 07:34 PM 1.627 MB 44100-16-2
L
R

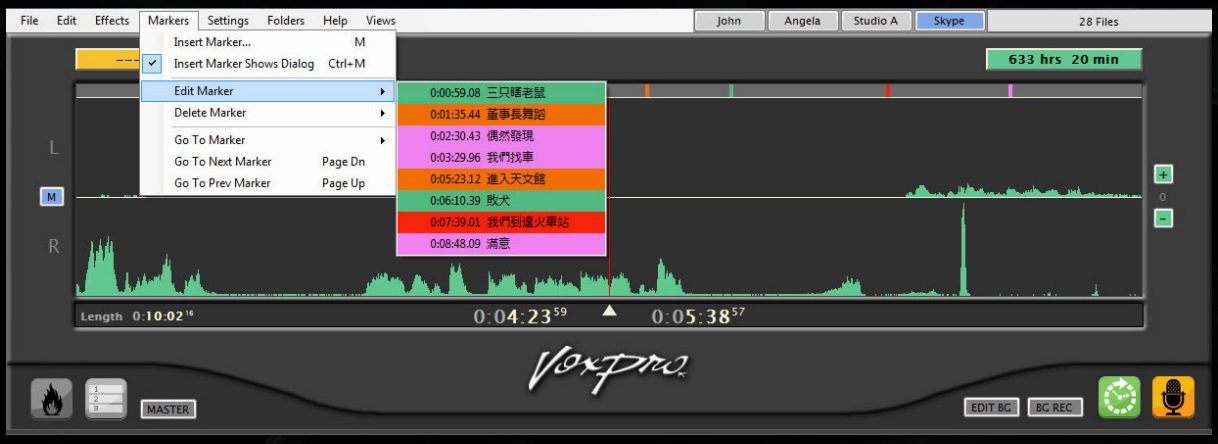
the software

a ton of power in a package the size of your screen

Whether or not you've used digital audio editing software, you will find that VoxPro's design, layout and feature set enable you to get to work fast. VoxPro gives you simultaneous playback and record (record in background while playing and editing in foreground). All functions are intuitive and easy to understand, so you'll be a pro in no time.



- NEW IN VOXPRO7: The industry's most popular editor/recorder gets a new signal processing toolset that lets talent quickly clean up phone calls for on-air presentation.
- NEW IN VOXPRO7: ClipCleaner toolset includes spectral display, parametric EQ, de-esser, compressor, expander, limiter and noise gate for processing channels independently or jointly. Comes with a standard library of presets for easy setup.
- NEW IN VOXPRO7: FX Macros to create one-button shortcuts for frequently used effects and other editing operations. FX Macros can be used to create a preset for any available effect that can then be assigned to an on-screen button for quick recall.
- NEW IN VOXPRO7: A new onscreen QuikSearch box and the ability to color-code files and hotkeys makes navigation even faster.
- NEW IN VOXPRO7: In addition to a new FX Editor, Wheatstone designers also overhauled the VoxPro Effects menu, making special effects like chorus, reverb and distortion much more accessible and making recent effects settings "sticky" for automatic recall.
- NEW IN VOXPRO7: Support for importing 24-bit files, a new feature in GapBuster to automatically detect the noise floor, and the use of a hardware-based graphics library for smoother and more efficient performance.
- VoxPro natively supports WheatNet-IP networking for easy access to any source anywhere in the network.
- MultiTrack feature allows the placement of music and sound effects into any Master Edit with a drag and drop feature.
- Record in the background while playing and editing audio in the foreground.
- Background recording lets you select bits from a file currently being recorded, for instant upload to social networking sites or for broadcast. For instance, you can be playing a file, then start a recording in the background without interrupting the original file playback. Or you can be recording a file, then view that file in the editor so that you can select a portion of it and copy it to another file (which you can do anything you want with), all while the recording continues in the background. In fact, you can be in stand-by mode, start recording in the background, then start playing something else entirely in the foreground. Super flexibility!
- On-screen detachable Hotkeys window with the ability to set-up an endless number of tab pages with up to 12 rows per tab, five Hotkeys per row. Drag and drop edited bits, music and sound effects. Optionally hide Editor and File List panels. And, there's a user option for exclusive Hotkey playback mode as well as support for Unicode labels.
- All popular file formats, including MP3, M4A, MP2, WAV, AIFF and WMA files can be imported individually or in groups. Audio can be exported as WAV, MP3s, or native VoxPro files.
- Updated interface screen design with options to view it in a Classic VoxPro layout; with MultiTracks open; and/or with on-screen Hotkeys open or (now) with a floating Hotkeys window. Your choice with the click of an icon.
- Resize fonts in the Edit List and for Hotkey labels.
- Place the Edit List on the left or right side of the VoxPro window when in MultiTrack and/or Hotkey mode.



- With Multi-Channel Playback, play a Hotkey bit while recording other content in VoxPro.
- Mobile Device Audio Support lets you record and upload remote talent content that will instantly import into VoxPro.
- Pitch and Time are combined as one effect allowing simultaneous pitch shift with time stretch.
- Normalization effect has flexible options: Left, Right, both jointly or independently, as well as the ability to set peak level.
- VoxPro's AGC boosts the timid and limits the loud on either or both channels. Say goodbye to caller levels that are too high or too low and hello to consistent levels!
- VoxPro uses industry standard RIFF WAV file format for universal compatibility.
- Search panel with selectable/adjustable scope to search only your own account, all accounts on the local computer, or all accounts on all VP workstations on the network. Ability to copy/move/delete/rename files from the Search panel.
- GapBuster effect automatically removes silence.
- Color Coded Markers are a graphical method to precisely position location of markers. Great for interviews, baseball or football games – anything that will require documentation of "points of interest" in the file. There is also support for Unicode labels.
- With Auto-Network, forget about dealing with IP addresses and computer IDs. VoxPro workstations connected to your station's LAN automatically detect each other and stay connected, allowing users to access their password protected accounts from any VoxPro workstation.
- Zoom - Four Zoom levels: x1, x4, x10, and sample-by-sample. Press the Q key on your computer keyboard or the zoom key on VoxPro control panel for very precise editing. You can even playback files in the zoom position as the zoom effect stays on until the Q or zoom key is pressed again.
- With Auto-Import, VoxPro users can choose any folder anywhere on the station's LAN and have VoxPro check that folder every 30 seconds for any incoming media files. If a file is detected it automatically gets added to the user's current folder.
- Using EZ-Export, if you find yourself continually exporting to one particular folder either on your VoxPro computer or anywhere on the station's LAN, you can set up VoxPro to always export only to that folder with the EZ-Export right click command when a file title is highlighted. In VoxPro the individual user sets up this feature and it includes any MultiTrack mix created.
- NEW IN VOXPRO7: Automation Export is similar to EZ-Export except that it adds an on-screen icon for ALL users which allows for one-button export to the studio's automation system.

VoxPro7: Clip Cleaner

New tools to give you the best audio you can have – in record time

The VoxPro7 ClipCleaner toolset includes spectral display, parametric EQ, de-esser, compressor, expander, limiter and noise gate for processing channels independently or jointly to clean and enhance the quality of noisy phone calls, but of course it can be used for other purposes (e.g. special effects) as well.

ClipCleaner is organized into three separate processing stages:

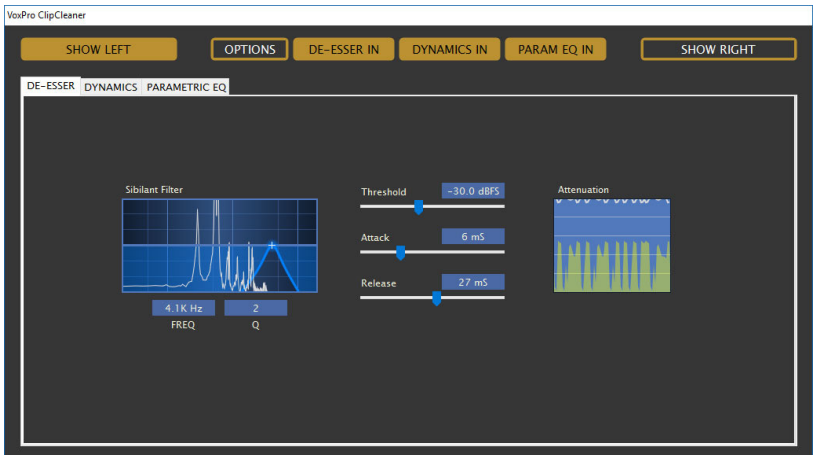
De-Esser
Dynamics
Parametric EQ

The De-Esser helps to control audio spikes (generally above 2KHz) that are a result of the pronunciation of sibilants such as “S”, “SH”, “CH”, “Z” and sometimes the plosives “T” and “D”. It is essentially a frequency-controlled ducker.

The Dynamics section adds expansion, noise gating, compression and limiting to your audio to help reduce background noise and level the audio to make the volume more consistent.

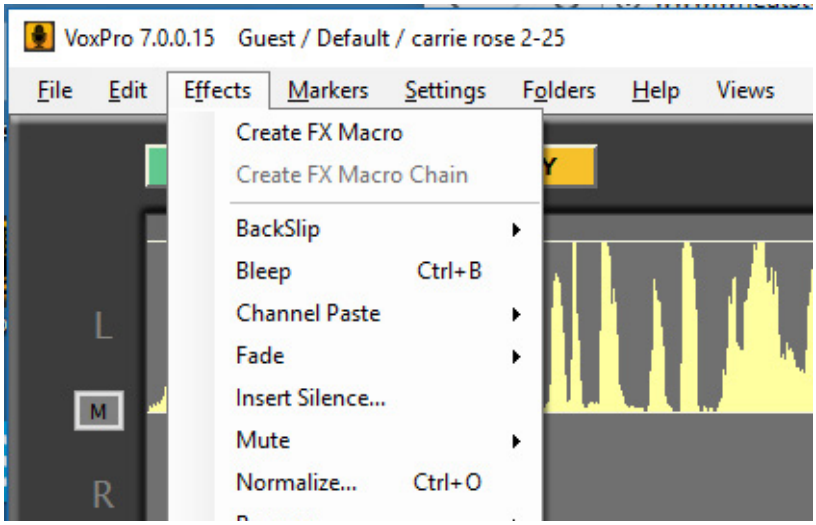
The Parametric EQ section offers six filters, four of which are fully parametric, as well as a high-pass filter (HPF) and a low-pass filter (LPF).

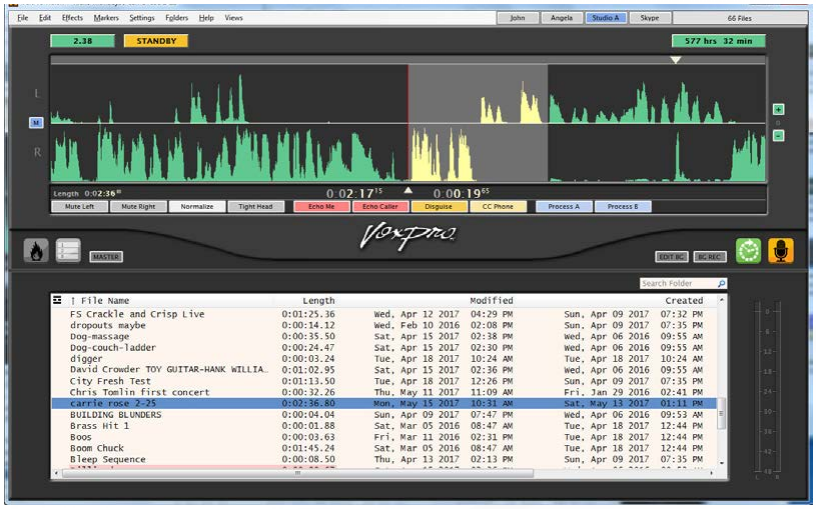
ClipCleaner brings an exceptionally powerful set of audio tools to VoxPro7, making it a true standalone audio workstation.

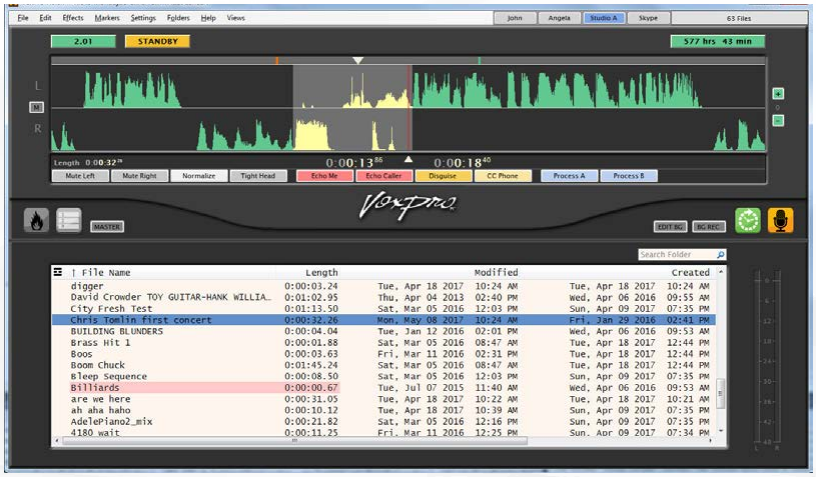


VoxPro7: FX Macros

With FX Macros, you get one-button programming of whatever you want.







FX Macros provide a means to store commonly used effects on a dedicated button, which can then be applied to your mix with a simple mouse click or using function keys. Once defined, you can chain FX Macros together in sequence.

As an example, suppose you commonly perform a particular sequence of operations on a phone call after it is recorded: *normalize – apply favorite ClipCleaner preset – run GapBuster to tighten it up*. You could assign each of these individual effects to a macro button, and then create an additional button which performs all three in sequence.

Like Hotkeys and tracks in the File List, macro buttons can be color-coded according to your own needs. They may also be re-arranged within the macro strip.

The VoxPro7 Effects menu makes special effects such as chorus, reverb and distortion much more accessible.

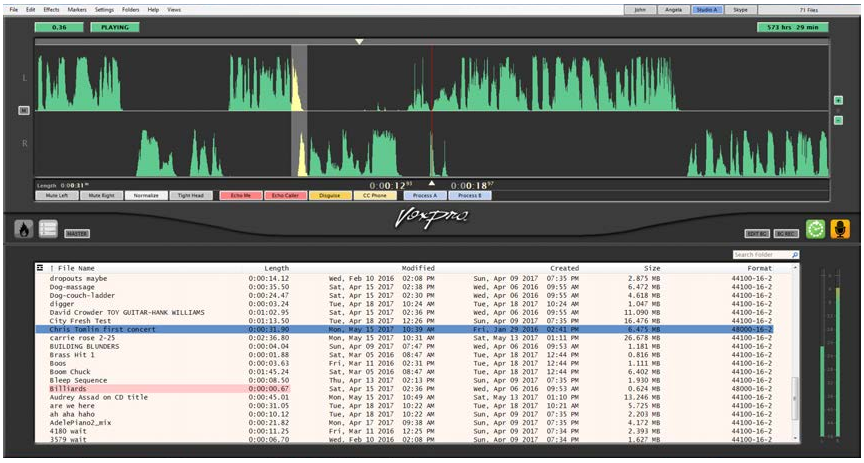
VoxPro7: details

VoxPro's graphical user interface is no-nonsense, 100% live broadcast ready

VoxPro Main Window

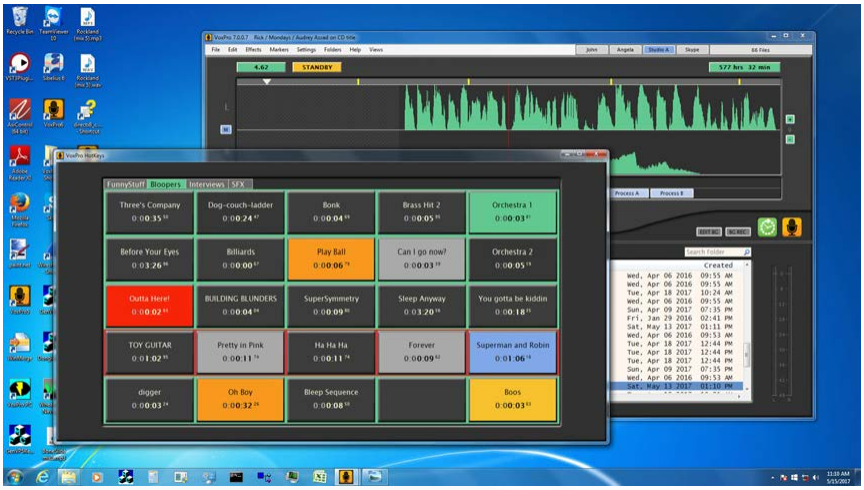
VoxPro's main window is laid out to give you an overview of your audio files as well as an editing window to get right to work with the audio you select.

Recent additions to VoxPro include the WheatNet-IP routing assignment buttons at the top, background recording and editing indicators, and a detachable Hotkeys window.



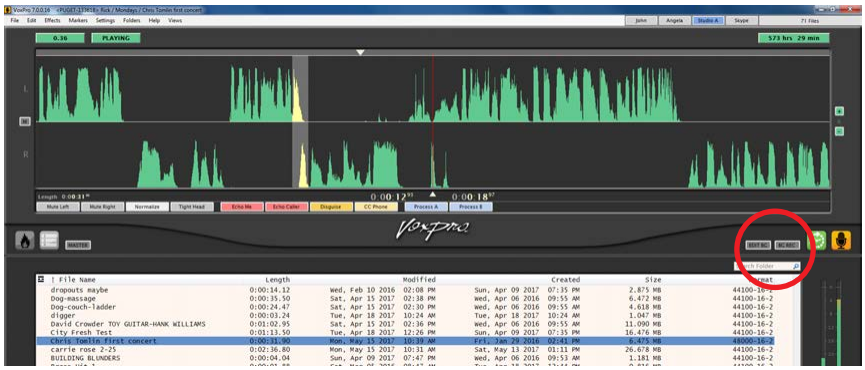
Hotkeys

On-screen Hotkeys window with the ability to set-up an endless number of tab pages with up to 12 rows per tab, five Hotkeys per row. Drag and drop edited bits, music and sound effects. Play multiple Hotkeys simultaneously, or switch on exclusive Hotkey playback mode to stop any currently playing Hotkey when a new Hotkey is triggered.



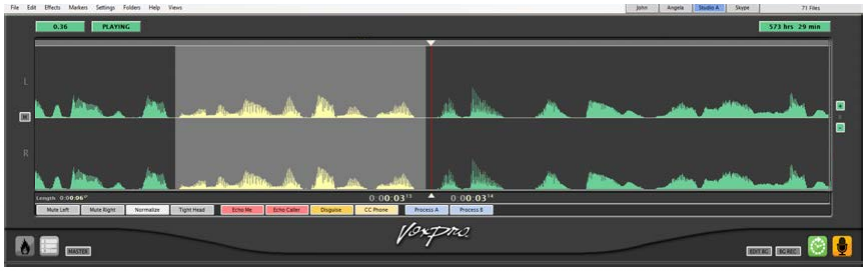
Unicode Labels for Hotkeys

VoxPro supports virtually any and every language and character set in the world. Regardless of which country on which continent you live, VoxPro can be localized.



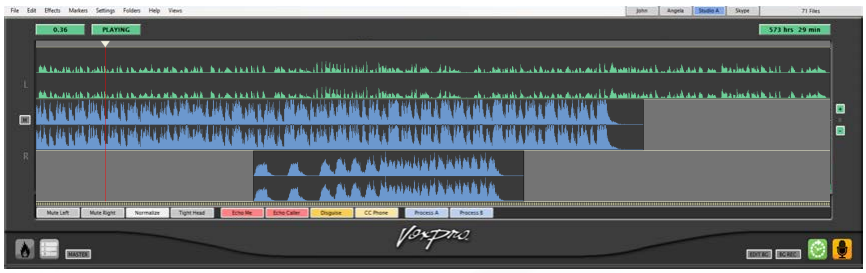
Background Recording

With VoxPro, you can simultaneously record and play back audio. This is particularly handy when covering, for example, sports. Suppose you are recording a baseball game, but want to excerpt a teaser for news of a home run being hit. Nothing to it. Grab the audio, copy it, edit it, play it – all while the full game continues being recorded.



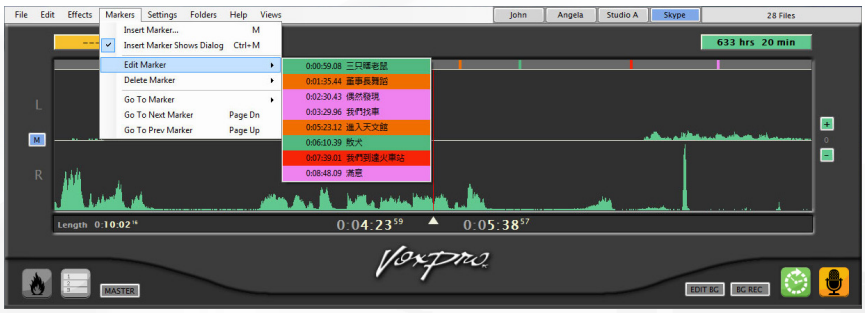
Editing

Because VoxPro was created specifically for live, on-air use, we came up with an editing interface that is simple and intuitive. It provides exactly the tools you need to edit the type of audio you are working with as fast and cleanly as possible, for immediate playback.



MultiTrack Panel

The MultiTrack Panel allows multiple audio files to be layered over the current active file. The top-most file in the MultiTrack Panel is the active file, displayed in its entirety. This is referred to as the "title track".



Color Coded Markers

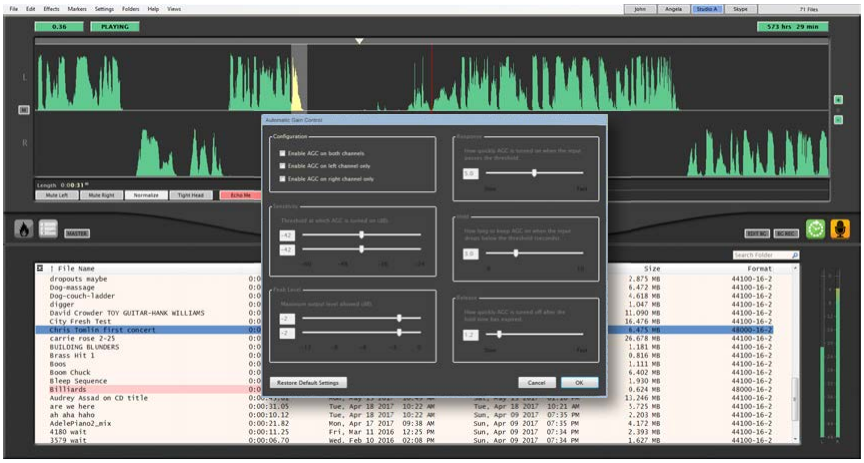
New graphical method to precisely position location of markers. Great for interviews, baseball or football games. Anything that will require documentation of "points of interest" in the file. There is also support for Unicode labels.

VoxPro7: more details

VoxPro's graphical user interface is no-nonsense, 100% live broadcast ready

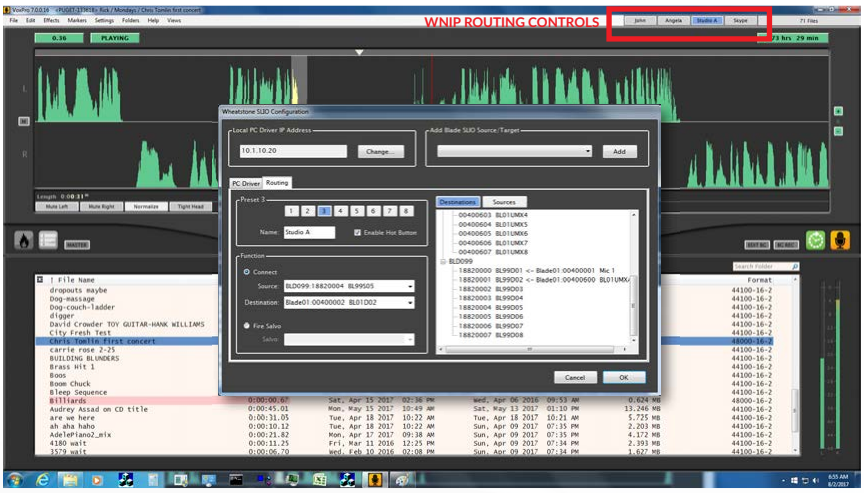
AGC

Automatic Gain Control continuously monitors the signal coming into the soundcard, turning up the volume when the signal is too low, and bringing down the volume when it gets too high. AGC is operational only when recording and operates on each channel independently (for example, the caller may need to be boosted, but not the jock).



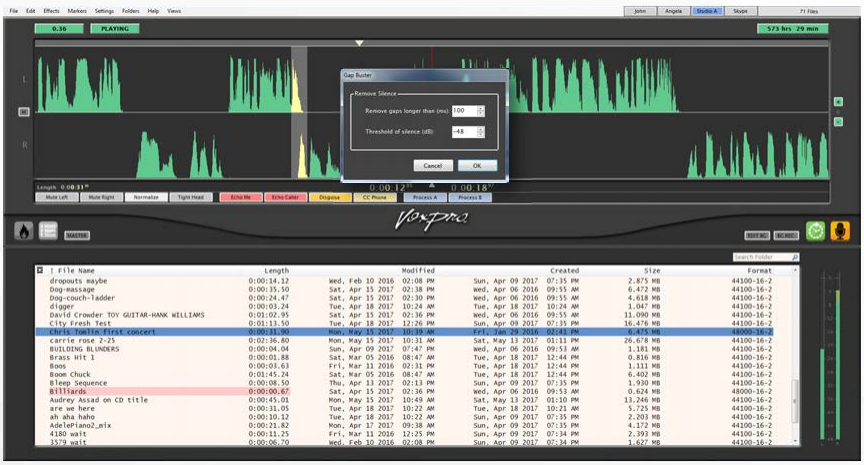
WheatNet-IP Routing

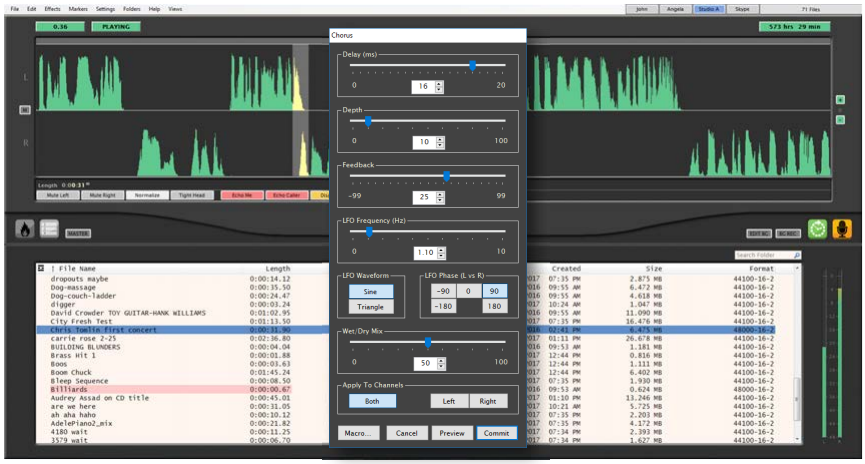
VoxPro fully supports WheatNet-IP. This means that all of the benefits of The Intelligent Network are available from within the VoxPro interface. Assign sources from anywhere on the network to on-screen WheatNet-IP buttons and selecting a source is as easy as pushing that button. Likewise, your VoxPro audio becomes a source available to any BLADE or control surface on the network.



GapBuster

Of course a jock would never have moments of awkward silence, but callers often do. With VoxPro's GapBuster, you can set thresholds for the length of time a pause in the conversation lasts and replace it with your own preset timing, automatically. Its algorithm makes for absolutely natural-sounding conversations.

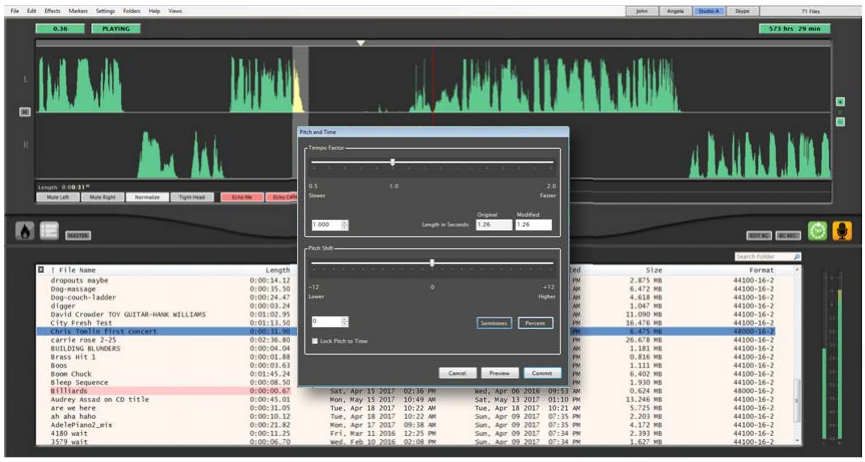




Effects

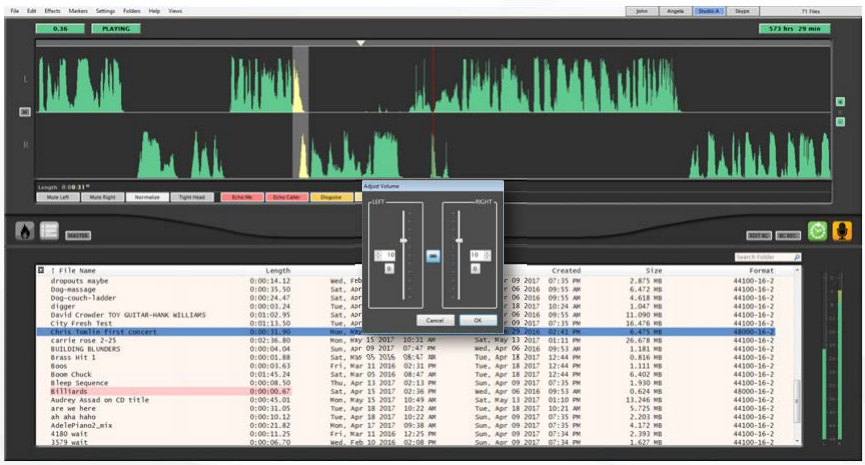
VoxPro7 offers a full array of effects for creative editing: It gives you Chorus/Voice-Doubling, Compression, Distortion (for adding harmonics), Echo, Flanger, Gargle (which modulates the amplitude of the signal), Parametric EQ, and Waves Reverb.

The new editing windows for the effects provide more control over effects' parameters.



Pitch/Time Manipulation

Allows the pitch and tempo of the selected region to be changed in several ways: A voice may be raised or lowered in pitch without altering the time; a recording may be stretched or compressed in time without altering the pitch; or both effects may be applied simultaneously. Or go retro and use it like classic analog tape, where speeding up the playback rate raises the pitch, and slowing it down lowers the pitch.



Adjust Volume

Part of the Effects functions, Adjust Volume changes the decibels on right channel, the left channel, or both channels during editing to allow you to achieve a balanced level. Handy when caller volumes fluctuate or when you are editing multitrack files.

specs

what you'll need to run VoxPro

Minimum System Requirements

- Windows 7/8/10
- Intel Pentium Core or equivalent
- 4GB RAM
- USB port for hardware key (dongle)
- USB port or COM port for optional control panel
- Soundcard or audio device with WDM/DirectSound driver
- Microsoft .Net Framework 4.5

Recommended System

- Intel Core i5 or better, 3GHz or faster
- GPU with minimum 256MB dedicated graphics memory
- 1TB storage drive
- 8GB RAM
- Additional NIC if running an AOIP driver

When shopping for a computer for VoxPro7, keep in mind that cost-saving features such as "integrated graphics" transfer the load of screen drawing and updating to the CPU, rather than to a dedicated GPU. An AOIP driver also uses the CPU and system memory, in place of a physical sound card. Make sure that the computer you choose is up to the task it has been assigned, or it will cause nothing but problems. This is all the more important if you plan on running a resource-intensive application such as a web browser simultaneously with VoxPro7. (Actually, we recommend that you dedicate a separate computer for web browsing and general internet access.)

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wheatstone.com | sales@wheatstone.com

Wheatstone
BROADCAST AUDIO PERFECTIONISTS®

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NEURON

FM/HD/DAB+ SPECTRAL AUDIO PROCESSOR

Wheatstone

Meet NEURON

Energize your station with the FM/HD/DAB+ spectral audio processor. Fully dynamic, yet powerful, NEURON produces the kind of “draw you in” sound that even the best ears in the business love to hear.

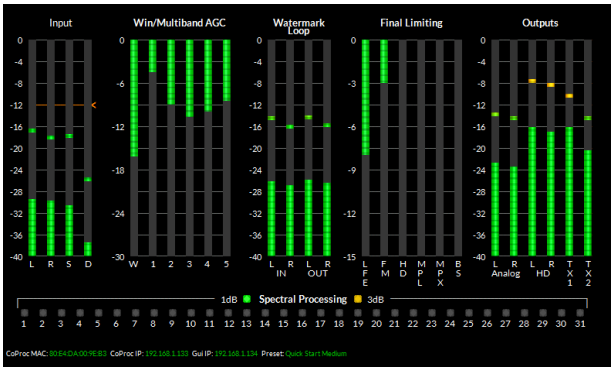
Only NEURON FM/HD/DAB+ spectral audio processor gives you patented 1/3 octave band resolution for precision transient peak control without pulling down critical frequencies with it. This means you’ll be able drive more energy into the processor, yet maintain peak compliance for a much fuller, vibrant on-air sound.

NEURON
DIGITAL SPECTRAL PROCESSOR
SYSTEM OVERVIEW
Analog
Digital
WheatNet-IP
INPUT SETUP
EQUAL-IZER
WIN / MB AGC
SPECTRAL PROCESS
Watermark Send
Watermark Return
FM CLIP & BASS
HD DELAY
STEREO GEN
Analog MPX
Digital MPX
FM Digital
HD LIMITER
HD OUTPUT
ANALOG L/R
Analog L/R
HD Digital
PRESETS
SCHEDULE
SECURITY
NETWORK
RDS/RBDS
SYSTEM
LOGGING
ESC
M/HD ANALOG OUT
RT
AES IN
AES OUT
FM
HD
GPI
WATERMARK
ETHERNET
Designed and Built in USA
CAUTION — To avoid the risk of electric shock refer all service to a qualified technician
90-240 VAC/50-60Hz

Overview

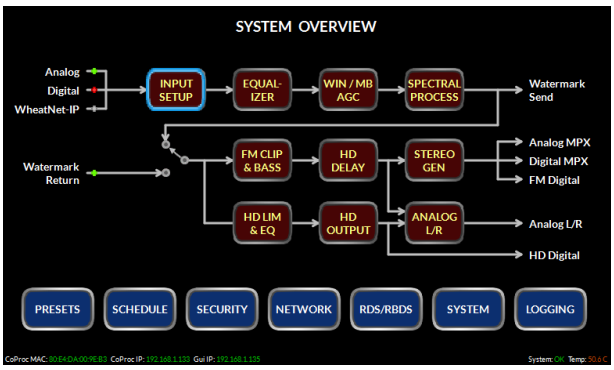
NEURON FM/HD/DAB+ SPECTRAL AUDIO PROCESSOR

It's no secret that radio has sounded tired for some time now. With modern delivery options, new technology, and our brains buzzing with more choices than ever, it's time to bring new life to the radio dial. Only the NEURON FM/HD/DAB+ audio processor uses spectral processing techniques to produce a full, energetic on-air sound. With its super smart controls doing the calculations for you and adjusting all the right parameters as you tweak, you don't need an advanced degree to set the ideal sound.

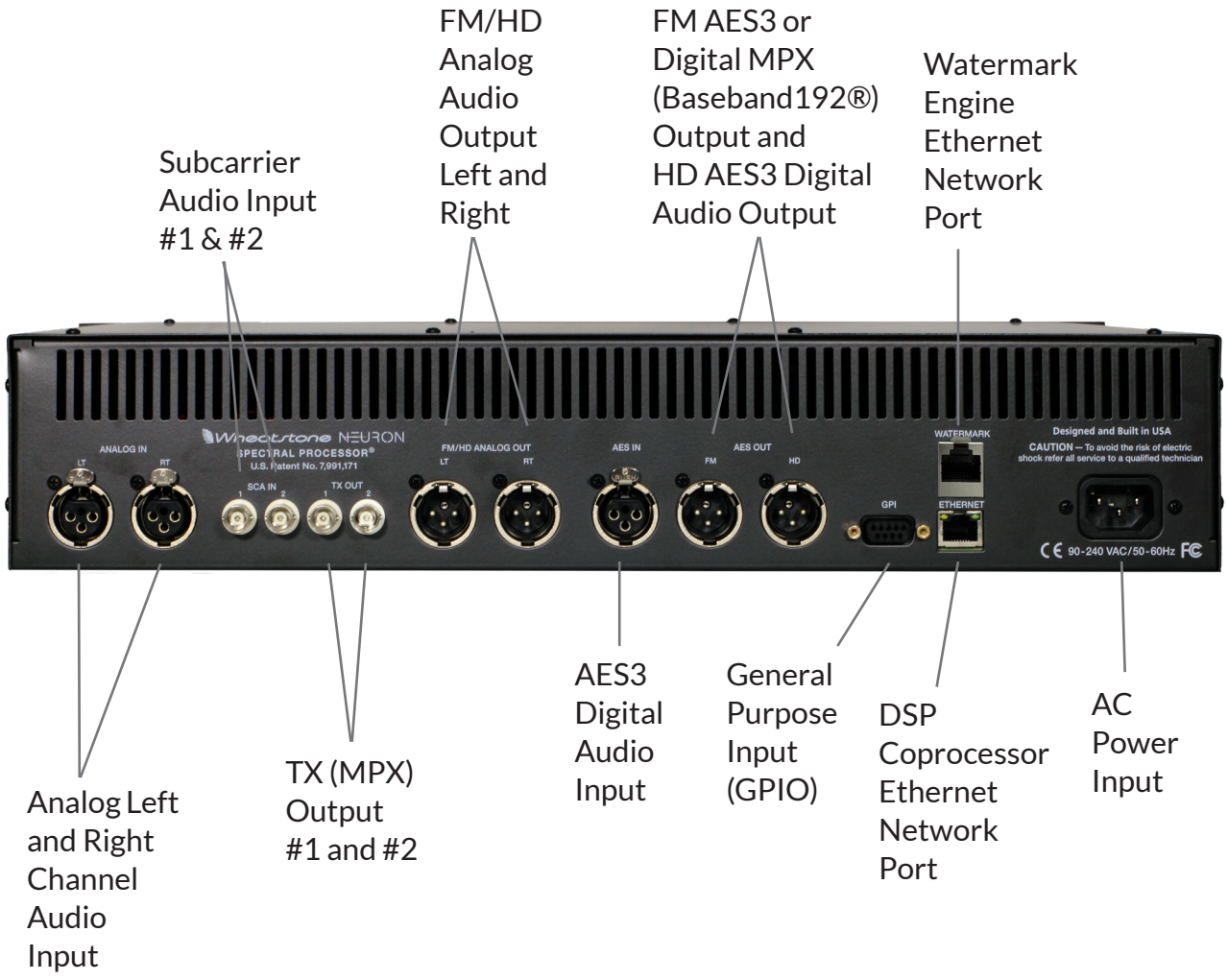


The left front panel screen always shows the metering for input and output levels, watermark engine send and receive levels, and metering for all of the dynamics processing that occurs within NEURON'S DSP engine.

The right front panel screen is equipped with a touch interface and hosts the navigation menu for all input/output and processing adjustments.



NEURON Rear Panel Connections



Features

- **Density Compensation®:** Many studios today are unmanned and it's up to the AGC to know the difference between amplitude and dynamic range in order to manage levels properly. NEURON'S two-band windowed pre-processor and five-band AGC utilize a proprietary Density Compensation® algorithm for real-time analysis of the pre- and post-processed audio as well as data from the user's control settings to invisibly manage spectral balance and program density as incoming program content changes
- **Spectral Processor:** NEURON'S patented Spectral Processor technology applies human psychoacoustic characteristics to perform fine-grained peak control. By grouping frequencies into 1/3 octave 'critical bands' that model how the human ear perceives sound, peak limiting is applied to only the narrowest frequency band possible without affecting nearby frequencies. Limiting in this way lets you drive the processor for optimum loudness and still get a richer, fuller sound out the other end. The result is uncannily transparent and musical audio completely devoid of the usual artifacts related to peak limiting.
- **Bass Extra:** Add bass texture without overdriving modulation and driving up clipping IM distortion. Bass is sidechained in the NEURON so you can get the bass you want without adding amplitude to the overall signal.
- **Pre-emphasis Optimization:** In more traditional audio processing designs, pre-emphasis is either managed by specialized limiting or carefully designed clipping that merely tolerates the pre-emphasis curve. The NEURON'S FM peak control technology reconstructs the audio after pre-emphasis is applied to reproduce vibrant highs.
- **Super Smart Settings:** You don't need to be a processing pro or spend weeks getting the ideal sound. NEURON gives you simple controls on the front or GUI, many working with associated controls on the back end for exponentially enhancing the sound. Start with any one of the dozens of factory settings, and create your own signature sound in minutes, not hours or days, with a few adjustments.
- **Multipath Mitigator:** This user control helps 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.
- **Unified, Smart Processing:** Using Unified Processing®, the NEURON shares information between ALL stages. iAGC, compression, and limiting/clipping work together no matter which control a user adjusts. Changes are made automatically, in real time, in ways never envisioned (or heard) before.

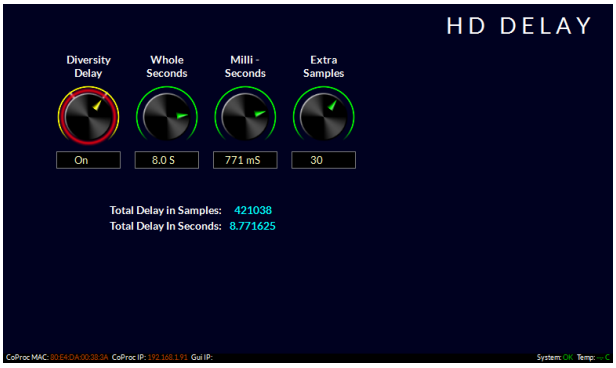
- **Stereo Generator**: A DSP-based stereo generator generates the stereo multiplex signal and provides for two separately adjustable "TX" outputs to feed (for instance) main and backup transmitters.
- **SCAs:** The two analog subcarrier inputs are digitized at 192 kHz, mixed with the stereo MPX signal in the digital domain, and will accept subcarrier signals up to 80 kHz.
- **Full RDS/RBDS Generator:** Neuron includes a fully featured RDS/RBDS generator that is compliant with nearly all playout systems, includes advanced RT+ tagging and provides all the tools needed for either a static or dynamic listener experience.
- **Wheatstone® baseband192:** Wheatstone® baseband192 digitizes the entire multiplex spectrum up to and including the RDS/RBDS, doing away with an analog composite interface between processing and transmission. A single AES/EBU cable carries the digitized signal between this baseband192-equipped processor 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.
- **Separate FM and HD/DAB+ Paths:** The FM and HD/DAB+ signal paths share the four-band parametric equalizer, two-band windowed pre-processor, five-band AGC/leveler and multiband Spectral Processor. Post Spectral Processing, the FM and HD/DAB+ paths have their own specialized program aware peak controllers optimized for their respective broadcast mediums.
- **Daypart Scheduler:** A fully configurable daypart scheduler allows scheduled preset changes or RDS/RBDS dataset changes.
- **WheatNet IP Connectivity:** NEURON is WheatNet IP compatible, making it easy to manage settings remotely though the WheatNet IP audio networked studio.

NEURON GUI'S

Bands 1 through 5

Spectral Processing

FM Clipping

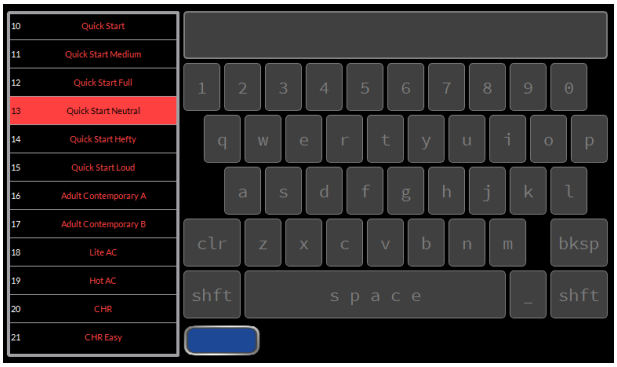


HD Delay

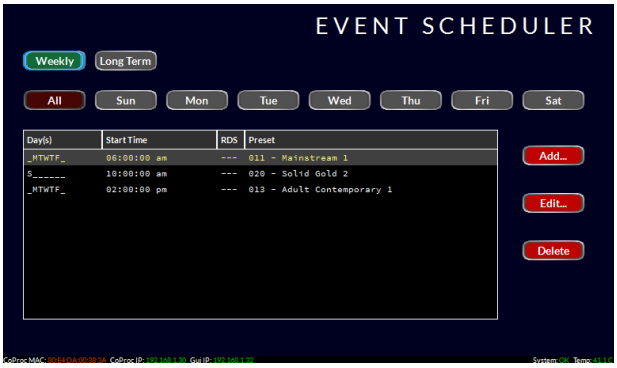
The equalizer is equipped with two parametric equalizers and two shelving filters.

Stereo Generator

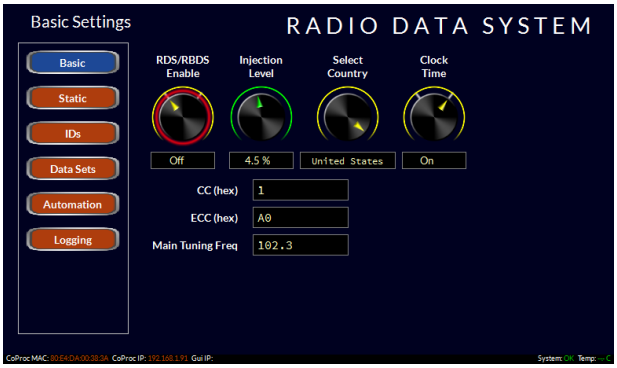
HD Limiter



Presets



Event Scheduler



RDS/RBDS

The NEURON GUI software

NEURON GUI'S

AGC DENSITY COMPENSATION®

NEURON's proprietary Density Compensation® technology maintains spectral balance and program density using a two-band windowed pre-processor and five-band AGC. A phase-linear Linkwitz-Riley crossover (200Hz or 500Hz, depending on preset) allows natural level variation to preserve short-term dynamics, avoiding the unnatural effects of basic compression.

The algorithm analyzes both pre- and post-processed audio in real time, along with user settings, to optimize amplitude and dynamic range. Subtle psychoacoustic enhancement can also be applied to improve on-air sound quality.

FIVE BAND AGC

NEURON's automatic level control algorithm utilizes a slave compressor intimately tied to the leveler time constants for each band in the five-band AGC. The time constants closely interact to provide an extremely wide range of operating leeway. As density control is increased, the threshold of the AGC is raised while that for the compressor remains fixed at whatever the band's threshold setting is. The audible result is a 'thickening' and 'filling in' of the sound as the faster compressor's dynamics become more apparent than that of the slower leveler. Taken to an extreme, the compressor will do much of the work of the band, but at the same time prevent unnatural gain rush-up because the compressor can never have more gain than the leveler – all of which is useful for generating that full radio sound without adding listener fatigue.

PROPRIETARY SPECTRAL AUDIO PROCESSING

Wheatstone's patented spectral audio processing section performs fine-grained peak control based on how the human ear processes audio. By utilizing a 1/3 octave 'critical band' technique, limiting is applied to the narrowest frequency band possible without affecting nearby frequencies. Precision overshoot protection in this way provides for optimum loudness while enabling a richer, fuller sound. The result is uncannily transparent and musical audio that is completely devoid of the usual processing artifacts related to peak limiting.

The output is split into separate paths, one for FM and one for HD final processing. The FM path utilizes Wheatstone's limitless clipper technology and can receive pre-emphasized audio conditioned for 50µS or 75µS. The HD path utilizes broadband look-ahead limiting techniques for excellent peak control.

ADVANCED PEAK CONTROL

NEURON uses sophisticated FM clipping to provide aggressive peak control with very little perceived distortion. Unique to NEURON is its ability to adjust the spectral balance of the audio inside the clipper algorithm itself for effective peak control. In addition, to reduce perceived distortion with speech and other mono material, NEURON can automatically back down the FM clipper drive when speech or mono programming is detected. With this, stereo music can be more effectively and aggressively clipped while preserving speech intelligibility.

PRE-EMPHASIS OPTIMIZATION

In traditional audio processing designs, pre-emphasis is either managed by specialized limiting or carefully designed clipping that merely tolerates the pre-emphasis curve. NEURON FM peak control technology takes a different approach, including reconstructing the audio after pre-emphasis is applied to reproduce vibrant highs. NEURON's pre-emphasis can be set at 50µS or 75µS, or disabled entirely.

BASS EXTRA: CLIPPER AND MANAGER

Unlike the days of vinyl where very low frequencies had to be rolled off to prevent the stylus from jumping out of the record grooves, digital audio has no such limitation. In today's popular music it is not unusual to hear bass frequencies well down into the tens of hertz. Such program content can be problematic when primary peak control is applied, which is why NEURON has a separate Bass Clipper that is designed to artistically control low bass energy without rolling it off. The Bass Clipper not only controls low bass energy to prevent it from being clipped by the main FM clipper, therefore reducing IM distortion, it also makes it possible to add or remove texture from the bass to suit individual programming and competitive needs.

NEURON's bass manager serves both the analog and HD signal paths for improved consistency between the two transmission mediums.

BASS HARMONICS

Unique to NEURON is its ability to add harmonics from very low bass to create a fuller sound on today's smaller speakers. NEURON's algorithm uses an anomaly of human psychoacoustics to create harmonics from very low bass that can be perceive but are not actually reproduced on some smaller speakers.

SUB BASS SYNTHESIZER

NEURON can mathematically create sub bass frequencies between 25 and 60Hz from their higher frequency fundamentals (recall a popular boombox of the '70s) and add sub-bass energy to the mix without muddying things up. The Sub Bass Synthesizer maximum amount of enhancement is artistically limited to prevent over-enhancement and/or the unlocking of older style analog STL of FM exciter AFC loops.

NEURON GUI'S

SEPARATE FM AND HD OUTPUTS

NEURON processes analog FM and digital HD audio separately, with both paths sharing a four-band parametric EQ, two-band windowed pre-processor, five-band AGC/leveler, and multiband spectral processor. Each path includes a dedicated, program-aware peak controller optimized for its format.

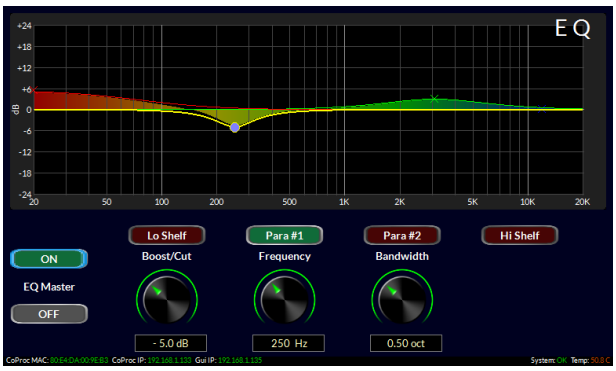
Processed FM and HD audio are output simultaneously via analog (balanced L/R), AES3 digital (L/R), and two configurable digital MPX channels using the Wheatstone® baseband192 protocol. Two analog MPX outputs and WheatNet-IP are also provided for monitoring. Analog L/R can be assigned to either FM or HD output. All outputs feature independent level controls and can follow preset changes as needed.

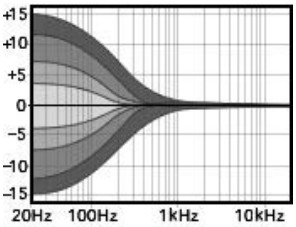
FM/HD DIVERSITY DELAY

NEURON provides up to 10 seconds of delay in the analog FM signal path to compensate for the delay in the HD side of the transmission system. FM diversity delay is adjustable with one sample (20.83µS) resolution.

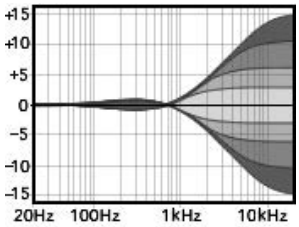
FULL EQ CONTROL

The equalizer is equipped with two parametric equalizers and two shelving filters, which are user adjustable for boost/cut. A Lo Shelf control offers frequency choices from 20Hz to 500Hz while a Hi Shelf control offers choices from 2 kHz to 20 kHz. Bandwidth can be set for desired boost or cut effect.

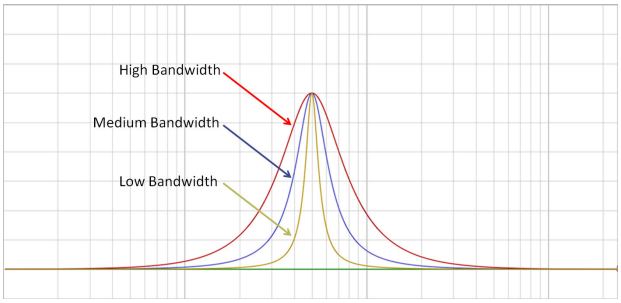




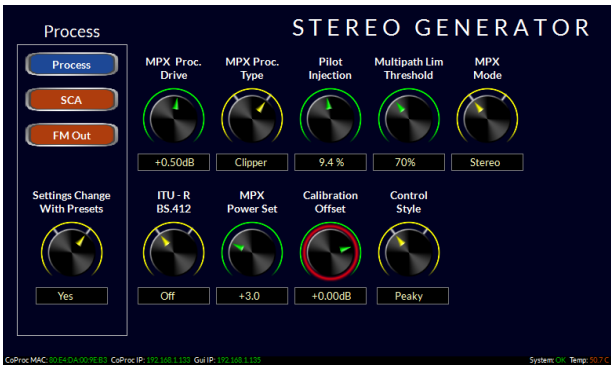
Lo Shelf



Hi Shelf



STEREO GENERATOR WITH MPX OVER AES



NEURON generates the stereo multiplex signal and provides for two separately adjustable outputs to feed the main and backup transmitters, for example. The stereo generator also outputs the Wheatstone® baseband192 digital MPX signals (often called MPX over AES) with both transmitter MPX outputs encoded on the left and right channels, respectively.

MULTIPATH MITIGATION

NEURON includes an advanced multipath mitigator that manages the stereo image to minimize the audible effects of multipath and receiver-induced stereo blending.

There is no getting around the physics of multipath, which is caused by topological features (such as mountains or reflecting building structures) along the path between the station's transmitter and its listeners. However, NEURON can change how stereo receivers behave in multipath situations by modifying how much L-R (stereo) energy there is in the transmitted signal. By lowering the amount of L-R on a program-dependent basis, NEURON can lessen the effect when stereo receivers blend the left and right channels during multipath. By making blend less obvious, the listening experience is improved.

PHASE ROTATOR

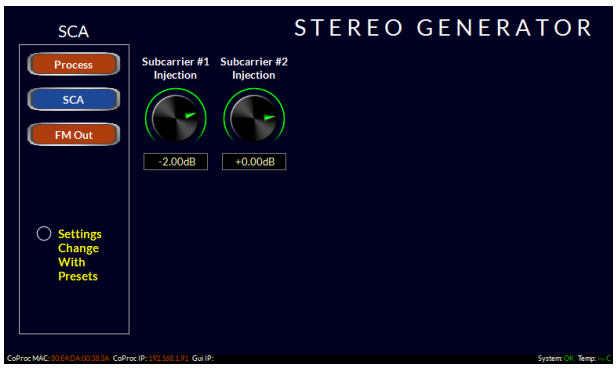
NEURON includes a phase rotator to correct the asymmetrical audio waveforms often found in human voice.

ITU-R BS.412 CONTROL

NEURON includes a control for stations regulated under ITU-R BS.412 for reducing interference in closely spaced broadcast channels, typically 100kHz apart. Depending on setting, NEURON will reduce the amount of MPX power required to reduce how much RF spectrum the station's signal consumes on the FM broadcast band.

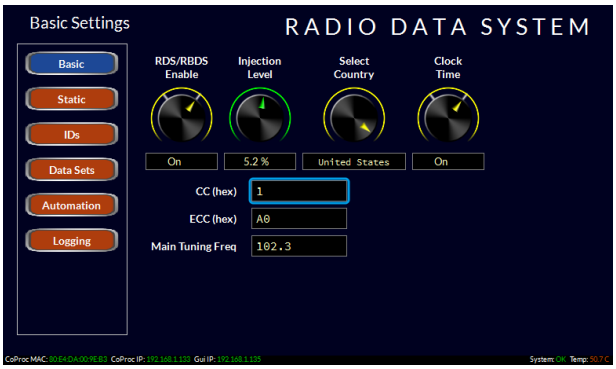
TWO SCA INPUTS

The two analog subcarrier inputs are digitized at 192kHz, mixed with the stereo MPX signal in the digital domain, and will accept subcarrier signals up to 80kHz.



NEURON GUI'S

FULL-FEATURED RBDS/RDS GENERATOR

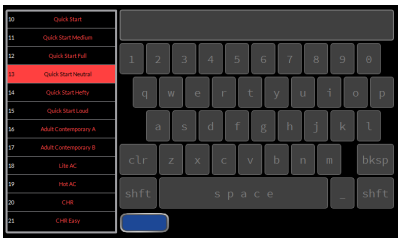


NEURON includes a fully featured RDS/RBDS generator that is compliant with nearly all playout systems, includes advanced RT+ tagging and provides all the tools needed for either a static or dynamic listener experience.

NEURON GUI

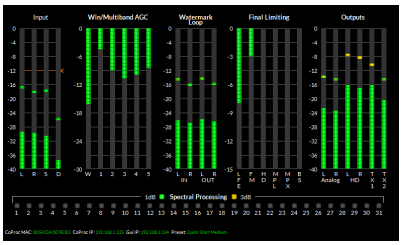
NEURON's GUI software can control an unlimited number of NEURON processors via a standard Ethernet network. Utilizing TCP and UDP protocols the app can be used to control the processor from anywhere in the world with an internet connection. This includes controlling it behind firewalls, NAT routers and VPN tunnels.

SETTING, NAVIGATING AND MANAGING NEURON



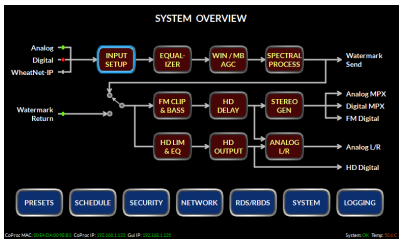
DIAL IN YOUR SOUND IN MINUTES.

Start with any one of the 160+ NEURON presets optimized by format and tested in the Wheatstone lab by the best ears in the industry. Set it and go, or adjust with confidence knowing that with every adjustment you make, NEURON is managing associated controls to exponentially enhance the sound. NEURON lets you create your own signature sound in minutes, not hours or days.



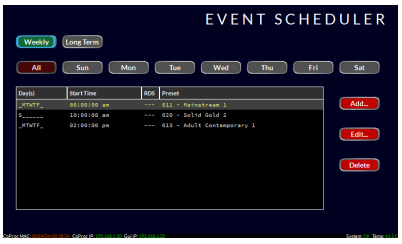
KEEP TABS ON THINGS.

NEURON's front panel screen shows at-a-glance the metering for input and output levels and all the dynamics processing that occurs within NEURON's DSP engine. At the bottom is information pertaining to the network, such as assigned IP address, and the currently running processing preset.



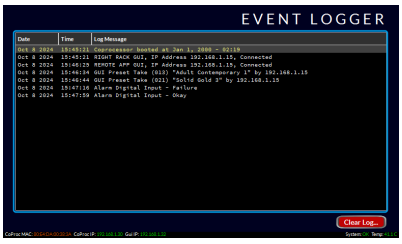
NAVIGATE EASILY.

Navigating NEURON is easy with touchscreen access to processing sections, presets, logging events, and setting up dayparts, SCAs, RDS, networking and security.



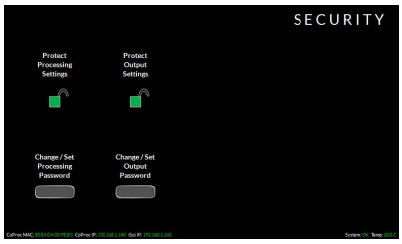
SCHEDULE IT.

NEURON includes a comprehensive scheduler for setting RDS, presets and more by the week or long term.



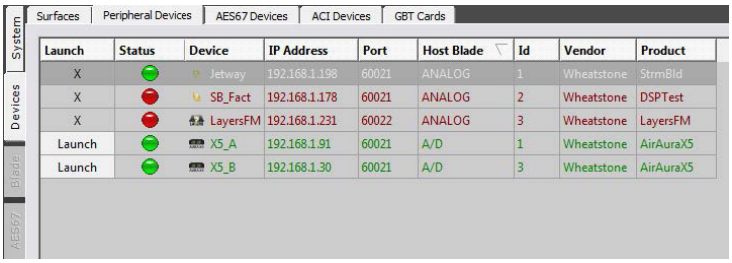
LOG IT.

NEURON also has an event logger than keeps track of various events and stores them in its onboard memory. Each event is time and date stamped.



SECURE IT.

Neuron has two security levels: one for protecting settings and another for protecting the output.



Launch	Status	Device	IP Address	Port	Host Blade	Id	Vendor	Product
X		Jetway	192.168.1.198	60021	ANALOG	1	Wheatstone	StrmBld
X		SB_Fact	192.168.1.178	60021	ANALOG	2	Wheatstone	DSPTest
X		LayersFM	192.168.1.231	60022	ANALOG	3	Wheatstone	LayersFM
Launch		X5_A	192.168.1.91	60021	A/D	1	Wheatstone	AirAuraX5
Launch		X5_B	192.168.1.30	60021	A/D	3	Wheatstone	AirAuraX5

WHEATNET IP ENABLED.

NEURON can be added to your WheatNet IP audio network at any time. Its I/O signals can stay statically routed, or they can be dynamically routed using programmable buttons on audio GP panels, talent stations or by GPIO/LIO functions within the WheatNet IP system.

AUTOMATIC FAILOVER.

Neuron can automatically failover to a backup in order to restore on-air broadcast. Automatic failover from analog to AES3 or WheatNet IP is based on silence detection.

GENERAL SPECIFICATIONS

Analog Line Input

Type:	Electronic differential (SSM2143)
Input Impedance: >	10K Ohms (bridging)
Optimum Source Impedance:	<1k Ohms
A/D Conversion	AKM5394, 192 kHz, 24-bits
Maximum Input Level:	+20dBu

Digital Inputs

Data Standard:	AES3
Data Amplitude:	Per AES3-2023 assuming minimum allowable output signal of 2V P-P and minimum allowable input signal of 200mV P-P
AES Receiver:	CS8416, 192 kHz, 24-bits
AES Sample Rates Accepted:	32 kHz to 96 kHz
Input Reference Level:	-24dBFS with up to 12dB adjustable input gain
WheatnetIP Data Receiver:	100BaseTX Ethernet per IEEE 802.3u
Sample Rates Accepted:	44.1 kHz and 48 kHz

Analog Output

D/A Conversion	AK4396, 192 kHz, 24-bits
Output Type:	Balanced electronic differential (SSM2142)
Maximum Output Level	+20dBu into >1k ohms
Signal to Noise Ratio:	>80dB, 75µS de-emphasis and 15 kHz bandwidth*
Total Harmonic Distortion:	<0.05%, 75µS de-emphasis and 15 kHz bandwidth*
Intermodulation Distortion:	<0.05%, 75µS de-emphasis and 15 kHz bandwidth*
Stereo Separation:	>75dB, 20 Hz – 15 kHz

Left/Right Digital Output

Data Standard:	AES3
Maximum Output Level:	0dBFS
Sample Rate:	32 kHz to 48 kHz, synchronizes to AES Input if present
Signal to Noise Ratio:	>80dB, 75µS de-emphasis and 15 kHz bandwidth*
Total Harmonic Distortion:	<0.05%, 75µS de-emphasis and 15 kHz bandwidth*
Intermodulation Distortion:	<0.05%, 75µS de-emphasis and 15 kHz bandwidth*
Stereo Separation:	>75dB, 20 Hz – 15 kHz

Audio Input Failsafe

Type:	Automatic – user choice
Analog Fail Cause:	Audio level below -24dBu
Response Time:	30 seconds”
Digital Fail Cause 1:	Audio level below -48dBFS
Response Time:	30 seconds
Digital Fail Cause 2:	Corrupted or invalid digital data
Response Time:	Immediate
Failsafe Direction:	Digital to Analog, Analog to Digital (no digital to digital failover)

Phase Rotator

Filter Type:	4th order allpass

High Pass Filter

Filter Type:	4th order Butterworth

Audio Crossovers

Filter Types:	4th order Linkwitz-Riley

Stereo Generator

MPX D/A Conversion:	AK4396, 192 kHz, 24-bits
Maximum MPX Output Level:	9.5V P-P into >1k ohms
Digital MPX Output:	192 kHz sample rate, TX #1 on left channel, TX #2 on right channel
38 kHz Suppression:	>70dB
19 kHz Pilot Protection:	>60dB at 9% injection, no MPX processing
Signal to Noise Ratio:	>70dB (ref 75 kHz deviation/75µS de-emphasis, 15 kHz BW)
Sub/Main, Main/Sub Crosstalk:	>70dB
Total Harmonic Distortion:	<0.05%, 75µS de-emphasis and 15 kHz bandwidth*
Intermodulation Distortion:	<0.05%, 75µS de-emphasis and 15 kHz bandwidth*
Stereo Separation:	>50dB @ 1 kHz, >1k ohm load /NMT 100pF

SCA/RDS Input

Input Type:	Balanced and floating over chassis (SSM2143)
Input Impedance:	24k ohms
A/D Conversion:	AK4396, 192 kHz, 24-bits
Frequency Response:	Accepts analog subcarriers up to 80 kHz
Maximum Input Level:	5V P-P

AC Power

Input Voltage:	100-250VAC (auto sensing)
Input Frequency:	50/60 Hz
Power Consumption:	<50VA at 120 Volts AC Input
Operating Temperature:	0 to 50 degrees C (32 to 122 degrees F) | Over temperature alarm at 50C

* The harmonic and intermodulation distortion performance of FM audio processors cannot be properly characterized by sine wave bench tests.

SOUND. SIMPLE. SMART.

Wheatstone Corporation makes broadcast quality control surfaces, on-air audio processors, virtual mixers, audio editors, streaming appliances, voice/mic processors, and 200+ interconnected AoIP studio elements — all engineered, manufactured and supported under one roof by industry pros. Celebrating 50 years of innovating audio solutions for broadcast, commercial, and live sound excellence, Wheatstone markets products under VoxPro, Wheatstone and Audioarts Engineering brand names.

Designed and built by

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07232025

AUDIOARTS LiON

FM + HD Audio Processor

Wheatstone

BROADCAST AUDIO PERFECTIONISTS℠

WHEATSTONE INTRODUCES THE AUDIOARTS LION

FM Audio Processor

Our LiON has the latest Wheatstone DSP algorithms; it is not a 90's era processor by any means. The AUDIOARTS LION Five-Band Processor/Multipath Controller has WheatNet-IP, so it can be networked. It has analog and AES3 so it can stand alone. It has Wheatstone SystemLink™ built in, to send full 24-bit linear audio directly to your transmitter over reliable high-speed links — Baseband 192 MPX with FM+HD timing locked (no codec to degrade audio quality). And it comes with 50 presets so you can plug and play.

At last, an affordable FM/HD audio processor with the algorithm prowess for transforming highly compressed source music into a more robust, dynamic listener experience on any device, anywhere.

To deliver airy highs, a smooth midrange, and deep lows you can feel, this low-cost, half rack sized FM/HD audio processor uses Wheatstone's advanced next-gen multiband AGC and clipping algorithms developed specifically for today's source content and listening devices.

The Audioarts LiON includes stereo enhance, RDS, and Wheatstone SystemLink™ for transporting the entire MPX and HD audio signals, including RDS, maintaining perfect FM/HD alignment across any high-speed data link.

Unique to Wheatstone processors, the LiON includes our intelligent five-band AGC technology — or iAGC — coupled to a five-band limiter and stereo generator. The combination provides automatic and superior real-time program density control for a consistent, spectrally-balanced sound regardless of density variations in incoming source material.

Stunning audio with little or no distortion

Fits perfectly into any/every broadcast workflow

Can do double redundant duty, easily replacing a processor on another feed

Multipath mitigation that can increase your listening area

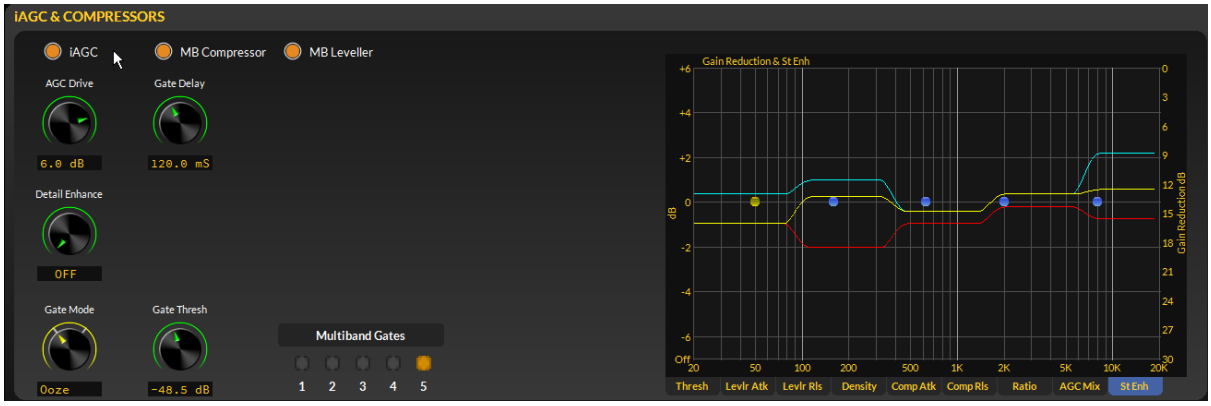
Is a part of the WheatNet-IP Intelligent Network

LiON is part of the WheatNet-IP audio network, with a full-blown interface, so you can set up and trigger presets remotely now and add on to your WheatNet-IP ecosystem later. It also includes 192kHz digital MPX connectivity to the transmitter for end-to-end native IP audio quality. It is equipped with two analog composite outputs, two SCA inputs, balanced analog Left/Right outputs and an AES digital output which may be switched to deliver either discrete Left/Right or baseband192 digital multiplex signal. Input audio may be delivered via analog, AES or WheatNet-IP.

For local and/or remote control, there's a full graphic user interface that allows you to tailor every function of the LiON, so tweaking and making changes is both intuitive and accessible.

LET YOUR SIGNAL ROAR ON A KITTEN BUDGET

INTELLIGENT IAGC



Our adaptive iAGC – or intelligent AGC – allows unobtrusive transitions between hyper-compressed recordings and those with more dynamic range. Effectively manages the behavior of the multiband AGC as program content density changes, something a typical broadband AGC simply cannot do. By coupling the iAGC and multiband AGC, we are able to produce a consistent, spectrally-balanced sound regardless of density variations in incoming source material.

SMART STEREO ENHANCEMENT

The LiON's Smart Stereo Enhancement provides a wide but extremely stable 'on-air' stereo image. "Wide", "alive", "exciting to listen to", and "very natural sounding" are terms customers have used to describe how our stereo enhancement method sounds. Users have reported hearing artistically important nuances in music that were simply inaudible when processed by competing products.

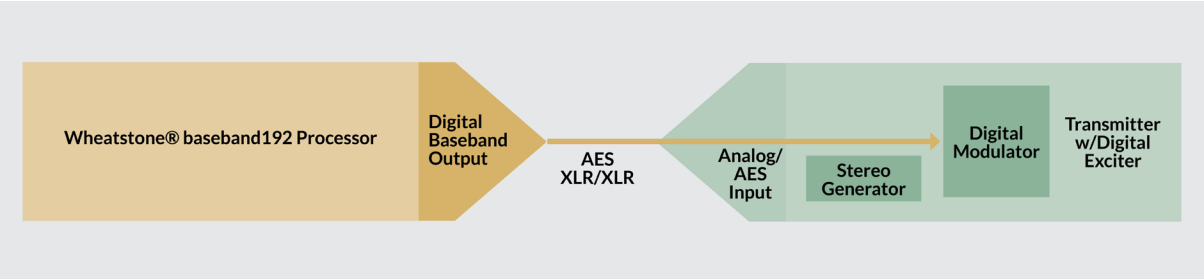
BASS TOOLS

The LiON Bass Management System circumvents bass-related distortion plaguing other broadcast audio processors. The result is increased depth, feel, and clarity of bass impact without affecting mid and high-frequency program – in fact, the clarity of higher-frequency audio is actually enhanced by the new algorithm.

MULTIPATH MITIGATION

Manipulating the stereo field intelligently can dynamically (on a song-by-song basis) mitigate problems created by multipath for FM stereo stations and help them achieve maximum audience reach.

MPX SYSTEMLINK WHEATSTONE BASEBAND 192



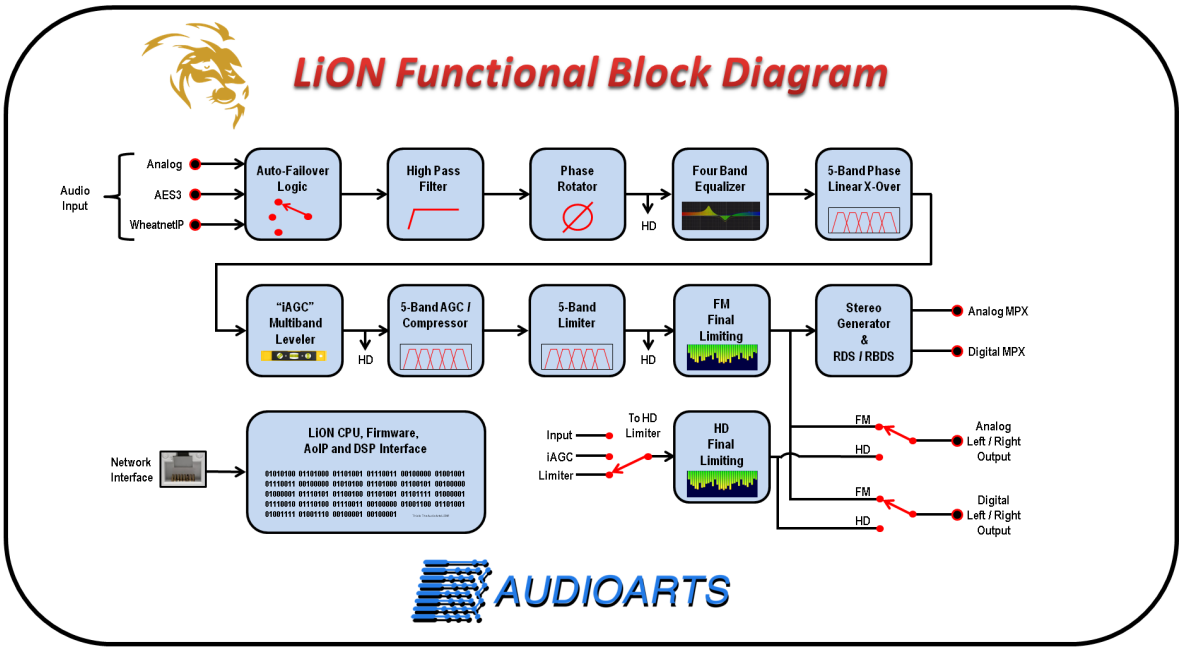
Wheatstone® baseband192 digitizes the entire multiplex spectrum including RDS and SCAs up to 80kHz, providing a higher performance interface than using the classic analog composite method between processing and transmitter. A single AES/EBU cable between the processor and a current solid-state FM transmitter carries the digital baseband signal, bypassing the need for multiplexing in the exciter and eliminating the resulting signal overshoot with its associated loudness tradeoff.

For more info, click here.

LION REMOTE APP

While you can access and adjust virtually all audio parameters through LiON's multi-tab GUI, you don't have to. Rather than wade through multiple screens (example: AGC/COMP menu shown above) our LiON Remote App lets you concentrate on what you hear, not what you see. The app makes the tough, behind-the-scenes decisions based on our simple-to-use controls supplied for TEXTURE (Drive, Density, Loudness) and EQ (Low, Warmth, High). It's as if we send a processing expert with each box!

LION SIGNAL FLOW DIAGRAM



LION IS PART OF THE WHEATNET-IP AUDIO NETWORK

With WheatNet-IP BLADE-4s, you get a virtual rack room in a 1-rack space box. They handle all the I/O (AES/EBU, SPDIF, AOIP, MADI, SDI and AES 67) and provide full routing capabilities. Each BLADE-4 gives you two 8x2 utility mixers, 12 universal GPI/O ports, 128 software logic ports, silence detection, built-in audio clip player, stereo multi-band audio processing, and much more, assignable anywhere on the network. With it you can create workflows that would require a ton of third-party gear.

Click to learn about WheatNet-IP

Click to learn about Blades

SPECIFICATIONS

ANALOG LINE INPUT

Type: Electronic Differential
Input Impedance: 10Kohm bridging
Optimum Source Impedance: < 1Kohm
A/D Converter: TI PCM4202, 192kHz, 24-bit
Maximum Input Level: +20dBu

DIGITAL LINE INPUT

Digital Audio Standard: AES3 (AES/EBU)
Data Amplitude: Per AES3-2003 assuming minimum allowable output signal amplitude of 2V P-P and minimum allowable input signal of 200mV P-P.

AES Receiver: CS8416, 192kHz, 24-bit
Compatibility: Digital sample rates between 32kHz and 96kHz are accepted and automatically synchronized.

Ethernet Data Type: WheatnetIP
Ethernet Interface: 10/100BaseT Ethernet per IEEE 802.3u

Digital Audio Input Reference: 0dBFS externally results in 0.0dBFS internally.

INPUT GAIN ACCOMMODATION

Gain Range: +/- 12dB in 0.5dB steps
Gain Calibration: A gain control setting of 0.0dB aligns an external 0dBFS signal with LiON's 0dBFS internal reference.

INPUT FAILSAFE

Type: Automatic
Analog Fail Cause: Audio level on both channels below - 24dBu (fixed)
Response Time: 30 seconds (fixed)
Digital Fail Cause 1: Audio level below -48dBFS (fixed)
Response Time: 30 seconds (fixed)
Digital Fail Cause 2: Corrupted or invalid AES data
Response Time: Immediate (fixed)
Failsafe Direction: Digital to Analog / Analog to Digital (no Digital to Digital)

AUDIO LEVEL BALANCE

Type: Common to both Analog and Digital Inputs

Adjustment Range: +/- 12dB
Adjustment Resolution: 0.5dB\

PHASE ROTATOR

Filter Topology: 4th Order Allpass
Operating Modes: In or Out (bypass)

HIGH PASS FILTER

Filter Class: 24dB/Octave Butterworth response
Frequency Choices: 20, 30, 40, 50, or 60Hz

EQUALIZER

Number of sections: Four
Low Shelf Frequency Range: 20Hz to 500Hz
Low Shelf Boost/Cut: +/- 14dB
High Shelf Frequency Range: 2kHz to 20kHz
High Shelf Boost/Cut: +/- 14dB
Parametric #1 Frequency Range: 20Hz to 20kHz
Parametric #1 Boost/Cut: +/- 14dB
Parametric #1 Bandwidth: 0.2 to 3.0 octaves
Parametric #2 Frequency Range: 20Hz to 20kHz
Parametric #2 Boost/Cut: +/- 14dB
Parametric #2 Bandwidth: 0.2 to 3.0 octaves

FIVE BAND LEVELER/COMPRESSOR WITH iAGC

Crossover Topology: 4th Order Linkwitz-Riley (phase linear)
iAGC parameters: Automatic and Program Dependent
Leveler/Compressor Compression Ratio: 2:1 to 6:1
Interband Coupling: 0dB to 6dB
L+R Mixer: Boost/Cut +/- 6dB
L-R Mixer: Boost/Cut +/-6dB
Crossover Frequencies: Factory Preset Dependent

FM PEAK CONTROLLER

Type: Proprietary
Stereo Pilot Protection: >50dB
Pre-Emphasis Accuracy: +/-0.25dB
FM Diversity Delay: Off to 10 seconds in one sample steps when simultaneously using the keyboard Ctrl key and the mouse scroll wheel.

STEREO AND RDS ENCODER

Composite Processor: Clipper operating at 192kHz.
D/A Conversion: TI PCM1798, 192kHz, 24-bits
Automatic Multipath Limiter: Program Dependent Timing Characteristics with adjustment range of Off to 100% in 5% steps

Subcarrier Input Impedance: 10kOhms
Subcarrier Input Level Range: -20dBu to +4dBu
Stereo Pilot Injection: Off to 20% of Composite Output level

19kHz Stereo Pilot Frequency: +/-0.2Hz
57kHz RDS Subcarrier Frequency: +/-0.2Hz
Stereo Pilot Protection: Better than 50dB
38kHz Suppression: Better than 70dB

ANALOG AUDIO OUTPUTS

Analog Left/Right Output Level: -48dBu to +20dBu
Analog Left/Right Output Options: Pre-emphasized, De-emphasized, and Pre-delay

D/A Conversion: TI PCM1798, 192kHz, 24-bits
Signal to Noise: >80dB in a 20kHz bandwidth
Total Harmonic Distortion: <0.05% 20Hz – 20kHz

DIGITAL AUDIO OUTPUTS

AES3 Protocol Output Level: >5V P-P into 110 ohm load
AES3 Audio Output Level: -48dBFS to 0DBFS
Digital Left/Right Output Options: Pre-emphasized, De-emphasized, and Pre-delay

Signal to Noise: >80dB in a 20kHz bandwidth
Total Harmonic Distortion: <0.05% 20Hz – 20kHz

OVERALL SYSTEM

Headroom: >20dB
Nominal Operating Level: -20dBFS
Processing Latency Analog In to MPX Out: 57mS maximum
Processing Latency Analog In to HD Out: 34mS maximum
Total Harmonic Distortion: <0.025%, 20Hz – 20kHz
Intermodulation Distortion: <0.025% SMPTE
Signal to Noise Ratio: >85dB
Stereo Separation: >50dB into a low capacitance load
Crosstalk: >75dB, 20Hz – 20kHz
Power Requirements: 100-250V AC, auto-sensing 50/60Hz, 9W/14VA

Power Connector: IEC 60320 C14 (male)
Operating Temperature: 0 to 50 degrees C (32 to 122 degrees F)
Overtemp alarm reporting via the GUI

Designed and built by
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wheatstone.com | sales@wheatstone.com

Wheatstone
BROADCAST AUDIO PERFECTIONISTS℠

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