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The bridge to possible

Simplified Network Automation

Syed Ziaullah – CX Product Management

Ravi Vietla – CX Product Management

Session ID : BRKATO-1003



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Agenda

- Why Automation?
- Key Components of an Automation Solution
- Demos
- Case Studies
- Q&A

Why Automation?



Why Automation?



95%

Up to 95% of network changes are performed manually



75%

of OPEX spent on changes and troubleshooting



70%

of policy violations are due to human error

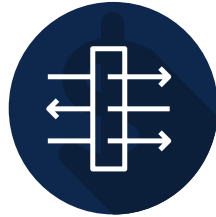
Impact of Automation

Tier 1 SP customer in USA



250

Site Activations per Day



1,000

Device Configs Audited
and Remediated per
night



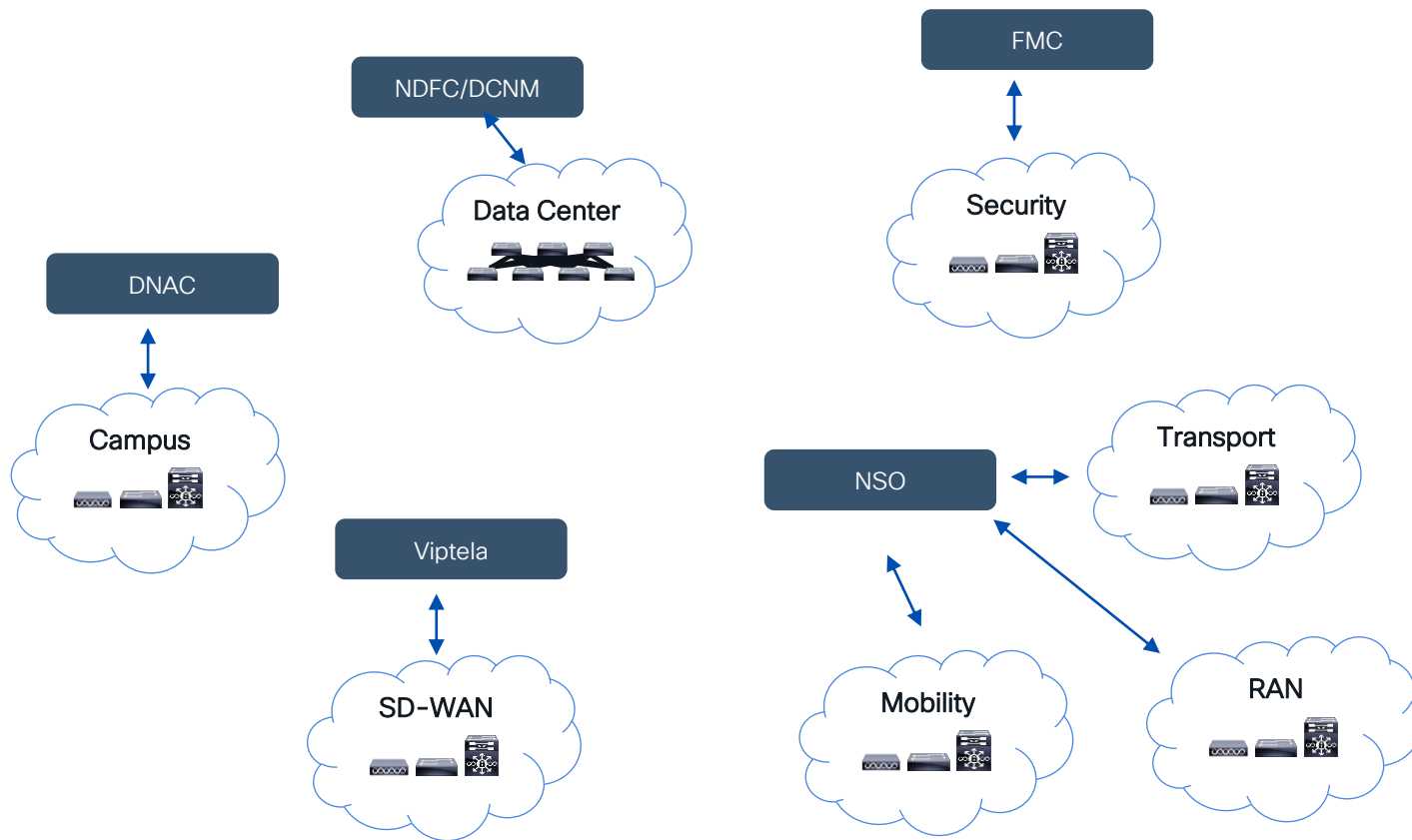
9,500

KPI thresholds
calculated daily

Network Management Challenges

- Too many changes are being introduced to the network and without governance
- Is the software on my devices up-to-date?
- Is the configuration on my devices consistent ... and complies with regulatory policies?
- My network is full of multi-vendor devices for various network domains
- When things go wrong, how do I quickly fix the problem?
- Quickly replace devices when they have problems

Network Domains



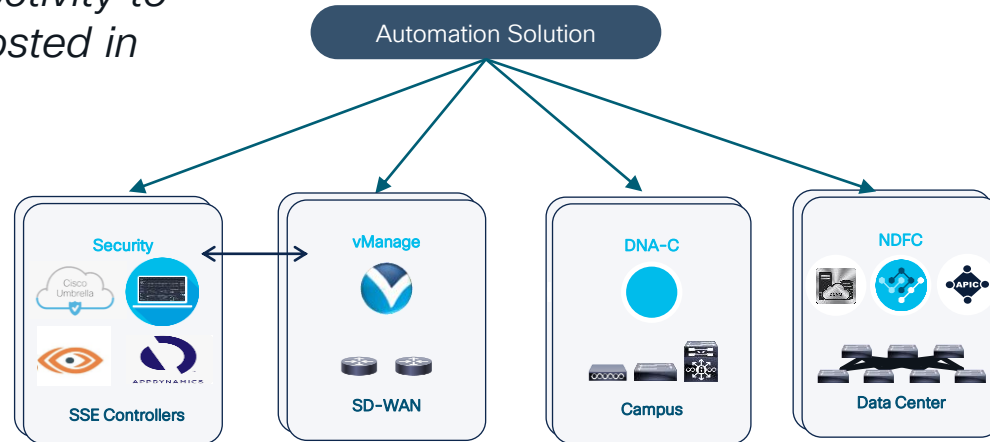
Intra-Domain Automation and Orchestration



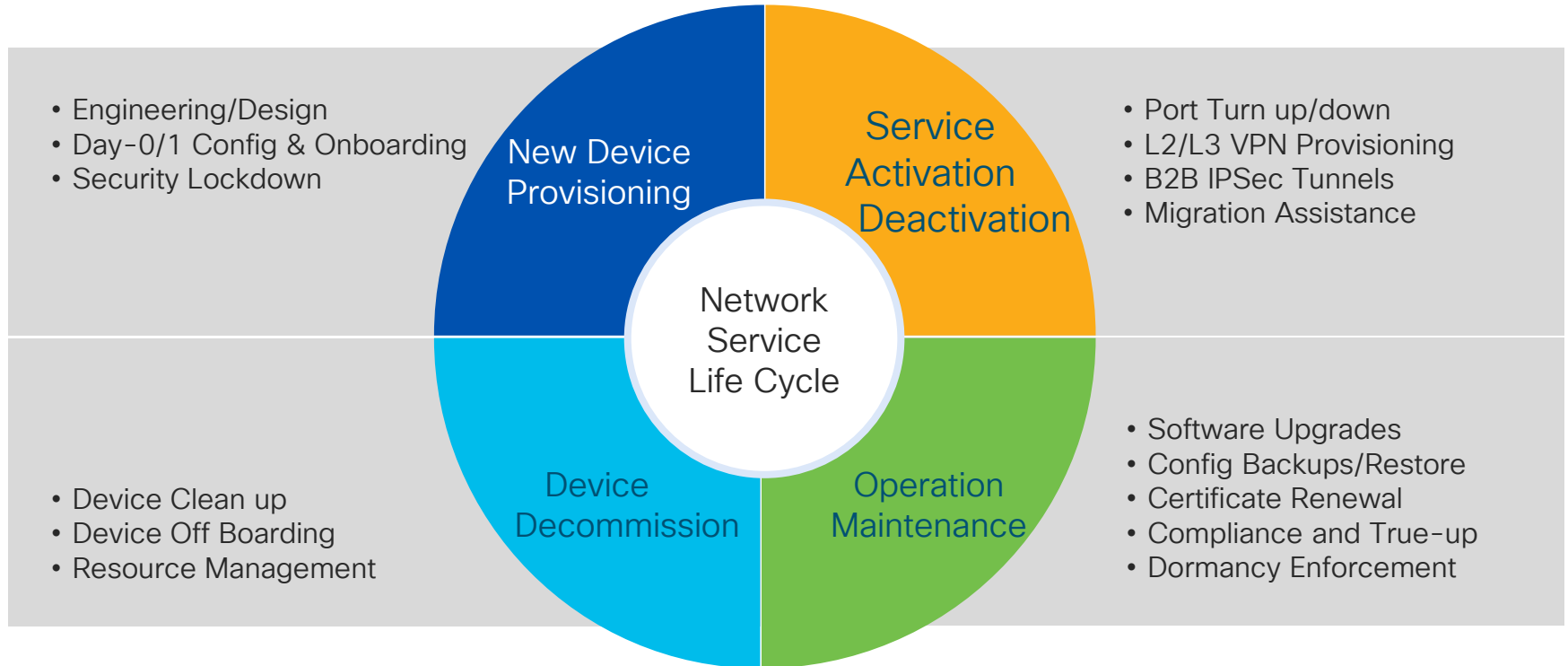
Inter-Domain Orchestration

As a network designer, I want to onboard a new branch/site with security services (SSE)

Also, I need to enable connectivity to the in-house Applications hosted in our Datacenters

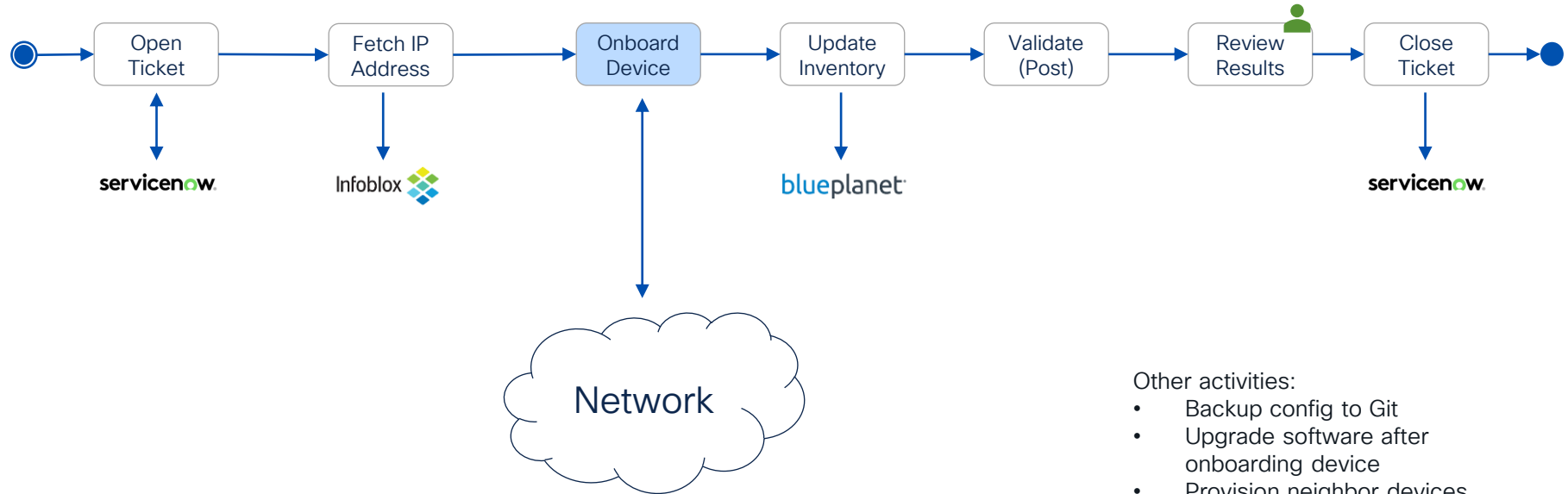


Network Lifecycle Use Cases



Don't Forget About the Business Process!

Sample Device Onboarding Example



Other activities:

- Backup config to Git
- Upgrade software after onboarding device
- Provision neighbor devices

Integration Touchpoints



Inventory/Resource Manager Integration

(IBM BPI, Granite, ...)



ITSM, Change Management

(ServiceNow, Remedy, ...)



Devops Tools

(Github, Bitbucket, Jira, ...)



Private/Public Clouds

(AWS, Azure, OpenStack, ...)

Key Components of an Automation Solution

Key Components of an Automation Solution



1. Multi-domain Orchestration

- Works with Cisco and 3rd party controllers
- Works with multiple controllers in a network domain (e.g. vManage, DNAC)
- Cross domain controller orchestration



2. Single Pane of Glass

- Common asset view
- Use Cases that cover multiple domains
- Service Catalog
- Cross launch to domain controllers
- Dashboards



3. Process Automation

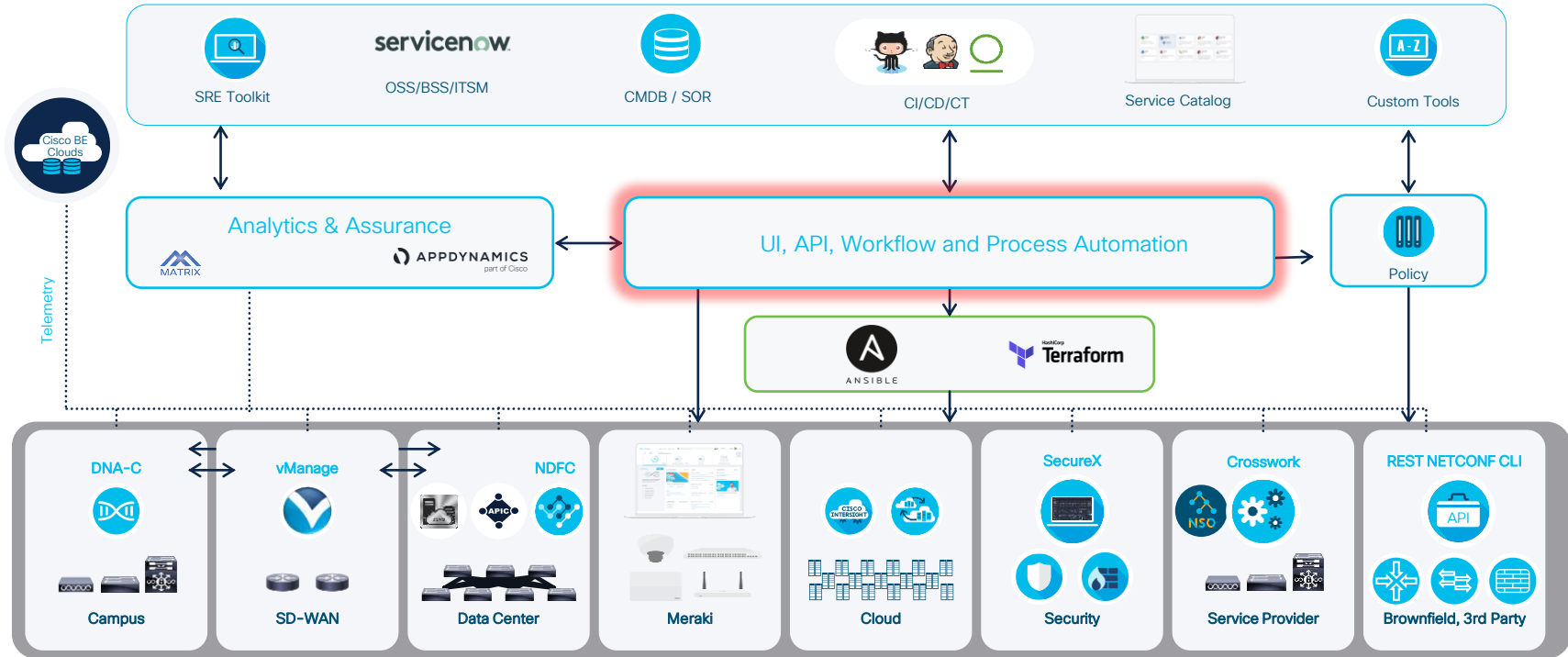
- End to end service stitching
- Human intervention
- East-west Integrations (IPAM, Inventory, Ticketing etc.)
- Pre/Post checks



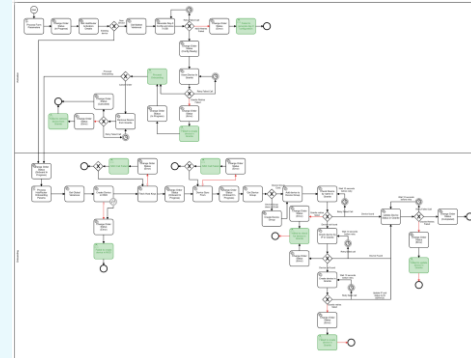
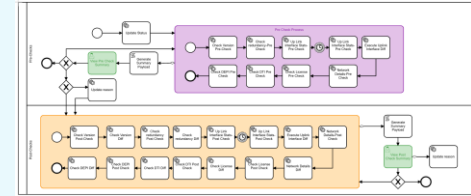
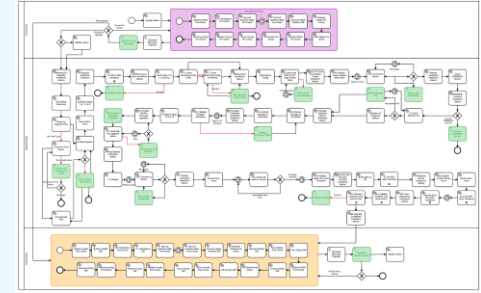
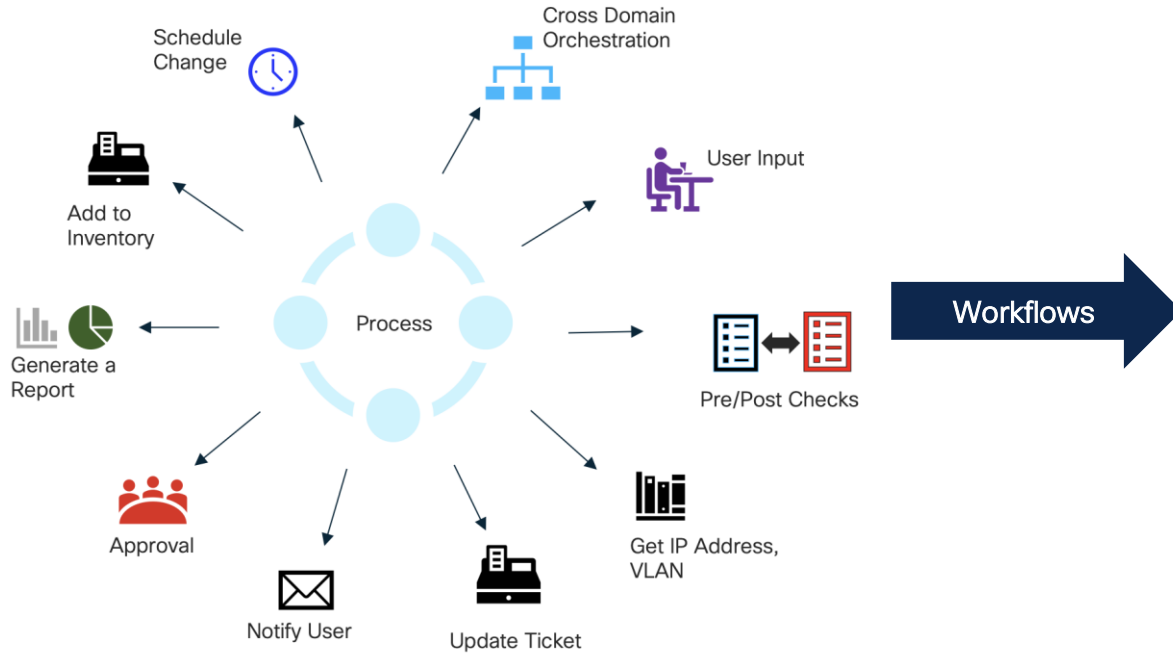
4. Prescriptive, Out of box Use Cases

- Device Onboarding
- Day-2 Configuration Management
- Software Upgrades
- Compliance
- Backup and Restore

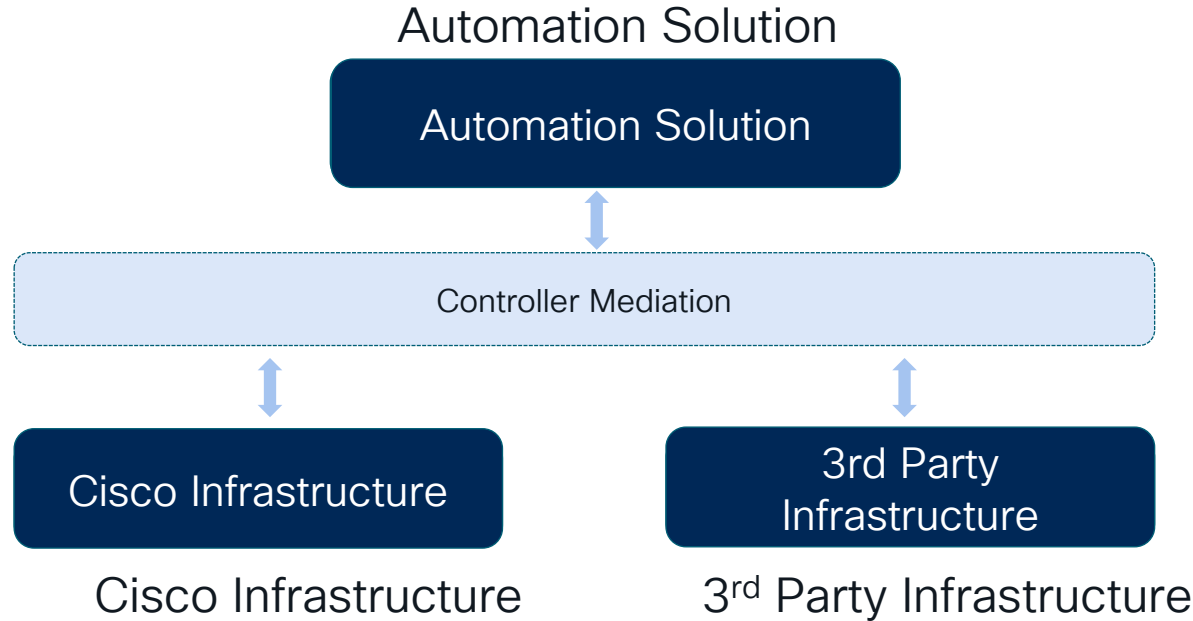
Automation & Assurance



Workflow Manager



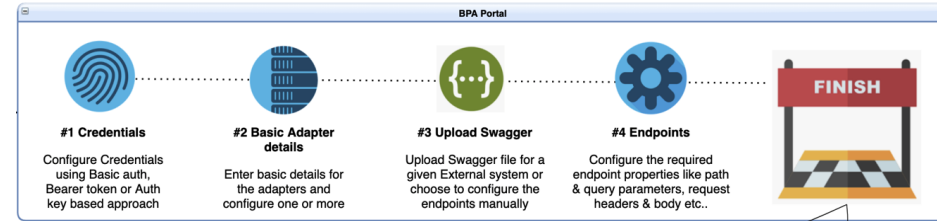
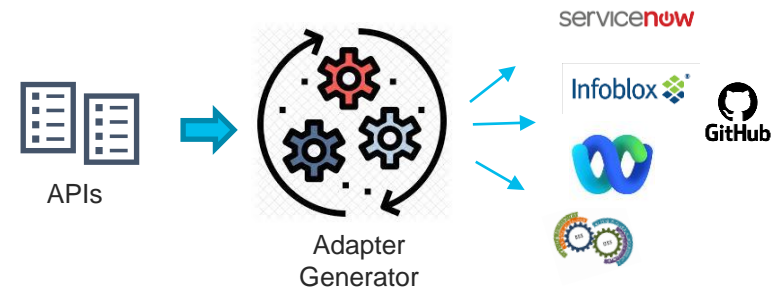
Third party devices/controllers



- Mediate user intent between applications and controllers
- Decouple applications from controllers
- Learn/Discover domain controller capabilities e.g., assets, services and templates

Adapter Framework

- Low code extension framework for east-west integration
- Generate adapters based on API spec (Swagger, Rest API etc.)
- Ready for use in workflows with convenient templates
- Out of box adapters for ServiceNow, Infoblox IPAM, Webex, Jira and Github
- Configure authentication credentials at run-time
- Hooks for request/response transformation
- Adapter versioning

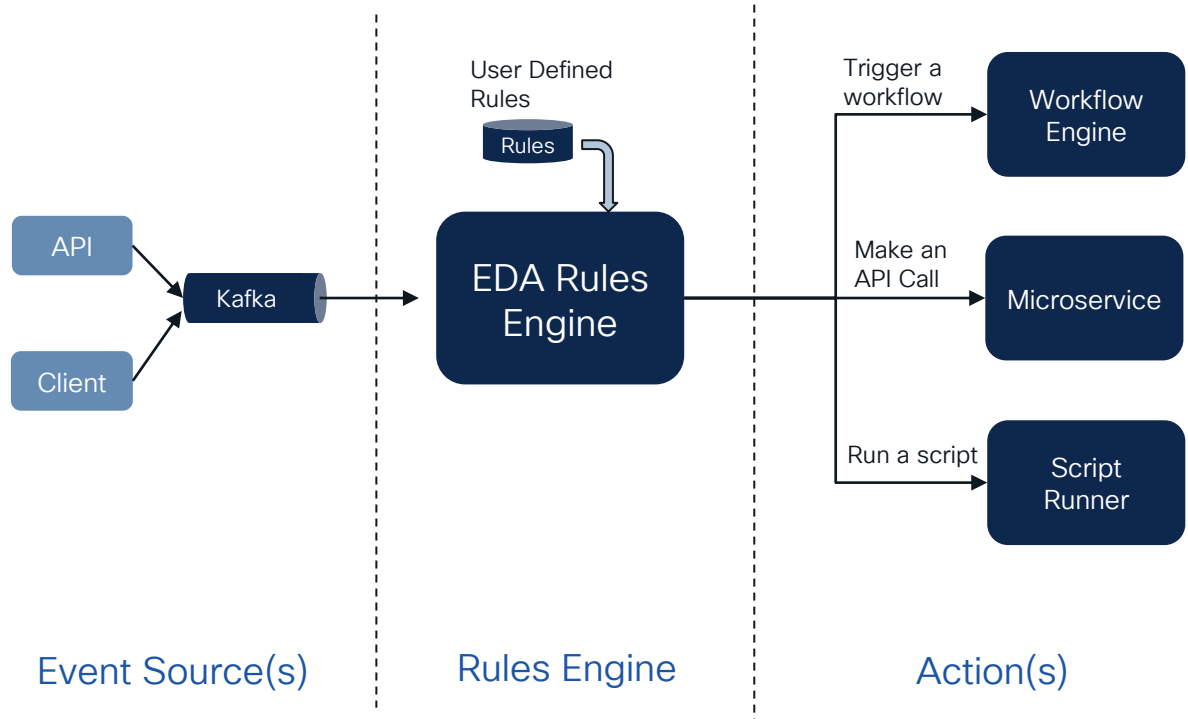


The screenshot shows the 'Business Process Automation' portal. The 'Adapter Library' tab is active, displaying a table of adapters. The table has columns for Adapter Name, Description, Base Path, Version, and Actions.

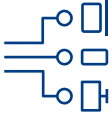
Adapter Name	Description	Base Path	Version	Actions
ServiceNow	Helps companies manage digital workflows for enterprise operations	/service-now/v1	v1	[Icons for view, edit, delete]
Serviceflow	Helps companies manage digital workflows for enterprise operations	/service-now/v2	v2	[Icons for view, edit, delete]
Remedy	ITSM software that produces Action Request System and various applications...	/remedy/v1	v1	[Icons for view, edit, delete]

Automation triggered by events

- Respond to network events with remediation orchestration
- Decide which action to invoke based on user-defined rules
- Input payload enrichment with a script or API call
- Trigger Workflows, APIs or Scripts



What about extensibility?



Workflow Manager

Domain orchestration and process automation



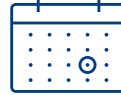
Market Variances

Site or Regional data



Form Designer

Approvals, Error Handling, Human Intervention



Scheduler

Repeated job execution, maintenance windows



Process Templates

MOP Automation and Pre/Post Checks



Script Runner

Execute Python scripts, Ansible Playbooks



Adapter Framework

Adapters for East-West integration

Demos

Business Process Automation (BPA)

Business Process Automation

Domain Controllers (NSO, DNAC, vManage, Ansible, ...)

Network Infrastructure (multi-vendor)

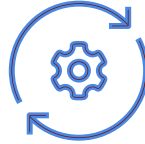
Demo 1 – Software Conformance & Upgrades

Software Conformance and Upgrades - Demo

1



Which assets in my network need software updates?



- Create conformance policies
- Run Conformance Checks

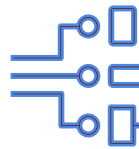


Assets that need updates

2



I need to update software for these assets



- Create upgrade job
- Batching assets
- Backup Configuration
- Schedule during maintenance windows
- Pre/post checks



Updated assets

Demo 2 – Configure L3 VPN Service

Create a network service on devices – L3VPN

Use Cases

1. I need to provision a L3VPN service to enable VPN connectivity for my enterprise customers



Service Catalog



Operator

2. I need the ability to track progress of the provisioning as it is instantiated on various devices



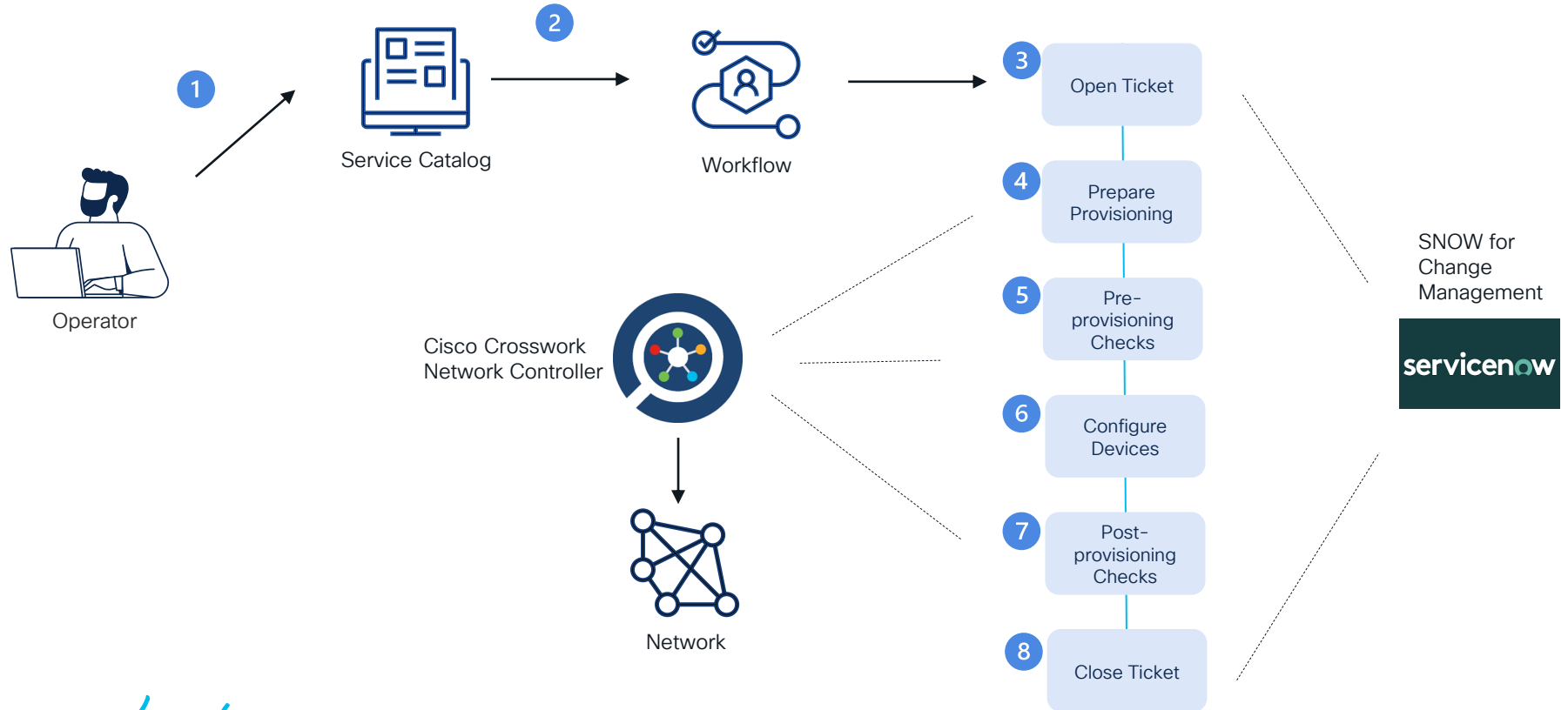
Workflow,
Milestone View
with Pre/Post
checks

3. To comply with my organizational policies, the service provisioning should be integrated with the established change management processes.



ServiceNow
Integration

Configure L3VPN - Demo



Demo 3 – Configuration Backup and Restore

Configuration Backup and Restore (BnR)

Use Cases



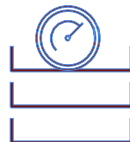
Ops Admin

1. I want to pre-define how backup and restore should be handled for various vendor devices that are managed by domain controllers



BnR Policies

2. I want to make sure that configuration of all the devices in my network is backed up to a secure location at a periodic interval



Backup Jobs,
Storage Plugins



Operator

3. I would like to compare the current configuration on my device against a backup version configuration



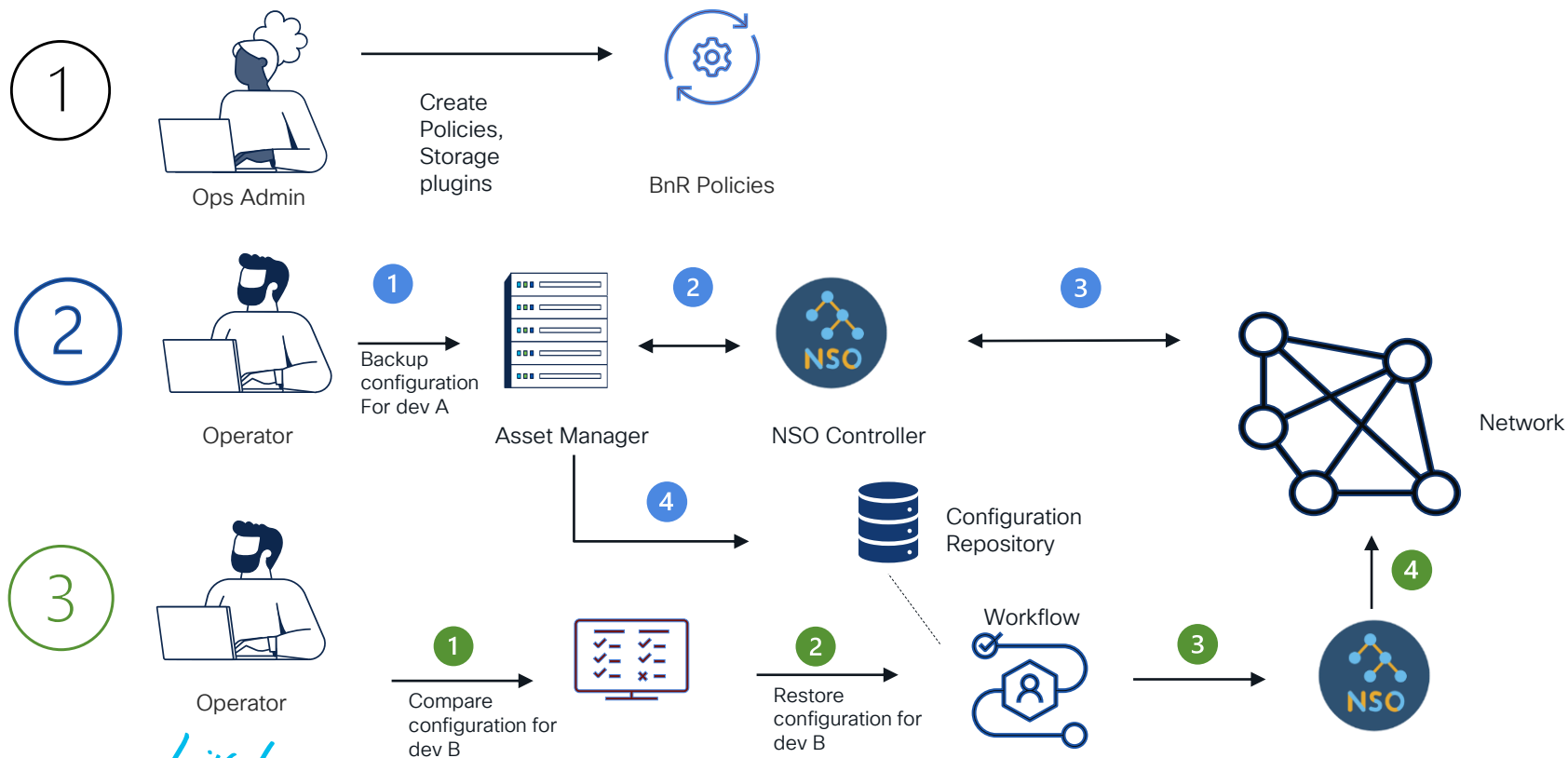
Compare config

4. I need to the ability to restore configuration of a device to a version that was backed-up



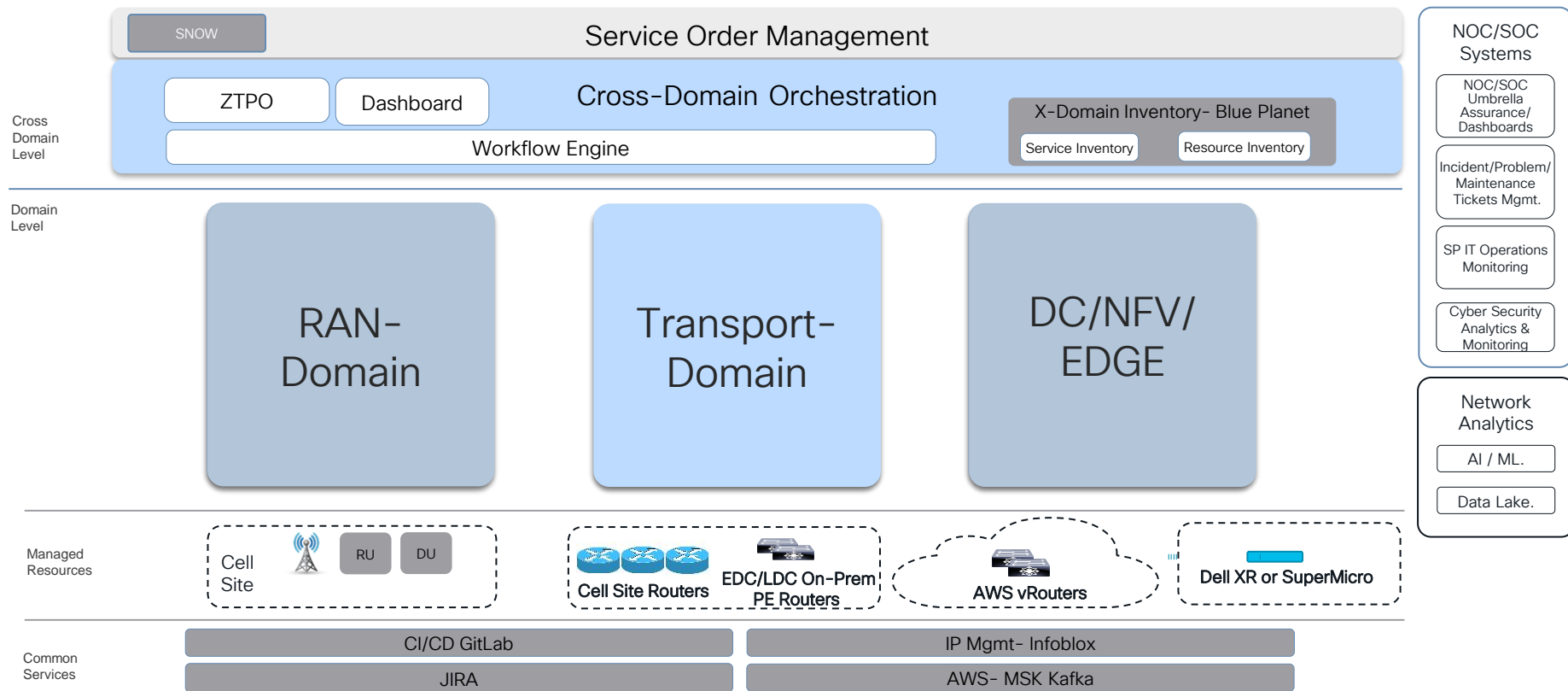
Config Restore

Configuration Backup and Restore (BnR) - Demo

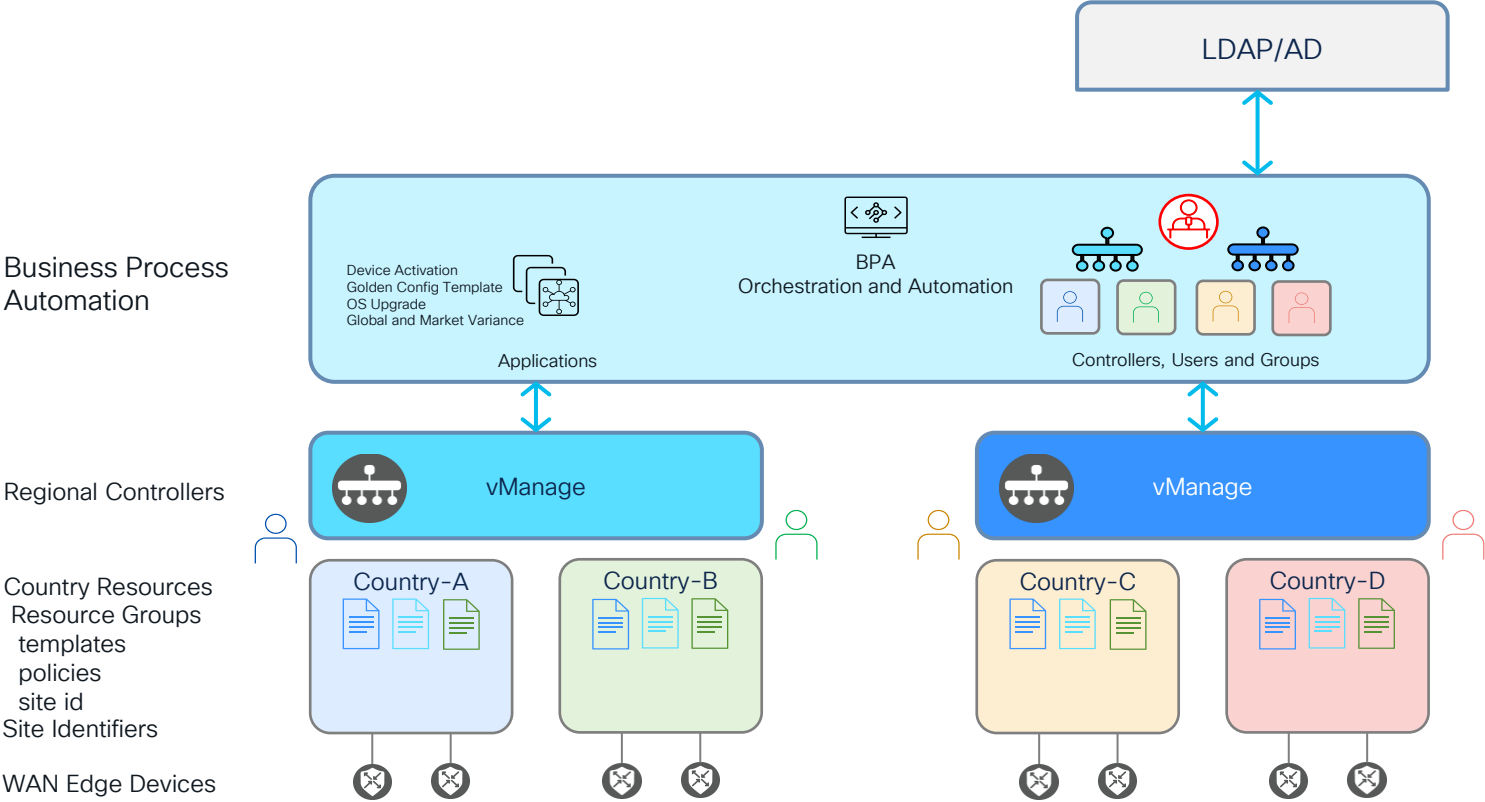


Case Studies

Integrations and Scale



Scale and RBAC - Global SD-WAN Deployment



Single Pane of Glass View – SASE



Single Pane of Glass



X-Domain Platform (Automation + Analytics)

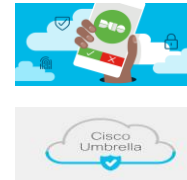


Cisco connector & Collector Layer to BE Controller
Points or 3rd party sources

WAN /
Branch

Application
Analytics

Security



Takeaways

- Automation is key to accelerate delivery and avoid costly errors
- Operators need a single solution that can manage cross-domain and multi-vendor hybrid networks
- Automation solutions must be flexible to adapt to changing policies and practices

More BPA Automation Sessions

Tuesday June 6th

10:30am

[BRKATO-1003](#)

Automated and Simplified network operator experience for managing multi-vendor network with Cisco and 3rd Party domain controller

Wednesday June 7th

1:00pm

[BRKATO-2500](#)

Managing Global SD-WAN Deployment using Automation and Orchestration

[BRKATO-2102](#)

Accelerate Time to value through Automation across IT Technologies

Fill out your session surveys!



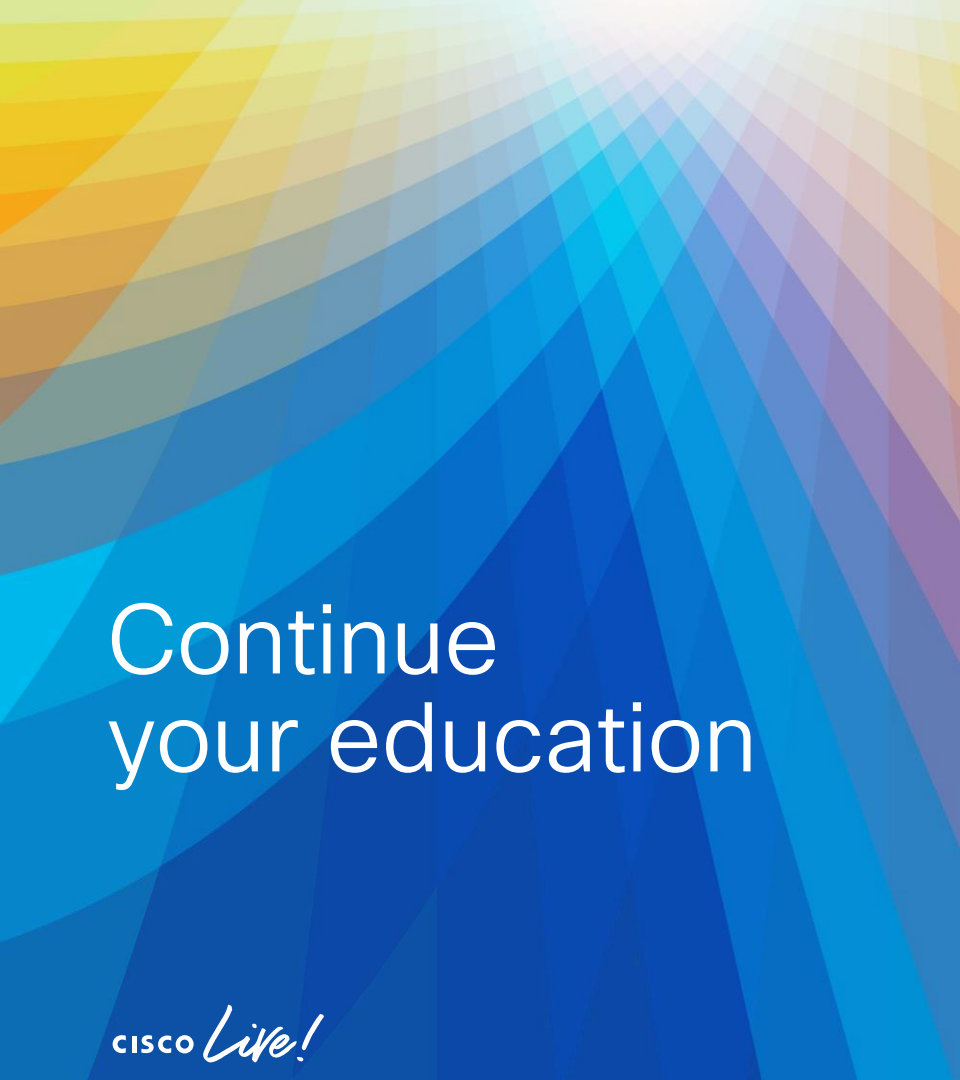
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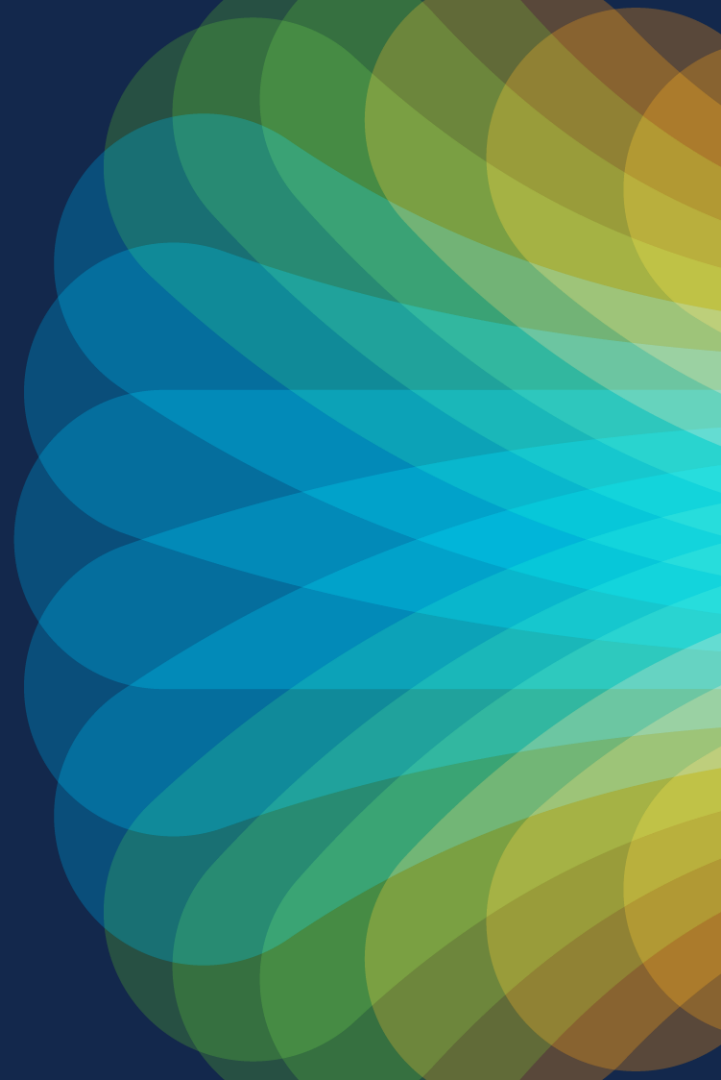


The bridge to possible

Thank you



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Q&A

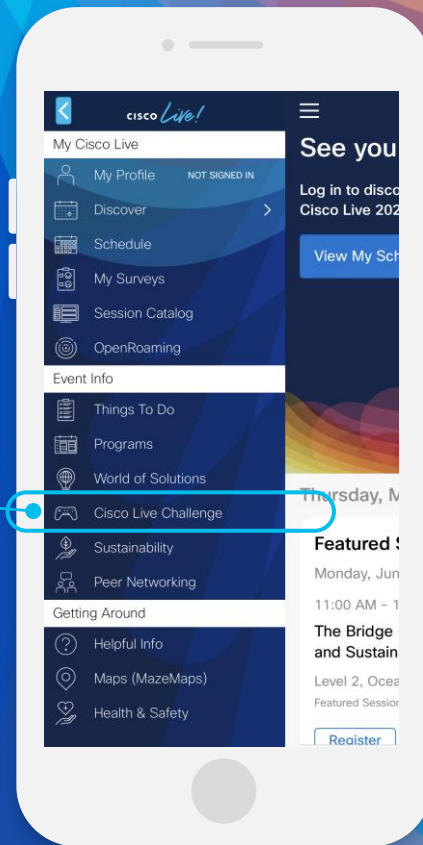
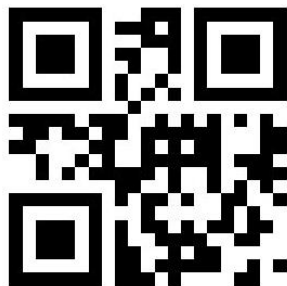


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