Access Control, Authentication and Public Key Infrastructure

Lesson 2

Assessing Risk and Its Impact on Access Control

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Learning Objective

- Mitigate risk to an IT infrastructure’s confidentiality, integrity, and availability with sound access controls.

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Key Concepts

- Risks, threats, and vulnerabilities of IT infrastructure
- Unauthorized access to IT infrastructure
- Security in the seven domains of a typical IT infrastructure
- Confidentiality, integrity, and availability throughout the seven domains with proper access controls
- Layered, physical, and logical access control security strategy

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Risk Definitions and Concepts

- Risk
- Asset value
- Threat
- Vulnerability
- Probability of occurrence
- Impact
- Control

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Risk Assessment

- Determine which risks exist in environment or may occur in future
- Measure level of risk by calculating the probability of occurrence and the potential impact on your environment

Risk = Probability X Impact

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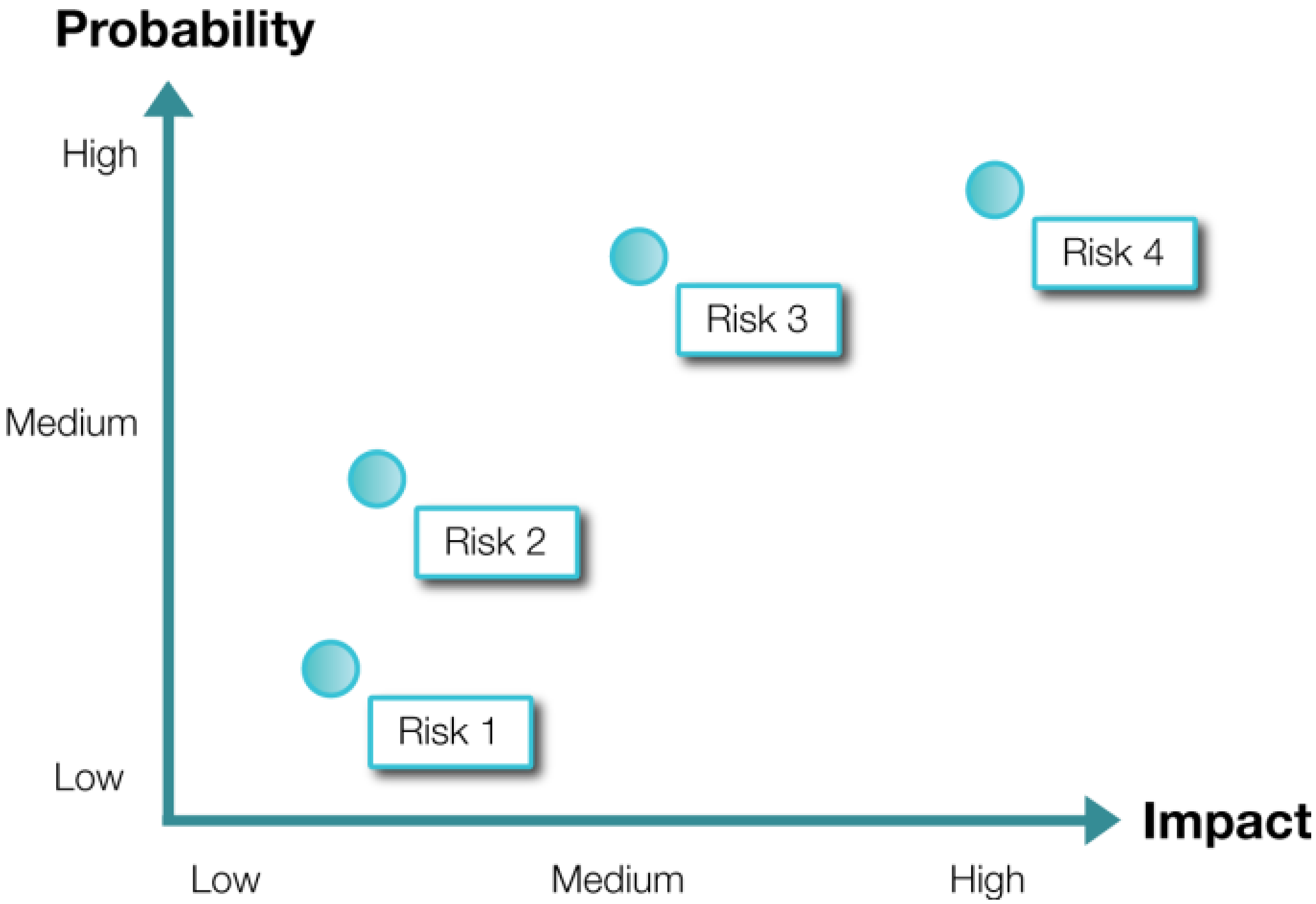
Risk = Probability X Impact Matrix



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Access Control Threats

Password cracking

- Guessing or deciphering passwords

Heightened access

- Ability of attacker to log into a system under one level of access and exploit a vulnerability to gain a higher level of access

Social engineering

- Use of manipulation or trickery to convince authorized users to perform actions or divulge sensitive information to the attacker

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Access Control Vulnerabilities

- Insecure passwords
- Insecure storage
- Insecure password hashes
- Insecure applications run at too high of a privilege level
- Users

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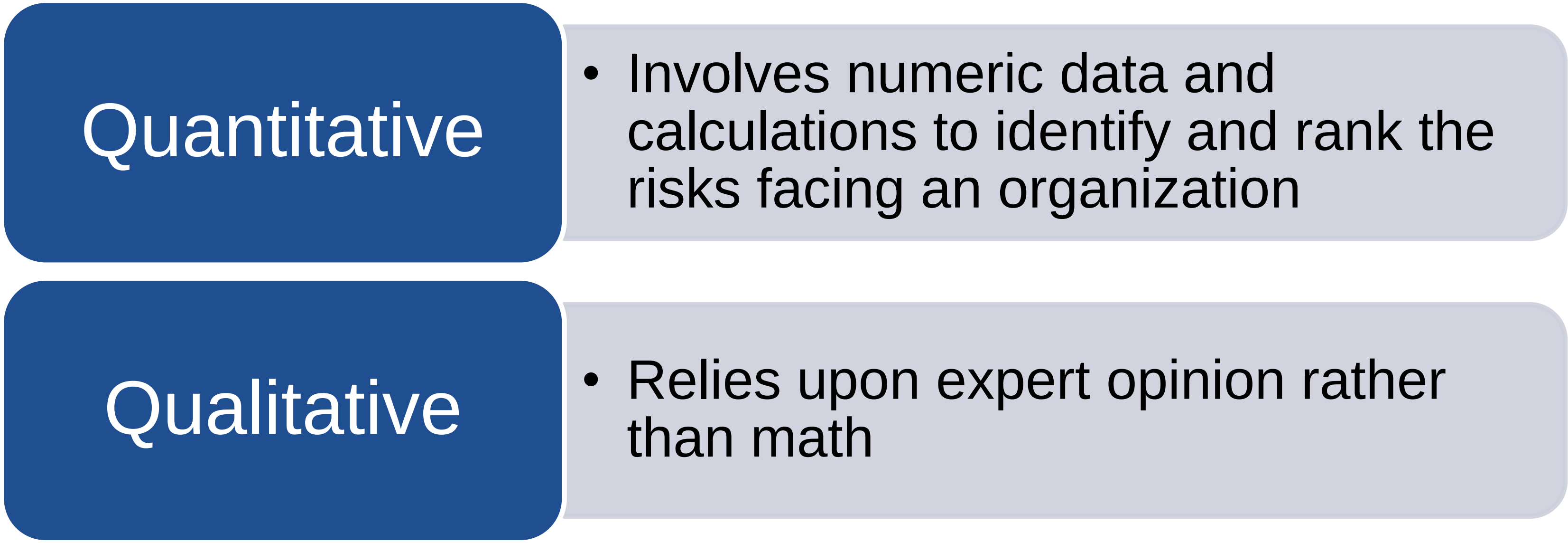
Risk Assessment



Quantitative

- Involves numeric data and calculations to identify and rank the risks facing an organization

Qualitative

- Relies upon expert opinion rather than math

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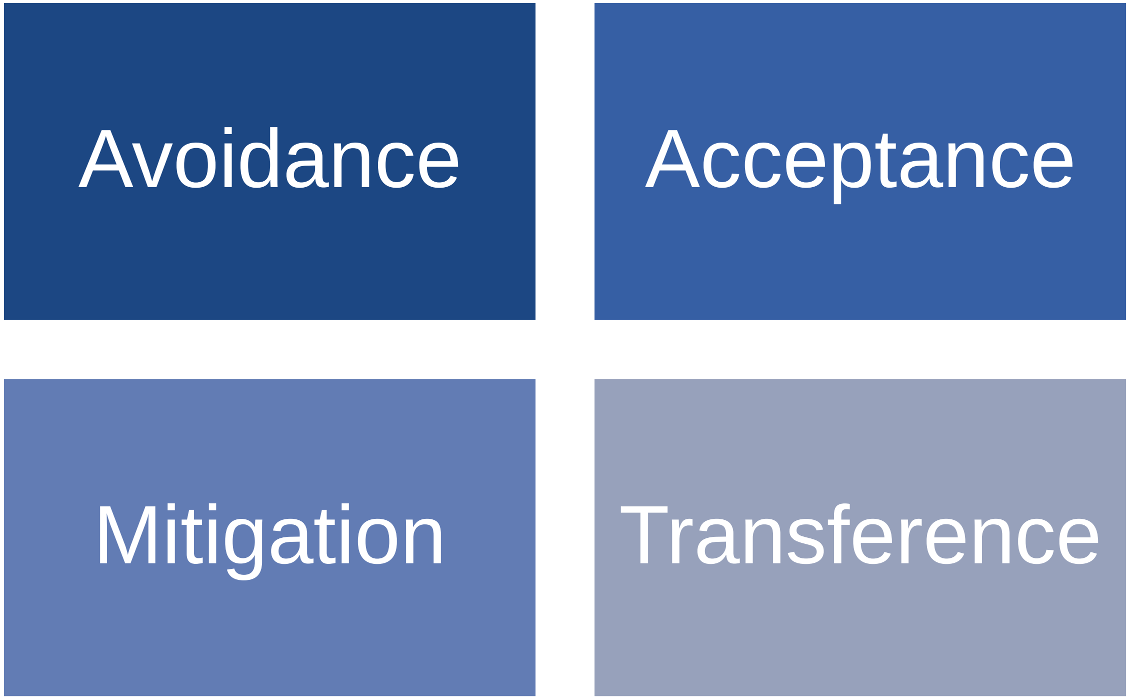
Risk Management Strategies



Avoidance

Acceptance

Mitigation

Transference

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Considerations for Designing a Risk Assessment

- Create a risk assessment policy
- Define goals and objectives
- Describe a consistent approach or model
- Inventory all IT infrastructure and assets
- Determine the value of each asset
  - Quantitatively or qualitatively

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Considerations for Designing a Risk Assessment (Cont.)

- Determine a “yardstick” or consistent measurement to determine the criticality of an asset
- Categorize each asset’s place within the infrastructure as critical, major, or minor

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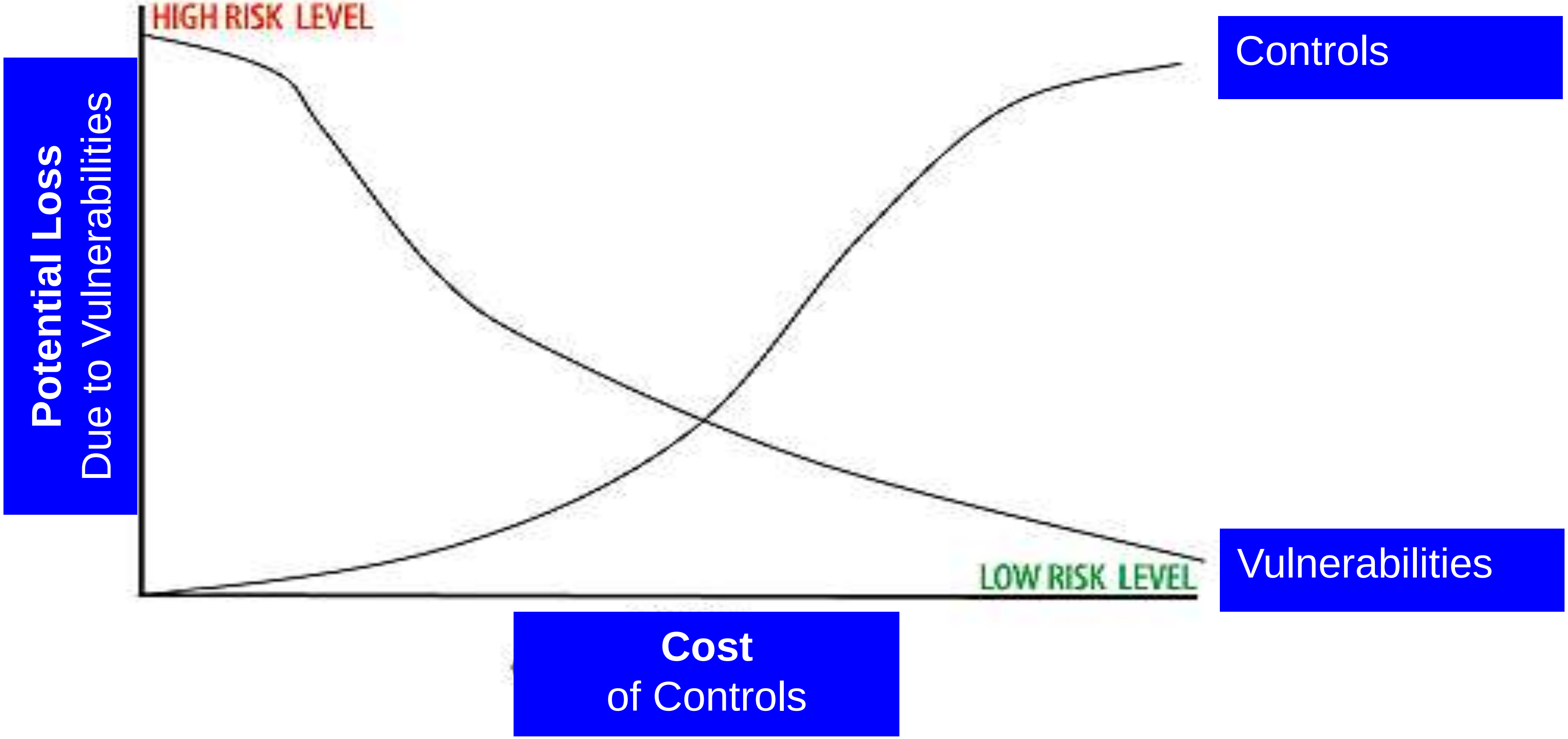
Controls—Cost Vs. Benefit



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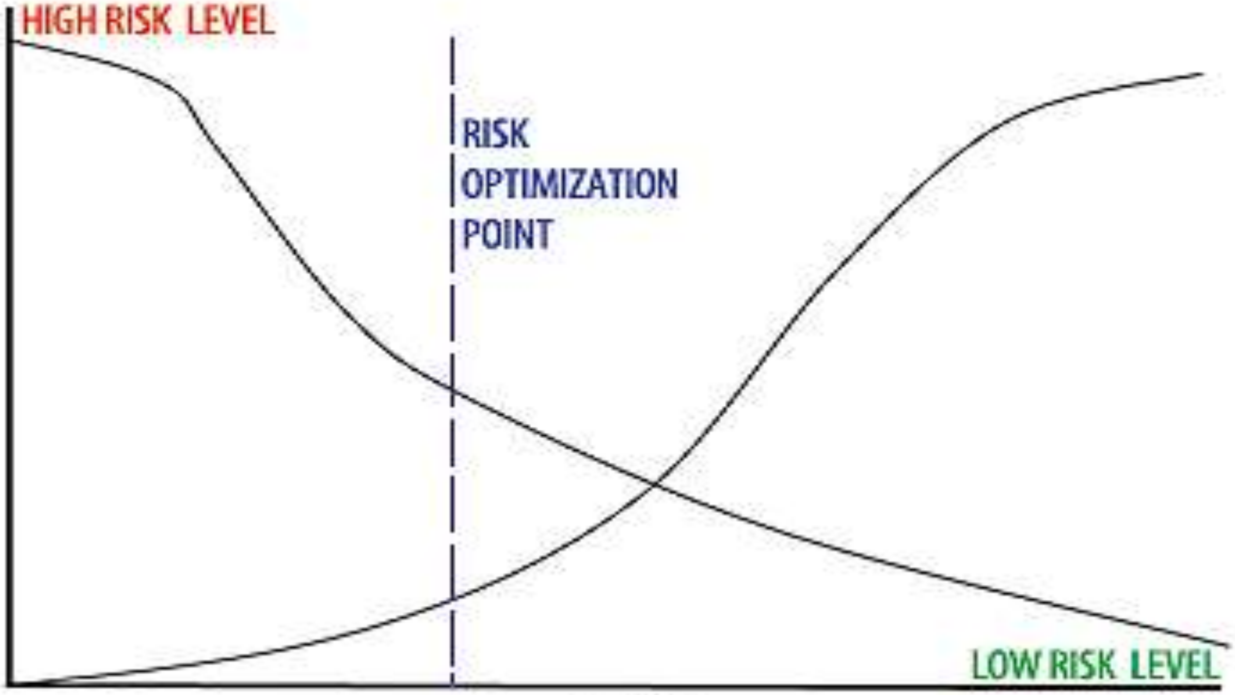
Controls—Cost Vs. Benefit (Continued)



Potential Loss
Due to Vulnerabilities

Controls

Vulnerabilities

Cost
of Controls

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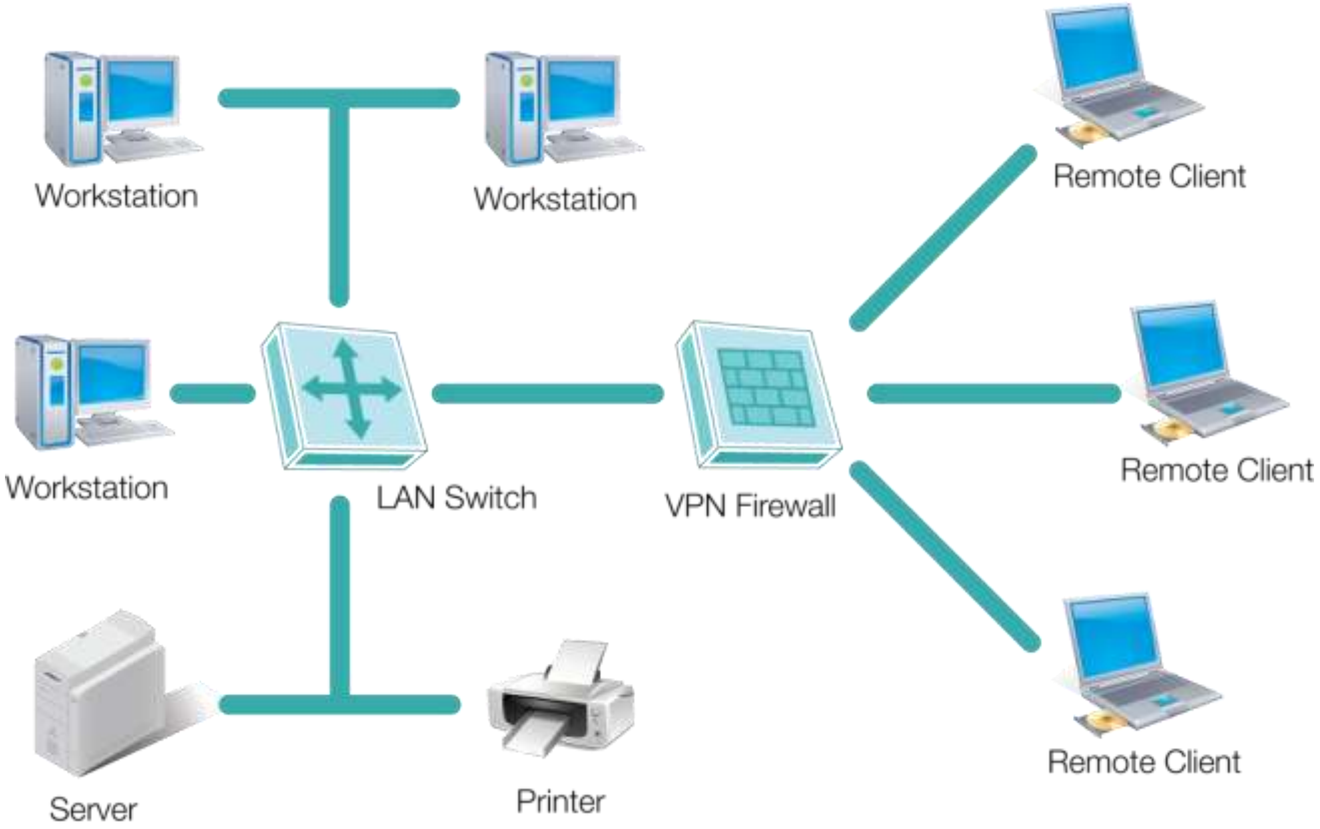
Where Are Access Controls Needed the Most?



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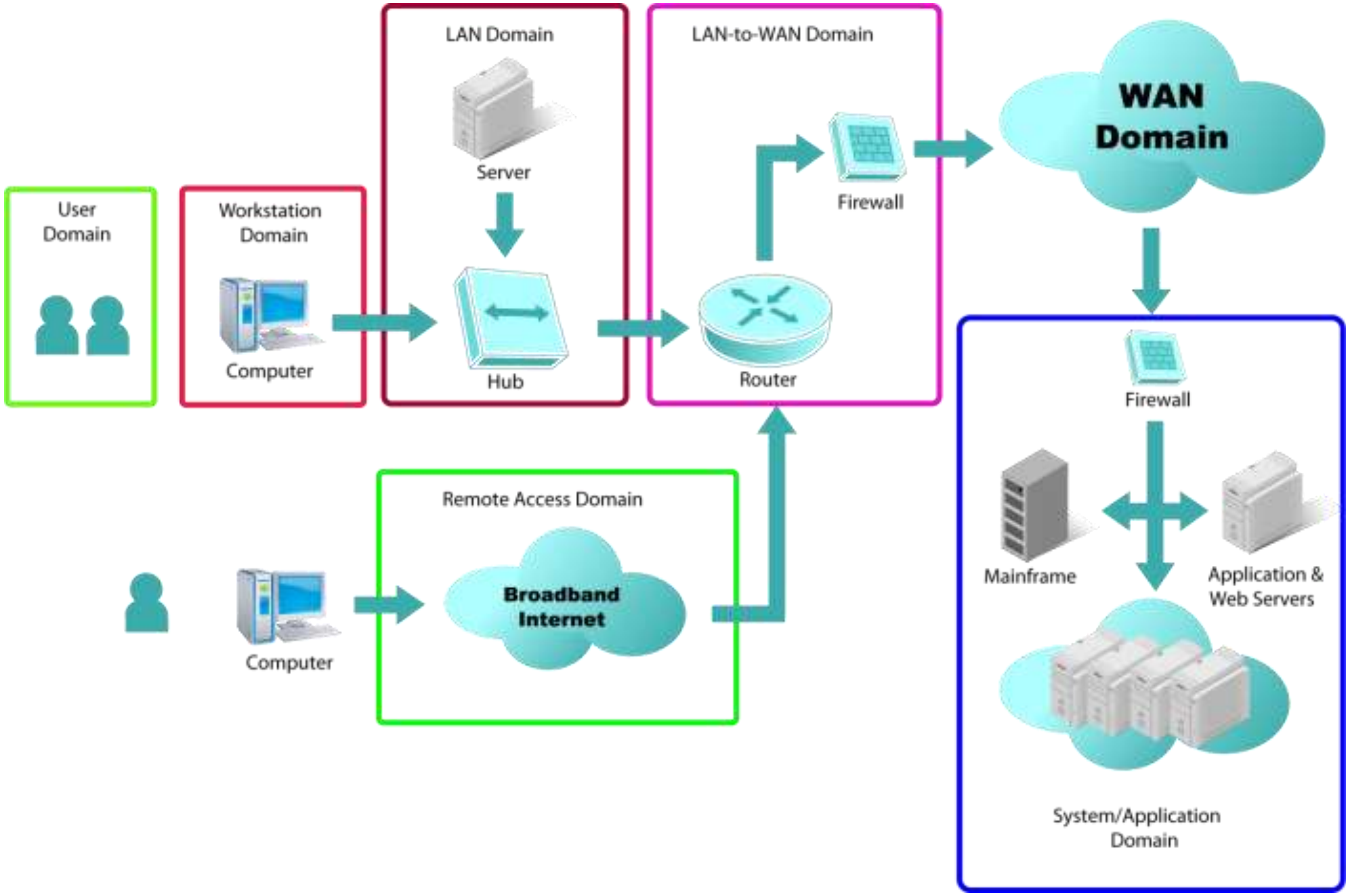
The Seven Domains of a Typical IT Infrastructure



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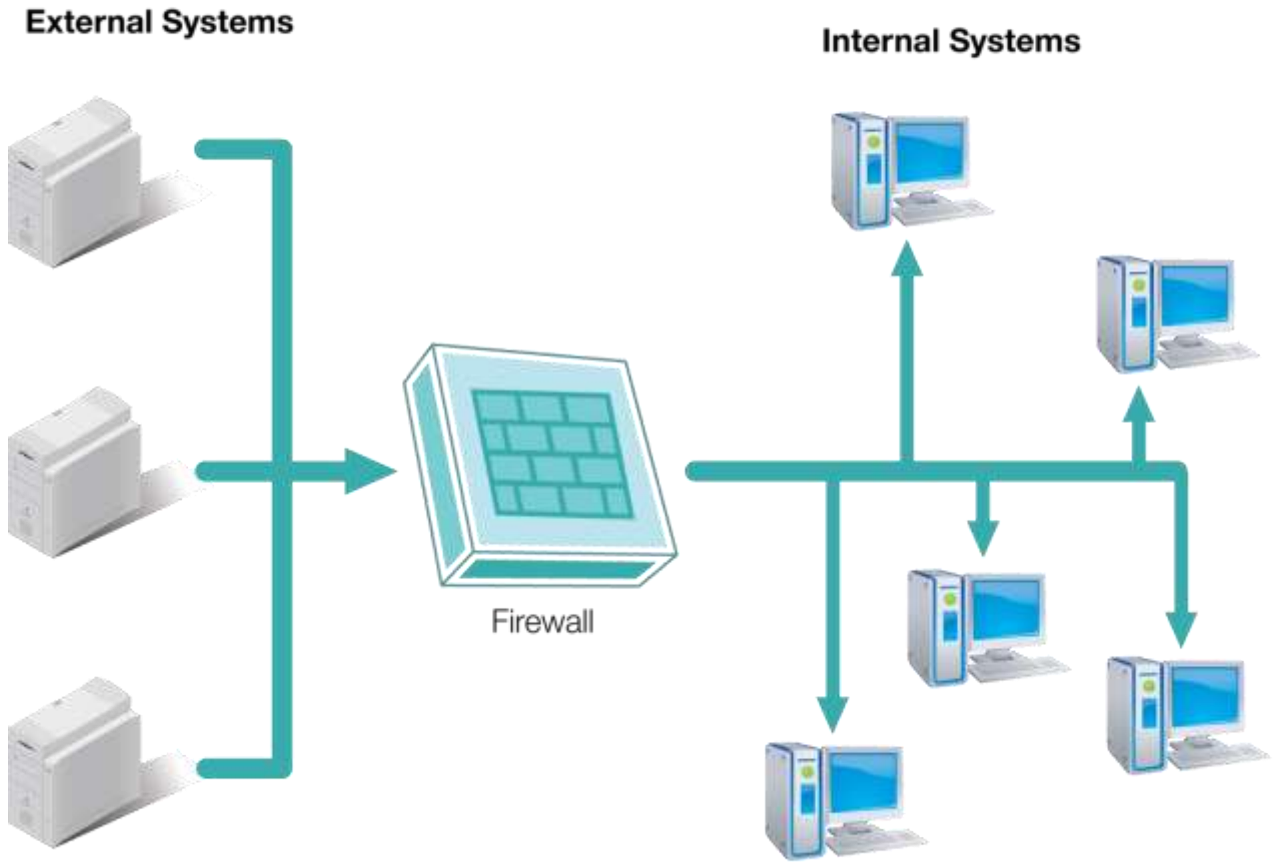
A Firewall Controls Network Traffic



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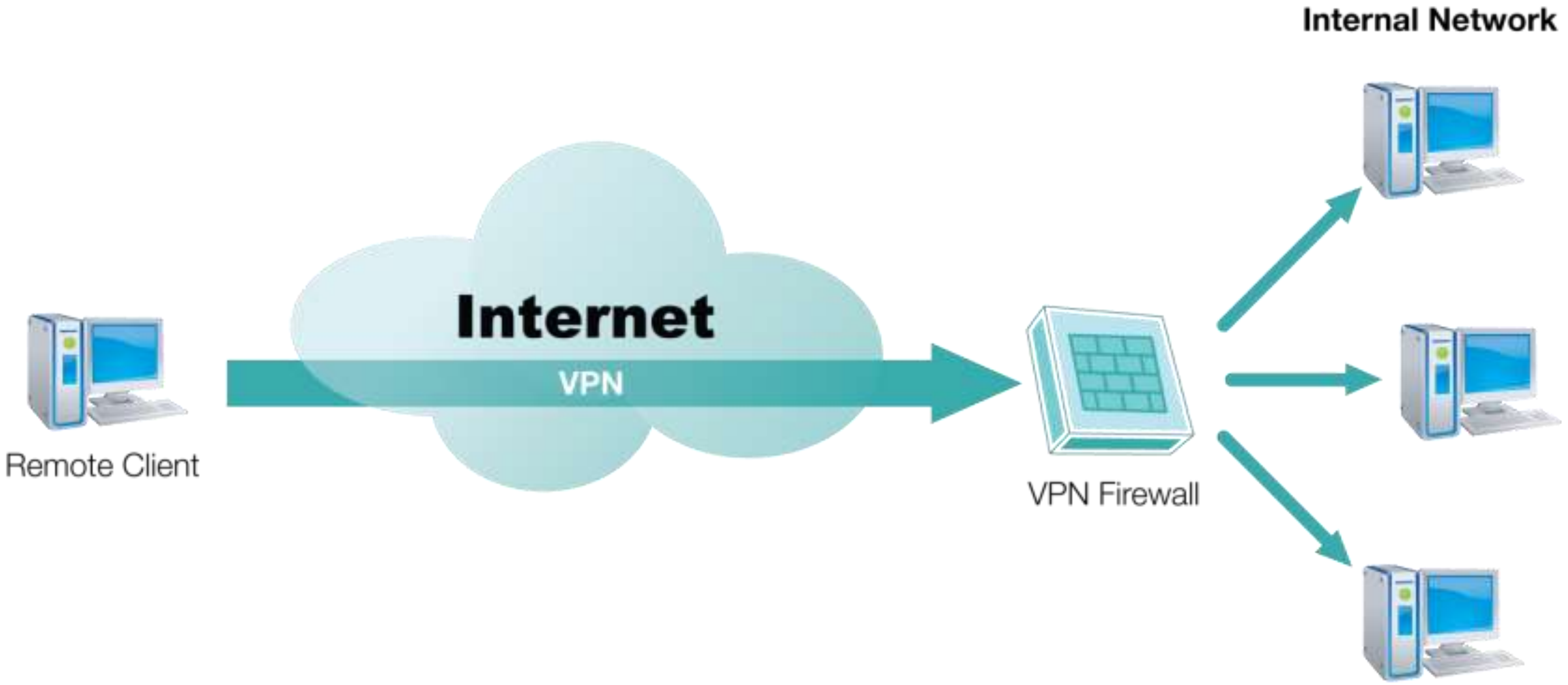
A VPN Using IP Tunneling



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Summary

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Virtual Lab

- Manage Windows Accounts and Organizational Units

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