Basic Network Design
Agenda

- Review Basic Network Design Considerations
- Examine Typical Network Designs
- Discuss Wireless Network Designs
Data Security

- Reminders:
  - Data Security is Critical
  - Data Security Policy is Critical
  - Network Security is a Only Part of the Information Security Program

- See Also: TrueCrypt, PGP Desktop, Microsoft EFS, Microsoft BitLocker, Axcrypt, Credent Mobile Guardian, etc.

- There is a trend in the industry to focus much more highly on Data
Basic Network Design

- Network Security Architectures (Cisco Press) Sean Convery
- Numerous Design Examples
- Note: Wireless LANS p424–441
- Threat Analysis and Policy Driven Designs
- Special Considerations for Deployment Types: Applications, Identity Management, VPNs, VOIP, Wireless, Etc.
- Small, Medium, and Large Networks
Design Considerations

- Business Goals
- Security Requirements
- Size of the Organization
- Available Staff
- Budget
- Industry Standards “Best Practice”
Design Considerations

- Network Devices
- Security Devices
- Application Usage
- Identity Management
- Network Topology
- Security Zones
- Infrastructure, Power/Wiring/Cooling
- Redundancy and High Availability
Security System Design

- Sean’s Ten Steps to Designing Security Systems, p467
  - Review Security Policy
  - Analyze Current Network
  - Select and Evaluate Products
  - Design a Rough Draft
  - Test Components

- Evaluate/Revise Design
- Finalize Design
- Implement 1st Phase
- Implement Remaining Phases
- Reevaluate
Simple Firewall Designs

- Router with ACL’s, No Firewall
- Firewall Single Segment
- Firewall Unprotected DMZ
- Firewall With DMZ Segment
Router With ACLs
Firewall, Single Segment
Firewall, Unprotected DMZ
Firewall, DMZ Segment

Note: switches not shown to improve readability
VPN and IDS/IPS Designs

- VPN and IDS Designs
- Firewall Location Issues
- Security Perimeter Issues
- IPS Is More Like a Firewall Than an IDS
VPN and Firewall
IDS and Firewall
Wireless Designs

- Wireless LANS p424–441
- Access Point Configuration
- Rogue APs
- Radio Issues
- 802.1x, 80211i, SSL/TLS, IPSEC
- Differentiated Group VLANS
  - Tend to be Proprietary
  - Match each SSID to a VLAN
- More on All of the Above Later
Wireless Authentication Gateway
Wireless Guest

Diagram showing a network setup with Internet, router, firewall, Public Servers DMZ, Internal network, and Wireless Guest Network. The diagram also includes an Authentication Gateway.
Wireless Multi-VLAN
Enterprise Designs

- Things can get complex very quickly
- How large is your enterprise
- What kind of design is manageable
Enterprise Design