# **Centre**COM® XS900MX Series

## Layer 3 10G Stackable Managed Switches

The XS916MXT and XS916MXS switches offer cost effective, high-speed 10G connectivity for servers and storage, and support 100/1000 connections for existing networks. The XS900MX Series enable a highly flexible and reliable network, which can easily scale to meet increasing traffic demands.



R6 READY

**Allied**Ware Plus™
OPERATING SYSTEM

## Overview

The XS900MX Series are the ideal 10G access switches for enterprise networks or anywhere a relay switch with 10G uplink is required. The switches also make the ideal core or aggregation switch, to connect servers and storage in a small network.

The XS916MXT features 12 x 100/1000/10GBASE-T and 4 x SFP+ slots. The AT-XS916MXS features 4 x 100/1000/10GBASE-T and 12 x SFP+ slots.

## Easy management

The XS900MX Series switches feature Allied Telesis Autonomous Management Framework™ (AMF), a sophisticated suite of management tools that provides a simplified approach to network management.

Common tasks are automated or made so simple that the everyday running of a network can be achieved without the need for highly trained, and expensive, network engineers. Powerful features like centralized management, auto-backup, auto-upgrade, auto-provisioning and auto-recovery enable plug-and-play networking and zero-touch management.

## Resiliency

Ethernet Protection Switching Ring (EPSRing™) and 10 Gigabit Ethernet allow several XS900MX Series switches to form a protected ring capable of recovery within as little as 50ms. This feature is perfect for high performance and high availability in enterprise networks.

## Stackable

Flexi-stacking allows a user to stack two XS900MX Series switches, with the choice of using 10G SFP+ direct attach cables, or RJ45 copper connectivity. VCStack provides a highly available system where network resources are spread out across stacked units, reducing the impact if one of the units fails. With VCStack and the XS900MX Series, up to 28 x 10G ports can be provisioned as a single virtual switch in one rack unit.

## Enhanced security

A secure network environment is guaranteed, with powerful control over network traffic types, secure management options, and other multi-layered security features built right into the XS900MX Series switches:

- ▶ Tri-Authentication
- ▶ Multiple Dynamic VLAN
- ▶ Enhanced Guest VLAN
- ▶ Auth-fail VLAN
- ▶ Promiscuous/intercept web authentication
- ▶ Two-step web authentication

Advanced security features include:
- ▶ Port security
- ▶ SSH to secure remote access environment
- ▶ DHCP snooping
- ▶ RADIUS/TACACS – User authentication database
- ▶ Encryption and authentication of SNMPv3

## Key Features

- ▶ Allied Telesis Autonomous Management Framework™ (AMF) supports auto-recovery, zero-touch configuration, and auto-backup
- ▶ AMF secure mode
- ▶ AMF edge node
- ▶ Ethernet Protection Switching Ring (EPSRing™)
- ▶ RIP, OSPF, and static routing
- ▶ Unicast and Multicast routing
- ▶ Mixed hardware Virtual Chassis Stacking (VCStack™)—two units
- ▶ Flexi-stacking
- ▶ Compact size: units can be mounted side by side on optional rackmount bracket
- ▶ Extended operating temperature: up to 50°C
- ▶ DHCP relay
- ▶ IPv6 management and forwarding
- ▶ IEEE802.1x/MAC/web authentication support
- ▶ Loop guard prevents network loops
- ▶ Front to back cooling
- ▶ Graphical User Interface (GUI) for easy management

**AMF**™      **EPSRing**™      **VCStack**™

# CentreCOM XS900MX Series | Layer 3 10G Stackable Managed Switches

## Specifications

### Performance

▶ 40 Gbps of stacking bandwidth

▶ Supports 9216 byte jumbo frames

▶ Wirespeed multicasting

▶ Up to 16K MAC addresses

▶ 2M Byte Packet Buffer

▶ 96 MB flash memory

▶ 4094 configurable VLANs

### Power characteristics

▶ 100-240 VAC, 47-63 Hz

### Expandability

▶ VCStack two units with SFP+ direct attach, or copper RJ45 cables

### Flexibility and compatibility

▶ Port speed and duplex configuration can be set manually or by auto-negotiation

### Diagnostic tools

▶ Find-me device locator

▶ Automatic link flap detection and port shutdown

▶ Optical Digital Diagnostic Monitoring (DDM)

▶ Ping polling and TraceRoute for IPv4 and IPv6

▶ Port mirroring

▶ UniDirectional Link Detection (UDLD)

### IP features

▶ Black hole routing

▶ RIP and static routing for IPv4 (16 routes)

▶ Extended routing with premium license - Static routing (128 routes), RIP (256 routes), OSPF (256 routes)

▶ IPv4 and IPv6 dual stack

▶ Device management over IPv6 networks with SNMPv6, Telnetv6 and SSHv6

▶ NTP client

▶ Log to IPv6 hosts with Syslog v6

### Management

▶ Allied Telesis Autonomous Management Framework (AMF)[1] enables powerful centralized management and zero-touch device installation and recovery

▶ AMF secure mode increases network security with management traffic encryption, authorization, and monitoring

▶ Console management port on the front panel for ease of access

▶ GUI for easy management

▶ Eco-friendly mode allows ports and LEDs to be disabled to save power

▶ Industry-standard CLI with context-sensitive help

▶ Powerful CLI scripting engine

▶ Comprehensive SNMP MIB support for standards-based device management

▶ Built-in text editor

▶ Event-based triggers allow user-defined scripts to be executed upon selected system events

▶ USB interface allows software release files, configurations and other files to be stored for backup and distribution to other devices

### Quality of Service (QoS)

▶ 8 priority queues with a hierarchy of high priority queues for real time traffic, and mixed scheduling, for each switch port

▶ Limit bandwidth per port or per traffic class down to 64kbps

▶ Wirespeed traffic classification with low latency essential for VoIP and real-time streaming media applications

▶ Policy-based QoS on VLAN, port, MAC and general packet classifiers

▶ Policy-based storm protection

▶ Extensive remarking capabilities

▶ Taildrop for queue congestion control

▶ Strict priority, weighted round robin or mixed scheduling

▶ IP precedence and DiffServ marking based on layer 2, 3 and 4 headers

### Resiliency features

▶ Control Plane Prioritization (CPP) ensures the CPU always has sufficient bandwidth to process network control traffic

▶ Dynamic link failover (host attach)

▶ EPSRing (Ethernet Protection Switched Rings) with enhanced recovery and SuperLoop Protection (SLP)

▶ ESPR Master (with premium license)

▶ Link aggregation (LACP) on LAN ports

▶ Loop protection: loop detection and thrash limiting

▶ PVST+ compatibility mode

▶ RRP snooping

▶ Spanning Tree (STP, RSTP, MSTP)

▶ STP root guard

▶ VCStack fast failover minimizes network disruption

### Security features

▶ Access Control Lists (ACLs) based on layer 3 and 4 headers

▶ ACL Groups enable multiple hosts/ports to be included in a single ACL, reducing configuration

▶ Auth-fail and guest VLANs

▶ Authentication, Authorisation and Accounting (AAA)

▶ Bootloader can be password protected for device security

▶ BPDU protection

▶ DHCP snooping, IP source guard and Dynamic ARP Inspection (DAI)

▶ Dynamic VLAN assignment

▶ Network Access and Control (NAC) features manage endpoint security

▶ Port-based learn limits (intrusion detection)

▶ Private VLANs provide security and port isolation for multiple customers using the same VLAN

▶ Secure Copy (SCP)

▶ Strong password security and encryption

▶ Tri-authentication: MAC-based, web-based and IEEE 802.1x

### Physical specifications

| | |
|---|---|
| Dimensions (W x D x H) | 21.0 cm x 32.3 cm x 4.3 cm (8.3 in x 12.7 in x 1.7 in) |
| Weight: XS916MXT | 2.8 kg (6.1 lb) |
| XS916MXS: | 2.7 kg (5.9 lb) |
| Packaged: Dimensions (W x D x H) | 40.0 cm x 33.0 cm x 15.0 cm (15.7 in x 13.0 in x 5.9 in) |
| Weight: XS916MXT | 4.5 kg (9.9 lb) |
| XS916MXS: | 4.2 kg (9.3 lb) |

### Environmental specifications

▶ Operating temperature range: 0°C to 50°C (32°F to 122°F)

▶ Storage temperature range: -25°C to 70°C (-13°F to 158°F)

▶ Operating humidity range: 5% to 90% non-condensing

▶ Storage humidity range: 5% to 95% non-condensing

▶ Operating altitude: 3,000 meters maximum (9,843 ft)

### Safety and electromagnetic emissions

| | |
|---|---|
| RFI (Emissions): | FCC Class A, EN55022 Class A, EN61000-3-2, EN61000-3-3, VCCI Class A, RCM |
| EMC (Immunity): | EN55024 |
| Electrical and Laser Safety: | UL 60950-1(cULus), CSA-C22 No. 60950-1 (cULus), EN60950-1 (TUV) EN60852-1 (TUV) |

### Product specifications

| PRODUCT | 100/1000/10G BASE-T (RJ-45) COPPER PORT | SFP/SFP+ SLOT | SWITCHING FABRIC | FORWARDING RATE |
|---|---|---|---|---|
| XS916MXT | 12 | 4 | 320Gbps | 238Mpps |
| XS916MXS | 4 | 12 | 320Gbps | 238Mpps |

### Power and noise characteristics

| PRODUCT | MAX POWER CONSUMPTION | MAX HEAT DISSIPATION | NOISE |
|---|---|---|---|
| XS916MXT | 78W | 270 BTU/h | 42 dBA |
| XS916MXS | 53W | 180 BTU/h | 42 dBA |

### Latency

| PRODUCT | 64byte | | | 1518byte | | |
|---|---|---|---|---|---|---|
| | 100Mbps | 1000Mbps | 10Gbps | 100Mbps | 1000Mbps | 10Gbps |
| XS916MXT | 6.93µs | 2.40µs | 1.35µs | 6.93µs | 2.40µs | 2.51µs |
| XS916MXS | 6.88µs | 2.80µs | 2.35µs | 6.90µs | 2.82µs | 3.49µs |

## Cryptographic Algorithms

**FIPS Approved Algorithms**

Encryption (Block Ciphers):

▶ AES (ECB, CBC, CFB and OFB Modes)

▶ 3DES (ECB, CBC, CFB and OFB Modes)

Block Cipher Modes:

▶ CCM

▶ CMAC

▶ GCM

▶ XTS

Digital Signatures & Asymmetric Key Generation:

▶ DSA

▶ ECDSA

▶ RSA

Secure Hashing:

▶ SHA-1

▶ SHA-2 (SHA-224, SHA-256, SHA-384. SHA-512)

Message Authentication:

▶ HMAC (SHA-1, SHA-2(224, 256, 384, 512)

Random Number Generation:

▶ DRBG (Hash, HMAC and Counter)

**Non FIPS Approved Algorithms**

RNG (AES128/192/256)

DES

MD5

## Ethernet Standards

IEEE 802.2   Logical Link Control (LLC)
IEEE 802.3   Ethernet
IEEE 802.3ab 1000BASE-T
IEEE 802.3ae 10 Gigabit Ethernet
IEEE 802.3an 10GBASE-T
IEEE 802.3x  Flow control - full-duplex operation
IEEE 802.3z  1000BASE-X

## IPv4 Features

RFC  768   User Datagram Protocol (UDP)
RFC  791   Internet Protocol (IP)
RFC  792   Internet Control Message Protocol (ICMP)
RFC  793   Transmission Control Protocol (TCP)
RFC  826   Address Resolution Protocol (ARP)
RFC  894   Standard for the transmission of IP datagrams over Ethernet networks
RFC  919   Broadcasting Internet datagrams
RFC  922   Broadcasting Internet datagrams in the presence of subnets
RFC  932   Subnetwork addressing scheme
RFC  950   Internet standard subnetting procedure
RFC 1027   Proxy ARP
RFC 1035   DNS client
RFC 1042   Standard for the transmission of IP datagrams over IEEE 802 networks
RFC 1071   Computing the Internet checksum
RFC 1122   Internet host requirements
RFC 1191   Path MTU discovery
RFC 1256   ICMP router discovery messages
RFC 1518   An architecture for IP address allocation with CIDR
RFC 1519   Classless Inter-Domain Routing (CIDR)
RFC 1591   Domain Name System (DNS)
RFC 1812   Requirements for IPv4 routers
RFC 1918   IP addressing
RFC 2581   TCP congestion control

## IPv6 Featuress

RFC 1981   Path MTU discovery for IPv6
RFC 2460   IPv6 specification
RFC 2464   Transmission of IPv6 packets over Ethernet networks
RFC 2711   IPv6 router alert option
RFC 3484   Default address selection for IPv6
RFC 3587   IPv6 global unicast address format
RFC 3596   DNS extensions to support IPv6
RFC 4007   IPv6 scoped address architecture
RFC 4193   Unique local IPv6 unicast addresses

RFC 4213   Transition mechanisms for IPv6 hosts and routers
RFC 4291   IPv6 addressing architecture
RFC 4443   Internet Control Message Protocol (ICMPv6)
RFC 4861   Neighbor discovery for IPv6
RFC 4862   IPv6 Stateless Address Auto-Configuration (SLAAC)
RFC 5014   IPv6 socket API for source address selection
RFC 5095   Deprecation of type 0 routing headers in IPv6

## Management

AMF edge node[1]

AT Enterprise MIB including AMF MIB and SNMP traps

SNMPv1, v2c and v3

IEEE 802.1AB Link Layer Discovery Protocol (LLDP)

RFC 1155   Structure and identification of management information for TCP/IP-based Internets
RFC 1157   Simple Network Management Protocol (SNMP)
RFC 1212   Concise MIB definitions
RFC 1213   MIB for network management of TCP/IP-based Internets: MIB-II
RFC 1215   Convention for defining traps for use with the SNMP
RFC 1227   SNMP MUX protocol and MIB
RFC 1239   Standard MIB
RFC 1724   RIPv2 MIB extension
RFC 2578   Structure of Management Information v2 (SMIv2)
RFC 2579   Textual conventions for SMIv2
RFC 2580   Conformance statements for SMIv2
RFC 2674   Definitions of managed objects for bridges with traffic classes, multicast filtering and VLAN extensions
RFC 2741   Agent extensibility (AgentX) protocol
RFC 2819   RMON MIB (groups 1,2,3 and 9)
RFC 2863   Interfaces group MIB
RFC 3411   An architecture for describing SNMP management frameworks
RFC 3412   Message processing and dispatching for the SNMP
RFC 3413   SNMP applications
RFC 3414   User-based Security Model (USM) for SNMPv3
RFC 3415   View-based Access Control Model (VACM) for SNMP
RFC 3416   Version 2 of the protocol operations for the SNMP
RFC 3417   Transport mappings for the SNMP
RFC 3418   MIB for SNMP
RFC 3635   Definitions of managed objects for the Ethernet-like interface types
RFC 4022   MIB for the Transmission Control Protocol (TCP)
RFC 4113   MIB for the User Datagram Protocol (UDP)
RFC 4292   IP forwarding table MIB
RFC 4293   MIB for the Internet Protocol (IP)
RFC 5424   Syslog protocol

## Multicast support

IGMP query solicitation

IGMP snooping (IGMPv1, v2 and v3)

IGMP snooping fast-leave

MLD snooping (MLDv1 and v2)

RFC 2715   Interoperability rules for multicast routing protocols
RFC 3306   Unicast-prefix-based IPv6 multicast addresses
RFC 4541   IGMP and MLD snooping switches

## Open Shortest Path First (OSPF)

OSPF link-local signaling

OSPF MD5 authentication

OSPF restart signaling

Out-of-band LSDB resync

RFC 1245   OSPF protocol analysis
RFC 1246   Experience with the OSPF protocol
RFC 1370   Applicability statement for OSPF
RFC 1765   OSPF database overflow
RFC 2328   OSPFv2

[1] The XS900MX Series support AMF edge. AMF edge is for products used at the edge of the network, and only support a single AMF link. They cannot cross links or virtual links.

RFC 2370   OSPF opaque LSA option
RFC 3101   OSPF Not-So-Stubby Area (NSSA) option
RFC 3509   Alternative implementations of OSPF area border routers
RFC 3623   Graceful OSPF restart
RFC 3630   Traffic engineering extensions to OSPF

## Quality of Service (QoS)

IEEE 802.1p Priority tagging
RFC 2211   Specification of the controlled-load network element service
RFC 2474   DiffServ precedence for eight queues/port
RFC 2475   DiffServ architecture
RFC 2597   DiffServ Assured Forwarding (AF)
RFC 2697   A single-rate three-color marker
RFC 2698   A two-rate three-color marker
RFC 3246   DiffServ Expedited Forwarding (EF)

## Resiliency

IEEE 802.1AX Link aggregation (static and LACP)
IEEE 802.1D  MAC bridges
IEEE 802.1s  Multiple Spanning Tree Protocol (MSTP)
IEEE 802.1w  Rapid Spanning Tree Protocol (RSTP)
IEEE 802.3ad Static and dynamic link aggregation

## Routing Information Protocol (RIP)

RFC 1058   Routing Information Protocol (RIP)
RFC 2082   RIP-2 MD5 authentication
RFC 2453   RIPv2

## Security

SSH remote login

SSLv2 and SSLv3

TACACS+ Accounting, Authentication, Authorization (AAA)

IEEE 802.1X   authentication protocols (TLS, TTLS, PEAP and MD5)

IEEE 802.1X multi-supplicant authentication

IEEE 802.1X port-based network access control

RFC 2560   X.509 Online Certificate Status Protocol (OCSP)
RFC 2818   HTTP over TLS ("HTTPS")
RFC 2865   RADIUS authentication
RFC 2866   RADIUS accounting
RFC 2868   RADIUS attributes for tunnel protocol support
RFC 2986   PKCS #10: certification request syntax specification v1.7
RFC 3546   Transport Layer Security (TLS) extensions
RFC 3579   RADIUS support for Extensible Authentication Protocol (EAP)
RFC 3580   IEEE 802.1x RADIUS usage guidelines
RFC 3748   PPP Extensible Authentication Protocol (EAP)
RFC 4251   Secure Shell (SSHv2) protocol architecture
RFC 4252   Secure Shell (SSHv2) authentication protocol
RFC 4253   Secure Shell (SSHv2) transport layer protocol
RFC 4254   Secure Shell (SSHv2) connection protocol
RFC 5246   Transport Layer Security (TLS) v1.2
RFC 5280   X.509 certificate and Certificate Revocation List (CRL) profile
RFC 5425   Transport Layer Security (TLS) transport mapping for Syslog
RFC 5656   Elliptic curve algorithm integration for SSH
RFC 6125   Domain-based application service identity within PKI using X.509 certificates with TLS
RFC 6614   Transport Layer Security (TLS) encryption for RADIUS
RFC 6668   SHA-2 data integrity verification for SSH

## Services

RFC  854   Telnet protocol specification
RFC  855   Telnet option specifications
RFC  857   Telnet echo option
RFC  858   Telnet suppress go ahead option
RFC 1091   Telnet terminal-type option
RFC 1350   Trivial File Transfer Protocol (TFTP)
RFC 1985   SMTP service extension
RFC 2049   MIME
RFC 2131   DHCPv4 client
RFC 2616   Hypertext Transfer Protocol - HTTP/1.1
RFC 2821   Simple Mail Transfer Protocol (SMTP)
RFC 2822   Internet message format

RFC 4330    Simple Network Time Protocol (SNTP) version 4
RFC 5905    Network Time Protocol (NTP) version 4

## VLAN support

IEEE 802.1Q    Virtual LAN (VLAN) bridges
IEEE 802.1v    VLAN classification by protocol and port
IEEE 802.3ac    VLAN tagging

## Voice over IP (VoIP)

LLDP-MED    ANSI/TIA-1057
Voice VLAN

## Ordering information

### AT-XS916MXT-xx

12-port 100/1000/10G Base-T (RJ-45) stackable switch with 4 SFP/SFP+slot

### AT-XS916MXS-xx

12 SFP/SFP+ slot stackable switch with 4-port 100/1000/10G Base-T (RJ-45)

Where xx =   10 for US power cord
           20 for no power cord
           30 for UK power cord
           40 for Australian power cord
           50 for European power cord

## Small Form Pluggable (SFP) modules

### 1000Mbps SFP modules

### AT-SPSX

1000SX GbE multi-mode 850 nm fiber up to 550 m

### AT-SPEX

1000X GbE multi-mode 1310 nm fiber up to 2 km

### AT-SPLX10

1000LX GbE single-mode 1310 nm fiber up to 10 km

### AT-SPLX40

1000LX GbE single-mode 1310 nm fiber up to 40 km

### 10G SFP+ modules

### AT-SP10SR

10GSR 850 nm short-haul, 300 m with MMF

### AT-SP10SR/I

10GSR 850 nm short-haul, 300 m with MMF industrial temperature

### AT-SP10LR

10GLR 1310 nm medium-haul, 10 km with SMF

### AT-SP10LR/I

10GLR 1310 nm medium-haul, 10 km with SMF industrial temperature

### AT-SP10ER40/I

10GER 1310nm long-haul, 40 km with SMF industrial temperature

### AT-SP10ZR80/I

10GER 1550 nm long-haul, 80 km with SMF industrial temperature

### AT-SP10BD10/I-12

10 GbE Bi-Di, 1270 nm Tx/ 1330 nm Rx, 10 km industrial temperature

### AT-SP10BD10/I-13

10 GbE Bi-Di, 1330 nm Tx/ 1270 nm Rx, 10 km industrial temperature

### AT-SP10BD20-12

10 GbE Bi-Di, 1270 nm Tx/ 1330 nm Rx, 20 km

### AT-SP10BD20-13

10 GbE Bi-Di, 1330 nm Tx/ 1270 nm Rx, 20 km

### AT-SP10BD40/I-12

10 GbE Bi-Di, 1270 nm Tx/ 1330 nm Rx, 40 km industrial temperature

### AT-SP10BD40/I-13

10 GbE Bi-Di, 1330 nm Tx/ 1270 nm Rx, 40 km industrial temperature

## 10GbE SFP+ Cables

### AT-SP10TW1

1 meter SFP+ direct attach cable, can also be used as a stacking cable

### AT-SP10TW3

3 meter SFP+ direct attach cable, can also be used as a stacking cable

## Accessories

### AT-RKMT-J15

Rack mount kit to install two devices side by side in a 19-inch equipment rack

## Feature Licenses

| NAME | DESCRIPTION | INCLUDES | STACK LICENSING |
|------|-------------|----------|-----------------|
| AT-FL-XS9MX-01 | XS900MX premium license | ► IPv4 Static routing (128 routes)<br>► RIP (256 routes)<br>► OSPFv2 (256 routes)<br>► PIMv4-SM, DM and SSM<br>► EPSR master | ► One license per stack member |
| AT-FL-XS9X-UDLD | UniDirectional Link Detection | ► UDLD | ► One license per stack member |

Allied Telesis™

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