AoIP, AES67 and SMPTE 2110-30 Implementation in the Real World

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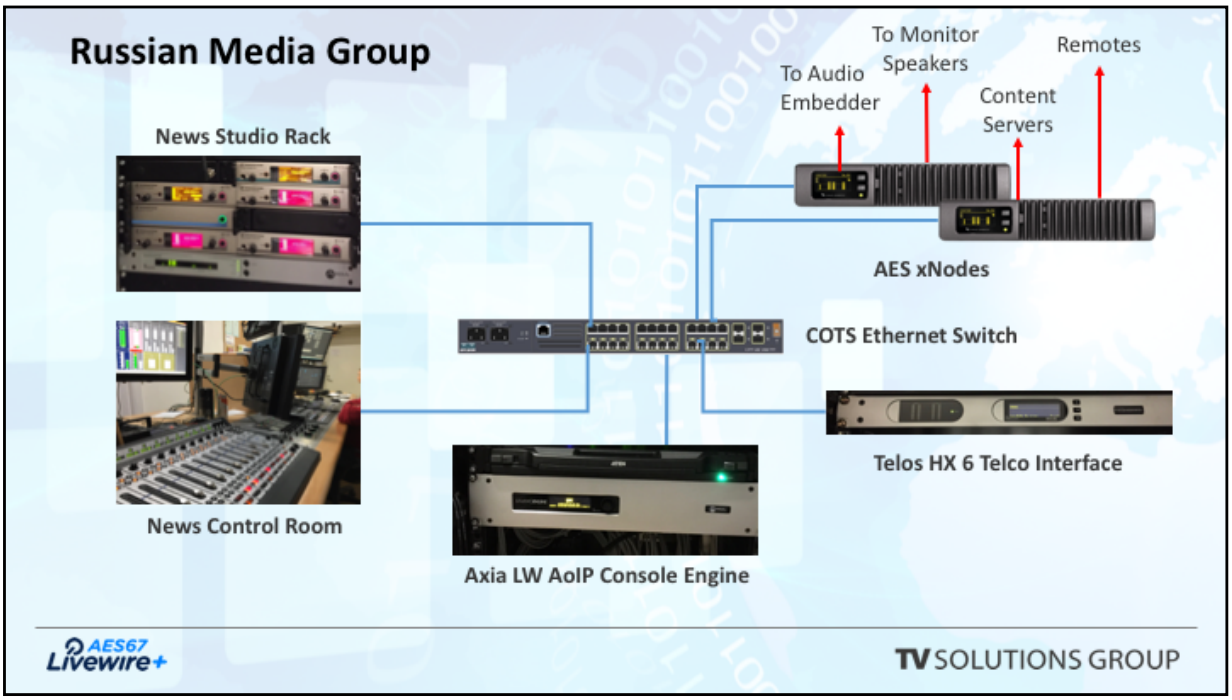

In Moscow the Russian Media Group has several radio stations and a TV station co-located. Seeing the success the radio stations had moving to a Livewire AoIP infrastructure the TV station decided to use this technology to its advantage. This was done several years ago before AES67 or SMPTE 2110. The selection was based on the system's potential for savings, ease of use, and features.

An Axia AoIP console engine and control surface were installed in the news control room. In the news studio wireless mics, wireless IFB, and studio monitor speakers were all connected to the AoIP netowrk by an Axia xNode. An Axia Intercom, natively using LW AoIP was installed. A Telos multiline studio phone system, with digital telephone hybrids and LW AoIP I/O was used. Another xNode delivered new studio audio to the SDII audio embedder and also provides audio outputs for audio monitoring. All of this audio I/O is interconnected with just a few Cat5/6 Ethernet cables.

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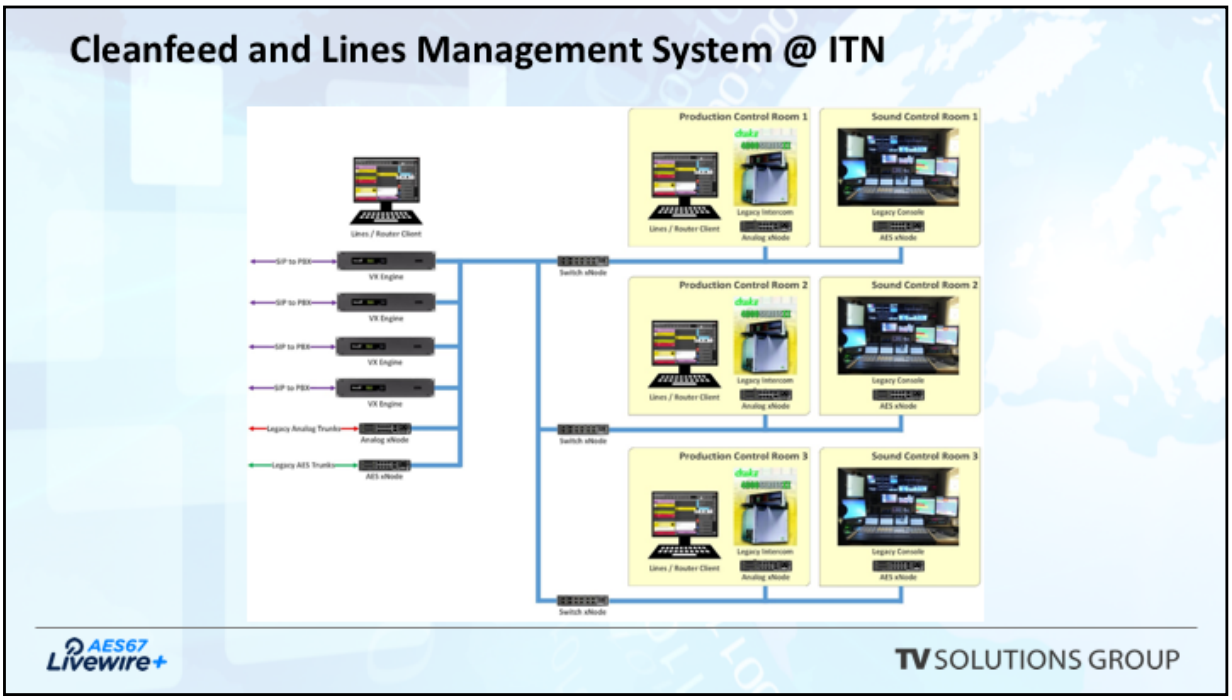

At ITN in London there are 5 control rooms and associated studio spaces. These are leased out to a variety of users, some long term and some for a single show or production. A way to share facility resources among the 5 control rooms was needed. Allocation of resources like production quality telephone services, intercom and audio devices had to be easy to assign and change at a moments notice.

3 of the 5 studios are shown here. LW+ AES67 was used to link all the control rooms to the various legacy intercoms, analog and AES digital audio devices and to Telos VX telephone systems. Telos engineers custom configured a LW+ AES67 AoIP control system and the 5 control rooms now share resources. It is quick and easy to make changes to accommodate different client and show requirements.

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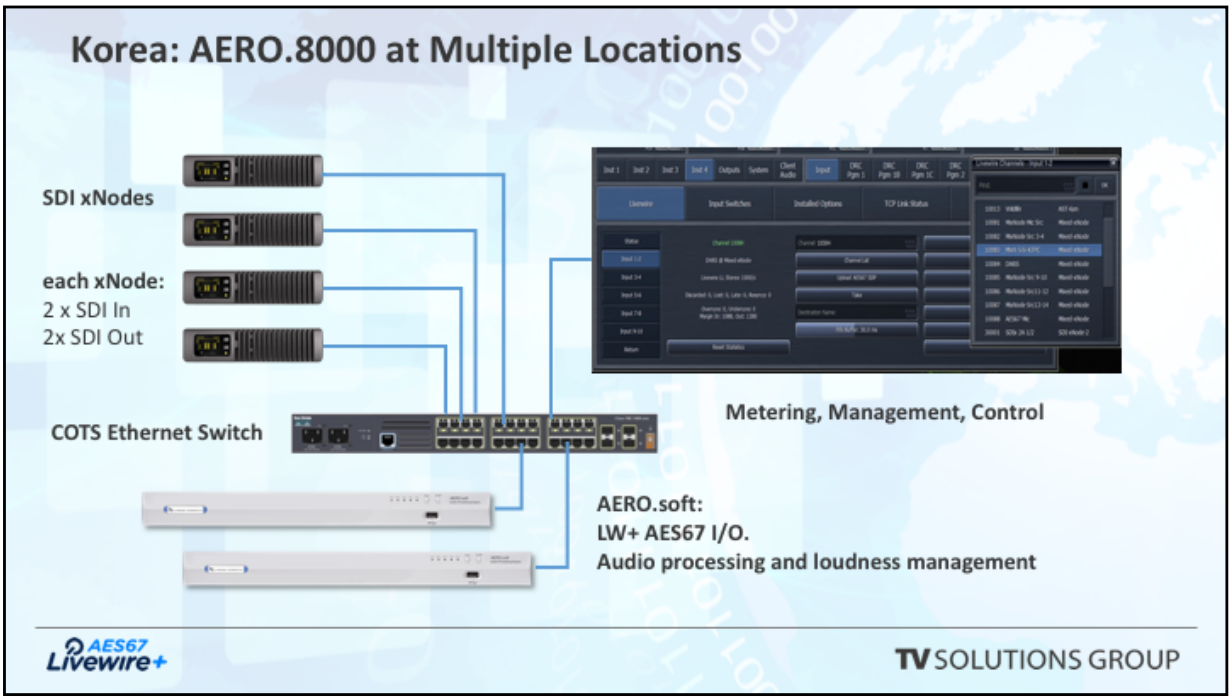

In the past few years several broadcasters in Korea and the U.S. have installed AERO.soft loudness control processors in broadcast television distribution facilities. Using a Livewire+ AES67 AoIP infrastructure, SDI xNodes de-embed and re-embed audio from and to SDI streams. Audio loudness control and processing is done in AERO.soft which uses LW+ AES67 I/O.

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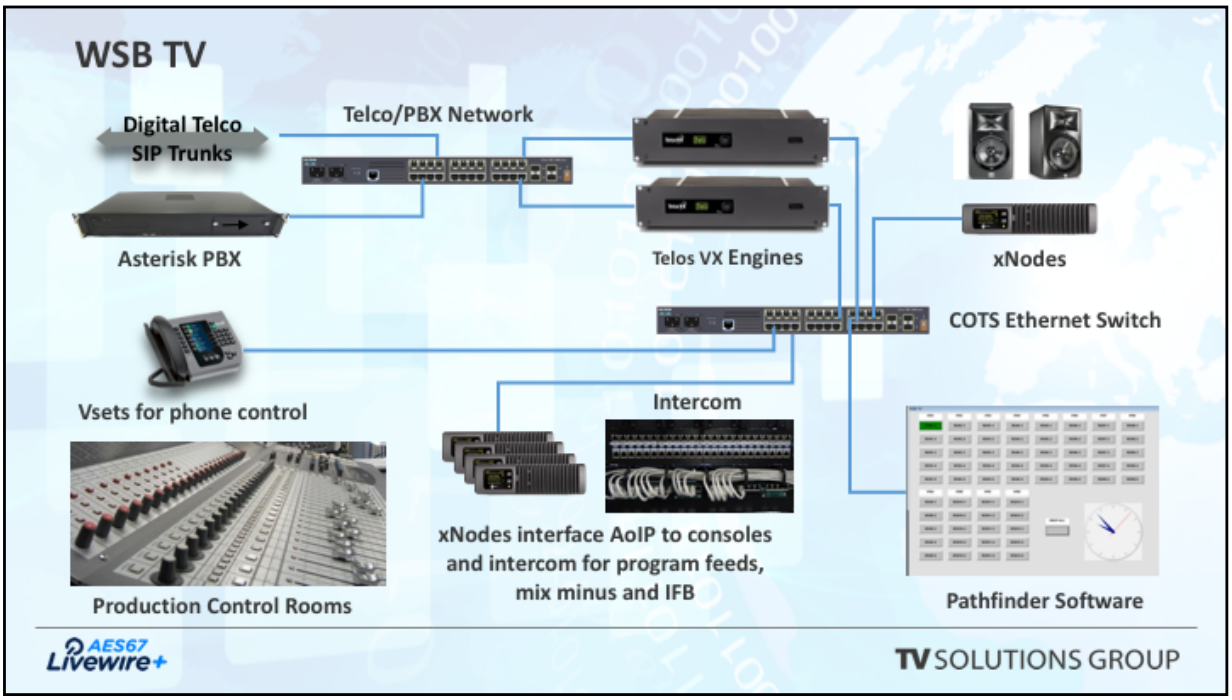

In Atlanta, in the US, WSB television and a major news network with facilities in Washington and NYC, were all looking for a better way make studio quality telephone calls available to their various news studios, edit rooms and reporters and IFB for crews that were on location.

They replaced racks of telephone couplers, telephone hybrids and patch panels with Telos VX and a Livewire+ AES67 infrastructure. Control rooms, edit bays and desktops share the digital hybrids and phone coupler capabilities of the VX and also gained control over IFB using Axia Pathfinder software.

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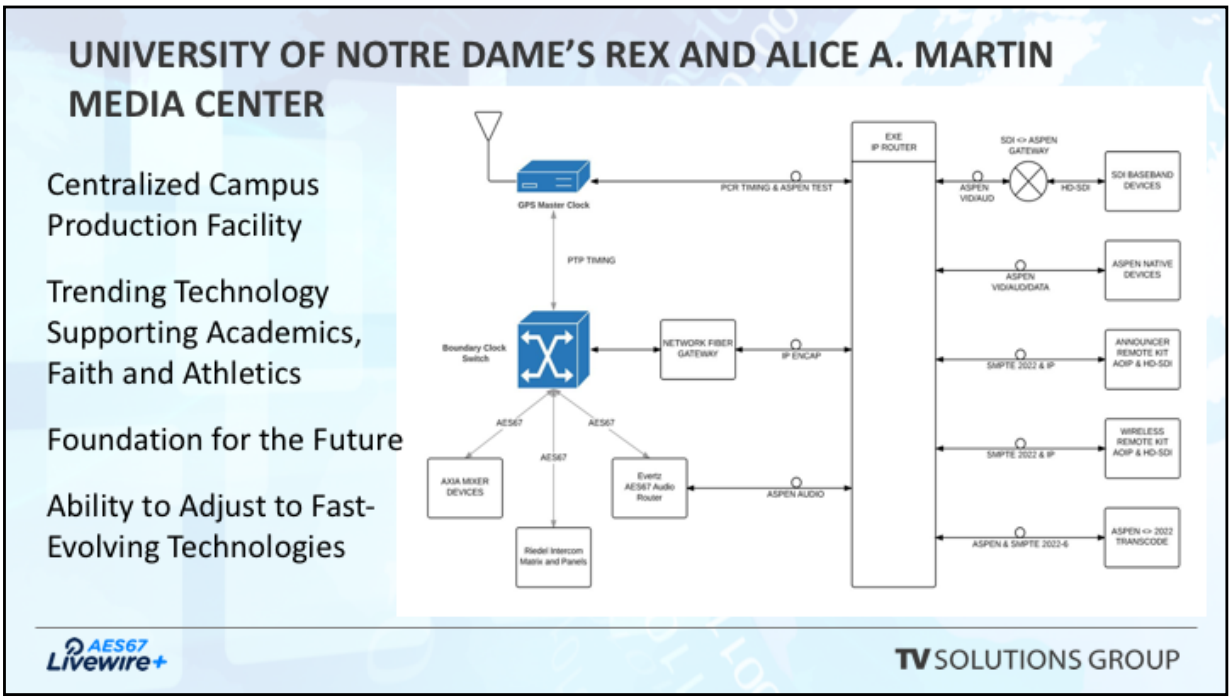

University Of Notre Dame chose best of breed gear to meet their campus wide production needs for national broadcasts and internal services. PTP master clock ties together audio, video, and metadata across multiple vendors to met their needs.

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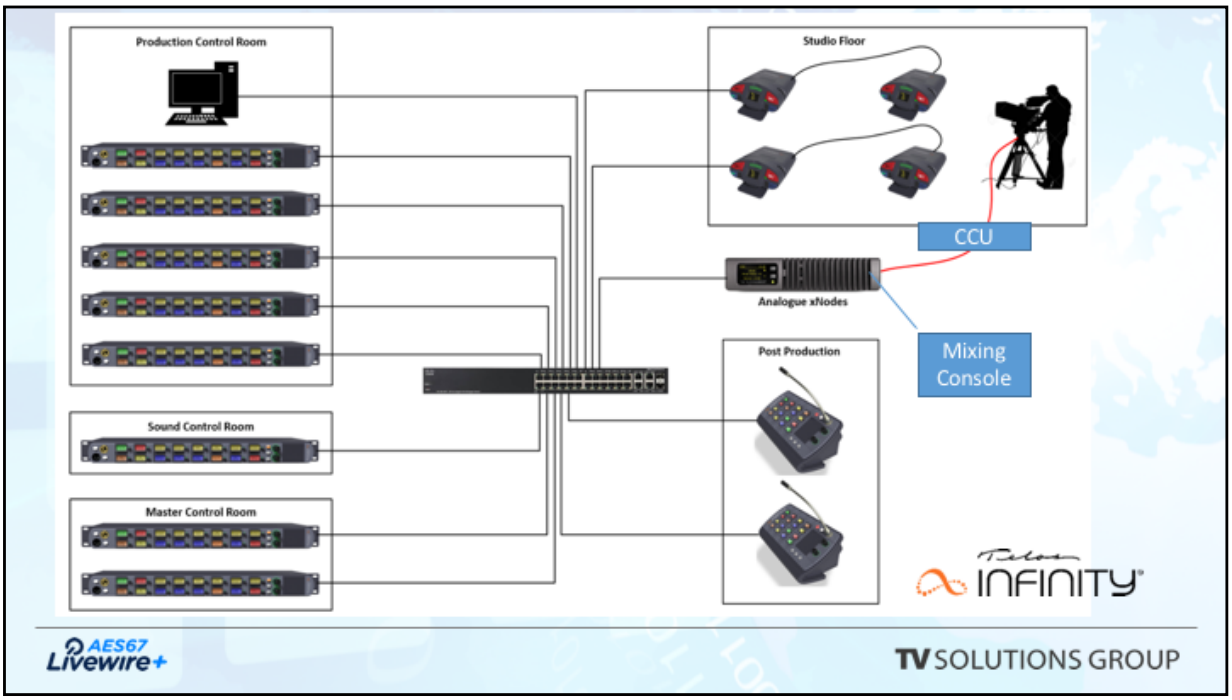

An example of the enormous promise of AES67 is the new Infinity intercom from the Telos Alliance. Combining AES67 audio interconnect with the router and control protocols of Telos' Livewire+ AES67 AoIP protocol Infinity is the first large scale intercom designed without a central matrix.

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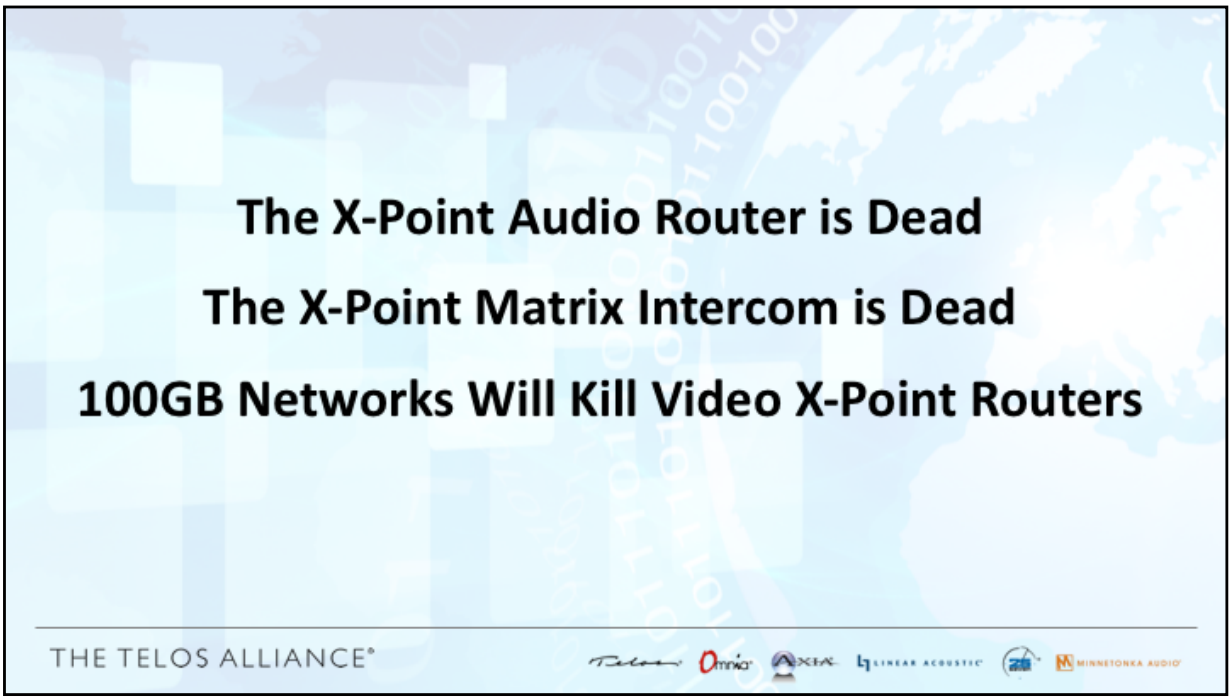

The last 18 years of radio broadcast facility development s a clear sign of what will happen in television broadcast and production. It took less than 15 years to replace audio x-point routers in professional radio broadcasting.

Why buy a crosspoint matric base intercom that runs out of connectivity when a matrix free intercom increases its capacity as more panels are added.

It will take much less than that for major changes in video production as network speeds are increasing at a faster rate.

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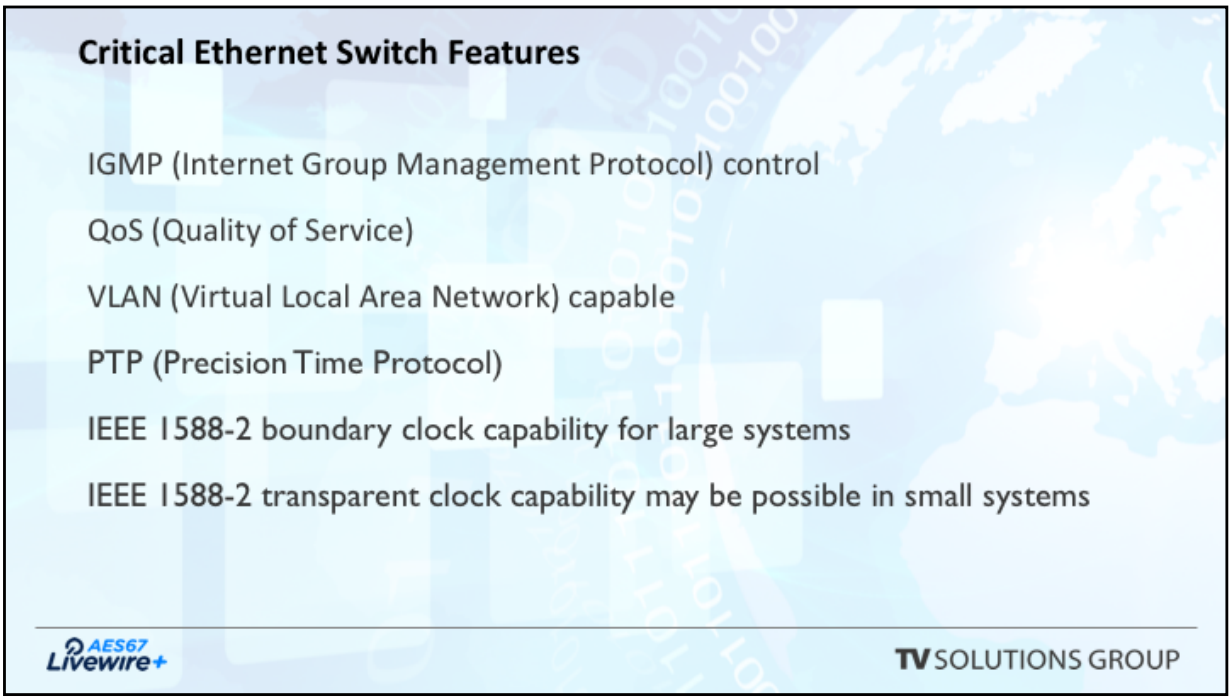

These are some terms to become familiar with when you begin to talk about the Ethernet network switch capabilities that used when configuring switches for use in an AoIP network.

Switch management applications must be able to mange the first three of these. The need for transparent or boundary PTP switch capability depends entirely on the size and purpose of your facility.

The Internet provides endless reading about what these terms mean and how they can be used in building networks.

The practical question is where do you start?

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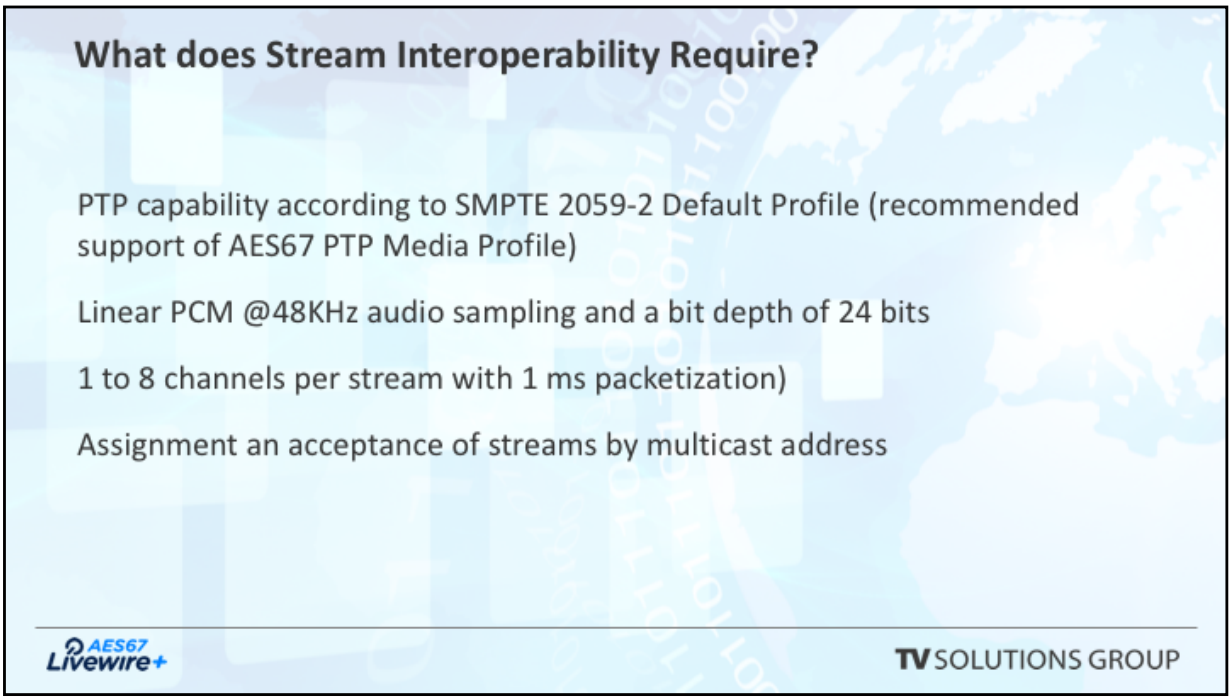

AoIP interoperability is simply the ability of an audio stream from 1 vendor to be received and used by another vendor's equipment.

AES67 and SMPTE 2110-30 both define a minimum level of interoperability and that is a 24 bit stereo stream sampled at 48KHz and packetized in 1ms packets. This level of interoperability has been demonstrated by many vendors in several tests conducted by several different organizations.

We are currently working on multivendor systems and we are optimistic and excited about the promise of these systems.

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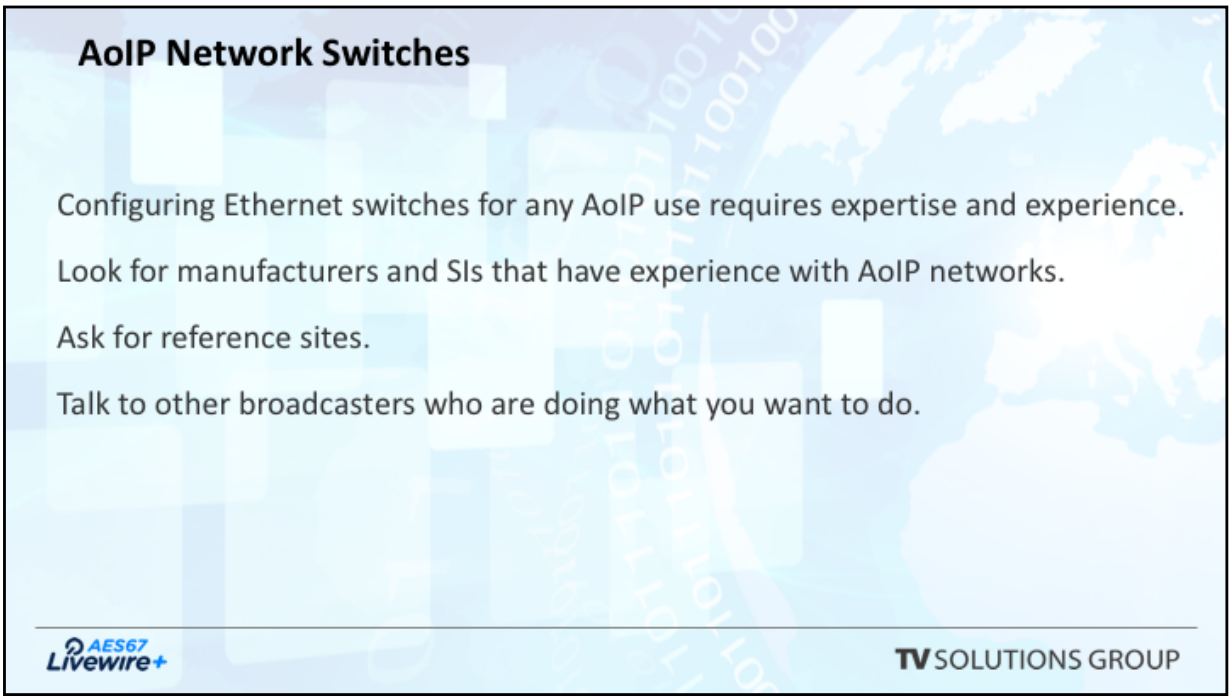

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Many manufacturers have media divisions specifically for handling broadcast configuration of their products.

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It is already apparent that standards re encouraging an increasing number of manufacturers to comply with these

standards.

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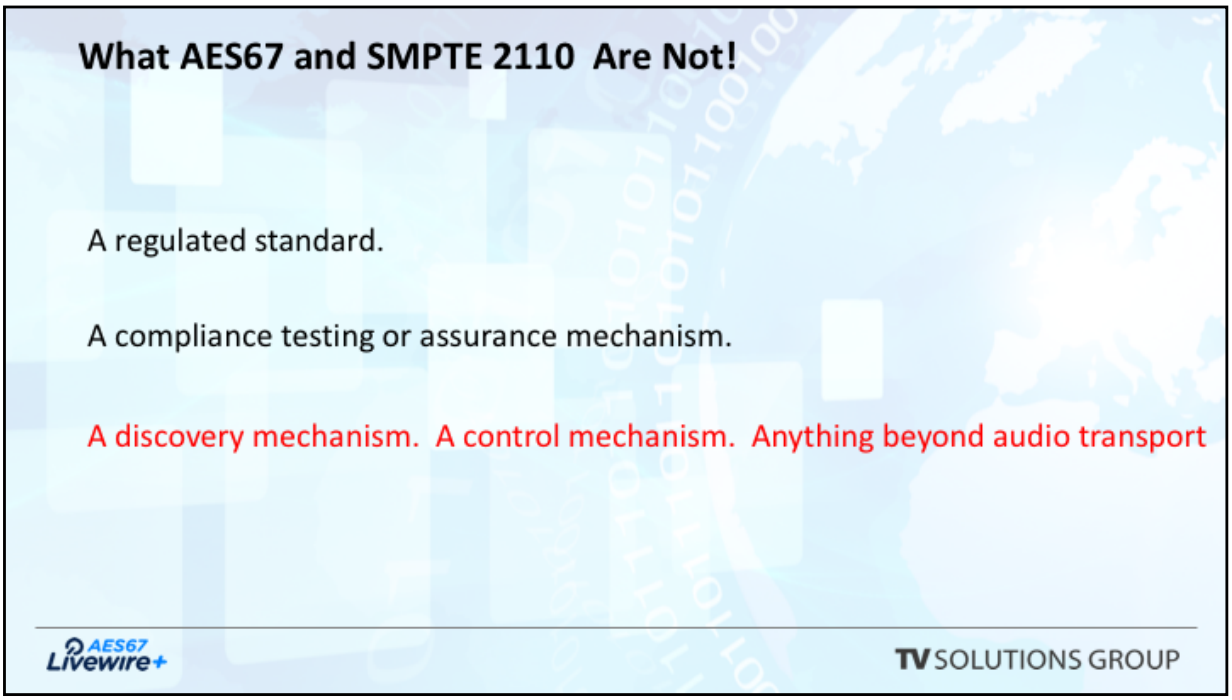

There are three things that AES67 is not! These are very important. It appears that all of the vendors we are familiar with in the broadcast space can send a receive an audio stream that the other vendors can use. The question is, when will streams be recognized by every vendor's equipment? This is where discovery comes into play and there is not yet a an accepted discovery standard.

You must ask vendors if they actually interoperate with one another in the manner and fact of your particular needs.

The good news is that two of the largest biggest players in AoIP systems, Telos with LW and LW+ and Lavo with Ravenna, have interoperated for years. They can each use the other's discovery mechanism.

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