Research on the Postprint of TV Station Converged Media Content Management Platform Construction Based on Cloud Computing Technology

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Abstract

With the evolution of the times, building converged media through the integration of multiple media forms is becoming a new direction for development and construction among major television stations. Simultaneously, the application of cloud computing technology and big data technology is becoming increasingly prevalent. Based on this context, this paper explores the important role and significant value of cloud computing technology in the development of converged media for television stations, and further discusses the construction of a television station converged media content management platform based on cloud computing technology.

Full Text

Preamble

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Title: Exploring Cloud Computing-Based Converged Media Content Management Platforms for Television Stations

Abstract: With the advancement of the times, building converged media platforms through the integration of multiple media forms has become a new direction for development and construction among major television stations. Meanwhile, the application of cloud computing and big data technologies has become increasingly widespread. Based on this context, this paper explores the important role and value of cloud computing technology in the development of converged media for television stations, and subsequently discusses the construction of cloud computing-based converged media content management platforms for broadcasters.

Keywords: Television Stations; Cloud Computing Technology; Converged Media

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The effective application of cloud computing technology in the construction of television converged media content management platforms can create video resource pools, strengthen effective media resource management, and optimize the management framework for media resources. Simultaneously, it enables full utilization of various cloud-based tools to expand the multi-dimensional aspects of content and resource management for television converged media, achieving optimized resource allocation.

1.1 Building Resource Pools

Traditional media resource management employs a siloed system architecture that struggles to address resource waste and consumption in the high-growth media business environment, both in terms of system processing and resource management. Therefore, media resource management must strengthen the integration of resources and capabilities while enhancing effective connectivity with the Internet. Cloud computing technology enables the construction of resource pools in television converged media development, facilitating the transformation from traditional siloed management models to cloud computing infrastructure. In conventional frameworks, system applications are bound to system resources, which are typically dedicated resources. These require over-provisioning of computing resources to handle peak load issues, leading to significant resource waste. Research indicates that traditional media resource management models suffer from generally insufficient resource utilization. In contrast, cloud computing technology employs comprehensive and systematic resource pools that virtually integrate servers, storage systems, and network systems using distributed algorithms for resource allocation, eliminating physical boundaries and ensuring rational resource utilization. Supported by cloud computing technology, media resources can be elastically scaled to achieve more flexible management. The unified platform built on cloud computing technology can enhance content processing efficiency and quality, reduce resource waste, meet explosive demands for resource transmission, storage, and usage, and enable dynamic resource allocation and business adjustment.

1.2 Utilizing Cloud-Based Tools

Cloud computing technology enables more efficient and streamlined content management models, facilitating effective operation and processing of video and audio resources while avoiding environmental impacts on these materials and ensuring efficient and intelligent media content resource management. Currently, technologies such as intelligent recognition and video DNA analysis have become increasingly mature, yet the continuous expansion of data resources also creates pressure on data storage and computation, affecting local deployment of resources. By comparison, cloud computing technology can implement intelligent resource cataloging management and create multi-dimensional functional services. Cloud computing technology can build search engines to ensure their effectiveness, enabling content scanning and index establishment for local media resources, thereby achieving precise retrieval and local application of search results. Through efficient transcoding and clipping technologies, cloud computing ensures the timeliness of media resource 入库 management, satisfies system migration requirements, and enables one-stop content checking and transcoding operations, guaranteeing technical application efficiency.

2.1 Strengthening Connections Between Public/Private Clouds and Local Systems

The construction of cloud computing-based television converged media content management platforms requires building public cloud, private cloud, and hybrid cloud architectures based on television business requirements, adopting diversified platform architectures combined with efficient and secure resource transmission paths to ensure optimized connectivity between public/private clouds and local systems during platform construction [1]. On the foundation of building public cloud media resource content management platforms, to safeguard the smooth development and normal operation of existing media resource businesses, traditional media resource management businesses should be expanded multi-dimensionally and multi-directionally to ensure their integrity and flexibility, promoting cross-platform, cross-network, and cross-space dissemination, sharing, and exchange of media content. For media content management, effective connectivity between local systems and public/private clouds must be strengthened. The original three-tier storage scheme structure for media resource content management can be retained and extended based on actual needs. In media content management, certain content with high confidentiality levels but low exchange frequency can be retained in local systems using offline storage based on actual requirements, ensuring resource security and reducing storage and utilization costs. To ensure content resource exchange functionality, media resources with high usage frequency can be stored in private cloud storage platforms through online storage, effectively controlling costs and improving resource exchange convenience. Resources requiring external exchange and incoming media content can be stored in public cloud platform environments to enhance exchange effectiveness and quality, facilitating access and configuration,

with regular cleanup based on usage requirements.

Based on cloud computing technology, program exchange methods can be transformed through cloud transmission technology, enabling anytime access and processing of television media program resources. In traditional media resource management, purchasing and importing external resources required manual operations, transcoding, and compression, with extremely time-consuming 入库 processing for acquired external programs. Cloud computing technology application can optimize system architecture design, leverage cloud computing advantages, and ensure efficient and convenient program exchange. Previous program production and exchange suffered from resource waste; therefore, flexible converged media content management platforms are needed for program exchange to reduce time costs, address waste and high consumption of program resources and labor costs, and ensure efficient resource sharing across different media. External program producers can apply cloud computing technology for content upload, catalog supplementation, video transcoding, and other operations to achieve rapid import and export of program content, strengthening resource management and control based on different users and ensuring content security.

Converged media represents an important trend in television program production and development in the current information age. Under this trend, traditional media resources integrate and share content with new media to provide multi-channel program content to audiences. In this context, cloud computing technology can be used to explore pathways and methods for high-speed program content promotion, attempting multi-terminal promotion and achieving B2B program content exchange. Meanwhile, with the emergence of numerous self-media platforms, media resource management requirements have further increased, as media management itself faces issues such as content query and reuse. Cloud computing technology must be employed to build converged media content management platforms and leverage their rapid expansion and professional hosting capabilities [3].

2.2 Building Multi-Dimensional Media Content Management Platforms

Employing multiple cloud platform management architectures can optimize and reconstruct business processes, ensure open interfaces, and expand the business capabilities and space of media resource management to satisfy considerations of convenience and elastic layout in media content management. In television program production and content management, constructing multi-dimensional content management platforms under cloud computing technology can guarantee business processes such as program development and media applications, provide technical support for new businesses in new media applications, build integrated business platforms, and support the integration and innovation of converged media resource management in television stations.

Multi-dimensional media content management platform construction can expand and extend current businesses, enabling network upload and production of existing media resources and importing media resource production content, with private cloud platforms capable of receiving content imports from other private cloud platforms. The rapid development of the Internet has brought increasingly rich network resources and content, and the construction and development of public cloud media resources can compensate for current shortcomings in media resources, particularly in terms of low timeliness, ensuring efficient signal, resource, and content 收录, and utilizing cloud resources for clipping and editorial review to guarantee content import efficiency.

Based on public cloud media resource management platforms, centralized management of media resource content can be achieved, enabling rapid processing of media resource content and supporting the application of media resources across various business scenarios and systems. This includes implementing multi-tenant management, restricting access permissions, strengthening resource management, enabling rapid media resource invocation, and facilitating unified regulation and analysis. For television media resource content, multiple business models can be built, including content metering and billing, media resource search, and media content recognition functions. For external promotion and copyright trading of television media, various content operation models can be established and multi-channel distribution can be realized [2].

2.3 Strengthening Platform Sharing of Converged Media Content

In cloud computing environments, building converged media content management platforms requires strengthening the sharing of media resource content both internally and externally within television stations. During content dissemination, considering factors such as the expanding scope of content distribution and increasingly standardized copyright management, the gradually increasing demand for external content sharing must be met with guaranteed efficiency. For example, Jiangsu Television has built a content sharing platform to meet the internal and external resource sharing demands in converged media environments, establishing secure content transmission and sharing pathways, ensuring cloud storage security for media resource content, adopting standardized and efficient cloud resource management, and guaranteeing the speed and efficiency for external television platforms to obtain authorized aggregation while strengthening overall control and effective analysis of content sharing.

In the construction of converged media content management platforms, content sharing functionality enables high-speed upload of television programs to cloud platforms, confirmation of cataloging content, efficient video transcoding, review of television program content, and effective security control and permission configuration for external users, ensuring program sharing efficiency and quality. Based on actual business data, statistical analysis can be strengthened to guarantee media resource content sharing efficiency and ensure the integrity of the content management data system.

2.4 Strengthening Program Exchange on Content Management Platforms

In the construction of television station media convergence content management platforms, cloud computing technology can transform program exchange methods by adopting cloud transmission technology to enable anytime access and processing of television media program resources. In traditional media resource management, purchasing and importing external resources required manual operations, transcoding, and compression, with extremely time-consuming 入库 processing for acquired external programs. The application of cloud computing technology can optimize system architecture design, leverage cloud computing advantages, and ensure efficient and convenient program exchange. Previous program production and exchange suffered from resource waste; therefore, flexible converged media content management platforms are needed for program exchange to reduce time costs, address waste and high consumption of program resources and labor costs, and ensure efficient resource sharing across different media. External program producers can apply cloud computing technology for content upload, catalog supplementation, video transcoding, and other operations to achieve rapid import and export of program content, strengthening resource management and control based on different users and ensuring content security.

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Note: Figure translations are in progress. See original paper for figures.