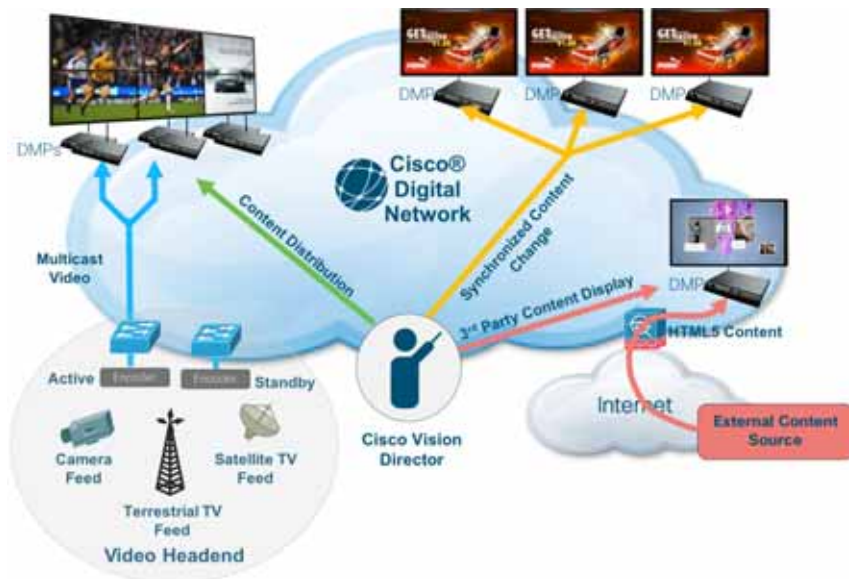# Cisco Vision Dynamic Signage Solution Component Overview

This section provides a brief overview of the components and operation of the Cisco Vision Dynamic Signage Solution.

The Cisco Vision Dynamic Signage Solution enables the integration and automated delivery of customized and dynamic content from multiple sources to different areas of the venue in standard definition (SD), high definition (HD), to ultra high definition (UHD). The solution is designed to enhance the visitor experience and provide the venue with additional revenue streams through targeted advertising via engaging, moving, dynamically updating content.

Four major components that constitute a Cisco Vision Dynamic Signage Solution (Figure 1 on page 9):

- Cisco Vision Dynamic Signage Director for centralized content management and operations

- Digital Media Player for content playback

- Cisco Digital Network, the IP infrastructure foundation for content transport

- Video Headend for video aggregation and distribution

Figure 1   Cisco Vision Dynamic Signage Solution Components

Cisco Vision Dynamic Signage Director

The Cisco Vision Dynamic Signage Director provides centralized management and operations for the Cisco Vision Dynamic Signage Solution. It acts as a single point of control for managing all Digital Media Player (DMP) endpoints, for placing and delivering content (video, graphics, and external content), for defining unique display areas (zones and

groups), as well as for the creation of entitlement areas (bars, restaurants, clubs, and suites). It also provides the interface to third-party applications and devices, scoreboards and statistics systems, external contact closure and IP triggering systems, and third-party touch panels (for local, display control).

The capability requirements of the virtual server handling the Cisco Vision Dynamic Signage Director are based on the size and complexity of the deployment. There are three design size classifications defined in this document, and for brevity, are primarily categorized by number of DMPs in the deployment. However, other operational factors should also be taken into account.

Table 1   Director Server Classification

Server Classification	Number of DMPs	Running Scripts	Operational Limits
Large	5000	250	See product documentation[1]
Standard	5000	100	See product documentation[1]
Small/Mini	1250	5	See product documentation[1]

1. Refer to Release 6.3: Cisco Vision Dynamic Signage Director Operations Guide.

For detailed server specifications refer to Cisco Vision Dynamic Signage Director Solution Requirements, page 26.

Sample Bill of Materials (BOM) for servers fitting various deployment scales of Cisco Vision Dynamic Signage Director are located in Appendix B: Bill of Material, page 65 of this document.

Digital Media Player (DMP)

The DMP renders and displays static and dynamic content on each of the venue's connected displays. In addition to the support of UHD video resolution, the DMP can be powered by 802.3at Power over Ethernet (PoE) and supports dual video regions, video wall and virtual ribbon-board synchronization, and the rendering of HTML5 content. The DMP also supports Live TV playback via the HDMI 2.0a input to play content from any broadcast channel - even protected HDCP content.

Figure 2   Cisco Vision Dynamic Signage Director Functional Overview

Figure 3   CV-UHD2 DMP for Cisco Vision

Table 2   DMP-Specific Feature Map

Feature	Series 2 DMP-2K SV-4K		Series 3 CV-HD & CV-UHD		Series 4 CV-HD2 & CV-UHD2	
UHD Local Video	**No**	Yes	**No**	Yes	**Yes**	Yes
Dual Video[1] with Luma Key (applied to secondary HD video region over an HD or 4K video in the primary region)	**Yes**	Yes	**No**	Yes	**No**	Yes
HDMI-In as a Channel Source[2]	**No**	Yes	**No**	Yes	**No**	Yes
Luma key support for second video region	**Yes**	Yes	**NA**	Yes	**NA**	Yes
Video Streamed to a Local HDMI-In Channel (HDMI-In Pass-Through)[3]	**No**	Yes	**No**	Yes	**No**	Yes
WiFi support	**No**	Yes	**No**	(Optional)[4]	**No**	No

1. Dual UHD resolution video regions is not supported.
2. Enhanced in Release 6.0 to add a default HDMI-In Channel 0.
3. For HDCP-compliant devices and content.
4. The CV-UHD WiFi model supports WiFi.

The following table identifies the globally-supported features for all media players in the release.

Table 3   Globally Supported Features for DMPs

Feature	Series 2	Series 3	Series 4
2.1 AC3/AC3+ (Dolby Digital audio decode)	Yes	Yes	Yes
5.1 Dolby plus/AC3	No	Yes	Yes
Auto-Registration	Yes	Yes	Yes
Bulk Administration Tool (BAT)	Yes	Yes	Yes
Closed Caption	Yes	Yes	Yes
Command Center Monitoring	Yes	Yes	Yes
Content Replacement	Yes	Yes	Yes

Table 3   Globally Supported Features (continued) for DMPs

Feature	Series 2	Series 3	Series 4
Content Synchronization (between same media player models only)	Yes	Yes	Yes
Custom Fonts (through Software Manager)	Yes	Yes	Yes
External Content Integration	Yes	Yes	Yes
Event Script Scheduler	Yes	Yes	Yes
HDMI Encoding[1]	SV-4K only	CV-UHD only	CV-UHD2 only
HTML Pages as a Multicast Channel (from external URL)[3]	Yes	Yes	Yes
HTTP Live Streaming (HLS) Video as a Multicast Channel (from external URL)[3]	Yes	Yes	Yes
Group/Zone Configuration	Yes	Yes	Yes
System Configuration Commands	Yes	Yes	Yes
System Configuration Firmware Configuration	Yes	Yes	Yes
Device Management Model Filtering	Yes	Yes	Yes
Device Management Monitoring	Yes	Yes	Yes
Multicast Video Scaling	Yes	Yes	Yes
Network Time Protocol (NTP) Configuration	Yes	Yes	Yes
Point of Sale (POS) Integration with DMB Using Widgets	Yes	Yes	Yes
Portrait Mode content renditions[2]	Yes	Yes	Yes
Precision Time Protocol (PTP) configuration	Yes	Yes	Yes
Proof of Play (PoP)	Yes	Yes	Yes
Touch Screen[3]	Yes	Yes	Yes
TV Control using RS-232 and IR Remote	Yes	Yes	Yes
Basic TV Control using HDMI CEC	Yes	Yes	Yes
Video Encoded as a a Multicast Channel from DMP Display Source (Display Encoding)[3]	Yes	Yes	Yes
Video Upload Support for Files Up to 4 GB in Size	Yes	Yes	Yes
Widgets	Yes	Yes	Yes

1. HDMI encoding only works on SV-4K, CV-UHD, and CV-UHD2 DMPs.

2. Not recommended when rendering video on CV-HD and CV-HD2 DMPs.

3. Introduced in Release 6.0.

Figure 4   CV-UHD2 DMP Front Panel Overview

Figure 5   CV-UHD2 DMP Rear Panel Overview

Cisco Digital Network

Cisco Digital Network is the foundational IP infrastructure that not only connects the video headend with the DMPs but typically interconnects all building IP endpoints to each other and to the outside world. The Cisco Vision Dynamic Signage Solution requires a converged, highly scalable, secure digital network designed specifically for low latency and redundancy to bring together all forms of access, communications, entertainment, and operations. This infrastructure is designed to enable the delivery of high-quality video, using advanced features of IP multicast and quality of service (QOS). This network also acts as the foundation to enable other services within the venue such as wireless communications, physical security, IP telephony, and network audio. The Cisco Digital Network is depicted in Figure 6 on page 14.

Non-Cisco network deployment is possible if all documented requirements are satisfied.

Figure 6   Cisco Digital Network

Video Headend

The headend is where video is received from various sources such as in-house feeds (through the venue video control room), over-the-air channels (typically from local over-the-air broadcast networks), and broadcast channels from cable or satellite providers. It is responsible for placing the video feeds onto the IP network with minimal latency. Video feeds may be provided in Ultra HD or HD resolution and are in encrypted or unencrypted formats.

The headend of the Cisco Vision Dynamic Signage Solution is designed to accommodate all of these feeds and perform the necessary encoding, transcoding, and extracting to create H.264 (MPEG-4, Part 10), H.265 (HEVC), or legacy H.262 (MPEG-2) encoded streams (Figure 7 on page 14). The headend then takes the processed streams, assigns a unique IP multicast address to each, and places it on the IP network to be joined by the DMP endpoints as a channel.

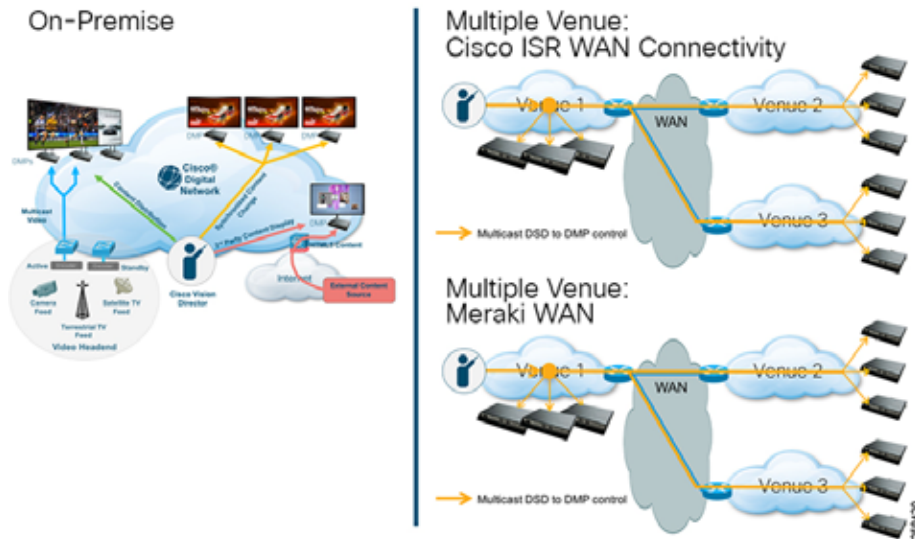**Figure 7   Video Headend Overview**

Deployment Models

On-Premise

The on-premise deployment model resembles an Enterprise client-server model with a server and its associated endpoints connected to an Enterprise campus network. The Cisco Vision Dynamic Signage Director server typically resides in the Data Center or in a Video Distribution service block (i.e., Video Headend) usually located near the broadcast room where all the various video input source feeds enter the venue.

Multiple Venue

The multiple venue deployment model (Figure 8 on page 15) is one where the Dynamic Signage Director is located at a central location and DMPs are distributed locally and across a WAN to remote locations. The WANs supported here include Cisco ISR (Integrated Services Router) which supports multicast, or Meraki-based WAN (unicast support only).

Figure 8   Deployment Model Overview

Deployment Models