

CCNA 200-301, Volume 2

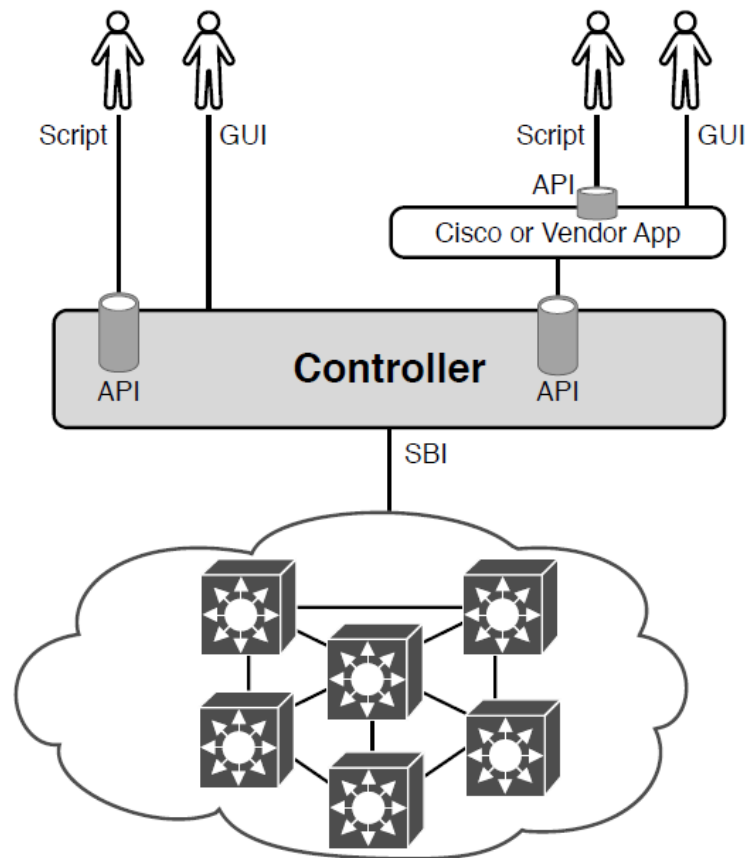
Chapter 17

Cisco Software-Defined Access (SDA)

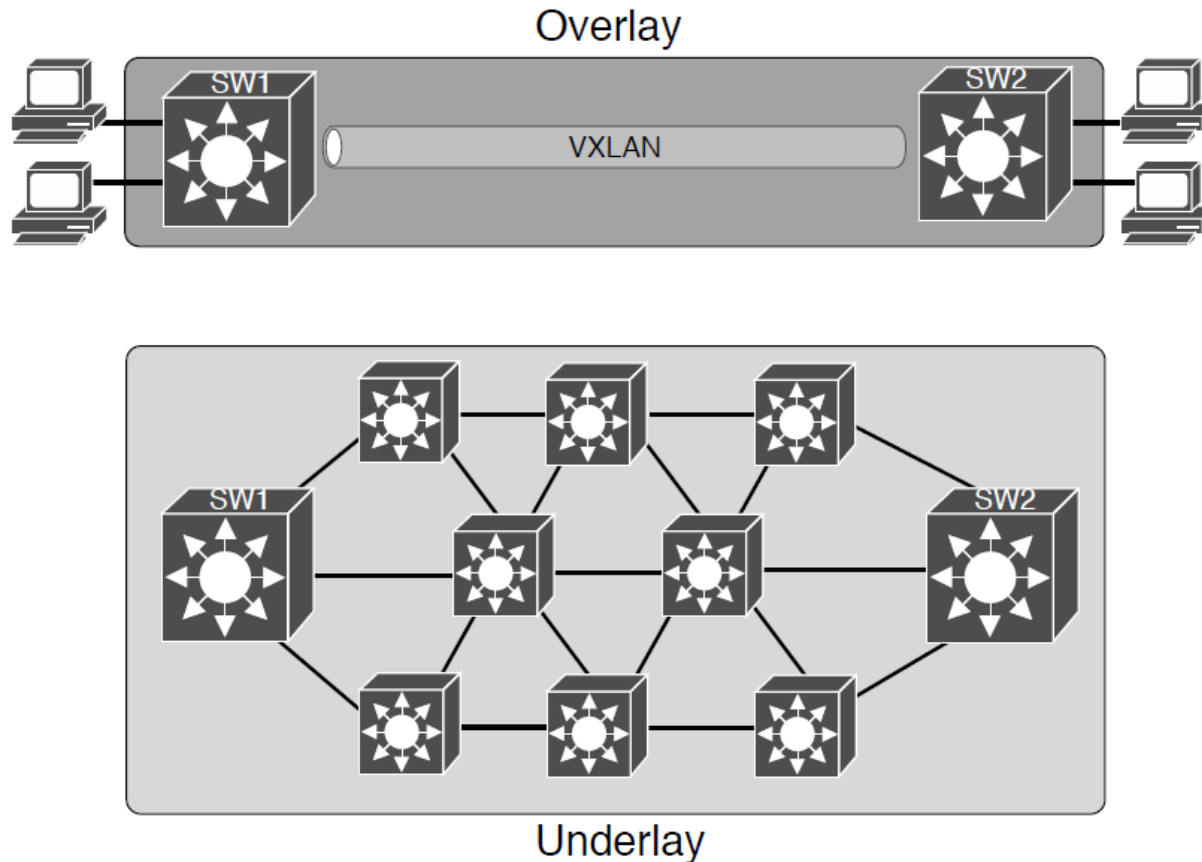
Objectives

- Explain the role and function of network components
 - Controllers (Cisco DNA Center and WLC)
- Explain how automation impacts network management
- Compare traditional networks with controller-based networking
- Describe controller-based and software defined architectures (overlay, underlay, and fabric)
 - Separation of control plane and data plane
 - Northbound and southbound APIs
- Compare traditional campus device management with Cisco DNA Center enabled device management

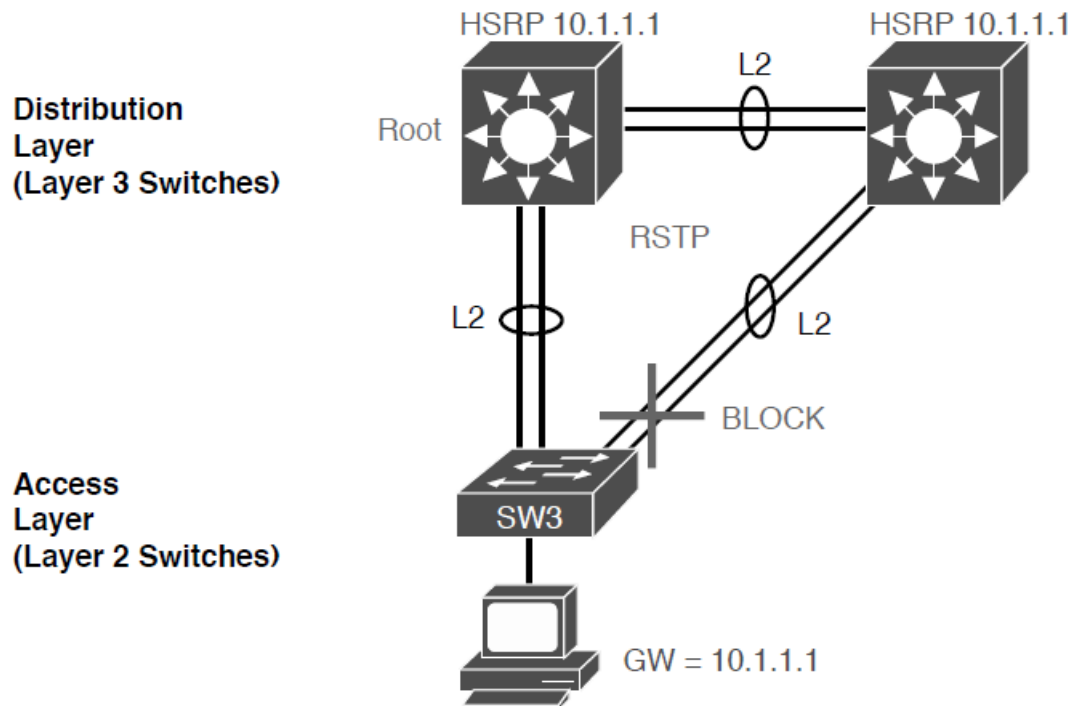
SDA Architectural Model with DNA Center



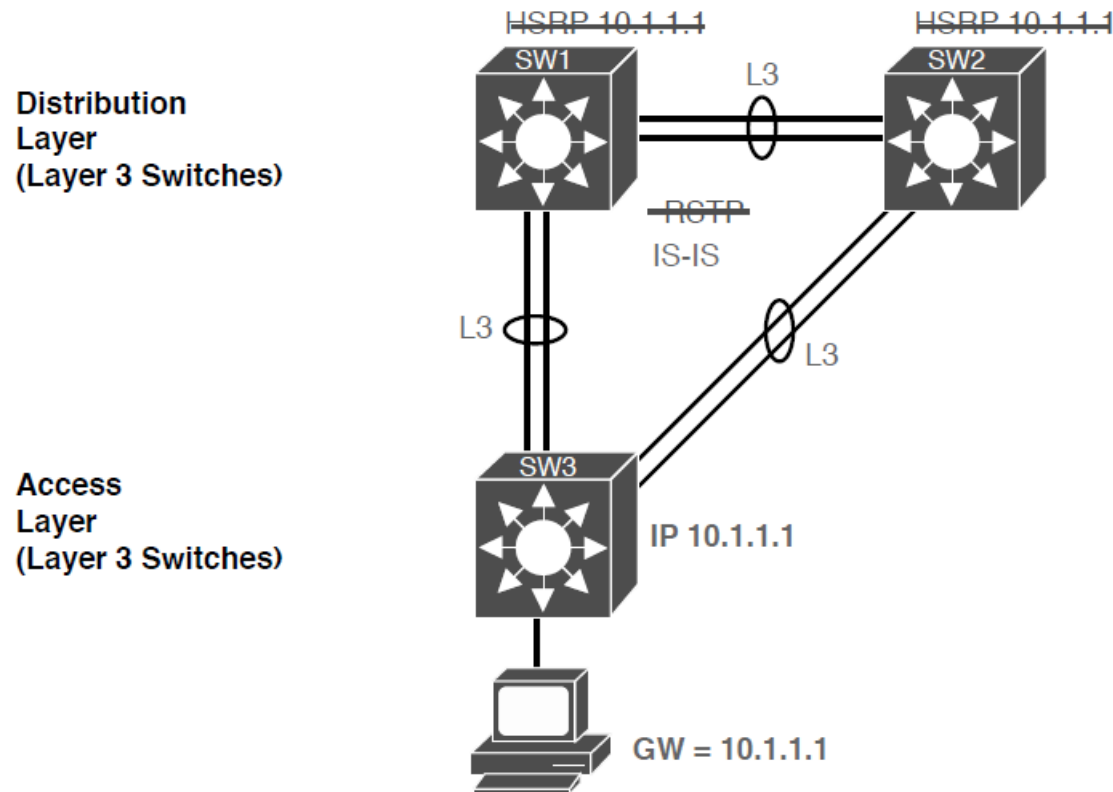
Fabric, Underlay, and Overlay



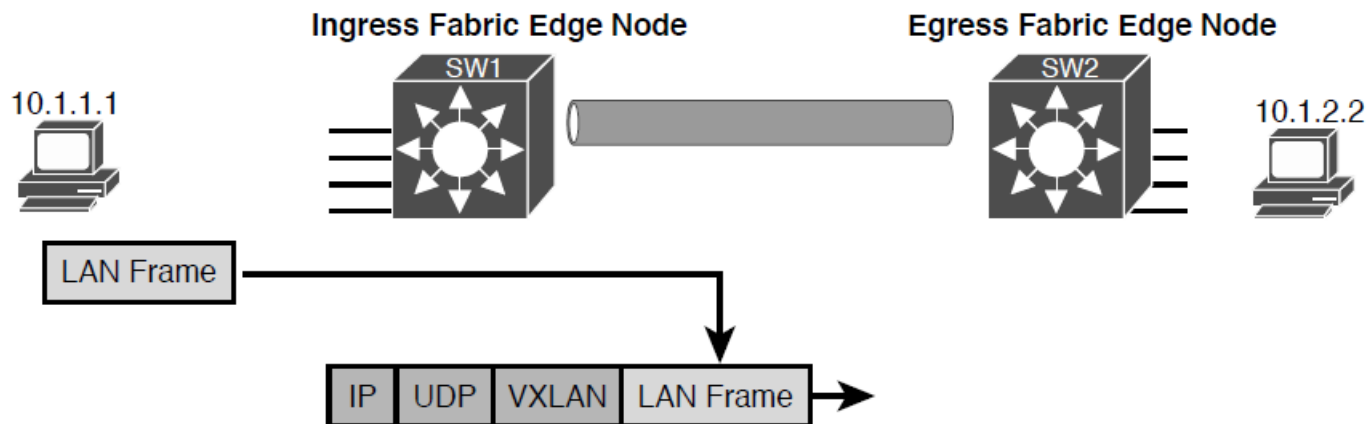
Traditional Access Layer Design: Three Switches in STP Triangle



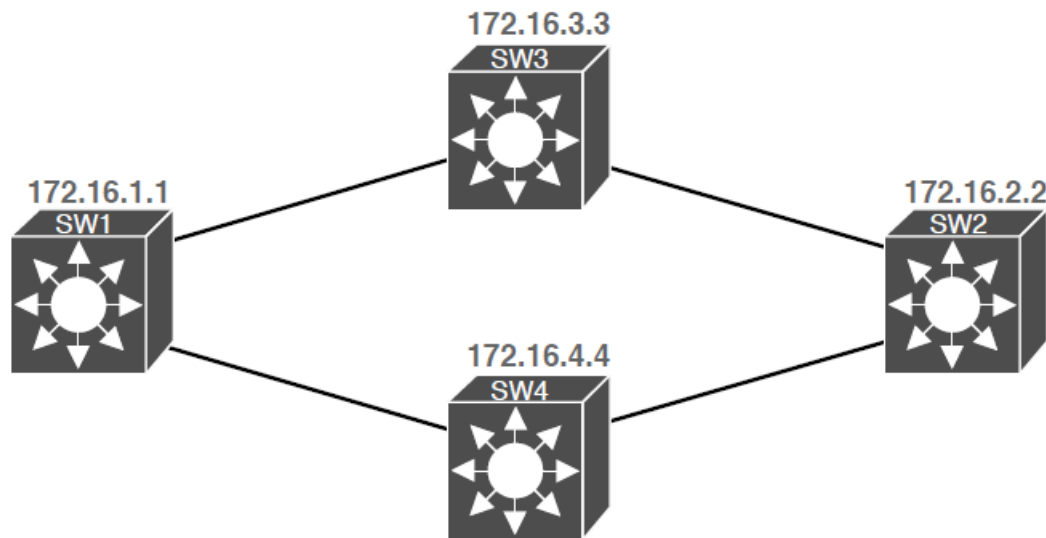
SDA Fabric Layer 3 Access Benefits



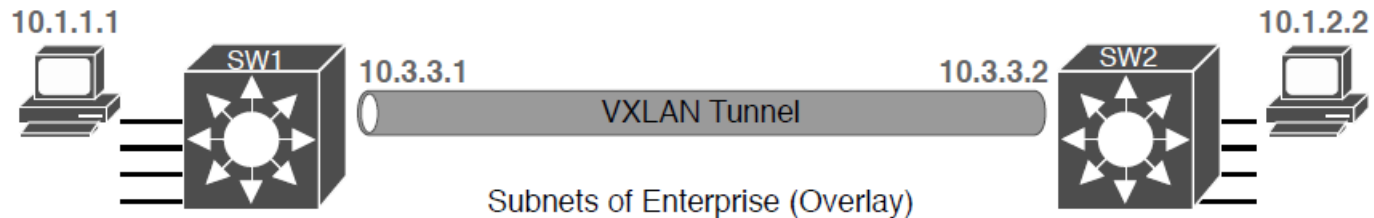
Fundamentals of VXLAN Encapsulation in SDA



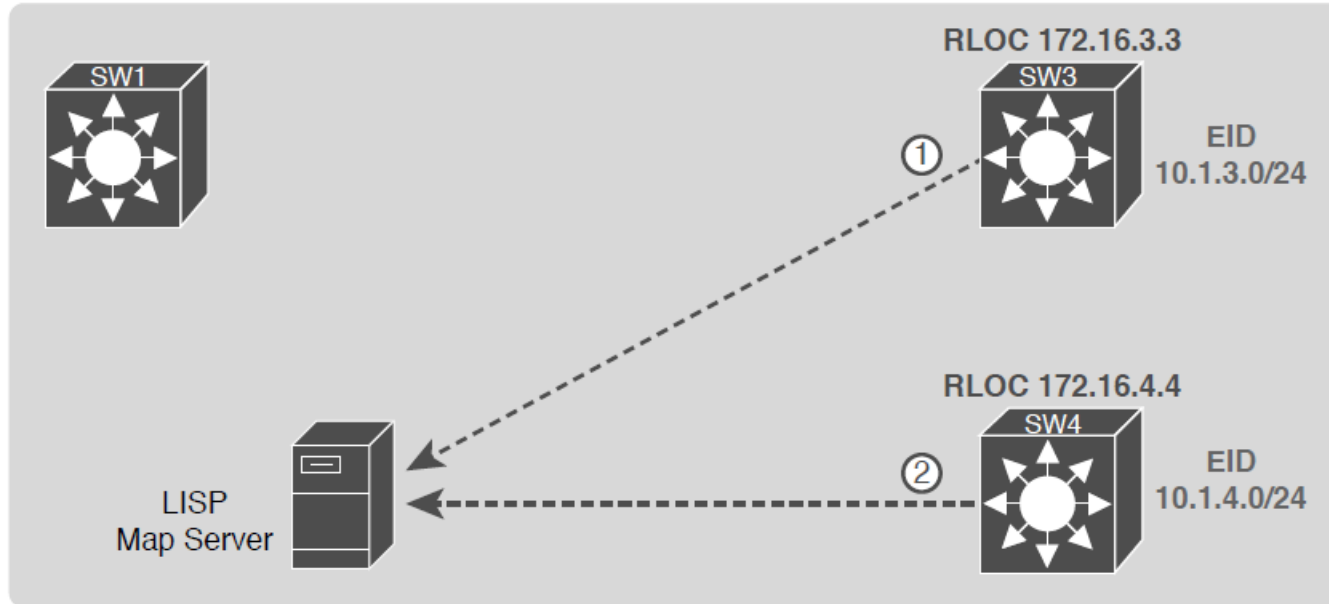
SDA Underlay Using 172.16.0.0



VXLAN Tunnel and Endpoints with IPv4 Addresses in the Same IPv4 Space

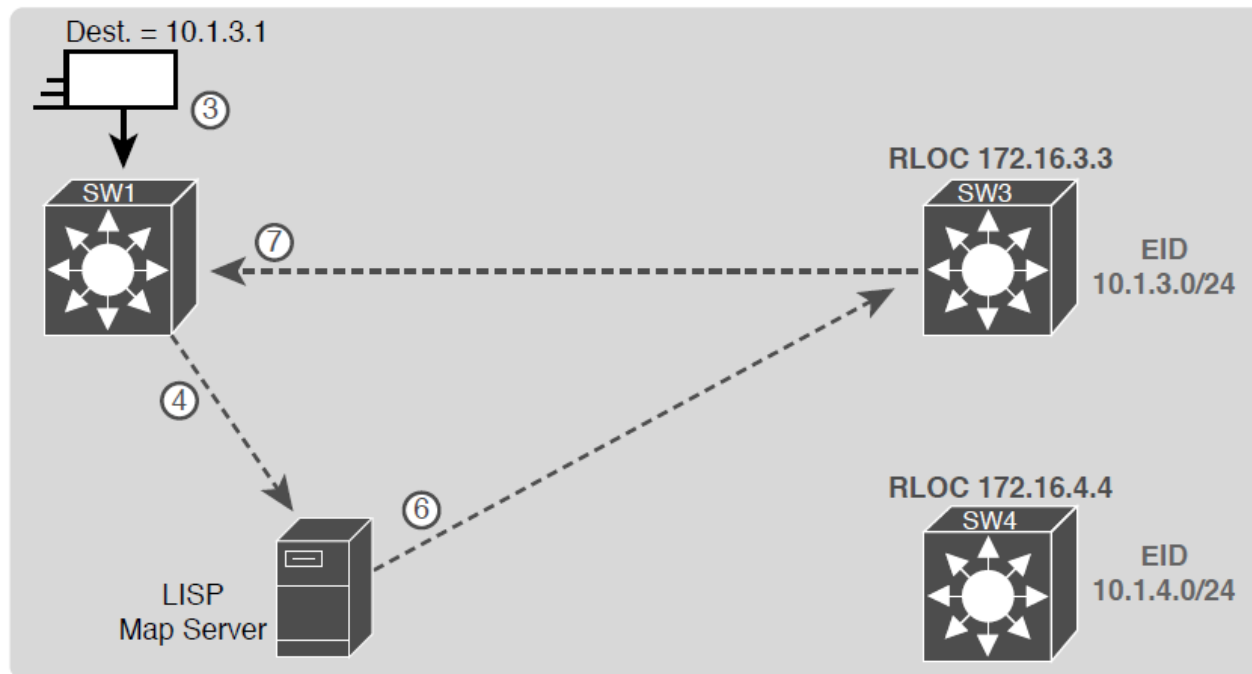


Edge Nodes Register IPv4 Prefixes (Endpoint IDs) with LISP Map Server



| | EID | RLOC |
|---|-------------|------------|
| ① | 10.1.3.0/24 | 172.16.3.3 |
| ② | 10.1.4.0/24 | 172.16.4.4 |

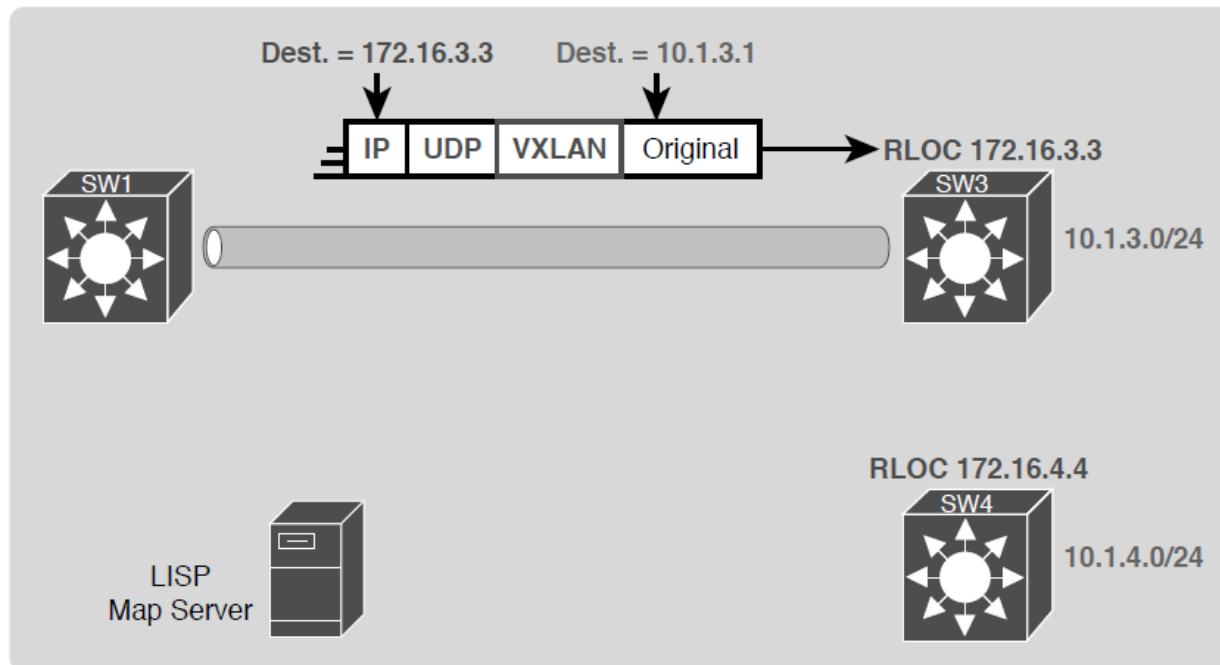
Ingress Tunnel Router SW1 Discovers Egress Tunnel Router SW3 Using LISP



⑤

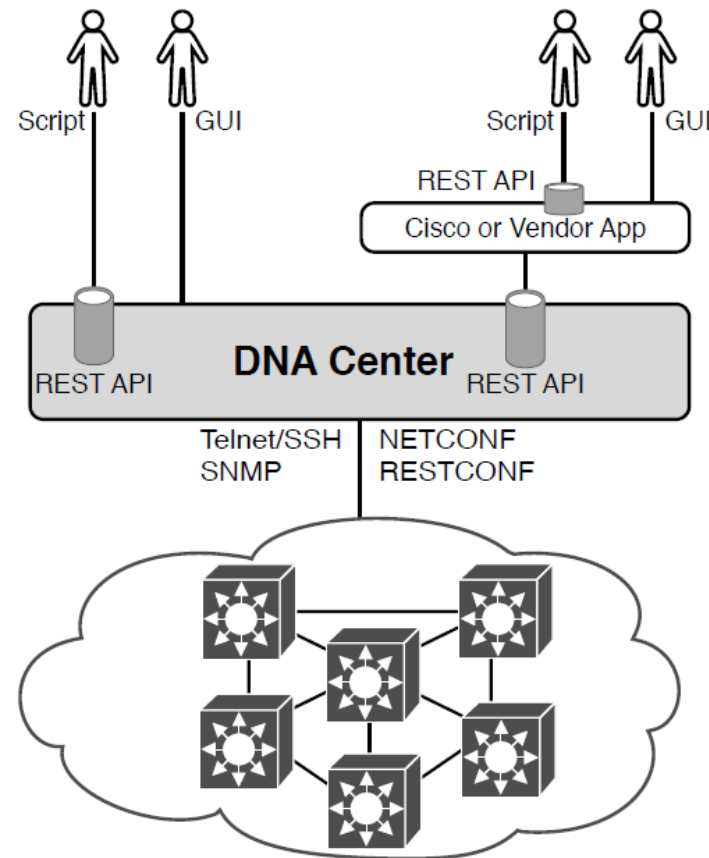
| EID | RLOC |
|-------------|------------|
| 10.1.3.0/24 | 172.16.3.3 |
| 10.1.4.0/24 | 172.16.4.4 |

Ingress Tunnel Router (ITR) SW1 Forwards Based on LISP Mapping to SW3

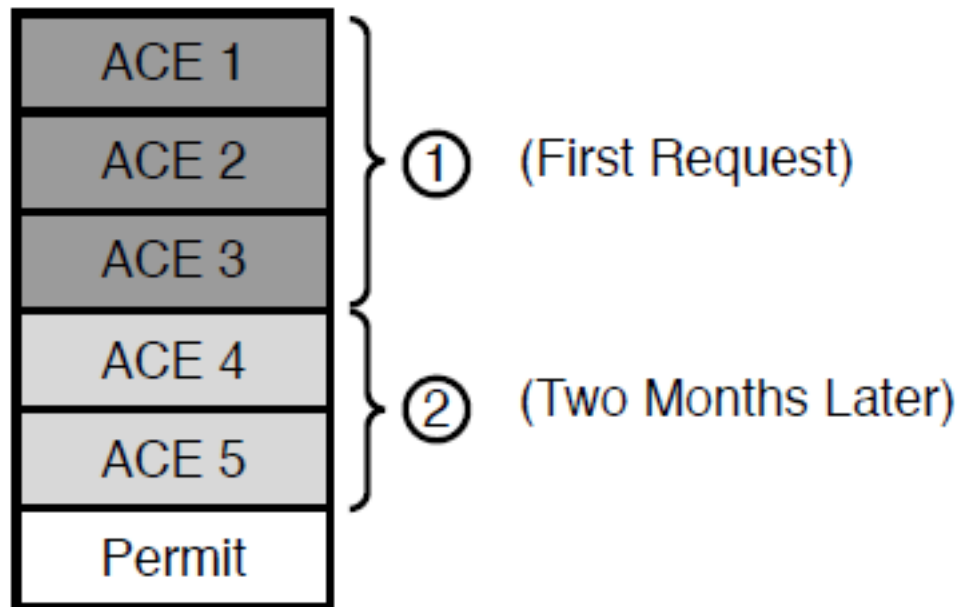


| | EID | RLOC |
|---|-------------|------------|
| ① | 10.1.3.0/24 | 172.16.3.3 |
| ② | 10.1.4.0/24 | 172.16.4.4 |

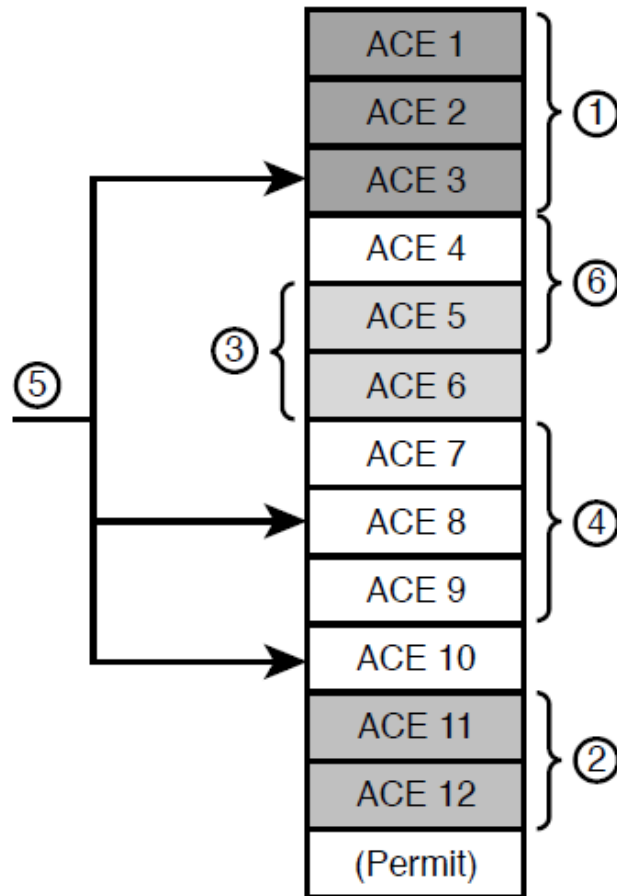
Cisco DNA Center with Northbound and Southbound Interfaces



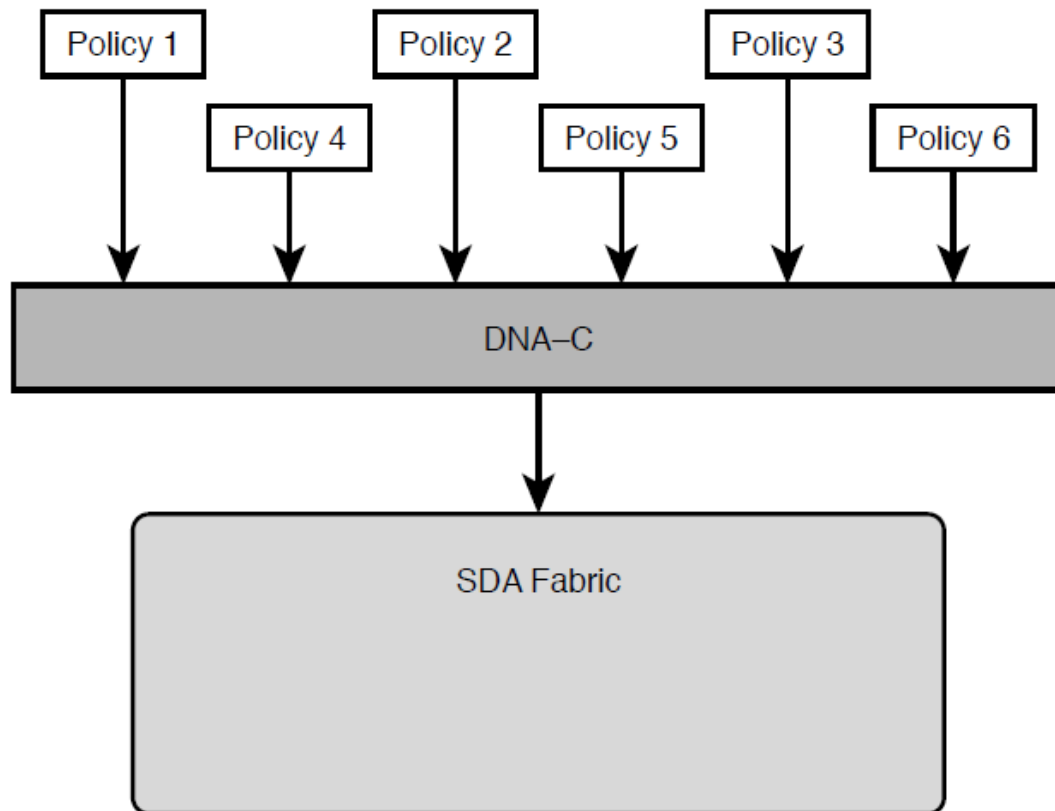
Lines (ACEs) in an ACL after Two Changes



Lines (ACEs) in an ACL after Six Changes



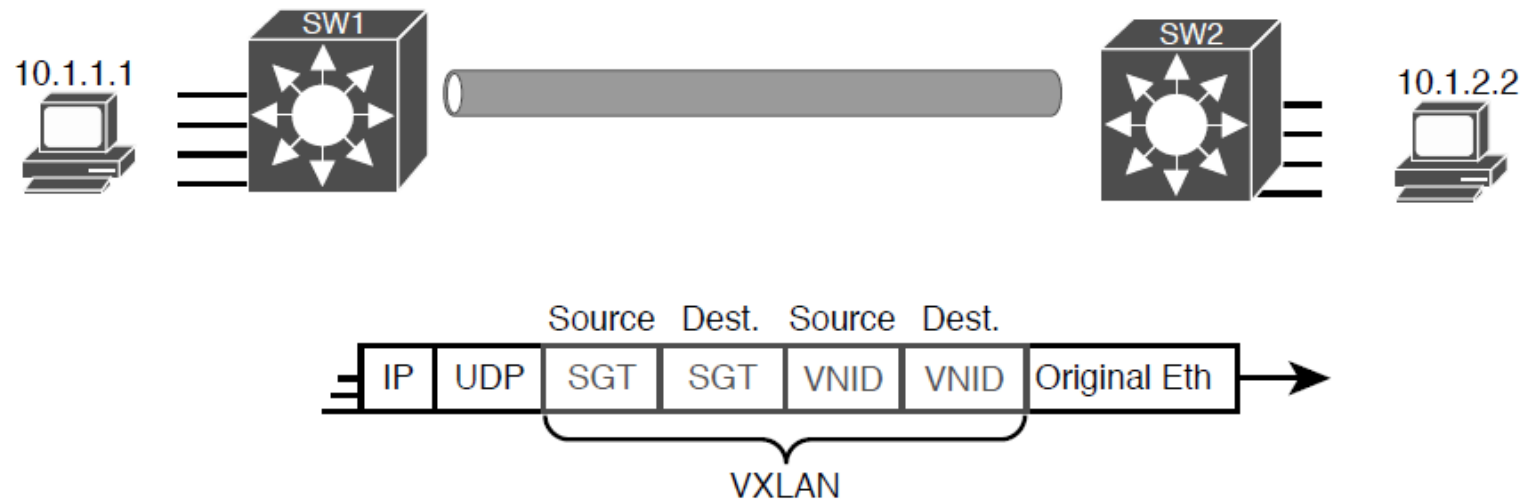
DNA-C IP Security Policies (Northbound) to Simplify Operations



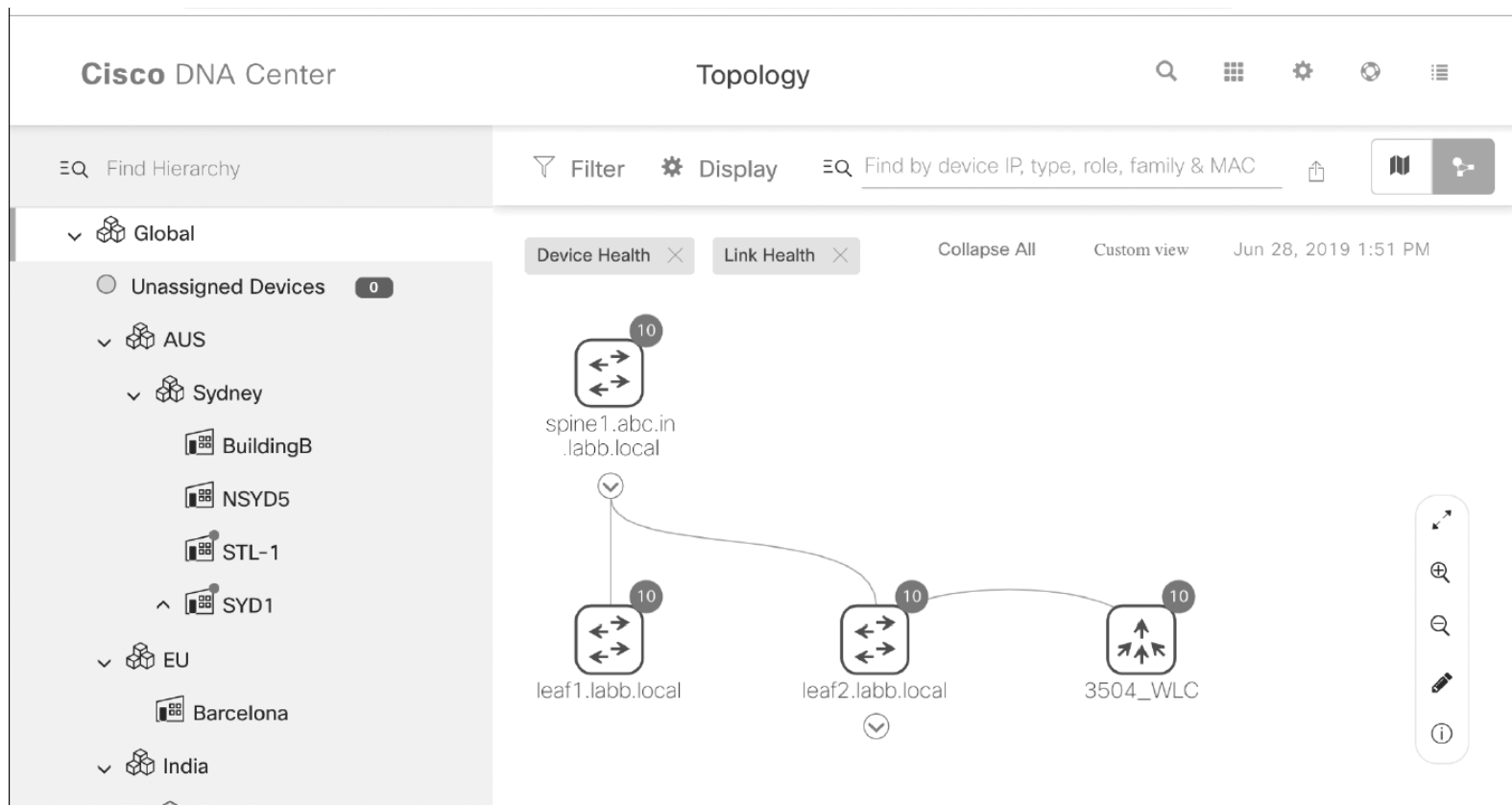
Access Table for SDA Scalable Group Access

| Dest. Source | Employee | Internet | Partner | Guest |
|-------------------------|-----------------|-----------------|----------------|--------------|
| Employee | N/A | Permit | Permit | Deny |
| Internet | Permit | N/A | Permit | Permit |
| Partner | Permit | Permit | N/A | Deny |
| Guest | Deny | Permit | Deny | N/A |

VXLAN Header with Source and Destination SGTs and VNIDs Revealed



DNA Center Topology Map



Hover and Click Details About One Cisco 9300 Switch from DNA Center

The screenshot displays the Cisco DNA Center interface in the 'Topology' view. On the left, a hierarchical tree shows the network structure: Global > AUS > Sydney > BuildingB > NSYD5 > STL-1 > SYD1 > EU > Barcelona > India. The main area shows a network diagram with two switches: 'spine1.abc.in.labb.local' (top) and 'leaf1.labb.local' (bottom), connected by a line. Both switches are labeled with a '10' in a circle. A tooltip is visible over the spine switch, showing its details.

Device Health **Link Health**

spine1.abc.in.labb.local

leaf1.labb.local

Device Details:

- Device: Cisco Catalyst38xx stack-able ethernet switch
- IP Address: 10.10.20.80
- Software Version: 16.3.5b
- Family: Switches and Hubs
- Network Role: DISTRIBUTION
- MAC Address: 70:01:b5:5d:1b:00
- Platform: WS-C3850-24P-L