What's New in SDA - Explore the Innovations in Catalyst Center 3.x

LTRENS-2554

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Principal Engineer

Why This Session Matters

What's New in SDA – Explore the Innovations in Catalyst Center 3.x

Explore

Discover new capabilities at your own pace and see how Catalyst Center 3.x and SDA have evolved.

Catalyst Center 3.x

Get hands-on with the latest SDA and Catalyst Center innovations, features, and workflows introduced in the 3.x releases.

Configure and Validate

Actively configure new features and validate their behavior directly in a live SDA fabric—no slides, no simulations.

Safe environment

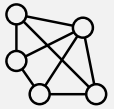
Work in a purpose-built, isolated lab designed for experimentation. Make changes freely without risk.

Apply Knowledge

Modify configurations, test scenarios, and apply what you already know—or just learned—to see real outcomes.

Session Level: **Intermediate**

Prerequisites**: Understanding of the SDA Architecture and configuration**



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Who are we?

Nathan Pan

CX Senior Technical Leader

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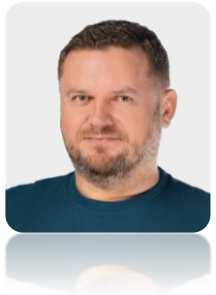
I am a **Senior Technical Leader at Customer Experience**, based in **North Carolina**, where I have spent my entire career in Cisco TAC.

I have been part of Cisco TAC since 2016, focusing on **Enterprise networking, Catalyst switching platforms, and software-defined networking solutions**.

My work gives me the opportunity to **mentor** the next generation of TAC engineers, **improve** our serviceability of Catalyst switching platforms, and **assist** customers resolve their most complex issues.

I graduated from Northern Arizona University.



Jaro Gawron

CX Principal Engineer

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I am a **Principal Engineer at Customer Experience**, based in **Kraków**, where I have spent my entire career since joining as one of the first hires in the local organization.

I have been part of Cisco TAC since 2012, focusing on **Enterprise networking, Catalyst switching platforms, and software-defined networking solutions**.

My work sits at the intersection of **engineering, operations, and customer problem resolution**, with a strong emphasis on making complex systems observable, debuggable, and resilient.

I graduated from Silesian University of Technology and hold a **CCIE in Enterprise Infrastructure & Service Provider**.

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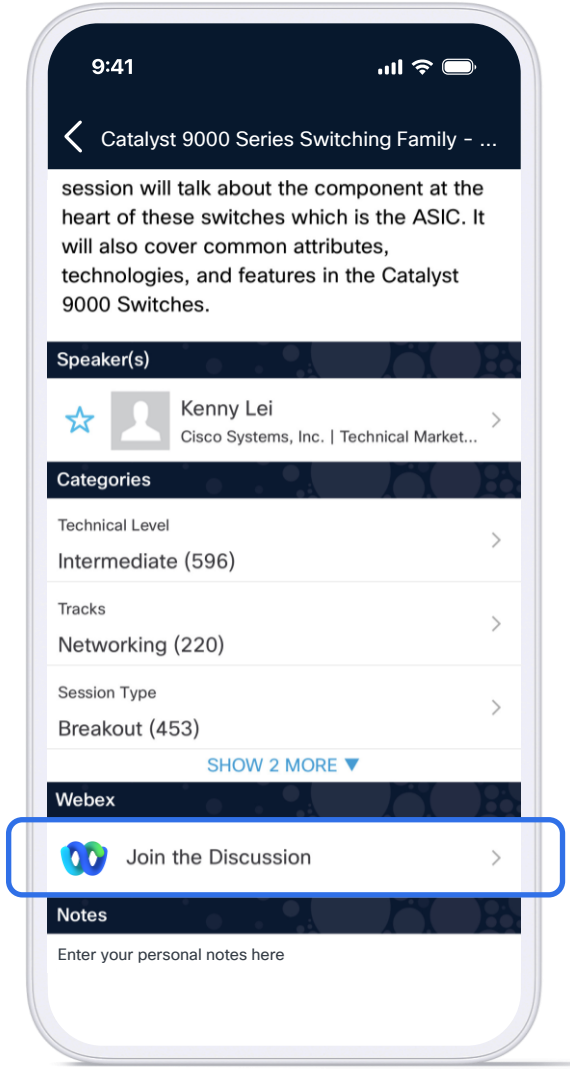


Agenda

01 Intro

02 Catalyst Center 3.X & SDA

03 Lab Environment

04 Lab Tasks Walkthrough

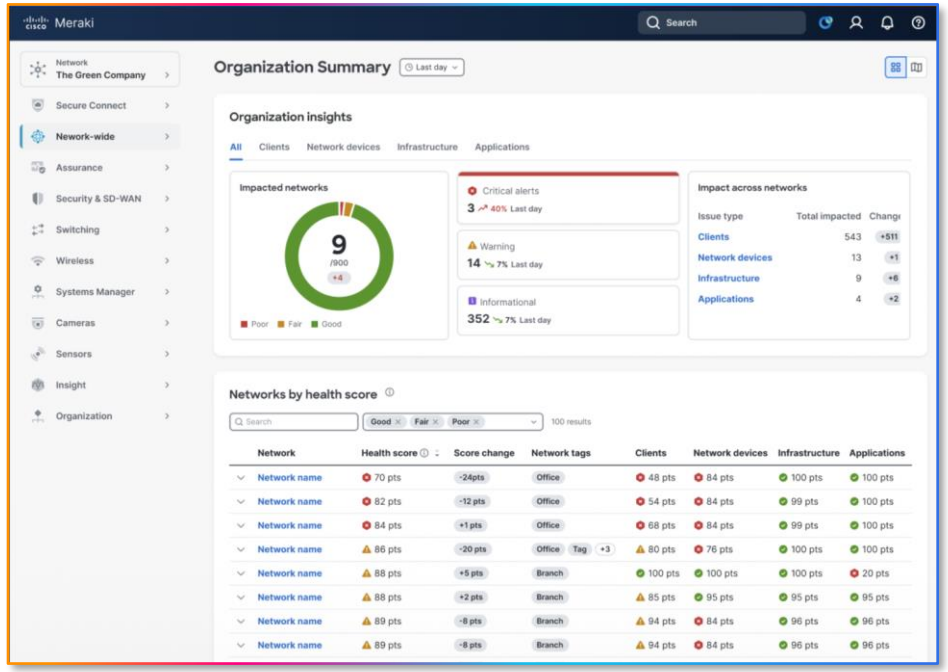
05 Lab time

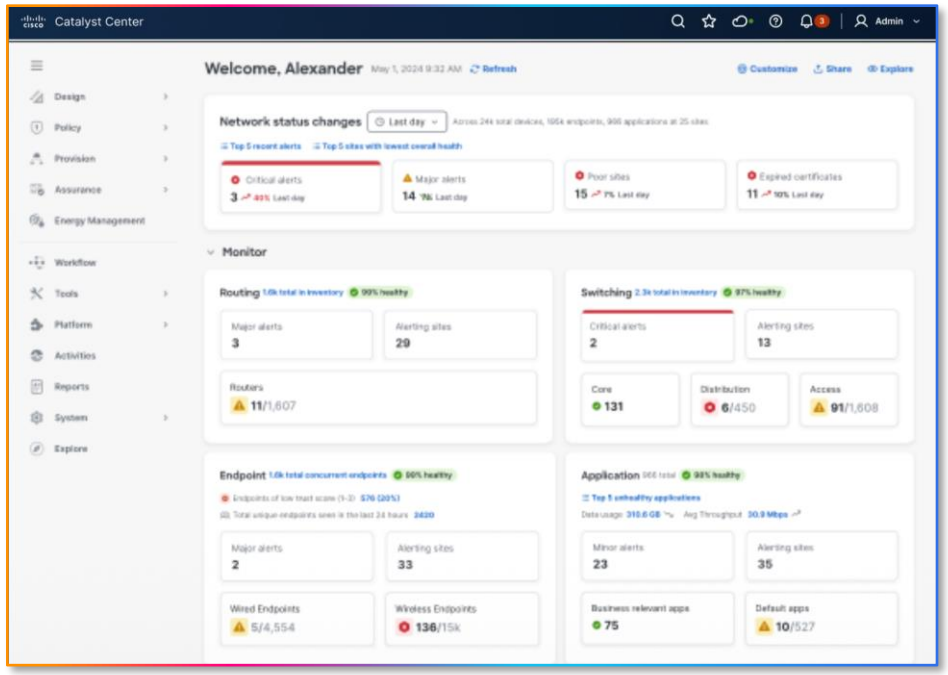
Catalyst Center 3.x

Catalyst Center 3.x

Magnetic GUI

Bringing together the power of **Catalyst** and simplicity of **Meraki**

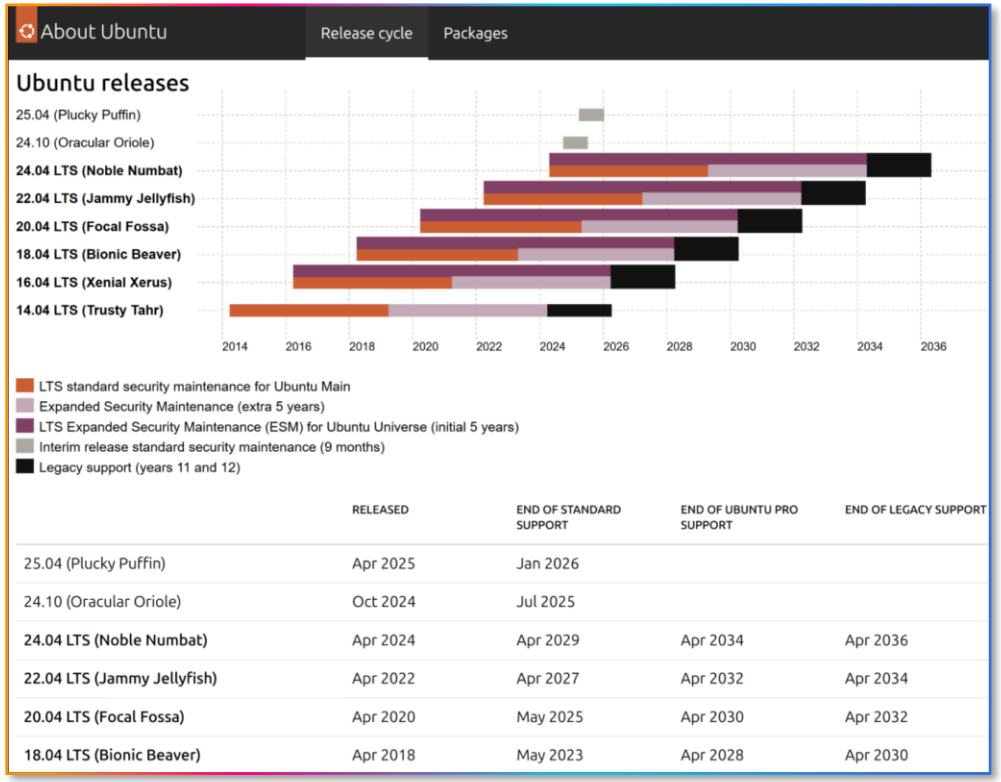




Catalyst Center 3.x

What's new under the hood

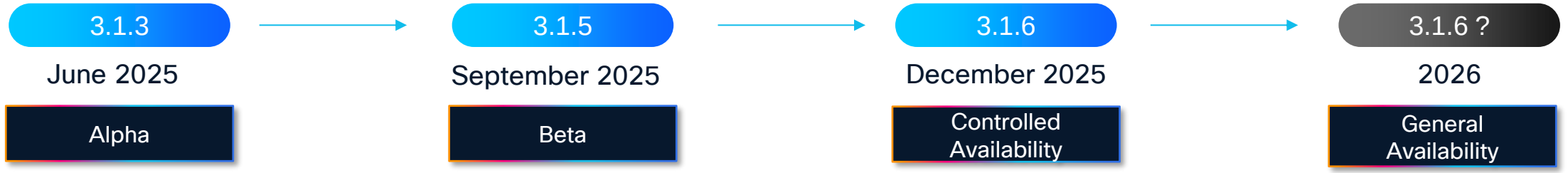
- New Linux (Ubuntu 22.04.5 LTS)
- New File system : XFS (prev ext4)
- NFS Backup Support
- Kubernetes: 1.29.10-cisco
- Kernel:5.15.0-72-generic



	RELEASED	END OF STANDARD SUPPORT	END OF UBUNTU PRO SUPPORT	END OF LEGACY SUPPORT
25.04 (Plucky Puffin)	Apr 2025	Jan 2026		
24.10 (Oracular Oriole)	Oct 2024	Jul 2025		
24.04 LTS (Noble Numbat)	Apr 2024	Apr 2029	Apr 2034	Apr 2036
22.04 LTS (Jammy Jellyfish)	Apr 2022	Apr 2027	Apr 2032	Apr 2034
20.04 LTS (Focal Fossa)	Apr 2020	May 2025	Apr 2030	Apr 2032
18.04 LTS (Bionic Beaver)	Apr 2018	May 2023	Apr 2028	Apr 2030

The biggest changes are within the internal architecture of the platform

Catalyst Center 3.x



- Private Preview,
- Early Field Trial
- Technical validation
- Identify Critical Issues
- Refine functionality

- Early Access
- Public Preview
- Usability & stability
- Build awareness
- Performance feedback

- First Customer Shipment
- Limited Availability
- Validate operational readiness
- Targeted customer segments, regions, markets or industries

- Full release, market adoption, feature complete
- Drive adoption, maximize market impact
- Sales , Marketing full-scale deployment
- Globally available

Lab is based on Catalyst Center 3.1.6-75205 (CA)

Lab Tasks Walkthrough

New SDA Features to explore

LISP Pub/Sub Migration

SDA 2.0 Migration workflow

Overlapping IP Pools

Enable identical IP address ranges across multiple VNs and fabric sites.

Custom Layer-2 Flooding

Fine-tune BUM traffic behavior for specialized use cases

Per-Border Ingress Steering

AS-path prepend for granular inbound traffic control

Site RBAC

Delegate administrative control at the site level

Silent Host Detection

Enhanced discovery mechanisms for endpoints with minimal traffic patterns

Resource Guard for SSDP

Protect network resources from discovery protocol overhead

7 Tasks

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Task 1:

LISP Pub/Sub Migration

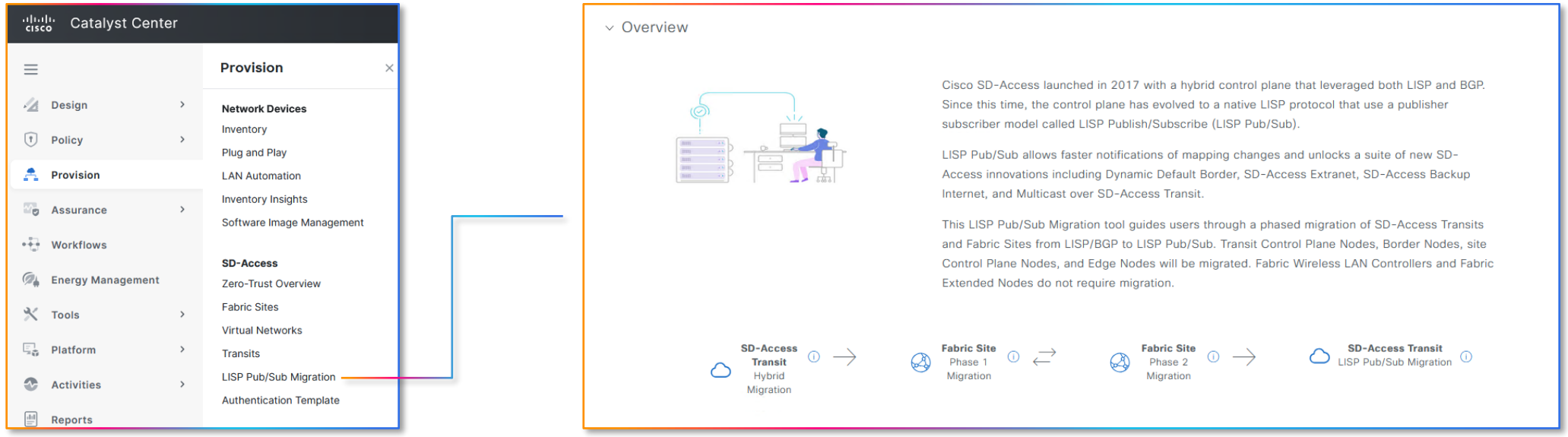
Troubleshooting physical and logical port failures, flaps, errors, and negotiation mismatches.

Use case:

Today if a user wants to migrate their Fabric Site from SDA 1.0 (LISP/BGP) to SDA 2.0 (LISP Pub/Sub) they have to remove all the devices from the fabric and then re-provision them as LISP/PubSub

Detail:

- Cisco Catalyst Center **3.1.3** offers a new LISP/BGP to LISP Pub/Sub migration workflow
- The workflow enforces a migration order of operation for complex routing scenarios such as MSRB or shared internet over SD-Access Transit.
- The migration workflow will modify the LISP configuration on Border Nodes (BN), Control Plane Nodes (CP), Edge Nodes (EN) and SD-Access Transit Control Plane Nodes (TC). Migration is not required for Fabric Extended Nodes and Fabric WLCs.



Task 1:

LISP Pub/Sub Migration

Troubleshooting physical and logical port failures, flaps, errors, and negotiation mismatches.

Fabric Sites transition through the following stages of migration:

1. **LISP/BGP** – Migration to LISP Pub/Sub has not started.
2. **Phase 1** – All Border and Control Plane nodes have started or completed migration. All BN and CP must migrate simultaneously.
3. **Phase 2** – Edge Nodes have commenced migration. One or multiple Edge Nodes can be migrated in a single migration task.
4. **LISP Pub/Sub** – All Edge Nodes have completed migration.

If present, SD-Access Transits transition through the following stages of migration:

1. **LISP/BGP** – Migration of the SD-Access Transit Control Plane Nodes (TC) has not commenced
2. **Hybrid** – All TCs have been transitioned to a hybrid state where they can serve concurrently both LISP/BGP and LISP Pub/Sub fabric sites.
3. **LISP Pub/Sub** – After all fabric sites have been migrated to LISP Pub/Sub, LISP/BGP has been removed from all TCs.

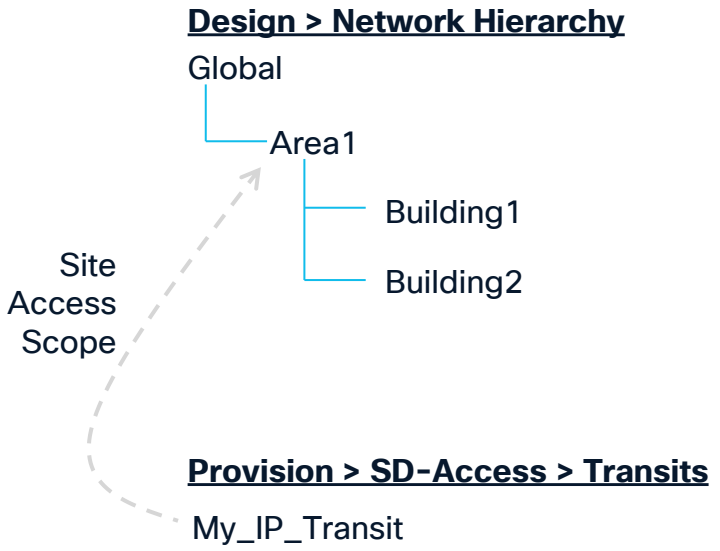
Task 2:

Site RBAC

Delegate administrative control at the site level

Use Case

- SRBAC is explained in the *What's New in Catalyst Center 3.1.3* release collateral. In short:
  1. The Catalyst Center administrator creates resource domains which are sites + roles
  2. Resource domains are assigned to Catalyst Center users
  3. Users can only access the roles and sites specified in their resource domain.
- Prior to 3.1.3 a transit is created but not assigned to a site during creation, the implicit site level was global.
- Catalyst Center users need a way to associate transits with a selected site hierarchy level to accomplish SRBAC e.g. an administrative user with access to only site1 should be able to attach a transit to a site1 Border Node.



Details

- Site access scope is set during transit creation. It associates a transit with a level in the network hierarchy:
  - IP transits can be attached to Border Nodes at or below the site access scope.
  - SD-Access transits can also be attached to Border Nodes below the site access scope.
- Site access scope is used to determine RBAC visibility and configuration permissions.
- By default, site access scope is set to Global level of the network hierarchy and can be optionally changed to a different level

Considerations

- None.

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Task 3:

Silent Host Detection

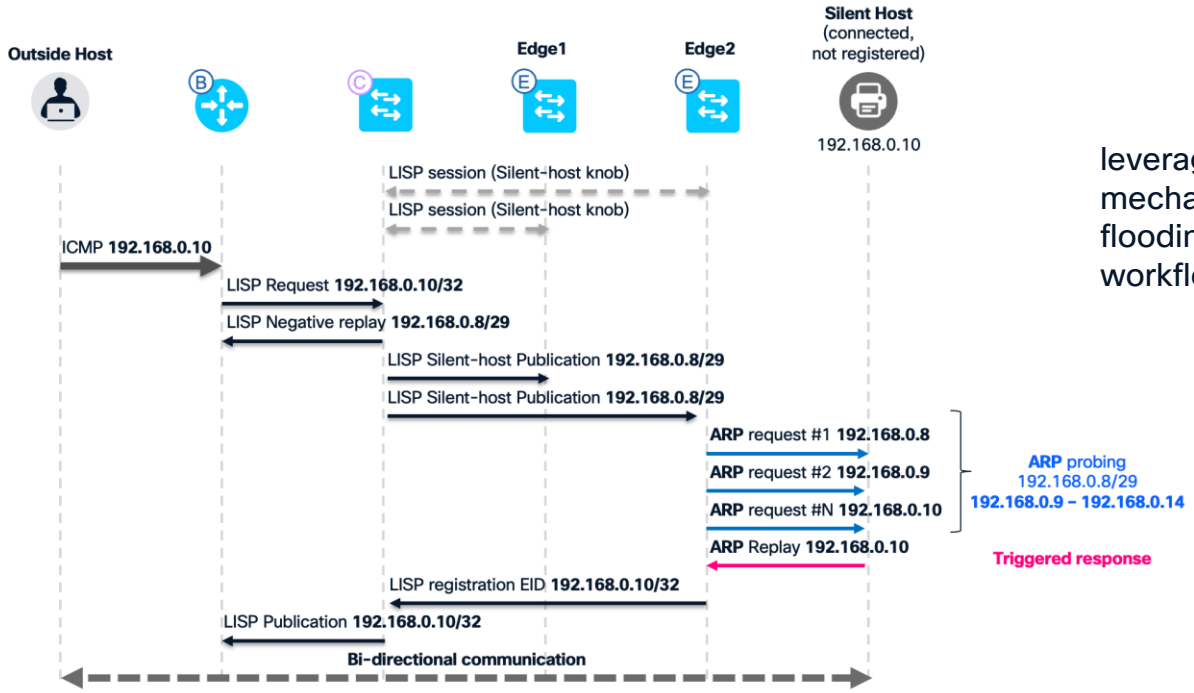
Enhanced discovery mechanisms for endpoints with minimal traffic patterns

Use case:

The LISP Silent Host Detection feature addresses a critical operational challenge in SD-Access fabrics: the discovery and registration of endpoints that never initiate traffic.

Detail:

This enhancement leverages targeted ARP probing to ensure passive endpoints are dynamically registered in the LISP control plane, preventing connectivity blackholing and ARP resolution failures.



leverages a targeted, notification-driven probing mechanism that eliminates the need for fabric-wide flooding. The following sequence illustrates the enhanced workflow for passive endpoint discovery:

Not yet orchestrated by CC

- Scheduled for CC 3.2.1
- In lab changes are added manually

Task 4:

Overlapping IP Pools

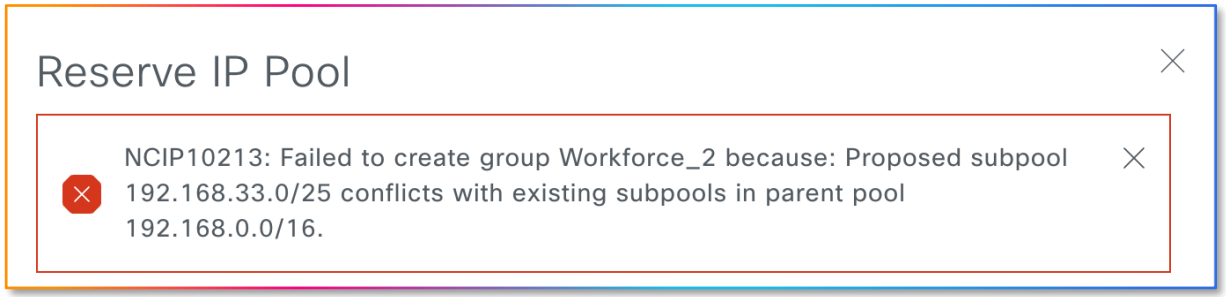
Enable identical IP address ranges across multiple VNs and fabric sites.

Use case:

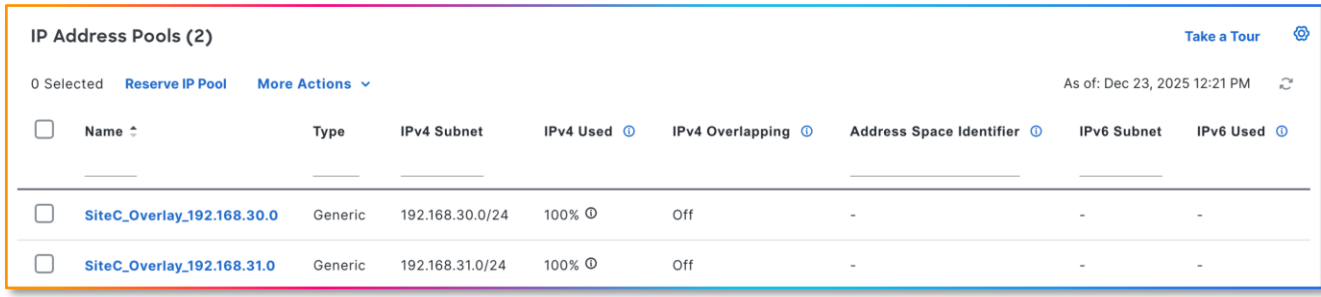
Catalyst Center enforced a single, global IP address space across the entire management domain. Every IP pool in a given site had to be completely unique—no partial or full overlaps were permitted. This limitation created operational challenges for enterprises with legitimate business requirements for address reuse, such as multi-tenant environments, standardized branch deployments, or post-merger network integration scenarios.

Detail:

The Overlapping IP Pools feature resolves these challenges by introducing Address Space Identifiers (Overlap IDs) combined with enhanced VRF and LISP isolation mechanisms. Each IP pool can be assigned to a unique namespace, allowing multiple pools with identical or overlapping address ranges to coexist within the same Catalyst Center management domain.



BEFORE



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Task 5:

Resource Guard for SSDP

Protect network resources from discovery protocol overhead

Use Case

- Various wired and wireless endpoints automatically originate and join SSDP multicast groups.
- High volumes of SSDP traffic can cause network stability issues in both fabric and non-fabric environments.
- When multicast routing is enabled in an SD-Access fabric, SSDP may generate significant multicast signaling and traffic, potentially impacting network performance.
- Users require a method to block SSDP traffic efficiently.

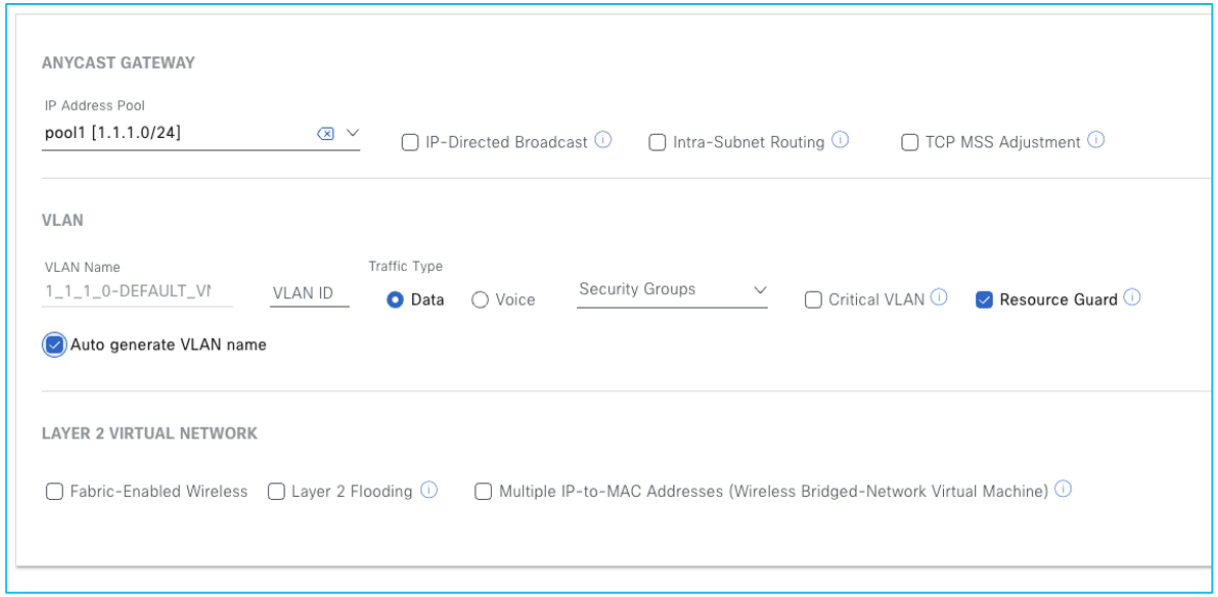
Details

- Resource Guard enables blocking of SSDP traffic at fabric ingress on a per-segment basis.
- Resource Guard is implemented using VACLs on Edge Nodes.
- The following multicast groups are blocked by Resource Guard: 239.255.255.250, FF02::C, FF05::C.

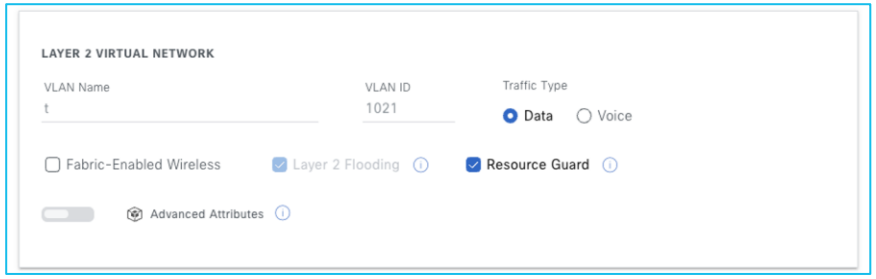
Considerations

- None

Anycast gateway create/edit workflow



Layer 2 virtual network create/edit workflow



Task 6:

Custom Layer-2 Flooding

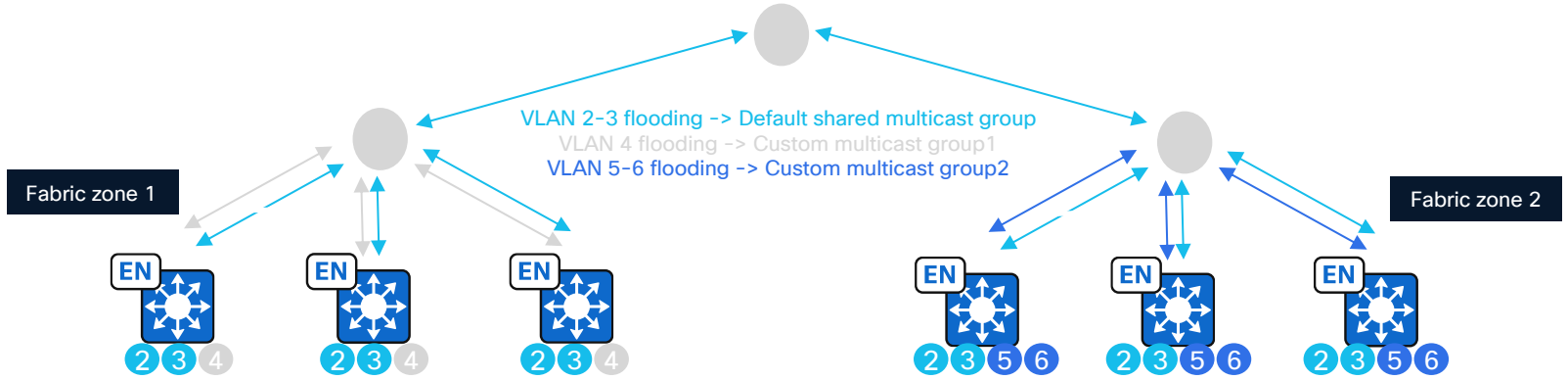
Fine-tune BUM traffic behavior for specialized use cases

Use Case

- In an SD-Access fabric, layer 2 flooding is enabled on a per-segment basis. A segment can either be an anycast gateway or a layer 2 virtual network.
- Before version 3.1.3, each fabric site used a single shared underlay multicast group for VXLAN transport of layer 2 flooding across all segments.
- Some customers require improved underlay bandwidth efficiency by customizing segment layer 2 flooding multicast groups to certain regions of the network.

Details

- The default behavior of a fabric site will remain consistent to previous SD-Access versions by using the shared multicast group for VXLAN layer 2 flooding.
- For each segment with layer 2 flooding enabled, the user can optionally configure a custom multicast group for VXLAN layer 2 flooding.
- A single multicast group can be used for multiple SD-Access segments, with the segments remaining isolated due to each segment using a different Layer 2 VNID.
- When a segment with layer 2 flooding is configured on an Edge Node or Layer 2 Border Node, the node joins the associated underlay multicast group for VXLAN layer 2 flooding. Flooding bandwidth can be optimized by scoping segments to specific fabric zones and assigning a custom multicast group to each fabric zone.



Task 7:

Per-Border Ingress Steering

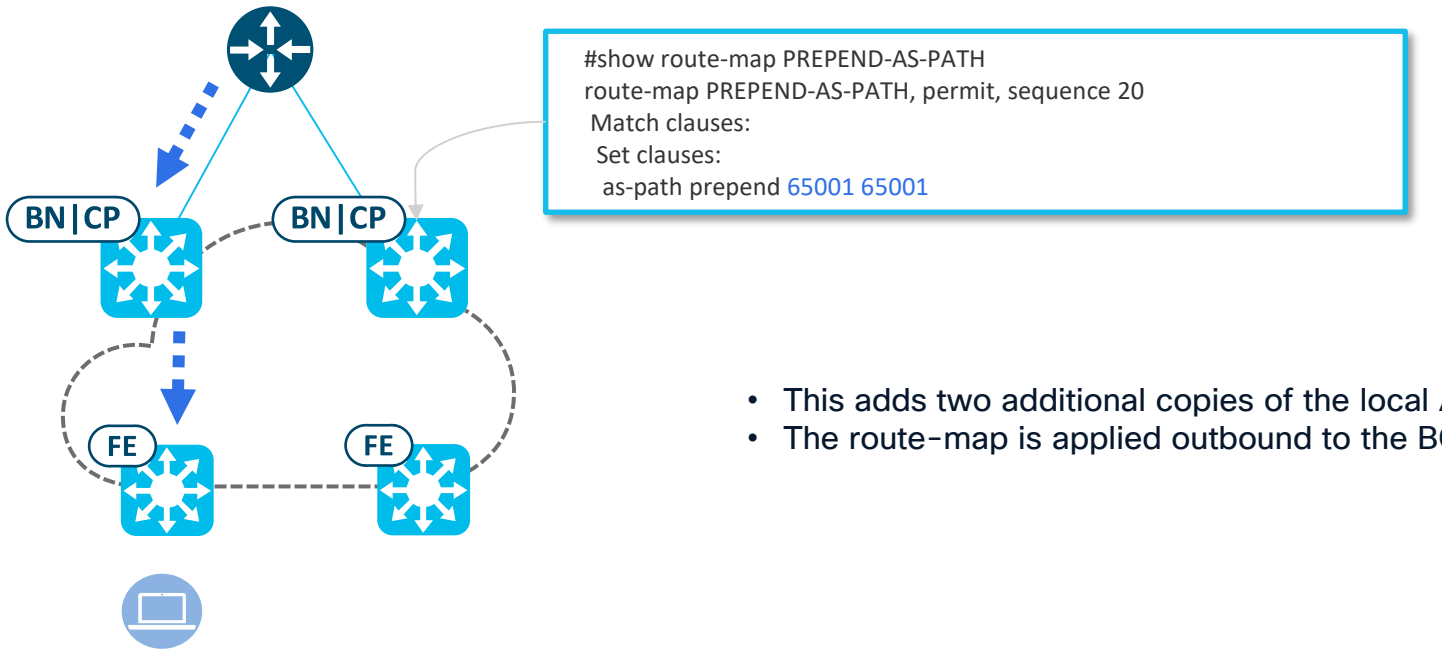
AS-path prepend for granular inbound traffic control

Use case:

In multi-Border SDA deployments, administrators need the ability to control which Border Node receives inbound traffic for specific Virtual Networks or prefixes. By the default the traffic is ECMP across all borders of the same type.

Detail:

The Per-Border Ingress Steering feature in Catalyst Center leverages BGP AS Path Prepending to provide granular traffic engineering control for north-south traffic flows in SD-Access fabrics. This capability enables administrators to influence inbound traffic path selection at the Border Node level, optimizing WAN link utilization and implementing active-standby or load-balancing ingress patterns.



- This adds two additional copies of the local AS (to the AS_PATH attribute
- The route-map is applied outbound to the BGP neighbors in the selected VN

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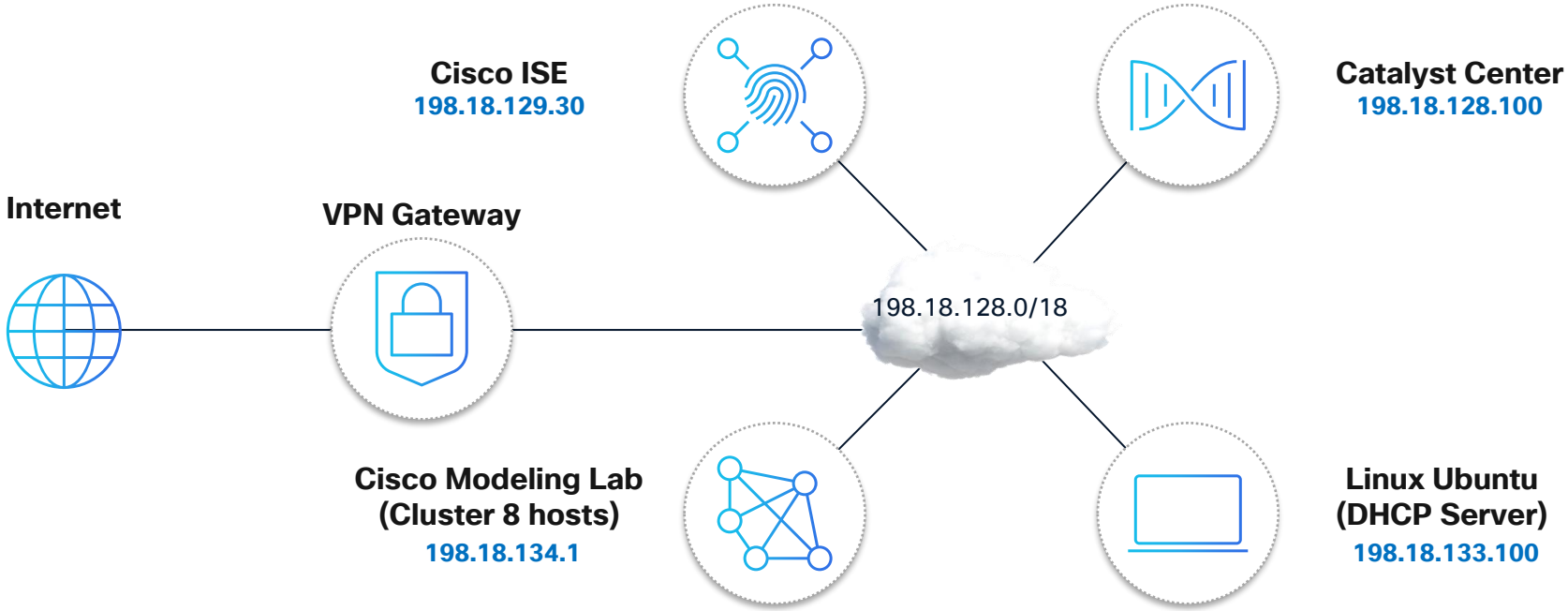
Lab environment

dCloud Environment

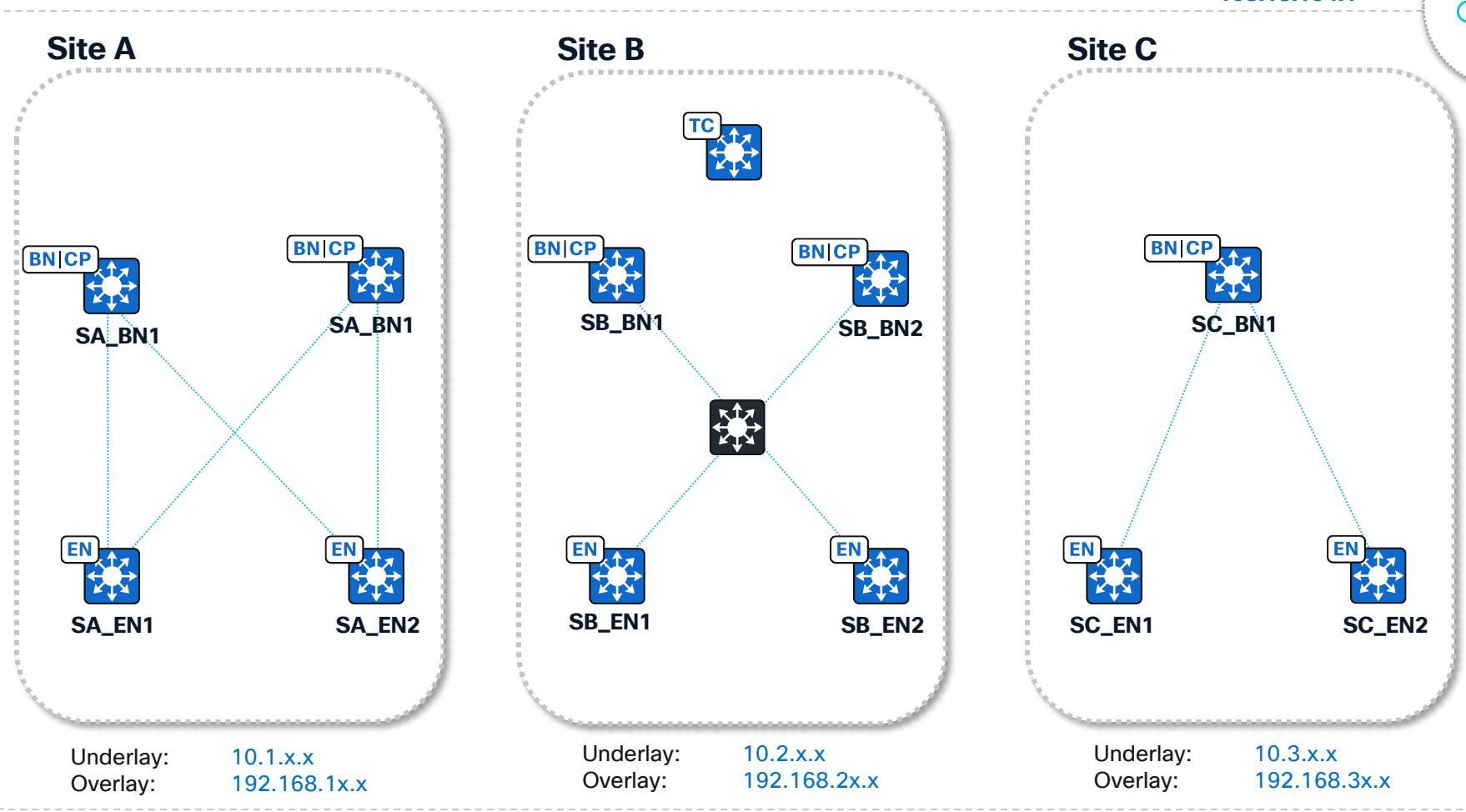
- Fully **virtual** environment
- Accessible from any place in the world
- **AnyConnect** required
- Ready for **exploration** and **experimenting**



LTRENS-2554 Instructor Led Lab

Lab Topology

Cisco Modeling Lab
198.18.134.1



All sites already **fully configured**

Site hierarchy **created in** Catalyst Center

All devices **discovered**

All fabric devices simulated based on Virtual-Catalyst9k (C9KV-UADP-8P)

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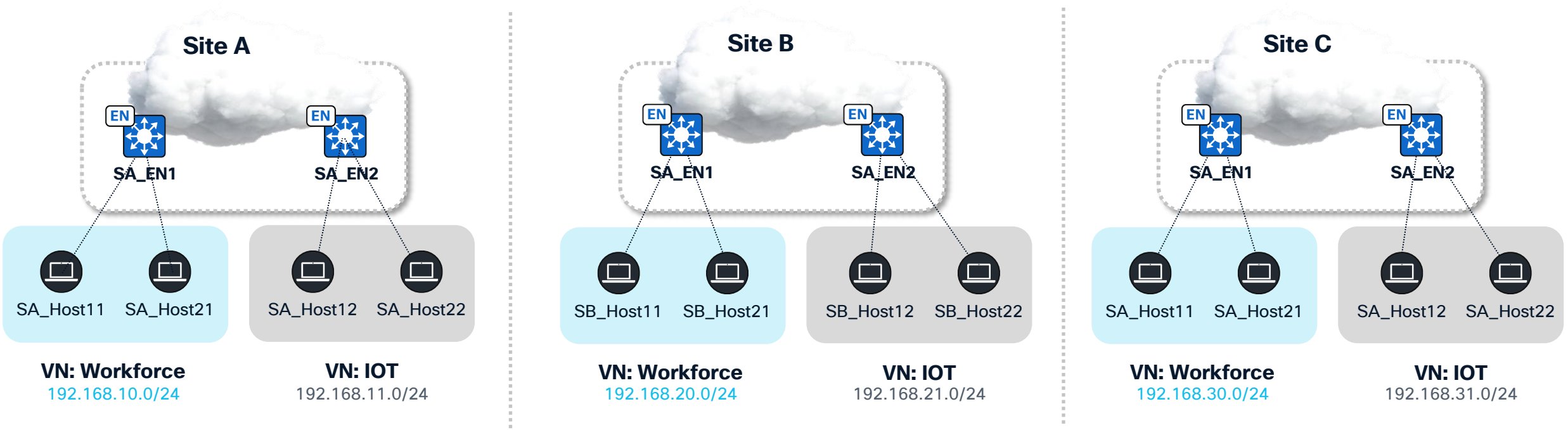
SDA Fabrics

2 VNs configured and statically assigned to port's of end hosts



End Devices simulated by Ubuntu VM in CML Environment

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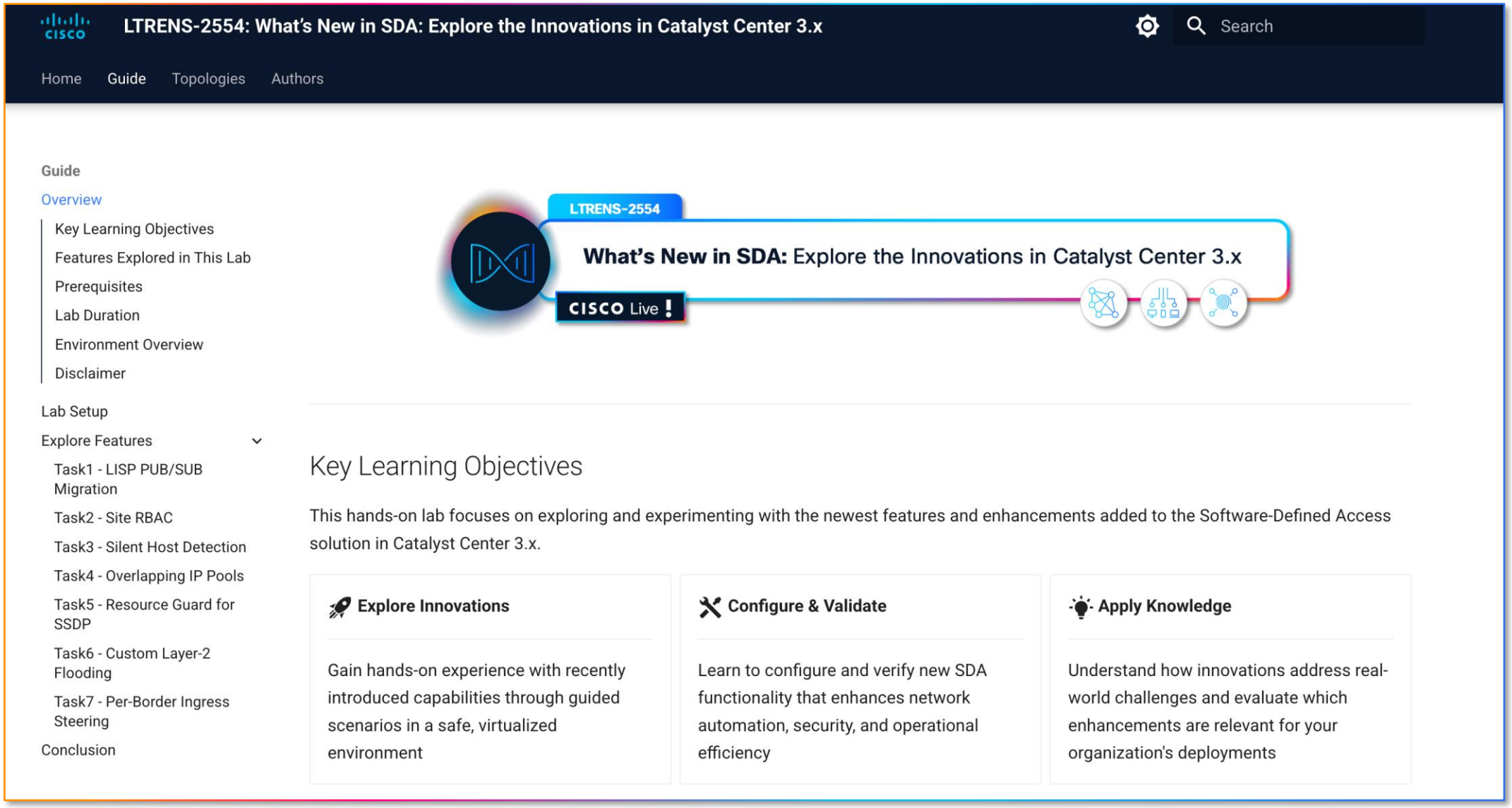
Lab guide



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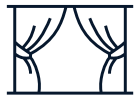

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