



Princeton University & Vantage Technology Consulting Group

Campus Support for CyberInfrastructure

Princeton's vision for a modernized network: Are we visionary or vision-impaired?

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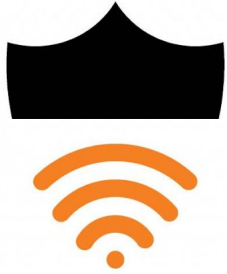
Next Generation Network

Goals

Internet Border

Role Based Access Controls

Campus-as-a-Lab

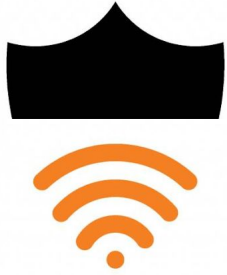


Goals

Enhance wireless services- Deliver fast, secure wireless services for most people & devices

Critical services network - Secure & reliable services for business applications, operations, and life safety

Research and Education network - low latency, high bandwidth, scalable services for research needs



Technical Goals

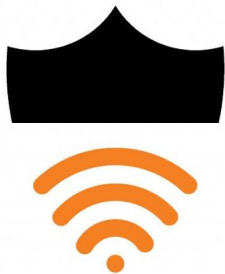
Heterogeneous Vendor Environment

IPv6 Implementation

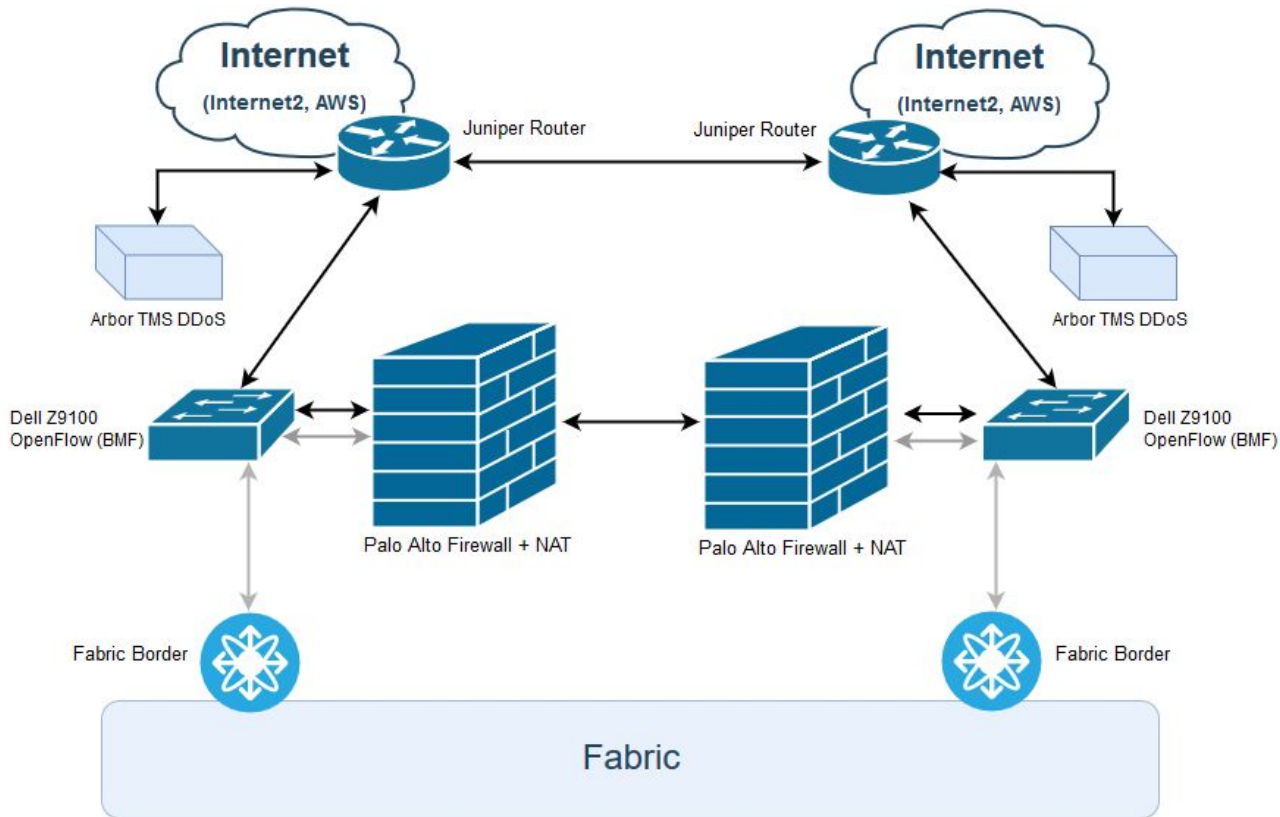
Software Defined Networking

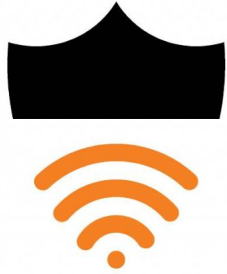
Functionality & support for variety of services

High Availability



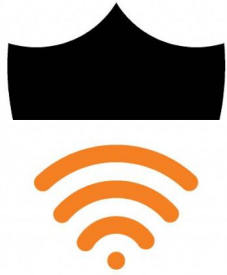
Internet Border





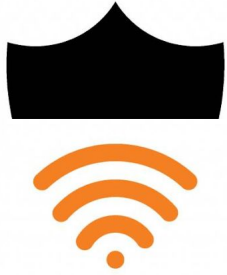
Border Components

- Juniper MX 10003 Routers
10/40/100Gbps capability
- Arbor Threat Management Systems
- Palo Alto 7080 Firewall
- Dell Z9100 for BMF Inline



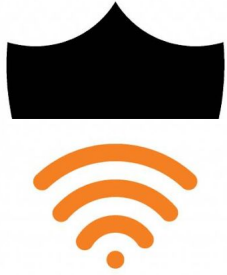
Border Routing & Security

- Full BGP tables from all providers
- Default toward the campus core
- Firewall, IPS, VPN, NAT, and DDoS mitigation
- Firewall bypass for trusted flows



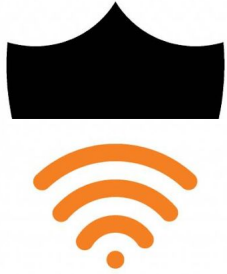
Role Based Access

- What do we mean by RBAC?
- Why do this?
- Challenges
 - Multivendor support
 - Role definition



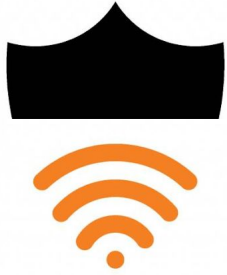
Identifying and solving pitfalls

- Multi-vendor design session
 - Playing nice in the sandbox
 - Shared vision and responsibility
 - Clear boundaries
 - Vendor engagement



Campus-as-a-lab

- Monitoring and visibility tools
- Anonymized data for research
- Ability to playback live network traffic in a lab environment



Campus-as-a-lab Examples

- Undergraduate Wireless projects
- DNS Query Analysis
- DDoS Attack Analysis
- IoT Analysis

Campus Fabric

