



咨询专家 Ask the Expert

思科SD-WAN (Viptela) 常见
问题定位和故障排除

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This session is for you if you:

- You are deploying Cisco SD-WAN Solution
- You already have deployed Cisco SD-WAN Solution
- You want to understand more about Cisco-SDWAN troubleshooting tools

What you will learn today to help you on your Cisco SD-WAN journey

How can you get more value from Cisco SD-WAN?

- Cisco SD-WAN
Architecture Overview

- Day 0 Troubleshooting
SD-WAN Tools

- Troubleshooting Control
Connections
Tools and CLI

- Demo

- Day N Troubleshooting
SD-WAN Tools

- Demo

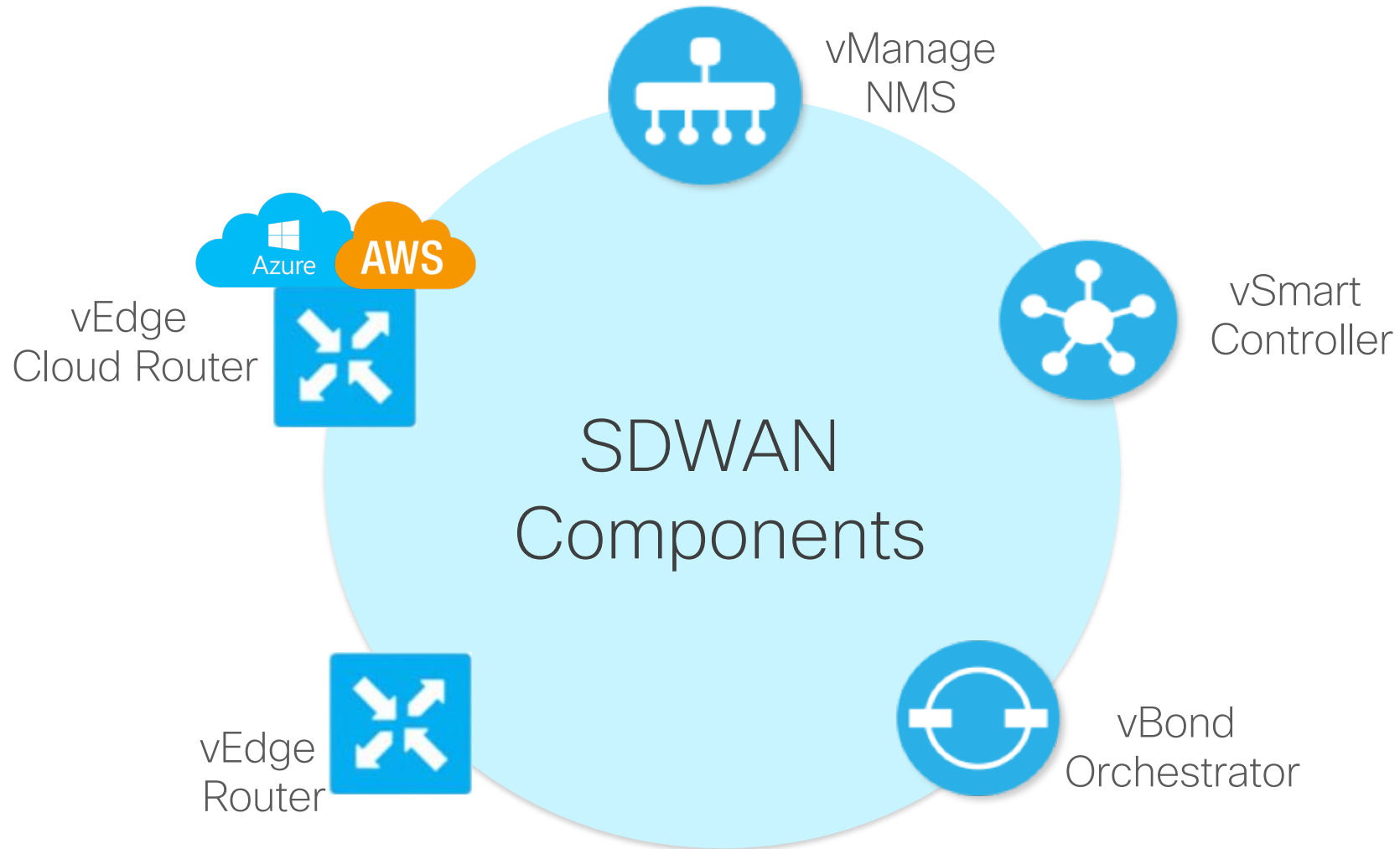
- System Maintenance
SD-WAN Tools



SD-WAN Architecture

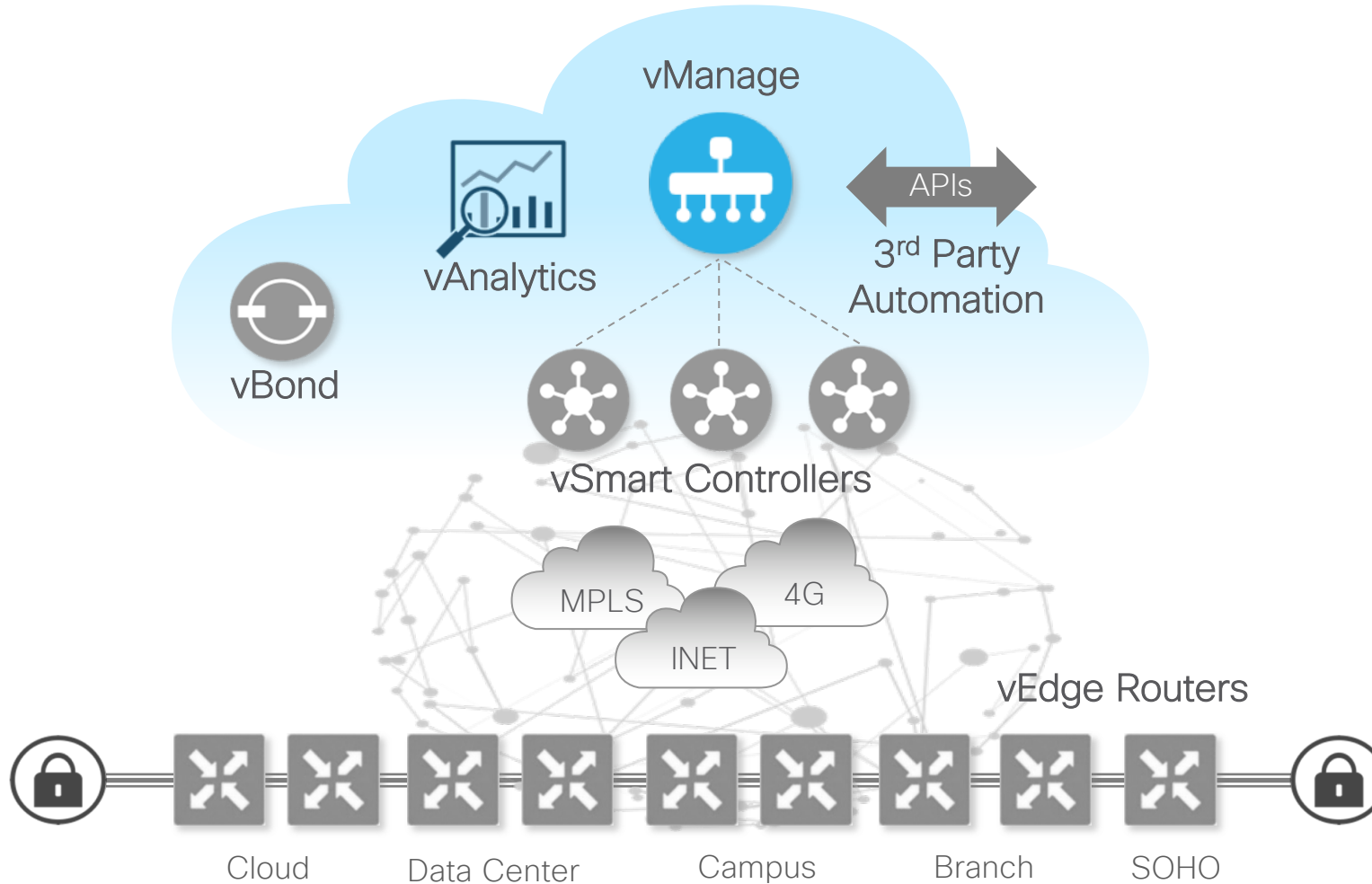


SDWAN Components Overview



Cisco SD-WAN vManage

Management Plane



Management Plane

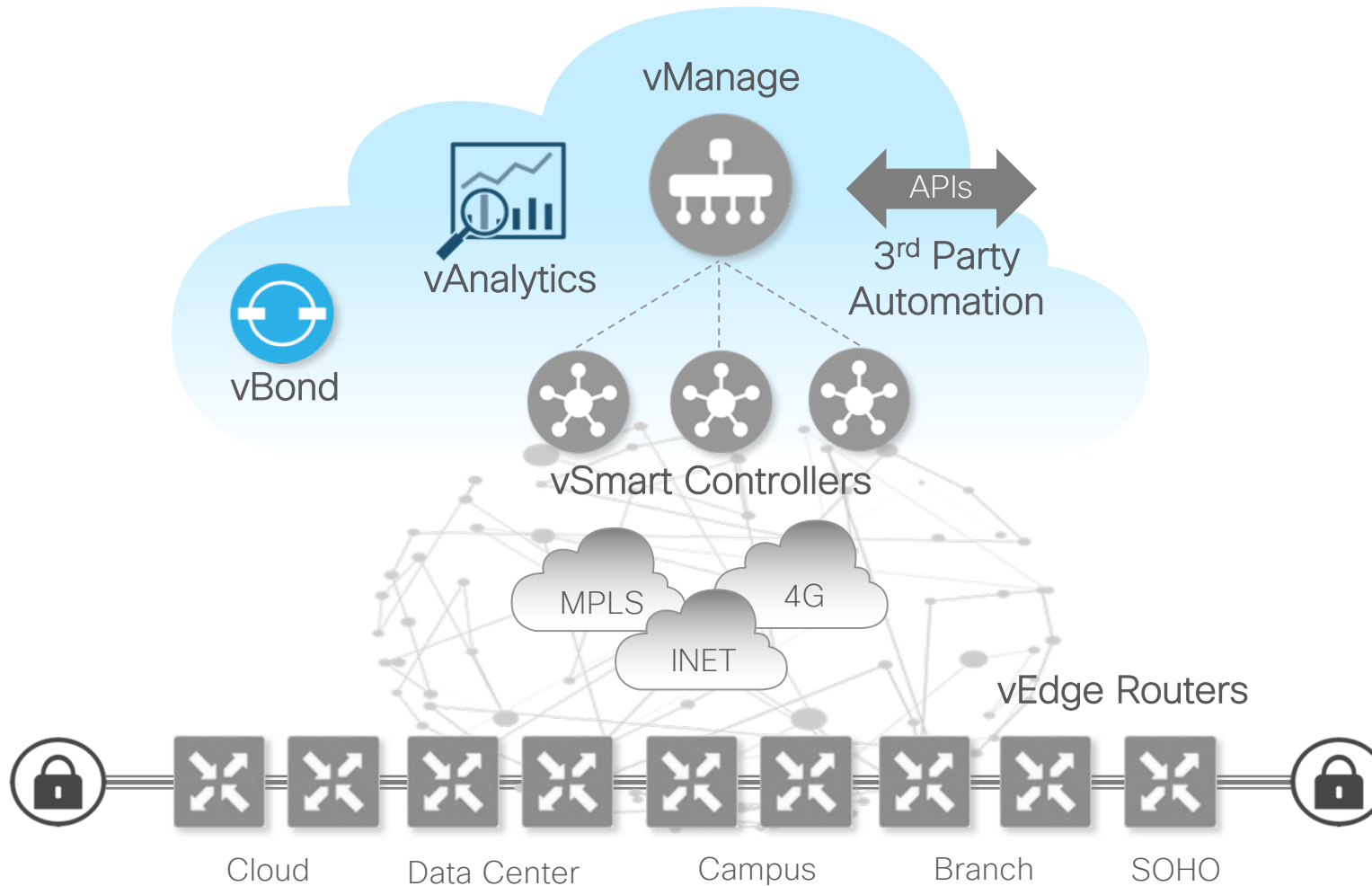


Cisco vManage

- Single pane of glass
- Policies and Templates
- Troubleshooting and Monitoring
- Programmatic interfaces

Cisco SD-WAN vBond

Orchestration Plane



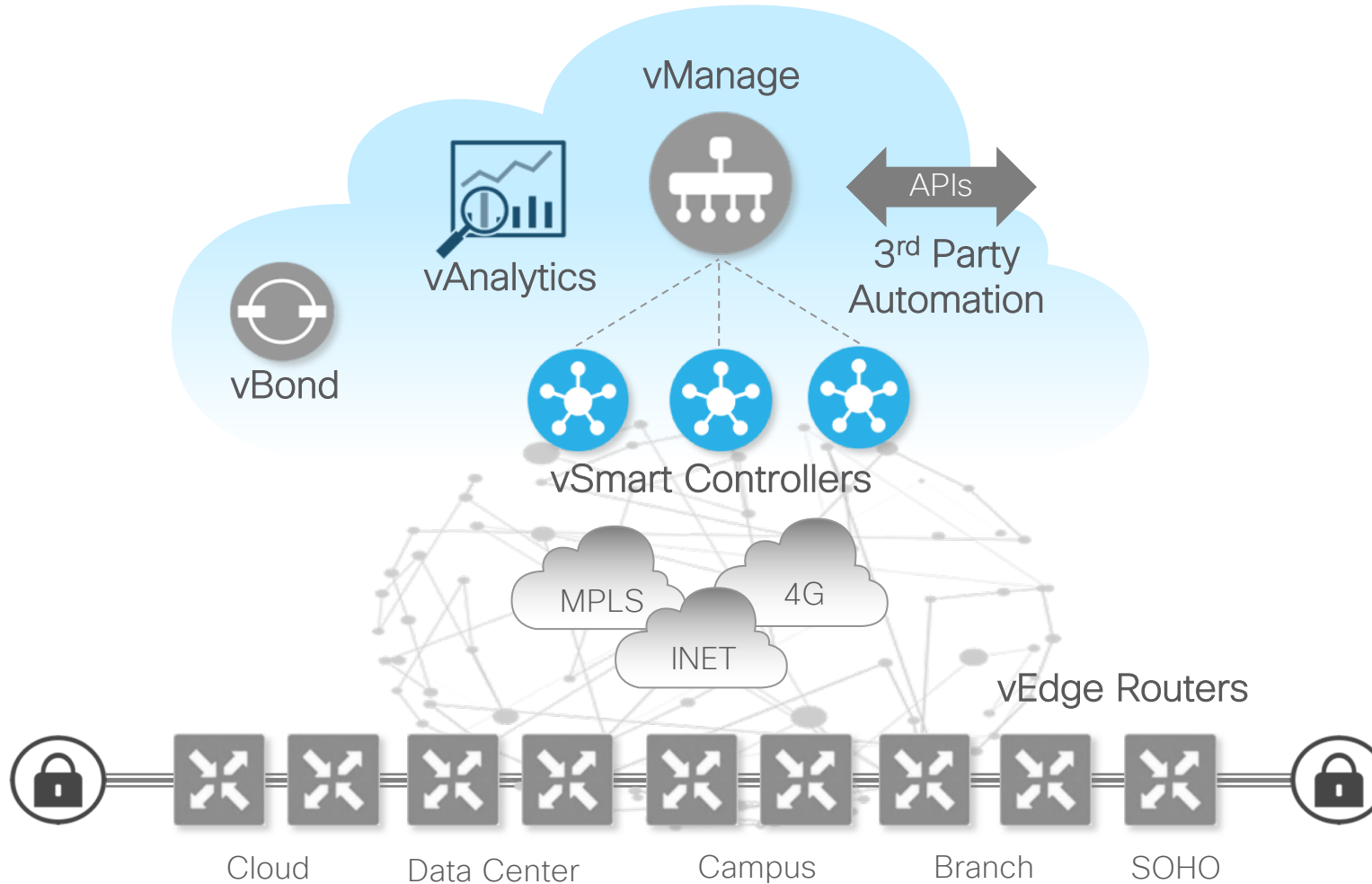
Orchestration Plane



- Orchestrates Connectivity
- First point of authentication (white-list model)
- Facilitates NAT traversal

Cisco SD-WAN vSmart

Control Plane



Control Plane

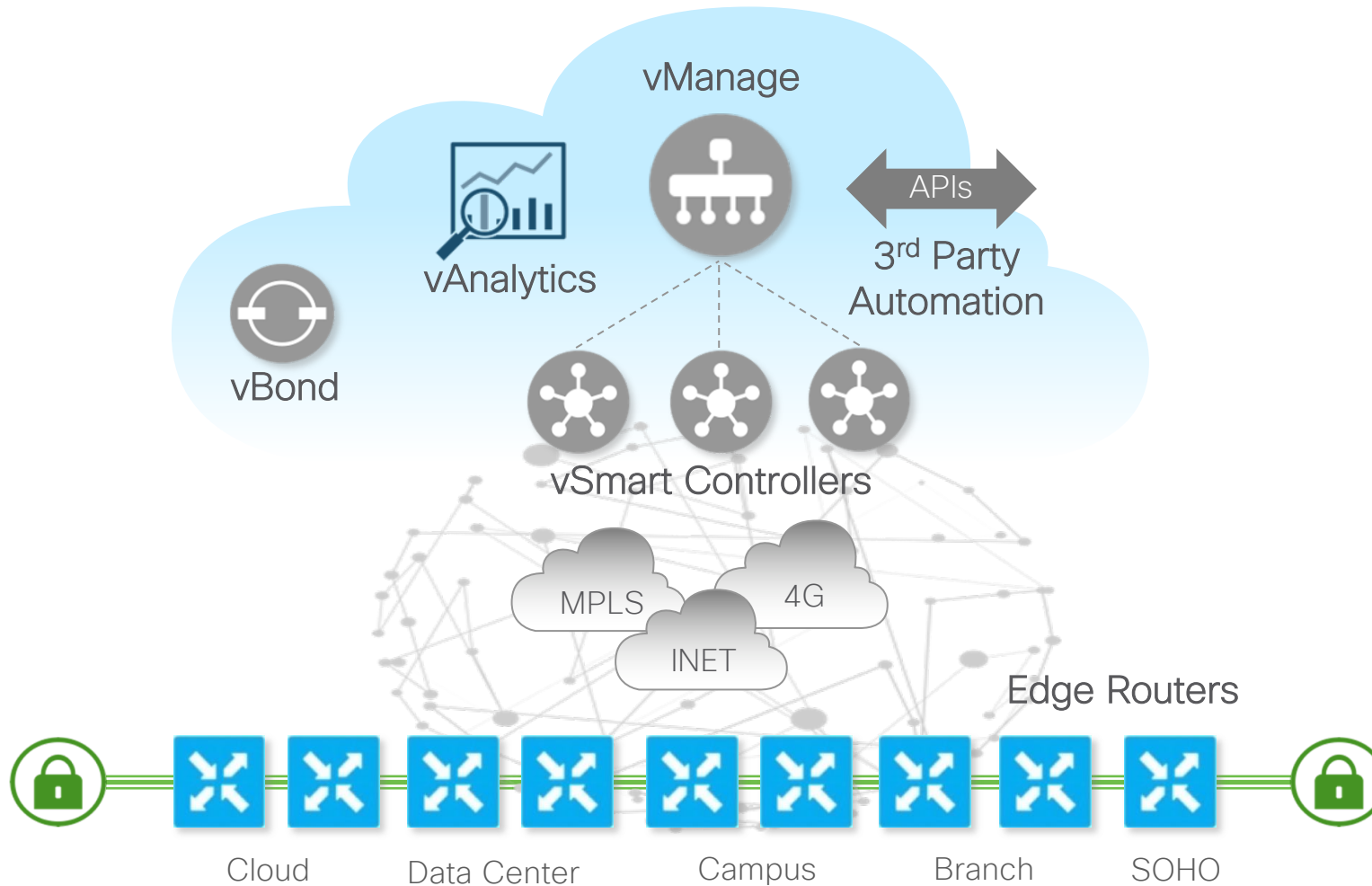


Cisco vSmart

- Handles all the Overlay-network routing
- Facilitates the DP encryption between vEdges
- Propagates the policies for handling DP traffic

Cisco SD-WAN Edge

Data Plane



Data Plane Physical/Virtual



Edge



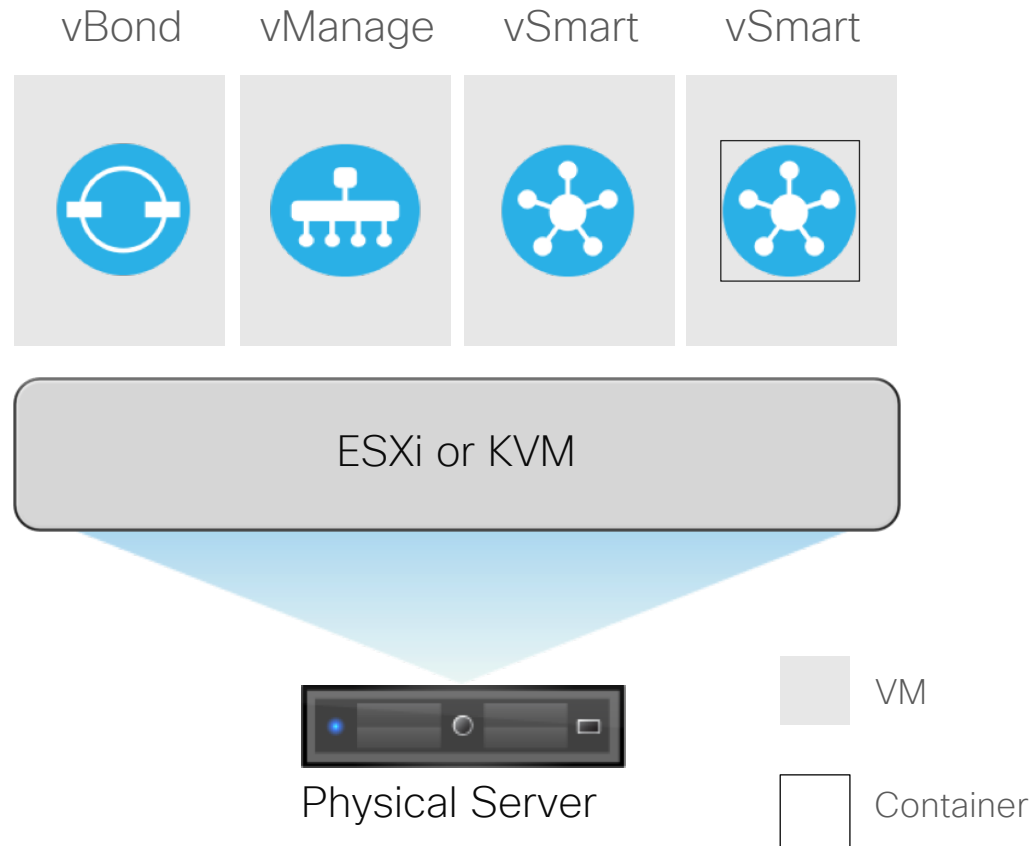
Edge Cloud

- WAN edge router
- Provides secure data plane with remote Edge routers
- Implements data plane and application aware routing policies

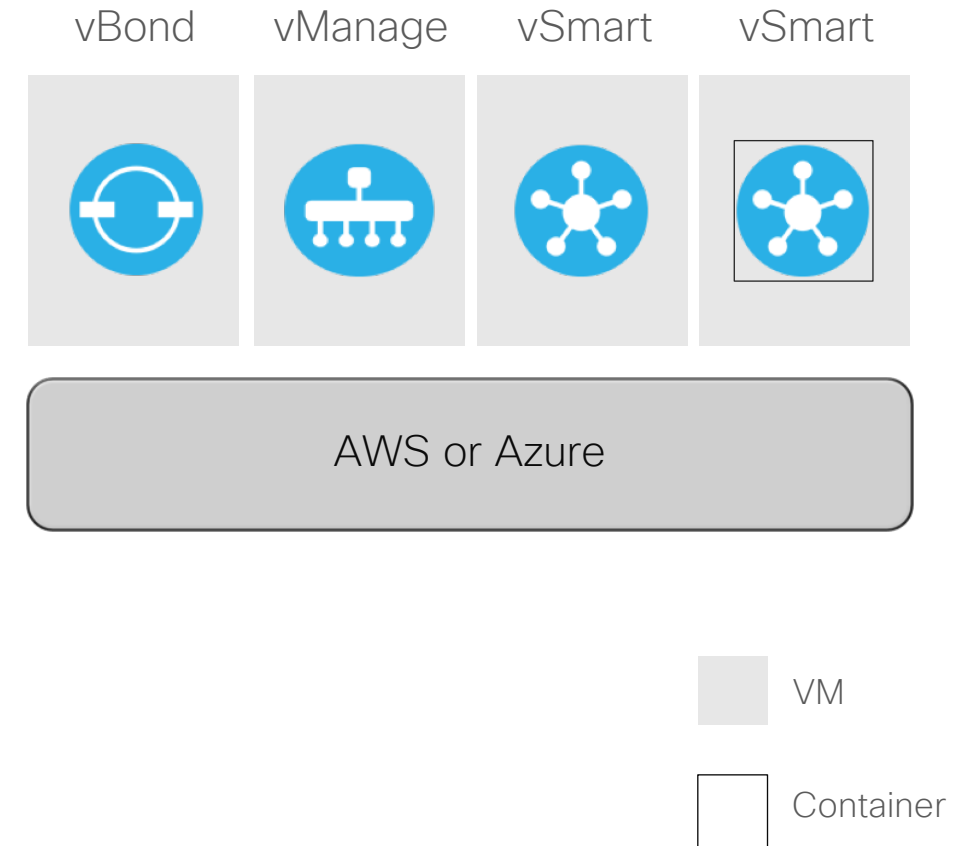
Controllers

Deployment Methodology

On-Premise



Hosted

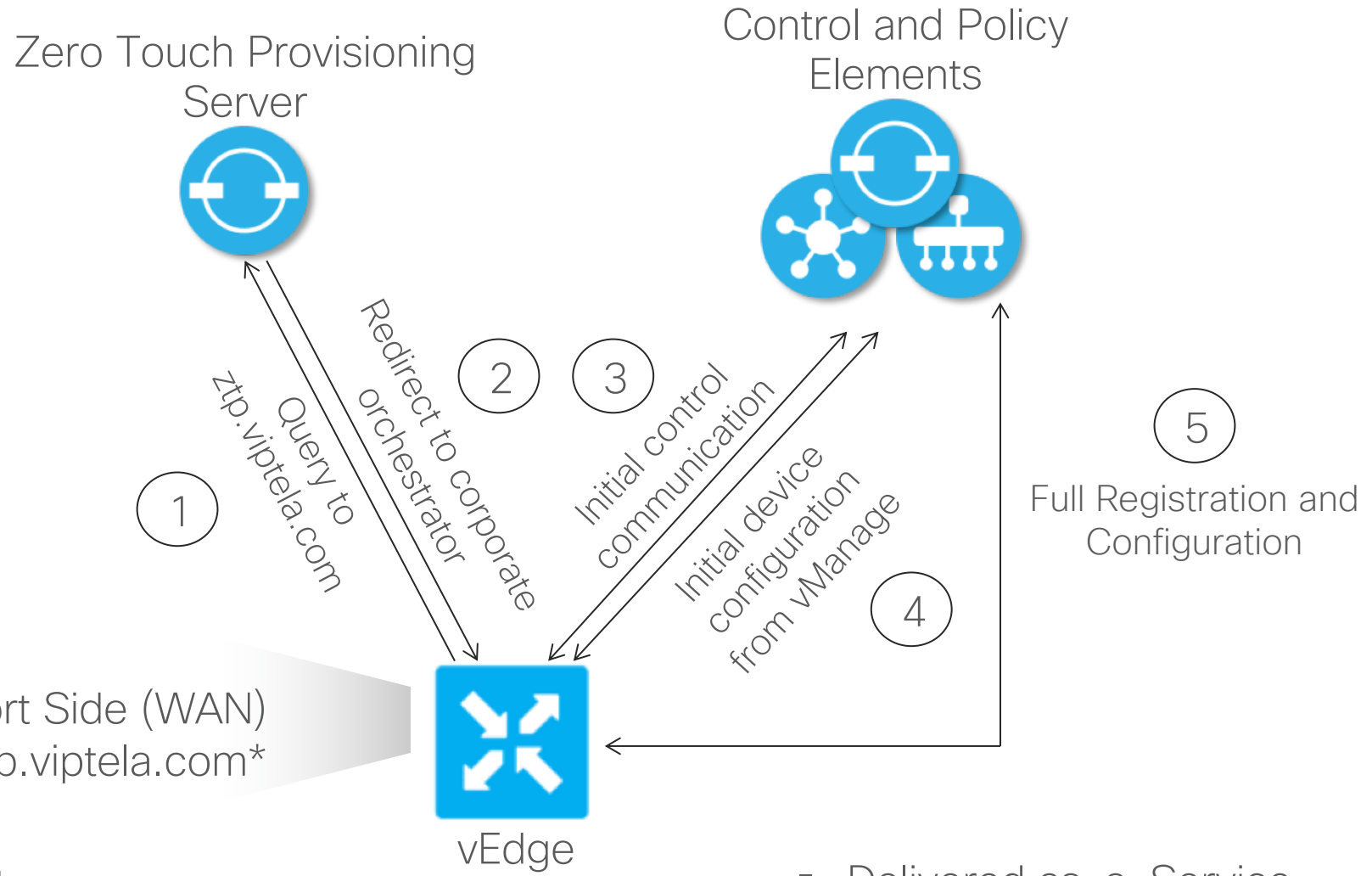


Day 0

Troubleshooting



Zero Touch Provisioning – vEdge Appliance



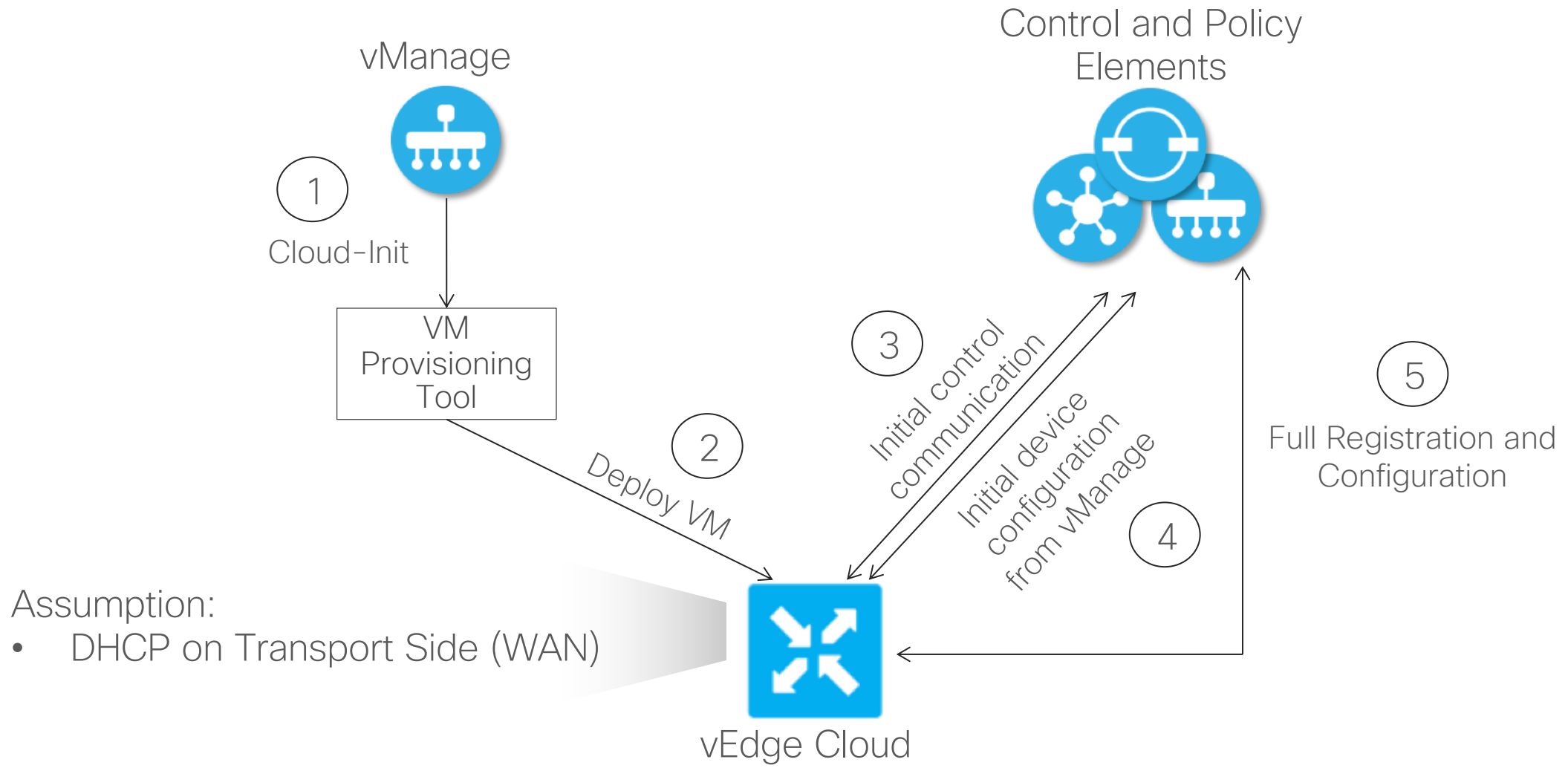
Assumption:

- DHCP on Transport Side (WAN)
- DNS to resolve ztp.viptela.com*

* Factory default config

■ Delivered as-a-Service

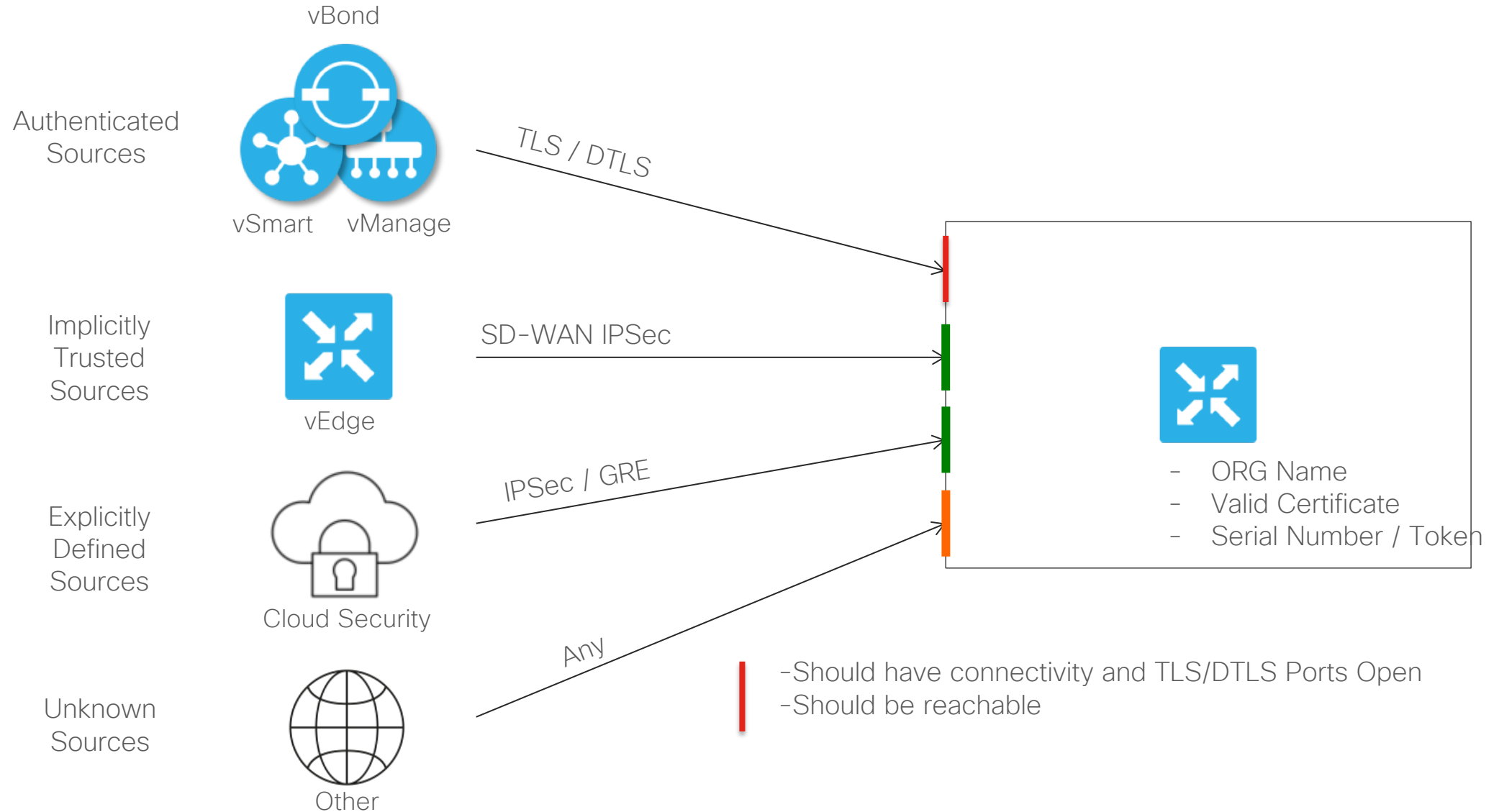
Zero Touch Provisioning – vEdge Cloud



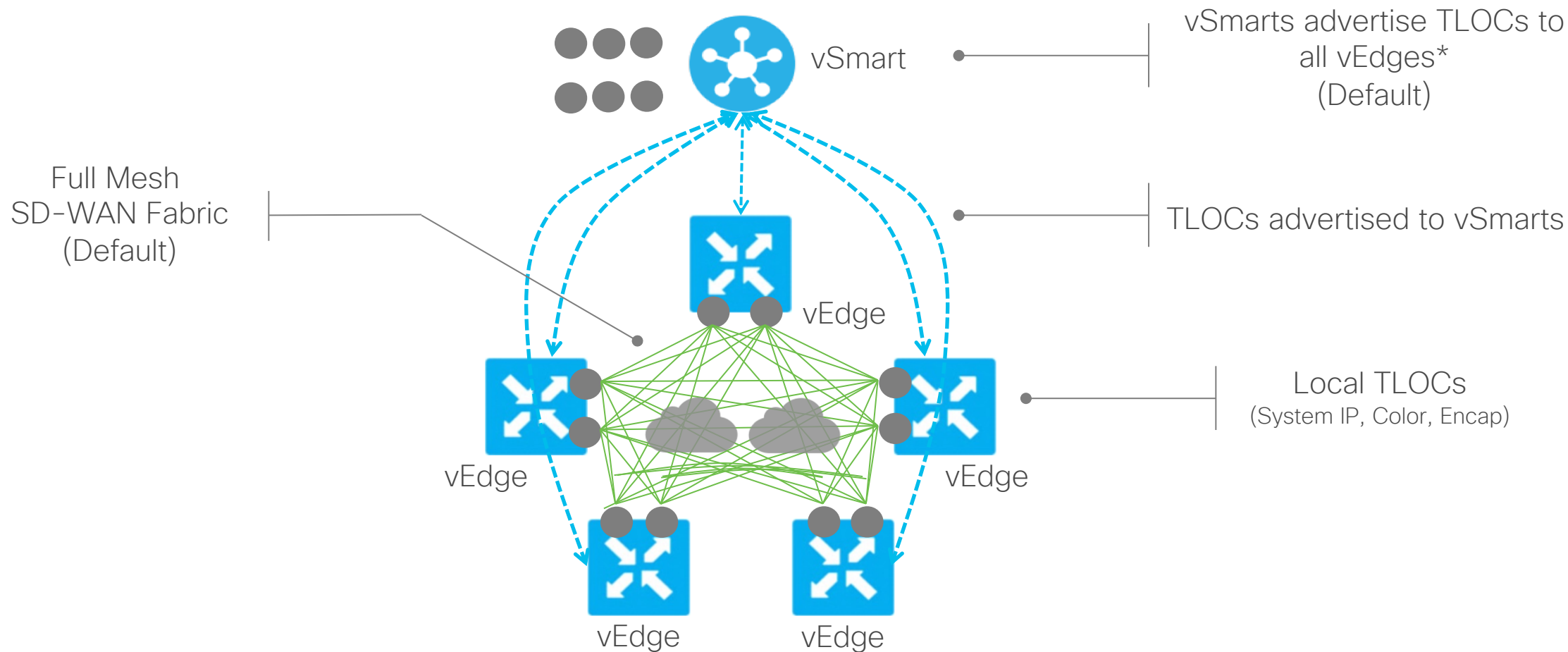
Troubleshooting Control Connections



Connections



Transport Locators (TLOCs)



* Can be influenced by the control policies

● Transport Locator (TLOC) — OMP — IPSec Tunnel

Possible Causes for Day 0 TSHOOT

Connectivity issues

- Connectivity issues
- DTLS Connection Failure
- TLOC Disabled
- Transient Conditions

Certificate Issues

- No License/Serial number(s) not present
- Certificate revoked/invalidated
- Certificate Verification Failed
- Org. Name Mismatch

TSHOOT Tools

- Control Connections
- Control Connections per device
- BFD Sessions
- OMP Summary
- OMP Peer Detail
- Device Bring UP
- Check over CLI

Demo : Day 0 Troubleshooting

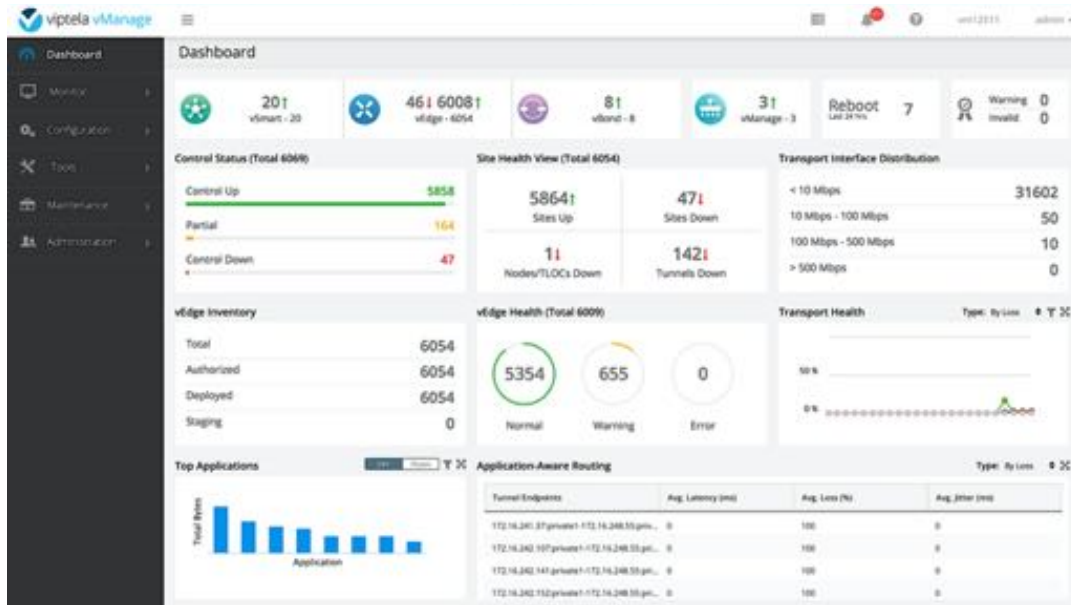
An abstract graphic consisting of two concentric white circles on a blue background. A thick white arc connects the two circles on the right side. Three colored dots (dark blue, green, and orange) are placed along this arc. A large blue semi-circle is on the right side of the slide.

Day N Troubleshooting

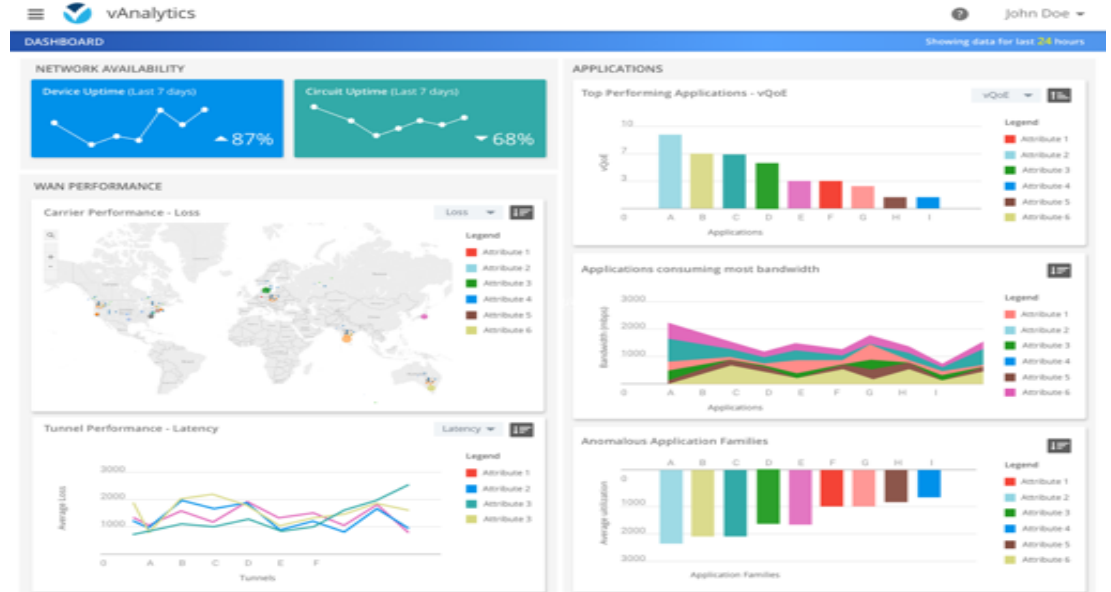


Simplified Management

Single Pane Of Glass Operations



Rich Analytics



Power Tools



REST



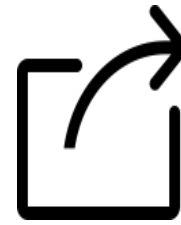
NETCONF



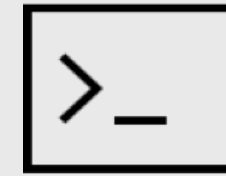
Syslog



SNMP



Flow Export

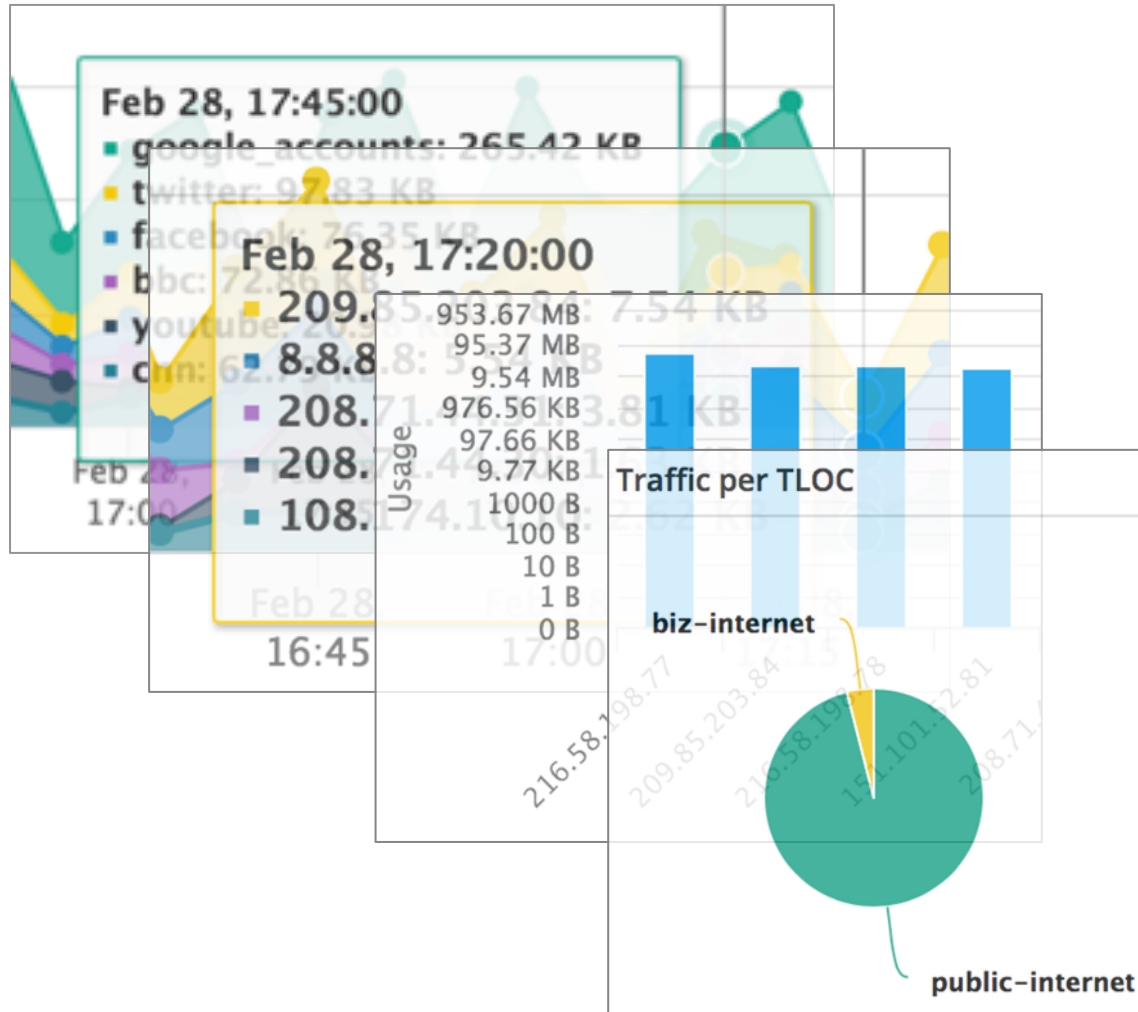


CLI



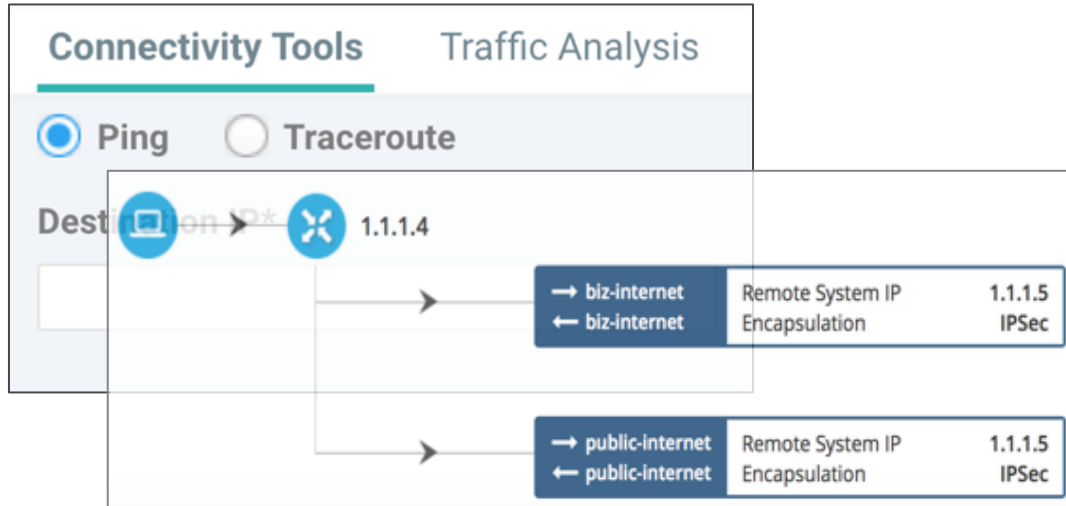
Linux Shell

Application and Flow Visibility



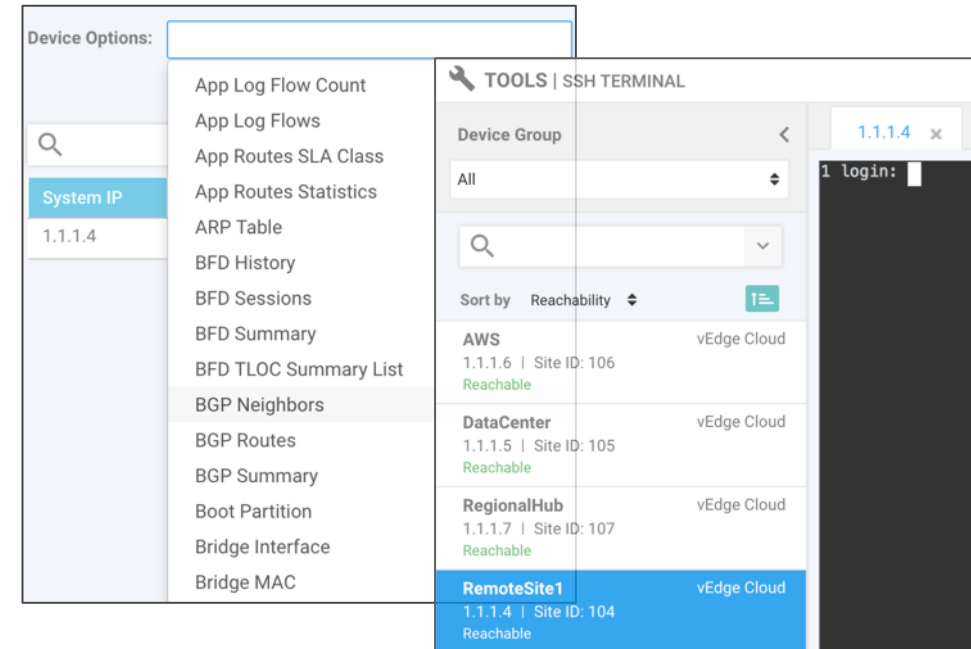
- Application and flow visibility for each vEdge router
 - DPI needs to be enabled for application visibility
 - Flow data can be exported from vEdge to external collector
- Realtime views or custom timeline views granularity
- Views can be zoomed into

Troubleshooting



Basic connectivity troubleshooting with ping and traceroute from any vEdge in the topology to any destination

Advance troubleshooting with real-time queries against vEdge routers



Expert troubleshooting with full featured CLI and Linux bash shell

Traffic analysis with synthetic traffic generation to test policies

An abstract graphic consisting of two concentric white circles on an orange background. A thick white arc connects the two circles on the right side. Three colored dots (dark blue, light blue, and green) are placed along this arc. The text "Demo: Day N Troubleshooting" is written in white, sans-serif font across the center of the circles.

Demo: Day N Troubleshooting

System Maintenance



Role Based Access Control (RBAC)

The screenshot displays a network device configuration interface with three overlapping windows:

- Add User Window:** Contains fields for Full Name (John), Username (Doe), Password (masked with dots), and Confirm Password (masked with dots).
- Add User Group Window:** Shows a dropdown menu for User Groups with options: basic, netadmin, and operator. The 'Operators' group is selected in the input field.
- Permissions Table:** A table with columns for Feature, Read, and Write permissions.

Feature↑	<input type="checkbox"/> Read	<input type="checkbox"/> Write
Alarms	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Audit Log	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Certificates	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Enforce segregation of administrative responsibilities

Create user groups to control access to the GUI elements

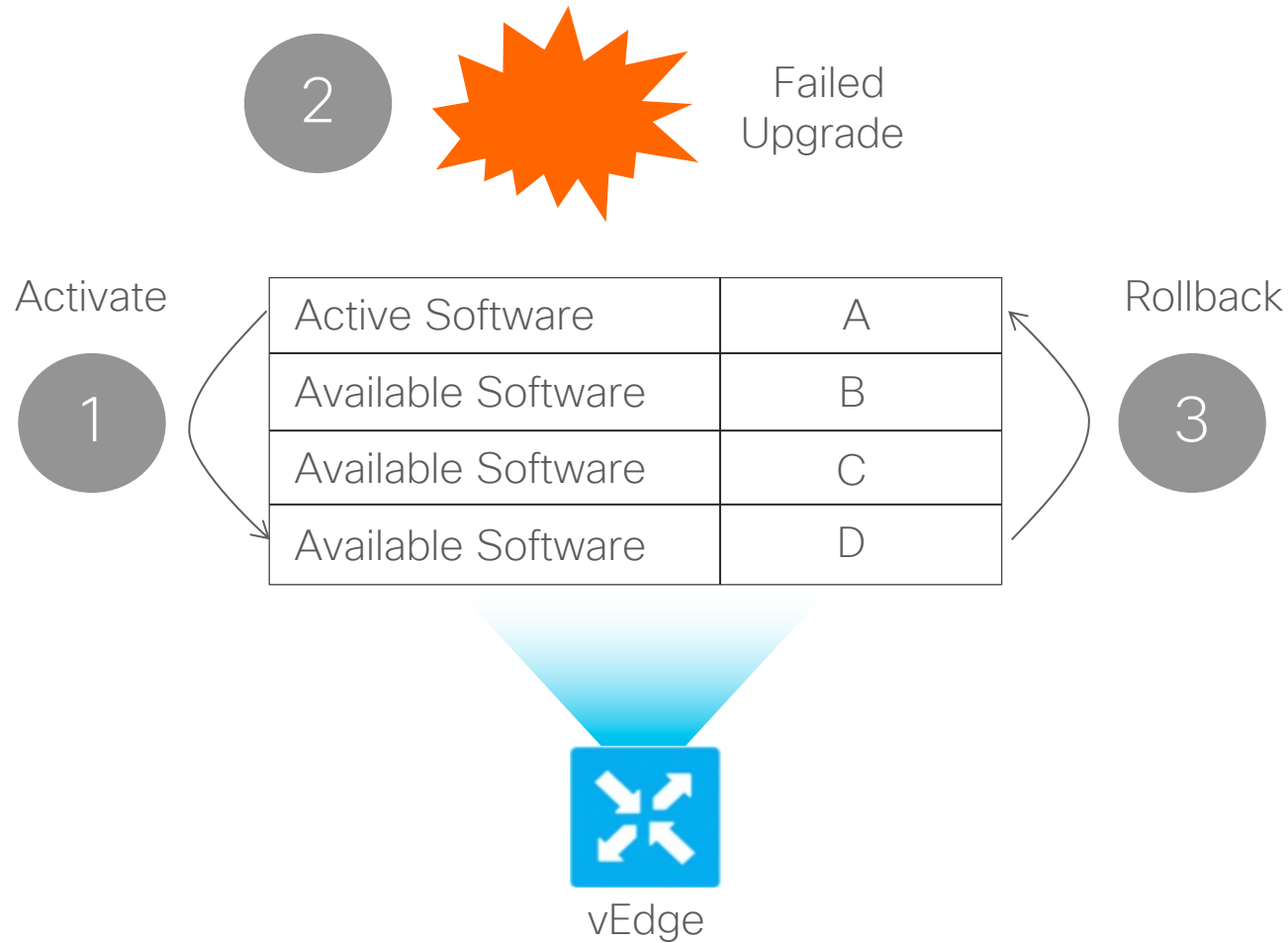
Assign read and write permissions

Create local user repository or link to centralized LDAP/AD

Map users into the user groups

Users can belong to multiple user groups

Centralized Software Upgrades



All software upgrades are performed centrally from vManage

One or two stage upgrade

- Load software and reboot now
- Load software and reboot later (Recommended)

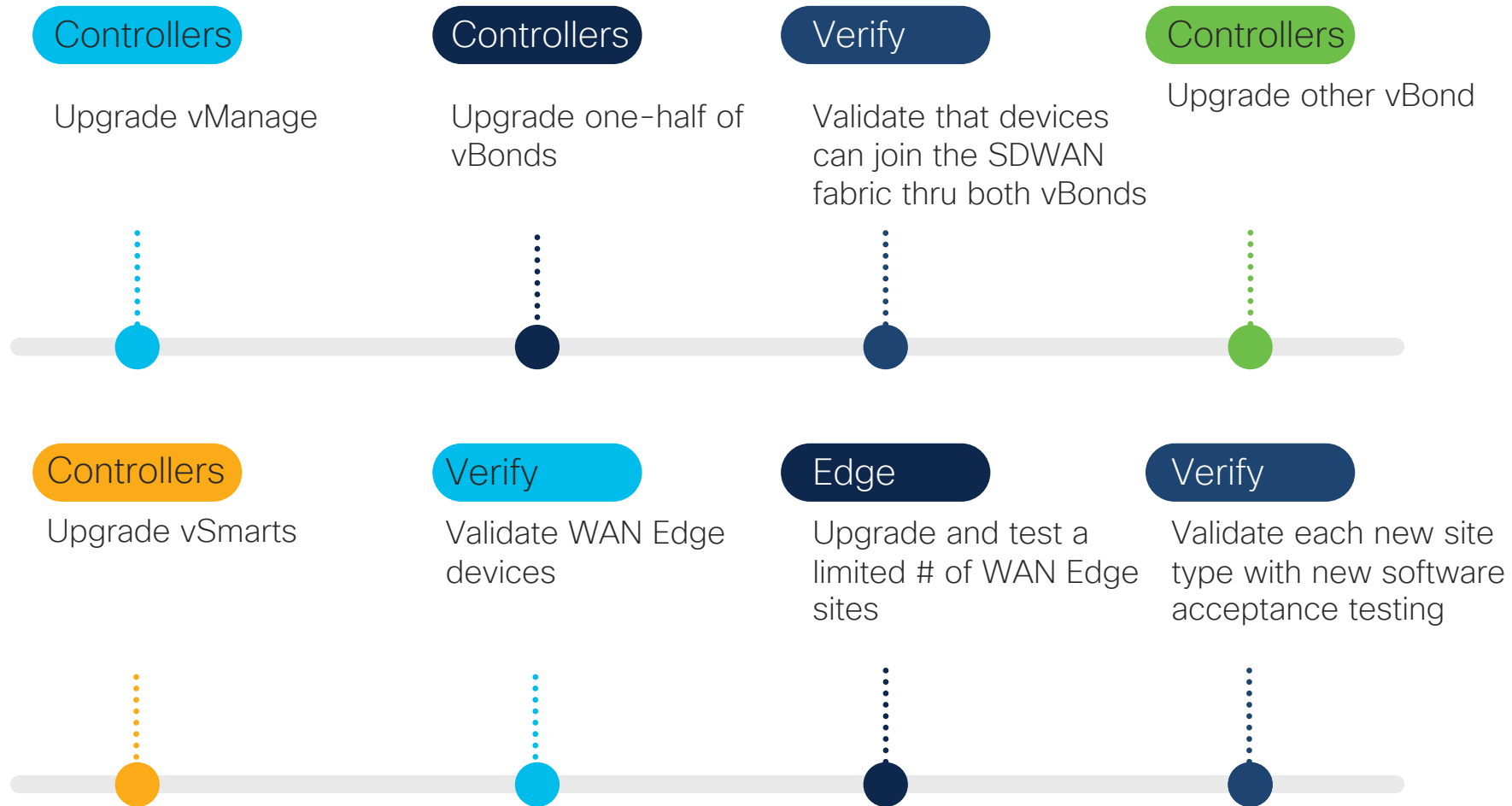
Self-healing on upgrade failure

- Device will revert to the last good image

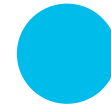
There is no requirement to run the same software version on all elements but highly recommended so you can take advantage of any new feature(s)

- Controllers should have higher software version than routers
- Read the Release Notes carefully to ensure you complete any prerequisites prior to upgrading
- Always check the software [SDWAN compatibility matrix](#)

SW Upgrade Workflow



Key Points to Remember



Understand the SD-WAN system architecture and component relationships



Basic configuration is accomplished on vManage and Edges



Multiple ways to manage and troubleshoot using the tools



Importance of Software Maintenance

Resources

[Customer Experience Services for SD-WAN](#)

[Cisco EN Validated Design and Deployment Guides](#)

[SD-WAN SD-WAN DevNet APIs](#)

[SD-WAN DevNet API Learning Lab](#)

[SDWAN compatibility matrix](#)

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