MANAGING PODIUM PRESENTATIONS USING UTP

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Since the presentation market is a multi-billion dollar industry; those in the field cannot afford to lose valuable presentation time in connecting and dismantling equipment. Part of the loss in time is due to the bulky and obtrusive coaxial cabling that is found in most installations. The installation of audio-visual projection equipment can be a cabling nightmare due to the multitude of bulky and expensive coaxial cables snaking around the room. Furthermore, the inevitable use of "gaffer's" tape to secure the cables and prevent accidents is a messy solution to an otherwise state-of-the-art installation. This article will demonstrate how twisted pair cable coupled with audio-video balun technology is a more discreet and cost-effective solution versus coax, allowing installers and users to streamline their podium presentation systems and help shorten setup and dismantling time.

Podium Presentation Systems

The typical podium presentation system is comprised of:

a) a speaker's podium
b) one or more audio-visual projectors
c) audio video sources (VCR, DVD, camera, microphone, PC, video servers)
d) video switchers, scan converters and video scalers if required
e) all necessary audio-video coaxial cabling and connectors

The problem with the way presentation systems are traditionally cabled is that the cabling becomes too bulky and cumbersome to manage efficiently. Also, the number of presentation technologies to choose from has grown and the projection system must be able to support sources from multiple audio-video formats such as composite video, S-Video, VGA and RGB. Each format has its own type of connector and cable, giving rise to a tangle of multiple types of coaxial cables being routed between equipment.

Figure 1 illustrates the typical audio-video cabling using coaxial cable. The system supports RGBHV, audio, voice, and LAN connections. The cables are enclosed into a cabling harness and cannot be removed from the wall. Any changes to this configuration are costly and time-consuming.

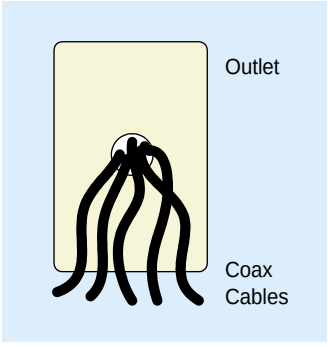

Figure 1: Typical Coaxial Cable Congestion

The Solution

Instead of installing complex and expensive switching systems, the use of video baluns and the appropriate cable harnesses can provide a neater and more

cost-effective cabling structure that allows equipment to be set-up and taken down quickly and without damaging the furnishings in the presentation room. Figure 2 illustrates a conceptual podium presentation installation using various video baluns to provide the interface between the equipment and the twisted pair cabling system. In a simple case, the primary cable harness provides the options to connect a variety of audio and video signals to the projector and may be hidden under a raised floor or in the ceiling plenum. Keystone jacks at either end provide a versatile means to connect or disconnect audio-video equipment via Category 5 patch cables. This is necessary in situations where the equipment must be set up and dismantled quickly. The keystone jacks may be color-coded according the type of audio/video signal to be connected. In the case of a permanent installation, the keystone jacks can be replaced by a wall plate with color-coded jacks for each audio-video signal. A wide range of video baluns on the market allow different analog audio/video signals to be supported. Since Category 5 cables are used, the diameter of the cable harness is much smaller than if coaxial cables were bundled together. The following case study illustrates how twisted pair cable and audio baluns were applied in a Technology Lab in Olympia, Washington.

A Case Study – ESD 113, Olympia, Washington

FM Electronics recently installed a podium audio-video system in a technology lab for the Educational Service District 113 (ESD 113) in Olympia, Washington. The lab is primarily used to provide training on software and hardware. Since the presentation devices are continuously changing and the projector is mounted above

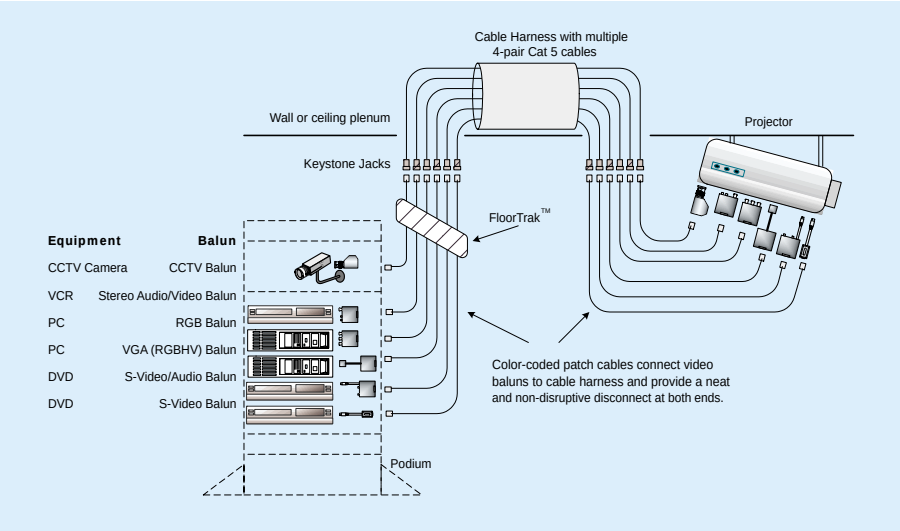

Figure 2: A conceptual podium presentation installation.

the instructor, this lab needed an audio video system that was flexible and would allow a choice of composite audio-video and high-resolution VGA video to be displayed.

All Category 5 cabling was passed through the wall and plenum ceiling to the projector that supported audio as well. Since the projector is needed for both analog audio-video and PC-VGA programming, it is equipped to receive multiple audio-video formats including:

- S-Video and audio
- Composite video and audio
- VGA

Normally the video baluns are installed with Velcro pads in the ceiling plenum on a small metal plate attached to the projector mounting post. A short VGA cable and the necessary audio-video cables are the only connecting devices in the room. According to Dr. Richard Barnhart, the Director of Educational Technology at ESD 113, the video baluns were deliberately made visible in order to illustrate the innovative use of video balun technology. In a typical installation the video baluns would have been concealed in the ceiling with the connectivity cables running through the projector support mast.

Figure 3 shows a VGA video balun and a composite audio-video balun converting their respective audio-video cables to Category 5 twisted pair. One balun is used to convert S-Video and stereo audio into four Category 5 twisted pairs. The other balun converts the VGA video signal into four twisted pairs. Normally unshielded twisted pair is always used, but in this case, shielded twisted

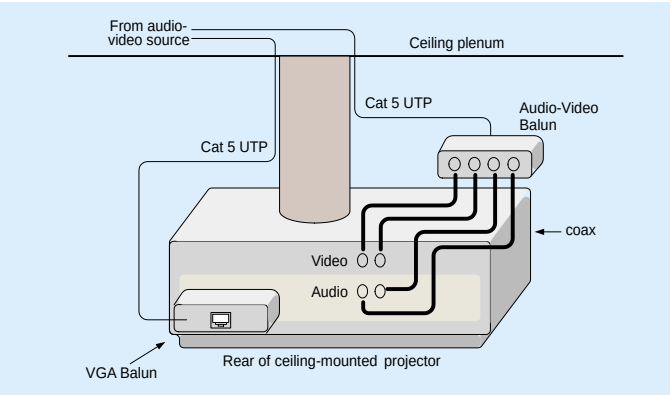

Figure 3: Composite Audio-Video Balun and VGA Balun Mounted on Rear of Projector

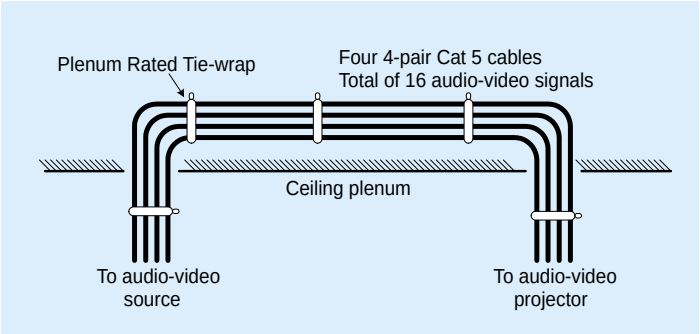

Figure 4: Cat 5 Cabling Harness in Ceiling Carrying Audio-Video and VGA Signals

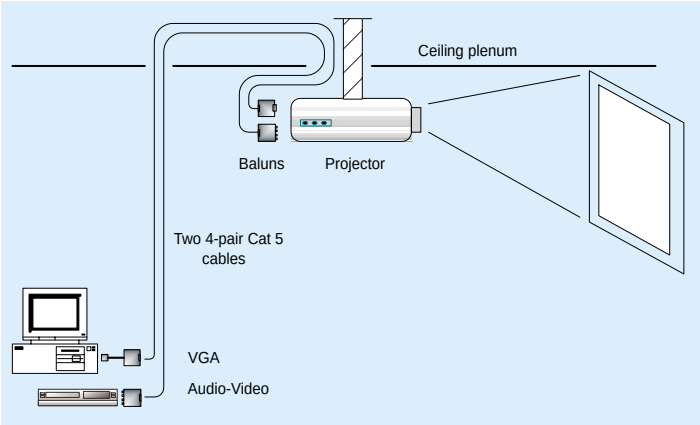

Figure 5: Technology Lab Showing Ceiling Projector and Cat 5 Cable Harness

pair was needed between the VGA baluns in order to provide a common signal reference between the VGA equipment at both ends.

The Category 5 twisted pair cables connecting the projector to the audio-video input equipment are neatly tie-wrapped and concealed in the ceiling plenum. (See Figure 4) In this application there are only four Category 5 cables used. Together they carry sixteen (16) audio video signals and would replace up to sixteen (16) coaxial cables if each signal had it own cable.

Figure 5 shows the overall lab setup with the projector mounted to the ceiling. Note the absence of numerous coaxial cables.

Using video baluns and Category 5 UTP; the podium cabling has been streamlined by allowing connections to the projector to be made via a standard modular wall plate. Each jack is color coded for a different audio-video signal. For example, in this application the jacks were assigned as follows, as shown in Figure 6.

Top connector:
Stereo audio and voice

Middle connector:
VGA via shielded twisted pair

Bottom connector:
Ethernet LAN connection

Additional jacks can be installed to support other video connections such as S-Video or CATV. The cables from the wall plate to the keystone jacks are inserted in a FloorTrak™ cable cover that provides a safe walk path. The cable harness between the keystone jacks are concealed in the ceiling plenum.

Conclusion

Podium presentation cabling can be streamlined by using passive cabling components and standard Category 5 cabling without the need to resort to more expensive or cumbersome transceiver equipment. The above case shows how passive balun technology can help provide a neater and more cost-effective cabling solution without having to resort to active components and additional power supplies. For more information about how Category 5 cable can be applied to podium presentation systems, please contact your local audio-video specialist.

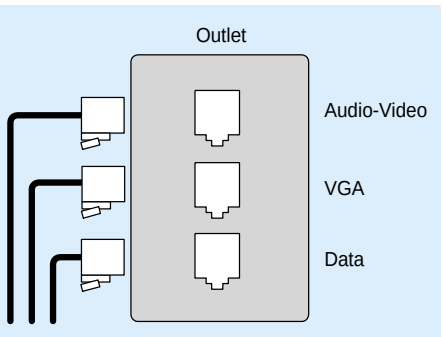

Figure 6: Cat 5 Wall-Outlets for Stereo Audio-Video, VGA Video and LAN

References

For a more comprehensive discussion about the different video standards, please refer to the following link entitled "Understanding Computer Interfacing": http://www.inlineinc.com/tech/notes/ CBM

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Glossary

Composite video - Single channel video whereby all elements of the video signal (color, sharpness, brightness and synchronization) are transmitted over one wire. Composite formats include: NTSC (N.Am), PAL (UK) and SECAM (France).

S-Video - A video transmission format whereby the video is transmitted in two components: chroma (color) and luma (brightness). Transmitting these components separately and then recombining them at the receiver achieve a sharper image achieved versus composite video.

VGA - A form of component video whereby the video signal is transmitted in five separate parts; red, green, blue, horizontal sync and vertical sync. VGA provides superior resolution than S-Video and composite video.

Video scan converter - A device that converts a VGA video into an analog video signal.