NetOps Meet DevOps:
Automating Network Management

Marcio Saito, CTO
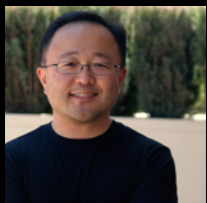
http://Opengear.com

Context

Working with Open Source Software, Data Center and Infrastructure Management Solutions for the past 20+ years.

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- Management Solutions for network infrastructure
- Console Servers, Resilience Gateway
- More info at opengear.com and at the Lisa Expo

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The State of Network Management

- Console Servers essential to network provisioning
- Copy&Paste CLI prevalent configuration method
- SNMP used monitoring, not for configuration management
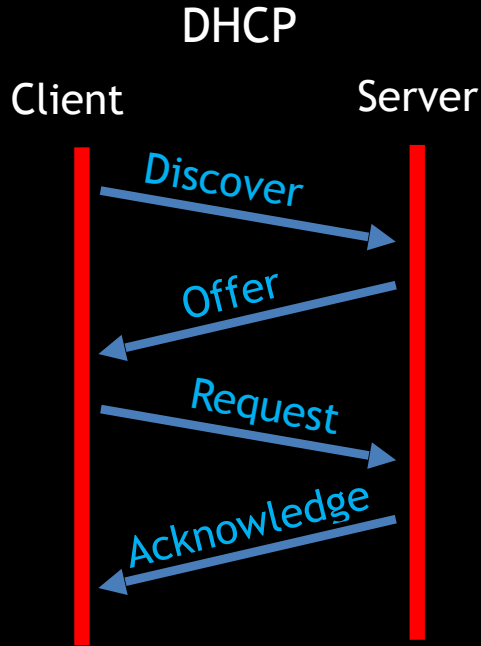- Configuration error or hardware failure cause downtime

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NetDevOps

The Big Divide

Zero-Touch Provisioning (ZTP)

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DHCP

Client   Server

Discover

Offer

Request

Acknowledge

- Config files served through DHCP are specifically targeted at each device based on Vendor ID, MAC address
- Can be used to fully automate network device provisioning and configuration

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Orchestration Tools

Orchestration Tools

Tool	Master	Agent	Connection	Actions	Network Devices
Puppet	Java	Ruby	SSL TCP	Resource/ Manifest	Cisco, Arista, Huawei, Cumulus, Juniper
Chef	Erlang/ Ruby	Ruby	TCP/ Certificates	Recipe/ Cookbook	Cisco, Arista, Cumulus, Juniper
Ansible	Python	N/A	SSH	Play/ Playbook	Cisco, Arista, Cumulus, Juniper

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Infrastructure as Code

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- Separate data from syntax

- Template and re-use configuration files

- Use revision control

- What version is your infrastructure?

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Renewed drive towards Standards

Network Management Standards

- NETCONF

  IETF protocol for deploying, changing and removing configuration from network devices

- YANG

  Data Modeling language for NETCONF

- OpenConfig

  User-driven, vendor-agnostic, network management model

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Network Engineers: Action Items

1. NetOps is NetDevOps

   Learn Python, Ansible, Git

2. Automate Everything

   Apply ZTP, Consider Orchestration

3. Infrastructure as Code

   Gather your config templates and put it in version control

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Console Server Vendor: Action Items

1. ## Become a provisioning and automation tool
   Become the ZTP server for the rest of the infrastructure on Day One, support Orchestration tools

2. ## Be open, provide open interfaces
   Provide RESTful APIs and other programmatic interfaces, comply with and support emerging standards in network configuration

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" We always overestimate the change that will occur in the next two years and underestimate the change that will occur in the next ten. "

Bill Gates

Don't let yourself be lulled into inaction.

Thank You

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