Christie Terra SDVoE Solution FAQ

Software Defined Video over Ethernet (SDVoE) fundamentals

+ What are the advantages of using SDVoE products and transporting AV over 10G networks?

SDVoE products foundationally solve a broad set of professional AV application requirements that are encountered in virtually every project. AV extension, AV switching, scaling, video wall, multi-viewer, EDID management, audio embedding and de-embedding, audio mixing and control routing. Two products used together in systems fulfill all these requirements configured in simple, highly scalable systems at prices that are more affordable than traditional AV technology.

+ What is the advantage of using 10G Ethernet for AV transport vs using traditional AV switching products or streaming over 1 Gigabit networks?

The 10G Ethernet switching supports transport of uncompressed video content. No compromise must be made in latency or quality as occurs using AV streaming products on 1 Gigabit networks. Compared to traditional AV switching and transport, a 10G Ethernet network can support incredible scalability to very large system sizes beyond 1000 endpoints at much more affordable prices. The 10G networked platform can also be easily expanded and built up over time. Ethernet switches are very dense. A one rack unit network switch can support 48 switching ports. This is a dramatically smaller size than an AV switch supporting a similar input/output capacity. SDVoE products all support video wall scaling, multi-viewer and KVM functions, which are not standard in traditional AV switching systems. System-wide EDID management and audio processing features simplify and make system integration vastly more efficient.

+ Why is the SDVoE platform for AV systems superior to other platforms such as HDBaseT or fiber switching and extension products?

The SDVoE platform is superior because it fulfills AV system solutions that natively support 4K@60Hz video content. An SDVoE system operating from a 10G network can scale up to very large sizes easier and at a much lower cost than an HDBaseT system can. Common HDBaseT switching systems do not natively support multi-viewer and KVM applications. The SDVoE platform supports 4K@60Hz video and it is interoperable with other SDVoE products. Today, HDBaseT switching designs should be expected to implement proprietary solutions to support 4K@60Hz 4:4:4 content.

+ How are AV signals transported over the network using SDVoE products?

AV signals are transported over the 10G network uncompressed.

+ Why are SDVoE products superior to other AV over IP products that use H.264 or JPEG2000 compression?

SDVoE products process and transport video so it is delivered to a display uncompressed. JPEG2000 and H.264 encoders compress the video. The quality of the picture will be reduced, and it can become visible, especially on large displays.

+ How does 4K@60Hz video fit onto a 10G network connection without compromising the content?

The data rate required to carry 4K@60Hz content is only slightly higher than 10 Gigabits/second. In this one case, a mathematically lossless process is applied to the video. All of the original data is reproduced at the destination, artifact-free. The end result is identical to uncompressed content.

+ Are products from SDVoE Alliance members interoperable?

Yes, SDVoE products produced by different manufacturers are interoperable. This offers greater value to customers since different product solutions can be prepared by many manufacturers, and the customer must not rely on one sole supplier of all the features they require.

+ What does artifact-free mean?

Artifact-free means that a process has not produced modifications to the original video that reduces the quality. SDVoE products transport and process uncompressed video which is artifact-free.

+ Why is 60Hz frame rate valuable?

Maintaining a 60Hz frame rate ensures that the full motion of the original video is preserved. It ensures that the video maintains natural motion.

+ Why is 4:4:4 video processing valuable?

4:4:4 video processing ensures that no color information is removed from the original video content as occurs when 4:2:2 or 4:2:0 processing is applied. 4:2:2 and 4:2:0 processing results in lost color information and video artifacts will develop. Since SDVoE manages uncompressed video, 4:4:4 color is maintained throughout the system.

+ How is content protected from copying while it is on the network?

The SDVoE platform protects encrypted source content by applying AES-128 encryption to ensure it remains protected in the system.

+ Are 10G Ethernet switches expensive?

10G Ethernet switches are available in many different sizes for different applications. The price will vary depending on the size of the switch. Medium sized switches with 16 ports that offer copper RJ45 connectors and SFP+ fiber ports cost approximately $100 USD per port. Most Terra SDVoE solutions use fiber and SFP+ transceivers fitted into the fiber ports. Very large 10G switching systems will have a higher cost per port than individual switches because a backbone switch is used to interconnect the switches that support the 10G endpoint devices. Many SDVoE designs will have a lower cost than traditional AV matrix routing switchers that support 4K/60 applications, particularly large switching systems.

Christie Terra

+ What types of video signals are supported using Christie Terra products?

Christie® Terra Transmitters can accept HDMI 2.0 and DisplayPort 1.2 video signals, with embedded audio. HDR and deep color is supported transporting content from Transmitters to Receivers.

+ What is the maximum resolution supported by Christie Terra products?

Christie Terra products support 4K@60Hz content. The maximum resolution is 4096 x 2160 at 60Hz.

+ How is HDR and deep color video supported in a Christie Terra system?

HDR and deep color information is passed on from the transmitter to the receiver. Terra is capable of preserving these advanced video formats from Transmitters to Receivers.

+ What video processing is available using Christie Terra products?

Christie Terra products support many video processing applications. Terra can be used to scale video, produce a video wall, and create multi-viewer systems.

+ What audio formats are supported using the Christie Terra products?

Christie Terra supports analog stereo audio, HDMI embedded stereo audio, HDMI multi-channel PCM as well as Dolby True HD and DTS-HD Master Audio formats.

+ What type of audio processing is supported using Christie Terra products?

Christie Terra supports stereo audio embedding and de-embedding between the analog and HDMI audio. PCM multi-channel audio can also be down-mixed to stereo format.

+ What control formats are supported using Christie Terra products?

A Christie Terra system offers access and switching of control signals from any Transmitter or Receiver. Serial RS-232, serial IR and 1 Gigabit Ethernet signals can be used to interface control across the system.

+ What is the minimum latency when using Christie Terra products?

Christie Terra can transport 60Hz video across a 10G Ethernet network in only 100 microseconds. This is two orders of magnitude (x100) smaller than a 60Hz video frame (16.67 milliseconds).

+ Does Christie Terra support fast switching between sources?

Christie Terra offers a fast switch mode for applications where a quick response and clean transition is required during source switches.

+ What type of EDID management is available from Christie Terra systems?

The Christie Terra system manages EDID across AV systems very efficiently. A vast, comprehensive set of EDID formats are saved in the Terra Transmitters and Receivers. If a new EDID is encountered in a system, the Terra Receiver can quickly save the EDID format across the system to all Transmitters with the press of one button.

+ Does Christie Terra support HDCP 2.2 encryption?

Yes, Christie Terra supports the most recent HDCP 2.2 encryption. The Terra system is HDCP 2.2 compliant and it will manage any mix of sources that are unencrypted or must comply with HDCP 2.2 and HDCP 1.x specifications.

+ What applications can be supported using Christie Terra products?

Christie Terra fulfills a broad set of applications that exist in virtually every AV project, including AV extension, AV switching, scaling, video wall, multi-viewer and KVM applications. These applications can be fulfilled independently, or they can all be used in systems that include many sources and different displays.

+ How large can Christie Terra systems become?

Christie Terra systems can be very large. A system can have 1000 or more Transmitters and Receivers. Terra solutions don't need to have symmetry between sources and displays. The mix of inputs and outputs are adaptable to any project.

+ What connector is used to transport video using Christie Terra products?

Christie Terra products offer an SFP+ adapter that accepts transceivers used with Direct Attach Cables, fiber or copper cables.

+ What functions does the Terra Controller fulfill in a Christie Terra system?

The Christie Terra Controller provides complete operational control and management for Terra systems. The Terra Controller is used to configure, program and control Terra systems. It offers an application programming interface (API) for use with third-party control systems.

+ What distinguishes the Controller in the Christie Terra system?

The Terra Controller is easy to learn and use. This embedded device is highly-secure and offers redundancy and web-based configuration making it ideal for reliable operation in mission-critical environments.

+ Can a redundant controller be configured in a Christie Terra system?

Yes, the Terra Controller offers the ability to configure a redundant controller to ensure consistent, reliable operation in mission-critical applications.

+ What type of operating system does the Christie Terra Controller use?

The Terra controller uses Windows 10 Embedded.

+ What security protection is available from the Christie Terra Controller?

The Terra Controller is highly secure, employing HTTPS encryption: TLS 1.2 protocol, 256-bit key, 2048-bit certificate key. The Controller incorporates strong password management, encrypted, control, network application port management, user access and event logging, system data encryption, update protection and threat notification.

+ What other products should we expect Christie to develop that are based on SDVoE?

Christie will continue to develop SDVoE processing products that advance AV-over-IP applications operating from 10G Ethernet networks. Watch for Christie displays to begin to offer a direct interface to an SDVoE system using 10G Ethernet connectivity. AV designs that use Christie displays with a direct SDVoE interface will produce systems with far more quality, scalability and capability than traditional approaches at a lower system price.

+ What size video walls can be supported using Terra?

Video walls can have as many 64 screens.

+ How does Christie Terra fit in with other image processing products that Christie offers?

Existing image processing products such as Spyder X80, Phoenix and Pandoras Box offer unique, differentiated capabilities. Christie Terra can be used in combination with these products for extension, switching, KVM, multi-viewer and video wall applications.

For the most current specification information, please visit www.christiedigital.com

CHRISTIE®