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Segmentation Simplified

A Case Study of Meraki Adaptive Policy and Cisco TrustSec

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BRKXAR-2005

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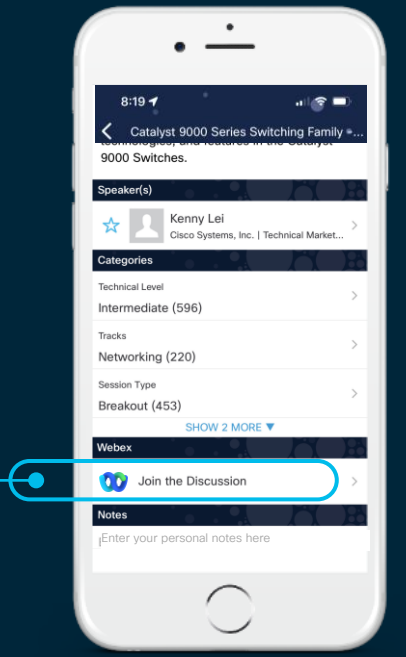

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Praveen Poojary

Customer Delivery Architect

11 Years in Cisco

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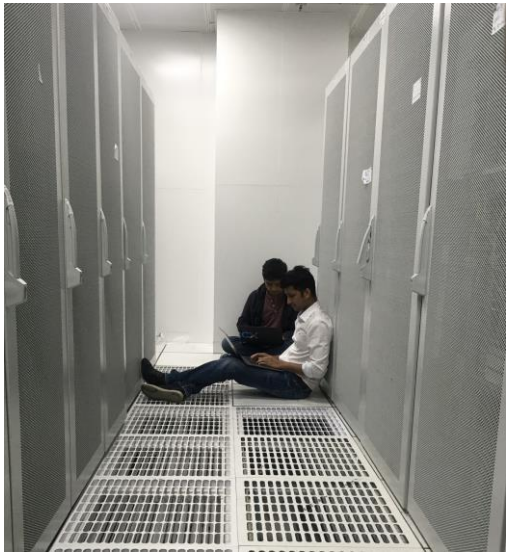


Lee Sudduth

Customer Delivery Architect

22 Years in Cisco

#CCIE

#CCDE

Introduction

Agenda

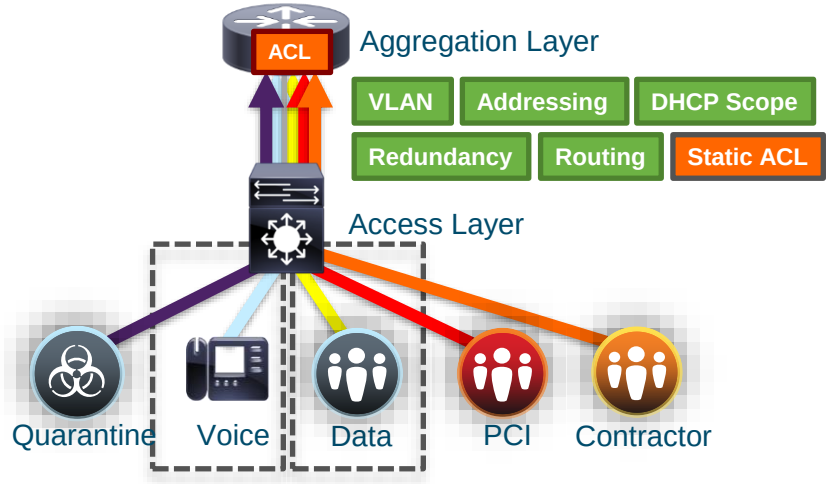
- Technology Overview
- Case Study
- Conclusion

Overview

Choosing the Right Tool

Traditional Segmentation

Design needs to be replicated for floors, buildings, offices, and other facilities. Cost could be extremely high



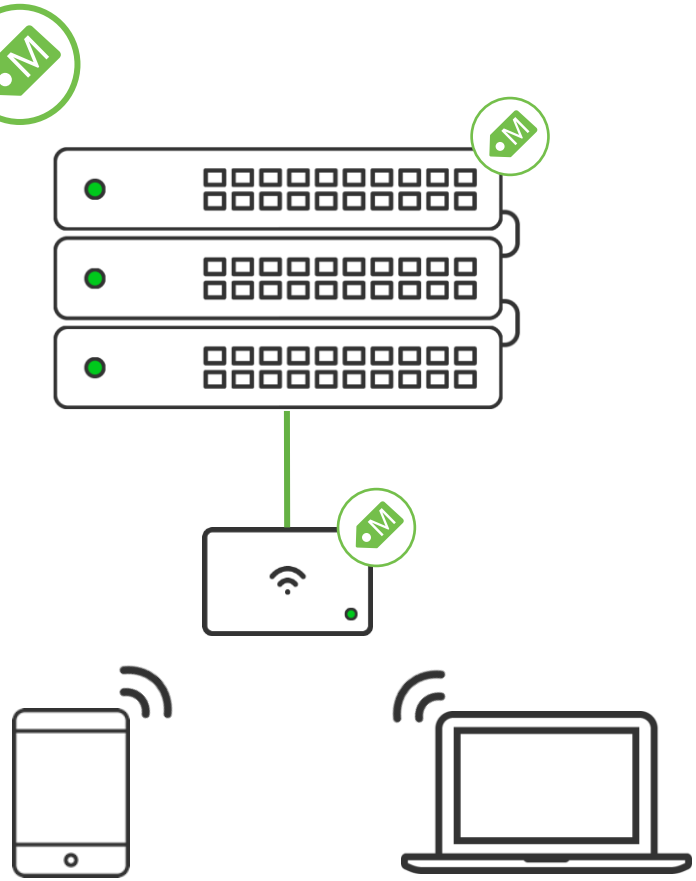
Simple Segmentation with 2 VLANs

More Policies using more VLANs

Meraki Adaptive Policy

- Identity and policy based on tags
- Uses inline SGTs
- Org-wide policy based on intent, not IP
- Provides micro-segmentation within VLANs
- Flexible tag assignment

- Supported platforms:
  - All Meraki 802.11ac wave 2 and Wi-FI 6 MR
    - Requires MR27 Firmware
  - All Meraki MS390 switching platforms
  - Requires MS390 & MR Advanced License



Flexible Tag Assignment

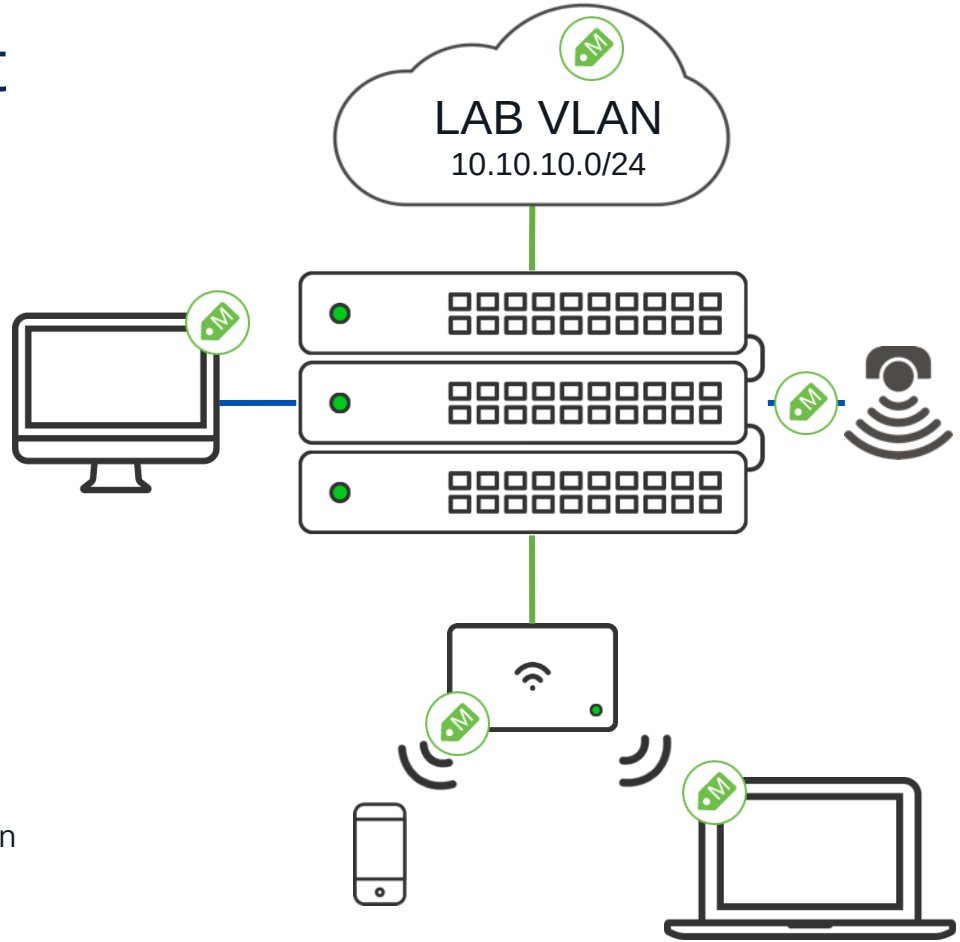
Tags can be applied in many different ways:

Statically assigned to a switch port
- Wired IOT Sensors

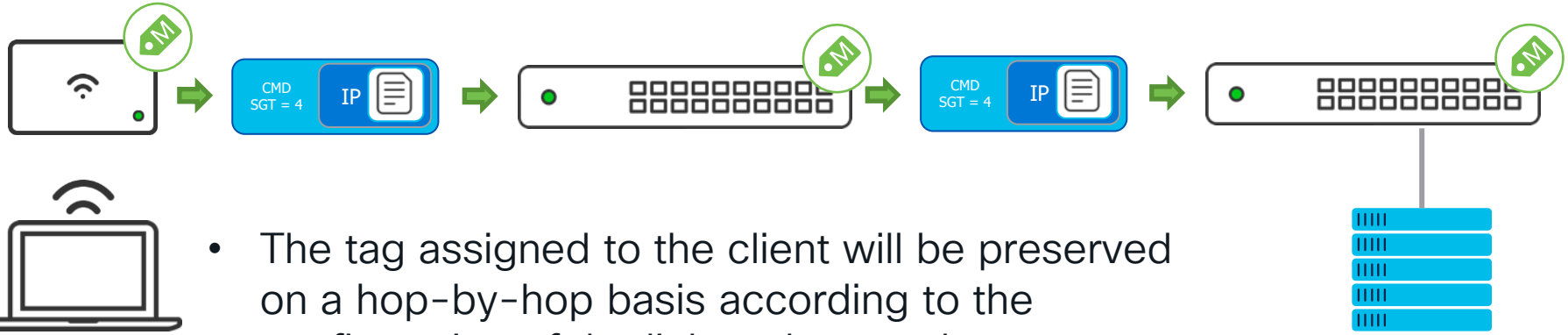
Static assignment per SSID
- Guest Users

Dynamic assignment via RADIUS
- Wired & Wireless 802.1x

Static IP to SGT Mapping
- Last resort to map traffic to an SGT
- Uses network objects as source for mapping
- Available w/ network object public beta – coming soon



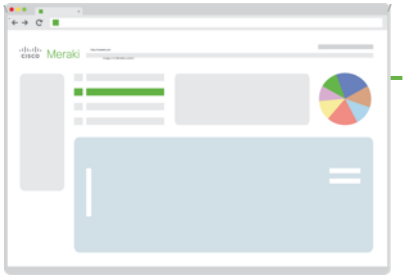
Tag Application and Preservation



- The tag assigned to the client will be preserved on a hop-by-hop basis according to the configuration of the link to the next hop
- Entire path must support inline SGTs
- The tag can be seen on the network device, not on the sending/receiving client

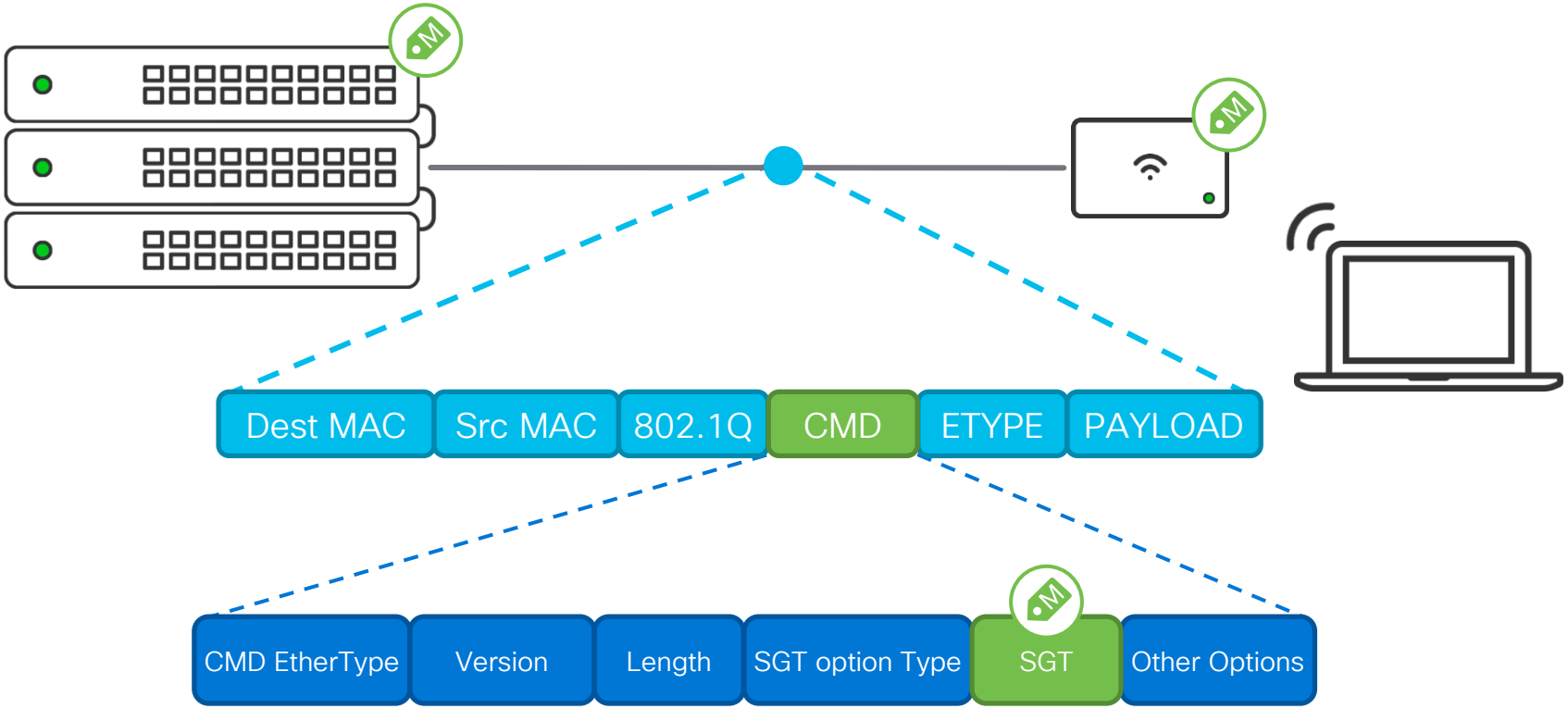
One Consistent Policy Across All Sites

SRC | DST	Employee	IoT	IoT Server
Employee	✔	✘	✔
IoT	✘	✘	✔
IoT Server	✔	✔	✔



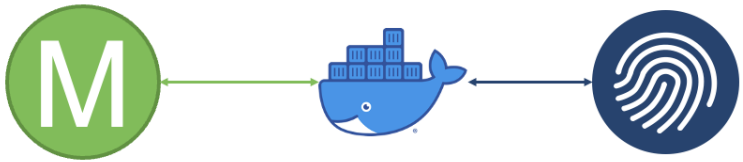
Policy & Groups are configured in dashboard and pushed to Adaptive Policy nodes like any other Meraki configuration change

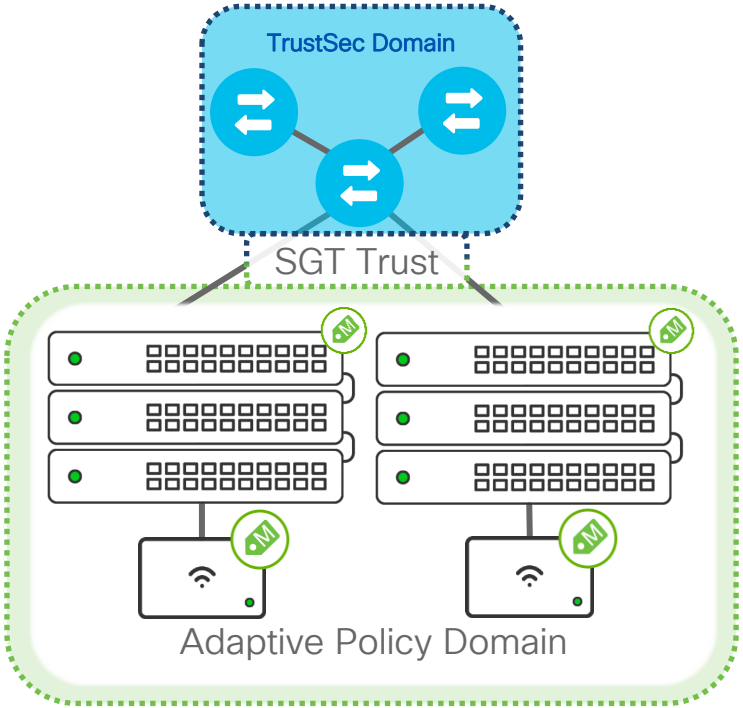
What are SGTs?



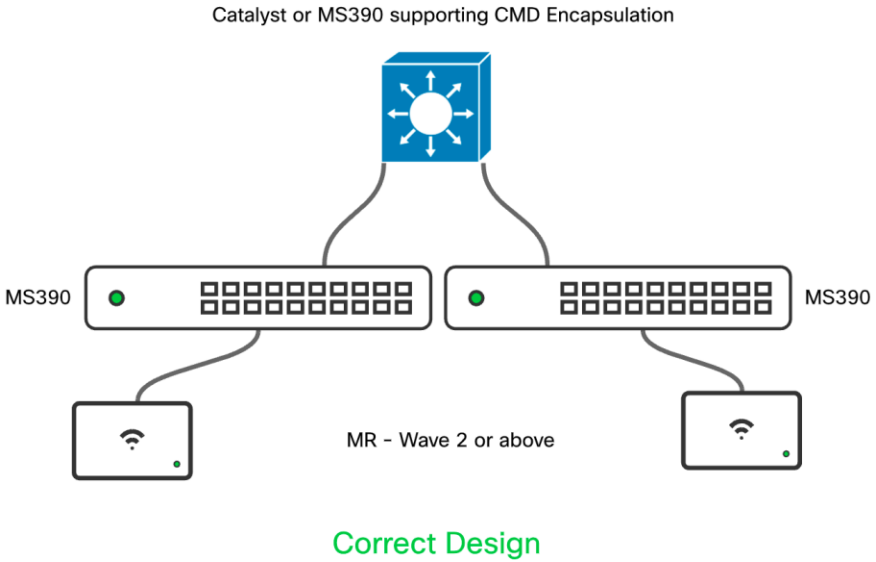
Adaptive Policy and TrustSec

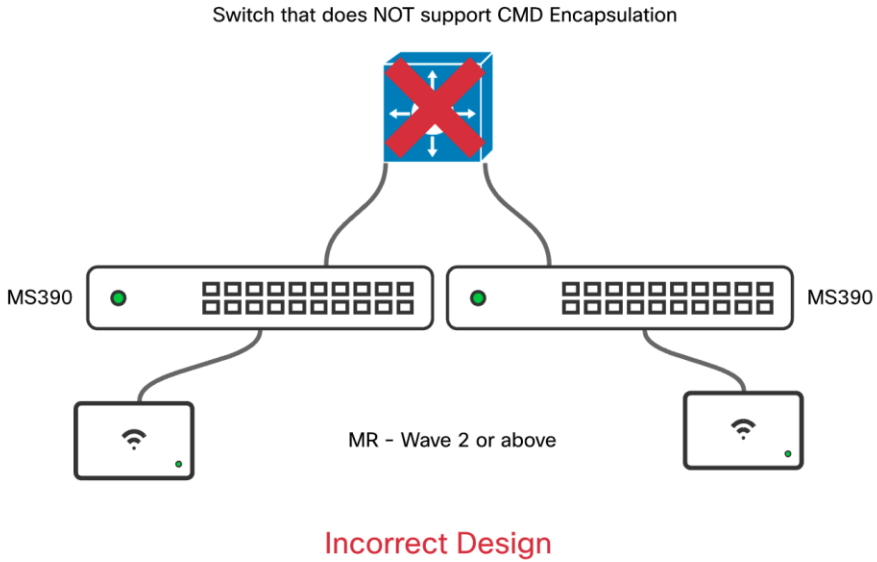
- Tag propagation between domains
- ISE as the central policy source of truth
- Use container for policy sync *(Optional)*
- <= 60 tags in deployment





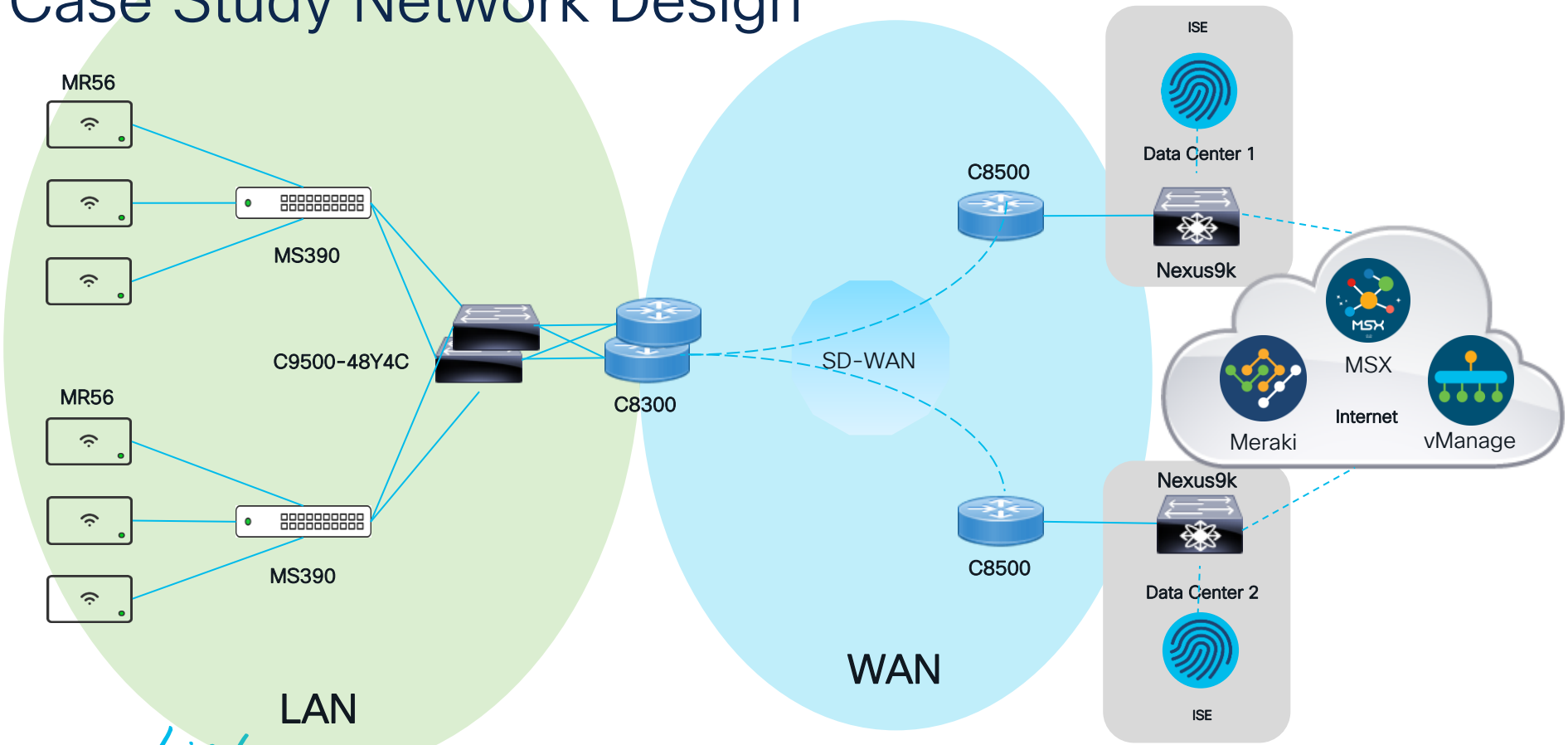
Integrating with Catalyst





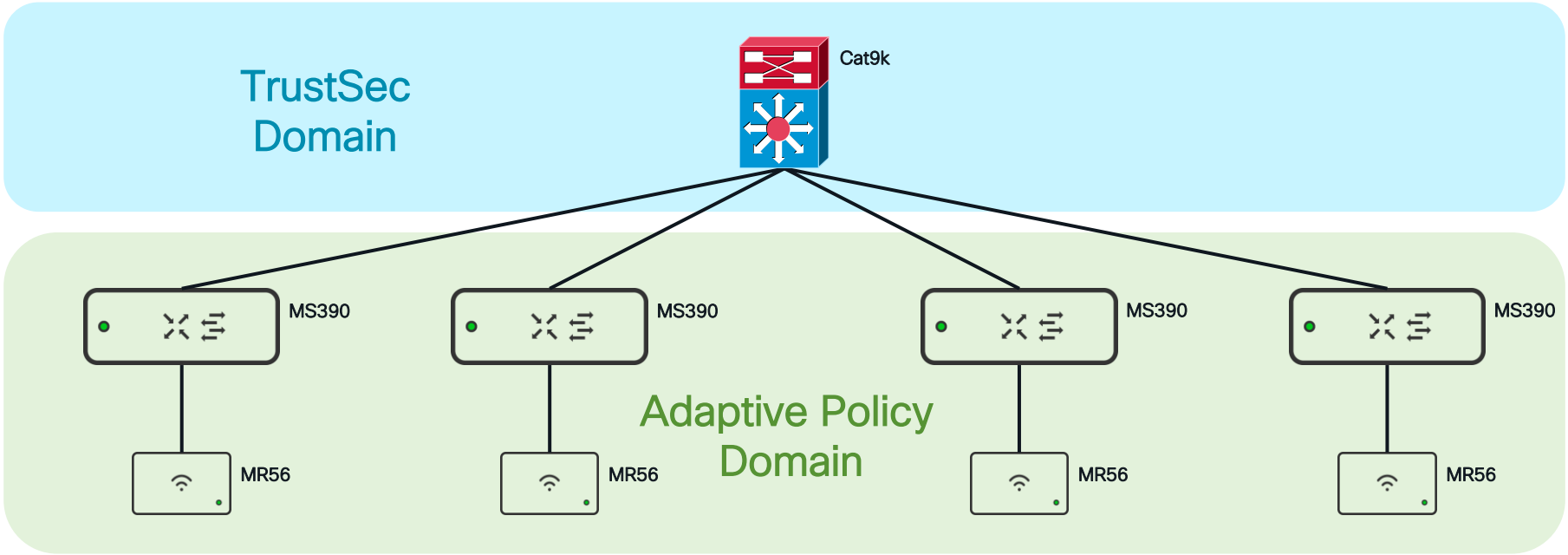
Case Study

Case Study Network Design



Meraki Access / Catalyst Core

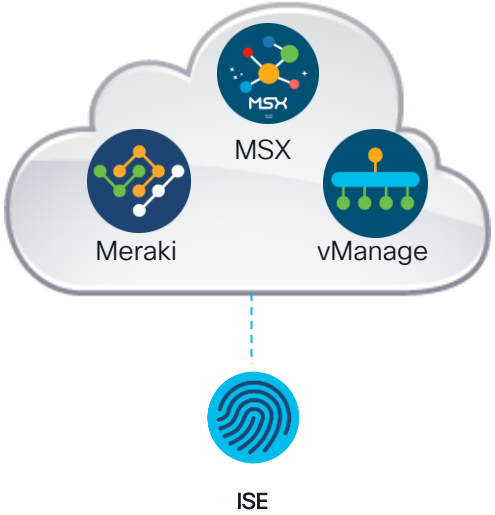
Core: SGT Propagate and Enforce



Case Study Orchestration Design

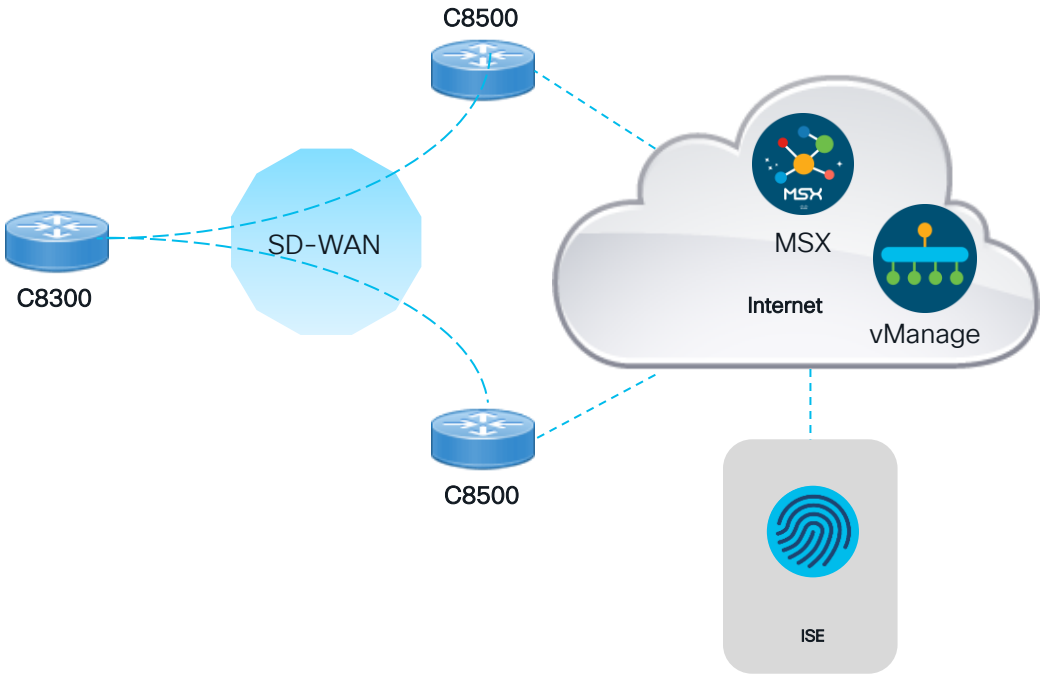
MSX Orchestrator

- Meraki Dashboard
  - Wireless Access
- Meraki Dashboard
  - Wired Access
- MSX (NSO)
  - Cat9k Core Switches
- vManage
  - SD-WAN
- ISE/ Meraki Dashboard
  - Adaptive Policy



SD-WAN Overlay Design

- C8300 cEdge Router
- C8500 cEdge Router
- Routing to Data Center via C8500
- TrustSec Security Policy



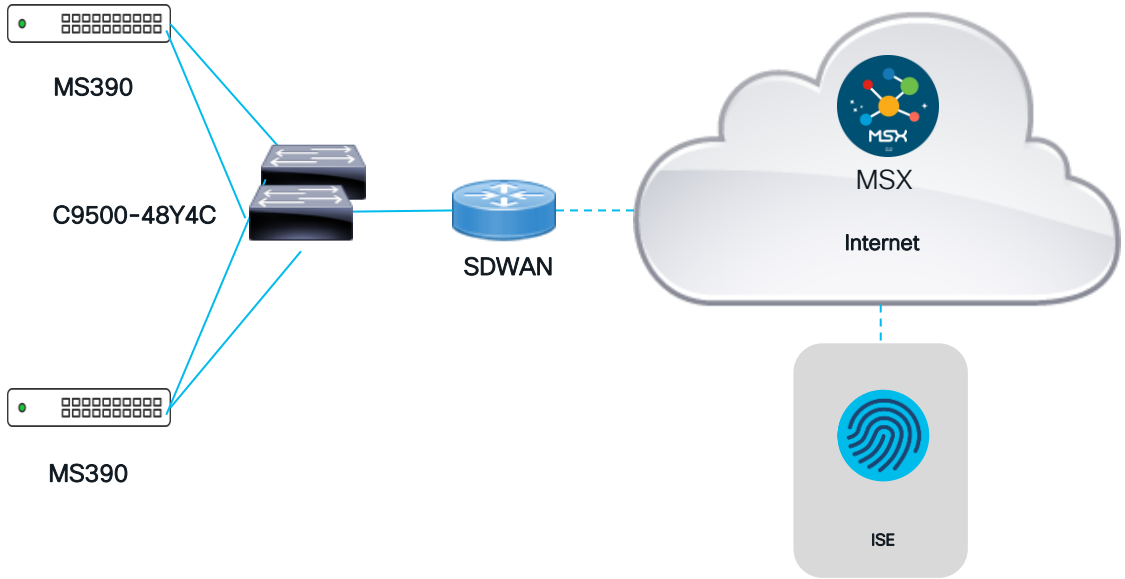
Catalyst 9500 LAN Routing and Switching Core

Catalyst 9500-48Y4C
- Stackwise Virtual

Layer 2
- VLAN Segmentation
- SGT Propagation

Layer 3
- IP Segmentation
- Local Routing
- WAN Routing

Security Policy
- TrustSec



Meraki LAN Access

- MR56 Wireless Access
- MS390 Wired Access

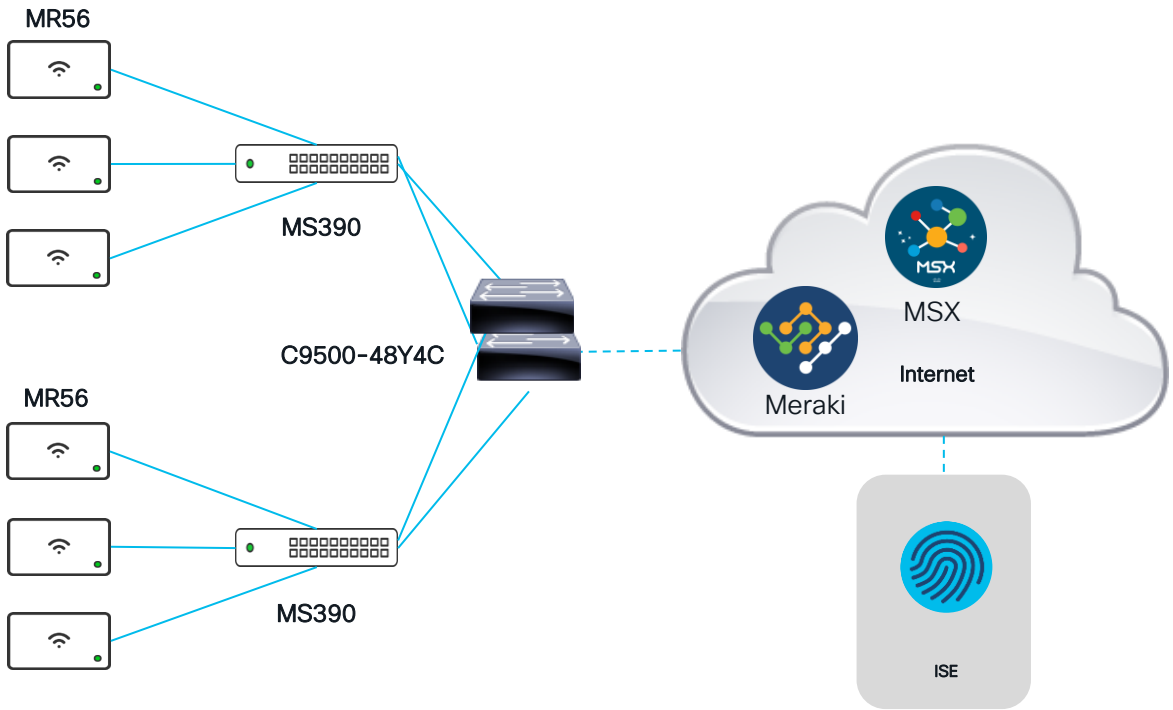
- Security Policy

Statically assigned to a switch port

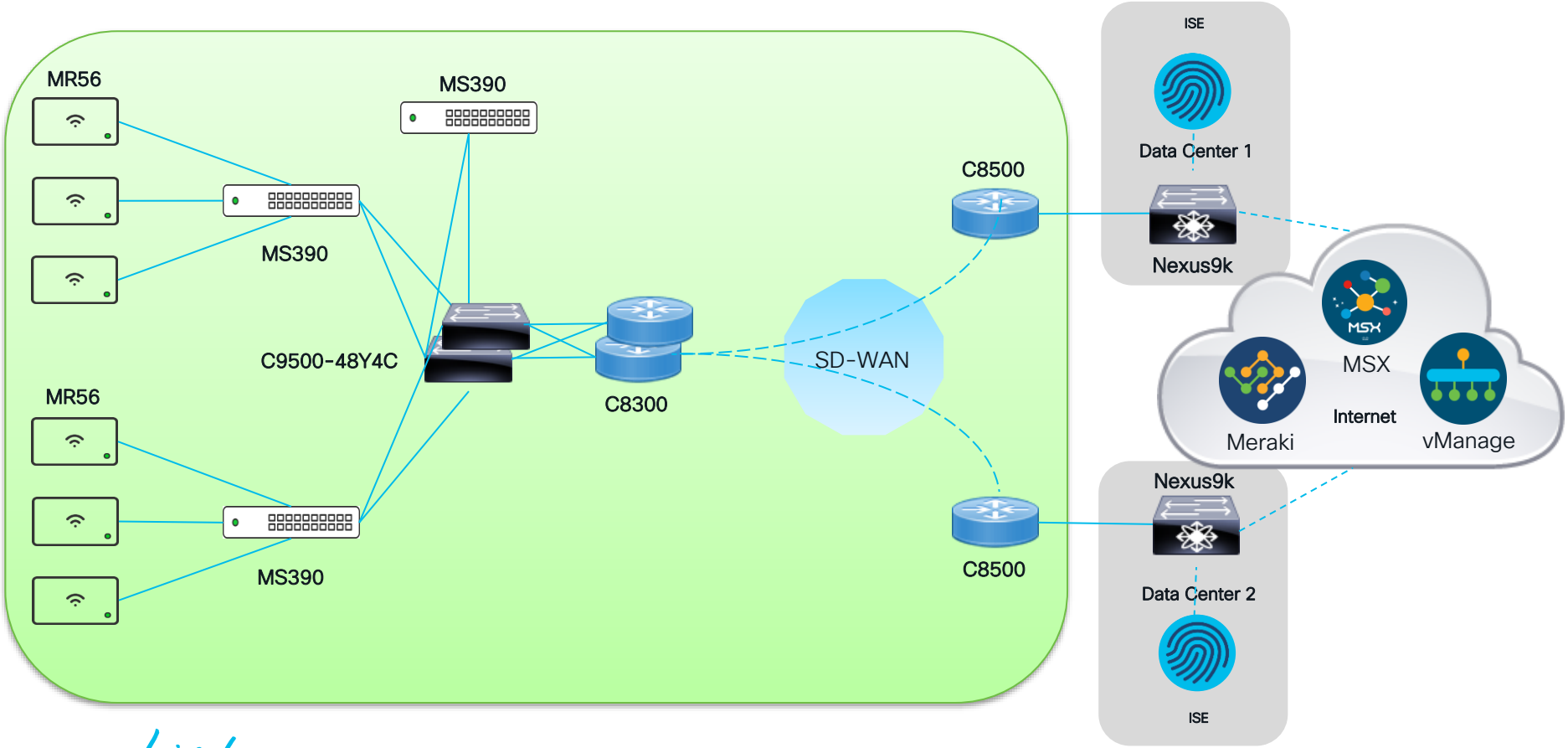
Static assignment per SSID

Dynamic assignment via RADIUS
Wired & Wireless 802.1x

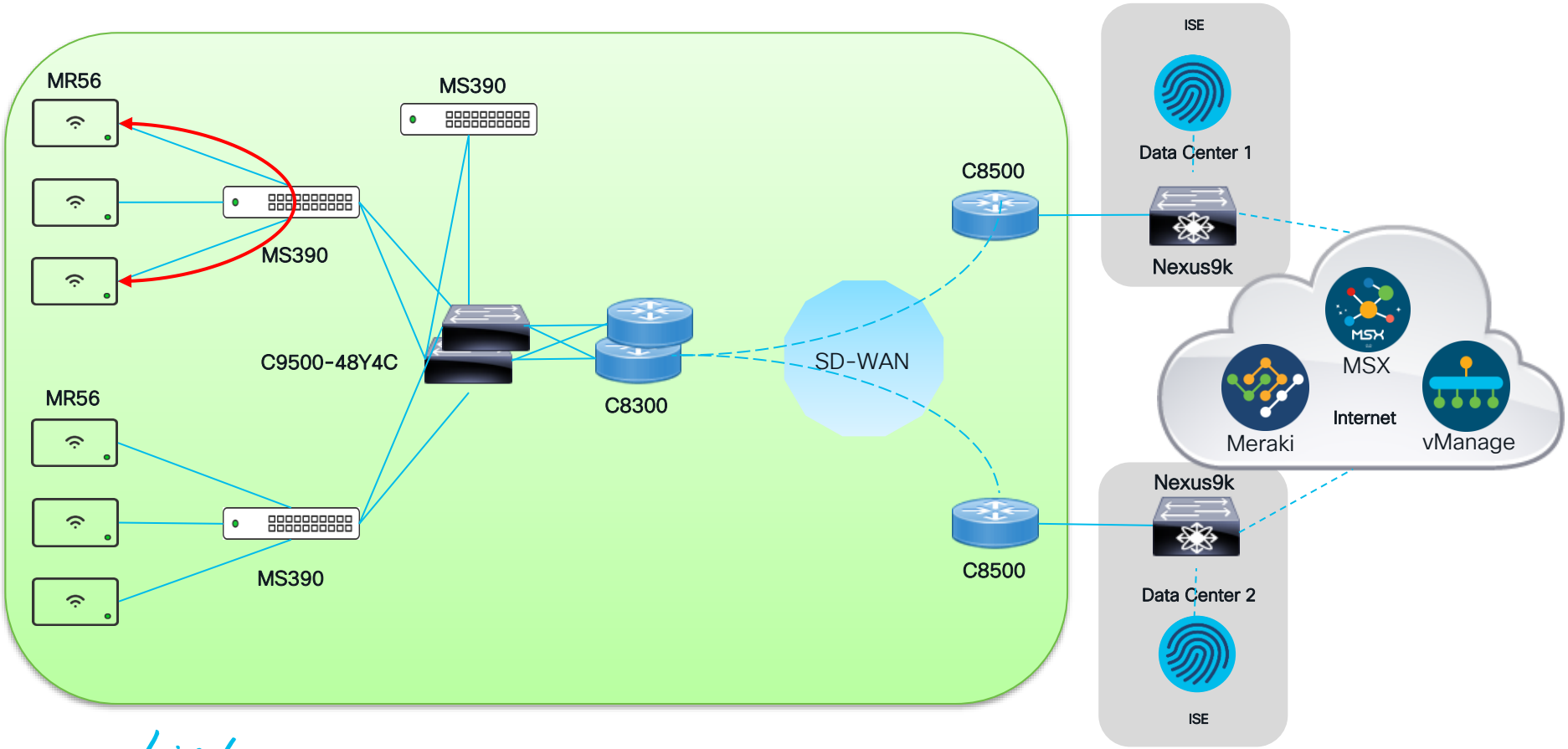
Static IP to SGT Mapping
Uses network objects



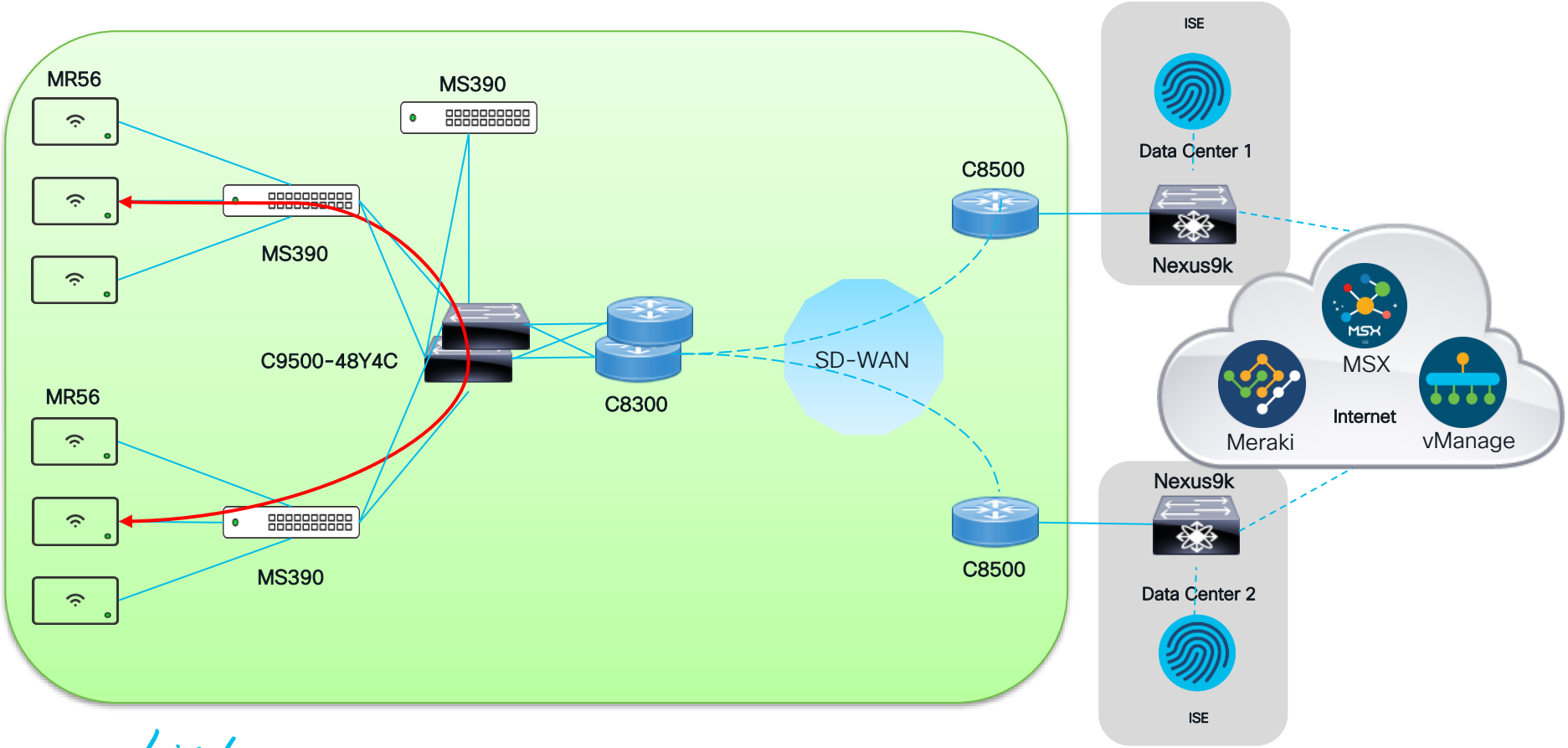
Adaptive Policy Applications



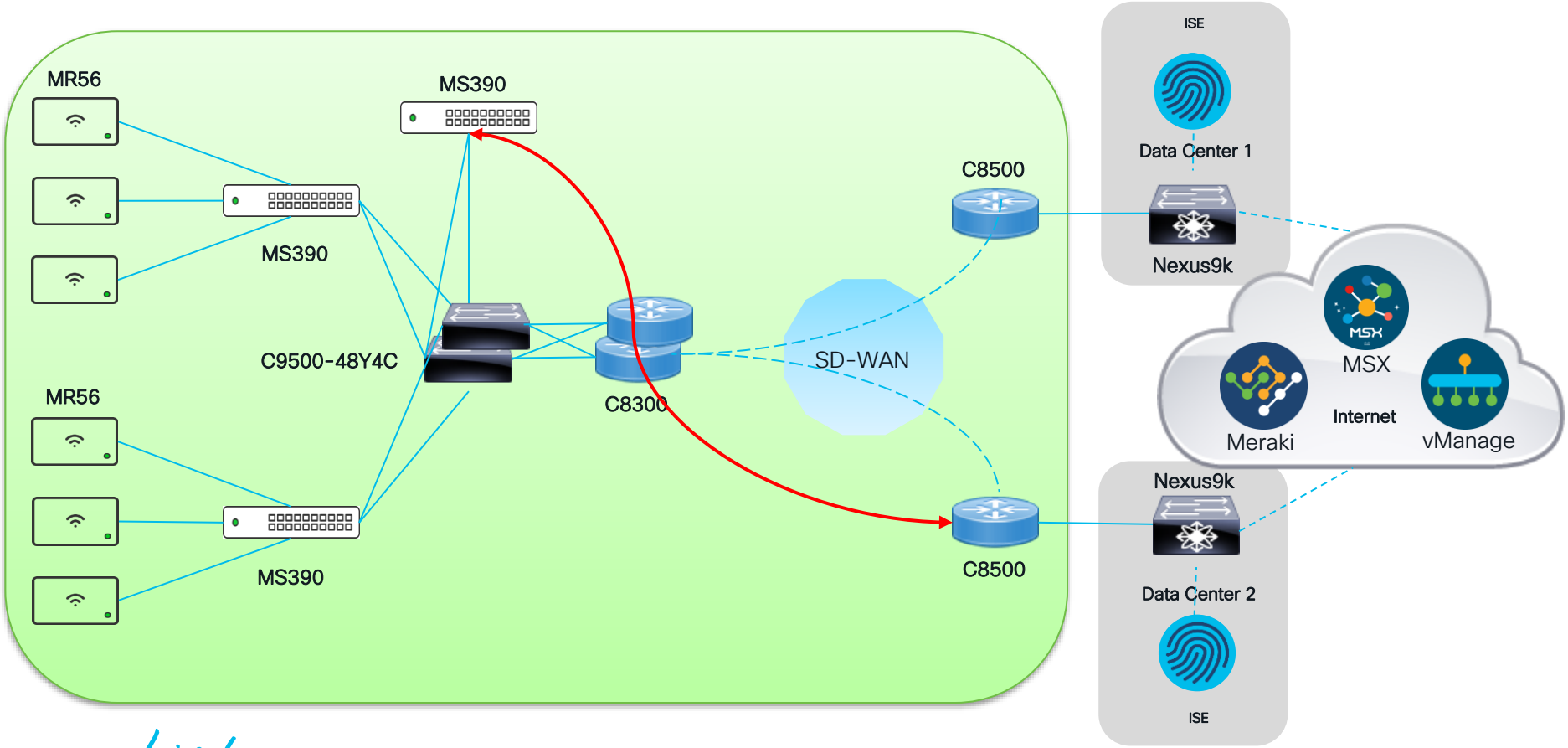
Adaptive Policy with MS390 and MR56



Adaptive Policy with TrustSec on Catalyst 9500



Adaptive Policy with TrustSec on SD-WAN

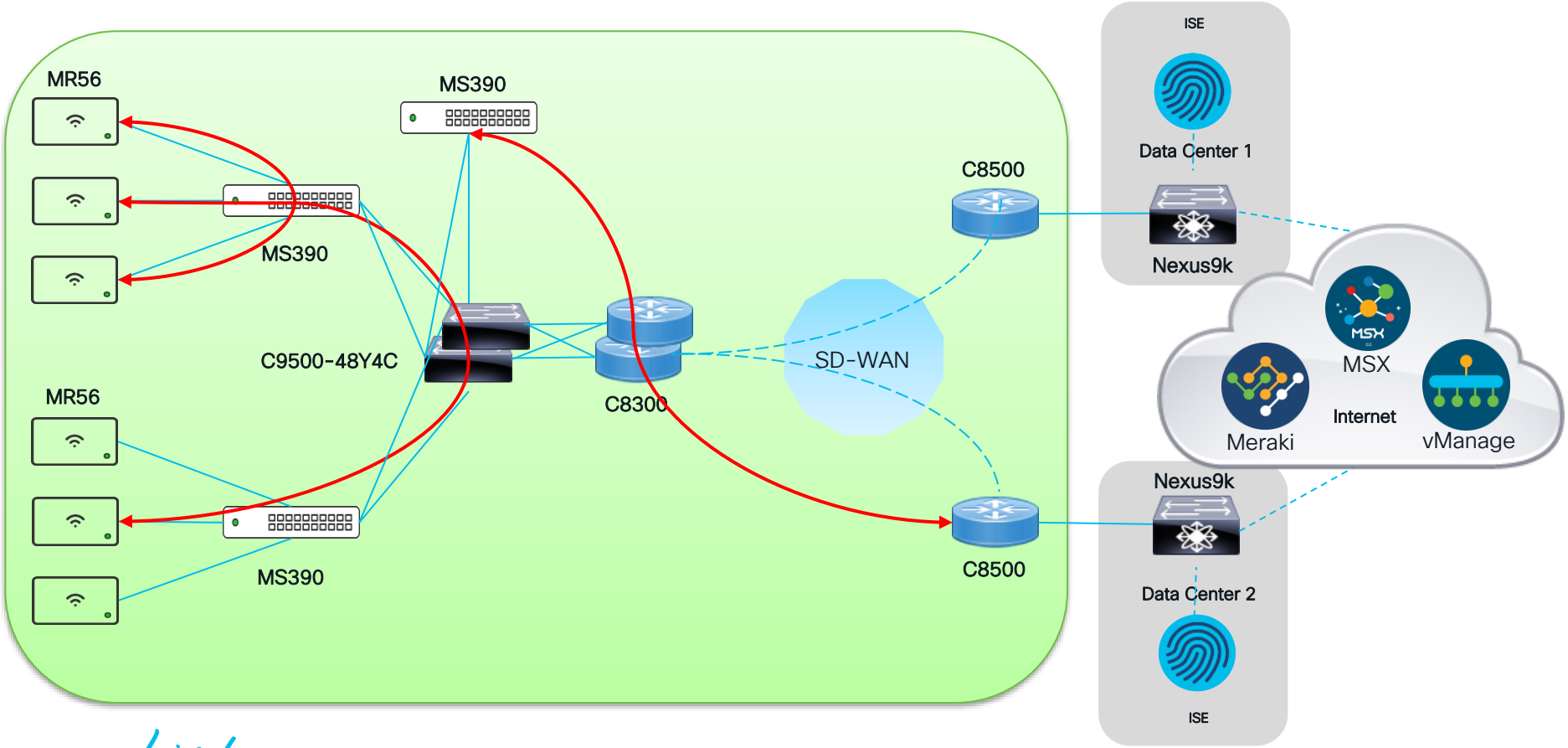


CMD Packet Structure

```
> Frame 310: 1325 bytes on wire (10600 bits), 1325 bytes captured (10600 bits)
> Ethernet II, Src: CiscoMer_75:65:00 (38:84:79:75:65:00), Dst: Cisco_9c:44:bf (70:b3:17:9c:44:bf)
> 802.1Q Virtual LAN, PRI: 0, DEI: 0, ID: 1
v Cisco MetaData
    Version: 1
    Length: 1
    Options: 0x0001
    SGT: 2
    Type: IPv4 (0x0800)
> Internet Protocol Version 4, Src:                 Dst: 209.206.51.215
> User Datagram Protocol, Src Port: 40152, Dst Port: 7351
> Data (1271 bytes)
```

MS390 Cat9k

Multiple Technologies--Multiple Applications



Conclusion

Generalized Tools to Specialized Tools

Technical Session Surveys

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