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A Study on Broadcasting Service Node for Video-Network Systems

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In recent years, multimedia networks that handle the multimedia data such as voice or video has rapidly advanced. If user can connect to the Internet, it is possible to select from video streams. It is easy to provide video streams on network compared to existing broadcasting systems. It has been anticipated that many personal broadcast stations start their services when information and telecommunication infrastructure develops.

However, exhaustion of network resources and server resources may be caused in this system. For example, when viewing audience connects to a server, some signaling messages are exchanged. Therefore, as the number of viewing audience increases, the load of the network devices which processes the message will increase. To solve these problems, a flexible mechanism to prepare the various services is required.

The video-on-demand system is used in the contents distribution using the communication network. However, that is not suitable for the networks with many users because contents provider must respond for each viewing audience, and operation takes the serious load and consumes the network resources.

On the other hand, broadcasting system is efficient because video streams carried out one-way flow to the viewing audience. This research presents an efficient architecture and system operations when providing broadcast type service on a communication network.

On the proposed system, a single stream which contains many contents is delivered to the viewing audience. By using that system, the necessity that each viewing audience connects directly to server, and generating of signaling message is suppressed.

The proposed system consists of three components MPEG2-TS Converter, Contents Selector, and Service Manager.

- **MPEG2-TS Converter** processes MPEG2-TS (Transport Stream) in realtime by collecting two or more single video streams. This component contains some MPEG2

Encoder and Multiplexer, and is used when user connected to the network wants to offer video stream.

- **Contents Selector** provides single stream for viewing audience, and was adapted for a home access line. This component contains TS separator, and receives TS from MPEG2-TS Converter by using multicast technologies.
- **Service Manager** gives an easy-to-use browser-based interface for providing and referring video streams. This component is constructed with three process: SQLdaemon, HTTPdaemon and POLLdaemon. The SQLdaemon is a database server to store reserved information by video stream provider. HTTPdaemon is a WWW server which provides GUI for WWW browser. This daemon is used when user providing and referring video streams. POLLdaemon is a guardian for database.

The connection between the viewing audience and Contents Selector is established a the unicast communication. A viewing audience sends requests to a Contents Selector and the Contents Selector provides arbitrary contents from TS. To the user group with whom it presented in the same domain, this node is put into place and is shard.

By using these three nodes, contents can be provided easily, and the load to a contents provider can be reduced. Furthermore, the number of viewing audience that can be accommodated to the network increases and a frequent contents change can be performed, while the load of a communication network remains low. By evolving the proposed architecture, the near on-demand services are possible.

It is a futuer work to use the resources of MPEG2-TS Converter effectively, filling a demand of a user to some extent by independent reservation control of a Service Manager.