



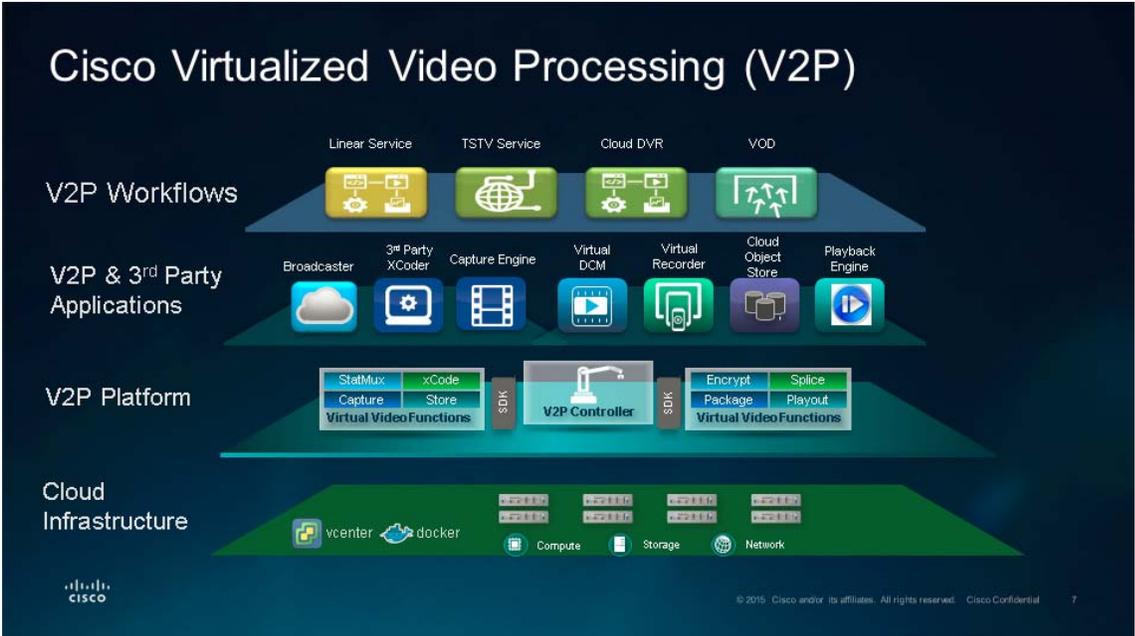
Overview

This chapter provides general information on the Cisco Virtualized Video Processing Controller (V2PC), including product overview and system requirements.

Product Overview

V2PC is the control interface for the Cisco Virtualized Video Platform (V2P). V2PC provides an open platform that transforms the way video infrastructure is built, deployed, provisioned, and maintained. V2PC enables a video processing application to run over a cloud or on-premise infrastructure while flexibly orchestrating its media workflows and resources.

Figure 1-1 Cisco Virtualized Video Processing (V2P) Platform



Customers can rapidly create and orchestrate media workflows across video headends and data center environments, and can evolve seamlessly from a hardware based infrastructure to a hybrid or pure virtualized cloud infrastructure. The software centric workflows increase the reachability of content across a variety of content consumption platforms.

This transformation has resulted in flexible user experiences and simplified operations, allowing customers to better manage, modify, and scale media workflows to support services such as Live, VOD, Time Shift, and Cloud DVR (cDVR) to OTT consumers.

V2PC Components

V2PC works with a hierarchy of components that includes platforms, application containers, service containers, providers, zones, nodes, and the logical functions they support, which are configured into media workflows.

Application Containers

Each function in the media pipeline is implemented as a distributed software centric application. Nodes that contribute to a common function are bound together into a logical container called an *application container*. Compute nodes can be VMs, physical appliances, or any other form of compute unit (for example, a Linux container). Each container can scale independently and elastically based on demand.

Service Containers

A *service container* is a collection of application containers interconnected using one or more media workflows. Each media workflow defines the arrangement of the application containers within the media pipeline. The media workflow also guides the flow of content through the application containers and the associated processing of data. Media workflows can also be chained, so that the output from one media workflow serves as the input to another.

Media Workflows

A *media workflow* is a GUI configurable template used to create Live, VOD, or cDVR output. V2PC media workflows support Apple HTTP Live Streaming (HLS), Microsoft HTTP Smooth Streaming (HSS), or MPEG Dynamic Adaptive Streaming over HTTP (DASH) content by applying suitable input and output settings for each application. Media workflows are reusable templates that provide discrete processing functions such as transcoding, publishing, DRM, and DVR buffering.

Networks

V2PC can be deployed with 1, 2, 3, or 4 networks, depending on customer requirements. While a single flat network can be used for functional testing environments, V2PC customer environments will have at least two separate networks, one for management and another for data.

A V2PC network contains one or more *regions*, and each region is made up of one or more *zones*. A region can be associated with a geographical region, one or more data centers, or a service area. A zone is a set of cloud platform components (compute, network, storage, and security) that are fate-shared. A zone can be mapped to the underlying cloud platform provider such as a datacenter in vCenter, an availability zone, or any other combination of fate-shared cloud resource topologies.

Nodes

Each zone in a V2PC region is associated with one cloud controller, and has one or more *nodes*. V2PC works with several types of nodes, which differ by function:

- Repo node – Deployment and upgrade server
- Master node – GUI, configuration, orchestration server
- ELK node – Logging server
- VM Template – Idle VM for cloning AE, MCE, MPE or third-party nodes
- Application Engines (AE) – Redis, HA Proxy, IPVS
- Media Capture Engine (MCE) – a microservice within V2PC that performs linear content packaging and capturing, VOD content ingestion, and unified Ingest for Live, VOD, and cDVR. MCE also provides integration with COS and NAS storage.
- Media Playback Engine (MPE) – a microservice within V2PC that performs just-in-time packaging (JITP) of adaptive transport streams to various ABR formats.

Related Terminology

The following additional terms have specific meanings in the context of V2PC operations:

- Media Workflow Resources – configuration parameters for things like live sources, publish templates.
- Providers – Infrastructure environments such as Atlanta Lab, San Jose Lab, or AWS cloud.
- AIC – application instance controller; handles deployment and deletion of an application.
- Application SDK – template that includes scripts to install the application.
- Workflow SDK / MFC – template that describes creation of a custom workflow.
- Workers – individual virtual machines on which applications run.
- Image flavors – Groups of settings that define the VM, CPU, RAM, and storage for each worker.

V2PC System Requirements

- The V2PC master controller should be deployed as 2x large (8 CPU, 32 GB RAM, 40 GB Disk storage).
- The Repo server should be deployed as 2x large (8 CPU, 32 GB RAM, 40 GB Disk storage).
- The ELK node should be deployed as 2x large with 500 GB disks space (8 CPU, 32 GB RAM, 500 GB Disk storage).

