



## Connected Lecture Hall with a Hybrid Solution of Networked and Centralized AV, Audio Reinforcement and Intuitive Control



### OPPORTUNITY

Large learning spaces like Lecture Halls go beyond the audiovisual content sharing needs of smaller spaces. While technology that supports intuitive content sharing is still critical, so is added audio reinforcement for voice and content. It may also be important to capture and stream content to overflow spaces.



### SOLUTION

HARMAN Professional solutions offers a wide range of choices for any audiovisual requirement. The solution example in this application brief includes podium-friendly technology solutions for the instructor offering system control and access to a variety of content options. It also includes wallplate connections for additional visiting devices to share content. The core video distribution system distributes high-resolution video to large screens and displays for clear audience view; while the audio system provides reinforcement for both content and voice. Finally, networked AV connections enable content captured in the lecture hall to be shared to overflow spaces, throughout the campus, and even over the internet to other sites.

The system can support virtually any source. Here, a Blu-ray player, document camera, and accessible connections for BYOD devices like laptops are included in the podium. An AMX HydraPort connectivity solution provides access to connections at the podium, while a Modero G5 7" wall mount control panel installed in the podium allows instructors to control both content and equipment. The system also has access to a room-PC and/or additional sources in the AV closet, and can stream content to and from the campus LAN.

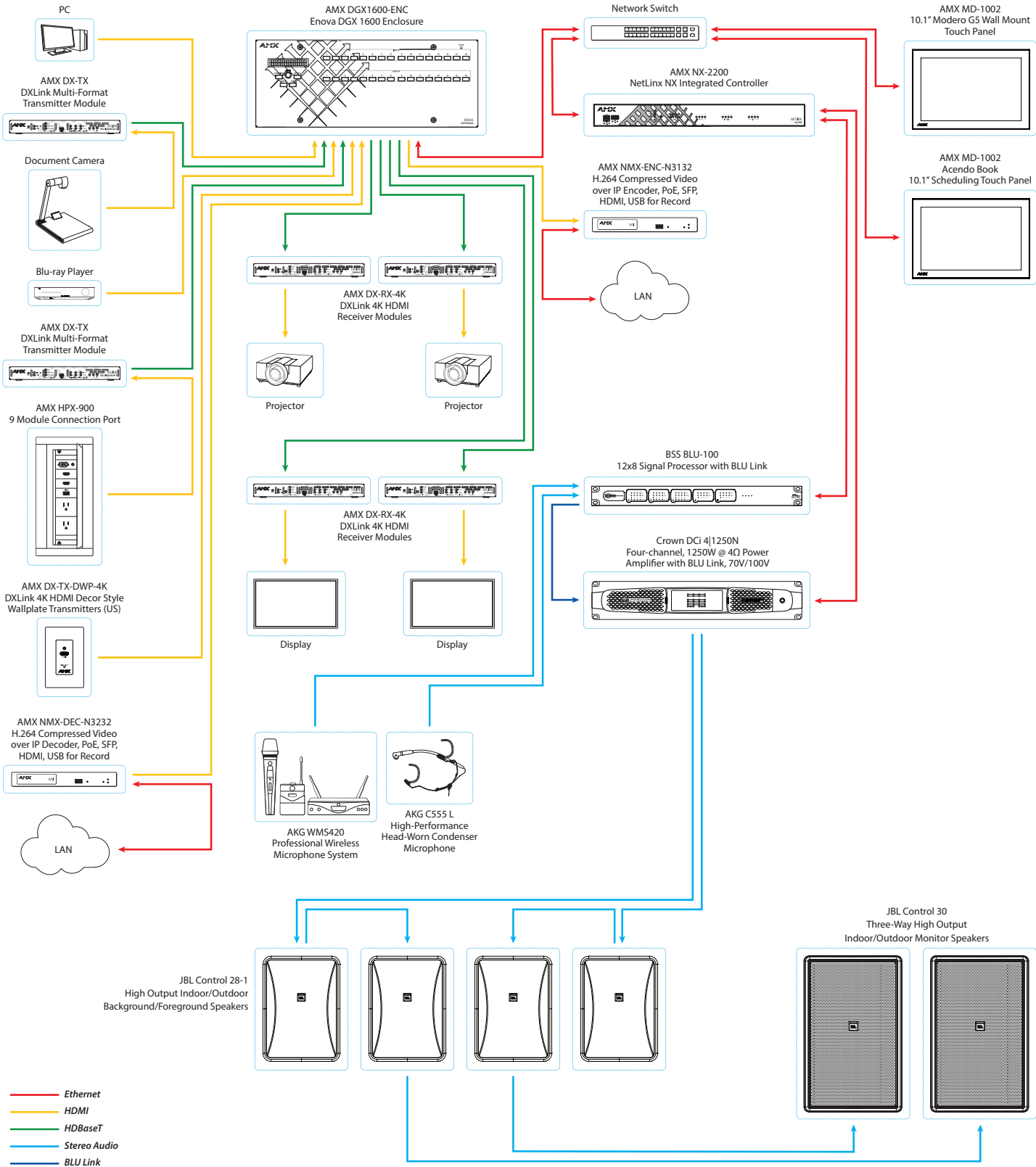
Distribution of in-room content is provided by an Enova DGX 1600 digital media switcher with an AMX SVSI N3232 Decoder on one input for access to streamed content from other campus locations. A camera feed from the lecture hall can also be streamed back out to the campus or overflow rooms via the output of the Enova DGX connected to a N3132 Encoder.

High-resolution projectors and displays placed strategically in the hall ensure all audience members can see the instructors content in stunning high-resolution that is clear enough for even the most high-contrast video images, and in real time to eliminate fatigue from video delay.

For audio, a BSS BLU-100 receives voice audio from a microphone and WMS420 professional wireless microphone system and/or C555 L high-performance head-worn condenser microphone along with audio from content sources delivered from the outputs on the Enova DGX. The BLU-100 is a fixed I/O Soundweb London device expertly designed to provide audio processing capabilities including mixing/gain, crossovers and filters, delay, primitives, graphic and parametric EQ and more. This ensures that no matter the source, the sound is processed for delivery in a consistent way that ensures intelligibility and avoids complications like perceived audio jumps when switching between sources. From there, the audio is delivered to a Crown DCi 4|1250N amplifier with patented DriveCore technology and then onto JBL Control Contractor Series speakers to complete the voice and sound reinforcement solution with legendary industry audio. The Control 30 speakers are shown in the diagram below, the Control Contractor Series has a wide range of additional options include surface-mount (on-wall), in-ceiling, and in-wall models. BSS Soundweb London, Crown and JBL offer signal processing, amplifiers, and speaker combinations to fit even larger spaces if required.

Unified control of the entire system is achieved with an NX Central Controller, the industry leader in secure control, together with streamlined intuitive user interfaces provided by both a Modero G5 tabletop and wall mount touch panel. At the heart of the control system, the NX Central Controller provides simplified control of all the devices in the room to include actions like device on/off, volume, screen lowering and much more; while the Modero touch panels give the users an intuitive way to access that control. The user interfaces can be customized to include selections for independent device actions (like volume for each device). For even more powerful control options the system can be set up with combined actions like "visitor presentation" that could switch to the connection for the visiting device, turn on the projector, lower the screen, dim the lights and adjust the volume all with a single selection. And finally, for easy room scheduling, an Acendo Book scheduling panel outside the room ties into the campus scheduling platform to clearly display the room schedule and allow for on-panel booking. AMX Acendo Book is compatible with Microsoft Exchange, Office 365 and Google Calendar. The scheduling panel displays the room schedule, the panel itself lights red or green to indicate room availability, and depending on desired setup, user can book the room directly from the panel.

NETWORKED AV LECTURE HALL SYSTEM DIAGRAM





### AMX N3000 Series H.264 Video over IP

The AMX SVSI N3000 Series extends the reach of AMX SVSI Networked AV to the WAN for streaming, video to desktop, digital signage, set-top boxes, or mobile device applications. Utilizing H.264 compression technology, the N3000 Series delivers the highest quality HD video content at the lowest bandwidth for the most demanding application. Moving video to or from the cloud just became a lot easier.



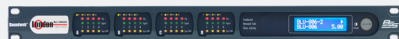
### AMX Modero G5 Touch Panels

AMX Modero G5 is the face of the most secure AV control system. Beautiful, streamlined user interfaces that integrate all the functionality needed to control room technology including sources, devices, lighting, and more. Get complicated user interactions out of the way so business, learning and entertainment can get underway. Available in 20", 10" and 7" tabletop and 10" and 7" wall mount.



### AMX Enova DGX Digital Media Switchers

AMX Enova DGX digital media switchers allow a large number of sources, with resolutions up to 4K60 4:4:4, to be distributed across a large room, building or campus. With local VGA and HDMI support, in addition to transport options including category cable and fiber, the system can be customized by selecting from a variety of input/output cards.



### BSS Soundweb London Digital Signal Processors

Used in install sound applications, Soundweb London provides three core functions for audio signals processing, control and distribution. Simplified programs allow designers to assign and define an extensive menu of audio processing choices (called objects) for each incoming channel. Processing capabilities include: mixing / gain (i.e., ambient noise compensator, compressor, ducker, expander, gate, leveler, limiter), crossovers and filters, delay, primitives, graphic and parametric EQ, and more. Those channels can then be connected using a drag-and-drop block diagram. This creates the signal flow that defines the processing, control and distribution of the audio.



### Crown DCi DriveCore Installed Amplifiers

The Crown DCi DriveCore Amplifiers are purpose built for installed sound with patented DriveCore technology for superb efficiency and exemplary audio quality. Available in two, four or eight channels per amplifier at 300, 600, 1250 or 2400 watts per channel. In addition, there are models available that support Dante/AES67, BLU link, AVB and CobraNet



### JBL Control Contractor Series Loudspeakers

Spanning a complete range of surface-mount (on-wall), in-ceiling and in-wall models, the variety of solutions offered by the Control Contractor Series give you complete mastery of any architectural, aesthetic or system performance requirement. All with sound from JBL, simply select the loudspeaker for the architectural, form factor and sonic requirement and the resulting sound system will always deliver superior performance, reliability and value.