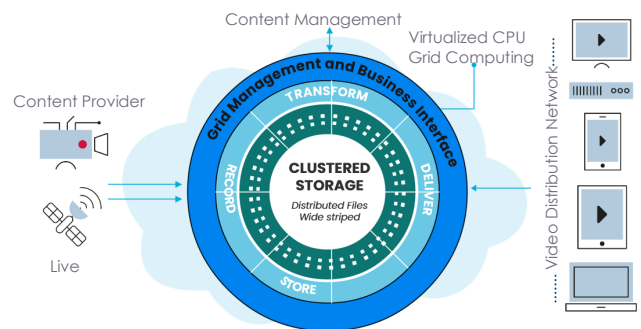# MediaKind Video Storage and Processing Platform

For cable companies, multiple service operators (MSOs), telcos and content providers who need a cost efficient, reliable solution for massively scalable video storage and recording that exceeds stringent performance requirements, the MediaKind Video Storage and Processing Platform (VSPP) is the only field proven, large scale software-based solution that provides resiliency, very high throughput, and virtually hands-off maintenance. This platform is highly optimized to minimize hardware footprint and provide the best possible TCO.

A Dramatically Different Approach

VSPP is a 100% software, high performance, scale-out storage that leverages the available processing resources on the same infrastructure to also perform distributed computing. The Shared Nothing (SN) architecture enables running compute on the storage infrastructure resulting in a consolidated storage and processing grid that provides unsurpassed performance and massive scalability.

MediaKind Video Storage and Processing Platform
Single Namespace Unlimited x86 COTS Servers

While well suited for all intensive storage needs, the platform is especially optimized for the specific characteristics of video/media storage, processing and delivery. The scale out storage integrates various frameworks that allow running specialized modules. This is designed to meet application specific needs, in addition to the core tasks of media ingest, processing, and streaming. For example, the media workflow framework includes modules for place shifting, ad insertion and transcoding.

At its core, the platform features our scale out file system, which is a high performance distributed file system that clusters all storage server nodes into a single namespace. It is 100% software, supplied on reference configuration running on heterogeneous Linux COTS servers with direct attached storage (DAS/JBOD).

Use Cases

Cloud DVR

- Cloud based DVR applications enable service providers to offer a DVR service without the need to deploy or upgrade to expensive DVR boxes at the subscriber site. By locating the storage and streaming at the network operation center and running an RS-DVR client software at the subscriber site, operators can offer a full DVR service without the need of hardware upgrades at the subscriber.

Dynamic origin server

- The origin server is a scale out media storage system that can also perform content transformation, and streaming. The origin ingests MPEG-TS CBR and ABR, and transforms them on-the-fly to RTSP and different OTT formats, thus eliminating the need to store multiple formats.

VSPP Tiered Architecture

- Supports different tiers to address specific streaming patterns as well as content popularity.

Edge pumps

- With an ongoing transformation to the full-blown Media Edge for the legacy and OTT delivery.

Key Benefits

Unprecedented Performance	- Highly scalable throughput for large scale delivery of data - Modular and high capacity storage to allow massive library support - Storage & compute on a single platform leverages full capabilities of resources - Superior load balancing removes bottlenecks

Cost Efficiency	- Reduce server requirements
	  - Integrated processing
	  - Distributed RAID
	- Replace expensive specialty appliances with COTS servers
	- Eliminates separate server farms for storage, processing and streaming
	- Scale out infrastructure allows pay as you grow economics

Massive Scalability	- Plug and play expansion - Single namespace simplicity - Increases simultaneous streaming capacity with innovative video striping
Solid Reliability	- Redundancy without duplication requirements - Hands-off maintenance - Auto recovery, fast rebuild - 100% resilience - No downtime for updates, h/w replacement
Flexibility	- Reference integrated COTS HW - Flexible options for storage or throughput density - Modular Components - Resilient architecture

Platform Features

Recommended Configuration

- CPU 2nd Generation Intel Xeon Gold 62xx Processors
- DRAM 192GB
- Network Interfaces: 4 x 1Gbit/s; 6 x 10/40 Gbit/s
- Storage: SSD, SATA, SAS all capacities are supported
- Disk Controller support JBOD mode - data protection implemented
- OS RHEL/Centos 7.6 or later
- Supports Multiple DRMS: Verimatrix, Nagra, ORCA (Purple), Latens DRM (PACE), Cisco (NDS) DRM, Irdeto, Buy DRM, PT

Media workflow framework

- Media Ingest / Recording
- Media delivery (streaming)
- Media transcoding
- Ad insertion
- Packaging
- Encryption
- Content delivery/streaming

Comprehensive Diagnostics suite

- Enables real time tracking the root of problems
- Service level monitoring enables tracking parameters that directly affect user experience, for example: number of restarts, session allocation time, failed playout sessions

- Strong framework is provided for business analytics

Shared file system with built in distributed RAID

Supports any storage devices (HDD, SSD, flash memory, DRAM)

Rich set of interfaces to the storage

- FTP, HTTP
- Ingest live video streams (MPEG SPTS, ABR/CBR)
- Integrated grid based CDN origin (ABR delivery)
- Supports media streaming to legacy clients (RTSP, LSCP for UDP streaming)
- MPEG SPTS output

Just in time Transcoding (JITX)

Specialized compression (deduplication) functions

- Storage reductions and CAPEX optimization

Grid Management Suite

- Resource management for server clusters
- Grid management and load balancing
- System topology, system administration and monitoring
- Typically runs on a pair of servers to provide high availability configuration
- Maintains meta data for the clustered storage
- Interfaces to customer back office systems

Scheduler – Management recording requests, subscribers provisioning, entitlements and programs related information (EPG)

Manager – centralized redundant component which controls and manages the cluster

Back Office Infrastructure

DRM | SRM | EPG | Content Management (CMS)

Manager DB | Manager HA | Scheduler DB

Control Plane

CONTENT SOURCES — Live/Real Time, Internet, VOD, External Content Store

Consumer Devices — TV, PC, Mobile

Nodes – typically COTS (Commercial Off-The-Shelf) servers, which a basic storage and computing element

Pods – represents a virtual video server entity, which clusters together a number of nodes with interconnection networks

Pod 1 – Storage Cluster & Processing Grid | Pod 2 | Pod 3 | Pod N

Data Plane