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Professional Media Organisation Centralised Core Infrastructure from Hitachi Data Systems

Manage Converging Global Professional Media Markets with Core Hitachi Infrastructure

Global media markets are changing rapidly and, in many ways, converging. No longer are there simple separate silos. Markets may include traditional forms of media, such as television, radio and print, or new media, such as online and mobile, and tablet media, such as newspapers, magazines and books. Hitachi Data Systems proposes the only way to manage this convergence effectively and remain relevant is through the introduction of a "business-driven enterprise architecture" and a scalable centralised core infrastructure servicing all converged new media markets.

The Hitachi centralised core infrastructure (see Figure 1) supports our philosophy of:

1. Employing Hitachi Unified Compute Platform to run all applications for all market verticals as they converge (GA 2011)
2. Ingesting and storing one master copy of all content and associated metadata on enterprise-grade storage in a single standardised mezzanine file format
3. Using and distributing standard file format content many times via multiple channels, through a software media transcode grid running on a Unified Compute Platform with tightly integrated enterprise storage
4. Promoting the adoption of a total cost of ownership solution, an economically friendly tiered hybrid cloud archive: All three tiers of the hybrid archive will be managed by a media middleware appliance vendor. Content used on a frequent basis should be housed in Tier 1 storage, such as Hitachi NAS Platform, powered by BlueArc®, in a private cloud at the professional media organisation's facility. Tier 2 and Tier 3 content used less frequently should be stored in a cost-effective deep archive data warehouse(s).

With its solution based on hybrid cloud architecture, Hitachi Data Systems affords professional media organisations the opportunity to realise revenue from their professional media content assets.

Centralised Core Infrastructure Vision

The Hitachi vision includes a centralised core infrastructure with automated workflows that repurpose content and deliver it into each vertical market. This core infrastructure must be 3D scalable and allow the instant provisioning of new technology services. This removes the traditional problems of silo technology implementations, network bottlenecks and delays for new technology services. The focus then moves to definition of business service models.

Depending on the media organisation's unique requirements, content ingest ports for all mediums must be served. Consideration for the number of ingest ports is also dependant on the channel genre. Hitachi Data Systems would propose, on average, two baseband ingest ports per HDTV and radio channel, each with an allocated 10 hours online storage within the core infrastructure. With the content ingested and preferably automatically quality checked, it can then be automatically migrated to the Hitachi Virtual Storage Platform (VSP) archive environment, under an archive middleware appliance.

Consideration should also be given to external content owner's desire to distribute content as files, via secure dark fibre, utilising external Telco service providers. The content owners have a desire to do this for both cost and revenue leakage issues.

The Solution Components Across Media Markets and Verticals

In the program preparation and promotions creation environments, different approaches and technologies are required for each vertical. In the television domain, many broadcasters are migrating to Apple Final Cut Pro edit suites connected to the centralised core enterprise storage infrastructure. Each is provisioned with a minimum of 20 hours online storage. The content can be moved in and out of the archive as and when required. Producers Desktop Edit Decision Lists (EDL's) are used for what was once termed the "offline edit." These are then transferred to the more expensive online high resolution Apple Final Cut Pro finishing edit suites.

Traffic and scheduling applications can run on the Hitachi Unified Compute Platform, which consists of Hitachi Compute Blade servers.

Linear television on-air transmission automation application software can run on the Unified Compute Platform. Next-generation automation software has moved to a more mature paradigm of calling the content from the heterogeneous enterprise storage platform, which is, of course, completely 3D scalable.

In past years, content for on-air transmission has been loaded into the on-air servers many days in advance. This requires the broadcasters to have large amounts of high performance storage to support this requirement. Hitachi is observing a global market trend within more mature broadcasters, which sees content for traditional

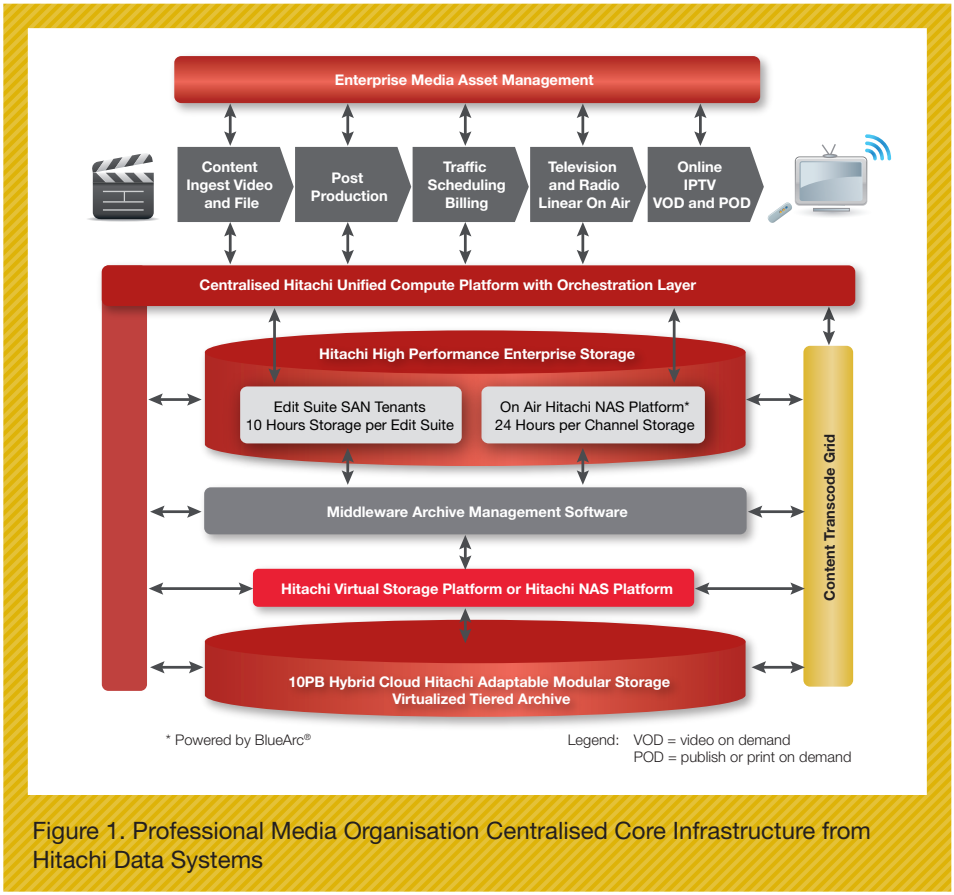

Figure 1. Professional Media Organisation Centralised Core Infrastructure from Hitachi Data Systems

Hitachi Data Systems brings changing and converging professional media markets stable, scalable, structure and support with Centralised Core Infrastructure.

online HDTV broadcasts loaded in the high performance storage environment only 24 hours before it goes to air. This reduces network bandwidth, which is the greatest single point of failure. This also allows for all content to be loaded into the transmission environment on day shifts when broadcasters' operations are staffed with their most experienced engineers and operators. At night the station only needs light administration.

Hitachi NAS Platform is suited to this environment with a throughput transfer rate of 95Gb/sec from eight nodes. A multichannel broadcaster in the USA uses Hitachi NAS Platform for 70 channels with on-air transmission and online servers.

Hitachi anticipates the IPTV basic functionality would be under the control of on-air automation systems or Telco OTT systems, calling from the master content files through the media transcode grid.

Hitachi recommends broadcasters consider a software content transcode grid. This will facilitate the philosophy of only one HDTV master copy of all content to be stored. It will also make lower resolution images or any resolution or file format available on the fly for SDTV (standard definition television) and IPTV (Internet protocol television) VOD requirements. This reduces:

- The size of the storage infrastructure
- Complexities around media asset management
- Complexities around digital content rights management

Software Transcode Grid

Hitachi Data Systems is forging global strategic partnerships and intercompany technology certifications with media content transcode grid software vendors. The software will run on the new Hitachi Compute Blade servers, which are a perfect fit as the applications are CPU intensive.

Professional Media Content Archive

Hitachi Data Systems suggests to broadcasters a single common file format be adopted for both online high performance storage and the archive environment.

For the archive, a tight integration of the transcode grid with an archive middleware appliance is required. This will alleviate playout file format inconsistencies and incompatibility concerns when the content is recalled to the TX online server environment.

With respect to the archive size, Hitachi Data Systems has determined that broadcasters typically have content assets ranging from 10,000 to 1 million hours that they wish to ingest into a digital archive. A single common file format and appropriate bit rate need to be agreed upon up front by broadcasters. Hitachi suggests a hybrid cloud archive be tiered utilising the Hitachi Virtual Storage Platform or Hitachi NAS Platform.

High performance disk in Tier 1 would be owned and housed within the broadcasters facilities, whilst lower performance disk would be sourced from a secure cost-effective data warehouse in Tier 2 and Tier 3. Hitachi promotes powering down the lower tiers unless content is being recalled from them, to achieve a more green content storage environment.

This hybrid cloud architecture is leading edge and economically superior to legacy infrastructures, and it affords the professional media organisations the opportunity to realise revenue from their professional media content assets through IPTV and VOD content consumption.

Reference Architectures

Hitachi Data Systems is forging global strategic partnerships with professional media software vendors, but remaining agnostic in this arena. Hitachi is certifying each application, and developing reference architectures for the following functionalities:

- Media asset management
- Post-production editing and effects
- Baseband video server software and codecs
- Traffic scheduling and billing
- Media transcode grids
- On-air automation
- Middleware archive appliances
- IPTV, VOD or OTT appliances

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