Conditional Get: Conditional GET is a mechanism that allows a cache to verify that its objects are up to date. A conational GET message, if the request message use the GET method and the request message includes and If-Modified-Since: header line.

GET message: an HTTP request message

Mime Encoding: a standard specification for formatting non-ASCII messages so that they can be sent over the Internet.

Processing Delay: Time needed for the router to examine the packet and decide what to do with it

Queuing Delay: Time waiting at output link for transmission

Transmission Delay: Time required to push bits into an output link

Propagation Delay: Time required for the bits to travel the length of the link

Traffic Intensity: It is the ration La/R, where L is the packet length, a is the average packet arrival rate, and R is the link bandwidth

Out of band: Out of band refers to the dedicated control connection where users can communicate with FTP server. FTP is said to send its control information out-of-band. HTTP sends request and response into the same TCP connection that carries the transferred file itself. HTTP is said to send its control information in-band.

IMAP: IMAP is a mail access protocol. It has many more features than POP3. An IMAP server will associated each message with a folder. Unlike POP3, an IMAP server maintains user state information across IMAP sessions. Another important feature of IMAP is that is has commands that permit a user agent to obtain components of messages.

Cookie: A cookie is a small piece of data send from a website and stored in a user’s web browser while the use is browsing that website.

RFCs are standard documentations and specifications of some public domain protocols.

Bit torrent chunk:

TDM: Time-division multiplexing. A type of multiplexing that assigning each stream a different time slot in a set.

Overlay network: a virtual or logical network on top of the physical network.

Internet backbone: It refers to the principal data routes between large, strategically interconnected networks and core routers on the Internet.

ISP: Internet Service Provider. A business or organization that offers user access to the Internet and related services.

Unguided media: the waves propagate in the atmosphere and into outer sp*a*ce.

Datagram network, “best effort network.” A packet transport mode where packets are routed independently and may follow different paths, thus there is no guarantee of sequence delivery and reliable delivery.

**Describe how conditional get requests might be used by an institutional web cache (proxy server). (4 points)**

To send a conditional GET message, a request message has to contain GET method and include an If-Modified-Since: header line. The proxy server can use conditional get requests to check if an object is up to date. If the object is not modified since the specified date, the web server will not send new copy of object back to proxy server, it will only send a response code to proxy server.

**What does the header line “Connection: close” mean? Is this normal for HTTP 1.1? How could multiple objects be sent quicker? (4 points)**

The header line “Connection: close” means that the client does not want to keep the connection open. The client does not want to reuse this connection. This is not normal for HTTP 1.1 because it uses persistence connection. When use “Connection: close”, the client is specifically want to use non-persistent connection.

Multiple objects could be send quicker by not using the “Connection: close” message. HTTP 1.1 uses persistent connection as a default.

Conical Hostname: A properly denoted hostname of a computer or network server. Canonical means “according to the rule”

Elastic applications: It is TCP Friendly applications. When it encounters delay, loss, or bandwidth limitations, the application adapts its rate to maximize throughput. It makes use of whatever throughput they get.

Problem with centralized DNS

A single point of failure. If the DNS server crashes, so does the entire Internet.

Traffic volume: A single DNS server would have to handle all DNS quires.

Distance to centralized database: A single DNS server cannot be close to all the querying clients.

Maintenance: The single DNS would have to keep records for all Internet host.

FTP: File Transfer Protocol.

Torrent: The collection of all peers participating in the distribution of a particular file is called a torrent.

Peers in a torrent download equal-size chunks of the file from one another.