ITENTIAL OVERVIEW

The Promise of Automation

API Consumption | Model Based | Programmability

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AGENDA

- Introduction to Itential
- Refresher on Cisco Network Services Orchestrator
- Automation Journey
- Programmable Networking Value Proposition
- Potential Use Cases
- Customer Example
- Demonstration
WHO IS ITENTIAL?

Itential is a network automation software company building the Itential Application Platform, aka Pronghorn.

Strategy & Focus

• Leverage models to capture complexity
• Platform focus – API first
• ‘App’ concept focused new Operational models
• Use-case outcomes – focus on new methods & solutions
• Federate as much as possible – distributed sources of truth
QUICK NSO REFRESHER
CISCO ORCHESTRATION ARCHITECTURE

HIGH LEVEL VIEW

- Model-driven end-to-end service lifecycle and customer experience in focus
- Seamless integration with existing and future OSS/BSS environment
- Loosely-coupled and modular architecture leveraging open APIs and standard protocols
- Orchestration across multi-domain and multi-layer for centralized policy and services across entire network

Workflow, Order Manager

OSS

Network Service Orchestrator (RFS)

Configuration-based Provisioning

Multi-layer WAN SDN

DC & NFV Controller

CPE

Metro and Access

WAN

Data Center

EMS

Customer Services

Infrastructure

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NSO MAIN FEATURES

#1 MODEL-BASED ARCHITECTURE

- **Applications**
  - Physical Networks
  - Virtual Networks
  - Network Apps

- **Engineers**
  - Service Manager
  - Device Manager

- **Network Equipment Drivers (NEDs)**

- **NETCONF, REST, SNMP, CLI, etc**

- **REST, NETCONF, Java, Python, Erlang, CLI, Web UI**

- **Service Model**
- **Device Model**

- **NETCONF, REST, SNMP, CLI, etc**

- **Applications**
  - VNFM
  - Controller Apps
  - EMS and NMS

- **Engineers**
  - No hard-coded assumptions about:
    - Network services
    - Network architecture
    - Network devices
  - Instead:
    - Data models written in YANG (RFC 6020)
NSO MAIN FEATURES

#2 FASTMAP

- **FastMap:**
  - Only the CREATE operation needs to be specified
  - UPDATE, DELETE and REDEPLOY automatic

- **Benefits:**
  - Reduces service implementation code by two orders of magnitude
  - Supports modifications of services at runtime

- **Service Manager**
  - Physical Networks
  - Virtual Networks
  - NETCONF, REST, SNMP, CLI, etc

- **Device Manager**
  - Network Equipment Drivers (NEDs)

- **Network Apps**
  - VNFM
  - Controller Apps
  - EMS and NMS

- **Service Model**
  - Device Model

- **Create**
  - Update
  - Delete
  - Redeploy
ITENTIAL PRONGHORN
Pronghorn is designed for common use cases, such as:

- MOP Automation
- Policy Management
- Gold Standards Compliance

It supports network-facing teams by automating complex and time-consuming activities and simplifying interactions with external systems (OSS).
PRONGHORN ARCHITECTURE & CAPABILITIES

- **Adapter layer** provides connectivity
- **Broker layer** creates a unified, federated view of network assets
- **Business logic layer** microservices, cogs, and workflow provide for rapid development and automation
- **Pre-made applications** support common use cases
- **All functionality** is exposed via REST API
- **Broker layer** creates a unified, federated view of network assets
- **Adapter layer** provides connectivity
- **All functionality** is exposed via REST API
USE CASE: MAINTENANCE ACTIVITY AUTOMATION

Business Requirements
• Reduce time to execute device upgrades and maintenance, improving productivity within maintenance windows

Solution Benefits
• Automated workflow ensures compliance with process
• Eliminates re-work due to error
• Evaluation capabilities enable analysis and conditional execution based on multiple parameters (available memory, existing device config, etc)
• Evolves as a customer’s process does
USE CASE: GOLDEN CONFIGURATION

Business Requirements
• Maintain the configuration of a constantly evolving network more efficiently

Solution Benefits
• Hierarchy based configuration to manage complex environments

• Automates the configuration management process in an easy to maintain fashion

• Run compliance reports to identify and resolve misconfigured devices in the network

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USE CASE: SERVICE MANAGEMENT

Business Requirements
• Provision and update deployed services more accurately with reduced manual interaction

Solution Benefits
• Abstract who requests the service from the process followed and the way the service is deployed
• Enable or limit access to provisioning based on user privileges
• Reduce or eliminate manual errors
• Lower OPEX costs through “deploy once” capabilities regardless of equipment vendor
CUSTOMER USE CASE
CUSTOMER DEPLOYMENT EXAMPLE: US WIRELESS SERVICE PROVIDER

• Manual processes delaying new business customer, new marketing offering, and new engagement implementation

• Ex:
  – Zero Rating rules implementation: >100 days
  – New Customer turn-up: >25 days
  – APN Resiliency: >20 days

• Customer implemented NSO and Pronghorn to automate their processes
  (All data sanitized)

• Problem Statement
Implementation of NSO & Pronghorn produced significant results for the customer:

- Reduction in manual intensive efforts
- Ability to better meet marketing demands
- Removal of Human errors and provide better consistency in experience
- >$10M in annual cost reductions
- >$20M in annual cost avoidance

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## SAMPLE CURRENT PRONGHORN APPLICATIONS

<table>
<thead>
<tr>
<th>Use-Case</th>
<th>Description</th>
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<tbody>
<tr>
<td>Zero Touch Device Provisioning</td>
<td>Speed the deployment of new network elements into customers’ networks with Day 0 and Day 1 configurations</td>
</tr>
<tr>
<td>Service Lifecycle Management</td>
<td>Provision, update, and delete services regardless of vendor or location. This application adapts to customers’ operational and business processes, and automates much of the data collection</td>
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<tr>
<td>Golden Configuration</td>
<td>Hierarchy based configuration to manage complex environments and reporting to ensure devices are deployed correctly</td>
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<tr>
<td>MOP Automation</td>
<td>Operational workflow and automation to manage maintenance activities, replacing long documents and copy/pasting of commands</td>
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<tr>
<td>Policy Manager</td>
<td>Provisioning and management of ACL, Firewall, and OpenStack policies across an organization’s infrastructure</td>
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<tr>
<td>Operations Portal</td>
<td>Aggregate fault, performance, topology, and service metrics into a single portal, enabling actionable intelligence</td>
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The promise of automation.

Thank you.

Paul Vogt
Paul.vogt@itential.com