Module 11 CCNA -Automation and Programmability

1. Explain How Automation Impacts Network Management.

Ans. Automation in network management has significant implications for various aspects of network operations and maintenance.

**Efficiency**: Automation tools can significantly reduce the time and effort required to manage network infrastructure.

**Consistency**: Automation ensures that network configuration changes are applied consistently across the entire network infrastructure.

**Scalability**: Automation tools can handle large-scale network deployments more effectively.

**Fault Tolerance**: Automation helps to improve the fault tolerance of network operations.

**Security**: Automation plays a crucial role in network security. By implementing security best practices and monitoring network activity, automation can help detect and respond to security incidents before they can cause significant damage.

1. Compare Traditional network with Controller based networking .
2. Explain Virtualization Describe Characteristics of REST-based API.
3. Explain methods of Automation.

There are several methods of automation in network management, including:

**Network Automation:** Automation tools are used to manage and configure network devices, such as routers, switches, and firewalls. These tools can be used to define and enforce network policies, monitor network health, and troubleshoot issues.

**Security Automation:** Security automation tools are used to detect and respond to security incidents and threats in real-time. They can analyze network traffic, identify anomalies, and trigger security alerts and responses.

I**nfrastructure Automation:** Infrastructure automation tools are used to manage the deployment and scaling of network infrastructure. They can automate the provisioning and configuration of virtual machines, containers, and cloud resources

**Orchestration Automation:** Orchestration automation tools are used to manage the deployment and orchestration of services across distributed systems. They can automate the deployment and scaling of microservices and containerized applications.

**Provisioning Automation:** Provisioning automation tools are used to automate the process of deploying and configuring network devices and services. They can streamline the deployment process and reduce manual intervention.

**Monitoring Automation:** Monitoring automation tools are used to collect and analyze network data and performance metrics. They can detect and respond to issues in real-time.

5. Explain SDN Explain DNA Center.

SDN (Software-Defined Networking) is a networking architecture that separates the control plane from the data plane. The control plane is responsible for managing the network configuration and control, while the data plane is responsible for forwarding packets. SDN allows for programmable network control and enables network administrators to define and enforce network policies in a centralized manner.

DNA Center is a platform developed by Cisco that provides a comprehensive solution for SDN-based network management. It offers various features such as network automation, programmability, security, and policy-based network management.

6. Explain SD-Access and SD-WAN.

SD-Access (Software-Defined Access) is a networking architecture that enables network administrators to define and enforce network policies for access control and security at the edge of the network. It allows for the automated provisioning and configuration of access control devices, such as firewalls and VPN gateways, based on predefined policies.

SD-WAN (Software-Defined Wide Area Network) is a cloud-based network architecture that optimizes network performance and reduces latency by dynamically rerouting traffic between network devices and the cloud. It allows for the seamless integration of branch offices and remote locations with the central network, enabling a unified management and optimization of network resources.