

## **SILICON IP**

### **VIDEO: DISPLAYPORT**

Digital display interface that transmits high-resolution video and audio between devices, supporting advanced video features like 4K and HDR.

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## OVERVIEW

DisplayPort, developed by VESA, is a digital interface for transmitting audio and video between devices like computers, monitors, and projectors. It supports high-resolution video, multi-channel audio, and features such as HDR, variable refresh rates (VRR), and higher refresh rates, making it ideal for gaming, video editing, and professional workstations. DisplayPort also enables multi-monitor setups from a single output and is backward compatible with HDMI and DVI through adapters, supporting resolutions up to 8K with efficient bandwidth management.

## KEY FEATURES

### High Resolutions and Refresh Rates

- DisplayPort supports high-definition resolutions, including 4K, 5K, and up to 8K, along with high refresh rates (up to 240Hz or more), making it ideal for gaming, professional graphics, and multimedia production.

### Multiple Monitor Support

- DisplayPort allows for daisy-chaining, enabling multiple monitors to be connected through a single DisplayPort output. This multi-stream transport (MST) feature makes it ideal for multi-monitor setups.

### Advanced Audio Support

- It carries multi-channel audio, supporting formats like Dolby Atmos and DTS-HD, making it suitable for home theaters and high-fidelity audio setups.

### Adaptive Sync and Variable Refresh Rate (VRR)

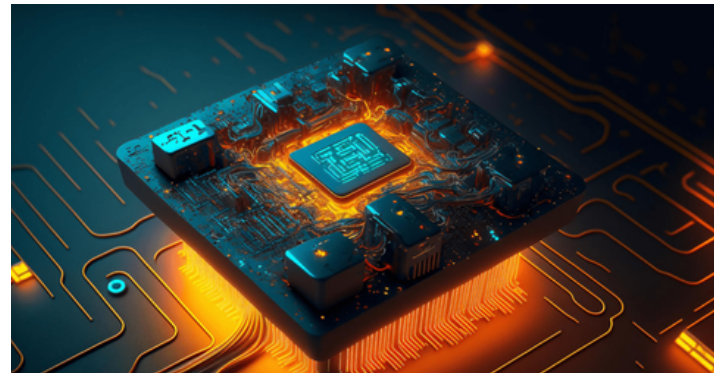
- DisplayPort supports technologies like AMD FreeSync and NVIDIA G-Sync, reducing screen tearing and stuttering by synchronizing the refresh rate between the display and GPU, providing a smoother gaming experience.

### High Dynamic Range (HDR)

- With support for HDR, DisplayPort enhances color accuracy and contrast, delivering richer, more dynamic visuals, especially in media and gaming applications.

### USB-C Compatibility

- DisplayPort can be transmitted via USB-C, allowing for video, audio, data, and power delivery through a single compact connector, widely used in laptops and mobile devices.



### Efficient Bandwidth Utilization

- It offers high bandwidth with up to 77.4 Gbps in DisplayPort 2.0, enabling higher resolutions, color depths, and refresh rates, while maintaining signal integrity.

### Backward Compatibility

- DisplayPort is backward-compatible with older interfaces like HDMI, DVI, and VGA through adapters, making it a flexible option for a wide range of display devices.

## DISPLAYPORT APPLICATIONS

### Computer Monitors

- DisplayPort connects desktops and laptops to monitors, offering high-resolution output and supporting multiple monitor setups, ideal for productivity and design workstations.

### Gaming

- Gamers rely on DisplayPort for its ability to support high refresh rates, low latency, and features like variable refresh rate (VRR), ensuring smoother gameplay and better graphics performance.

### Video Editing and Content Creation

- With support for resolutions up to 8K, wide color gamuts, and HDR, DisplayPort is essential for video editors and content creators seeking vibrant display output.

### Virtual Reality (VR)

- DisplayPort is key for VR systems, providing the necessary bandwidth to deliver high-resolution, immersive visuals at fast frame rates, ensuring a seamless virtual experience.

### Digital Signage

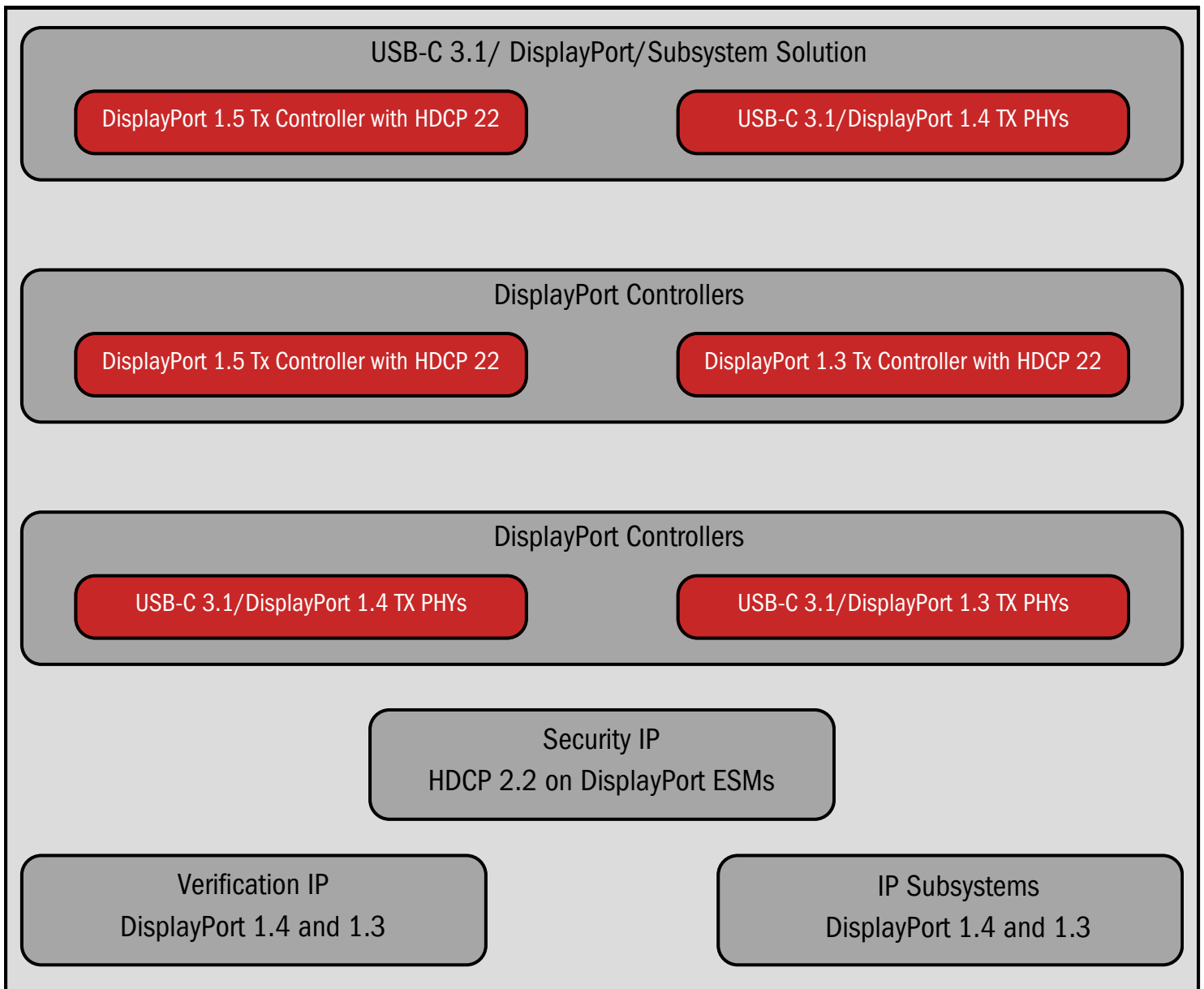
- In commercial and retail environments, DisplayPort is used to drive digital signage systems, offering high-definition content on large displays for advertisements, information boards, and other visual communication.

### Docking Stations

- Many docking stations use DisplayPort to connect laptops to external monitors, keyboards, and other peripherals, enhancing productivity for users who require multiple displays.

## DISPLAYPORT ARCHITECTURE

### DisplayPort Architecture





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