Understanding and Determining the Value of Network Automation for Small Regional and Campus Networks

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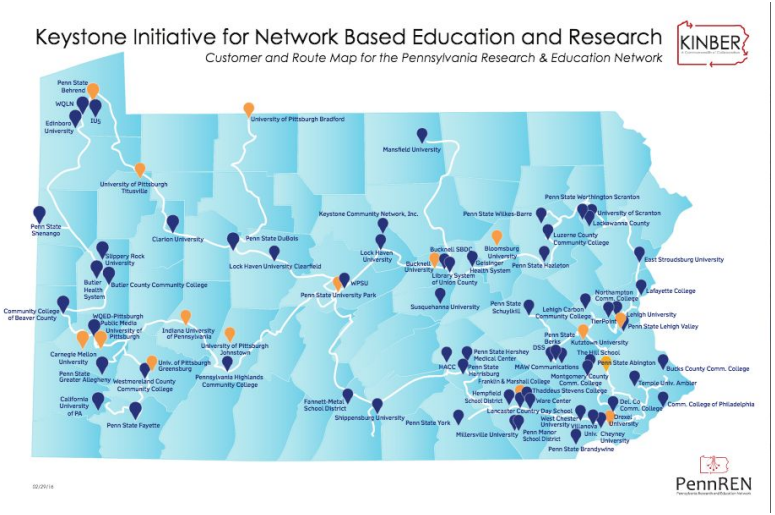
PRIMARY TRACK **Advanced Networking**

Understanding and Determining the Value of Network Automation for Small Regional and Campus Networks

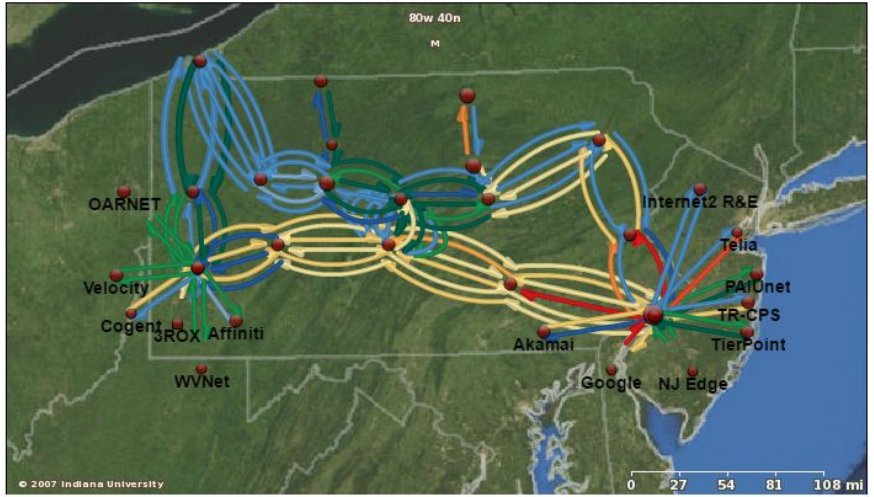
- Who is KINBER and How Does that Effect our Network Automation Strategy
- KINBER's Automation Strategy
- Automation Tools & Partners
- Successes and Challenges

KINBER/PennREN



- 125 Connections
  - 25 10G Connections
- 30G+ Egress Traffic
- Own 1800+ miles of fiber, 84 POPs
- Small Staff
  - 7 Full-Time
    - 3 Engineers including myself
  - Tier I (Service Desk) & II (1st Level Engineering) NOC Services contracted to GlobalNOC
  - Systems Support (Database, Servers) contracted to GlobalNOC
  - KINBER engineers maintain our own tools as well
    - perfSONAR
    - Observium

KINBER/PennREN



- KINBER Business Life Cycle
  - Seed ✓
  - Startup ✓
  - Growth
    - Engineering Resource Focus
      - 80% of Engineering is Provisioning New Customers
      - 15% is Tier III Break/Fix Situations
      - 5% Network Enhancement Projects (Improvements, Better Services, Better Responses)
    - Constant range of issues bidding for time
    - R&R
      - Revenue
      - Reputation

KINBER Automation Strategy

- Relate to Business Life Cycle & Business Processes
  - **Provisioning**
    - Faster Provisioning = Faster Revenue
    - Faster Provisioning = Better Customer Experience
    - Less Errors = Better Customer Service
  - **Break/Fix**
    - Faster Data Collection to Solve a Problem

KINBER Automation Strategy

- **Provisioning**
  - Network Design
  - Procurement
  - **Network Deployment**
  - **Network Configuration**
  - Certification of Services
  - Certification of Database Records

- **Break/Fix**
  - Alerts or Customer Request Generates a ticket
  - Tier I does some **data collection** for ticket before escalation for Tier II

KINBER Automation Strategy

- **What provisioning steps can we improve on?**
  - Network Deployment
  - Network Configuration
- **What break-fix steps can we improve on?**
  - Initial Data Collection
- **Metrics**
  - Time Spent on Configuration
  - Time from Ticket Opening (Alert, Call, or Email)
  - Faster Data Collection to Solve a Problem

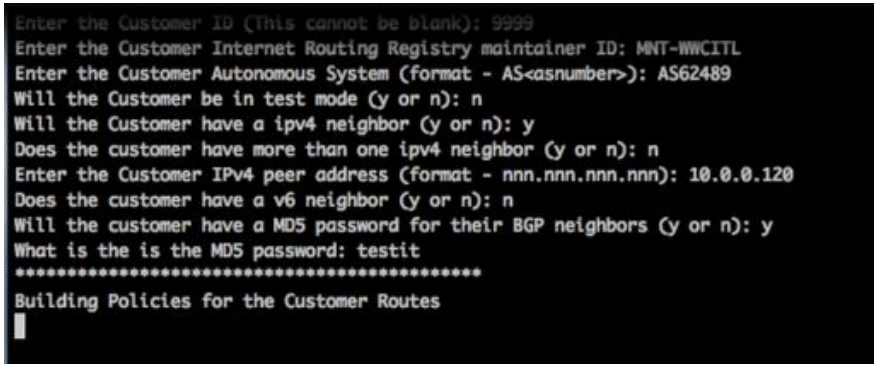
Network Automation Tools and Implementation

- **Partner**
  - GlobalNOC
- **Tools**
  - Dist-Tool
- **Process**
  - **System-wide configuration changes**
    - dist-tool --template VPLS_Service.json --node-name swt01.psup.net.pennren.net
  - **Push-Button Break/Fix Data Collection**
    - dist-tool --template BGP_Ticket.json --node-name swt01.psup.net.pennren.net
    - dist-tool --template Backbone_Ticket.json --node-name swt01.psup.net.pennren.net

Network Automation Tools and Implementation

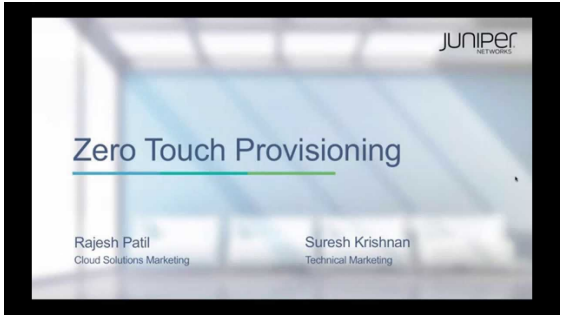
- **Partner**
  - Integration Partners
- **Tools**
  - Provisioning Application for Peering
- **Process**
  - Streamline process of adding new peers
  - Automate AS-SET

integrationpartners
WHAT'S POSSIBLE



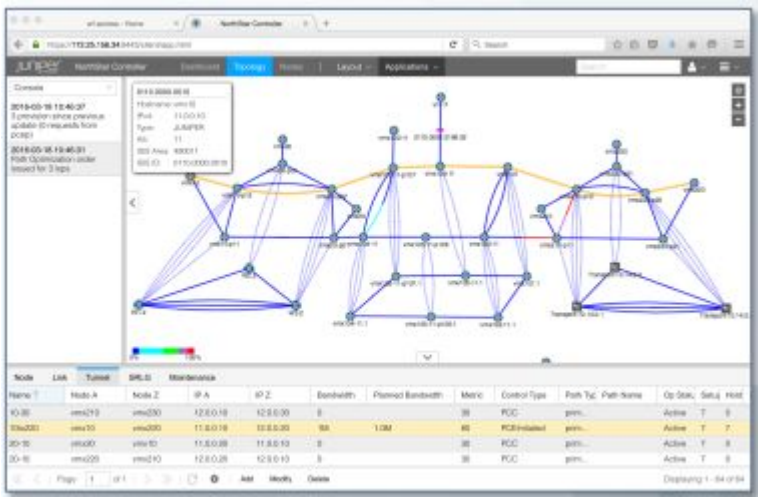
Network Automation Tools and Implementation

- **Partner**
  - Juniper
- **Tools**
  - Zero-Touch Provisioning (ZTP)
- **Process**
  - Majority of our Node Expansion is Juniper EX Models off a Core Node
  - DOA testing can involve non-engineering staff powering up unit and plugging into lab environment where ZTP performs an initial code upgrade and base configuration load



Network Automation Tools and Implementation

- **Partners**
  - Integration Partners
  - ADVA
  - Juniper
- **Tools**
  - Northstar Controller
- **Process**
  - Link MPLS Core and Optical Core into decisions



Successes and Challenges

- **Successes**
  - While very little is implemented today, continuous theme of “Benefits in Automation”
  - Metrics are starting to form to detail reasons for automation
  - Baseline Implementation Taking Form
    - Translating Ideas to Solutions
- **Challenges**
  - Resources availability in Growth-Stage our the Company
    - Translating Ideas to Solutions