INFOSOFT IT SOLUTIONS

Training | Projects | Placements

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802.1x

Introduction to IEEE 802.1X

- Overview of network access control (NAC)
- Evolution and purpose of IEEE 802.1X standard
- Key features and benefits of 802.1X authentication

Authentication Basics

- Authentication vs. authorization vs. accounting (AAA)
- Types of authentication protocols (EAP, RADIUS)
- Security principles and challenges in network access

802.1X Components

- Supplicant, Authenticator, and Authentication Server roles
- EAP (Extensible Authentication Protocol) methods supported by 802.1X
- Protocol interactions and message flow (EAPOL)

802.1X Architecture

- Overview of 802.1X architecture in wired and wireless networks
- Components: Port-based network access control (PNAC)
- Integration with VLANs for network segmentation

Authentication Protocols

- EAP-TLS (Transport Layer Security)
- EAP-PEAP (Protected Extensible Authentication Protocol)
- EAP-TTLS (Tunneled Transport Layer Security)
- EAP-MD5 and other EAP methods

RADIUS (Remote Authentication Dial-In User Service)

- Role of RADIUS in 802.1X authentication
- RADIUS attributes and message flow
- Deployment considerations and scalability

Configuration and Deployment

- Configuring 802.1X on network devices (switches, access points)
- Setting up authentication servers (RADIUS servers)

Security and Encryption

- Encryption methods in 802.1X (EAP over TLS, PEAP with MS-CHAP)
- Mutual authentication and certificate management
- Securing user credentials and authentication data

Integration with Network Infrastructure

- Compatibility with existing network infrastructure (wired and wireless)
- Interoperability with other security protocols (802.11i, WPA2, WPA3)
- Network segmentation and access policies

Monitoring and Auditing

- Monitoring 802.1X authentication logs and events
- Auditing compliance with security policies

- Incident response and forensic analysis

802.1X in Wireless Networks

- Implementation considerations in Wi-Fi networks (WPA2-Enterprise, WPA3-Enterprise)
- Roaming and session management with 802.1X
- Performance implications and optimization

Single Sign-On (SSO) Integration

- Integration of 802.1X with SSO solutions (e.g., Active Directory, LDAP)
- User provisioning and lifecycle management
- Federated authentication across domains

Enterprise Deployment Scenarios

- Deploying 802.1X in enterprise environments (large-scale deployments)
- Best practices for policy enforcement and user management
- Scalability considerations and load balancing

Compliance and Regulatory Considerations

- Regulatory requirements (e.g., GDPR, HIPAA)
- Industry standards and compliance audits
- Data protection and privacy considerations

. Case Studies and Practical Applications

- Real-world examples of successful 802.1X deployments
- Case studies across industries (enterprise, education, healthcare)

Training and Education

- Courses and certifications for network administrators and security professionals
- Educational resources and workshops
- Skills development for implementing and managing 802.1X

Community and Resources

- Participating in 802.1X communities (forums, conferences, industry associations)
- Accessing online resources and research publications

Future Trends in Network Access Control

- Emerging technologies and innovations in network access control
- Predictions for the future of 802.1X and NAC solutions

Challenges and Considerations

- Common challenges in deploying and managing 802.1X
- Integration with IoT devices and BYOD policies
- Continuous improvement and adaptation to evolving threats

Global Collaboration and Standardization

- Role of IEEE and IETF in standardization
- Collaborative initiatives and global regulatory compliance