Shenzhen Omnimedia Media Cloud

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“Omnimedia” for the radio and television industry is the convergence of broadcast and Internet production workflows for news and information programming via an agile, digital platform. International giants — The Guardian, The BBC, New York Times, and Wall Street Journal among others — have all aggressively optimized their organizational structures and streamlined their production operations to meet the fast-moving demands of today’s digital media market.

Shenzhen Media Group (SMGZ) — founded in 2004, based in Shenzhen, Guangdong Province; owns twelve TV channels and four radio stations — which broadcast music, news, and talk shows by satellite, terrestrial, and cable transmission; some high-definition; mobile, pay, and shopping channels; music, traffic, and talk radio — an advertising sales company, and video, film, and sound studio. Total company assets are more than USD 805 million (CNY 5 billion). A long-standing business goal of the company is to extend their sphere of influence both domestically and internationally.

The functional analysis conducted by Huawei for SMGZ, and the broadcast domain in general, has made the conclusion that a flat, open, fully converged platform is the key to affecting the smooth transition from a traditional radio and television production operation to the widest possible access to all media — omnimedia — digital production and distribution service.

Truly a mix of the old and the new, under the control of the newest and most modern of operating systems, the omnimedia solution architecture falls squarely in the domain of Huawei’s greatest strength: Information and Communications Technologies (ICT).

In this, as in other scenarios across industries in the ICT era, it is a cloud platform that unlocks the largest variety of co-production platforms and multi-channel options for radio and television program producers and editors.

Hybrid Cloud Infrastructure

How is it that cloud computing technologies are so effective when applied to media convergence initiatives? How do media organizations upgrade legacy workflow architectures to incorporate an open media cloud that meets current and anticipated demands?

A viable solution for radio, television, and internet publishing organizations is a distributed, hybrid private-public cloud that integrates widely dispersed network-connected resources. Media clouds are well-suited for traditional radio and television studio, machine room, and edit suite environments that benefit from adopting a physically decentralized, but logically centralized browser-based controller that addresses a Machine-to-Machine (M2M) array of otherwise disjointed systems and components — including geographically distant components over long-distance carriers.

The accomplishment is that new services and new workflows can be configured quickly, electronically, with zero manual intervention. This is especially helpful during peak hours, when tightly scheduled resources are normal and routine.

The private cloud consists of a logic controller, local and central storage, and a core switch.

A hybrid cloud platform is created when a public cloud connects with an internal private cloud. The hybrid omnimedia-platform employs a distributed architecture based on OpenStack with the ability to dynamically allocate resources for on-demand services. For example, the default allocation may be high-resolution resources for internal production and low-resolution resources for external services, such as streaming — and alternately, by schedule or breaking news event, a high-bandwidth external feed will be provisioned and left open until reasigned, or when internal storage services in the private cloud are running out of resources, traffic will be redirected to the public cloud.

“Single Cloud” Services

These needs cannot be met by universal switching and storage equipment or by common cloud computing architecture. Enterprises need a media cloud built on an open cloud platform that suits the characteristics of radio and television services.

Huawei has optimized its universal ICT platform to develop a distributed infrastructure-as-a-Service (IaaS) media cloud platform for efficient video processing. The open IaaS platform features Graphics Processing Unit (GPU) virtualization, dynamic resource allocation, and scheduling, efficient virtual desktop protocol support, and compatibility with industry-specific equipment and interfaces.

Using HDP*, an enhanced protocol that evolved from Huawei Desktop Protocol (HDP), the distributed IaaS platform provides smooth editing capabilities for HD video. The improved protocol support and optimized virtualization applies GPU pass-through and GPU hardware virtualization technologies to diverse HD Non-Linear Editing (NLE) scenarios. The solution enables smooth 6-track NLE of HD videos over four concurrent Virtual Machines (VMs) and implements synchronous audio and video as well. Unlike solutions using traditional siloed storage architecture — configured to process large numbers of high-bit-rate audio and video streams, the Huawei solution deploys an OceanStor 9000-based distributed storage pool. The flagship OceanStor 9000 product is built to use the storage resource pool, including ingested and uploaded raw footage, media content in production, and finished media assets for distribution or archival. The resource pool enables efficient resource sharing and dynamic resource allocation for multiple TV channels and media workflows. A traditional storage model requires multiple data transfers between disparate systems, wasting time and system resources. Huawei’s unified storage resource pool prevents waste and can improve production efficiency by up to 60 percent.

Huawei FusionSphere, an open cloud platform with converged computing, storage, and network functionality, enables enterprises build Software-Defined Networking (SDN), service-aware networks. These networks are built to centrally manage IT resources and orchestrate fine-grain IT operations through automated virtualization. Under FusionSphere, private and public cloud IT resources can be integrated to function as a single cloud is providing all services. The best operating efficiencies for capture and creation, editing, and distribution are achieved when additional public and/or internal data centers are interconnected and consolidated.

Significantly Increased Program Production Efficiency

Shenzhen Media Group’s omnimedia news center officially launched on May 15, 2015. Huawei is the exclusive IT infrastructure solution provider for this project. In the newly converged facility, ICT resource pools have replaced traditional workstations; computing and storage are managed remotely and allocated dynamically; editors and journalists use virtual desktops to assemble and compose content in a manner of multimedia files, including audio clips, video feeds, transcripts, and graphics. It is estimated that program production efficiency has improved significantly.

Built on a virtualized, all-IP infrastructure, delivered under exclusive contract by Huawei, the converged news center for Shenzhen Media Group is a first-of-its-kind production platform that sets a new standard for completing the integration of Internet publishing with radio and television organizations worldwide.