Possibilities

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Catalyst 9600 Architecture Addendum

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Please check BRKARC-3010 in the OnDemand library.

Agenda

- Overview
- Architecture
- Forwarding
- Access Control Lists
- Quality of Service
- Security Features
- High Availability Features
- Catalyst 9600 Design
- Closing

Cisco Catalyst 9000 Family

Cisco Catalyst 9200 Series

Cisco Catalyst 9300 Series

Cisco Catalyst 9400 Series

Cisco Catalyst 9500 Series

Cisco Catalyst 9600 Series

Access switching

Core switching

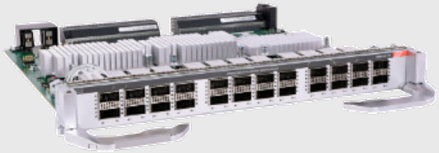
IOS-XE
Common Software Architecture

UADP ASIC
Common Hardware Architecture

*C9300, C9400, C9500 and C9600 run the same binary IOS-XE image


Overview

Cisco Catalyst 9600 Series
Line cards

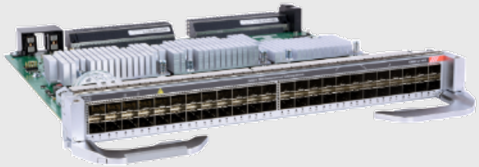


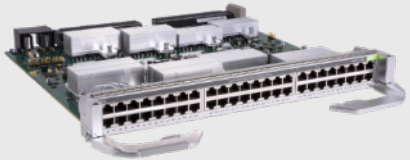
C9600-LC-24C – 100G/40G (fiber)

- 24 ports
- QSFP28/QSFP+
- Supports 100G and 40G

C9600-LC-48YL – 25G/10G/1G (fiber)

- 48 ports
- SFP28/SFP+/SFP
- Supports 25G, 10G, and 1G





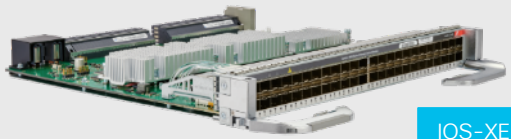
IOS-XE 17.1.1

C9600-LC-48TX – mGig (copper)

- 48 ports
- Copper 10G (NBASE-T/10BASE-T)
- Supports 10G,5G,2.5G,1G,100M and 10M

C9600-LC-48S- 1G (fiber)

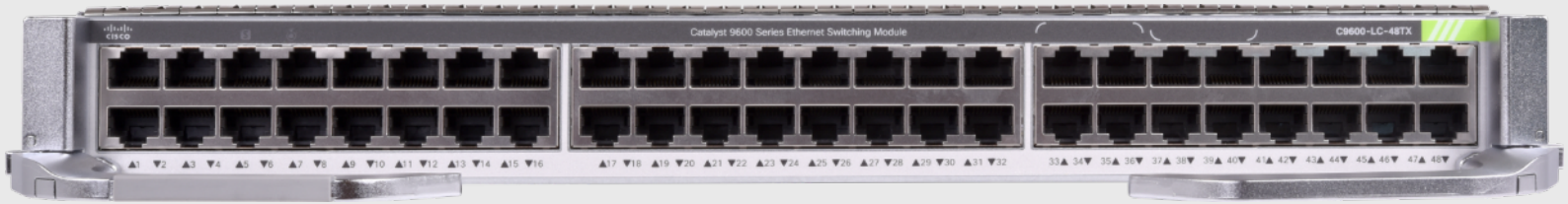
- 48 ports
- SFP
- Supports 1G



IOS-XE 17.2.1

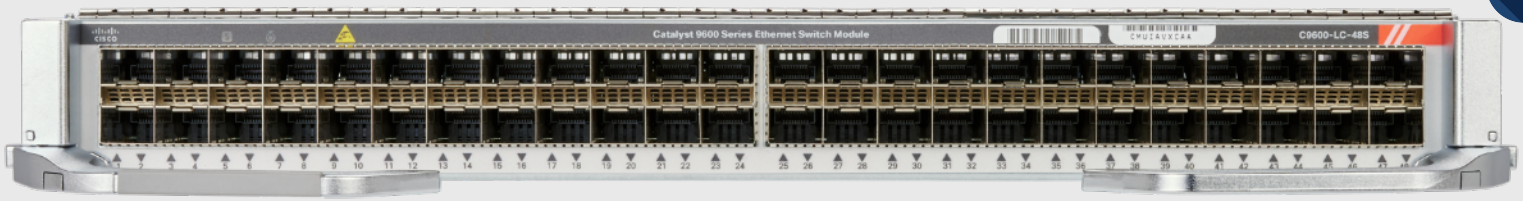
Cisco Catalyst 9600 Series
mGig Line Card – C9600-LC-48TX

For collapsed core deployment and connectivity to application servers



- All 48 ports can support 10G/5G/2.5G/1G/100M/10M
- Line rate on all ports. Any port, any supported speed
- No PoE
- Port reference is “Ten<slot#>/0/<port#>” and port speed is auto (default)

Cisco Catalyst 9600 Series
1G Line card – C9600-LC-48S

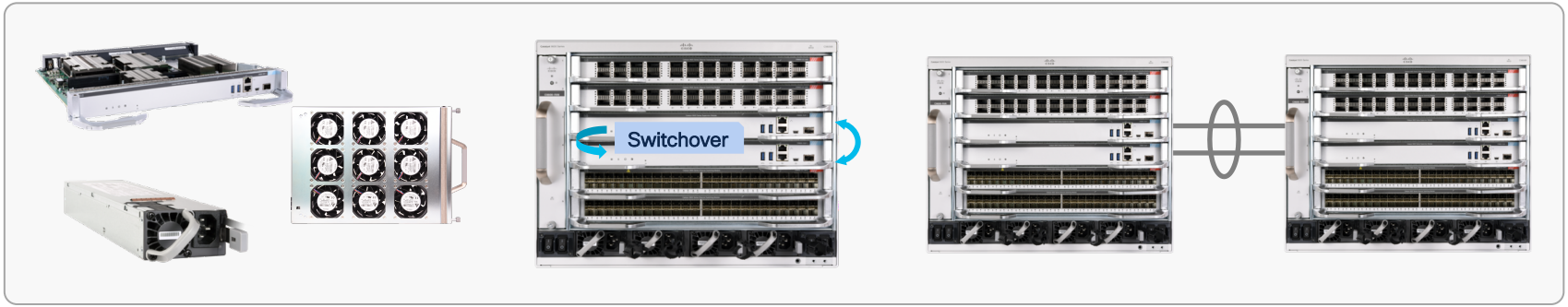


- All 48 ports support 1G
- Hardware capable of 10/100M*
- Line rate with 1G (any packet size with 1G)
- Port reference is always “Gig<slot#>/0/<port#>”

*Roadmap

High Availability

High availability
Protect business continuity

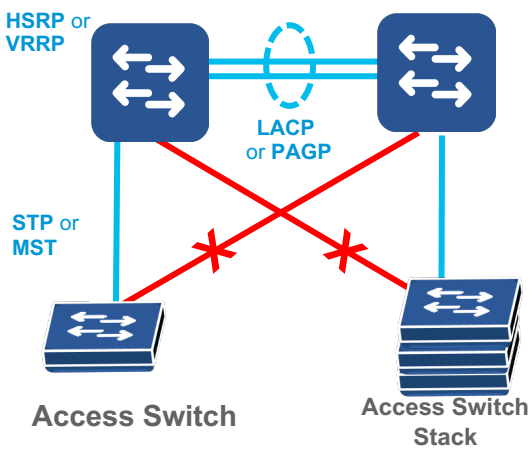


Physical redundancy	Stateful Switchover (SSO)	Non-Stop Forwarding (NSF)	In-Service Software Upgrade (ISSU)	StackWise®-Virtual
Redundant hardware • Redundant power supplies • Redundant fan in the fan tray • Redundant supervisors	**Sub-second failover** • Between supervisors within chassis (<5ms) • Between chassis with StackWise-Virtual	**Resilient L3 topologies** • NSF support for OSPF, EIGRP, ISIS, BGP	**Minimize upgrade downtime** • SMU • ISSU • GIR *	**Infrastructure resilience** • Multi-chassis EtherChannel (MEC) provides hardware-based failover

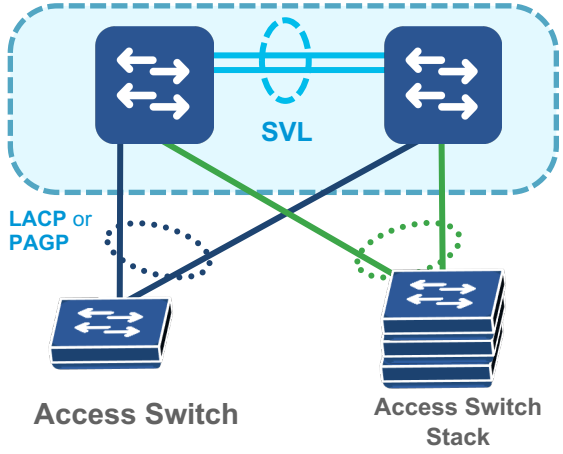
* Roadmap

StackWise Virtual
Topology Comparisons

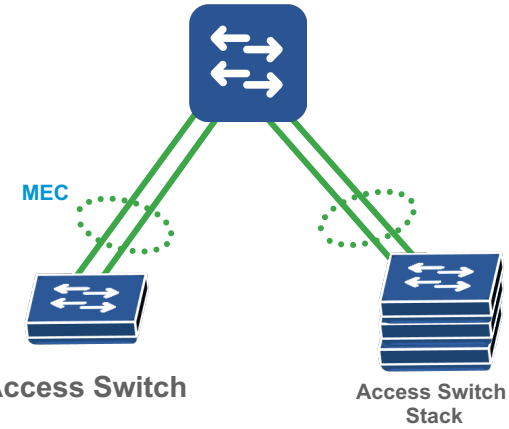
Traditional



SV - Physical



SV- Logical



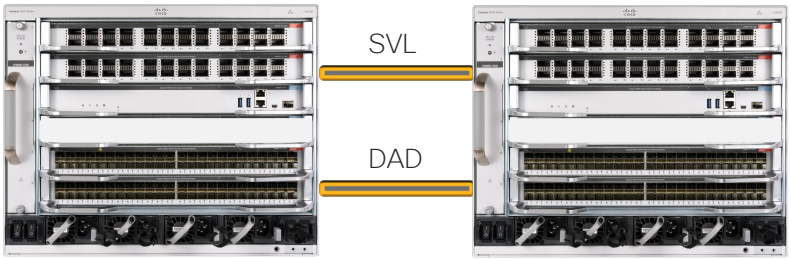
Benefits of StackWise Virtual

Simplify Operations by Eliminating STP, FHRP and Multiple Touch-Points

Double Bandwidth & Reduce Latency with Active-Active Multi-chassis EtherChannel (MEC)

Minimizes Convergence with Sub-second Stateful and Graceful Recovery (SSO/NSF)

StackWise Virtual with Single Sup per Chassis

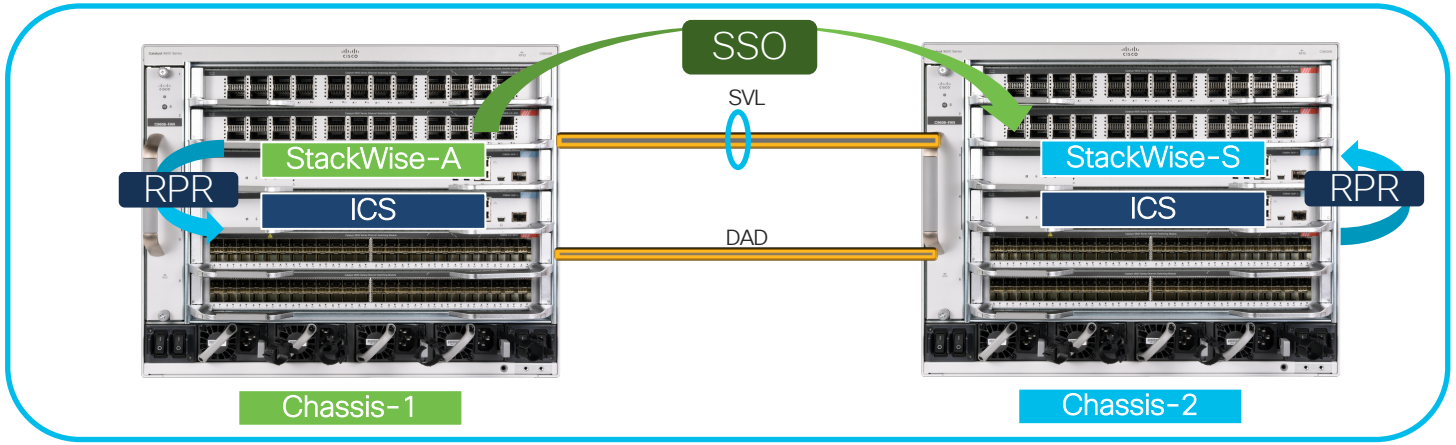


StackWise Virtual is supported with IOS-XE 16.12.1 or later

- SVL: StackWise Virtual Link
  - Same speed ports (10G or higher)
  - Up to 8 ports
- DAD: Dual Active Detection:
  - Fast Hello
    - Directly connected
    - Up to 4 links
  - Enhanced PAgP
    - EtherChannel with PAgP
    - Up to 4 port-channels
- IOS-XE 16.12.x and 17.1.x: 2nd Supervisor is not supported in the chassis and will be powered off if inserted in SVL Mode

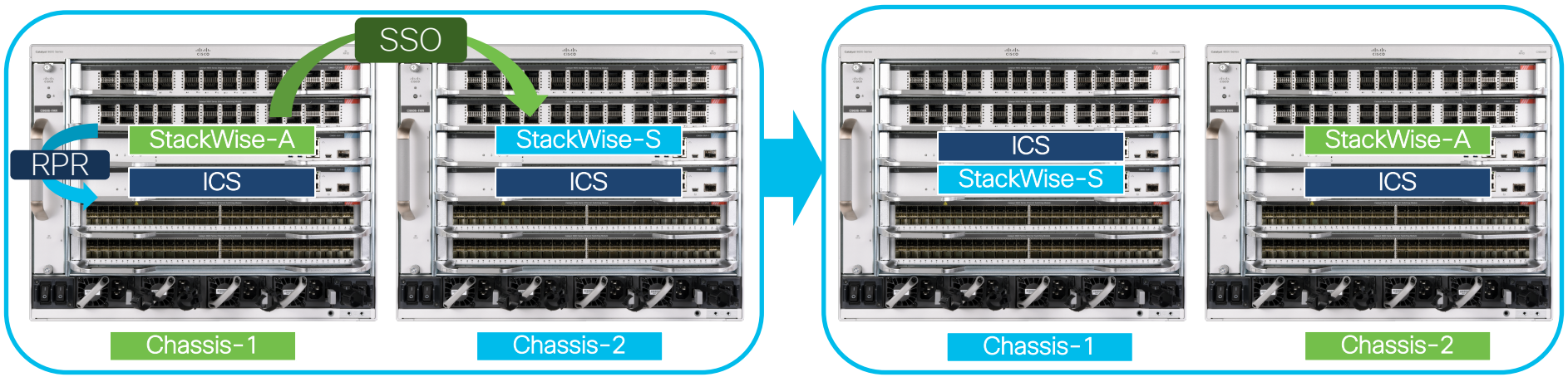
- A Distribution layer technology allowing stacking of 2 switches
- Supports flexible distances with support of all supported cables and optics
- SVL and DAD links are supported on any ports with 10G or higher speed, including QSA
- DAD support with **1G** speed is added from 16.12.2/17.1

StackWise Virtual Quad Sup RPR



Role	Description	Control Plane	Data Plane
StackWise-A	StackWise Virtual Active In Chassis Active	Active	Active
StackWise-S	StackWise Virtual Standby In Chassis Active	Hot Standby	Active
ICS	In-Chassis Warm Standby	Warm Standby	Warm Standby

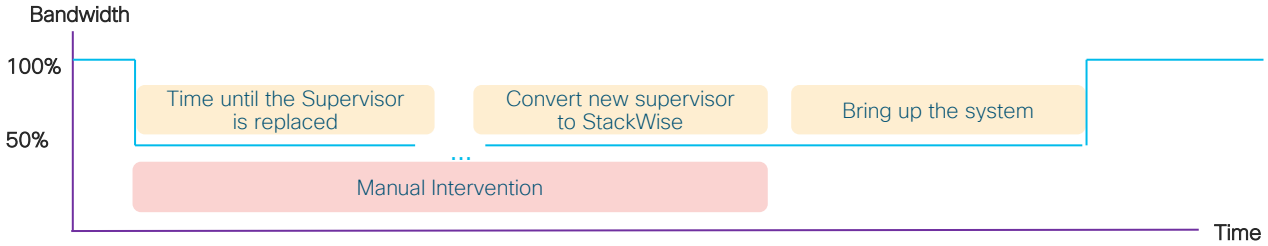
Quad Sup StackWise Virtual Switchovers



1. StackWise Active in Chassis-1reload, the StackWise-S in chassis-2 become StackWise Active
2. Cold standby supervisor in Chassis-1 continue the boot process to become StackWise standby while the line cards in chassis-1 get reset
3. ICS in Chassis-2 remain the same. The reloaded Sup in Chassis-1 comes back and become ICS in Chassis-1

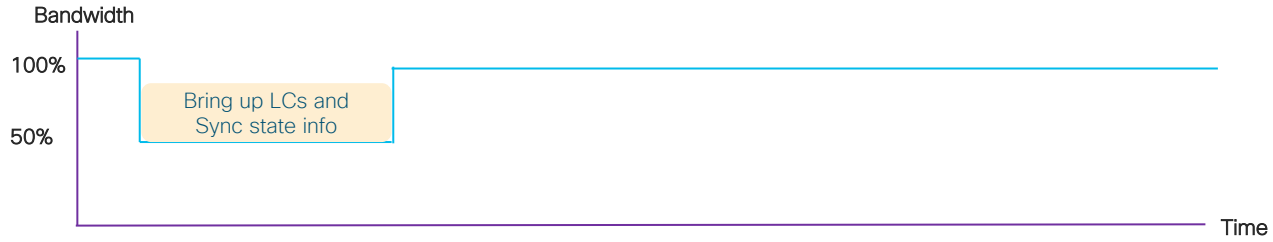
StackWise Virtual Convergence

Single SUP per Chassis



- Manual Intervention
- Non-Deterministic Recover time
  - Single-homed device
  - Back to full bandwidth

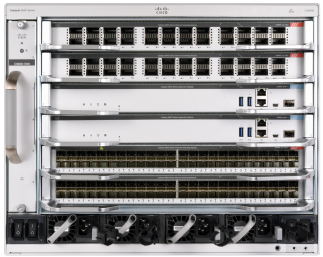
Dual SUP per Chassis



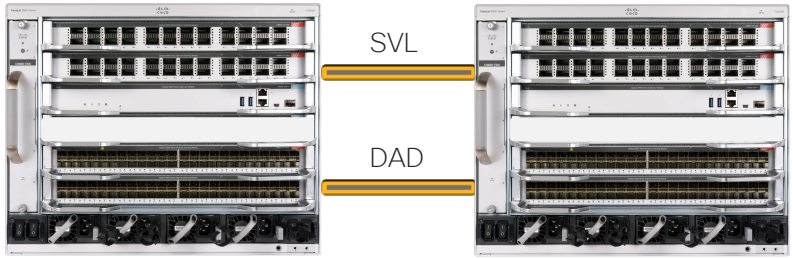
- Automatic recovery
- Deterministic Recover time for
  - Single-homed device
  - full bandwidth restoration

In Service Software Upgrade (ISSU)

- ISSU supported starting with 16.12.1
- Between EMs and within EMs



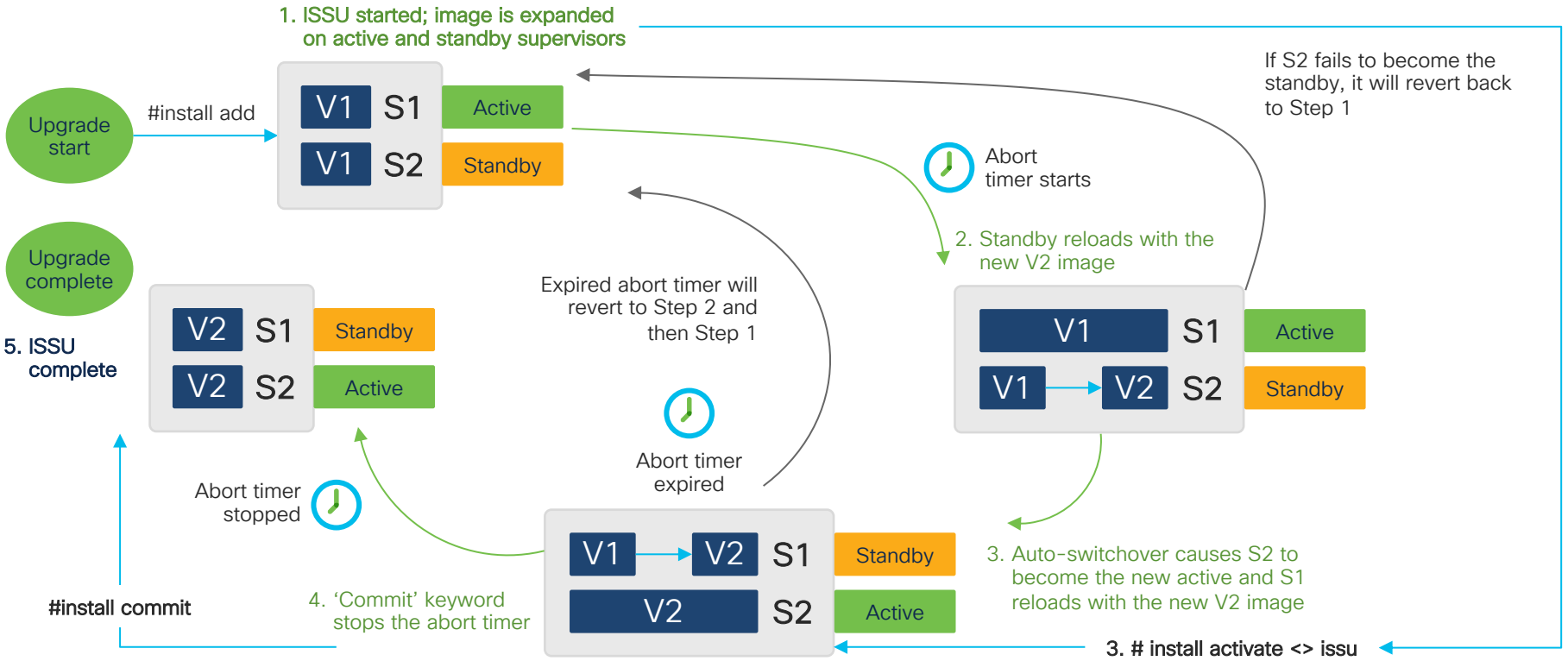
In Chassis



StackWise Virtual

- ISSU provides a mechanism to perform software upgrades and downgrades without taking the switch out of service
- Leverages the capabilities of NSF and SSO to allow the switch to forward traffic during Supervisor IOS upgrade (or downgrade)
- Key technology is the ISSU Infrastructure
  - Allows SSO between different software versions

Cisco Catalyst 9000 Series ISSU workflow



Closing

Cisco Catalyst 9600 Series Summary

Offering a comprehensive, high-density portfolio on campus with 100G, 40G, 25G, 10G

Architectural flexibility

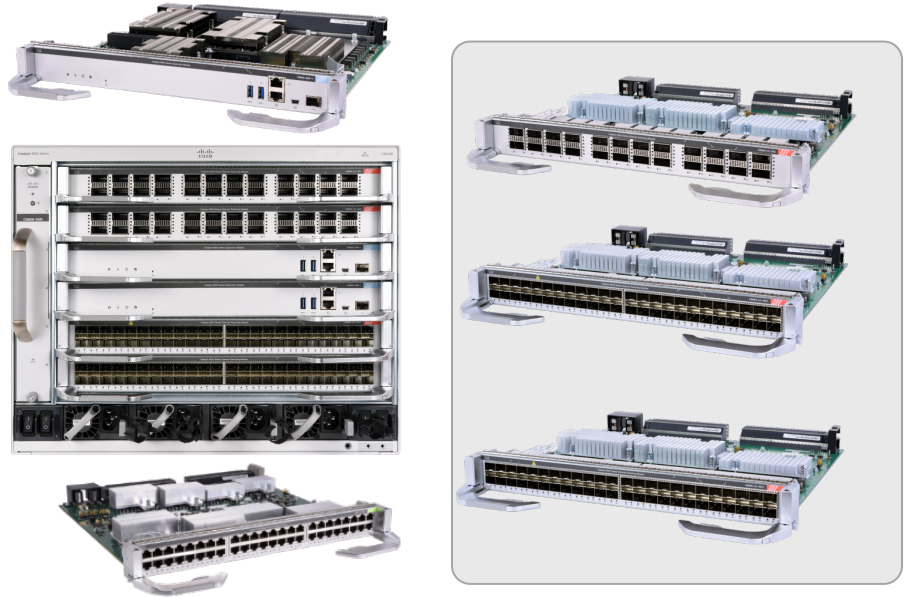
- Broad support for 1G/10G, 25G, 40G, 100G from aggregation to core

Infrastructure investment protection

- Non-disruptive migration from 10G to 25G and beyond

Cost-effective optics

- Innovation in standards to support high-density, multilane optics



Platform benefits

Up to 1TB SSD storage

Customizable ASIC templates

Same Cisco IOS® XE image

Dual-serviceable fan tray

N:1 power supply redundancy

Possibilities

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Roadmap: Machine Learning and Artificial Intelligence	CCP-1201	Tues 3:30 – 5:00
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Possibilities

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