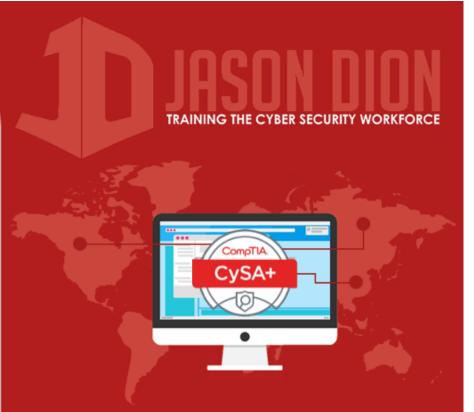


Analyzing Secure Architectures

Security Architecture & Tool Sets

Analyzing Architectures

- Attackers always look for the flaw in the architecture's security controls
- Penetration testers act like an attacker to find these flaws, gaps, and single points of failure
- When analyzing security controls, determine if they meet the given requirement or stated goal



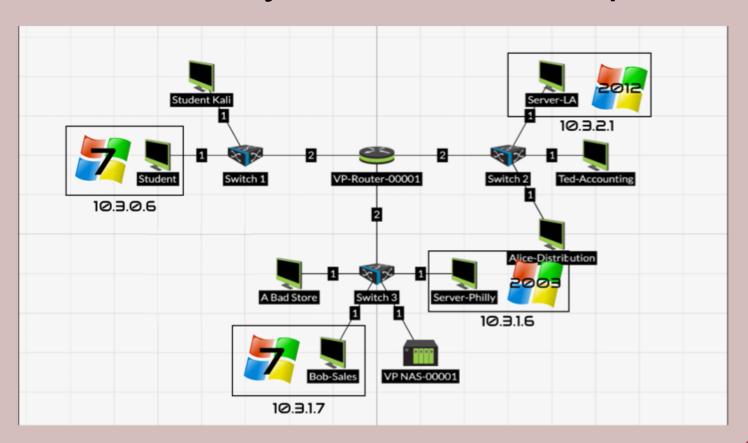
Reviewing Architectures

- Operational View
 - Focuses on how a function is performed or is supposed to accomplish
- Technical View
 - Focuses on technologies, configurations, and settings used in an architecture (system or service)
- Logical View
 - Focuses on the interconnections of systems with less technical details than the technical view



Common Issue: Single Points of Failure

 Singular part of the system that could cause the entire system to fail or the desired security level to fail is exploited



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RAINING THE CYBER SECURITY WORKFORCE



Common Issue: Data Validation and Trust

- Data is commonly assumed to be valid and trustworthy in a system
- Can cause issues, such as trusting input provided to web application will be valid
- Can lead to SQL injections or other issues
- To prevent this, systems should be designed with validation and integrity checking



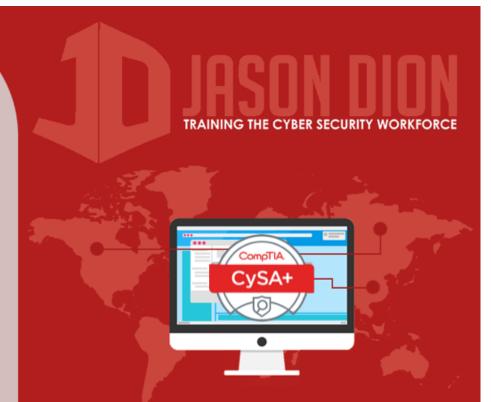
Common Issue: Users

- The largest cause of a security failure
- Mistakes and abuse can be at fault
- To prevent this:
 - Use automated monitoring to detect error
 - Constrain interfaces to only allow activities
 - Implement procedural checks and balances
 - Provide user awareness training



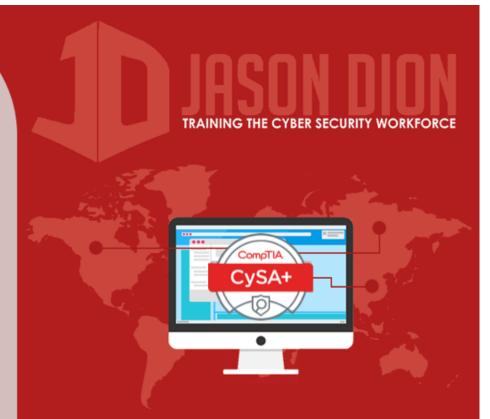
Common Issue: Authentication & Authorization

- User credentials, passwords, and permissions can cause security failure
- To prevent this:
 - Multifactor authentication
 - Centralized account management
 - Centralized privilege management
 - Monitor privileged account access
 - User awareness training



Architecture Reviews

- Step-by-step analysis of organization security needs
- Begin with the design requirements and then look at technical and logical diagrams
- Identify issues and report them per your organizational processes



Maintaining Secure Architectures

- Threats change over time and systems become outdated
- Conduct scheduled reviews
 - Systems, networks, and processes
- Continual Improvement
 - Incremental improvements over time
- Retirement of processes
 - Policies can become no longer relevant

