EECS 489 Discussion 3

Reminders

- Project 1 is due tonight
- Have three late days
- Project 2 will be released on Monday

select() demo

Q1 DNS

Is it possible for an organization’s Web server and mail server to have exactly the same alias for a hostname (for example, foo.com)? What would be the type for the RR that contains the hostname of the mail server?

Q1 DNS

Is it possible for an organization’s Web server and mail server to have exactly the same alias for a hostname (for example, foo.com)? What would be the type for the RR that contains the hostname of the mail server?

Yes. MX resource record type contains hostname for the mail server

Q2 DNS

Suppose you can access the caches in the local DNS servers of your department. Can you propose a way to roughly determine the Web servers (outside your department) that are most popular among the users in your department? Explain.

Q2 DNS

Suppose you can access the caches in the local DNS servers of your department. Can you propose a way to roughly determine the Web servers (outside your department) that are most popular among the users in your department? Explain.

Take snapshot of cache at various times. Most frequent websites occur often.

Q3 DNS

Suppose that your department has a local DNS server for all computers in the department. You are an ordinary user (i.e., not a network/system administrator). Can you determine if an external Web site was likely accessed from a computer in your department a couple of seconds ago? Explain.

Q3 DNS

Suppose that your department has a local DNS server for all computers in the department. You are an ordinary user (i.e., not a network/system administrator). Can you determine if an external Web site was likely accessed from a computer in your department a couple of seconds ago? Explain.

Can use dig query times to tell if something was cached

Q4 DNS

Suppose you are trying to access the page web.eecs.umich.edu/course/eecs489. Your system has been configured to use 8.8.4.4 as your local DNS server. Give the list of nameservers queried in the correct order.

Assume the following:

- No caching
- All name servers perform recursive name resolution
- Root name server is also responsible for the zone containing the .edu domain
- .umich.edu and .eecs.umich.edu are in a separate zone of their own
- .eecs.umich.edu nameserver is authoritative for all hostnames ending in .eecs.umich.edu

Q5 DASH

Consider a DASH system for which there are N video versions (at N different rates and qualities) and N audio versions (at N different rates and versions). Suppose we want to allow the player to choose at any time any of the N video versions and any of the N audio versions. Consider the following:

If we create files so that the audio is mixed in with the video, so server sends only one media stream at given time, how many files will the server need to store (each a different URL)?

If the server instead sends the audio and video streams separately and has the client synchronize the streams, how many files will the server need to store?

Q5 DASH

Consider a DASH system for which there are N video versions (at N different rates and qualities) and N audio versions (at N different rates and versions). Suppose we want to allow the player to choose at any time any of the N video versions and any of the N audio versions. Consider the following:

If we create files so that the audio is mixed in with the video, so server sends only one media stream at given time, how many files will the server need to store (each a different URL)? N*N

If the server instead sends the audio and video streams separately and has the client synchronize the streams, how many files will the server need to store? N+N

Q6 HTTP Streaming

Consider a simple HTTP streaming model. B denotes the size of the client's application buffer, and Q denotes the number of bits that must be buffered before the client application begins playout. Also r denotes the video consumption rate. Assume that the server sends bits at a constant rate x whenever the client buffer is not full. Also assume that $x < r$.

Describe the behaviour of the video playout.

Suppose the buffer starts out empty. How long will it be before the video can begin playout?

Assume the current buffer size is $\alpha > Q$. How long will the playout last?

Q6 HTTP Streaming

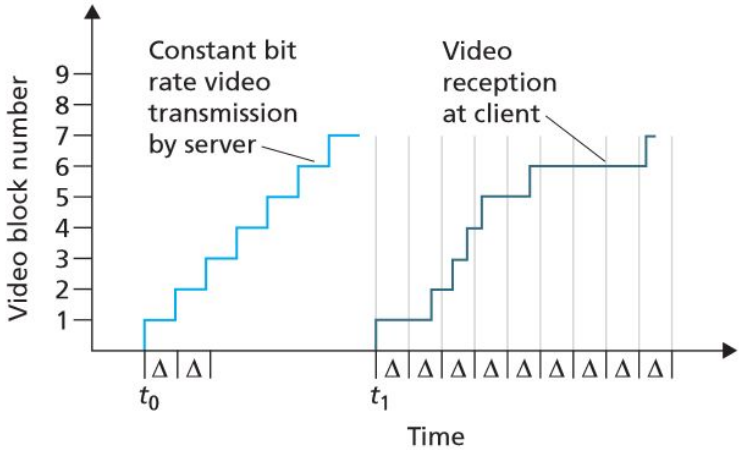
Consider a simple HTTP streaming model. B denotes the size of the client's application buffer, and Q denotes the number of bits that must be buffered before the client application begins playout. Also r denotes the video consumption rate. Assume that the server sends bits at a constant rate x whenever the client buffer is not full. Also assume that $x < r$.

Describe the behaviour of the video playout. Alternate between playout and freeze

Suppose the buffer starts out empty. How long will it be before the video can begin playout? Q / x

The current buffer size is α ($> Q$). How long will the playout last? $(\alpha) / (r - x)$

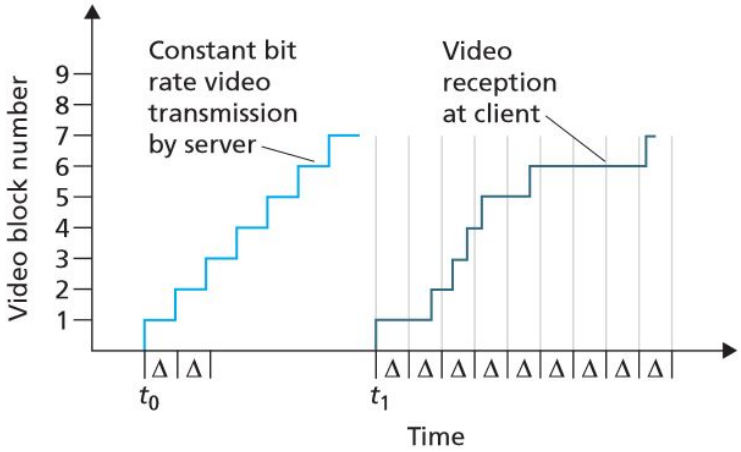
Q6 Video Streaming



Suppose that video is encoded at a fixed bit rate, and thus each video block contains video frames that are to be played out over the same fixed amount of time, Δ. The server transmits the first video block at t_0, the second block at t_0+Δ, and so on. Once the client begins playout, each block should be played out Δ time units after the previous block. Consider the following:

Suppose the client starts playing the video at t_1+Δ. In the figure, how many blocks of video will have arrived in time for correct playout?
What is the smallest playout delay at the client, such that every video block has arrived in time for its playout?

Q6 Video Streaming



Suppose that video is encoded at a fixed bit rate, and thus each video block contains video frames that are to be played out over the same fixed amount of time, Δ. The server transmits the first video block at t_0, the second block at t_0+Δ, and so on. Once the client begins playout, each block should be played out Δ time units after the previous block. Consider the following:

Suppose the client starts playing the video at t_1+Δ. In the figure, how many blocks of video will have arrived in time for correct playout? 6
What is the smallest playout delay at the client, such that every video block has arrived in time for its playout? 3Δ