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The bridge to possible

Managing Global SD-WAN Deployment

Automation and Orchestration

Praveen Chandra, CX Product Manager
CX – Digital Assurance and Automation

BRKATO-2500

cisco Live!

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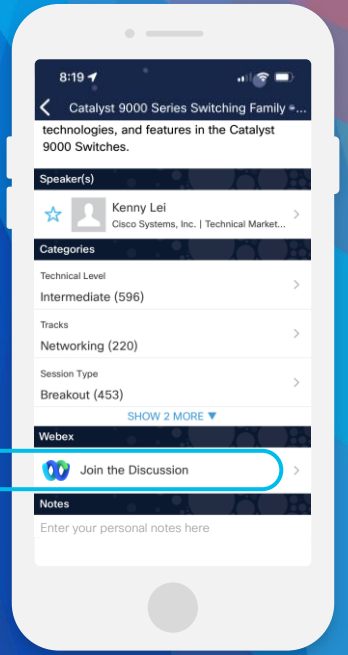

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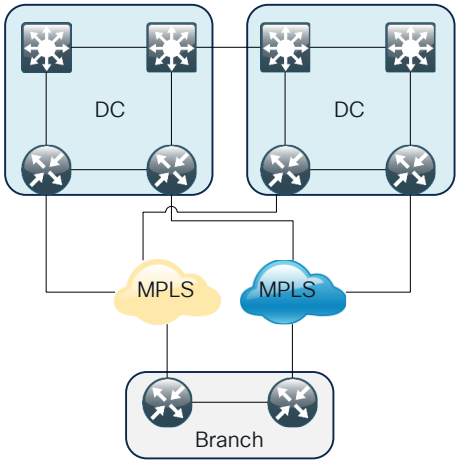
Agenda

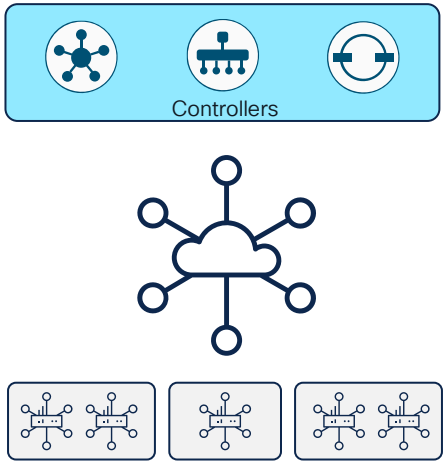
- Overview
- Deployment Challenges
- Network Profile and Requirements
- Solution Approach
- Use Cases – Day 0 and Day 1 & Day 2 (Demo)
- Summary and Key Takeaways

Overview

Traditional Network

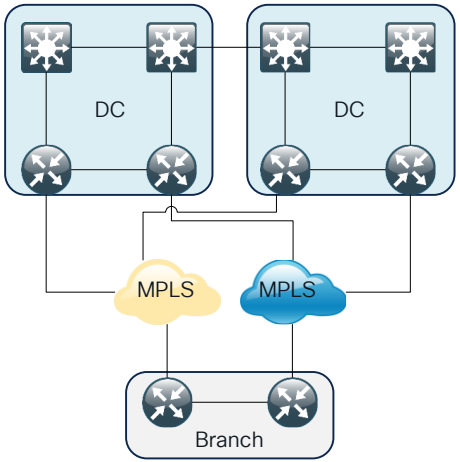


Controller-based Network



Overview

Traditional Network



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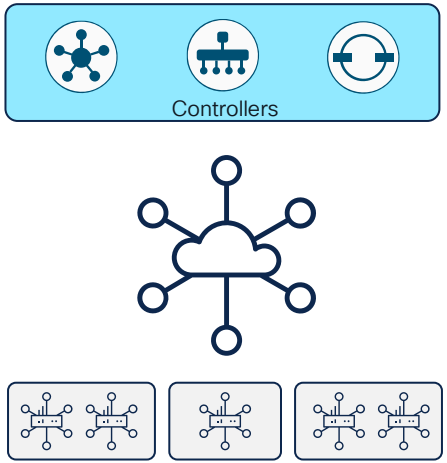
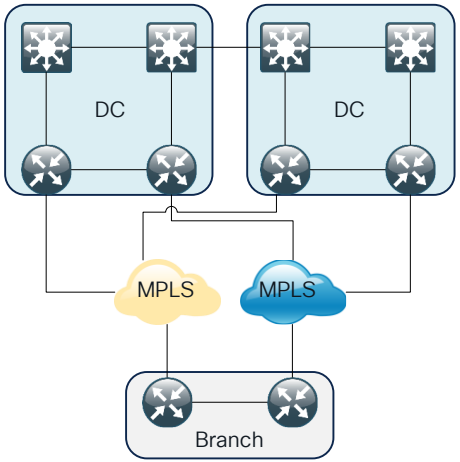


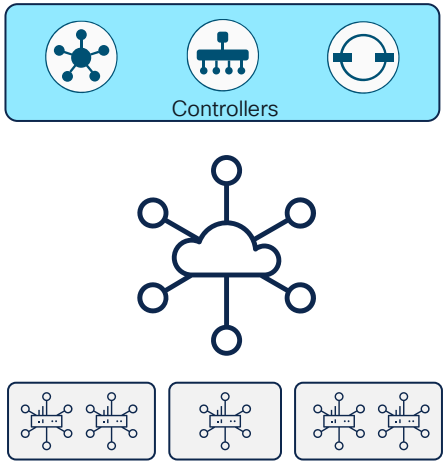
Traditional WAN	Hybrid WAN	Software-defined	AI-Optimized WAN	Intent-based WAN
Leased Line or MPLS	MPLS, broadband and mobile	Controller-based Any transport	AI-driven performance optimization	Predictive intent alignment

Overview

Traditional Network



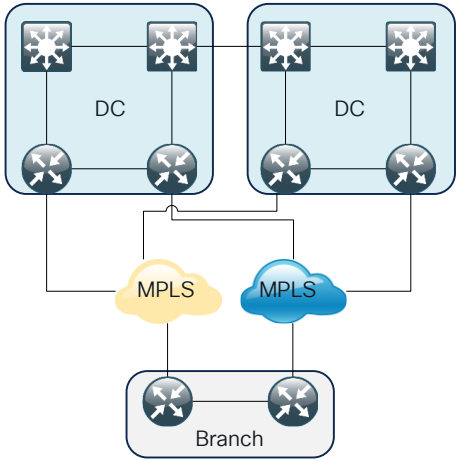
Controller-based Network

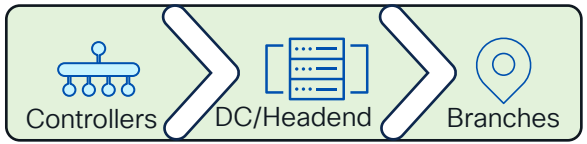


Manual	NMS and Scripts	Programmable	SD Controllers	AI ML/MR
CLI Single device	Config management Siloed	APIs Domain Manager	APIs Policies	AI-driven response to dynamic network conditions

Overview

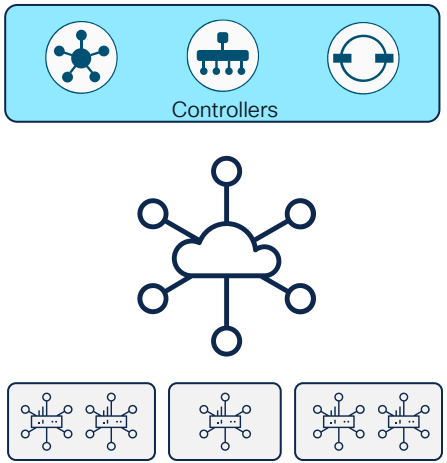
Traditional Network





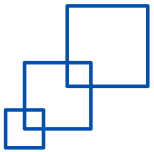
Deployment Sequence

Controller-based Network (SD-WAN)



Deployment Challenges

Scaling Deployment for Global Networks

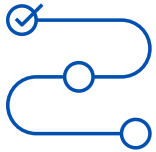


- Large network size
- Multiple regions & domains

Operating Multiple Administrative Domains

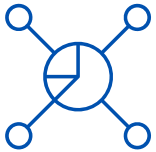
- Multiple regions
- Multiple countries

Managing Standard & Consistent Global Policies

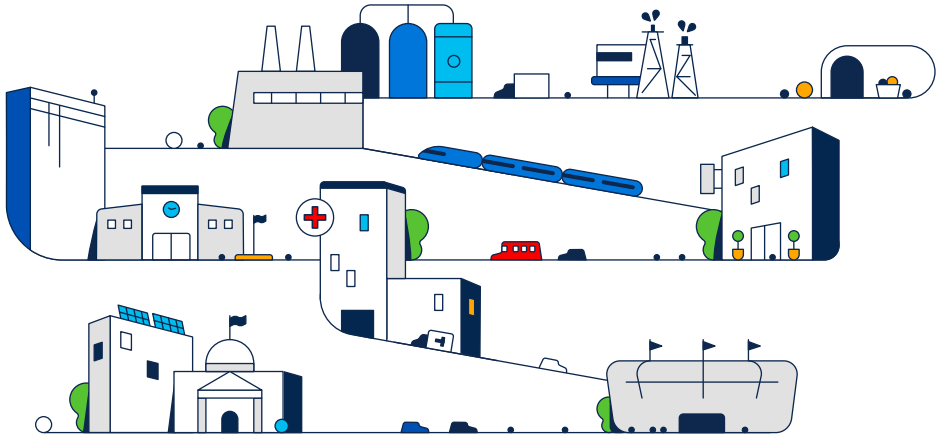


- Multiple controllers
- Consistent Policies Standards & Compliance

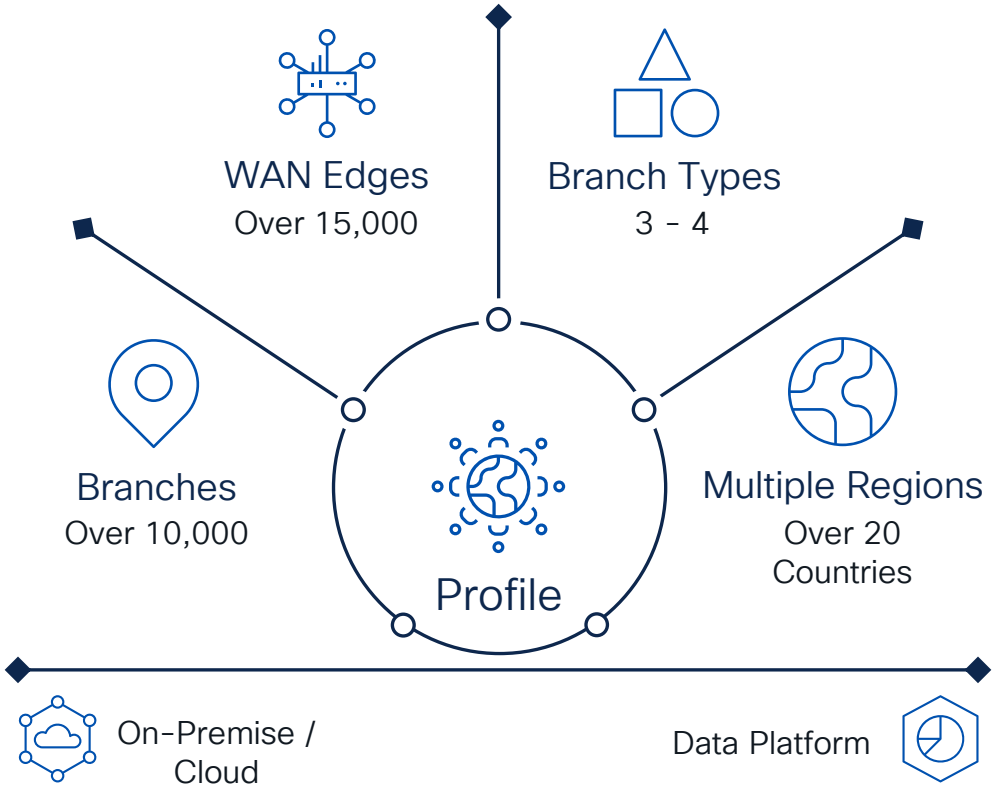
Deployment Challenges

Transition to New Network	Speed and Agility of Technology Rollout	Reliable Network Data	Integration with Business Processes
			
Plan Design Implement Device Connectivity Transition	Days for provisioning Site readiness Migration considerations	Network data model Source of truth	New business processes Service management

Large Enterprise Example

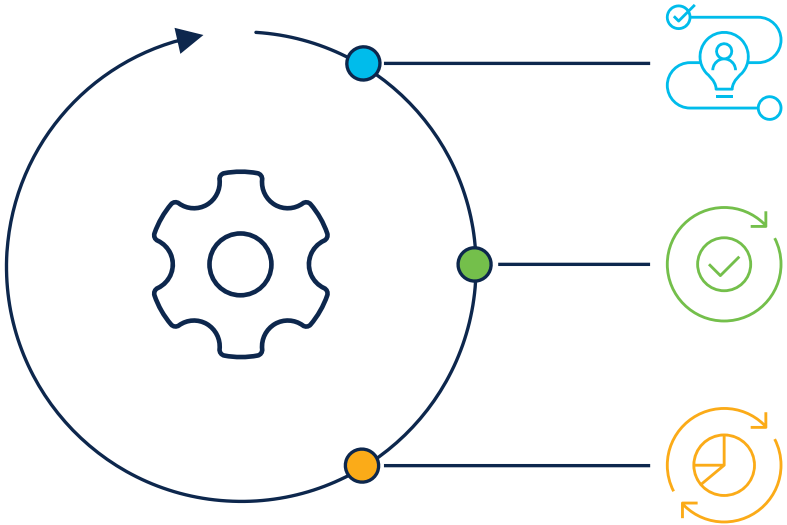


Network Profile and Requirements



Solution Approach

Objectives



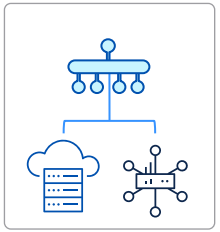
Simplify transition to controller-based architecture

Accelerate deployment to achieve faster time to value

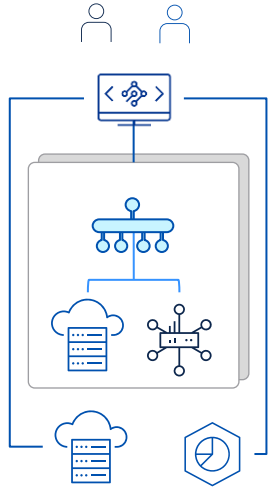
Operationalize new network processes

Solution Approach

Automation and Orchestration

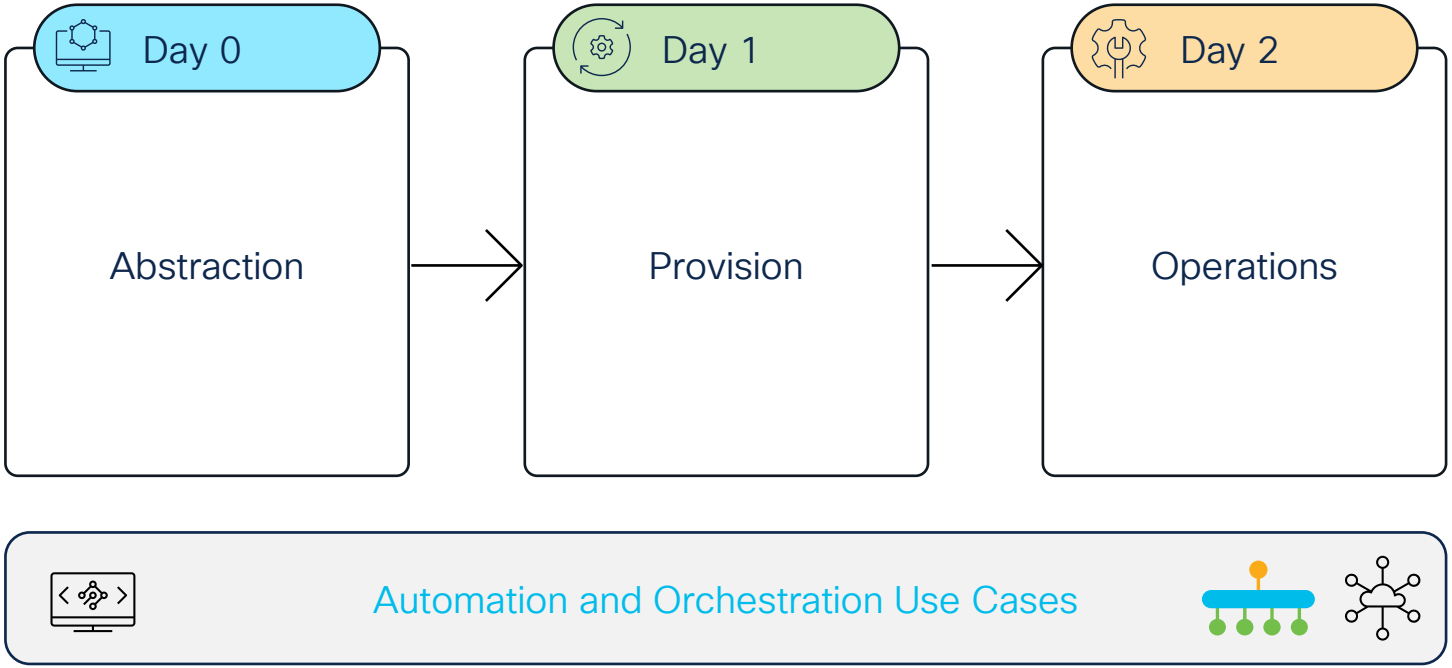


Automation	Orchestration
The ability to perform repetitive tasks	The coordination of tasks in a desired sequence resulting in consolidated business process workflow
Abstraction of the network to manage programmatically	Abstraction of the controller layer, business processes with administrative domains, and data model for orchestration
Synchronizing provisioning file (WAN Edge List) from Cisco PnP	Device activation of a single or multiple devices online or offline using automated and manual tasks
Synchronizing provisioning file from Cisco PnP and WAN Edge configuration	New processes required to perform similar runbook operations on SD-WAN
UI and API	UX, Sequencing, Scheduling, Approvals, Error handling, Rollback, Sync vs Async, business process integration

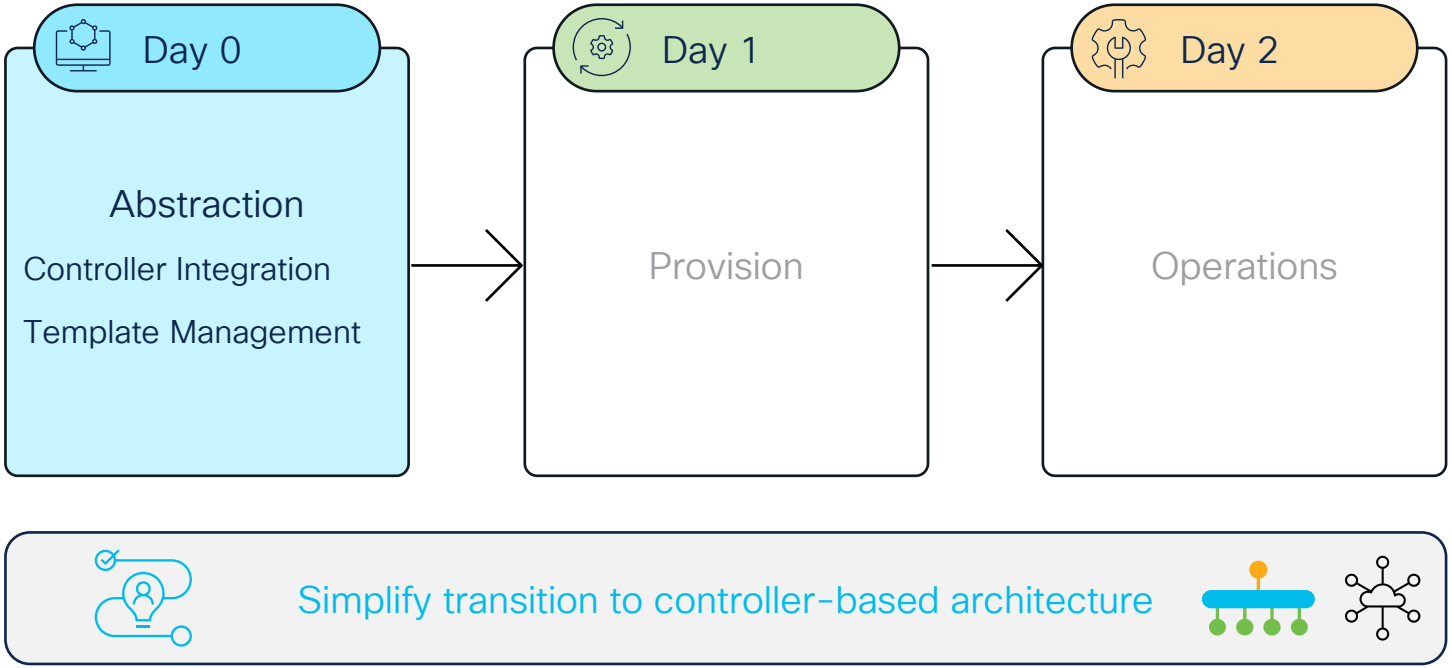


Solution Approach

Use Cases



Use Cases



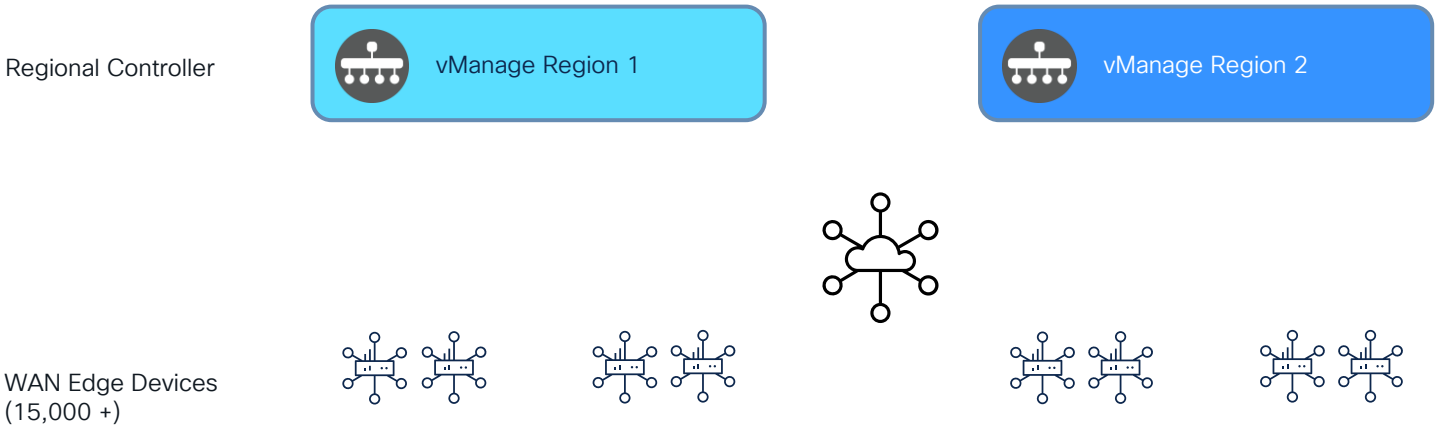
Abstraction

Controller Integration

How to support large enterprise networks requiring multiple controllers ?

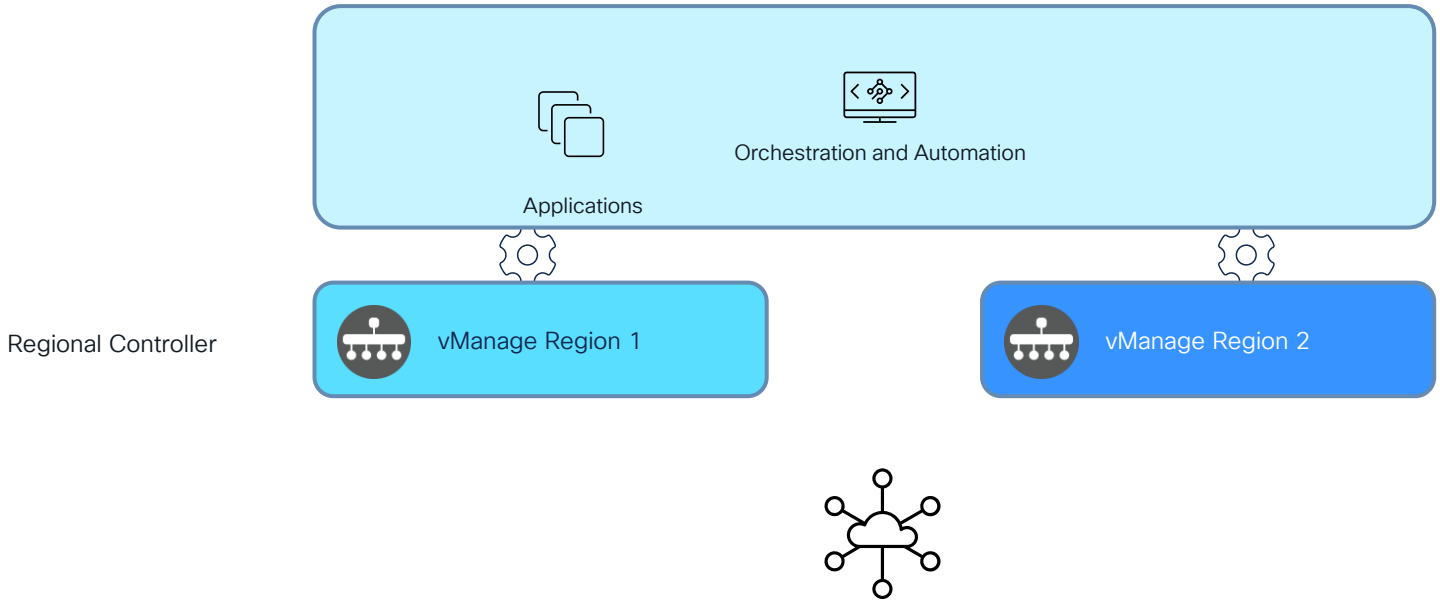
Abstraction

Controller Integration



Abstraction

Controller Integration



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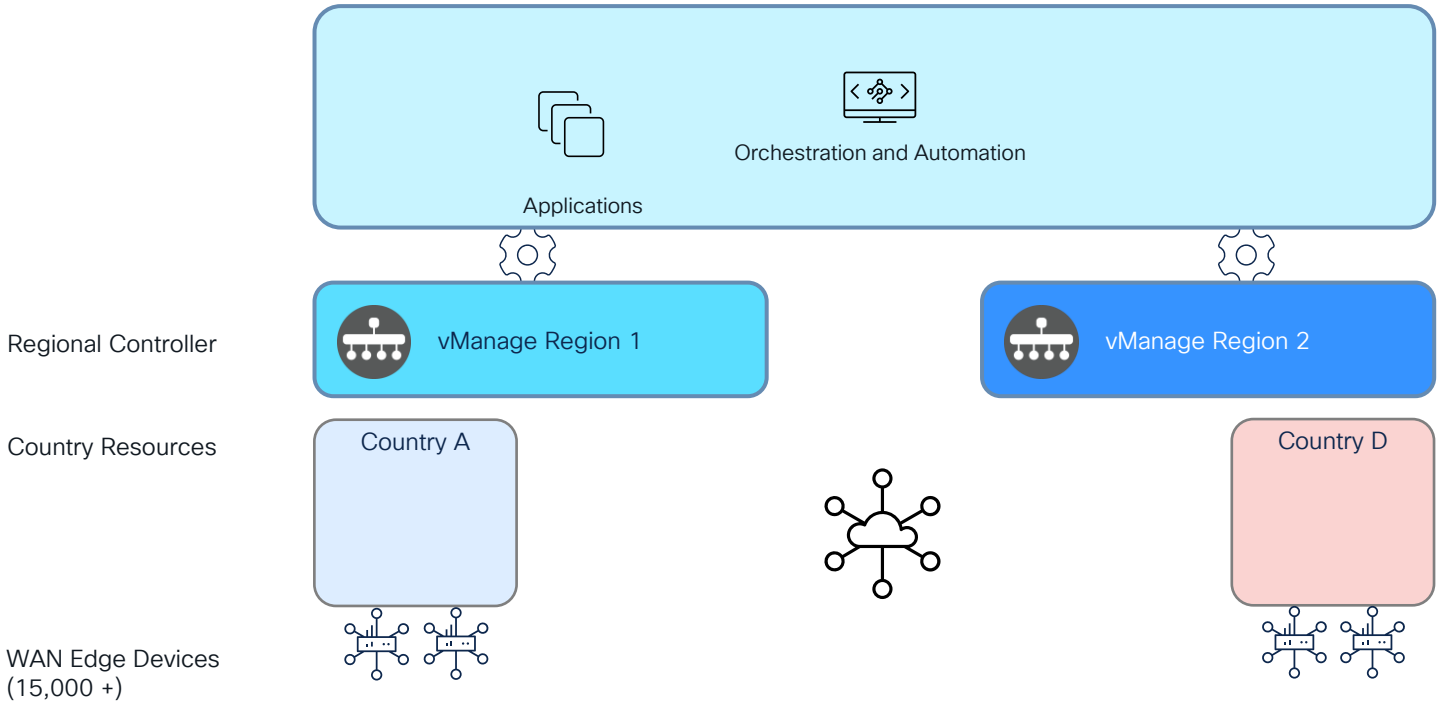
Controller Integration



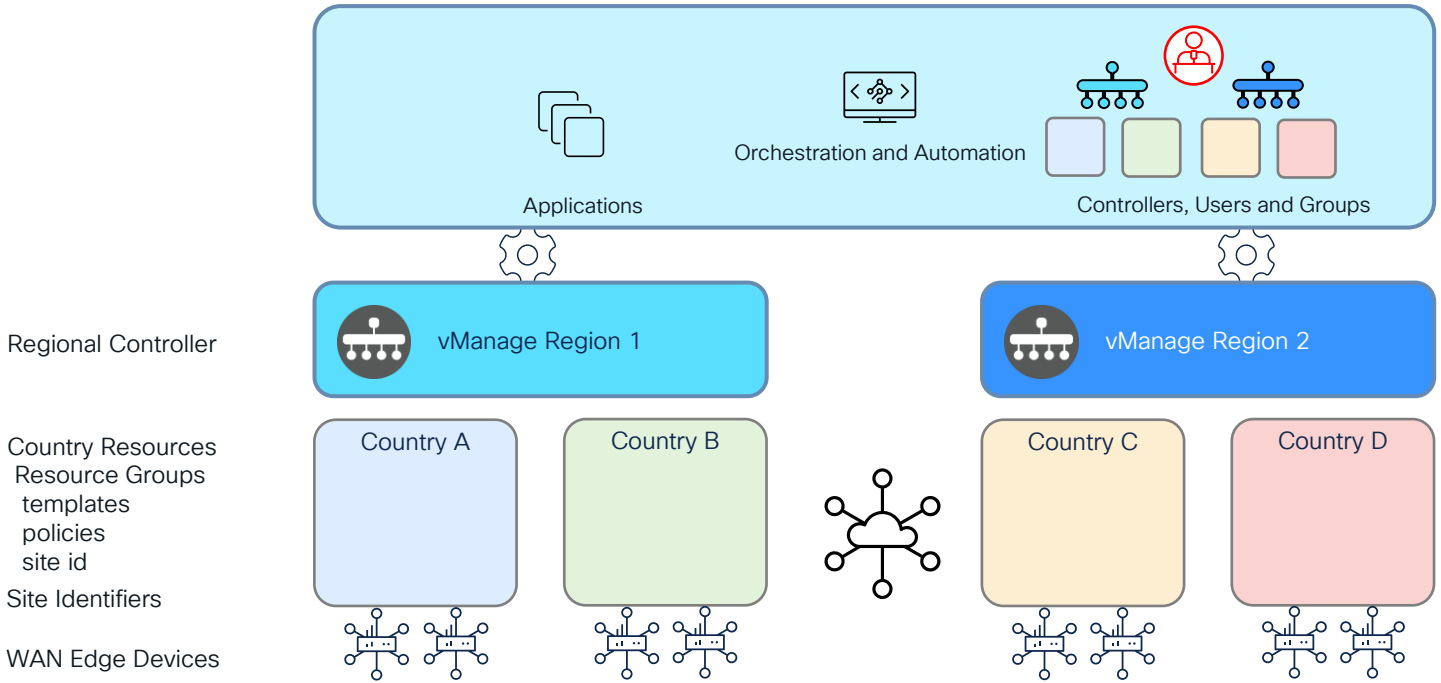
Abstraction

Controller Integration

How to share controller resources between multiple administrative domains ?

Abstraction

Controller Integration



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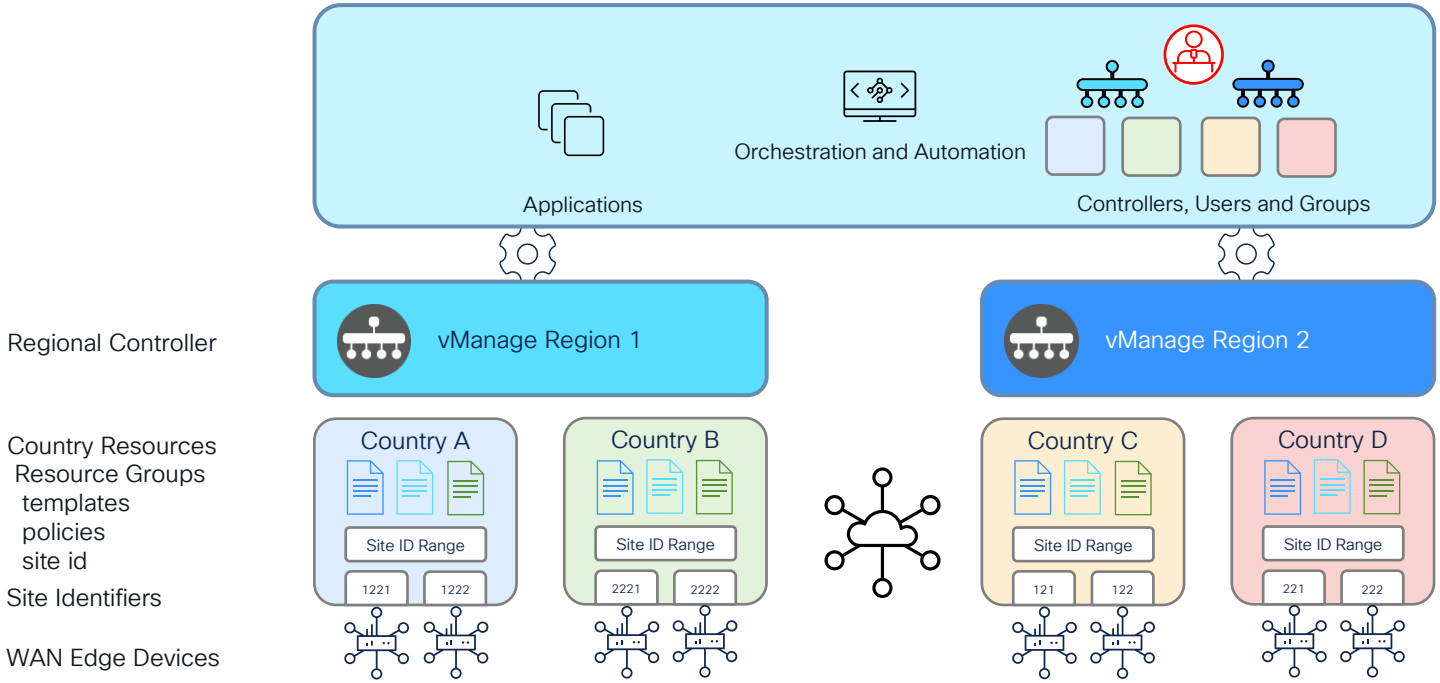
Controller Integration



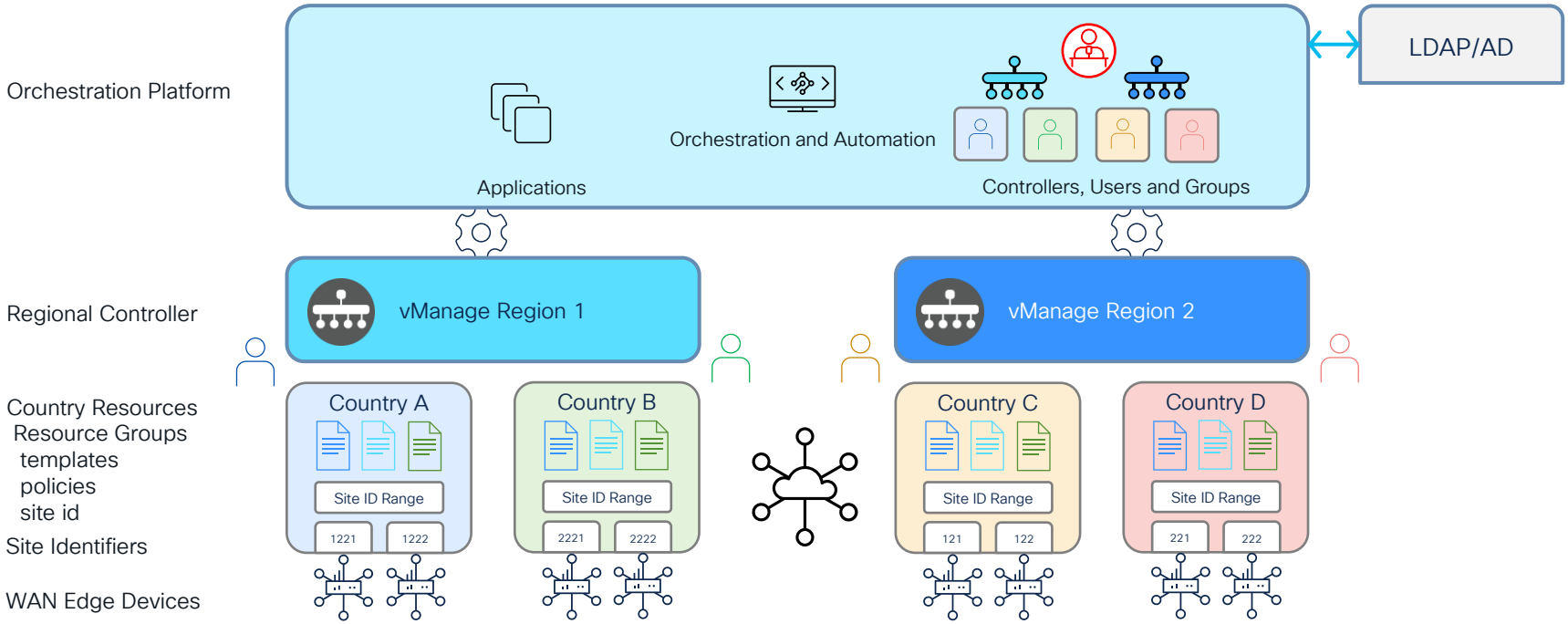
Abstraction

Controller Integration

How can we enforce access control for different administrative domains ?

Abstraction

Controller Integration



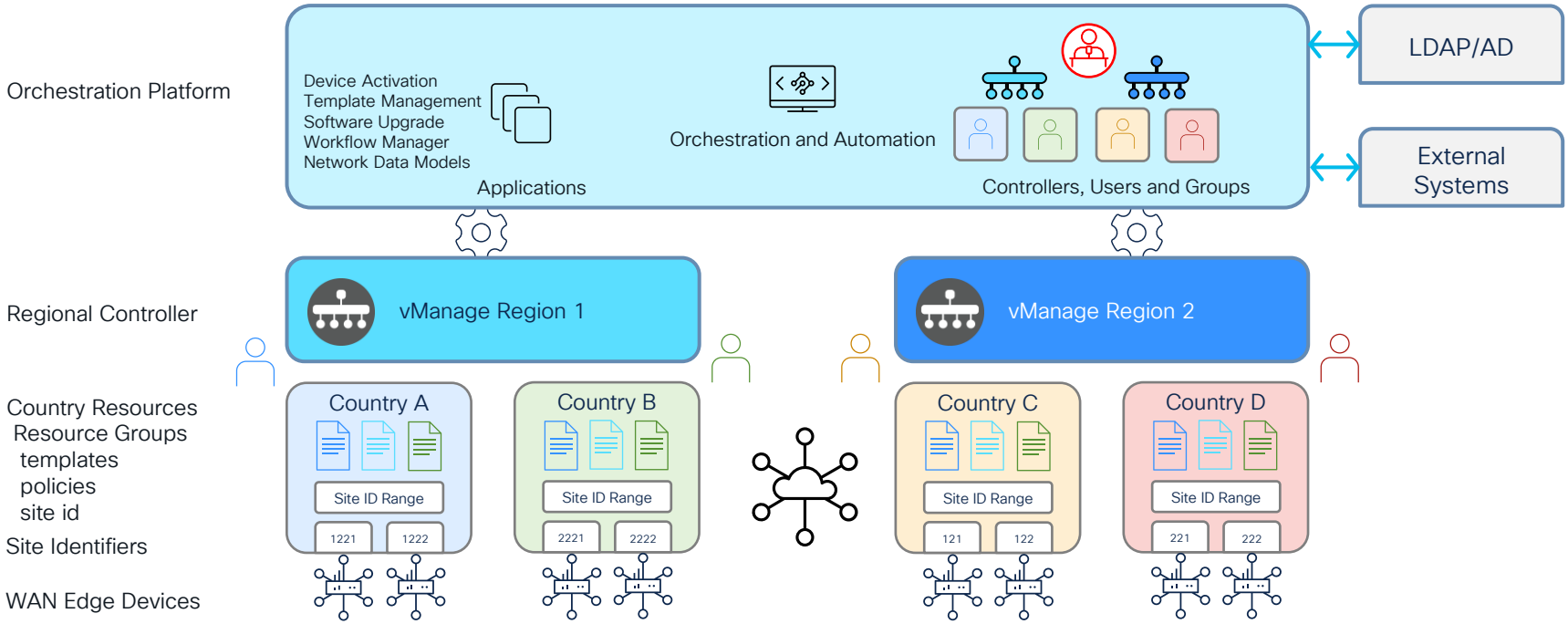
Abstraction

Controller Integration

How de we interact with external systems for business processes integration ?

Abstraction

Controller Integration



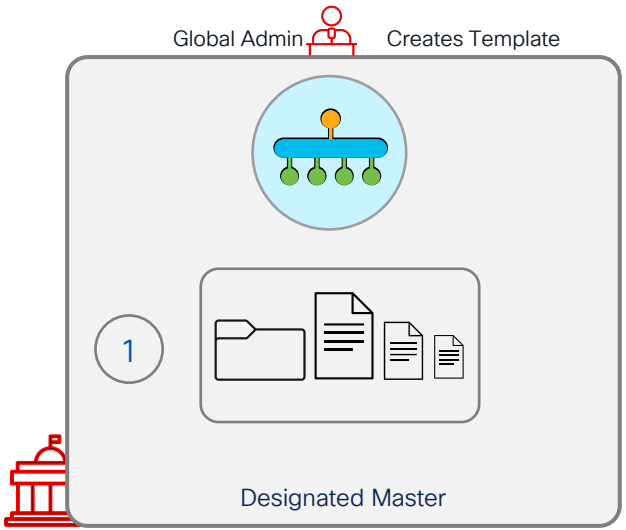
Abstraction

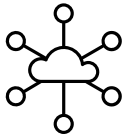
Template Management

How can we create, deploy and manage standardized policies consistently across multiple controllers ?

Abstraction

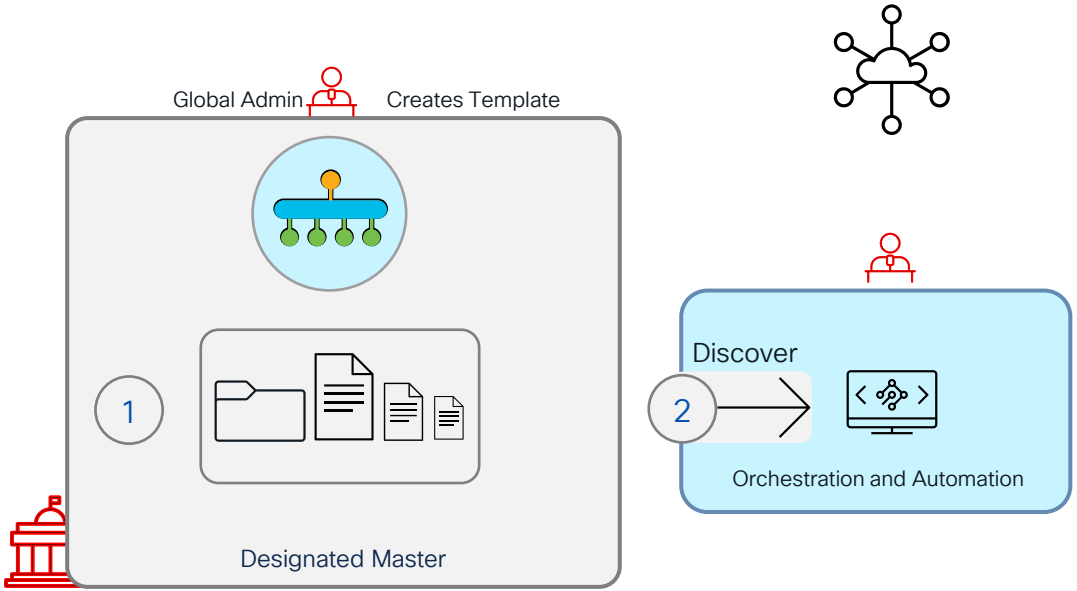
Template Management





Abstraction

Template Management



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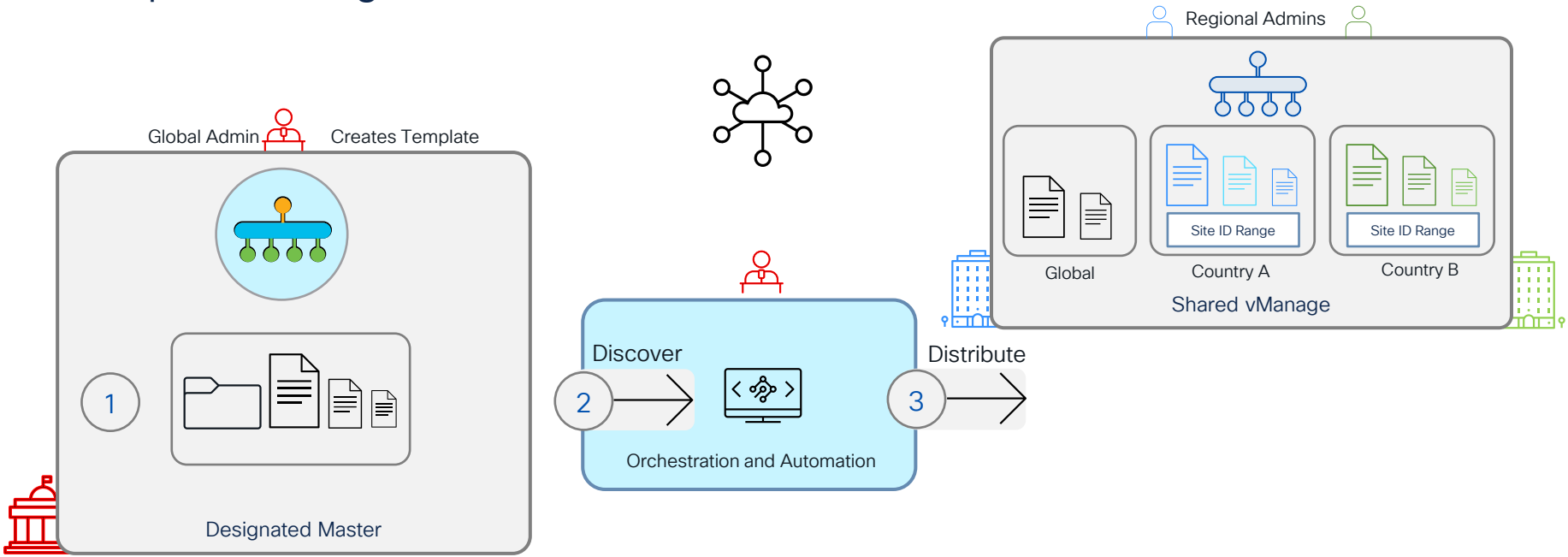

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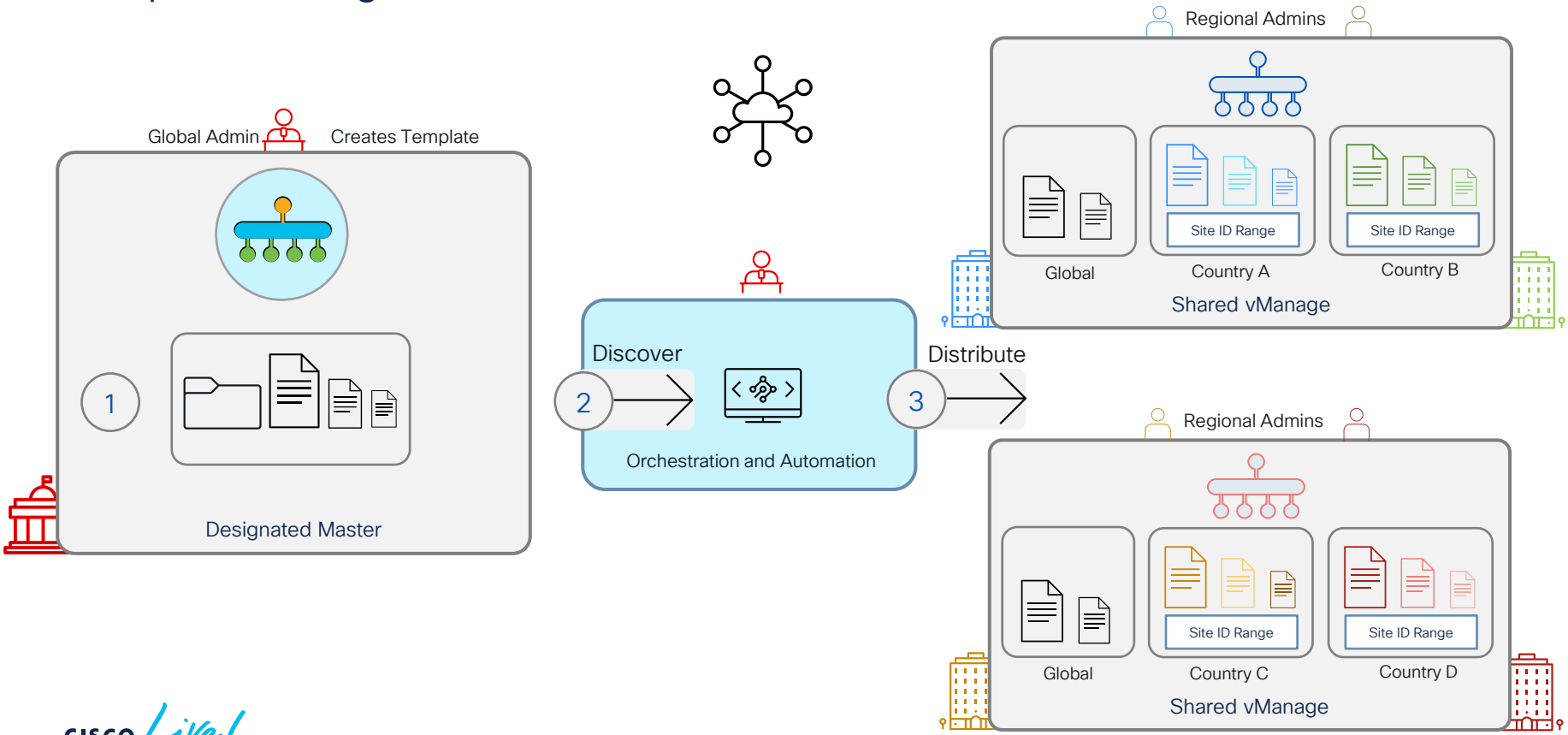

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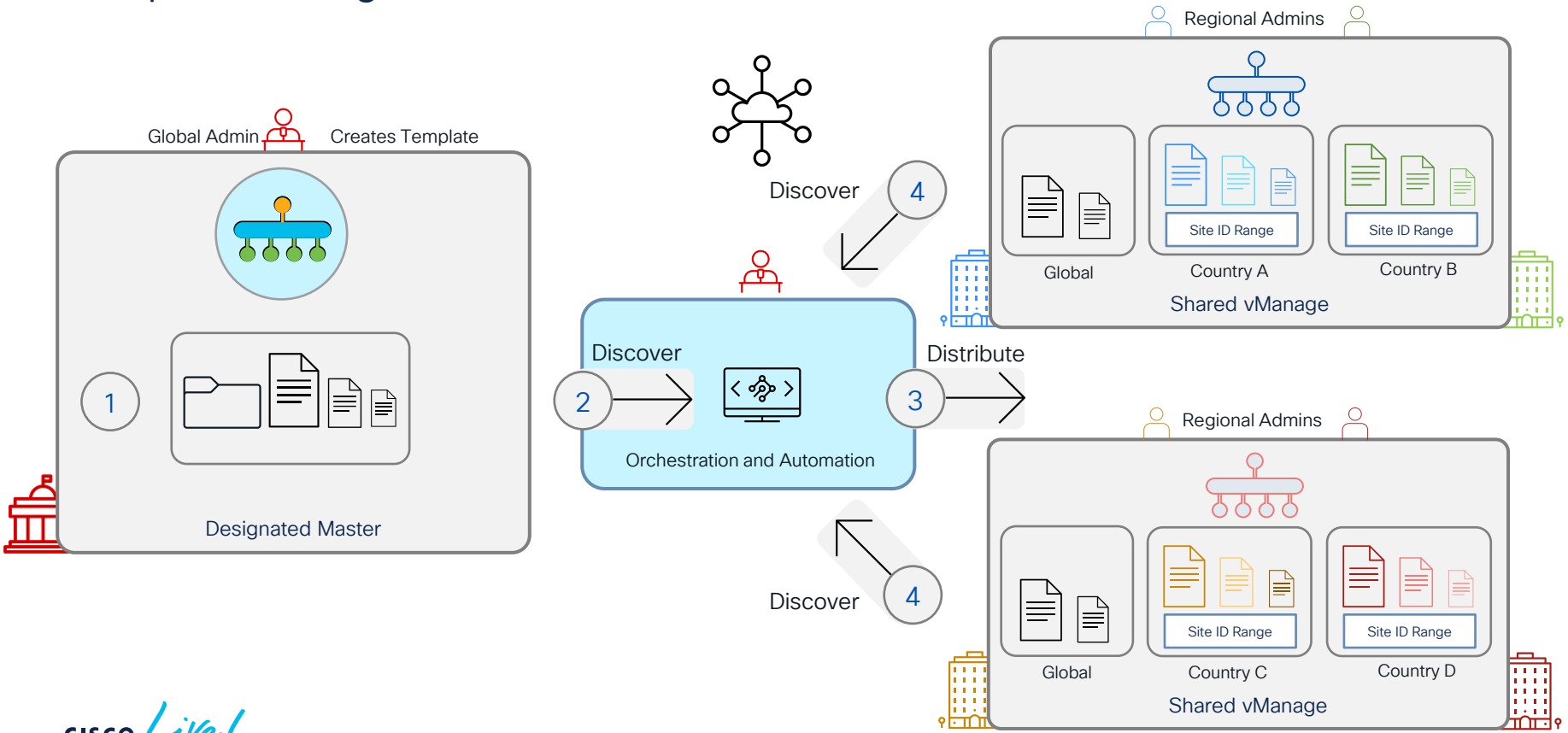
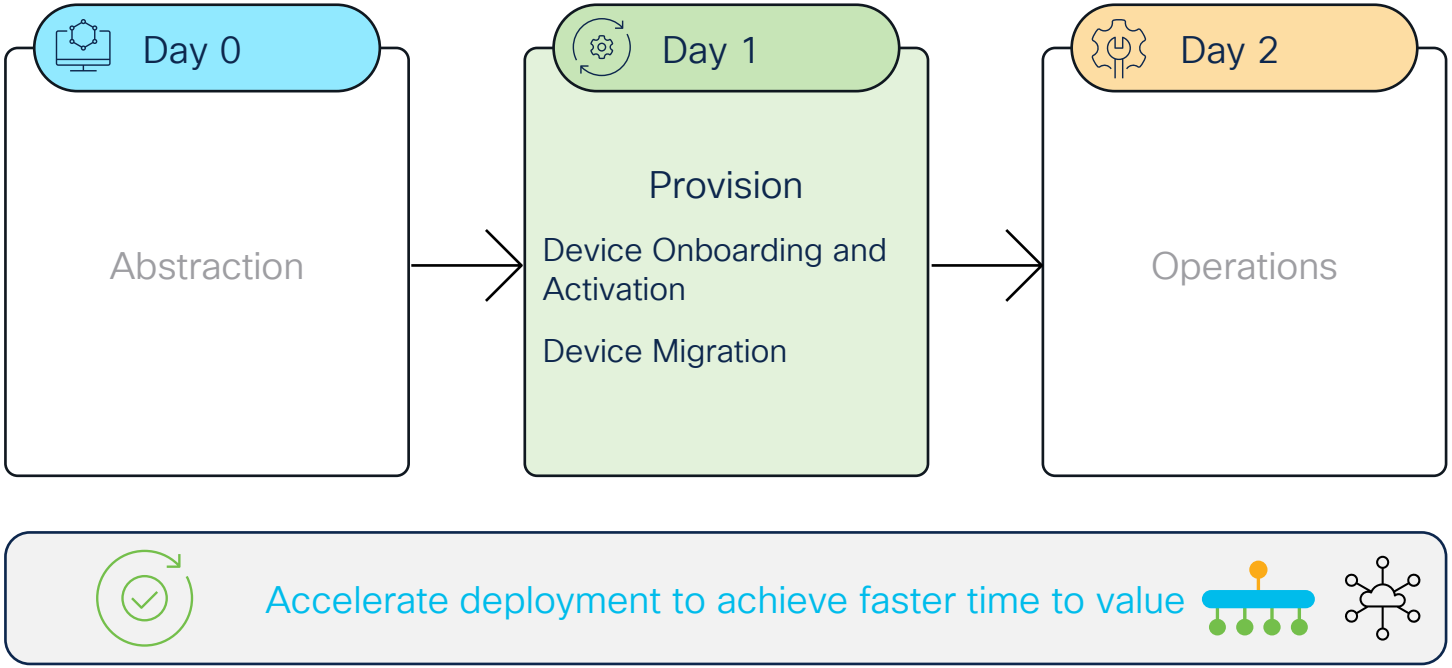


Use Cases



Provision

Device Onboarding and Activation

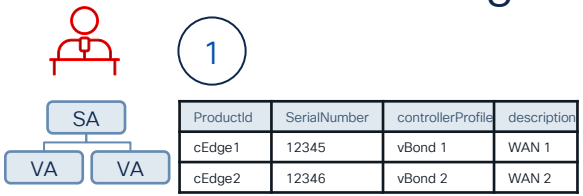
How can we bootstrap a device from Cisco PnP server and activate a site ?

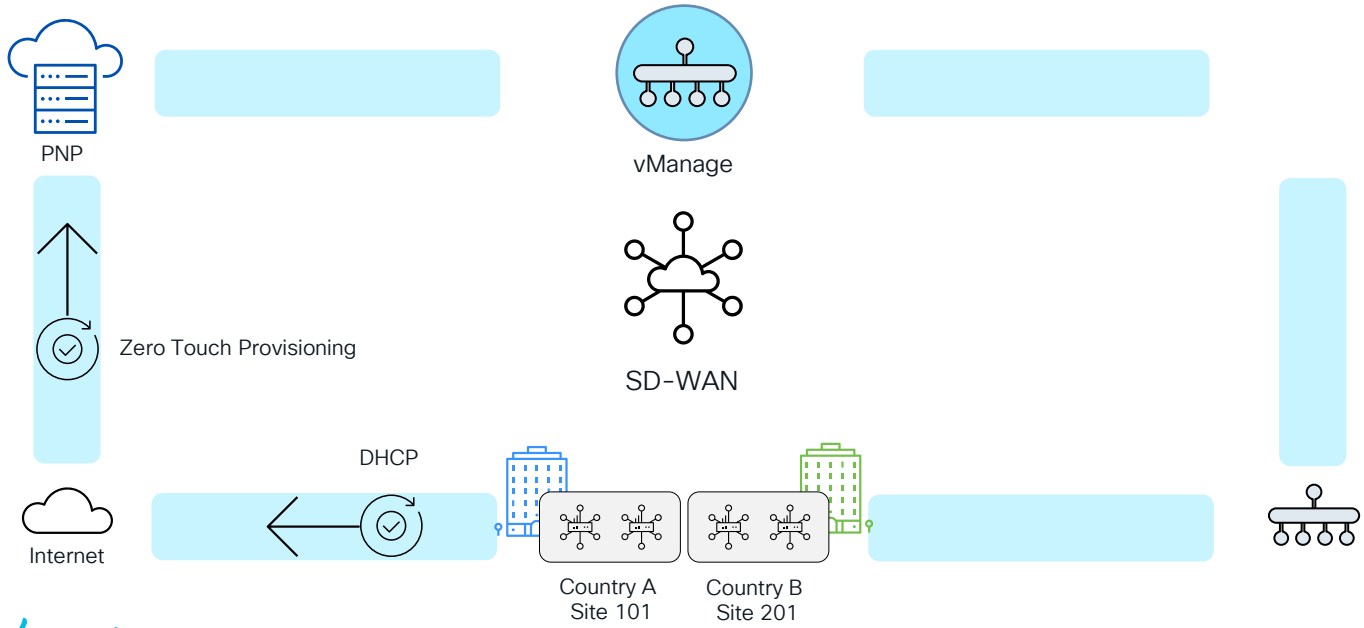
Demo

Provisioning

Provision

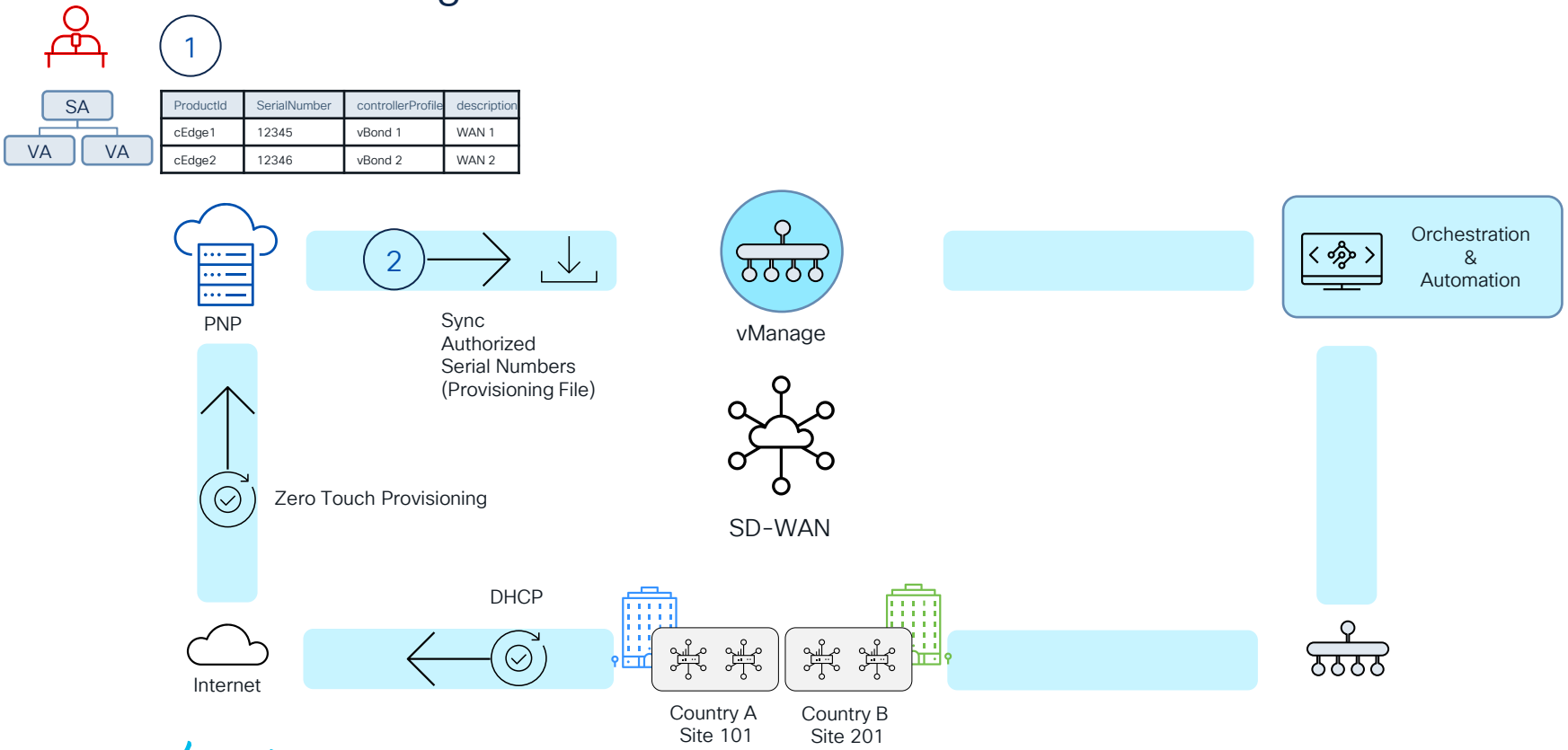
Device Onboarding and Activation





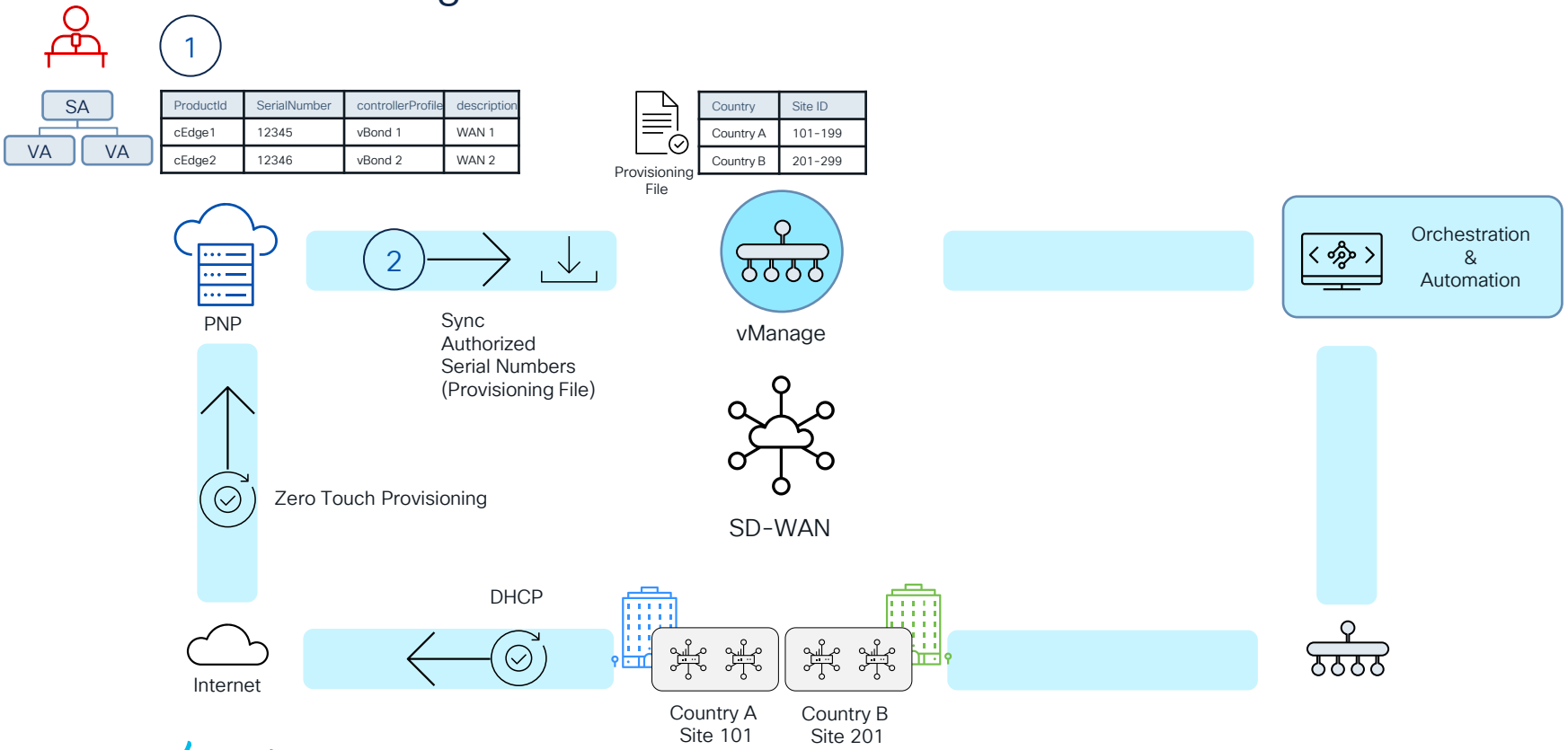
Provision

Device Onboarding and Activation



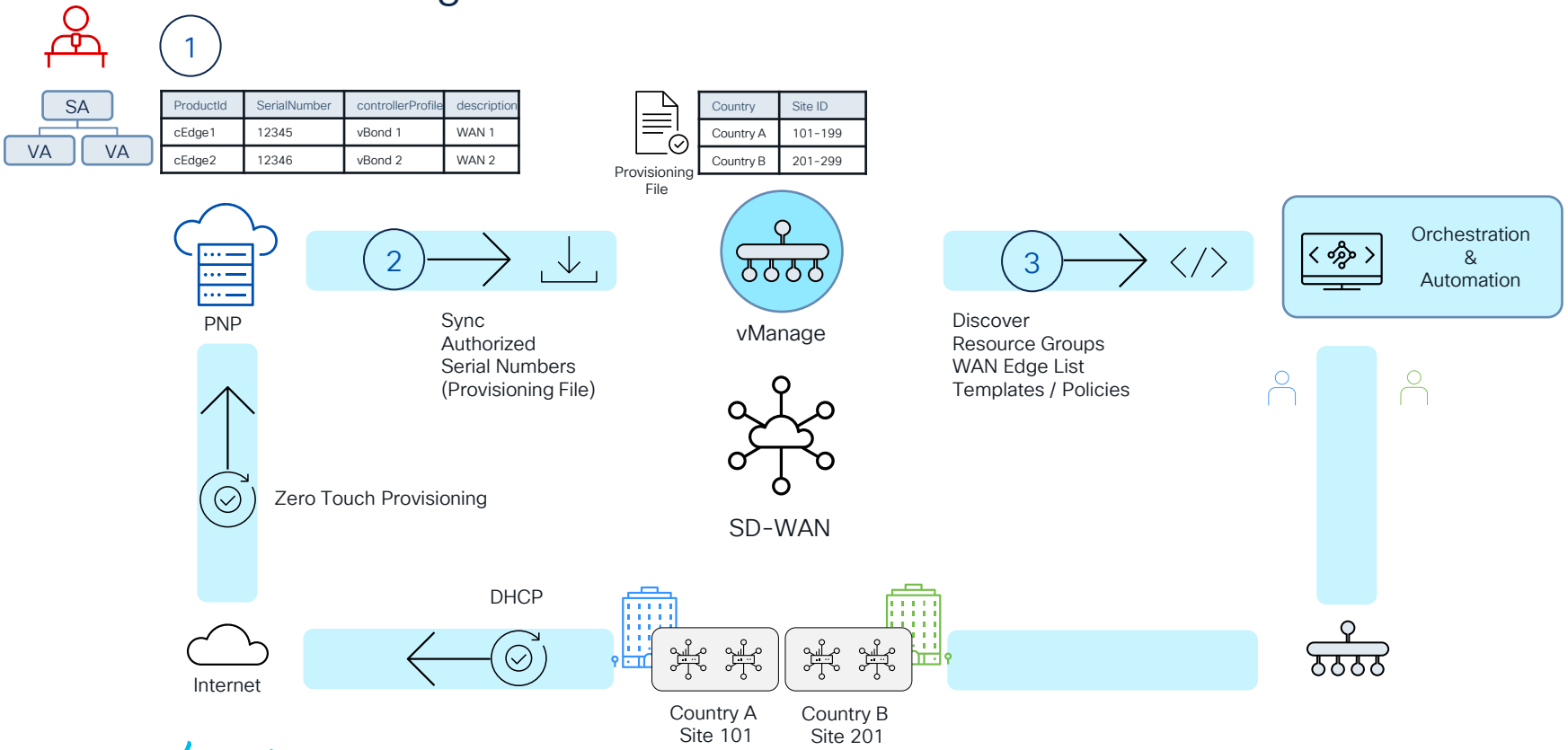
Provision

Device Onboarding and Activation



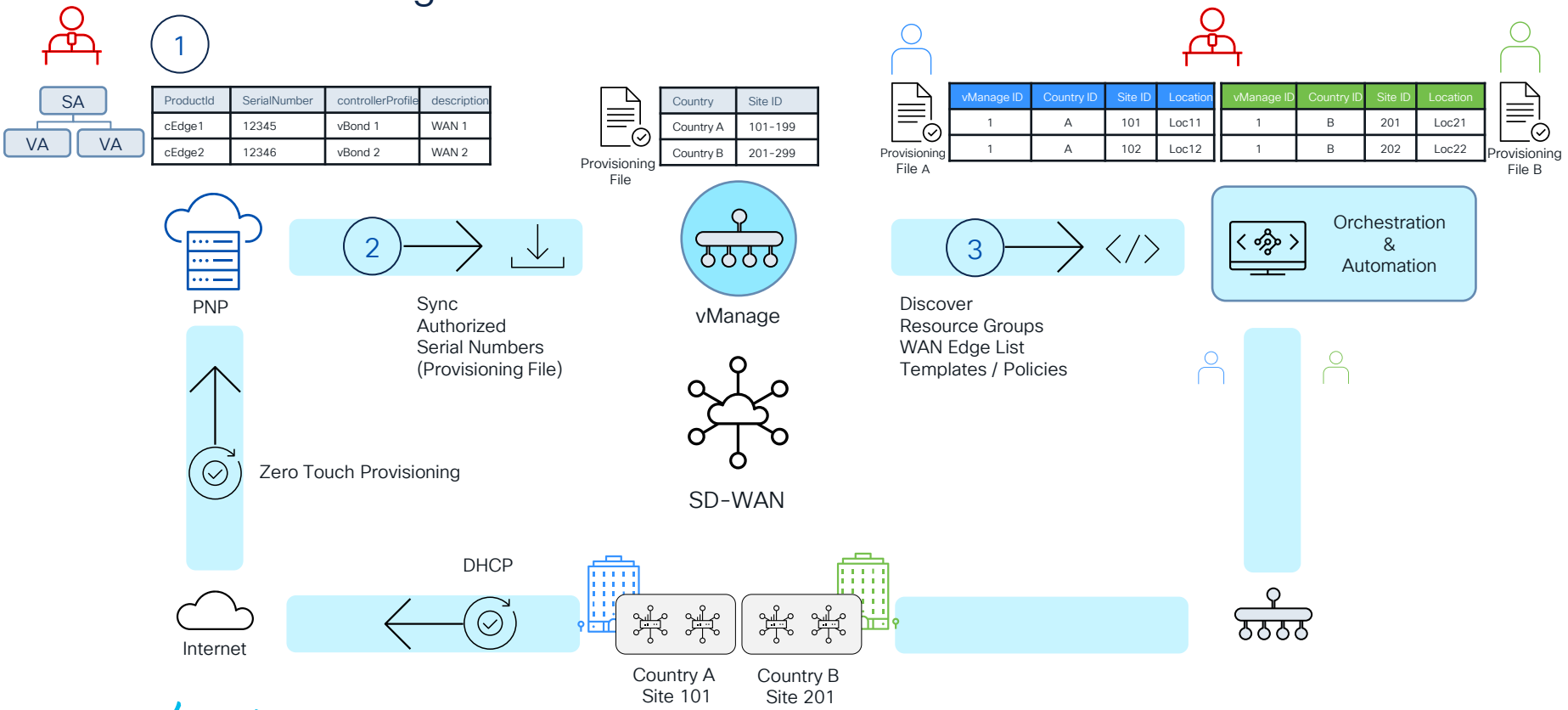
Provision

Device Onboarding and Activation



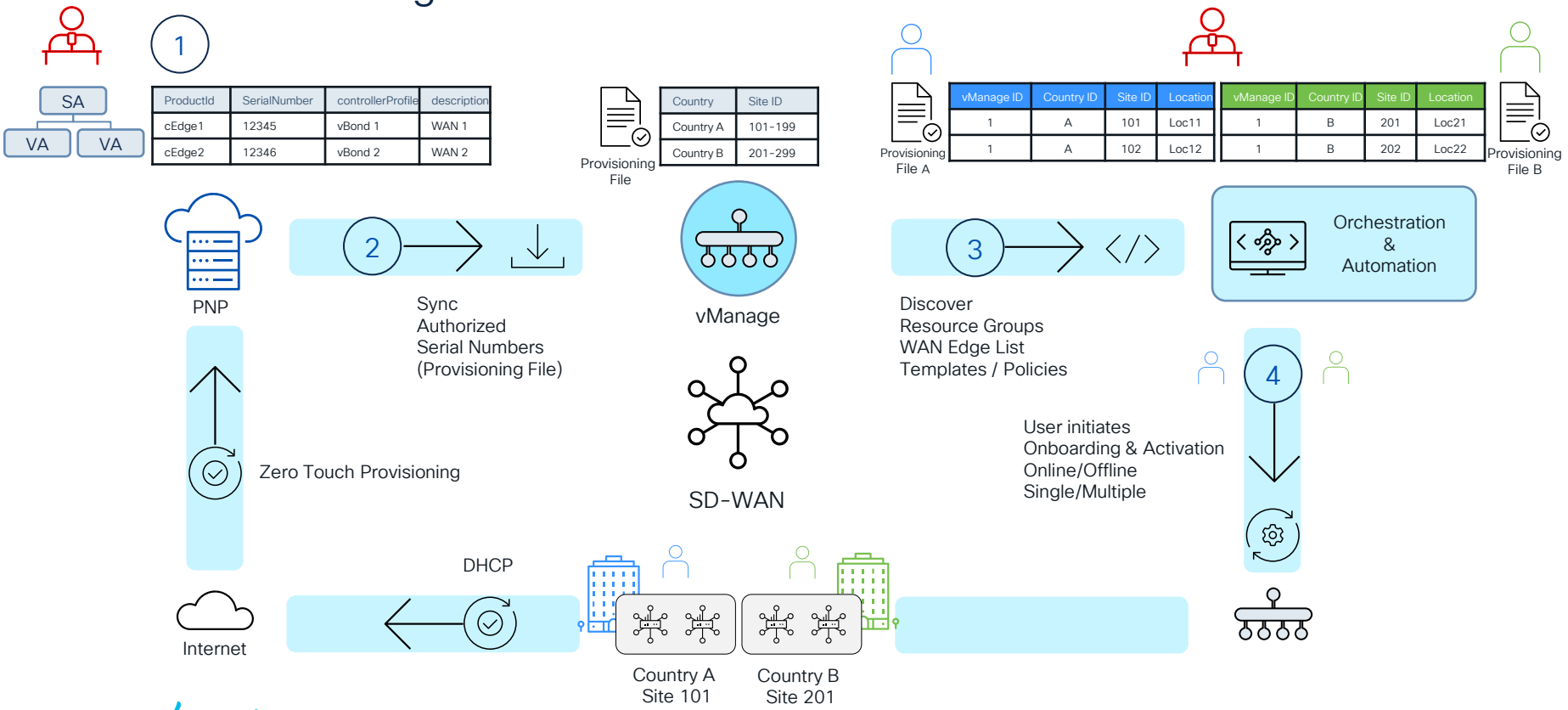
Provision

Device Onboarding and Activation



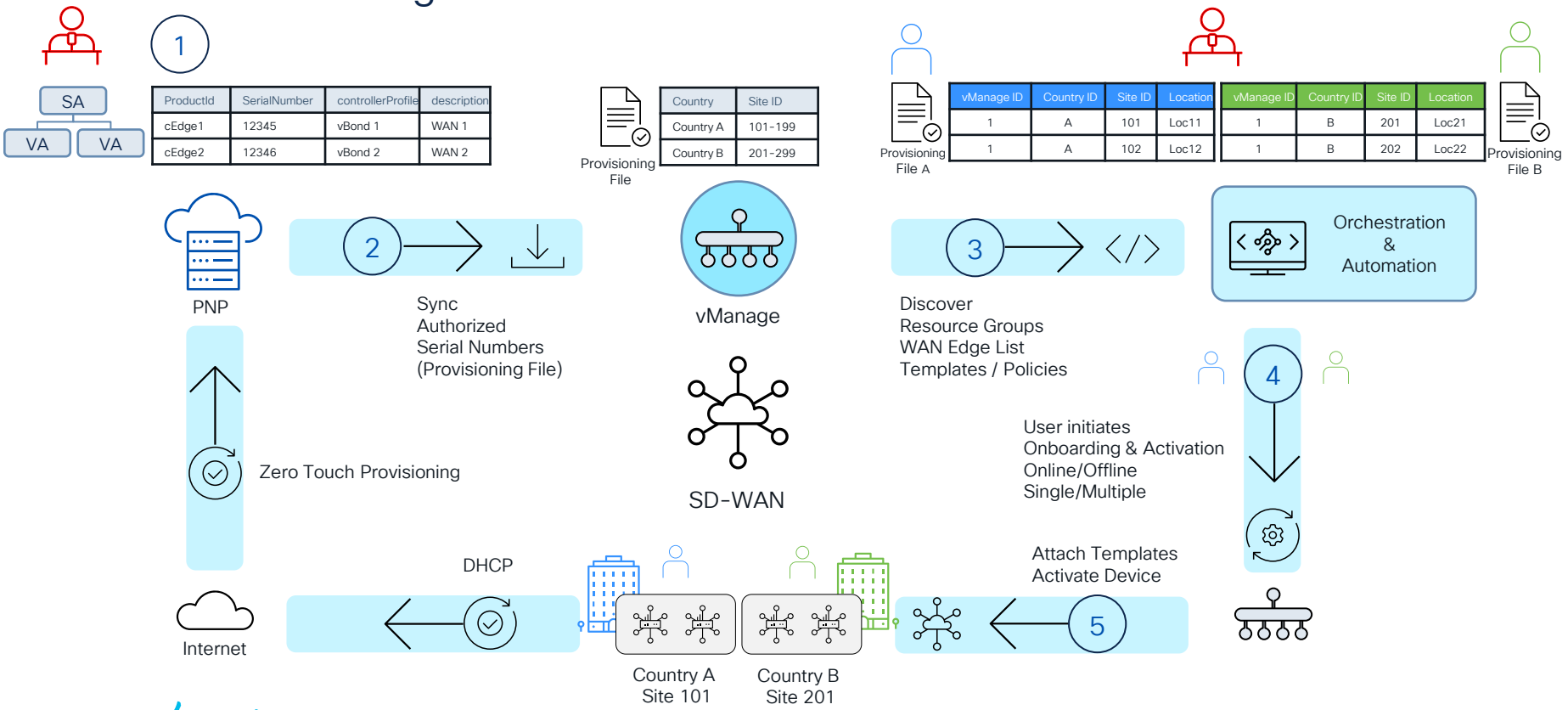
Provision

Device Onboarding and Activation

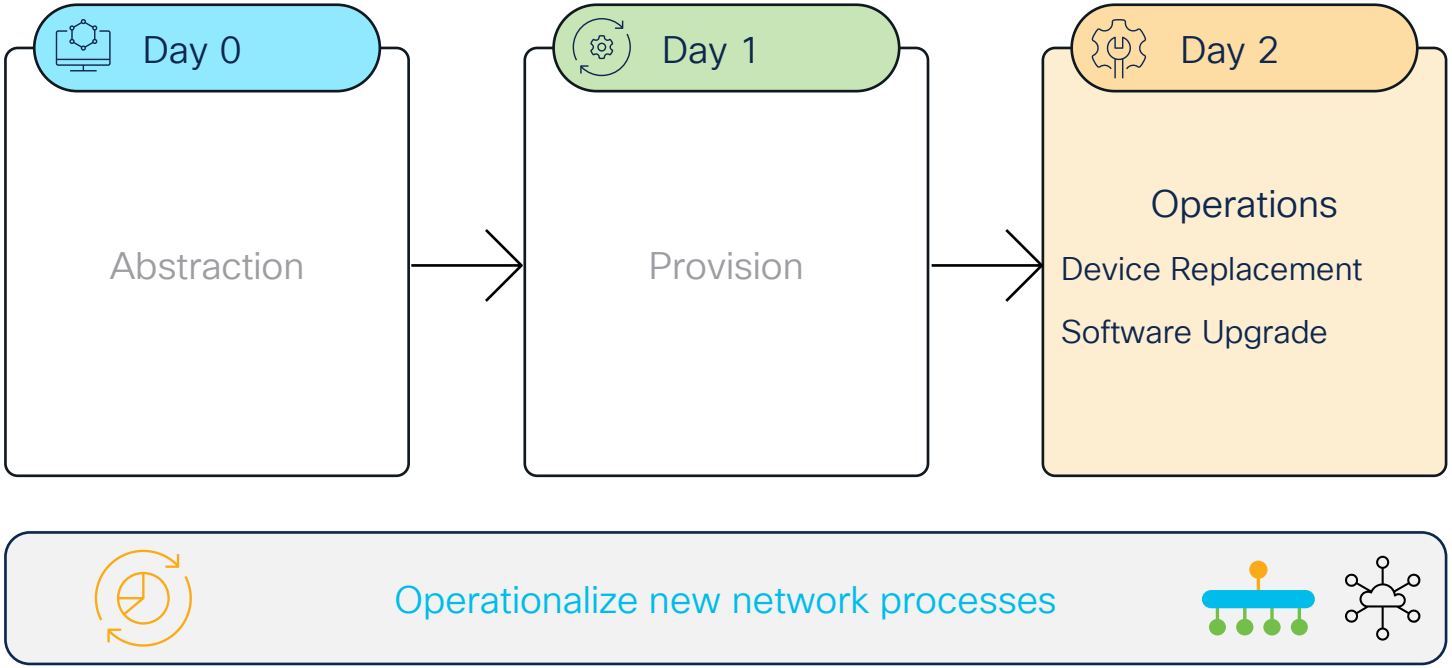


Provision

Device Onboarding and Activation



Use Cases



Operations

Decommission and Replacement

How can we operationalize the process of replacing a failed device on new network ?

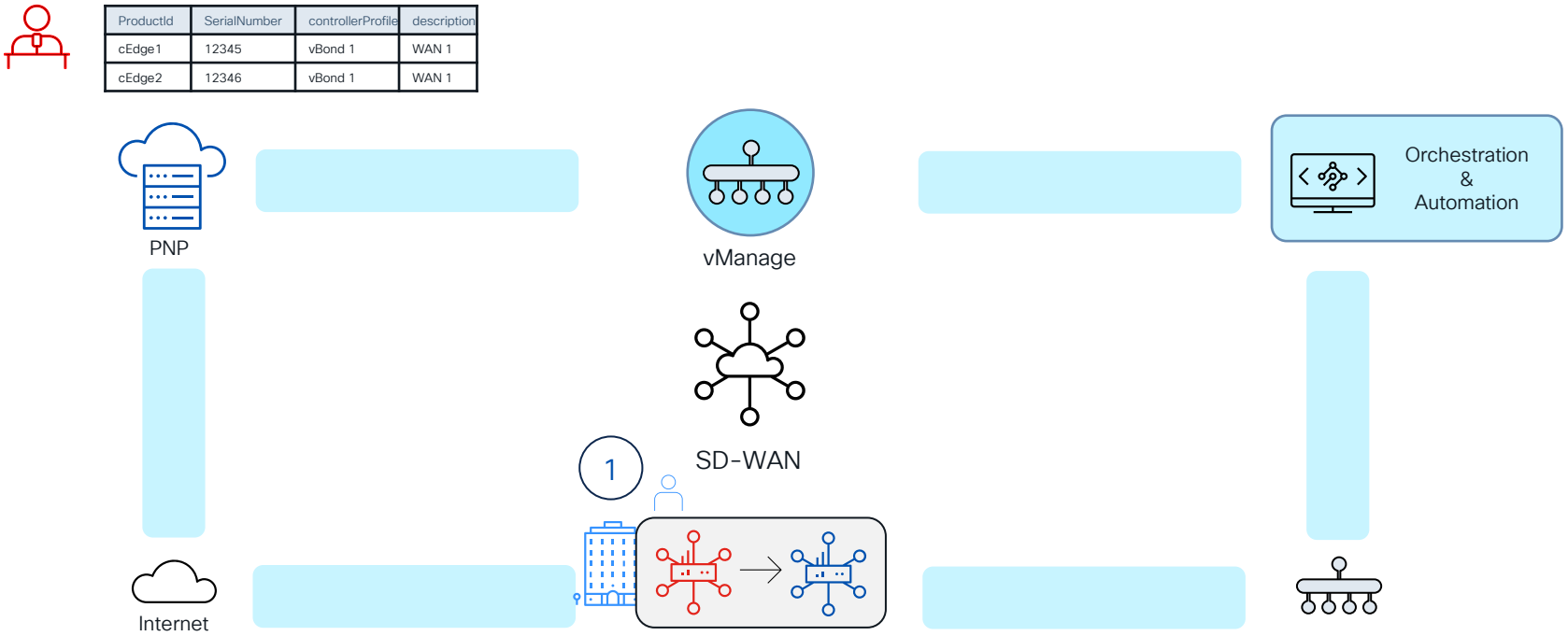
Demo

Device Replacement

Operations

Device Replacement

ProductId	SerialNumber	controllerProfile	description
cEdge1	12345	vBond 1	WAN 1
cEdge2	12346	vBond 1	WAN 1

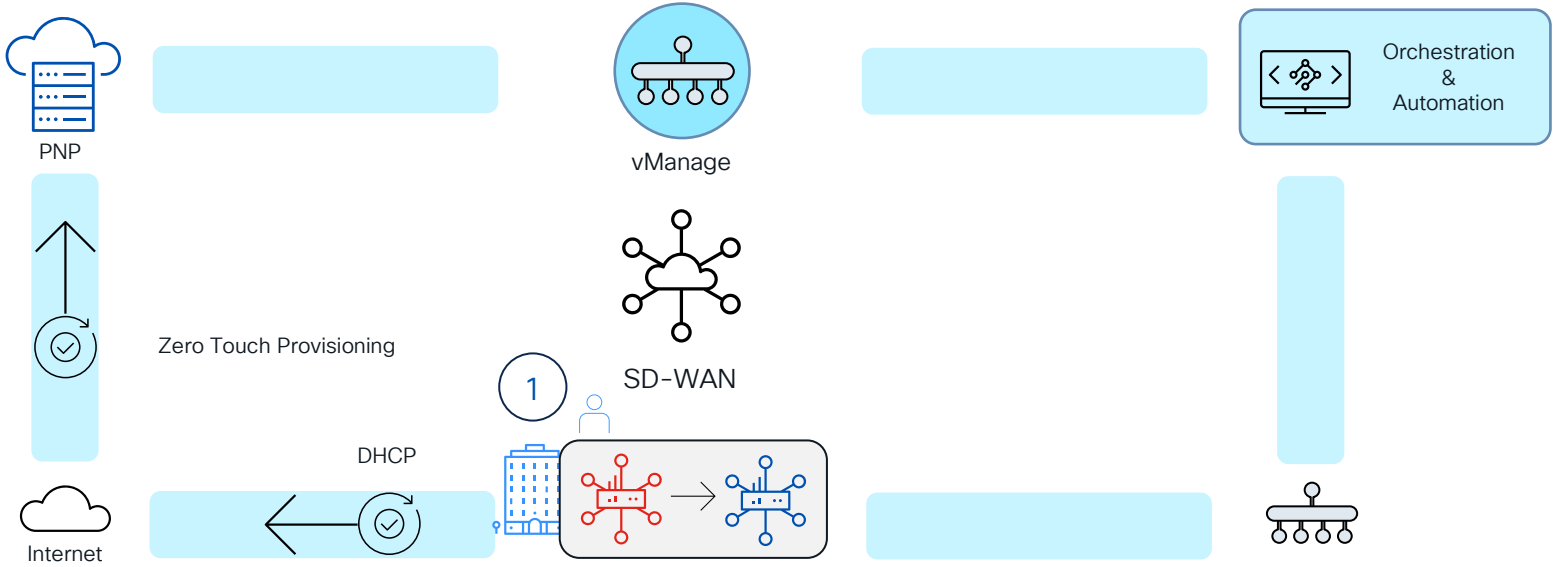


Operations

Device Replacement

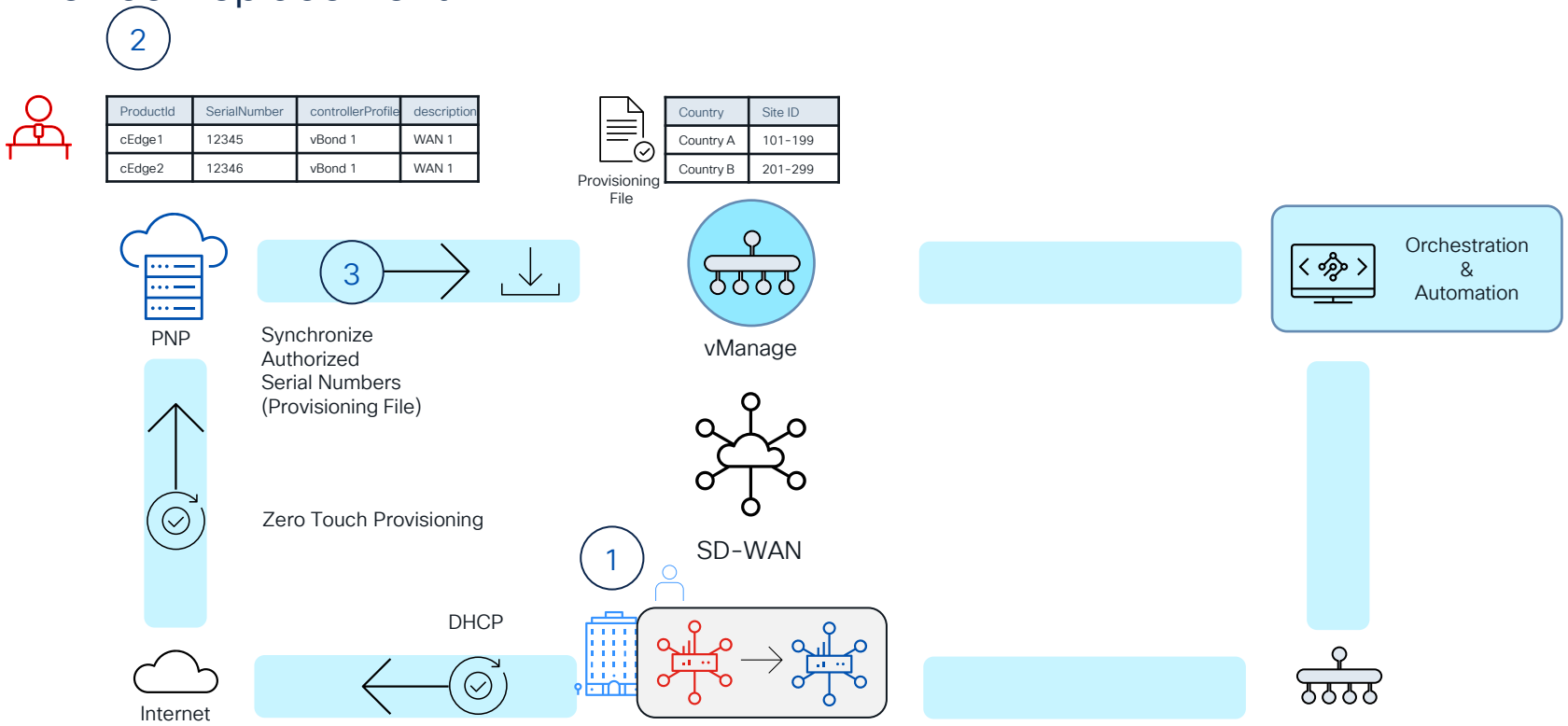
2

ProductId	SerialNumber	controllerProfile	description
cEdge1	12345	vBond 1	WAN 1
cEdge2	12346	vBond 1	WAN 1



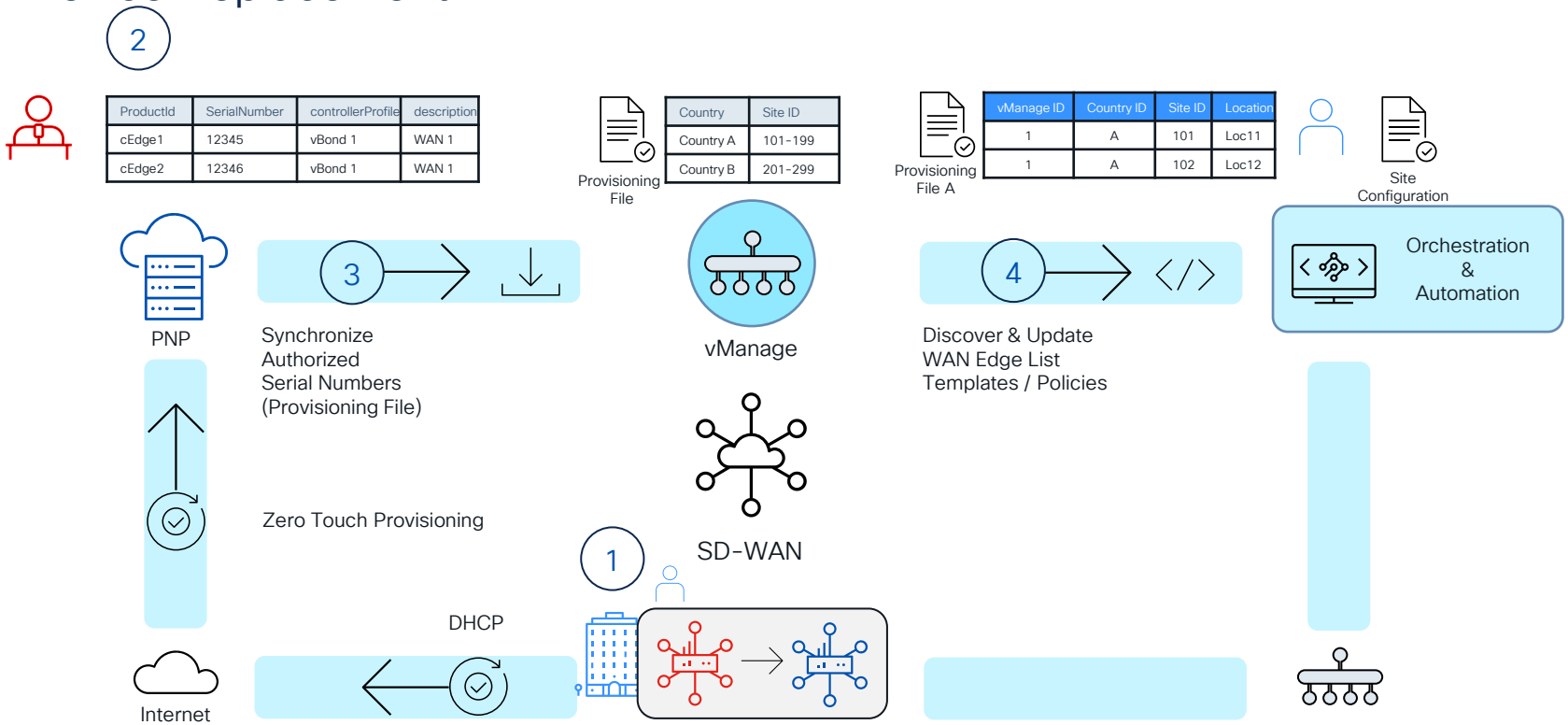
Operations

Device Replacement



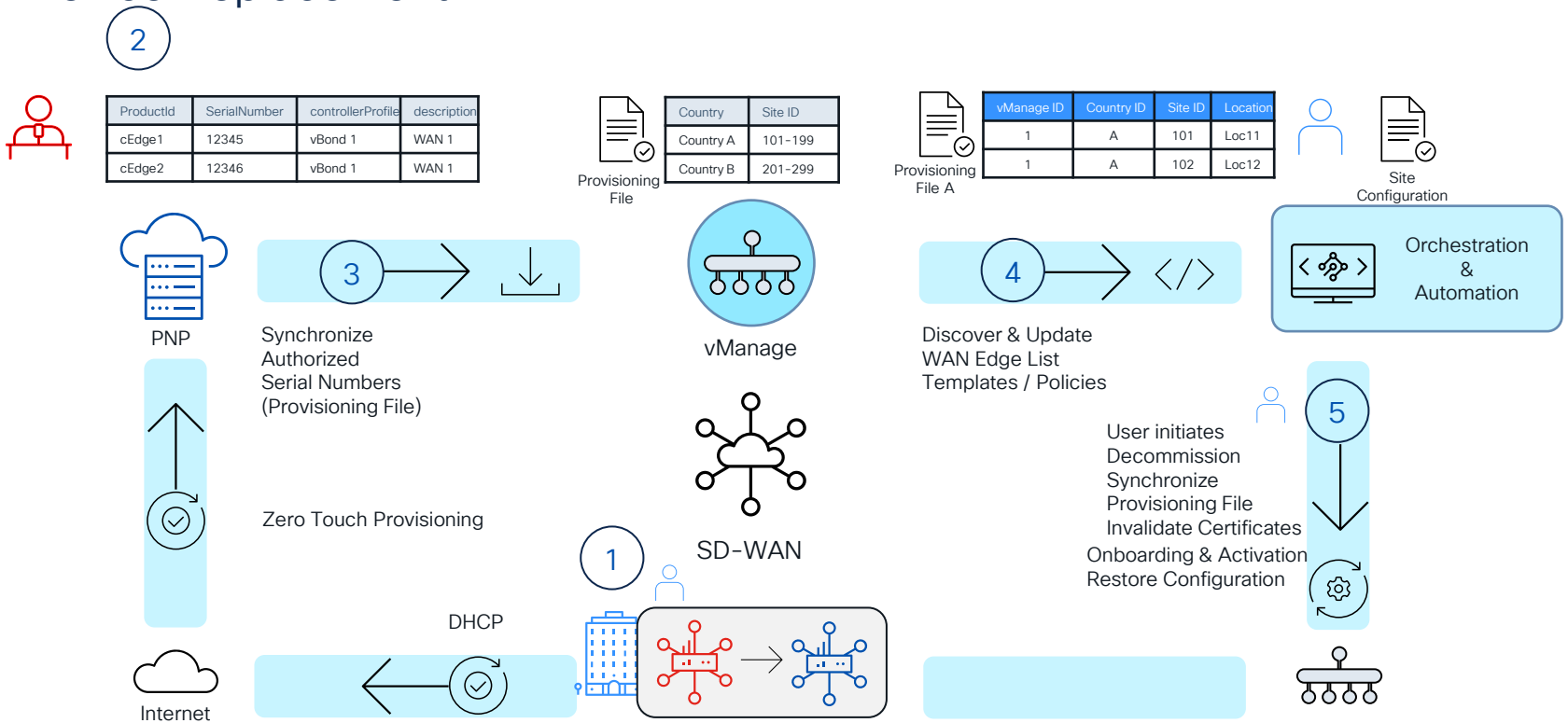
Operations

Device Replacement



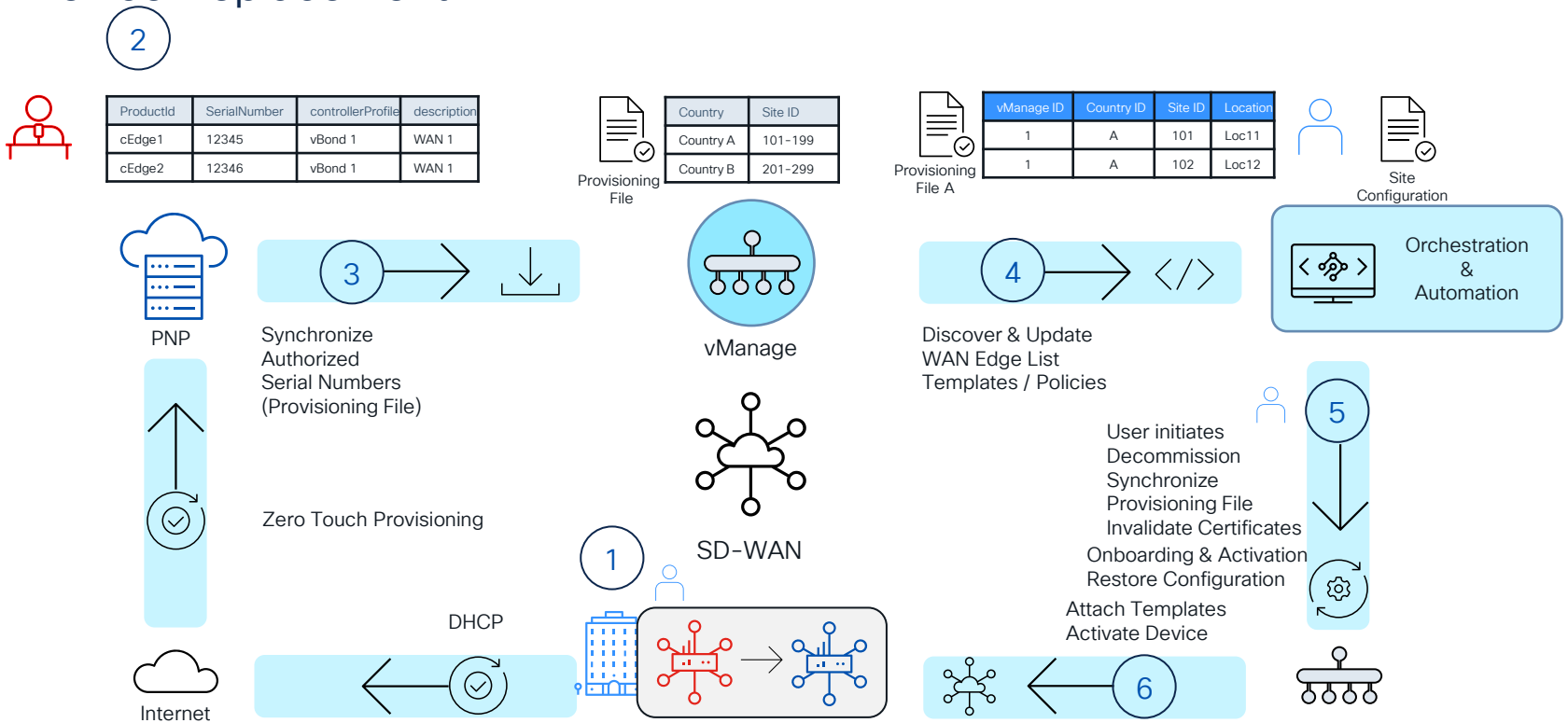
Operations

Device Replacement



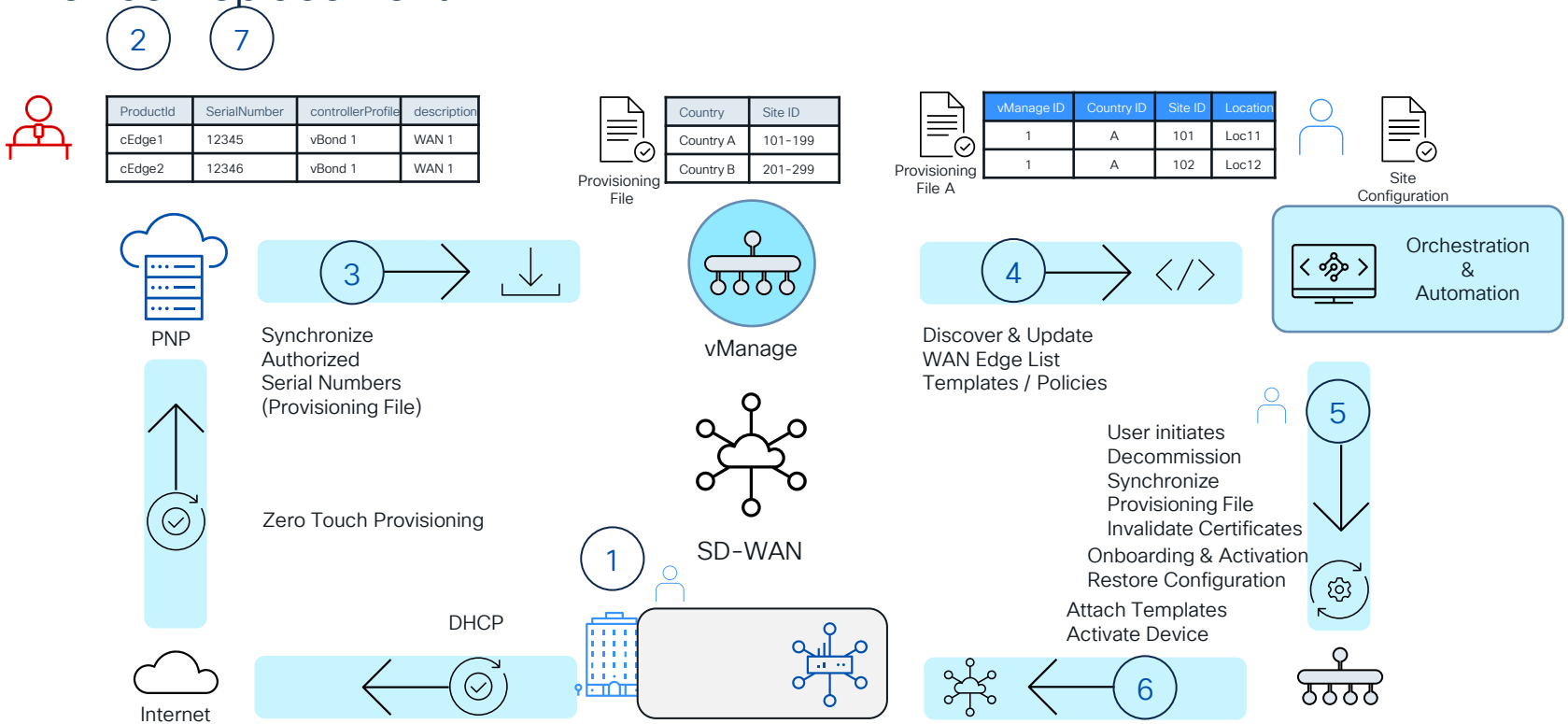
Operations

Device Replacement

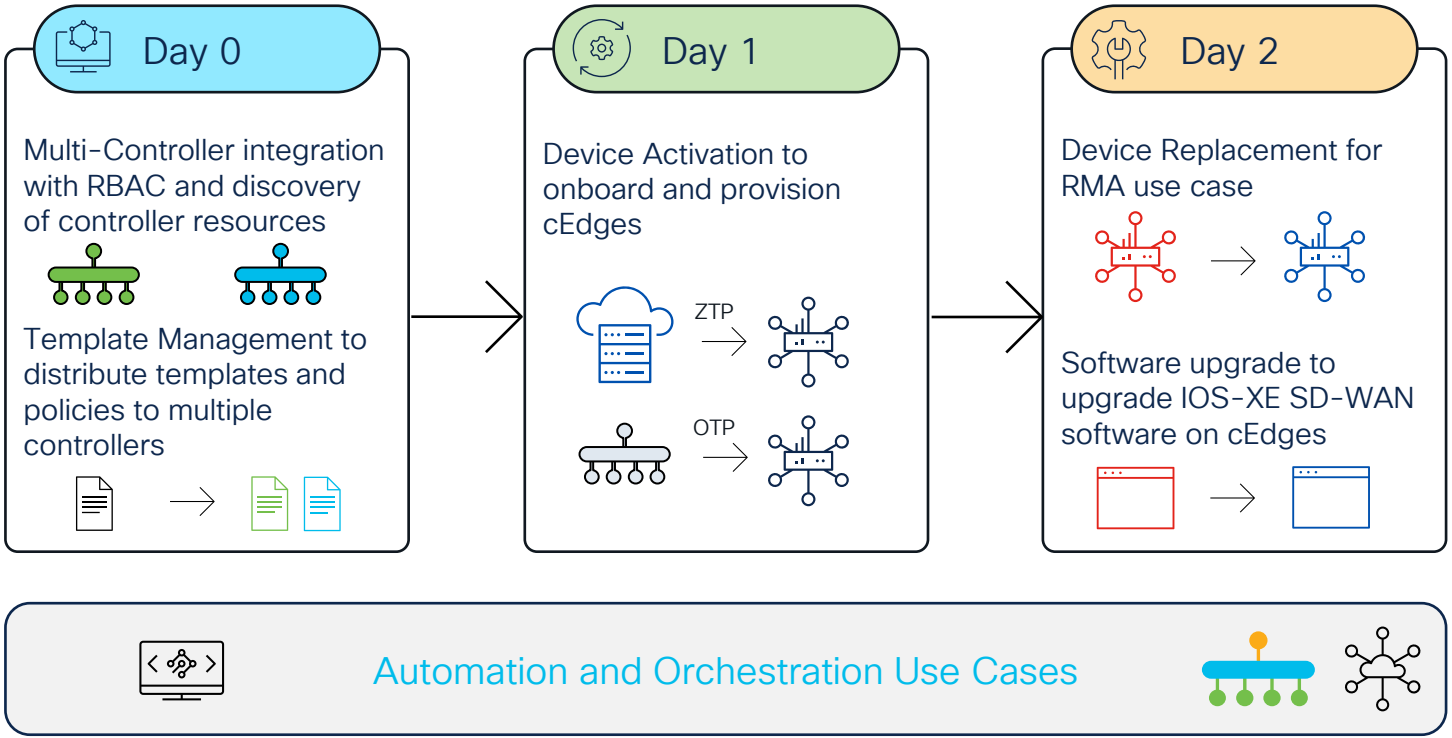


Operations

Device Replacement



Use Cases

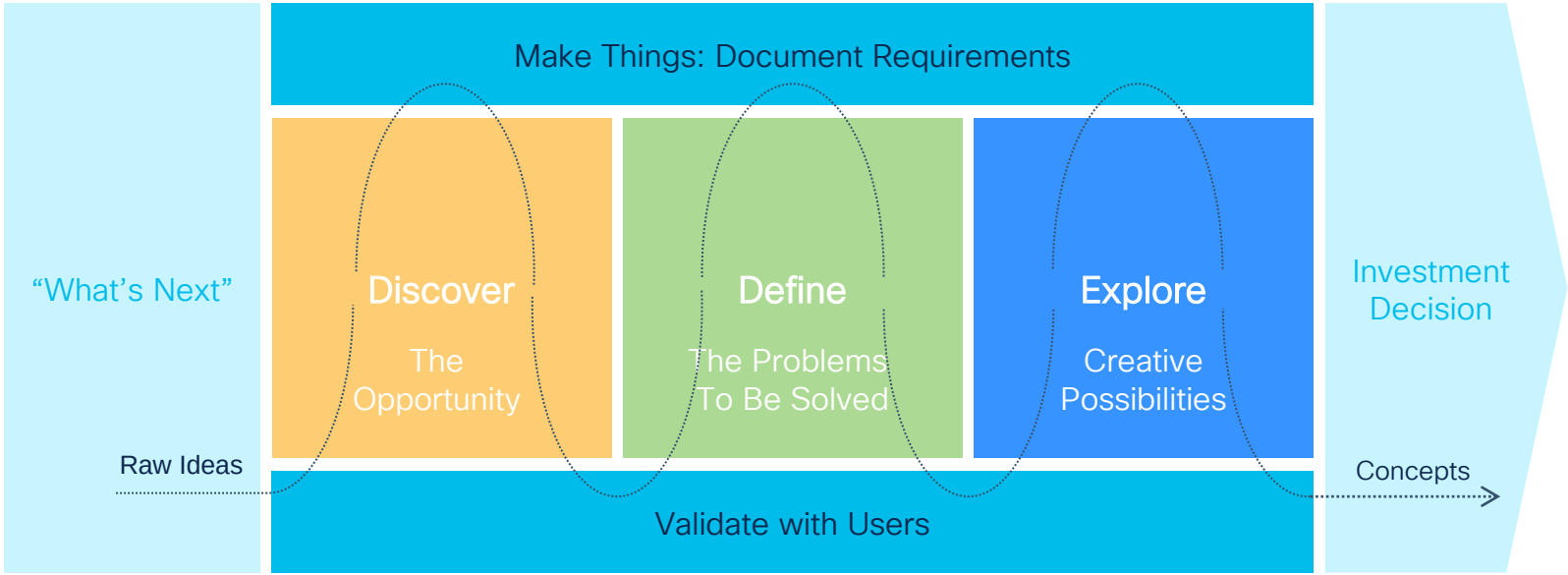


Summary and Key Takeaways

- Leveraging controller enabled network programmability can reduce time to rollout new technology using automation
- Identify challenges and define solution approach to transition to new architecture faster and seamlessly
- CX services can help in orchestrating network capabilities spanning multiple domains to achieve end-to-end workflow automation
- CX developed SD-WAN deployment use cases can be reused by CX led delivery to improving efficiency and consistency

References

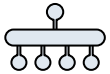
Process and Methodology



Source: Cisco Design Thinking Framework
https://developer.cisco.com/site/designthinking/

Glossary and Legend


SD-WAN


vManage Controller


WAN Router


SD-WAN WAN Edge


Automation & Orchestration Platform


Layer 3 Switch


Cisco Plug and Play


Template/Policy

MPLS


Provisioning File


Admin User


Internet

Glossary and Legend

vSmart Controller

vBond Controller

Glossary and Legend

Abbreviation	Description
CX	Cisco Customer Experience
PNP	Cisco Network Plug and Play
DC	Data Center
API	Application Programming Interface
AD	Active Directory
LDAP	Lightweight Directory Access Protocol
DHCP	Dynamic Host Configuration Protocol
MPLS	Multiprotocol Label Switching

Abbreviation	Description
SD-WAN	Software-defined Wide Area Network
SDN	Software-defined Networking
SA	Smart Account
VA	Virtual Account
RBAC	Role Based Access Control
IOS	Internetworking Operating System
ID	Identifier
RMA	Return Material Authorization

Glossary and Legend

Abbreviation	Description
AI	Artificial Intelligence
ML	Machine Learning
MR	Machine Reasoning
IBN	Intent-based Networking
ZTP	Zero Touch Provisioning
OTP	One Touch Provisioning
UI	User Interface
UX	User Experience

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Wednesday June 7
1:00PM

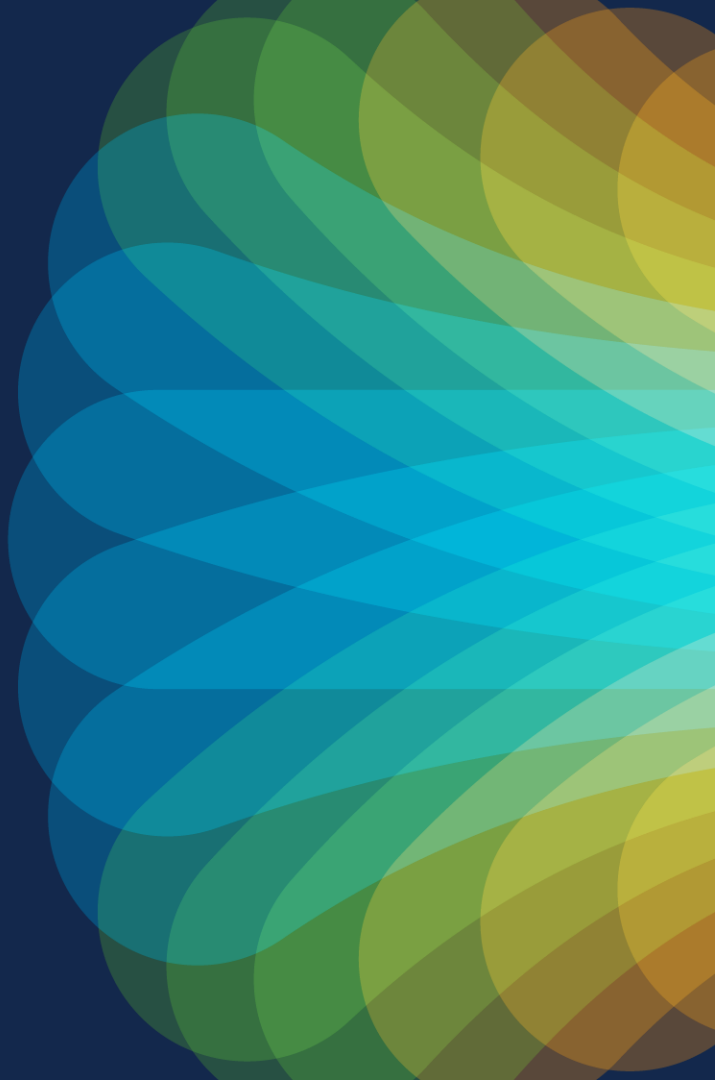
BRKATO-2102 Accelerate Time to Value through Automation across IT Technologies

Wednesday June 6
10:30AM

BRKATO-1003 Automated and Simplified network operator experience for managing multi-vendor network with Cisco and 3rd Party domain controllers

The bridge to possible

Thank you



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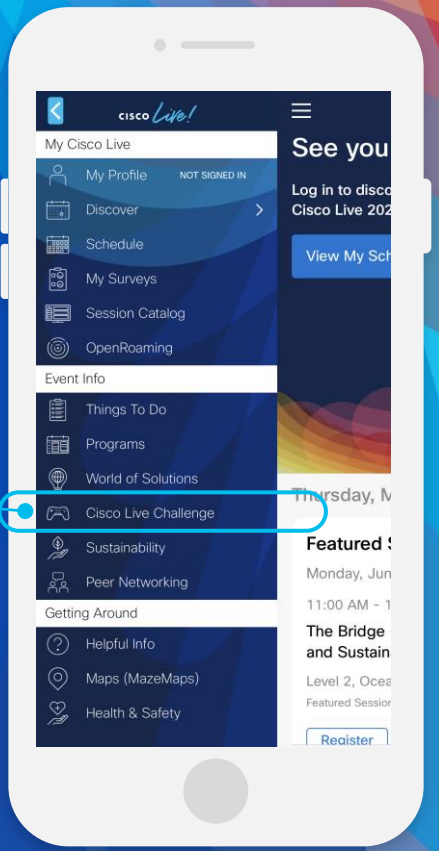


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