NETGEAR®

ProSAFE® 10-Gigabit Ethernet Smart Switches

Industry's first 10G Smart Switch, purposely designed for SMB with Cost-Effective 10GBase-T connectivity and Advanced L2+ Features

As a leading provider of network equipment for SMBs, NETGEAR understands the importance of a reliable and high performance network to the SMB customers. With the growth of virtualization, cloud-based services and applications like VoIP, video streaming and IP surveillance in the SMB space, SMB networks need to extend beyond simple reliability to higher speed and better performance. The 10G Smart Switch (XS712T) from NETGEAR presents the right solution for this requirement, delivering unprecedented non-blocking 10-Gigabit bandwidth at an affordable cost by using the 10Gbase-T technology.

The NETGEAR XS712T is a powerful smart switch that comes with 12 10-GBase-T copper ports and 2 Combo SFP+ for 10G Fiber links. It is purposely designed as a cost-effective way to provide 10G connections to 10G-capable servers and NAS (Network Attached Storage). It can be used as a 10G access switch, uplink to 10G Managed switch (XSM7224) while expending the 10G connections down to the edge.

Highlights

XS712T provides comprehensive L2 features in order to meet our customers' current and future needs on virtualization, converged network and mobility. Some of the main features include:

- Advanced VLAN features such as VLAN and guest VLAN
- Advanced QoS (Quality of Service) with L2-L4 awareness and 8 priority queues
- Static Routing
- Private VLAN
- Dynamic VLAN assignment
- IGMP and MLD snooping
- Advanced Security
- IPv6 for management, QoS and ACL

10 Gigabit transition with Base-T

- 10GBase-T, like other Base-T technologies, uses the standard RJ45 Ethernet jack
- It is backward compatible, auto-negotiating between higher and lower speeds – thereby not forcing an all at once network equipment upgrade
- Cat5/Cat5E are supported for Gigabit speeds; when Cat6 twisted pair copper cabling is minimum requirement for 10 Gigabit up to 30 meters
- Cat6A or newer Cat7 cabling allow for up to 100 meter 10GBase-T connections

Designed as Core Switch for SMB Network

- 10G connection to 10G-capable servers and network storages
- Powerful L2/L2+ features made it the most cost-effective core switch for SMB and virtualization environment
- Future-Proof your network with 10G bandwidth, advanced traffic management and comprehensive IPv6 Support
- Static routing, helps to route internal traffic for more efficient use of network resources
- IGMP and MLD snooping, providing advanced multicast filtering

Act as Aggregation Switch for Medium-sized Network

- 10G switch helps to resolve the congestion issue between network edge and core, which is caused by the boarder adoption of Gigabit-to-the-desktop
- 10 Gigabit Ethernet provides greater scalability than multiple Gigabit Ethernet links, resulting in a simplified and highly-efficient network infrastructure
- Up to eight 10 Gigabit Ethernet links can be aggregated into a virtual 80-Gbps connection
- 10 Gigabit Ethernet reduces cabling complexity and uses existing cabling efficiently

Smart IT, not Big IT

- Easy to manage via web-Based Management GUI or Smart Control Center for multi-switch deployment
- Standard-based technology, ensuring interoperability with any standard-based devices in the existing network
- Dual firmware images, improving reliability and uptime to your network
- Worry-free with NETGEAR ProSAFE Lifetime Hardware Warranty
- Assist with customer deployment with 1-year Free 24x7 Advanced Technical Support

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Hardware at a Glance

	FRONT			REAR	
Model Name	Form-Factor	100/1000/10GBase-T	1000/10GBase-X	Power Supply	Fans
XS712T	Rackmount	12	2 (shared)	1 internal PSU, fixed	2 internal, fixed fans

Software at a Glance

|	LAYER 2+						
Model Name	IPv4 / IPv6 ACL and QoS	IPv4 / IPv6 Multicast filtering	Auto-VoIP	EEE (802.3az) Auto-EEE	VLANs	Convergence	IPv4 Unicast Static Routing
XS712T	L2, L3, L4 ingress	IGMP and MLD Snooping	Yes	Yes	Static, Dynamic, Voice, MAC, Private VLANs	LLDP-MED, RADIUS, 802.1X	Yes (Port-based, VLANs)

Performance at a Glance

| Model Name	Packet buffer	CPU	ACLs	MAC address table RP/NDP table VLANs	Fabric	Latency	Static Routes	Multicast IGMP Group
XS712T	16 Mb	600 Mhz 128M RAM 32M Flash	100 ingress	32K MAC 1K ARP/NDP VLANs: 256	240Gbps line-rate	10GBase-T <6.606 µs SFP+ <2.979 µs	32 IPv4	1K

Features at a glance

HARDWARE FEATURES	BENEFITS
12 10GBase-T connections	Support low-latency, line-rate 10G Copper "Base-T" technology with backward compatibility to Fast Ethernet and Gigabit Ethernet. Cost-Effectively migrate current network to 10G capacity by utilizing the existing Cat6 RJ45 short connections (up to 300m) and Cat6A / Cat 7 connections up to 100m.
2 combo SFP+ 10G Fiber ports	Backward compatible to Gigabit fiber. Providing flexibility to uplink to 10G-capable core or aggregation switches that support fiber links.
SOFTWARE FEATURES	BENEFITS
Dynamic VLAN Assignment	IP phones and PCs can authenticate on the same port but under different VLAN assignment policies. Users are free to move around and enjoy the same level of network access regardless of their physical location in the network.
Static Routing	A simple way to provide segmentation of the network with internal routing through the switch – reserving the router for external traffic routing only, making the entire network more efficient.
Comprehensive IPv6 Support for management, ACL and QoS	Build current network with future in mind. Ensure investment protection and a smooth migration to IPv6-based network without switch replacement.
Private VLAN	Help reduce broadcast with added security
IGMP Snooping and MLD Snooping	Facilitate fast receiver joins and leaves for multicast streams. Save cost and improve network efficiency by ensuring multicast traffic only reaches designated receivers without the need of an extra Multicast router.
Robust security features: • 802.1x authentication • DHCP Filtering • Port-based security by locked MAC • ACL filtering to permit or deny traffic based on MAC and IP addresses	Build a secured, converged network with all types of traffic by preventing external attacks and blocking malware while allowing secure access for authorized users.
Comprehensive QoS features: • Port-based or 802.1p-based prioritization • Layer 3-based (DSCP) prioritization • Port-based ingress and egress rate limiting	Advanced controls for optimized network performance and better delivery of mission-critical traffic such as voice and video.
DHCP Snooping	Ensure IP address allocation integrity by allowing only clients with specific IP/MAC addresses to have access to the network.
Dual firmware Images and configuration files	Dual firmware image and dual configuration file for transparent firmware updates/configuration changes with minimum service interruption.
Protected Ports	Ensure no exchange of unicast, broadcast, or multicast traffic between the protected ports on the switch, therefore, improve the security of your converged network where your sensitive phone conversation can stay private and your surveillance video clips can be forwarded to their designated storage device without leakage or alteration.

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ProSAFE® 10-Gigabit Ethernet Smart Switches

Data Sheet

XS712T

Target Application

XS712T in SMB Newtork
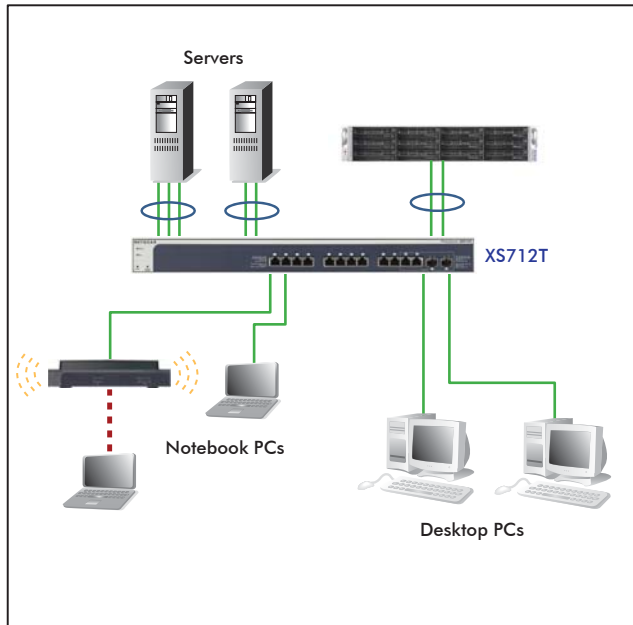
XS712T in Medium-sized Network
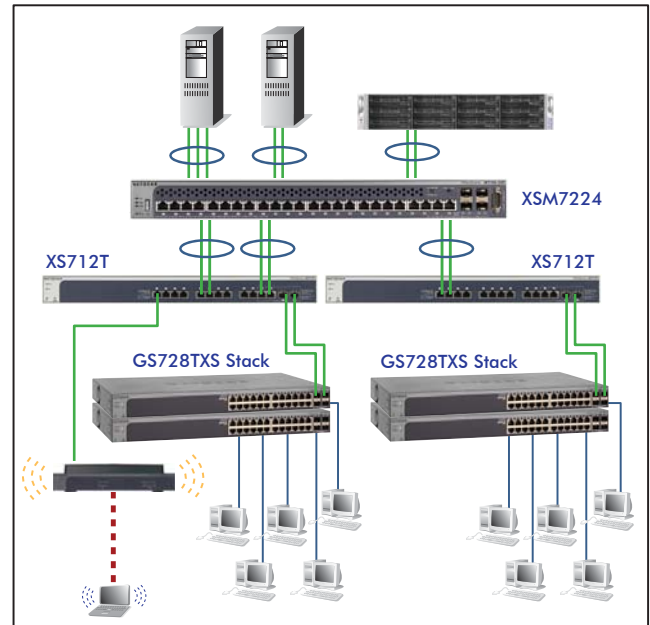
— 10GE link   — GE link   ···· Wireless link

Why 10G Switches and Why from NETGEAR?

NETGEAR offers the Industry's first cost-effective 10G Switch for SMBs and is the only provider for 10G solution at affordable price point:

- Ideal for SMBs to use as the core switch, connecting to 10G-capable Servers and network storages.
- Cost-effectively expand 10G bandwidth from core switch in medium-sized networks to access switches which are equipped with 10G uplinks
- Powerful feature sets with advanced L2 functions, enhanced security measures, static routing, dynamic VLAN assignment and IPv6 support
- Lifetime warranty and 1-year Free Advanced Tech Support for peace-of-mind

Technical Specifications

Physical interfaces
Auto-sensing RJ45 100/1000/10GBase-T

- 12 - 2 (shared)

Packet Buffer Memory

- 16 Mb - Dynamically shared across only used ports

Performance Summary
Switching fabric

- 240 Gbps - Line-rate (non blocking fabric)

Green Ethernet
Energy Efficient Ethernet (EEE)

- IEEE 802.3az Energy Efficient Ethernet Task Force compliance- Deactivated by default

Auto-EEE Mode

- Deactivated by default

Power Back Off

- 10GBase-T standard - Drops power consumption by 15% to 20% when short copper cables are detected

Other Matrix
Forwarding mode

- Store-and-forward

Latency (64-byte frames, 10 Gbps, Copper 10GBase-T)

- <6.606 μs

Latency (64-byte frames, 10 Gbps, Fiber SFP+)

- <2.979 μs

Addressing

- 48-bit MAC address

Address database size

- 32,000 MAC addresses

Number of VLANs

- 256 VLANs (802.1Q) simultaneously

Number of multicast groups filtered (IGMP)

- 1K

Number of Link Aggregation Groups (LAGs - 802.3ad)

- 8 LAGs with up to 8 ports per group

Number of hardware queues for QoS

- 8 queues

Number of static routes - IPv4

- 32

Number of IP interfaces (port or VLAN)

- 15

Jumbo frame support

- Up to 12K packet size

Acoustic noise (ANSI-S10.12)

- 49.7dBA @ 25 °C ambient (77 °F)

Heat Dissipation (BTU)

- 334 Btu/hr

Mean Time Between Failures (MTBF)

- 211,197 hours

L2 Services - VLANs

- IEEE 802.1Q VLAN Tagging
- IP based VLANs
- MAC based VLANs
- Voice VLAN - Based on phones OUI bytes (internal database, or user-maintained) or protocols (SIP, H323 and SCCP)

Network Security

- IEEE 802.1x
- Guest VLAN
- RADIUS based VLAN assignment via .1x
- MAC-based .1x
- Network Storm Protection, DoS
- Broadcast, Unicast, Multicast DoS Protection
- DoS attacks
- DoS Prevention
- Private VLAN

L2 Services - Availability

- IEEE 802.3ad - LAGs
  - LACP ((8 LAGS with max. of 8 members in each LAG))
- Broadcast Storm Control
- IEEE 802.3x (Full Duplex and flow control)
- IEEE 802.1D Spanning Tree Protocol
- IEEE 802.1w Rapid Spanning Tree
- IEEE 802.1s Multiple Spanning Tree
- BPDU Guard

L2 Services - Multicast Filtering

- IGMP Snooping (v1, v2 and v3)
- MLD Snooping Support (v1 and v2)
- IGMP Snooping queries
- Block unknown Multicast

Technical Specifications

L3 Services - DHCP

- DHCP Client
- DHCP Snooping

L3 Services - IPv4 Routing

- Static Routing
- VLAN Routing
- IP Source Guard
- Router Discovery (IRDP)

Network Monitoring and Discovery Services

- 802.1ab LLDP
- SNMP V1, V2, V3
- RMON 1,2,3,9

Network Traffic

- Access Control Lists (ACLs)
    - L2 / L3 / L4
- IP-based ACLs (IPv4 and IPv6)
- MAC-based ACL
- TCP/UDP-based ACL
- MAC lockdown
- MAC lockdown by the number of MACs
- IEEE 802.1x Radius Port Access Authentication
- Port Security
- DHCP Snooping

Quality of Service (QoS)

- Access Lists
- L2 MAC, L3 IP and L4 Port ACLs
- Ingress rate limiting
- Egress rate limiting
- Support for IPv6 fields
- DiffServ QoS
- IEEE 802.1p COS
- Dst MAC and IP
- IPv4 and v6 DSCP
- IPv4 and v6 TOS
- WRR (Weighted Round Robin)
- Strict Priority queue technology
- Auto-VoIP
    - Yes, based on protocols (SIP, H323 and SCCP) or on OUI bytes (default database and user-based OUIs) in the phone source MAC address
- Auto Video
- Port Mirroring

IEEE Network Protocols

- IEEE 802.3 Ethernet
- IEEE 802.3z Gigabit Ethernet 1000BASE-SX/LX
- IEEE 802.1D Spanning Tree (STP)
- IEEE 802.3i 10BASE-T
- IEEE 802.3ae 10-Gigabit Ethernet
- IEEE 802.1s Multiple Spanning Tree (MSTP)
- IEEE 802.3u 100BASE-T
- IEEE 802.3ad Trunking (LACP)
- IEEE 802.1w Rapid Spanning Tree (RSTP)
- IEEE 802.3ab 1000BASE-T
- IEEE 802.1AB LLDP with ANSI/TIA-1057 (LLDP-MED)
- IEEE 802.1X Radius network access control
- IEEE 802.1Q VLAN Tagging
- IEEE 802.1p Class of Service
- IEEE 802.3x full-duplex flow control
- IEEE 802.3 af (PoE)
- IEEE 802.3 at (PoE Plus)

Management

- Password management
- Configurable Management VLAN
- Admin access control via Radius and TACACS+
- Web-based graphical user interface (GUI)
- Smart Control Center (SCC) for multi-switch management
- IPv6 management
- Dual Software (firmware) image
- Dual Configuration file
- SNTP client over UDP port 123
- SNMP v1/v2
- SNMP v3 with multiple IP addresses
- RMON 1,2,3,9
- Port Mirroring
- Many to One Port Mirroring
- Cable Test utility
- SSL/HTTPS and TLS v1.0 for web-based access
- File transfers (uploads, downloads) TFTP / HTTP
- HTTP Upload and Download (firmware)
- Syslog (RFC 3164)

LEDs

Per port

- Speed, Link, Activity

Per device

- Power and Fan Status

Physical Specifications

- Dimensions: 440 x 257 x 44 mm
- Weight: 4.04 kg (8.9 lb)

Power Consumption

- 98.2W (max.) - Worst case, all ports used, line-rate traffic, max PoE

Environmental Conditions

Operating

Temperature

- 32° to 122°F (0° to 50°C)

Humidity

- 90% maximum relative humidity, non-condensing

Altitude

- 10,000 ft (3,000 m) maximum

Storage

Temperature

- − 4° to 158°F (−20° to 70°C)

Humidity

- 95% maximum relative humidity, non-condensing

Altitude

- 10,000 ft (3,000 m) maximum

Electromagnetic Emissions and Immunity

Certifications

- CE mark, commercial
- FCC Part 15 Class A, VCCI Class A
- Class A EN 55022 (CISPR 22) Class A
- C-Tick Class-A
- EN 50082-1
- EN 55024

Safety

Certifications

- CB mark, commercial
- CSA certified (CSA 22.2 #950)
- UL listed (UL 1950)/cUL IEC 950/EN 60950
- CCC (China Compulsory Certificate)

Ordering Information

Package Content

All models

- ProSAFE® 10-Gigabit Smart Switch (XS712T)
- Power cord
- Rack-mounting kit
- Resource CD with links to online documentation, installation guides, Web-management user manual, Smart Control Center (SCC) software and user guide.

Ordering Information

North America and Latin America:
XS712T-100NES

Europe:
XS712T-100NES

Asia:
XS712T-100AJS

China:
XS712T-100PRS

Optional Modules and Accessories

AXM763-10000S

- 10GBase-LRM long reach multimode

AXM762-10000S

- 10GBase-LR long reach single mode, 9/125µm, up to 10km (6.2 miles)

AGM731F-10000S

- 1000Base-SX short range multimode

AGM732F-10000S

- 1000Base-LX SFP GBIC (Single mode)

AXC761-10000S

- 10GSFP+ Cu (passive), SFP+ connectors on both end, 1m (3.3ft)

AXC763-10000S

- 10GSFP+ Cu (passive), SFP+ connectors on both end, 3m (9.8ft)

AXC753-10000S

- 10GSFP+ Cu (passive), one SFP+ connector and one XFP connector, 3m (9.8ft)

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