

Assignment 1

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Latest Trends in Computer Networks

{Network Trends refers to new technologies, concepts and practices that improve how data is transmitted, stored and managed. These trends reflect the increasing need for faster, more secure and scalable networks.}

These trends are important to enable better connectivity and faster communication. It supports emerging technologies like AI, IoT and Cloud Computing. It also addresses growing demands for data security and user privacy.

Following are the some trends in computer networks:

1. AI-Powered Network Automation

AI and machine learning (ML) are becoming foundational in network management, helping automate repetitive tasks and enhance decision-making with predictive insights.

Key Benefits

- Real-time analytics for proactive network management.
- Reduced operational costs through automation of network monitoring and maintenance.
- Improved accuracy and efficiency in identifying network issues before they impact users.

2. 5G and Private 5G Networks

5G technology is transforming connectivity with faster speeds, reduced latency, and higher device capacity. Organizations in critical sectors like healthcare, logistics, and manufacturing are increasingly adopting private 5G networks for enhanced control and security.

Key Benefits

- Enhanced data privacy and control for businesses.
- Increased reliability and faster data transmission.
- Scalable connectivity for IoT devices, leading to greater operational efficiency.

3. Network as Service (NaaS)

NaaS provides organizations with flexible, subscription-based networking solutions, allowing them to scale their network infrastructure as needed without significant capital expenditure. By using a cloud-like model for network services, companies can quickly adjust their networking capabilities to meet demand.

Key Benefits

- Cost of savings by eliminating the need for upfront infrastructure investment.
- Flexible network management with scalable and customizable options.

4. Zero Trust Network Access (ZTNA)

The increase in cyber threats has made Zero Trust Network Access (ZTNA) a top priority for organizations. ZTNA is a security model based on the principle of "never trust, always verify," enforcing strict identity verification for every user or device trying to access the network.

Key Benefits

- Enhanced network security through strict access control.
- Reduced vulnerability to data breaches and insider threats.
- Improved compliance with security regulations.

5. Edge Computing and IoT Integration

With the proliferation of IoT devices, edge computing has become essential for managing and processing data closer to where it is generated. By 2024, edge computing will support real-time data processing for IoT devices in industries like manufacturing, healthcare, and retail.

Key Benefits

- Reduced latency and faster response times for IoT applications.
- Lower bandwidth costs by processing data locally.
- Enhanced performance in real-time applications and remote environments.

6. Wi-Fi 7 Adoption

As the next evolution in Wi-Fi technology, Wi-Fi 7 offers significant improvements in speed, capacity, and efficiency, particularly in high-density environments like offices, stadiums, and smart cities. Wi-Fi 7 is expected to be widely available by late 2024, enabling faster and more reliable wireless connections.

Key Benefits

- Increased speed and reduced interference in high-density areas.
- Improved support for bandwidth-intensive applications.
- Enhanced user experience with faster, more stable wireless connections.

Conclusion

Networking trends in 2025 are centered around automation, flexibility, and security, with a strong emphasis on supporting emerging technologies like IoT, 5G, and edge computing. These advancements will not only improve efficiency but also open up new opportunities across various sectors. Businesses that embrace these trends can expect greater agility, cost savings, and a more robust networking foundation for the future.
