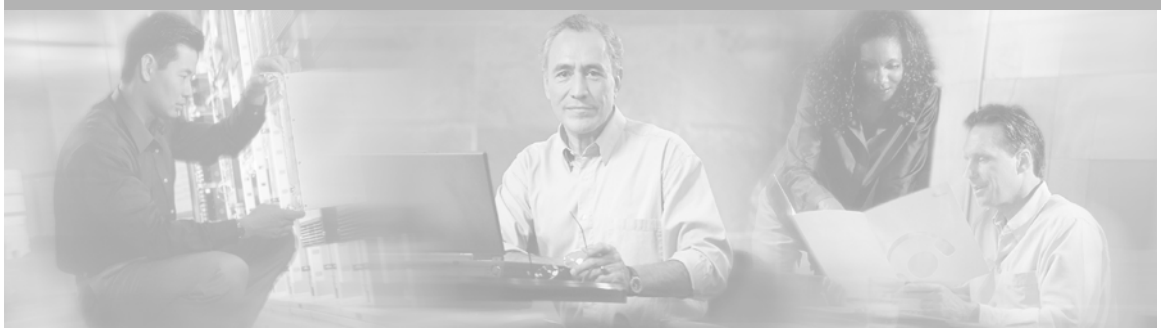

Data Center Infrastructure Design Guide 2.1—Readme File

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Data Center Infrastructure Design Guide 2.1—Readme File

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What is Included in this DG Release?

This design guide (DG) provides guidelines for designing and building the data center switching infrastructure.

Table 1 lists the technologies used in the data center infrastructure design documented in version 2 of this design guide. This table provides a quick glance of the topics and lists the timeframe (current or future) of documentation availability for each technology.

Table 1 Cisco Data Center Technologies and DG Status

Technology/Product	Description	Other	In this DG?
Cisco Catalyst 6500 WS-X6708-10G-3C	8 port 10 GigE line card for the Catalyst 6500 Series switch	6708 notations have been added to reflect the increased port density. Testing is scheduled for a future DG release. The data sheet is available at: http://www.cisco.com/en/US/products/hw/switches/ps708/products_data_sheet09186a00801dce34.html	No
Cisco Catalyst 6500 next generation hardware—Sup720 and 6700 Series line cards.	This DG is based on lab testing using the Sup720 and 6700 Series line cards in the Cisco Catalyst 6500 platform in core, aggregation, and access layer switches.	Native 12.2.18 SXD3 was used in the lab environment.	Yes

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Table 1 Cisco Data Center Technologies and DG Status (Continued)

Application Control Engine (ACE)	The ACE module introduces a next generation load balancer and security services module that permits higher performance and active-active designs. The ACE module is not an available product at the time of this writing.		No
Firewall Services Module (FWSM) Release 3.1	Release 3.1 of the FWSM software introduces several new capabilities including Private VLAN support and active-standby context groups, which permit load balancing of contexts across an FWSM redundant pair. Release 3.1 is not available at the time of this writing.		No
Data center security		See the data center security DG at the following URL: http://www.cisco.com/en/US/netsol/ns656/networking_solutions_design_guidances_list.html#anchor3	No
Cisco CatOS-IOS hybrid	Hybrid CatOS-IOS software in the Cisco Catalyst 6500 platform	This DG is based on the Cisco Native IOS solutions only in the Cisco Catalyst 6500 and 4948-10GE-based products.	No
Pervasive 10GE	This design guide focuses on the use of 10GE technology as a primary technology used in access layer uplinks, aggregation, and core connections.		Yes
Server fabric switching—Infiniband	Designing for HPC or database clusters using Infiniband technology		No
Service module integration (for example, FWSM, IDS, CSM, NAM, and SSLSM)	Integration of service modules and appliances into the data center infrastructure	Service modules are examined for interoperability and placement guidelines. Detailed design and configuration guides can be found at the following URL: http://www.cisco.com/en/US/netsol/ns656/networking_solutions_design_guidances_list.html#anchor3	No
1RU access layer design	Using 1RU switches in the access layer design best practices	Testing is focused on the Cisco Catalyst 4948-10GE 1RU switch.	Yes

Table 1 Cisco Data Center Technologies and DG Status (Continued)

Environmental	Designing for proper cabling, cooling/airflow, and power configurations		No
Network Management	Using the NAM, CVDM, CiscoWorks, Netflow, or other management/configuration tools		No
Geographically dispersed clustering (also known as stretch clusters)	Designing in support of extending Layer 2 domains to support HA clustering across metro or wide area networks		No
CPU protection from STP loop conditions	Design best practices in limiting the impact of failures related to spanning tree loop conditions		Yes
Spanning tree—Using 802.1w Rapid PVST+ and 802.1s MST	Designing scalable spanning tree domains using 802.1w and 802.1s and related features		Yes
Layer 2 access design	Designs using L2 looped and loop-free access layer topologies		Yes
Layer 3 access design	Designs using L3 access layer topologies		No
Service layer switch design	How to move service modules out of the aggregation layer and into a separate service switch chassis for CSM and SSL modules		Yes
Distributed Forwarding Card placement and benefits	Where to use DFC3 daughter cards to improve distributed switching performance in the data center	Covered in multi-tier and server cluster architecture chapters	Yes
Enterprise campus segmentation	The need to isolate/segment multiple logical network environments on the same physical network for administration, security, or other purposes.	This is covered outside of this DG document.	No
Use of NSF/SSO for high availability in the data center	Where to use redundant supervisors in the data center architecture, and designing to support required failover times		Yes

Table 2 lists the technologies used in the data center infrastructure design documented in the previous v1.1. Note that version 2.1 builds on the v1.1 and v 2.0 design recommendations and it is not intended to be a replacement.

Table 2 Technologies used in the Data Center Infrastructure Design Documented in DG v1.1

Technology/product	Description
Layer 3 data center design	Using OSPF and EIGRP in the data center design
Layer 3 security	Using dynamic routing protocol authentication
Use of VTP in Layer 2 designs	Why not to use VTP in the data center
Choosing a spanning tree protocol	Explains the differences between 802.1w, Rapid PVST+ and MST and when to use each
Using LoopGuard and UDLD	
Using PortFast and TrunkFast	
Layer 2 security	Explains VLAN hopping, MAC flooding, ARP spoofing, and spanning tree vulnerabilities
Default gateway design	Reviews configurations for HSRP in the data center
ARP table tuning	Tuning the ARP table size to optimize traffic characteristics
NIC teaming design	Covers the various NIC teaming methods and connectivity options
Mainframe OSA and OSPF design	Explains mainframe connectivity options when using the OSA interface and covers IP addressing and OSPF configurations
PortFast and BPDU Guard	When to use PortFast and BPDU Guard on server ports
Port security	Covers server port security options
Server port configurations	Examples of server port switch configurations
Network management configuration	Configuring user names and passwords, VTY access, SNMP, and logging
VLAN configuration	Configuring VTP, MAC address reduction, and other VLAN features
Spanning tree configuration	How to configure Rapid PVST+, MST, and protection from loops with UDLD and LoopGuard
Switch-to-switch trunk configuration	EtherChannel and trunking configuration between the aggregation layer switches