Alan Palayil

A20447935

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ECE 545 Quiz 1

1. Briefly describe your understanding of the Internet best service model.
    - The Internet Best Service Model is a concept that refers to a design pattern in which the service providers strive to deliver the best possible service to users by leveraging the capabilities of the Internet to provide a high-quality and efficient service that constantly adapts to meet changing user needs. This model is based on the idea that the Internet enables service providers to deliver services with greater efficiency, scalability, and flexibility compared to traditional service delivery models. It involves delivering services by utilizing multiple channels, such as the web, mobile, and social media, and utilizing data and analytics to enhance the service experience. The goal of this model is to create a smooth, personalized, and accessible service that offers a seamless user experience.

2. Justify that running over UDP is an appropriate choice for the DNS application.
    - The DNS application uses the UDP for its operation for the following reasons:
        i. Speed: UDP is fast and efficient. The DNS requires quick resolution of domain names to IP addresses as the DNS query and response are small, thus use of UDP allows for fast and efficient delivery of these messages.
        ii. Low Overhead: UDP has a smaller overhead compared to other protocols, making it ideal for the DNS application that requires less processing time and resources.
        iii. No guarantee of delivery: The DNS application doesn't require a guarantee of delivery as a lost query or response can be transmitted without adverse effects.
        iv. Statelessness: UDP is a stateless protocol, which means that it does not maintain any information about previous transactions. This property is well suited for the DNS application, which does not require any state to be maintained between queries and responses.

      In conclusion, the use of UDP for the DNS application is appropriate due to its fast and efficient delivery of small messages, low overhead, lack of reliability guarantees, and stateless nature.

3. Briefly describe your understanding of the dynamic adaptive streaming over HTTP (DASH) protocol.
    - Dynamic Adaptive Streaming over HTTP (DASH) is a standardized video streaming protocol that enables efficient delivery of video content over the Internet. It works by dynamically adapting the video quality to the available network bandwidth, ensuring a smooth and uninterrupted viewing experience for the user.

The protocol works by breaking down the video into smaller segments and encoding each segment into different quality levels. The player on the user's device then selects the appropriate quality level based on the current network conditions and requests the next segment. This process continues throughout the video playback, ensuring that the quality of the video is always optimized for the available network conditions. DASH is an open, royalty-free standard, and is supported by a wide range of devices and platforms, making it a popular choice for video streaming applications such as Netflix.