NETGEAR®
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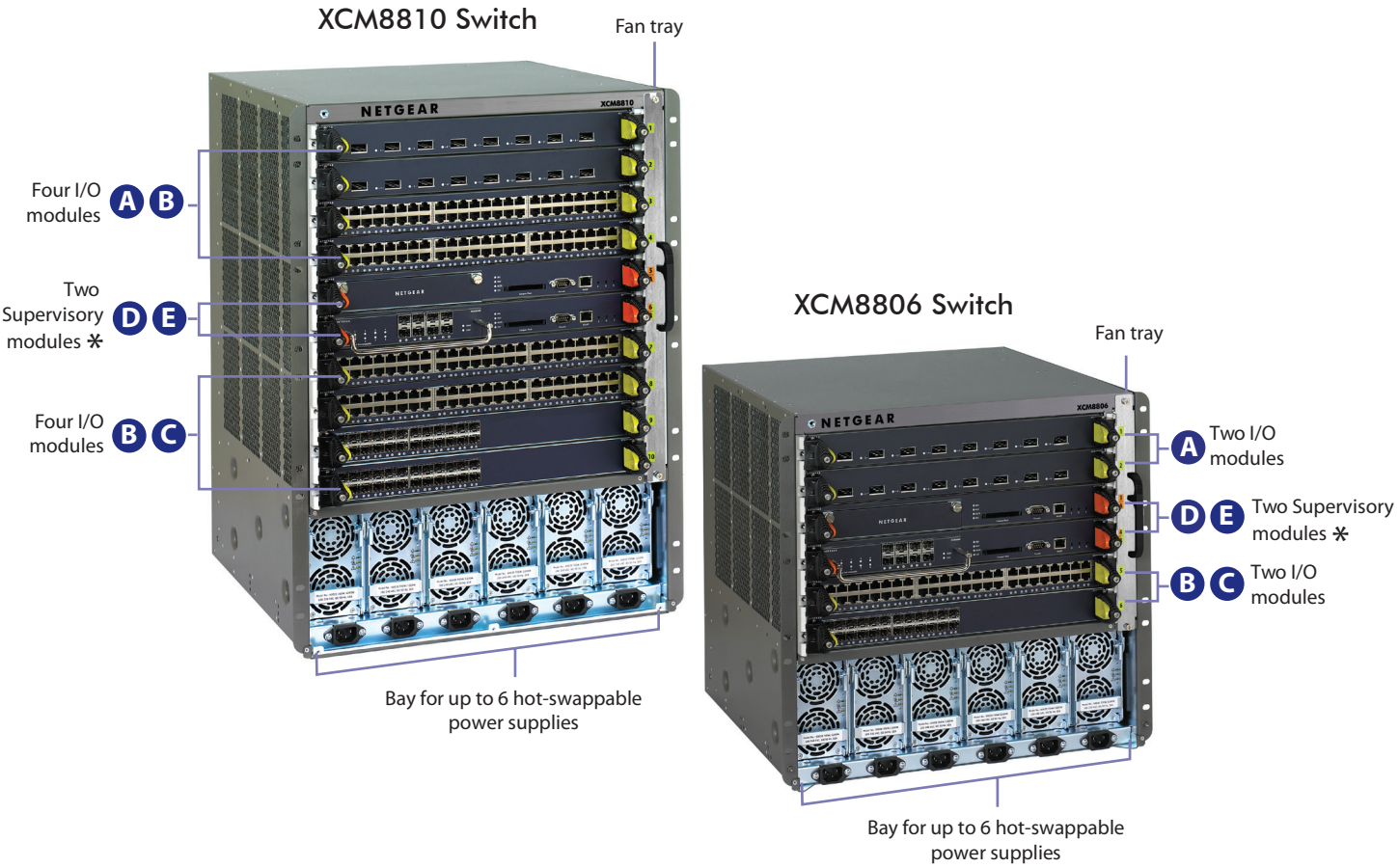
NETGEAR® 8800 Series Chassis Switch
XCM8800

Data Sheet

The NETGEAR® 8800 Series 6-slot and 10-slot Chassis solution simplifies network infrastructures with purpose-built core, aggregation, and intelligent edge modules. Connectivity options include Gigabit copper, Gigabit optical, and 10 Gigabit optical I/O modules, as well as optional 802.3 af power over Ethernet (PoE). Local Switching on every I/O module and 48 Gbps per slot bidirectional bandwidth provide high-density, line-rate connectivity. Redundant, load-sharing power supplies, as well as redundant cooling fans, contribute to a robust hardware system that is highly available. NETGEAR 8800 Series switches combine highly resilient software to provide the levels of resiliency and uptime that have traditionally been associated with voice networks. The NETGEAR OS runs each protocol, such as OSPF or Spanning Tree, as a separate process that is protected from other processes. This preemptive multitasking increases system integrity and inherently protects against Denial of Service (DoS) attacks.

NETGEAR 8800 Series switches have a complete L2/L3/L4 aggregation feature set, including IPv6, and an optional Advanced Core license upgrade for critical core applications. These chassis switches reduce management overhead, operational complexity, and capital expenditure, supporting a wide variety of applications. They are backed by the NETGEAR 3-year warranty, including 3-year Next Business Day Onsite Replacement in specific regions.



- A XCM8808X I/O module: 8 XFP 10 Gigabit ports
- B XCM8848T I/O module: 48 Gigabit ports
- C XCM8824F I/O module: 24 SFP Gigabit ports
- D XCM88S1 Supervisory module with slot for optional port card
- E XCM888F port card: 8 SFP Gigabit ports

* One Supervisory module is required. The second slot can be occupied by an I/O module

24/7 TECHNICAL SUPPORT*

1-888-NETGEAR (638-4327)
Email: info@NETGEAR.com

NETGEAR 3 YEAR WARRANTY* NBD* 3-year on-site service

Key Performance Metrics

Area	Key Specifications		NETGEAR 8800 Series Chassis	
Capacity	Supervisory Modules/Chassis		1 Supervisory module	2 Supervisory modules
	Gbps/Slot (I/O module slots)		24 Gbps	48 Gbps
	Gbps/Slot (Secondary Supervisory slot when I/O module inserted)		12 Gbps	-
	Fabric bandwidth		424 Gbps	800 Gbps
	Total throughput	Intra-blade	570 Mpps (10-slot chassis) 288 Mpps (6-slot chassis)	570 Mpps (10-slot chassis) 288 Mpps (6-slot chassis)
		Inter-blade	285 Mpps (10-slot chassis) 144 Mpps (6-slot chassis	
	Hitless Supervisory module failover		No	Yes
Port Density	Max GE ports/system		440 (10-slot chassis: 432 ports on nine I/O modules plus 8 on Supervisory module)	400 (10-slot chassis: 384 ports on eight I/O modules plus 16 on two Supervisory modules)
	Max 10GE ports/system		72 (10-slot chassis: 8 ports each on nine I/O modules)	64 (10-slot chassis: 8 ports each on eight I/O modules)
Scale	MAC addresses		32K per slot	
	IPv4 (LPM) routes		12K	
	IPv4 Hosts		8K	
	IPv6 (LPM) routes		6K	
	IPv6 Hosts		3K	
	Multicast Sources, Groups (S,G)		6K	
	CPU core		1	2

Connectivity Options by I/O Module

NETGEAR 8800 Series I/O Modules	XCM8824F	XCM8848T	XCM8808X
10/100/1000BASE-T Ports	-	48 RJ45	-
PoE 802.3af	-	XCM88P Daughter Card	-
1000X SFP Ports	24 SFP	-	-
10GBASE Ports	-	-	8 XFP
Backplane capacity 2 Supervisory Modules 1 Supervisory Module	 48 Gbps 24 Gbps	 48 Gbps 24 Gbps	 48 Gbps 24 Gbps
Policy Based Routing	Yes	Yes	Yes
sFlow® Sampling	Hardware	Hardware	Hardware
ACL Hardware Resources	4K ACLs per 24-port block	4K ACLs per 24-port block	4K ACLs per 24-port block
Load Sharing Groups	128	128	128
Layer 2 MAC FDB	32K	32K	32K
IPv4 Longest Prefix Match (LPM) Entries	12K	12K	12K
IPv4 Host Table	6K	6K	6K
Extended IPv4 Host Cache	Yes	Yes	Yes
IP Multicast Sources, Groups (S,G)	2K	2K	2K
IPv6 Forwarding	Hardware	Hardware	Hardware

Supervisory Module Options

NETGEAR 8800 Series Supervisory Module	XCM88S1
CPU	Dual Core
Switch Fabric Capacity	424 Gbps (with 1 Supervisory Module) 800 Gbps (with 2 Supervisory Modules)
Gigabit Uplink	Optional XCM888F (8-port 1000Base-X SFP Card)

PoE Options

NETGEAR 8800 Series XCM8848T I/O Modules with Installed XCM88P PoE Daughter Cards N + 1 Power Redundancy							
110 V Power Supply				220 V Power Supply			
802.3af PoE Class	Number of Modules	Number of Ports	Number of Power Supplies	802.3af PoE Class	Number of Modules	Number of Ports	Number of Power Supplies
Class 0	3	144	6	Class 0	6	288	6
Class 1	8	384	6	Class 1	8	384	6
Class 2	6	288	6	Class 2	8	384	6
Class 3	3	144	6	Class 3	6	288	6

High Availability

A high-performance network connection, whether it connects PCs and IP telephones at the access layer or interconnects servers in a cluster, is useful only if it is also highly available. To achieve voice-class network availability, NETGEAR 8800 Series chassis switches combine highly resilient software and redundant hardware with high-availability network protocols.

The hardware design of the NETGEAR 8800 Series switches includes redundant Supervisory modules, power supplies, and other components. Redundant Supervisory modules provide an automatic failover mechanism that allows the second Supervisory module to automatically assume management responsibility for the entire chassis if the first Supervisory module fails. The advanced chassis design features a passive backplane complemented by high availability elements, such as isolated control and data planes and redundant controller boards for power distribution.

The chassis accommodates up to six load-sharing power supplies, providing a variety of redundant power configurations to support high-density implementations with and without PoE. Three power supplies in a 2 + 1 redundancy configuration can power a fully loaded chassis with gigabit or 10 Gigabit Ethernet ports. Additional power supplies support PoE deployments. A tray of nine fans (NETGEAR XCM8810 switch) or six fans (NETGEAR XCM8806 switch) provides redundant cooling for the chassis. The fan tray itself is hot swappable, allowing the NETGEAR 8800 Series switches to continue operation while the fan tray is replaced.

The NETGEAR OS provides true preemptive multitasking and protected memory. Each of the many protocols, such as OSPF or Spanning Tree, runs as a separate process, protected from other processes. In addition, the NETGEAR OS software monitors independent operating system processes in real time. If any process becomes unresponsive, or stops running, it is automatically restarted. In addition to increasing system integrity, this operational design inherently protects against Denial of Service (DoS) attacks. The modular design of the NETGEAR OS software allows new functionality to be added to the switch easily, extending switch functionality.

NETGEAR 8800 Series switches run a collection of high-availability protocols that allow the IP network to provide the levels of resiliency and uptime that have traditionally been associated with voice networks. The Spanning Tree (802.1D), Per VLAN Spanning Tree (PVST+), Rapid Spanning Tree (802.1w), and Multiple Instances of Spanning Tree (802.1s) protocols support Layer 2 resiliency. Cross-module link aggregation (802.3ad) enables trunking of up to eight links on a single logical connection, for up to 80 Gbps of redundant bandwidth per logical connection.

Software enhanced availability allows users to remain connected to the network even if part of the network infrastructure is down. NETGEAR 8800 Series switches continually check for problems in the uplink connections and use advanced Layer 3 protocols such as OSPF and VRRP to dynamically route around the problem. Equal Cost Multipath enables uplinks to be load balanced for performance and cost savings while also supporting redundant failover. If an uplink fails, traffic is automatically routed to the remaining uplinks and connectivity is maintained.

High-Performance Connectivity

Networking trends show an increasing number of devices at the edge of the network, including IP telephones, wireless access points (APs), and other devices. These networking trends drive the requirement for Gigabit Ethernet to the desktop and the use of 10-Gigabit Ethernet as an interconnect technology. NETGEAR 8800 Series switches deliver high-performance, cost-effective connectivity to address these trends.

The NETGEAR 8800 Series switches provide local switching on every I/O module, as well as 48 Gbps per slot bidirectional bandwidth, for high-density, cost-effective, line-rate connectivity. Three different types of hot-swappable I/O modules are available. Gigabit modules feature either 48 fixed copper ports or 24 pluggable SFP optical modules; 10-Gigabit modules feature 8 pluggable XFP optical modules. The NETGEAR 8800 Series switches support up to 400 Gigabit ports or up to 64 10 Gigabit ports in a single chassis. Redundant Supervisory modules

in the switch increase not only reliability but also the switching fabric and throughput. Two Supervisory modules provide switching capacity for up to 800 Gbps of fabric bandwidth and 570 Mpps Layer 2-Layer 3 hardware forwarding rate.

IPv6 packet forwarding makes available trillions of new IP addresses and offers better address allocation and address aggregation. Other features of IPv6 provide significantly greater end-to-end network connectivity and services. NETGEAR 8800 Series switches support IPv6 today, preparing enterprises to handle IPv6 traffic as this traffic enters their networks.

NETGEAR 8800 Series switches support 8 queues per port. Network managers can identify and predictably handle high-priority traffic, using QoS technologies that include rate-limiting or traffic policing on ingress, 802.1q tagging and DiffServ marking, and shaping on egress. These traffic priority applications contribute to low-latency, high-performance, voice-grade networks.

NETGEAR 8800 Series switches incorporate Link Layer Discovery Protocol (LLDP) to simplify trouble-shooting of enterprise networks. LLDP enhances the ability of network management tools to discover and maintain accurate network topologies.

NETGEAR 8800 Series switches can offer PoE on every port, for large IP telephony or wireless AP deployments. A NETGEAR 8800 Series switch can support up to 288 Class 3 PoE devices, or up to 384 Class 1 or 2 PoE devices in a single chassis without adding an external power tray.

The NETGEAR 8800 Series Chassis Switches typically consume 1.5 Watts (2.1 Watts maximum) per Gigabit Ethernet port and 7.0 Watts (10.4 Watts maximum) per 10 Gigabit Ethernet port, allowing for considerable savings in power and cooling costs.

Comprehensive Security

NETGEAR 8800 Series switches provide Enterprise-class security at the network perimeter as well as the core, using a variety of security technologies to protect your network from known or potential threats.

User authentication and host integrity checking enforce admission and usage policies on dedicated and shared ports at the edge of the network. The powerful sFlow® technology provides threat detection and response by offering continuous and simultaneous monitoring of application-level traffic flows on all interfaces. In the event of an attack, network managers can dynamically reconfigure the switches to close vulnerabilities, hardening the network without shutting down network operation.

Port mirroring can be used to mirror traffic to an external network appliance such as an intrusion detection device, for trend analysis. Mirrored traffic can also be used by a network administrator as a diagnostic tool when fending off a network attack. NETGEAR 8800 Series switches support many-to-one and cross-module port mirroring.

DoS protection provides graceful handling of DoS attacks. If the switch detects an unusually large number of packets in the CPU input queue, it assembles ACLs that automatically stop these packets from reaching the CPU. After a period of time, the ACLs are removed. If the attack continues, they are reinstalled. In addition, ASIC-based longest prefix match (LPM) routing eliminates the need for control plane software to learn new flows and allows the network to be resilient under a DoS attack.

Hardware-based, line-rate ACLs use Layer 2, 3, or 4 header information, such as the MAC address, IP source/destination address, or TCP/UDP port number, to regulate access to the network.

Policy-based routing provides a flexible mechanism for network administrators to customize the flow of traffic within the network. Packets are selected according to their ACL match conditions, such as QoS, VLAN, IP addresses, protocol, port number or other criteria, and redirected from their normal path to another physical port.

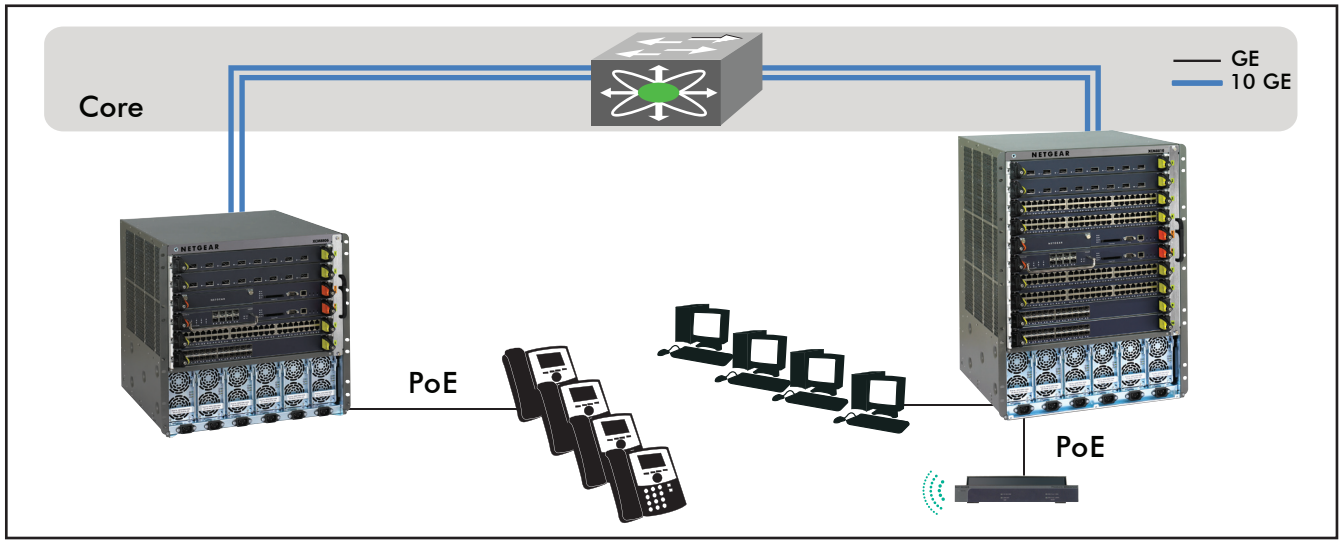
Secure management protocols such as SSH2, SCP, and SNMPv3 prevent the interception of management communications, while MD5 authentication of routing protocols prevents attackers from tampering with valid messages and attacking routing sessions.

Features at a Glance

High-Availability Features	
Redundant system design	• Redundant Supervisory modules • Advanced chassis design with passive backplane, isolated control and data planes, redundant controller boards for power distribution, and environmental monitoring • Redundant, load-sharing power supplies • Redundant cooling fans in a hot-swappable fan tray
Modular NETGEAR OS operating system	• True preemptive multitasking and protected memory • Process monitoring and restart • Loadable software modules
High-availability network protocols	• Spanning Tree and Rapid Spanning Tree Protocols • Advanced Layer 3 protocols, including OSPF and VRRP, that support enhanced network availability • Link aggregation (802.3ad) and Equal Cost Multipath protocols
High-Performance Connectivity Features	
Large switching capacity	• High-density, line-rate connectivity, providing up to 400 Gigabit Ethernet ports or up to 64 10 Gigabit ports in one chassis • Jumbo frame support • IPv6 packet forwarding support • 424 Gbps fabric bandwidth with one Supervisory module, 800 Gbps fabric bandwidth with two Supervisory modules
Convergence-ready connectivity	• Voice-grade connections • High-density PoE • Link Layer Discovery Protocol (LLDP) support
Low power consumption	Typical power consumption: • 1.5 Watts per Gigabit Ethernet port • 7.0 Watts per 10 Gigabit Ethernet port
Comprehensive Security Features	
Threat detection and response	• sFlow sampling technology that can sample application-level traffic on all interfaces simultaneously • Port mirroring for trend analysis and diagnostics to defend against network attacks
Hardened network infrastructure	• DoS protection • Policy-based routing • ASIC-based longest prefix match • Secure management • MD5 authentication of routing protocols

Target Applications

High-Density Access Layer for an Enterprise Network

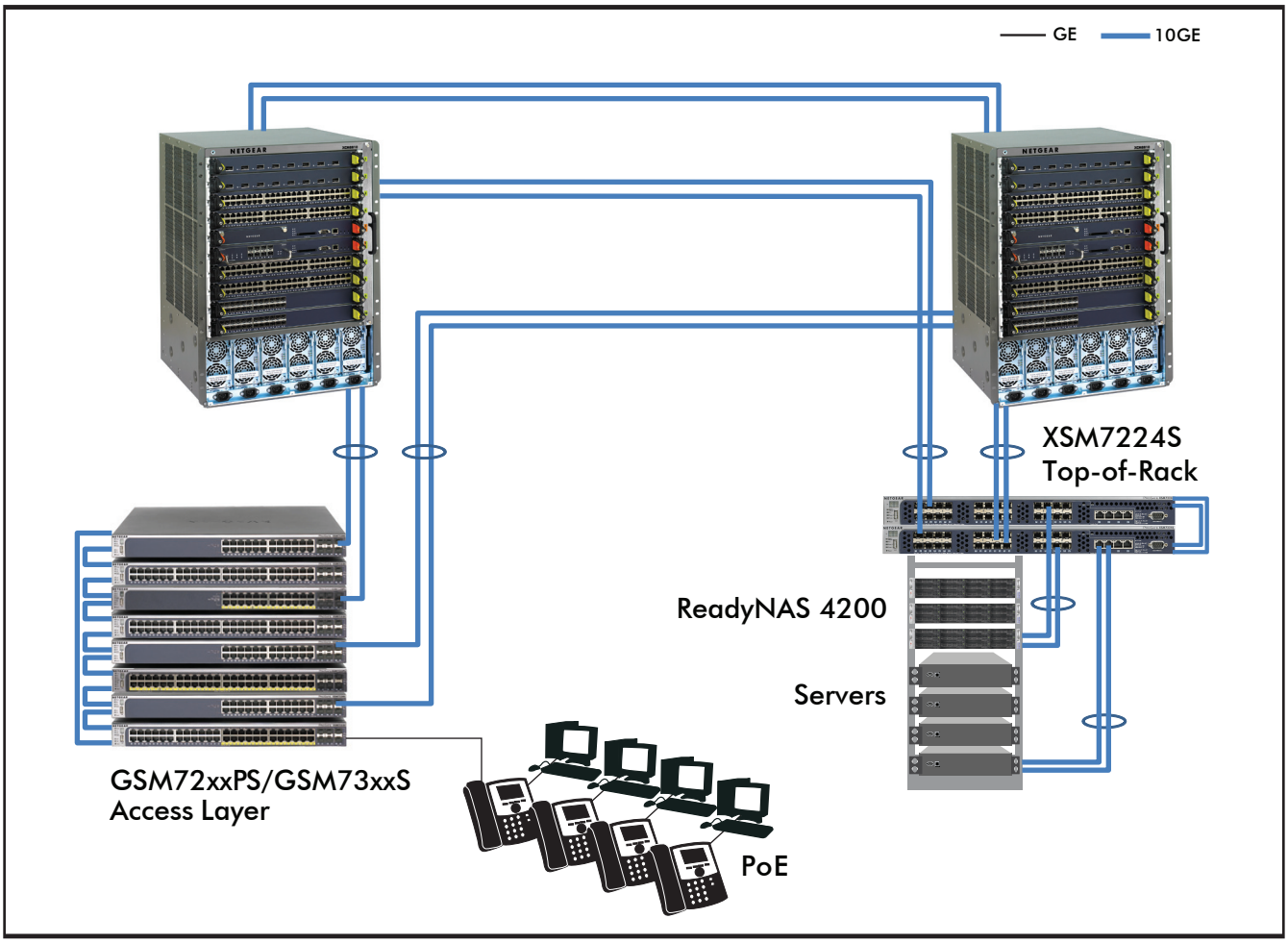


NETGEAR 8800 Series chassis switches satisfy the complete networking needs for a small to medium enterprise. The typical multi-switch edge network can be consolidated into a single, highly available switch that delivers high-density PoE for IP telephony, high-speed performance for services, and comprehensive security.

The illustrated network uses an XCM8810 10-slot chassis and an XCM8806 6-slot chassis. Redundant Supervisory modules in each switch provide maximum switching fabric throughput and hitless failover in case the primary Supervisory module fails. XCM8848T I/O modules provide high-density copper Gigabit connectivity for end-users. With the optional XCM88P PoE daughter card installed, these modules can also provide PoE support for devices such as IP phones or wireless access points. XCM8824F Gigabit I/O fiber modules are used to connect distant legacy equipment. The XCM8808X 10Gigabit I/O modules provide high-speed connections to the network core. Up to six power supplies provide n + 1 redundant power support for all functions of the switch.

Target Applications

High-Performance Network Core Switch



NETGEAR 8800 Series 6-slot and 10-slot chassis switches provide the ideal core network with high-performance and high-density 10 Gigabit Ethernet and Gigabit Ethernet interfaces. Network administrators can connect up to 66 10-Gigabit ports or 400 Gigabit ports in a single 14RU NETGEAR XCM8810 system, with two Supervisory modules for perfect redundancy and maximum throughput.

The illustrated sample network uses two XCM8810 chassis switches at the core of the network, connected using 10-Gigabit ports on installed XCM8808X modules. Each switch has two XCM88S1 Supervisory modules to provide maximum switching fabric capacity and hitless failover in case the primary Supervisory module fails.

In each XCM8810 switch, two ports on XCM8808X I/O modules provide a 10-Gigabit (40-Gigabit bidirectional), fully redundant connection to a stack of GSM72xx/PS/GSM73xxS switches in the access layer. These XCM8808X modules also provide 10-Gigabit connections to an XSM7224S top-of-rack switch in a server room. XSM and GSM stacking series allow for Distributed LACP and load-balancing – as well as perfect resiliency.

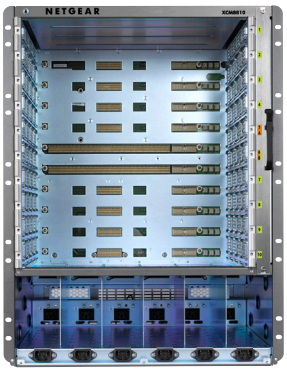
Available Components and Associated Optics

Chassis, Components, and Accessories

XCM8806
8800 Series 6-slot Chassis

- Four dedicated I/O module slots labeled 1, 2, 5, and 6
- One dedicated Supervisory module slot labeled 3/A
- One dual-purpose slot for either an I/O or Supervisory module labeled 4/B
- Power supply bay that accommodates up to six power supplies (ordered separately)
- Redundant, load-sharing, hot-swappable power supplies (minimum 3 units for 2 + 1 redundancy)
- Field-replaceable, hot-swappable fan tray (included)
- Two field-replaceable, hot-swappable power supply/fan controllers (included)
- Blank front panels (included)
- Optional cover for power supply bay
- 3-year warranty
- Ordering part number: XCM8806-10000S

XCM8810
8800 Series 10-slot Chassis



- Eight dedicated I/O module slots labeled 1, 2, 3, 4, 7, 8, 9, and 10
- One dedicated Supervisory module slot labeled 5/A
- One dual-purpose slot for either an I/O or Supervisory module labeled 6/B
- Power supply bay that accommodates up to six power supplies (ordered separately)
- Redundant, load-sharing, hot-swappable power supplies (minimum 3 units for 2 + 1 redundancy)
- Field-replaceable, hot-swappable fan tray (included)
- Two field-replaceable, hot-swappable power supply/fan controllers (included)
- Blank front panels (included)
- Optional cover for power supply bay
- 3-year warranty
- Ordering part number: XCM8810-10000S

XCM88S1
8800 Series Supervisory Module

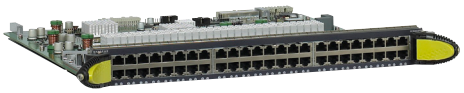
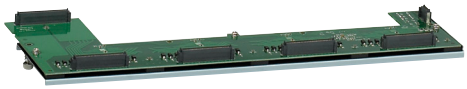
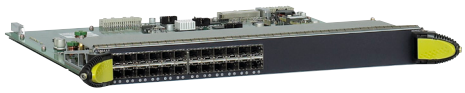
- Provides the active switching fabric and CPU control path for the switch
- One required for switch operation; second Supervisory module increases switch reliability and throughput
- Dual-core CPU
- One compact flash slot for storage (firmware, debug information capture)
- One slot for optional 8-port 1000Base-X SFP Port Card (XCM888F)
- One Management port (10/100 RJ45)
- One Console port (serial RS-232)
- 3-year warranty
- Ordering part number: XCM88S1-10000S

XCM888F
8800 Series SFP Port Card for Supervisory Module

- 8 1000BASE-X SFP ports
- Line-rate local switching
- 3-year warranty
- Ordering part number: XCM888F-10000S

Available Components and Associated Optics

Chassis, Components, and Accessories

XCM8848T **8800 Series 48-port Gigabit copper I/O Module** 	• 48 auto-sensing 10/100/1000Base-T ports using RJ-45 connectors • Line-rate local switching • Hot-swappable • Optional 802.3af PoE daughter card (XCM88P) • 3-year warranty • Ordering part number: XCM8848T-10000S
XCM88P **8800 Series PoE Daughter Card for XCM8848T** 	• Adds PoE support to the 48-port copper I/O module • 3-year warranty • Ordering part number: XCM88P-10000S
XCM8824F **8800 Series 24-port Gigabit fiber I/O Module** 	• 24 1000Base-X SFP optical ports • Line-rate local switching • Hot-swappable • 3-year warranty • Ordering part number: XCM8824F-10000S
XCM8808X **8800 Series 8-port 10 Gigabit fiber I/O Module** 	• Eight 10GBase XFP optical ports • Line-rate local switching • Hot-swappable • 3-year warranty • Ordering part number: XCM8808X-10000S
XCM88PS1 **8800 Series Power Supply** 	• 100-240VAC power supply unit • Power cord included • Minimum requirement without redundancy is 2 per chassis • Minimum requirement for 2 + 1 redundancy is 3 per chassis • Fully fault-tolerant and load-sharing in an N + 1 configuration • Additional power supply needed to support PoE • Maximum configuration is 6 per 8800 Series Chassis • Hot swappable in a redundant configuration • 3-year warranty • Ordering part number: XCM88PS1-10000S

Available Components and Associated Optics

Chassis, Components, and Accessories

XCM8806PC **8800 Series Power Supply Bay Cover for XCM8806**	• Optional power supply bay cover for 6-slot chassis • 3-year warranty • Ordering part number: XCM8806PC-10000S
XCM8810PC **8800 Series Power Supply Bay Cover for XCM8810**	• Optional power supply bay cover for 10-slot chassis • 3-year warranty • Ordering part number: XCM8810PC-10000S
XCM8806FT **8800 Series Spare Fan Tray Unit for XCM8806** 	• Replacement fan tray for 6-slot chassis • 3-year warranty • Ordering part number: XCM8806FT-10000S
XCM8810FT **8800 Series Spare Fan Tray Unit for XCM8810** 	• Replacement fan tray for 10-slot chassis • 3-year warranty • Ordering part number: XCM8810FT-10000S
XCM88FPB **8800 Series Spare Fan/PSU Controller Unit** 	• Replacement fan/power supply controller for NETGEAR 8800 Series chassis • 3-year warranty • Ordering part number: XCM88FPB-10000S

Available Components and Associated Optics

Optics and Cables

AXM751
ProSafe 10GBase-SR XFP LC Optical Module

- 10 Gigabit Ethernet “short-reach” fiber connectivity
- LC duplex connector
- Fits into any XFP interface on the XCM8808X module
- Drives 10 Gigabit Ethernet up to 300 m with 50/125 µm OM3 multimodule fiber cables
- Drives 10 Gigabit Ethernet up to 33 m with 62.5/125 µm OM1 multimode fiber cables
- 5-year warranty
- Ordering part number: AXM751

AXM752
ProSafe 10GBase-LR XFP LC Optical Module

- 10 Gigabit Ethernet “long-reach” fiber connectivity
- LC duplex connector
- Fits into any XFP interface on the XCM8808X module
- Drives 10 Gigabit Ethenet up to 10 km with single-mode fiber (SMF) cables
- 5-year warranty
- Ordering part number: AXM752

AXC753
ProSafe 3m Direct Attach XFP to SFP+ Cable

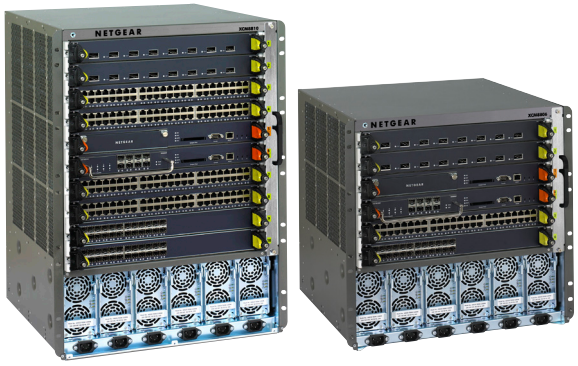
- Direct-attach copper cable
- XFP connector on one end that fits into any 10 GE XFP interface on the XCM8808X module
- SFP+ connector on the other end that fits into any 10 GE SFP+ interface on devices such as SFP+-based switches, servers, or storage devices
- 5-year warranty
- Ordering part number: AXC753-10000S

AGM731F
ProSafe 1000Base-SX SFP LC GBIC

- Gigabit Ethernet “short-reach” fiber connectivity
- LC duplex connector
- Fits into any SFP interface on the XCM8824F module or the XCM888F port card
- Drives Gigabit Ethernet up to 550 m distances with 50/125 µm laser-optimized OM3 multimode fiber cables
- Drives Gigabit Ethernet up to 275 m distances with 62.5/125 µm OM1 multimode fiber cables
- 5-year warranty
- Ordering part number: AGM731F

AGM732F
ProSafe 1000Base-LX SFP LC GBIC

- Gigabit Ethernet “long-reach” fiber connectivity
- LC duplex connector
- Fits into any SFP interface on the XCM8824F module or the XCM888F port card
- Drives Gigabit Ethernet up to 10 km distances with 9/125 µm single-mode fiber (SMF) cables
- Drives Gigabit Ethernet up to 550 m distances with 62.5/125 µm OM1 or 50/125 µm OM3 multimode fiber cables
- 5-year warranty
- Ordering part number: AGM732F



NETGEAR 8800 Series 6-slot and 10-slot Chassis Switch

TECHNICAL SPECIFICATIONS	
General Specifications - Chassis	**XCM8806 NETGEAR 8800 Series 6-slot Chassis Switch** • Empty 6-slot chassis with backplane, fan tray, and power supply/fan controllers included • Power supplies ordered separately **XCM8810 NETGEAR 8800 Series 10-slot Chassis Switch** • Empty 10-slot chassis with backplane, fan tray, and power supply/fan controllers included • Power supplies ordered separately
General Specification – Supervisory Module	**XCM88S1 NETGEAR 8800 Series Supervisory Module** • Switching fabric (one Supervisory module): 424 Gbps • Switching fabric (two Supervisory modules): 800 Gbps • One compact flash slot for storage (firmware, debug information capture) • One slot for optional 8-port 1000Base-X SFP Card (XCM888F) • One Management port (10/100 RJ45) • One Console port (serial RS-232)
General Specification – Gigabit Copper I/O Module	**XCM8848T NETGEAR 8800 Series 48-port 10/100/1000Base-T Module** • 48 auto-sensing RJ45 10/100/1000 ports • Optional 802.3af PoE daughter card (XCM88P)
General Specification – Gigabit Fiber I/O Module	**XCM8824F NETGEAR 8800 Series 24-port 1000Base-X SFP Module** • 24 Gigabit SFP ports
General Specification – 10 Gigabit I/O Module	**XCM8808X NETGEAR 8800 Series 8-port 10GBase-XFP Module** • 8 x 10 Gigabit XFP ports
General Specification – PSU	**XCM88PS1 NETGEAR 8800 Series 100-240VAC Power Supply Unit** • Delivers 700W at 90V to 110V • Delivers 1,200W at 210V to 220V
Supported Protocols – Switching	• IEEE 802.3 10BASE-T • IEEE 802.3u 100BASE-T • IEEE 802.3ab 1000BASE-T • IEEE 802.3z 1000BASE-X • IEEE 802.3ae 10GBASE-X • IEEE 802.3af Power over Ethernet • IEEE 802.1D – 1998 Spanning Tree Protocol (STP) • IEEE 802.1D – 2004 Spanning Tree Protocol (STP and RSTP) • IEEE 802.1w – 2001 Rapid Reconfiguration for STP, RSTP • IEEE 802.1Q – 2003 (formerly IEEE 802.1s) • Multiple Instances of STP, MSTP • PVST+, Per VLAN STP (802.1Q interoperable) • Draft-ietf-bridge-rstpmib-03.txt – Definitions of Managed Objects for Bridges with Rapid Spanning Tree Protocol • IEEE 802.1Q – 1998 Virtual Bridged Local Area Networks • IEEE 802.3ad Static load sharing configuration and LACP based dynamic configuration • Software Redundant Ports • IEEE 802.1AB – LLDP Link Layer Discovery Protocol • LLDP Media Endpoint Discovery (LLDP-MED), ANSI/TIA-1057, draft 08

Supported Protocols - Management and Traffic Analysis	• RFC 2030 SNTP, Simple Network Time Protocol v4 • RFC 854 Telnet client and server • RFC 783 TFTP Protocol (revision 2) • RFC 951, 1542 BootP • RFC 2131 BOOTP/DHCP relay agent and DHCP server • RFC 1591 DNS (client operation) • RFC 1155 Structure of Mgmt Information (SMIv1) • RFC 1157 SNMPv1 • RFC 1212, RFC 1213, RFC 1215 MIB-II, Ethernet-Like MIB & TRAPs • RFC 1573 Evolution of Interface • RFC 1650 Ethernet-Like MIB (update of RFC 1213 for SNMPv2) • RFC 1901, 1905 – 1908 SNMP v2c, SMIv2 and Revised MIB-II • RFC 2576 Coexistence between SNMP Version 1, Version 2 and Version 3 • RFC 2578 – 2580 SMIv2 (update to RFC 1902 – 1903) • RFC 3410 – 3415 SNMPv3, user based security, encryption and authentication • RFC 3826 – The Advanced Encryption Standard (AES) Cipher Algorithm in the SNMP User-based Security Model • RFC 1757 RMON 4 groups: Stats, History, Alarms and Events • RFC 2021 RMON2 (probe configuration) • RFC 2613 SMON MIB • RFC 2925 Ping/Traceroute MIB • RFC 2668 802.3 MAU MIB • draft-ietf-hubmib-mau-mib-v3-02.txt • RFC 1643 Ethernet MIB • RFC 1493 Bridge MIB • RFC 2096 IPv4 Forwarding Table MIB • RFC 2737 Entity MIB v2 • RFC 2233 Interface MIB • RFC 3621 PoE-MIB (PoE switches only) • Secure Shell (SSH-2) client and server • Secure Copy (SCP-2) client and server • Secure FTP (SFTP) server • sFlow version 5 • Configuration logging • Multiple Images, Multiple Configs • RFC 3164 BSD Syslog Protocol with Multiple Syslog Servers —999 Local Messages (criticals stored across reboots) • Web-based chassis interface • IP Route Compression
Supported Protocols - Security, Switch and Network Protection	• Secure Shell (SSH-2), Secure Copy (SCP-2) and SFTP client/server with encryption/authentication (requires export controlled encryption module) • SNMPv3 user based security, with encryption/authentication (see above) • RFC 1492 TACACS+ • RFC 2138 RADIUS Authentication • RFC 2139 RADIUS Accounting • RFC 3579 RADIUS EAP support for 802.1x • RADIUS Per-command Authentication • Access Profiles on All Routing Protocols • Access Policies for Telnet/SSH-2/SCP-2 • Network Login – 802.1x, Web and MAC-based mechanisms • IEEE 802.1x – 2001 Port-Based Network Access Control for Network Login • Multiple supplicants with multiple VLANs for Network Login (all modes) • Fallback to local authentication database (MAC and Web-based methods) • Guest VLAN for 802.1x • RFC 1866 HTML – used for Web-based Network Login • SSL/TLS transport – used for Web-based Network Login (requires export controlled encryption module) • MAC Security – Lockdown and Limit • IP Security – RFC 3046 DHCP Option 82 with port and VLAN ID • IP Security – Trusted DHCP Server • Layer 2/3/4 Access Control Lists (ACLs) • RFC 2267 Network Ingress Filtering • RPF (Unicast Reverse Path Forwarding) Control via ACLs • Wire-speed ACLs • Rate Limiting/Shaping by ACLs • IP Broadcast Forwarding Control • ICMP and IP-Option Response Control • SYN attack protection • CPU DoS Protection with traffic rate-limiting to management CPU

Supported Protocols - Security, Switch and Network Protection (continue)	• Robust against common Network Attacks: – CERT (http://www.cert.org) – CA-2003-04: "SQL Slammer" – CA-2002-36: "SSHredder" – CA-2002-03: SNMP vulnerabilities – CA-98-13: tcp-denial-of-service – CA-98.01: smurf – CA-97.28: Teardrop_Land -Teardrop and "LAND" attack – CA-96.26: ping – CA-96.21: tcp_syn_flooding – CA-96.01: UDP_service_denial – CA-95.01: IP_Spoofing_Attacks_and_Hijacked_ Terminal_Connections – IP Options Attack • Host Attacks – Teardrop, boink, opentear, jolt2, newtear, nestea, syndrop, smurf, fraggle, papasmurf, synk4, raped, winfreeze, ping –f, ping of death, pepsi5, Latierra, Winnuke, Simping, Sping, Ascend, Stream, Land, Octopus
Supported Protocols - Security, Router Protection	• IP Security – DHCP enforcement via Disable ARP Learning • IP Security – Gratuitous ARP Protection • IP Security – DHCP Secured ARP/ARP Validation • Routing protocol MD5 authentication
Supported Protocols - IPv4 Host Requirements	• RFC 1122 Host Requirements • RFC 768 UDP • RFC 791 IP • RFC 792 ICMP • RFC 793 TCP • RFC 826 ARP • RFC 894 IP over Ethernet • RFC 1027 Proxy ARP • RFC 2068 HTTP server • IGMP v1/v2/v3 Snooping with Configurable Router Registration Forwarding • IGMP Filters • PIM Snooping • Static IGMP Membership • Multicast VLAN Registration (MVR)
Supported Protocols - IPv4 Router Requirements	• RFC 1812 Requirements for IP Version 4 Routers • RFC 1519 CIDR • RFC 1256 IPv4 ICMP Router Discovery (IRDP) • Static Unicast Routes • Static Multicast Routes • RFC 1058 RIP v1 • RFC 2453 RIP v2 • Static ECMP • RFC 1112 IGMP v1 • RFC 2236 IGMP v2 • RFC 3376 IGMP v3 • RFC 2933 IGMP MIB • RFC 2096 IPv4 Forwarding Table MIB • RFC 1724 RIPv2 MIB • RFC 3768 VRRPv2 • RFC 2787 VRRP MIB • RFC 2328 OSPF v2 (Edge-mode) • OSPF ECMP • OSPF MD5 Authentication • RFC 1587 OSPF NSSA Option • RFC 1765 OSPF Database Overflow • RFC 2370 OSPF Opaque LSA Option • RFC 3623 OSPF Graceful Restart • RFC 1850 OSPFv2 MIB • RFC 2362 PIM-SM (Edge-mode) • RFC 2934 PIM MIB • RFC 3569, draft-ietf-ssm-arch-06.txt PIM-SSM PIM Source Specific Multicast • draft-ietf-pim-mib-v2-o1.tx • Mtrace, a "traceroute" facility for IP Multicast: draft-ietf-idmr-traceroute-ipm-07 • Mrinfo, the multicast router information tool based on Appendix-B of draft-ietf-idmr-dvmrpv3-11

Supported Protocols - IPv6 Host Requirements	• RFC 5095, Internet Protocol, Version 6 (IPv6) Specification • RFC 4861, Neighbor Discovery for IP Version 6, (IPv6) • RFC 2463, Internet Control Message Protocol (ICMPv6) for the IPv6 Specification • RFC 2464, Transmission of IPv6 Packets over Ethernet Networks • RFC 2465, IPv6 MIB, General Group and Textual Conventions • RFC 2466, MIB for ICMPv6 • RFC 2462, IPv6 Stateless Address Auto configuration – Host Requirements • RFC 1981, Path MTU Discovery for IPv6, August 1996 – Host Requirements • RFC 3513, Internet Protocol Version 6 (IPv6) Addressing Architecture • RFC 3587, Global Unicast Address Format • Telnet server over IPv6 transport • SSH-2 server over IPv6 transport • Ping over IPv6 transport • Traceroute over IPv6 transport
Supported Protocols - IPv6 Interworking and Migration	• RFC 2893, Configured Tunnels • RFC 3056, 6to4
Supported Protocols - IPv6 Router Requirements	• RFC 2462, IPv6 Stateless Address Auto configuration – Router Requirements • RFC 1981, Path MTU Discovery for IPv6, August 1996 – Router Requirements • RFC 2710, IPv6 Multicast Listener Discovery v1 (MLDv1) Protocol • RFC 3810, IPv6 Multicast Listener Discovery v2 (MLDv2) Protocol • Static Unicast routes for IPv6 • RFC 2080, RIPng • Static ECMP
Supported Protocols - QoS and VLAN Services	**Quality of Service and Policies** • IEEE 802.1D – 1998 (802.1p) Packet Priority • RFC 2474 DiffServ Precedence, including 8 queues/port • RFC 2598 DiffServ Expedited Forwarding (EF) • RFC 2597 DiffServ Assured Forwarding (AF) • RFC 2475 DiffServ Core and Edge Router Functions **VLAN Services: VLANs, vMANs** • IEEE 802.1Q VLAN Tagging • IEEE 802.1v: VLAN classification by Protocol and Port • Port-based VLANs • Protocol-based VLANs • MAC-based VLANs • Multiple STP domains per VLAN • Upstream Forwarding Only/Disable Flooding • RFC 5517 Private VLANs • Multicast Support for PVLAN • Multicast Support for VLAN Aggregation • VLAN Aggregation • Multicast VLAN Registration (MVR) • IEEE 802.1 Q-in-Q (Double-VLAN tagging) • IEEE 802.1ad Provider Bridge Network, virtual MANs (vMANs) • vMAN Ethertype Translation/Secondary vMAN Ethertype
Advanced Core Protocols, IPv4 and IPv6	**Requires NETGEAR 8800 Series Advanced Core Software License Upgrade (XCM88ASL-10000S):** • PIM-DM Draft IETF PIM Dense Mode draft-ietfidmr-pim-dm-05.txt, draft-ietf-pim-dm-newv2-04.txt • RFC 3618 Multicast Source Discovery Protocol (MSDP) • RFC 3446 Anycast RP using PIM and MSDP • RFC 2740 OSPFv3, OSPF for IPv6 • RFC 1771 Border Gateway Protocol 4 • RFC 1965 Autonomous System Confederations for BGP • RFC 2796 BGP Route Reflection (supersedes RFC 1966) • RFC 1997 BGP Communities Attribute • RFC 1745 BGP4/IDRP for IP-OSPF Interaction • RFC 2385 TCP MD5 Authentication for BGPv4 • RFC 2439 BGP Route Flap Damping • RFC 2918 Route Refresh Capability for BGP-4 • RFC 3392 Capabilities Advertisement with BGP-4 • RFC 4360 BGP Extended Communities Attribute • RFC 4486 Subcodes for BGP Cease Notification message • draft-ietf-idr-restart-10.txt Graceful Restart Mechanism for BGP • RFC 4760 Multiprotocol extensions for BGP-4 • RFC 1657 BGP-4 MIB • Draft-ietf-idr-bgp4-mibv2-02.txt – Enhanced BGP-4 MIB

Physical Specifications - Dimensions	• XCM8810 Chassis Switch: 24.47" high x 17.51" wide x 18.23" deep (62.2 cm x 44.5 cm x 46.3 cm) • XCM8806 Chassis Switch: 17.5" high x 17.51" wide x 18.23" deep (44.45 cm x 44.5 cm x 46.3 cm) • XCM88PS1 Power Supply: 4.75" high x 2.75" wide x 13.75" deep (12.1 cm x 6.99 cm x 34.9 cm) • XCM88S1 Supervisory Module Dimensions: 1.63" high x 15.26" wide x 15.25" deep (4.1 cm x 38.8 cm x 38.7 cm) • All I/O Module Dimensions: 1.63" high x 15.26" wide x 15.25" deep (4.1 cm x 38.8 cm x 38.7 cm) • XCM888F 8-port 1000Base-X SFP Card for XCM88S1 Dimensions: 1.32" high x 6.94" wide x 11.19" deep (3.35 cm x 17.63 cm x 28.42cm) • XCM88P PoE Daughter Card for XCM8848T Dimensions: 1.25" high x 14.31" wide x 4.81" deep (3.18 cm x 36.35 cm x 12.22 cm)
Physical Specifications - Weight	• XCM8810 Chassis Switch: 79 lb (35.8 kg) • XCM8810 Chassis Switch fully loaded (max): 200.5 lb (90.9 kg) • XCM8806 Chassis Switch: 65 lb (29.5 kg) • XCM8806 Chassis Switch fully loaded (max): 151 lb (68.5 kg) • XCM88PS1 Power Supply: 7 lb (3.2 kg) • XCM88S1 Supervisory Module: 6.45 lb (2.93 kg) • XCM8848T 48-port 10/100/1000Base-T Module: 7.75 lb (3.52 kg) • XCM8824F 24-port 1000Base-X SFP Module: 6.95 lb (3.15 kg) • XCM8808X 8-port 10GBase-XFP Module: 6.91 lb (3.13 kg) • XCM888F 8-port 1000Base-X SFP Card for XSM88S1: 2.20 lb (1.0 kg) • XCM88P PoE Daughter Card for XCM8848T: 0.80 lb (0.36 kg)
Physical Specifications - Power	• XCM8810 Chassis Switch with Fan Trays: 55W (Heat Dissipation: 188 BTU) • XCM8806 Chassis Switch with Fan Trays: 45W (Heat Dissipation: 154 BTU) • XCM88S1 Supervisory Module: 150W (Heat Dissipation: 512 BTU) • XCM8848T 48-port 10/100/1000Base-T Module: 110W (Heat Dissipation: 376 BTU) • XCM8848T 48-port 10/100/1000Base-T Module with XCM88P PoE Daughter Card: 110W (Heat Dissipation: 376 BTU) • XCM8824F 24-port 1000Base-X SFP Module: 100W (Heat Dissipation: 341 BTU) • XCM8808X 8-port 10GBase-XFP Module: 135W (Heat Dissipation: 461 BTU)
Operating Specifications	**Operating Conditions** • Operating Temperature Range: 0° C to 40° C (32° F to 104° F) • Operating Humidity: 10% to 93% relative humidity, non-condensing • Operational Shock: 30 m/s2 (3g), 11ms, 60 Shocks • Operational Sine Vibration: 5-100-5 HZ @ 0.2G, 0-Peak, 01 Oct./min. • Operational Random Vibration: 3-500MHz @ 1.5g rms
Regulatory/Safety Standards	**North American Safety of ITE** • UL 60950-1:2003 1st Ed., Listed Device (U.S.) • CSA 22.2#60950-1-03 1st Ed.(Canada) • Complies with FCC 21CFR Chapter1, Subchapter J (U.S. Laser Safety) • CDRH Letter of Approval (U.S. FDA Approval) • IEEE 802.3af 6-2003 Environment A for PoE Applications **European Safety of ITE** • EN60950-1:2001+A11 • EN 60825-1+A2:2001 (Lasers Safety) • TUV-R GS Mark by German Notified Body • 73/23/EEC Low Voltage Directive **International Safety of ITE** • CB Report & Certificate per IEC 60950-1:2001+All Country Deviations • AS/NZX 60950-1 (Australia/New Zealand) EMI/EMC Standards **North America EMC for ITE** • FCC CFR 47 part 15 Class A (U.S.) • ICES-003 Class A (Canada) **European EMC Standards** • EN 55022:1998 Class A • EN 55024:1998 Class A – includes IEC 61000-4-2, 3, 4, 5, 6, 8, 11 • EN 61000-3-2,3 (Harmonics & Flicker) • ETSI EN 300 386:2001 (EMC Telecommunications) • 89/336/EEC EMC Directive **International EMC Certifications** • CISPR 22:1997 Class A (International Emissions) • CISPR 24:1997 Class A (International Immunity) • IEC/EN 61000-4-2 Electrostatic Discharge, 8kV Contact, 15kV Air, Criteria A • IEC/EN 61000-4-3 Radiated Immunity 10V/m, Criteria A • IEC/EN 61000-4-4 Transient Burst, 1kV, Criteria A • IEC/EN 61000-4-5 Surge, 2kV, 4kV, Criteria A • IEC/EN 61000-4-6 Conducted Immunity, 0.15-80MHz, 10V/m unmod. RMS, Criteria A • IEC/EN 61000-4-11 Power Dips & Interruptions, >30%, 25 periods, Criteria C **Country Specific** • VCCI Class A (Japan Emissions) • AS/NZS 3548 ACA (Australia Emissions) • CNS 13438:1997 Class A (BSMI-Taiwan) • NOM/NYCE (Mexico) • MIC Mark, EMC Approval (Korea)
Telecom Standards	• ETSI EN 300 386:2001 (EMC Telecommunications) • ETSI EN 300 019 (Environmental for Telecommunications)

Environmental	• EN/ETSI 300 019-2-1 v2.1.2 – Class 1.2 Storage • EN/ETSI 300 019-2-2 v2.1.2 – Class 2.3 Transportation • EN/ETSI 300 019-2-3 v2.1.2 – Class 3.1e Operational • EN/ETSI 300 753 (1997-10) – Acoustic Noise • NEBS GR-63 Issue 2 – Sound Pressure • ASTM D3580 Random Vibration Unpackaged 1.5G
Warranty	• 3-year • Includes 3-year Next Business Day Onsite Replacement Support in major metropolitan areas across the United States, Canada, Austria, Belgium, France, Germany, Ireland, Luxembourg, Netherlands and UK
Service Packs	• Advanced Technical Support (24x7) with Software maintenance/subscription: - Tech support including installation, configuration and diagnostic support (remote) - Direct access to Level 3 support teams - Access to software updates and tech alerts - Escalation management with Plan of Action (POA) - Dedicated toll free number • One Service Pack per Chassis • For 6-slot Chassis (XCM8806): - **PAS0314** Advanced Technical Support (24x7) and Software Maintenance, Cat 4 (1 Year) **Americas**: PAS0314-100NAS (electronic voucher) **Europe**: PAS0314-100EUS (physical voucher) **Asia**: PAS0314-100AUS (physical voucher) • For 10-slot Chassis (XCM8810): - **PAS0316** Advanced Technical Support (24x7) and Software Maintenance, Cat 6 (1 Year) **Americas**: PAS0316-100NAS (electronic voucher) **Europe**: PAS0316-100EUS (physical voucher) **Asia**: PAS0316-100AUS (physical voucher)
ORDERING INFORMATION (ALL REGIONS)	
Empty Chassis:	
XCM8806-10000S	NETGEAR 8800 Series 6-slot Chassis Switch
XCM8810-10000S	NETGEAR 8800 Series 10-slot Chassis Switch
Supervisory Module:	
XCM88S1-10000S	NETGEAR 8800 Series Supervisory Module
XCM888F-10000S	NETGEAR 8800 Series 8-port 1000Base-X SFP Card for XSM88S1
I/O Modules:	
XCM8848T-10000S	NETGEAR 8800 Series 48-port 10/100/1000Base-T Module
XCM88P-10000S	NETGEAR 8800 Series PoE Daughter Card for XCM8848T
XCM8824F-10000S	NETGEAR 8800 Series 24-port 1000Base-X SFP Module
XCM8808X-10000S	NETGEAR 8800 Series 8-port 10GBase-XFP Module
Power Supply:	
XCM88PS1-10000S	NETGEAR 8800 Series 100-240VAC Power Supply Unit
License upgrade:	
XCM88ASL-10000S	NETGEAR 8800 Series Advanced Core Software License Upgrade (physical voucher)
Accessories:	
XCM8806PC-10000S	NETGEAR 8800 Series Power Supply Bay Cover for XCM8806
XCM8810PC-10000S	NETGEAR 8800 Series Power Supply Bay Cover for XCM8810
XCM8806FT-10000S	NETGEAR 8800 Series Spare Fan Tray Unit for XCM8806
XCM8810FT-10000S	NETGEAR 8800 Series Spare Fan Tray Unit for XCM8810
XCM88FPB-10000S	NETGEAR 8800 Series Spare Fan/PSU Controller Unit
Optics and Cables:	
AGM731F	NETGEAR ProSafe 1000Base-SX SFP LC GBIC (multimode, 550m OM3, 275m OM1)
AGM732F	NETGEAR ProSafe 1000Base-LX SFP LC GBIC (single mode, 10km)
AXM751	NETGEAR ProSafe 10GBase-SR XFP LC Optics (multimode, 300m OM3, 33m OM1)
AXM752	NETGEAR ProSafe 10GBase-LR XFP LC Optics (single mode, 10km)
AXC753-10000S	NETGEAR ProSafe 3m Direct Attach XFP to SFP+ Cable

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*Basic technical support provided for 90 days from date of purchase.

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