Unveiling QUIC: A Next-Generation Transport Protocol

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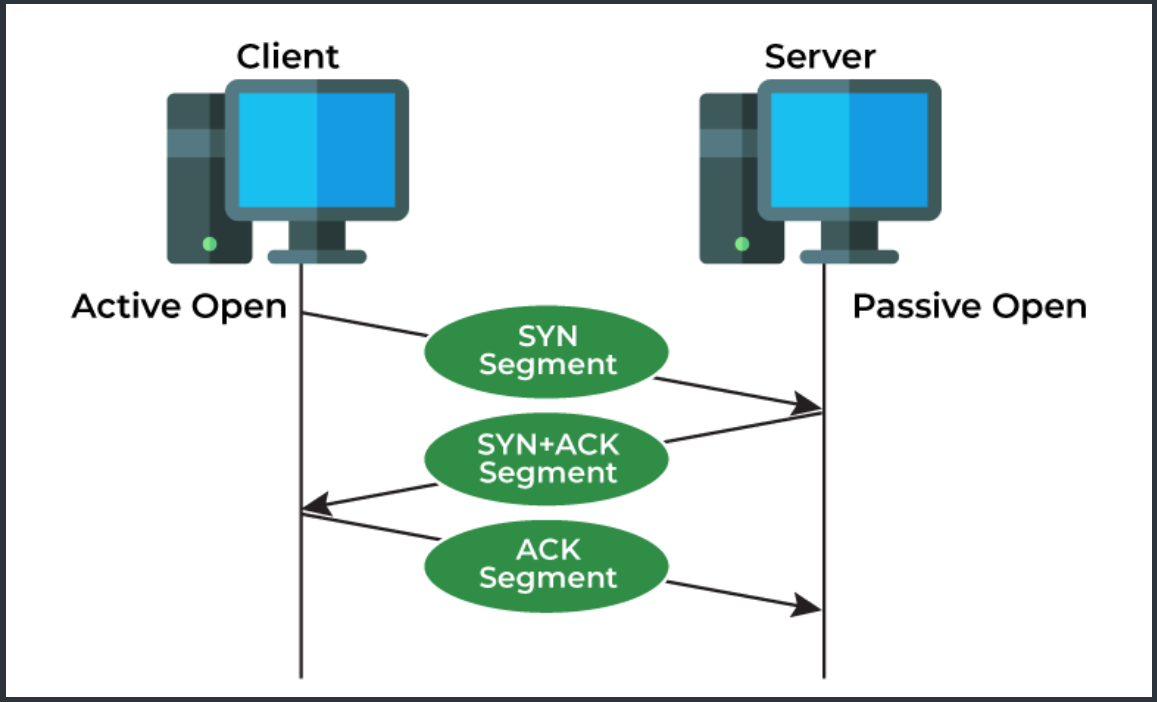
Task: 6.3HD

SIT202 Secure Networking

The Shortcomings of TCP

- Reliance on Three-way Handshake: Slows down connection establishment.
- Head-of-Line Blocking: A single lost packet can stall the entire data stream.
- Limited Congestion Control: Less adaptable to dynamic network conditions

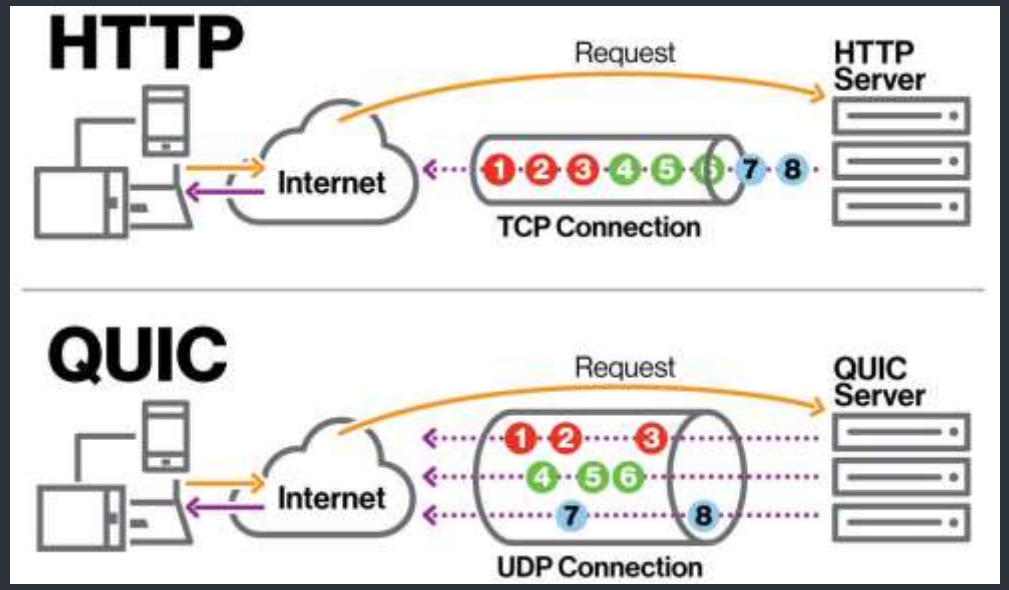


Introducing QUIC: A UDP-based Revolution

- Built on UDP for Faster Data Transfer
- Multiplexing for Concurrent Data Streams
- Reduced Latency with Streamlined Handshake
- Integrated Congestion Control and Reliability Mechanisms

Unveiling the Power of QUIC

- Reduced Latency: Faster connection establishment and improved handling of packet loss.
- Improved Congestion Control: Dynamic adaptation to network conditions for optimal data transfer rates.
- Enhanced Security: Built-in encryption with TLS 1.3 for secure communication.
- Multiplexing: Efficient handling of numerous concurrent data streams.



Beyond the Hype: Considerations for QUIC

- Complexity: Requires server and client support for QUIC communication.
- New Technology: Still under development, with ongoing improvements.
- Compatibility with Existing Infrastructure: Firewalls and IDS might require configuration updates.

QUIC in Action: Network Applications

- HTTP/3: Faster web browsing experiences with reduced latency.
- Streaming Services: Smoother video streaming with improved performance.
- Real-time Applications: Enhanced online gaming and video conferencing experiences.

Securing QUIC: Addressing Potential Threats

- Denial-of-Service (DoS) Attacks: Server-side rate limiting and resource protection are crucial.
- Middlebox Issues: Configuration updates and compatibility testing for firewalls and IDS are necessary.

The Future of QUIC: A Scalable and Evolving Protocol

- Wider Adoption: Increased server and client support is key.
- Integration with Existing Infrastructure: Ongoing efforts to ensure compatibility with firewalls and IDS.
- Standardization: IETF QUIC Working Group defining and solidifying the QUIC standard.

Conclusion: QUIC - A Game Changer for the Internet

- Faster connections, improved performance, and enhanced security.
- Ideal for real-time applications and web browsing experiences.
- Continued development and wider adoption hold immense promise.

Thank You!