



## Why Buy Axia?

### A Few Good Reasons why your next studios will be built with Axia IP-Audio technology.

If you're reading this, you've probably already spent a lot of research time planning your new studios, and you've narrowed down your final choices. Here are some reasons why studios built with Axia will provide more flexibility, reliability and long-term value than other console/routing systems.

**1. Axia is future-proof.** Axia introduced the first standard-based studio networking technology, Livewire™ IP-Audio, to radio broadcasters in 2003, and we're constantly working to improve the state of the art. Open, standards-based systems are where the most promising future always lies; that's why Axia was a charter, sponsoring member of the AES X.192 project — the working group that defined the AES67 interoperability standard. Axia AoIP interfaces support AES67 *now!* Equipment from manufacturers with proprietary systems may not be compatible for a long while — if ever.

**2. Open technology.** We believe in sharing technology to better the state of the broadcast industry. That's why, from the very start, we've invited other manufacturers — even competitors! — to be Axia partners. Our Livewire Limitless License program allows potential partners to build Livewire technology directly into their products with no per-unit licensing; a low one-time license fee makes it possible for them to build as many products with Livewire as they like. Which benefits the broadcaster by making intelligent, networked broadcast devices every more plentiful and affordable. We've also partnered with RAVENNA, the networking architecture developed by Europe-based alcNetworkx, to allow even more professional broadcast equipment to connect with Axia networks.

**3. Axia has the most partners.** Unlike other systems which use proprietary software and tightly control access to their systems, Axia values partners who make broadcast audio hardware and software. The more, the better! There are currently nearly 80 Axia partners — names like AudioScience, Nautel, ENCO, Telos, RCS and International Datacasting — producing dozens of products that connect natively to share audio and data with Axia networks. With Axia, one click of a CAT-5 cable is the only connection you need to make to transfer multiple channels of audio, mix-minus, IFB, PAD data, etc. between a broadcast device and your network. Other systems don't welcome partners like we do. See [www.telosalliance.com/Axia/Axia-Livewire-Partners](http://www.telosalliance.com/Axia/Axia-Livewire-Partners) for a complete list.

**4. Radio experience.** The Axia team of management, developers and designers are, in many cases, radio industry veterans. This experience figures heavily in the design of Axia equipment — and clients like you benefit. We're also good listeners: if there's a capability or functionality that you need, we'll work together to figure out a solution.

**5. Axia gives you more capabilities for less cost.** Axia consoles deliver the most value possible for the money. Where other console makers try to reduce costs by removing features, Axia designers do exactly the opposite: we work to pack the most features and capabilities into our consoles, for the lowest possible price. The result is that Axia consoles are more flexible, do more work, have more mixing and I/O capacity and deliver more needed capabilities than other networked consoles (even those from so-called "low cost" manufacturers).

Thanks to this design philosophy, Axia consoles help talent produce smoother shows. For instance, operators can recall their favorite "Show Profile" console snapshot with just one button press; this means that jocks can have their own custom board layout, with sources placed just where talent wants them. Axia consoles include studio-quality voice processing — EQ, compression and more — for mic sources, eliminating expensive outboard processors — and these settings can be saved in Show Profiles, too. There's also automatic mix-minus generation for incoming phone or codec sources, which eliminates fumbling to set up backfeeds and enables effortless IFB and talent talkback capabilities. These and other sophisticated features help operators produce complex programs with reduced effort, decreasing the chances for operator error.



**6. Reliable, self-healing networks.** Axia console mixing engines and xNode AoIP interfaces have dual, redundant network connections and dual-redundant power capabilities that allow you to plan and build a network that's hardened against unanticipated interruptions. Our PathfinderPC software can monitor silence on critical audio channels and take instant, automatic action if needed to restore audio — and then send you an e-mail to let you know what's happened. Critical Axia equipment also includes SNMP functionality to help you stay informed.

There's more: Axia draws from the best thinking of the IT industry. For example, built-for-broadcast Axia switches, and the Cisco switches we recommend, offer several levels of redundancy and alternate pathing should the need arise. In many cases, these switches are designed for better reliability than most traditional broadcast gear! An important feature of modern Ethernet switches involves ensuring Quality of Service (QoS) with redundant paths and Spanning Tree protocol, switch enhancements that allow Axia networks to provide several levels of redundancy.

The result of all this thinking: "smart" Axia networks that can sense problems and route around them, ensuring 24/7 reliability.

**7. The built-in switch advantage.** Axia is the only console company that integrates zero-configuration, built-for-broadcast Ethernet switches right into its console mixing engines, greatly reducing the cost of network infrastructure. Other networked console systems require you to purchase third-party edge switches for each studio — or install "home-run" audio cabling from the studio back to a central core switch, increasing the "hidden cost" of switchgear and eliminating the inherent value of audio networking. Of course, Axia systems work with robust Cisco switches as well, but only Axia offers you *choice* in the design and construction of your network switch fabric. Axia has even developed a no-configuration edge switch – xSwitch – that simply plugs into any Axia network and goes to work, routing audio and data, without any configuration needed.

**8. Seamless Telephone and Codec integration.** Are phones and remote broadcasts an important part of your programming? Axia Audio and Telos Systems are part of The Telos alliance. Telos is the world leader in broadcast phone systems, so you'd better believe we do phones right! From fully automatic mix-minus generation that requires no operator setup, to on-console control of multi-line phone systems and remote codecs via built-in multi-line controllers and dial pads, to single-cable audio and logic connections, Axia consoles give talent unparalleled ease of control. Which means better broadcasts, thanks to smoother shows and greatly reduced operator errors.

**9. Axia systems are easily scalable and reconfigurable.** Because Axia uses standard Ethernet to transport audio, machine logic and Program Associated Data (PAD), studios constructed using Axia can be expanded at will, up to 10,000 stereo streams per system — without the cost penalty associated with mainframe TDM routers. You can add more IP-addressable inputs, outputs, GPIO closures or entire consoles whenever and wherever you need them, without buying expensive card cages or routing frames.

Not only that, Axia systems are easily reconfigurable. If your plans or needs change during building (or any time afterwards), your Axia network can be quickly modified to suit your needs. Need more inputs than you anticipated for the syndicated talent's studio? Just add another audio node. Need two small voiceover studios instead of one big production room? Add another control surface. Thanks to this flexibility, running changes and modifications are simple and affordable. With traditional routing systems, modifications can result in big costs.

**10. Axia networks eliminate PC sound cards.** PCs connected to Axia networks can send and receive 24 channels of stereo audio and GPIO commands simultaneously, using our IP-Audio Driver, and the computer's existing Ethernet NIC. There are versions for Windows® and Linux operating systems. This simple software solution eliminates both the cost of third-party add-in cards and their hardware



dependencies, and works with products from major digital delivery system vendors like BE, RCS, ENCO, BSI, Netia, DAVID Systems and many more.

**11. Axia networks can be remotely administered.** Because all Axia audio nodes, mix engines and consoles are IP-addressable, you have remote access to individual settings and diagnostic reports at any time, from any network-connected PC — even via the Internet, if you choose. You can log in securely, quickly examine configurations and make changes if needed. There's also iProbe, a complete network management suite that lets you monitor conditions, make changes, and "push" software updates to multiple devices with just one click.

**12. You can easily build custom automated routing solutions.** Axia's PathfinderPC™ router control software lets you create custom client applications that give operators a simple, intuitive onscreen routing switcher interface with only the controls they need. The push of a button can load a salvo, send a conditional logic message, insert talkback into a path and more. It's easy to build advanced multiple-route-switching features too, using an easy-to-understand onscreen interface that lets you create "stackable" serial events using standard Boolean logic — all of which is invisible to the operators. PathfinderPC can even monitor critical program streams for audio presence and switch to a backup route or source if needed, adding another layer of redundancy to your network.

**13. Axia reduces infrastructure.** With Axia, audio inputs are right in the studios – where the audio sources are. All audio, machine logic and other data travels between studios on a single CAT-6 Ethernet cable; mainframe routing systems place their inputs in a central frame, which requires a cable "home run" from to studio for every audio input. Axia clients routinely find that the number of cable pairs per system is reduced from thousands to just dozens.

**14. Axia gives you the best Support and Warranty coverage in broadcasting.** Only The Telos Alliance has 24/7 Support, available 365 days a year, to help should the unexpected occur. And only Telos has a Five-Year limited warranty on all hardware products (that's about 400% more warranty than most other manufacturers). We're committed to providing you bulletproof equipment that delivers round-the-clock uptime, and expert technical support to match.

## Axia Saves You Money.

We've explored a few of the benefits you get from Axia that other systems can't deliver. Now let's closely examine how Axia not only delivers more capabilities, but does so more cost-effectively than standard studio construction methods.

**1. Axia saves money on wiring.** Sharing audio sources and destinations between studios with traditional consoles or mainframe-based routing systems is expensive because of the long runs of multi-pair cable needed. Let's imagine that "Studio A" needs to send four stereo program streams to the Technical Center, and needs to receive audio from a codec, two satellite receivers, a four-output digital playout system and an air monitor located in the Technical Center. An IFB feed will be sent back to the codec, and one program stream will feed a distribution amp and sent to other studios, for a total of 19 audio channels entering and exiting the studio. This much audio requires Belden 8769 38-conductor cable; a 500-foot length costs \$3,000.00. That's for audio cabling only — more circuits are needed for machine logic. If capacity needs grow, adding additional multi-pair could easily double the cable expenditure to \$6,000.00 per room. A 10-studio building would need at least \$60,000.00 in multi-pair cable just for the inter-room wiring, not including connectors, cable trays and installation time.

By contrast, an Axia IP-Audio network can carry several hundreds of stereo audio channels, plus GPIO/machine control logic, Program Associated Data (PAD), and standard network traffic such as file transfers, messaging, etc. over a single CAT-6 Ethernet cable. A 1000-foot reel of Belden Mediatwist 1872 CAT-6 costs \$225.00 — enough to interconnect several studios. Using Axia, the same 10 studios



that needed \$60,000 of multi-pair cable require only \$1,200 of CAT-6, a savings of \$58,800. A company building 100 studios in multiple locations could easily save *\$500,000 or more* in wiring costs with Axia compared to traditional hardwired studios.

**2. Axia saves money on soundcards.** We already showed you how Axia gives you more operational flexibility by eliminating sound cards. But there's cost savings to be had as well: a typical PC soundcard for broadcast can cost between \$2,000.00 and \$4,000.00. Axia's IP-Audio driver replaces these, converting audio into IP packets and sending it to the network using an off-the-shelf \$20 Ethernet NIC. In a typical radio station with five audio workstations, this represents a cost savings of between *\$10,000 and \$20,000*. But this is only the beginning.

In a traditional routing system, whenever a soundcard is used its audio outputs must plug into a corresponding console/router input. Axia's IP-Audio Driver eliminates the need for dedicated console modules and router input cards too, so it's not unusual for a typical station to save *another \$5,000 per studio* when considering this aspect. For a group building 100 studios, Axia could save well over \$1,000,000 in soundcard-related costs alone.

Axia's IP-Audio Driver integrates with a huge list of playout system partners' delivery software – see [www.AxiaAudio.com/partners/](http://www.AxiaAudio.com/partners/). No other manufacturer of networked consoles offers this many partner choices — other companies have a very limited partner list indeed.

**3. Axia eliminates outboard voice processing and mic preamps.** External voice processing boxes can cost between \$300.00 and \$1,500.00 per microphone, not including mic preamplifiers — another \$100.00 to \$400.00 each. For a typical studio containing 4 microphones, the cost of outboard processing could be anywhere between \$600.00 to \$2,000.00 per mic.

Axia consoles feature, at no extra cost, built-in studio-grade mic processing (with EQ) by Omnia. Our flagship Element console includes EQ, compression, noise gating and de-essing, but even our most affordable consoles have EQ and voice compression. Savings within a 5-studio facility could range from \$10,000.00 to \$20,000.00; over 100 studios, *the savings could easily exceed \$200,000 or more*.

**4. Axia reduces the cost of "Listening Stations."** Using traditional technology, setting up listening stations for programmers, managers and other office staff to listen to studio outputs meant using a selector panel hard-wired to the consoles or router frame, along with amps and speakers. This meant more wiring, more equipment, and more money. Because Axia is standards-based, studio audio is sent over the network in the form of RTP audio streams. Any PC with Windows Media Player, VLC Player, Winamp or a similar standards-compliant player can listen to these streams, and because modern PC's are equipped with headphone outputs or small speakers, anyone with a computer has a full-featured listening station. To make this even easier, Axia offers a very low-cost program called *iPlay* that allows users to switch instantly between up to eight pre-programmed sources.

In a typical station with four studios and some shared audio feeds, you'd have at least four listening stations, each of which would cost around \$1,000 to fully equip — up to \$200,000 when applied to 50 radio stations. Axia does away with the need for that external hardware and saves you that \$200,000. And, there's a bonus: because of the ease and convenience of listening using standard PC's, most Axia clients will set up far more than they would have otherwise, enhancing productivity by allowing many others in the organization to hear the streams — not just a select few.

**5. Axia reduces the cost of station audio archiving (logging).** With prices ranging from \$2,000 to \$15,000 and up, buying dedicated hardware recorders to log program audio can become a very expensive proposition, not just in initial hardware costs, but also in operating (media) costs. Software-based loggers running on PCs are less expensive, but soundcards must be used to get the audio into the computer for recording, driving costs up. For instance, the hardware cost to record 8 stereo streams using a Telos logging system with Telos soundcards would be around \$4,000 — that's \$500 per stereo stream. This cost, of course, doesn't include the PC and storage drive.



Axia's networked audio logger, *iProFiler*, uses our IP-Audio driver to capture audio directly from the network without the use of expensive soundcards. Using Axia, a 50-station group could save more than \$150,000 compared to the soundcard-equipped PC logging method (and much more compared to dedicated hardware recorders).

**6. Axia reduces the cost of peripherals by allowing more sharing.** Traditional consoles don't share resources well. A typical station might have need of an audio codec in various studios over the course of a working day. Since it's impractical to physically move a single codec from studio to studio, stations have historically equipped each studio with all the peripherals its users might need during the course of the day. Even though the station doesn't *need* three codecs, traditional consoles make it more convenient to install a codec in each of its three studios rather than attempt to share one or two devices.

Axia makes it practical share resources. Instead of duplicating devices in each studio, you can now share a few centrally-located devices between any studios that need them. It's hard to quantify the cost savings derived from this, but it would not be unusual to see the overall quantity of peripherals in a typical studio complex cut by 50% thanks to the benefits of sharing. To see how this quickly this savings adds up, consider: even if you only eliminate one \$4,000 codec per studio, this represents a *\$200,000 cost savings* within a 50-station group.

**7. Axia reduces the cost of studios by enabling fewer studios to do more work.** Radio stations have historically made inefficient use of studios. The reason is simple: each studio was primarily designed for only one purpose — on-air, production, news — and when not doing this work, lay idle.

Axia allows any studio to be instantly reconfigured to perform an alternate task. For example, a production studio, when not being used for production, can serve as an air studio or a news studio or an interview studio by simply loading a new profile into the console. Even large and very busy stations have found that with Axia they could reduce the number of studios needed, because each talent can have their work preferences saved in software rather than built into the permanent configuration of the studio (as was necessary with traditional consoles). If a station were able to reduce its studio needs by, say, 20%, this could easily represent \$250,000 or more across a 50-station group.

**8. Axia reduces the cost of audio routing.** All stations route audio, even the smallest ones. Of course, they don't always think of it as routing, but anytime an engineer needs to patch around a problem, an operator share a feed, a jock change what's being sent to a caller, or a tech send one audio source to multiple destinations, routing is what they're doing. And if a station doesn't have an audio router, they employ a hodge-podge of other devices to do the job. The cost of all those patch bays, distribution amps, line selector, sub-mixers and PC-controlled switches can add up to significant sums. A mainframe-type router can eliminate the need for many of those devices, but doesn't effect any cost savings. Mainframe routers cost even more than the various devices they replace!

By contrast, Axia is a true audio network that uses Ethernet to allow any device to connect to any other device in a facility. Axia networks use high reliability switches from companies like Cisco, HP, and AT as the core routing components, whereas Axia's routing-switcher competitors build *proprietary products*. This provides Axia clients with much more reliable solutions: Cisco has more experience building networks for 24/7/365 operation than all of the broadcast companies combined! Axia simply adapts Cisco's core technology to the needs of broadcast so that broadcasters have access to much more advanced technology, reliability and lower costs, due to the comparably higher volumes of Ethernet switches as compared to broadcast routers. Axia hardware typically costs 50% less than a comparable mainframe-type router.

**9. Axia reduces maintenance and operating costs.** Because Axia is based on standard Ethernet, the audio network is maintained using the same tools, cables, testers, and diagnostic programs used for your IT or VoIP networks. Remote administration and configuration is simple and requires nothing more than secure access and a standard browser. Stations can save money not only on engineering (a smaller



staff is possible because skills are leveraged across multiple platforms), but on the tools, spares, equipment and training needed to keep all of these systems operating.

We hope we've provided some insights that will be useful in your decision. Have questions or want to talk more? E-mail us anytime at [Inquiry@TelosAlliance.com](mailto:Inquiry@TelosAlliance.com) .

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