



The bridge to possible

Cisco Data Center Is Anywhere Your Data Is





Cisco MDS 9700 SAN Directors

Quick technical overview

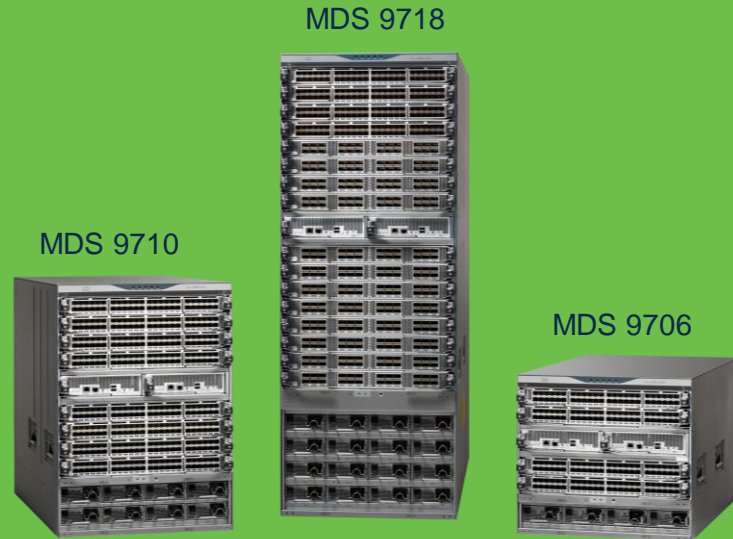
Bhavin Yadav

Technical marketing engineer

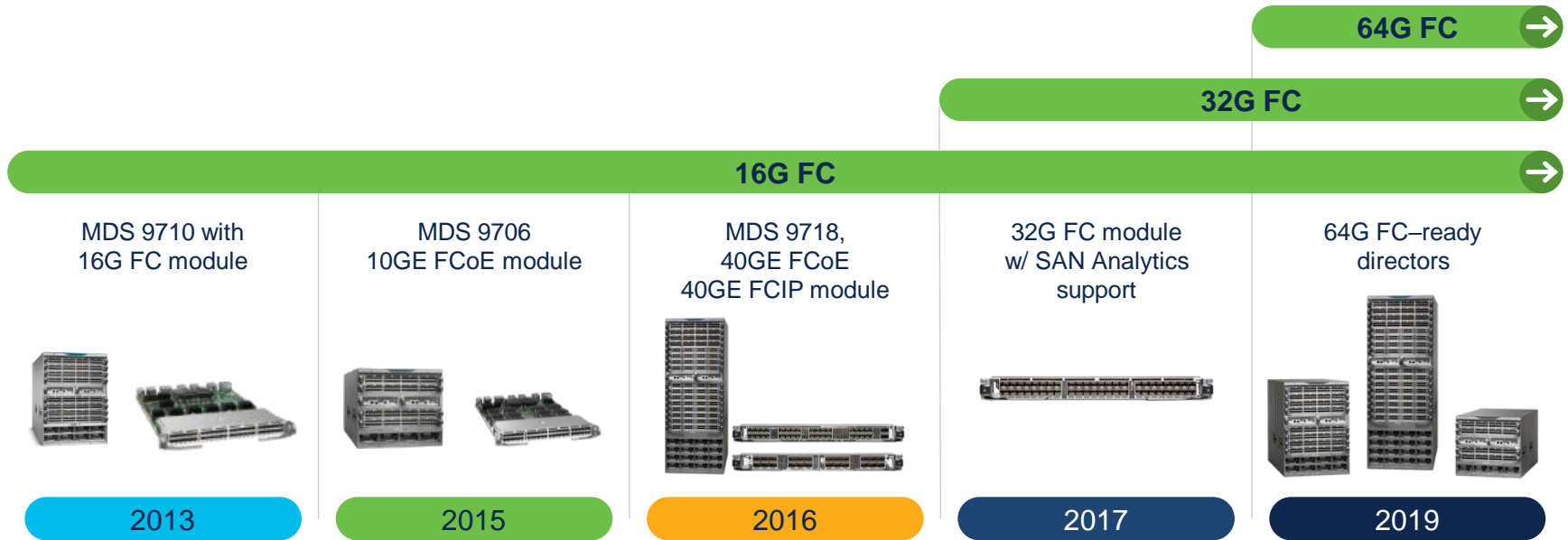
March 26, 2020

Cisco MDS SAN Directors

Cisco MDS 9000 Series Directors



Cisco storage networking: Pioneers of investment protection

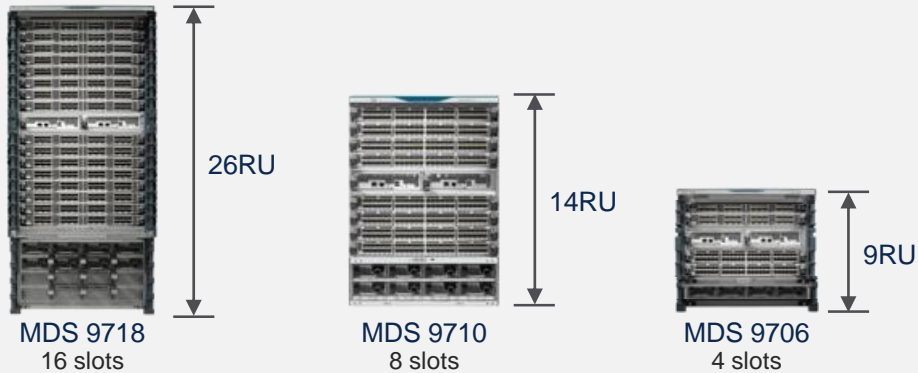


Industry's first 64G FC-ready directors with built-in analytics support

Cisco MDS 9000 Switch family – overview

Line-rate, nonblocking, non-oversubscribed, since 2013

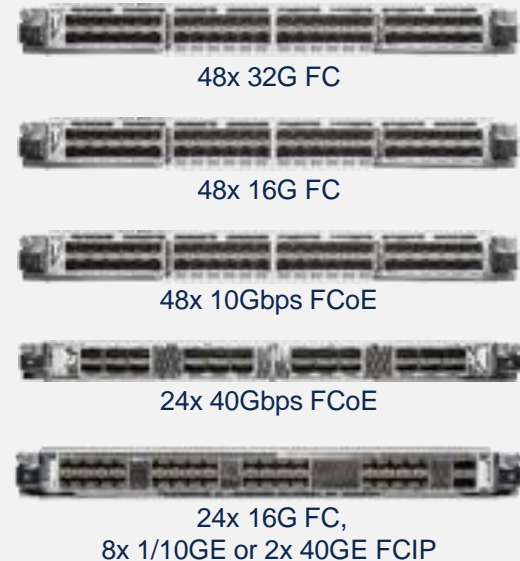
SAN Directors



- Built-in SAN Analytics support*
- Next-generation (64G FC) ready chassis
- Security using anti-counterfeit technology
- Transparent NVMe/FC integration
- Automation using Ansible, Splunk, OpenStack, etc.
- Built-in redundancy and flexibility combined with high availability

* 32G module only

Modules

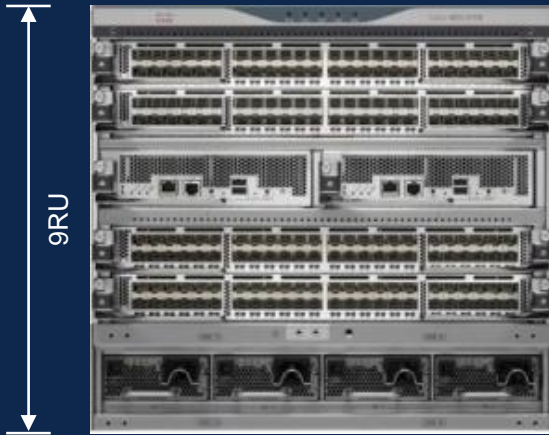


Cisco MDS 9706 Multilayer Director

Powerful small form factor director



Launched:
March 2015



Small form factor



192x 32G FC line-rate ports
4-slot capacity

Higher throughput



3 Tbps per slot bandwidth*
12 Tbps switching capacity

Multi-protocol



FC, FCoE, FCIP

Multi-speed



2/4/8/10/16/32G FC
10/40GE FCoE
1/10/40GE FCIP

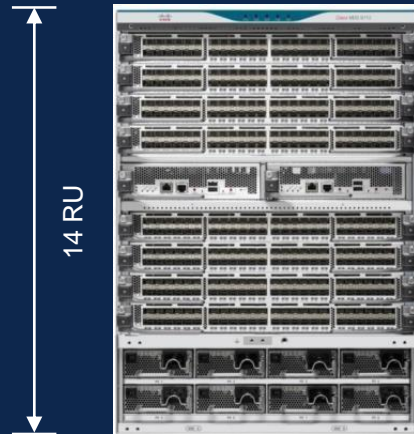
* Using Fabric-3 and Supervisor-4 modules

Cisco MDS 9710 Multilayer Director

Industry-leading reliability



Launched:
March 2013



- Up to 8 line cards
- Up to 6 fabric modules
- Dual supervisors

Performance



3 Tbps per slot bandwidth*
24 Tbps switching capacity

Capacity



384x 32G FC line-rate ports

Reliability



Redundant hardware components

Flexibility



Multi-protocol support

Multi-speed



2/4/8/10/16/32G FC, 10/40GE FCoE
1/10/40GE FCIP

* Using Fabric-3 and Supervisor-4 modules

Cisco MDS 9718 Multilayer Director

Industry's highest-density director



Launched:
February 2016



Highest port density



768x 32G FC line-rate ports
16-slot capacity

Highest scalability



48 to 768 ports
Enhanced scalability

Highest throughput



3 Tbps per slot bandwidth*
48 Tbps per chassis

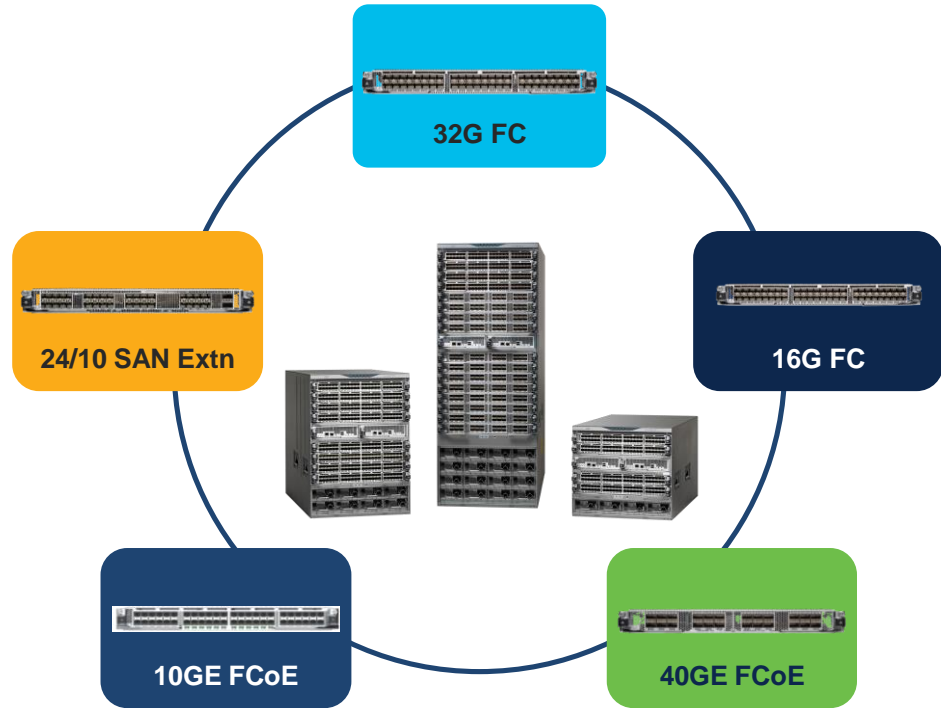
* Future support

Cisco MDS 9700 modules

Bringing FC, FCoE, and FCIP together

(M)Any options, any chassis

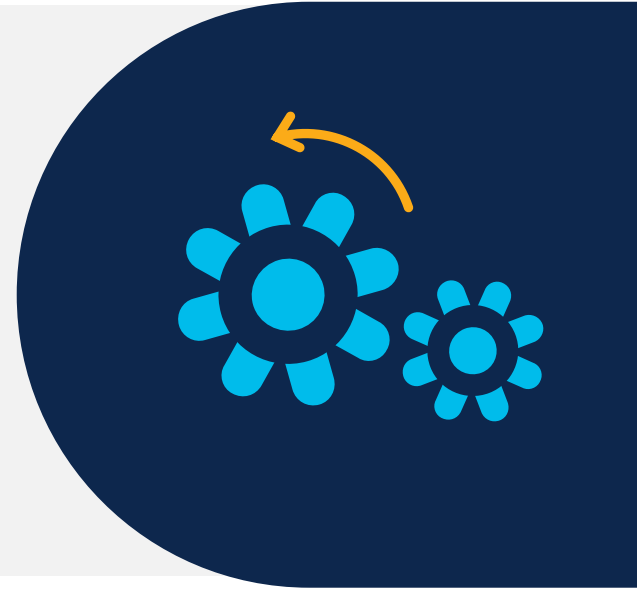
- **Flexibility:** Any speed, any count
- **Redundancy:** Any ASIC, any module
- **Interchangeable:** Any chassis, any position
- **Multiprotocol:** Any protocol, any chassis
- **Licensing:** Simple and transparent



Supervisor-4 module for Cisco MDS 9700

- Common supervisor for Cisco® MDS 9700 chassis
- Cisco Secure Boot support using anti-counterfeit chip
 - Run genuine Cisco software using genuine Cisco hardware
- Single 8-core Intel® Broadwell processor
 - Twice the performance of Supervisor-1 module

Nondisruptive upgrade support



Fabric-3 module

The Fabric-3 module is the next-generation fabric module for Cisco® MDS 9706 and Cisco MDS 9710 chassis



Benefits

- Double the bandwidth compared to Fabric-1 module
- Only 3x Fabric-3 modules required for 32G line cards
- 6x Fabric-3 modules will support redundancy for 32G line cards
- 6x Fabric-3 modules will support future 64G line cards

Nondisruptive upgrade support

Supported combinations in Cisco MDS 9700 chassis

(Supervisor modules and fabric modules in MDS 9700 chassis)

Combination	Supervisor-1 module	Supervisor-4 module	Fabric-1 module	Fabric-3 module
Supervisor-1 module	✓	✗	✓	✗
Supervisor-4 module	✗	✓	✗	✓
Fabric-1 module	✓	✗	✓	✗
Fabric-3 module	✗	✓	✗	✓

48-port 32-Gbps Fibre Channel module



- 48 x 32-Gbps Fibre Channel line-rate ports
- Common module for Cisco® MDS 9700 Series platform
- 4/8/16/32-Gbps FC supported speeds in SFP+ form
- Dedicated analytics Network Processing Unit (NPU)
- Up to 1.5 Tbps front-panel bandwidth
- Maximum 8300 buffer credits per port group
- 3 port groups; 16 ports per port group; 16 ports per ASIC
- Cisco PID: DS-X9648-1536K9

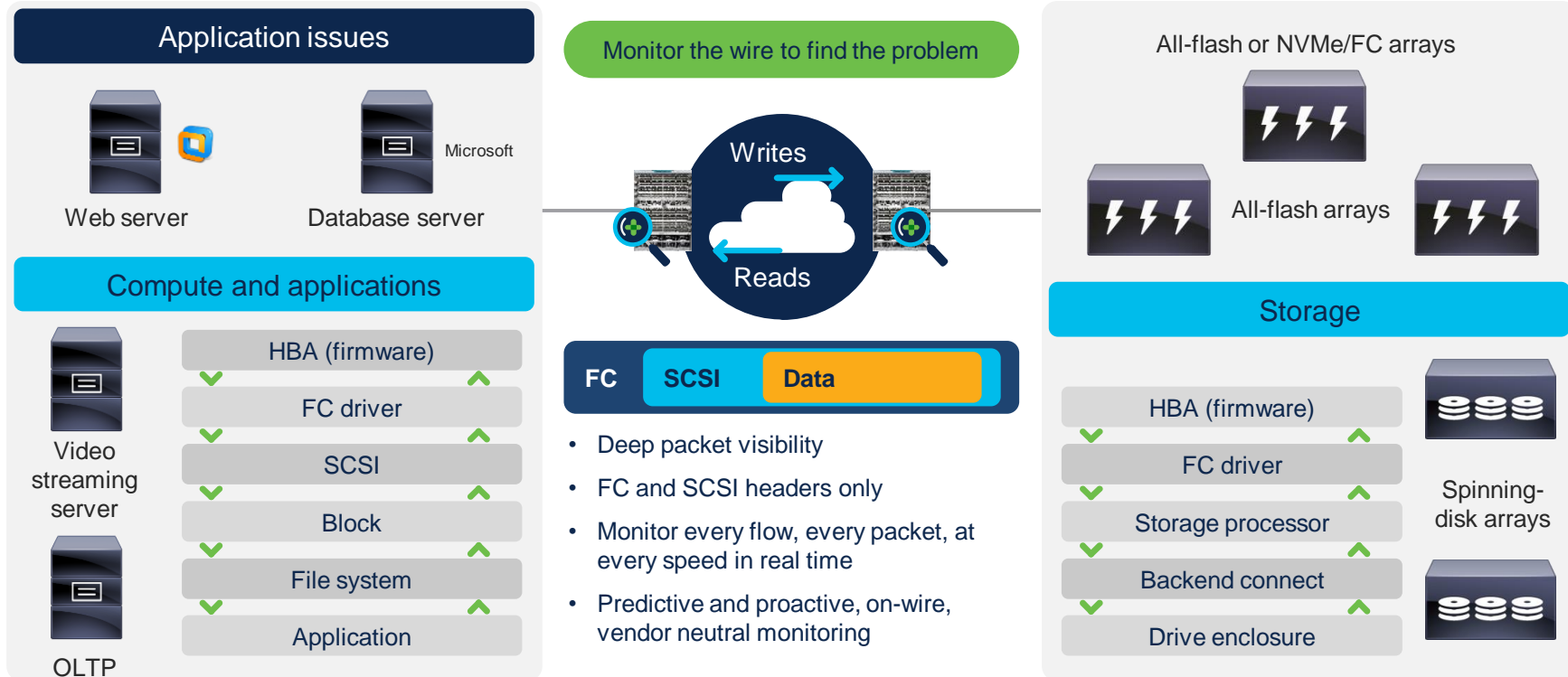
Cisco MDS 9000 24/10-Port SAN Extension Module



- Multi-protocol support: FC and FCIP
- Multi-port support: 24x 2/4/8/10/16G FC, 8x 1/10 GE IPS, 2x 40GE IPS*
- FCIP options: Compression, write acceleration, tape acceleration, IPsec encryption
- FC options: FC Cisco TrustSec® encryption
- Common module for MDS 9700 Directors
- Cisco PID: DS-X9334-K9

Software innovations

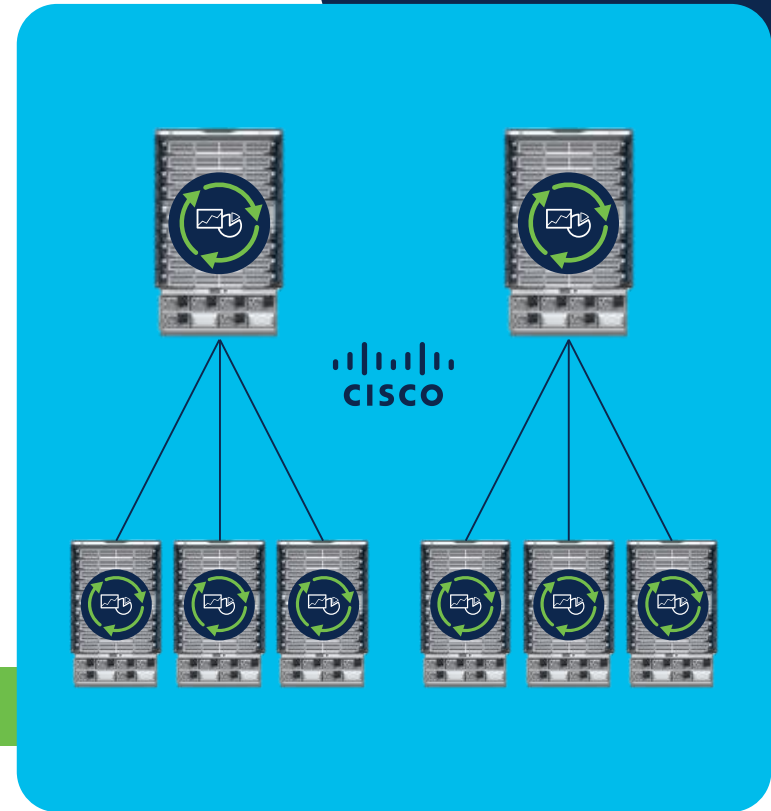
Where is the problem?



Cisco SAN Analytics: Simple and secure

- Simplified solution (No professional services are needed.)
- Secure solution (Data never leaves the switch.)
- Install in seconds, operationalize in minutes
- Easy third-party integration
- No cabling, devices, or ports needed
- Low-cost, affordable solution
- Free 120-day switch evaluation

Cisco® 32Gbps MDS SAN product family



Switch-native line-rate IO visibility



Pervasive | No appliance | No probes | Always on



High performance
Onboard analytics engine for
data collection



End-to-end visibility for
trouble shooting



100% visibility
of any packet, any flow,
any speed



Scale with MDS 9700
Director or fabric switch

Transparent NVMe/FC integration



No

additional license
additional configuration

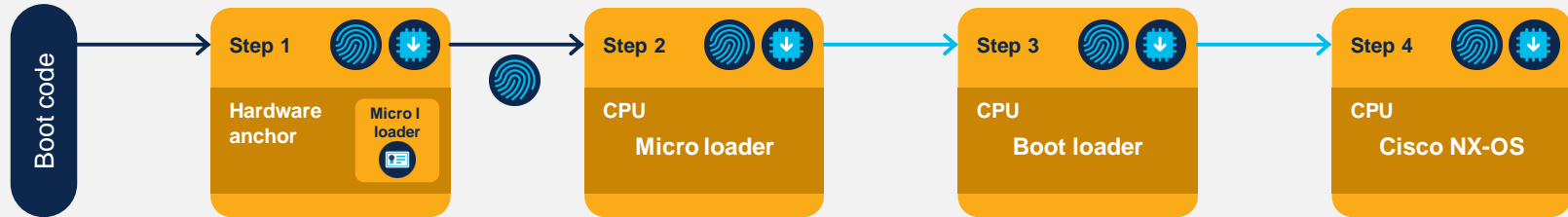
Supported
Today !!!

Transparent integration
End-to-end visibility (Analytics)
Supported across MDS portfolio

Yes

Anti-counterfeit technology and Cisco Secure Boot

Cisco Secure Boot



- Anti-counterfeit technology using built-in security chip
- Software authentication using SUDI (Secure Device Identifier)

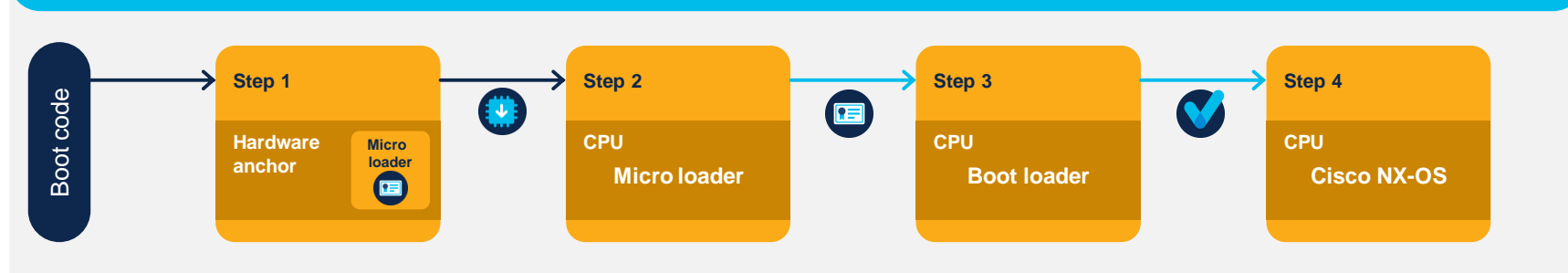
SUDI = Combination of Serial number and product ID

- Your switch is running **genuine Cisco® hardware** using genuine Cisco software

→ Image Signing → Integrity Checks

Anti-counterfeit technology and Cisco Secure Boot

Cisco Secure Boot



Step 1: Image loads into micro loader; NX-OS reads PID and SN from ID-SPROM of module during bootup.

Step 2: Cisco NX-OS authenticates the module's PID and SN against the SUDI in ACT2 chip obtained during bootup.

Step 3: Image is verified for integrity.

Step 4: Image is loaded on the module.


- On authentication failure, module will fail to load, with an error message: 
- ACT2_AUTH_FAIL: ACT2 test has failed on module 9 with error : ACT2 authentication failure

 Image Signing  Integrity Checks

Software features



SAN Analytics



Built-in, on-switch packet visibility with streaming



Investment protection



Next-generation (64G FC) ready chassis



Security



Cisco Secure Boot and anti-counterfeit technology



Automation



OpenStack, Restful API, Ansible, AutoZone

Additional resources

Additional resources

- [Cisco MDS 9700 data sheet](#)
- [Cisco NX-OS data sheet](#)
- [Interoperability guide](#)
- [Supported optics guide](#)
- [Cisco NX-OS configuration guides](#)
- [Cisco NX-OS programmability guide](#)
- [Release notes](#)
- [White papers](#)

Additional resources

Cisco MDS 9000 Series Multilayer Switches/Cisco Data Center Network Manager (DCNM) videos:

- <https://www.youtube.com/user/ciscomds9000/videos> or
- <https://www.youtube.com/user/Cisco/videos>

Pre-sales videos:

- [Cisco MDS 9700 with 32G FC and Integrated Analytics](#)
- [Cisco MDS and UCS - better together](#)

