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Lab 9

Questions:

1. Streaming video systems can be classified into three categories. Name and briefly describe each of these categories.

Streaming video systems can be classified into three categories and they are;

1. UDP streaming: With UDP, server transmits video at a rate that matches the client’s video consumption rate by clocking out the video chunks over UDP at a steady rate. Before passing the video chunks to UDP, the server will encapsulate the video chunks within transport packets specially designed for transporting audio and videos using the Real-Time Transport Protocol (RTP) or a similar scheme. Another distinguishing property of UDP streaming is that in addition to the server-to-client video stream, the client and server also maintain, in parallel, a separate control connection over which the clients sends commands regarding session state changes.
2. HTTP streaming: In HTTP streaming, the video is simply stored in an HTTP server as an ordinary file with a specific URL. When a user wants to see the video, the client establishes a TCP connection with the server and issues an HTTP GET request for tha URL. The server then sends the video files, within an HTTP response messages, as quickly as possible, that is, as quickly as TCP congestion control and flow control will allow. On the client sides, bytes are collected in a client application buffer. Once the number of bytes in this buffer exceeds a predetermined threshold, the client application begins playback- specifically, it periodically grabs video frames from the client application buffer, decompresses the frames, and displays them on the user’s screen.
3. Adaptive HTTP streaming: One shortcoming of the HTTP streaming is that the client cannot choose the version of the video even the video can be encoded into different versions from high definations to the low-definations. Dynamic Adaptive Streaming over HTTP (DASH) is developed for improving that problem. With DASH, each video version is stored in the HTTP server with different URL. The HTTP server also has a manifest file, which provides a URL for each version along with its bit rate. The client first requests the manifest file and learns about the various versions. Then the client selects one chunks at a time by specifying the URL.

1. List three disadvantages of UDP streaming.

The three disadvantages of UDP streaming are

1. Due to the unpredictable and varying amount of available bandwidth between server and client, constant-rate UDP steaming can fail to provide continuous playout.
2. It requires a media control server, such as an RTSP server, to process client-to-server interactively requests and to track client state for each ongoing client session. This increases the overall cost and complexity of deploying a large-scale video-on-demand system.
3. The third drawback is that many firewalls are configured to block UDP taffic, preventing the users behind these firewalls from receiving UDP video.
4. What is a packet that is received after its scheduled playout time considered lost?

The packet that arrive after their scheduled playout times are discarded and considered lost.

1. How are different RTP streams in different sessions identified by a receiver? How are different streams from with the same session identified?

RTP streams in different sessions: different multicast addresses.

RTP streams in the same sessions: SSRC field; RTP packets are distinguish from RTCP packets by using distinct port numbers.

1. What is the role of a SIP registrar? How is the role of SIP registrar different from that of a home agent in Mobile IP?

The role of a SIP registar is to keep track of the users and their corresponding IP addresses which they are currently using. Each SIP registar keeps track of the users that belong to its domain. It also forwards INVITE messages (for users in its domain) to the IP address which the user is currently using. The role of an SIP registar is similar to that of a home agent in Mobile IP because, In **Mobile** Internet Protocol (**Mobile IP**), a **home agent** is a router on a **mobile** node's **home** network that maintains information about the device's current location, as identified in its care-of address.