



Cisco Nexus 7000 Series Simplified End-to-End Management

Reducing Management Complexity and Increasing Efficiency

At-A-Glance

Introduction

As the data center has grown to support increasing enterprise demands, so has the need to deploy and manage new and evolving technologies. Simplified operations are critical in meeting these challenges and achieving increased operational efficiency through proactive management and reduction in unplanned network downtime.

Cisco Nexus 7000 Series Switch Operational Manageability

The Cisco Nexus™ 7000 Series is a modular data center–class line of switches designed for highly scalable end-to-end 10 Gigabit Ethernet networks. The fabric architecture scales beyond 15 terabits per second (Tbps), with future support for 40-Gbps and 100-Gbps Ethernet. This new platform is designed for exceptional scalability, continuous system operation, and transport flexibility.

The Cisco Nexus 7000 Series Switch, the first in a new generation of data center–class switches, delivers new levels of operational manageability and serviceability to increase the efficiency of data center operations.

Operational Manageability on Cisco Nexus 7000 Series

Flexible and Efficient Management

- **Extensible Markup Language (XML)–based programmatic interface:** Self-describing and extensible; helps keep operating expenses (OpEx) for upgrade and migration to a minimum
- **Configuration verification:** Allows the system operator to validate the configuration and available hardware resources prior to applying the configuration; provides the capability to preconfigure the device and apply the configuration at a later time, helping ensure that the configuration is correct and that appropriate hardware resources are available

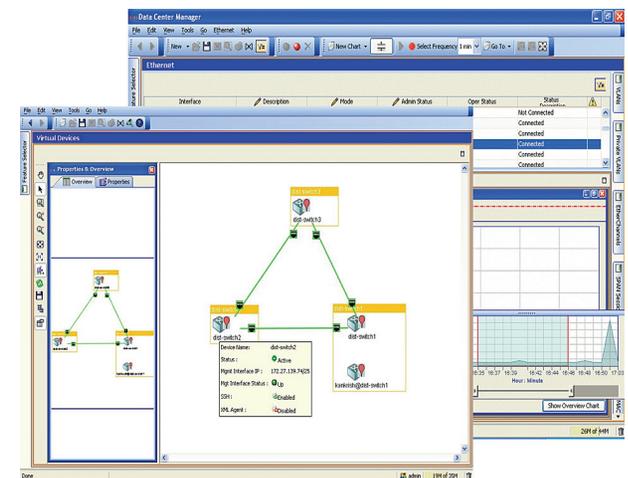
- **Connectivity management processor (CMP):** Supports innovative “lights-out” remote management of the Cisco Nexus 7000 Series
- **Monitoring LEDs:** Provide a clear summary of the status of the major system components, allowing operators to rapidly identify a need to perform further investigation; these LEDs report the status of power supply, fan, fabric, supervisor, and I/O modules
- **Front-to-back airflow options:** Helps ensure that use of the Cisco Nexus 7000 Series addresses the requirement for hot aisle and cold aisle deployments without additional complexity
- **Integrated cable management:** Allows the dense systems to be managed, either to a single side or to both sides for maximum efficiency and flexibility
- **Hot-swappable power supplies:** Enables continuous system operation; power supplies incorporate advanced features such as internal fault monitoring, temperature sensing, real-time power-draw statistics, and variable-speed fans.
- **Simple Network Management Protocol (SNMP):** Complies with SNMP Versions 1, 2, and 3
- **Role-based access control (RBAC):** Enables Cisco® NX-OS to control user access per device, allowing the administrator to restrict and customize user access as required
- **Command-line interface (CLI) similar to that of Cisco IOS® Software:** Uses the industry-standard Cisco IOS CLI to minimize the amount of time needed for operators to learn the system and become operationally proficient

Cisco Data Center Network Manager (DCNM)

Cisco DCM is a comprehensive and centralized administration solution dedicated to data center network operations (Figure 1). Cisco DCM offers these important advantages:

- **Multiprotocol awareness:** Manages Ethernet, IP, and network security; reducing operations costs
- **Fault, configuration, accounting, performance, and security (FCAPS) coverage:** Offers full network service lifecycle administration with emphasis on provisioning, performance, and assurance, providing simplified lifecycle management
- **Open application:** Offers a middleware API that exposes stateful network information to third-party applications; enabling interoperability

Figure 1. DCM GUI



Powerful Integrated Toolset for Ease of Servicing

- **Control plane analyzer:** The Cisco Nexus 7000 Series switch includes a built-in packet analyzer to monitor and troubleshoot control plane traffic. The packet analyzer is based on the popular Wireshark open source network protocol analyzer.
- **Flexible Cisco NetFlow:** Effective hardware-based sampling improves flow information. TCP flags are now exported as part of the flow information and are very useful in understanding TCP flow directions and detecting denial-of-service (DoS) attacks. The platform uses the flexible Cisco NetFlow command-line interface (CLI).
- **Cisco Embedded Event Manager (EEM):** Cisco EEM is a powerful device and system management technology integrated into Cisco NX-OS. Cisco EEM enables operators to customize behavior based on network events as they happen.
- **Cisco Generic Online Diagnostics (GOLD):** Cisco GOLD is a suite of diagnostics to verify that hardware and internal data paths are operating as designed. Boot-time diagnostics, continuous monitoring, and on-demand and scheduled tests are part of the Cisco GOLD feature set. This industry-leading diagnostics subsystem allows rapid fault isolation and continuous system monitoring, critical in today's continuously operating environments.
- **Switched Port Analyzer (SPAN):** The SPAN feature allows the administrator to analyze all traffic between ports by nonintrusively directing the traffic to a SPAN destination port that has an external analyzer attached to it.

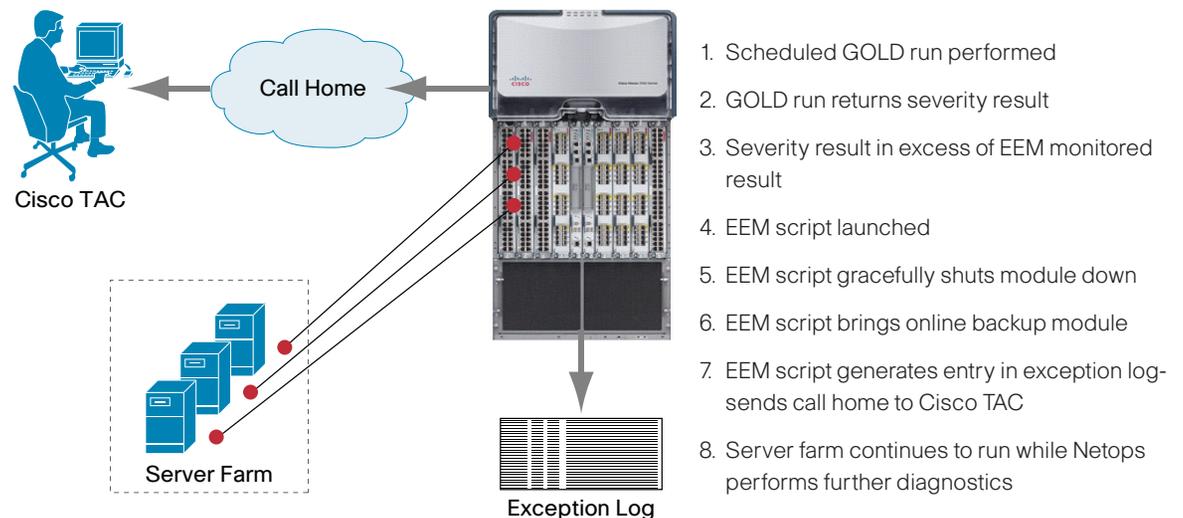
Smart Call Home

The Smart Call Home feature (Figure 2) continuously monitors hardware and software components to provide interactive technical support. A versatile range of message formats is available for optimal compatibility with pager services, standard email, and XML-based automated parsing applications. Smart Call Home combines Cisco GOLD and Cisco EEM capabilities to offer detailed diagnostics and real-time alerts, leading to faster resolution of problems. Smart Call Home is available free as part of a Cisco SMARTnet® Service contract.

For More Information

- **Cisco Smart Call Home:** <http://www.cisco.com/go/smartcall>
- **Cisco Nexus 7000 Series:** <http://www.cisco.com/go/nexus7000>
- **Cisco NX-OS:** <http://www.cisco.com/go/nxos>
- **Cisco Data Center Network Manager (DCNM):** <http://www.cisco.com/go/dcnm>

Figure 2. Smart Call Home Implementation Using Cisco EEM and Cisco GOLD



Cisco GOLD and Cisco EEM are the crucial elements of the adaptive and self-healing network and are enabled on Cisco Nexus 7000 Series Switches to support continuous system operation.