

**COMSATS UNIVERSITY ISLAMABAD**

**ABBOTTABAD CAMPUS**

**ASSIGNMENT NO. 1**

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**SUBJECT: COMPUTER NETWORKS**

**TOPIC: HTTP**

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**Question#1 (i) (CLO-02, C2)**

Benefits of adopting HTTP for Dynamic Adaptive Streaming over HTTP (DASH) at the application layer:

1. **How does widespread support and compatibility benefit DASH over HTTP?**HTTP is universally supported by all browsers, servers, and network devices, which means DASH can be implemented without requiring specialized streaming protocols or infrastructure. This ensures compatibility across a wide range of devices and platforms.
2. **How does DASH over HTTP optimize network usage?**DASH uses adaptive bitrate streaming, meaning it dynamically switches video quality based on real-time network conditions. This minimizes buffering and reduces unnecessary bandwidth usage during periods of low connectivity.
3. **Why is DASH over HTTP considered scalable?**Because it relies on standard HTTP servers (like Apache or Nginx), which are already optimized for large-scale delivery, DASH can serve a massive number of users without needing dedicated streaming servers.
4. **How does adopting HTTP for DASH reduce costs?**No need for proprietary streaming servers or protocols; existing web infrastructure (CDNs, caching servers, HTTP-based delivery) can be reused, lowering setup and maintenance costs.
5. **How does DASH over HTTP improve the user experience?**Users enjoy smooth playback with minimal buffering and automatic quality adjustments based on their internet speed. This leads to higher satisfaction and uninterrupted streaming.
6. **What is the advantage of DASH being interoperable and flexible?**It can be used with various media formats, codecs, DRM systems, and devices. This flexibility allows content providers to reach a broader audience without compatibility issues.
7. **How does progressive enhancement work in DASH over HTTP?**DASH can start with low-resolution playback and upgrade to higher resolutions as network conditions improve, ensuring continuous playback while enhancing video quality progressively.
8. **How does HTTP-based DASH ensure secure content delivery?**It supports standard security protocols like HTTPS and DRM (Digital Rights Management) to protect content from unauthorized access and ensure secure streaming.
9. **Why is DASH over HTTP easy to integrate into web applications?**It works seamlessly with HTML5 video players and JavaScript, making it easy to embed and control within modern web applications without needing plugins.
10. **Can DASH over HTTP support offline playback?**Yes, through integration with service workers and caching APIs (like in Progressive Web Apps), DASH segments can be downloaded and stored locally for offline playback.

**Question#1 (ii) (CLO-02, C2)**

Two main server placement philosophies in Content Distribution Networks (CDNs):

1. **Enter Deep (Edge Placement):**
   * In this approach, servers are placed deep inside the access networks, close to end-users (e.g., within ISPs).
   * Advantage: Lower latency and better quality of service due to proximity.
   * Use Case: Ideal for densely populated areas where high performance is required.
2. **Bring Home (Core Placement):**
   * Here, servers are placed at a few central locations near Internet Exchange Points (IXPs) or backbone providers.
   * Advantage: Easier to manage and maintain, with fewer servers required.
   * Use Case: Suitable for serving a large geographic area with fewer infrastructure requirements.

***END***