Chapter 1
Streaming Media Management and Delivery Systems

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ABSTRACT
The aim of this chapter is to highlight essential criteria required to set up a streaming media server within Higher Education Institutions. It explores different types of video content and highlights the importance of streaming media technology by differentiating between the traditional Web server software and streaming media server software. This is then followed by the explanation of different streaming media protocols and how the video content gets transported from the streaming media server to students’ computer. The chapter also explores different types of methods used to deliver streaming videos over the Internet, different streaming media software, encoding software, and encoding parameters used for converting high definition/quality videos into streamable quality. Section 3 of this chapter highlights the importance of folder and file naming conventions, exploring essential video metadata which is required to create and manage video files, Digital Rights Management technology to securely deliver video over the Internet, and how to publish a video on the Internet.

CONTENT (VIDEO)

The aim of this section is to investigate and review the types of streaming media content Higher Education offers. To review current streaming media services within UK Higher Education, the internet was searched using Google’s advanced search methods looking for higher education institutions that deliver streaming media videos. Interviews were carried out with Higher Education librarians and academics. The search criteria and interviews were restricted to UK Higher Education domain, keeping in mind that the Higher Education sector globally has similar objective and encourage sharing best practice to enhance the student learning experience.

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Review suggested that within Higher Education, videos are generally divided into two categories:

- Own Produced video
- Licensed video

**Own Produced Video**

Own produced video are produced by Higher Education institutions using their own services and under its editorial responsibility, in general with its own production facilities. Terms of use and code of practice is decided in house to meet their requirements. An institution may decide to make their video globally accessible or restrict their video to geographical location or validate access via login technology.

**Licensed Video**

A Higher Education institution can purchase a license (Educational Recording Agency, 2009) which allows its staff members to record television broadcasts for educational purposes, which can be distributed using streaming media technologies to students. However majority of such licenses contain terms of use and guidance to follow. For example: A video can only be delivered within restricted geographical boundary, video must be tagged with appropriate metadata and institutions must follow accepted code of practice for monitoring authorized access to licensed video.

Steaming media technology (Yan-Jun & Li, 2003) has made it possible to publish such videos online for instant access as oppose to traditional methods of delivery such has video tapes or DVDs.

**STREAMING MEDIA**

The word ‘streaming media’ refers to the technology that allows the continuous flow of multimedia over the internet. Video is a type of multimedia that combines both visual and audible components. Streaming Media in Higher Education refers to the real time delivery of audio/video over the networks. In computer science, network is a group of two or more computers linked together. Connected group of networks is called Internet. Internet connects groups of computer networks together regardless its geographical location, forming a single network in which any computer from any group can share information with any other computer globally. One way of accessing shared information located on the Internet is using a technology called World Wide Web (WWW). WWW contains a set of protocols to transmit different types of information. The protocol defines a common set of rules and signals that computers on the network use to communicate. Hyper Text Transfer Protocol (HTTP) is the set of rules for transporting information (text, graphic images, sound, video, and other multimedia files) on the World Wide Web. Information transported using HTTP can be viewed using a Web Browser. A Web Browser is a software application for retrieving, presenting, and transporting information on the World Wide Web. However the speed in which information can be transported is dependent upon the Internet Bandwidth. In the context of Internet, Bandwidth is defined as the maximum amount of information that can be transmitted over the internet per second. It is measured in bits per second. Streaming videos can be delivered using HTTP protocol using traditional web server which hosts WebPages. However, use of a streaming media server is highly recommended for streaming video instead of traditional web server.

**Streaming Media Server vs. Traditional Web Server**

Following are the differences between streaming media server and traditional web server for streaming videos over the internet (Nelson, 2009):
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