H3C S7500X-G Series High-End Multiservice Routing Switch

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New H3C Technologies Co., Limited

Overview

H3C S7500X-G series is a family of high-end multiservice routing switches intended for multiservice networks. It runs an operating system that boasts virtualization technologies such as Intelligent Resilient Framework 2 (IRF 2) and is fully compatible with 40G/100G Ethernet standards. It uses MPUs in redundancy and delivers a variety of high-availability features such as NSF, ISSU, graceful restart, and RRPP. Along with improved performance and efficiency, it maximizes the system uptime, significantly reducing the TCO for customers.

H3C S7500X-G series includes the S7510X-G, S7506X-G, S7503X-G, and S7503X-M-G models. These models can be used in various network environments such as metropolitan area networks and campus network core and aggregation layers, to deliver customers a wide range of solutions, including the security and switching integrated solution and wired and wireless unified solution.

H3C S7500X-G series high-end multiservice routing switch

Features

Abundant services, Evolving with the Multiservice Network Development

IRF 2

With the IRF 2 technology embedded in the operating system, H3C S7500X-G keeps pace with the continually evolving data center technologies. IRF 2 virtualizes multiple physical devices at the same layer into one virtual fabric to provide data center class availability and scalability. IRF virtualization technology offers processing power, interaction, unified management, and uninterrupted maintenance of multiple devices.

IRF 2 has not only become the main technology to improve performance and enable virtualization for data center switching devices but also increases the profit margins of customers thanks to the high service availability and uninterrupted upgrade and scaling it brings to traditional network applications.

IRF2 can be implemented over a distance of 80 km (49.71 miles) by using ordinary 10-GE optical fibers.

High IPv4/IPv6 Performance

H3C S7500X-G supports IPv4/IPv6 dual stack, multiple IPv6 transition tunneling technologies, and IPv4/IPv6 multicast technologies, and can provides users with complete IPv4/IPv6 solutions.

With a distributed architecture, H3C S7500X-G can achieve wire-speed non-blocking forwarding of IPv4/IPv6 services.

H3C S7500X-G has passed the IPv6 network access certification and is a mature commercial IPv6 product.

Wireless Integrated

H3C S7500X-G is integrated with a wireless control module to delivers rich services, including refined user control and management, complete RF management and security control, fast roaming, outstanding QoS capability, and IPv6. The module can collaborate with a security policy server to control endpoint access, which enhances entire network security.

H3C S7500X-G adopts a chip design that supports access controller functions, providing customers with more options for building wired and wireless integrated networks.

EAD

With a great portal authentication capacity, H3C S7500X-G can be used as an EAD gateway to provide EAD security authentication on a LAN with thousands of users. It can also provide portal authentication for authentication and accounting in the dormitory area in a medium- to large-sized campus network while delivering aggregation and core device services simultaneously.

BYOD Basic Network Architecture

H3C S7500X-G supports a variety of access authentication methods, and can be used as an authentication gateway to provide security authentication on a LAN with thousands of users. It provides basic network architecture for BYOD mobile office solution, convenient for you to expand BYOD applications such as mobile ERP, OA, and UC&C.

Comprehensive Security Assurance, Defending Against Varieties of Security Threats

Security Assurance on all the Three Planes

H3C S7500X-G provides security assurance on all the three planes: control, management, and forwarding planes.

- Control plane—The embedded protocol packet attack recognition module prevents attacks from Topology Change Notification (TCN), Address Resolution Protocol (ARP), and other protocol packets. Use of the MD5 algorithm for the OSPF/BGP/IS-IS routing protocols prevents network breakdown caused by illegitimate route update packets.

- Management plane—Use of SNMPv3, SSHv2, 802.1X and AAA/RADIUS user authentication, role-based user permission management ensures device access and management security.

- Forwarding plane—By binding IP address, VLAN ID, MAC address, port number, and any combinations of them and using uRPF that prevents illegitimate traffic from accessing the network and longest matching packet-by-packet forwarding, the forwarding plane can effectively defend against virus attacks.

Enhanced ACL

The switch offers strong ACL power. It supports:

- Standard and extended ACLs.

- VLAN-based ACLs, which facilities user configuration and saves ACL resources.

- ACLs in both the inbound and outbound directions, well-suited for industries such as finance that have strict access control requirements.

Carrier-grade High Availability, Ensuring Long, Stable Service Running

Carrier-Grade High Availability

The design of H3C S7500X-G eliminates single point of failures.

- All critical parts, including the MPUs, power supplies, and fan trays, are used in redundancy.
- The passive backplane eliminates single point of failures in the chassis.
- All modules and power supplies are hot swappable.

H3C S7500X-G series can operate in extreme environment reliably for a long time, with a carrier-grade reliability of 99.999%.

Reliable Multi-Service Operation

H3C S7500X-G provides the following features to enable multiple services to run reliably and simultaneously without stop:

- NSF and graceful restart, enabling millisecond-level service switching.
- ECMP load balancing to load balance and provide redundancy for services over equal cost routes.

- Rapid Ring Protection Protocol (RRPP) for Ethernet rings.

- Smart Link to ensure millisecond service switchover between dual uplinks.

IRF 2-based HA

IRF 2 can virtualize multiple S7500X-G switches into one virtual fabric that can be used and configured as one device but offers the combined port quantity and switching capacity of the virtualized devices. The devices on the IRF fabric back up each other, which enhances the system availability and enables millisecond-level link convergence.

IRF 2 simplifies the management process, reduces management costs, and allows smooth network scaling as needed. Employing rich hardware-based OAM fault detection features, it can detect link faults within milliseconds.

Highly Available MLAG Architecture

Multi-chassis link aggregation (MLAG, originated from DRNI) virtualizes two physical devices into a logical device at the forwarding plane while keeping separation of the device control planes, taking the benefits of link aggregation from the card level to the device level.

Hardware Specifications

Features	S7503X-M-G	S7503X-G	S7506X-G-PoE		S7510X-G-PoE
Forwarding Capacity*	2120Mpps	3000Mpps	6000Mpps		10000Mpps
Switching Capacity*	4.75Tbps	6.72Tbps	13.44Tbps		22.40Tbps
MPU* Slots	1~2	2	2		2
LPU Slots	1~2	3	6		10
MPU Name	LSCM2CTGS12GPSC0 LSCM2CTGS12GTSC0 LSCM2CGP24TSSC0 LSCM2CGT24TSSC0	LSCM2SUP03B0	LSCM2MPUS06AS0	LSCM3MPUS06A0	LSCM3MPUS10B0
MPU Processor	1.2GHz 2 cores	2.2GHz 2 cores	1.2 GHz 2 cores	2.2GHz 2 cores	2.2GHz 2 cores
MPU Flash /SDRAM	Flash 4GB SDRAM 2GB	Flash 4GB SDRAM 4GB	Flash 4GB SDRAM 2GB	Flash 2GB SDRAM 4GB	Flash 2GB SDRAM 4GB
MPU Console Ports	1x RJ-45 1x mini USB console	1x RJ-45 1x mini USB console	1x RJ-45 1x mini USB console		1x RJ-45 1x mini USB console

Features	S7503X-M-G	S7503X-G	S7506X-G-PoE	S7510X-G-PoE
MPU MGMT Ports	1x 10/100/1000M RJ-45	1x 10/100/1000M RJ-45 1x 1000M SFP	1x 10/100/1000M RJ-45 1x 1000M SFP	1x 10/100/1000M RJ-45 1x 1000M SFP
Operating Environment	Temperature: 0°C to 45°C (32°F to 113°F) Humidity: 5% to 95% (non-condensing)			
Input Voltage	DC: − 48V to − 60V AC: 100V to 240V			
Dimension (H x W x D)	175mm×436mm×420mm (6.89 × 17.17 × 16.54 in); (4U)	216mm×436mm×420mm (8.50 × 17.17 × 16.54 in); (5U)	575mm×436mm×420mm (22.64 × 17.17 × 16.54 in); (13U)	708mm×436mm×420mm (27.87 × 17.17 × 16.54 in); (16U)
Fully Loaded Weight (kg)	<28KG <61.73LB	<35KG <77.16LB	<75KG <165.34LB	<95KG <209.44LB
Availability	99.999%	99.999%	99.999%	99.999%
MTBF (yrs)	175.5	205.2	64.8	59.2
MTTR (hrs)	1	1	1	1

*The Switching and Forwarding capacity parameters are applicable for regions outside Greater China.

* MPU: Main Processing Unit integrating switching fabric

Software Specifications

Features	S7503X-M-G	S7503X-G	S7506X-G-PoE	S7510X-G-PoE
Ethernet	IEEE 802.1p (CoS priority) IEEE 802.1Q (VLAN) IEEE 802.1D (STP)/802.1w (RSTP)/802.1s (MSTP)/BPDU guard IEEE 802.1ad (QinQ), selective QinQ, VLAN mapping IEEE 802.3x (full-duplex flow control) IEEE 802.3ad (link aggregation), cross-card link aggregation RRPP Cross-card port mirroring/flow mirroring Broadcast/multicast/unknown unicast storm suppression on an interface Jumbo frame Port-based VLAN, Protocol-based VLAN, IP subnet-based VLAN, MAC-based VLAN Multicast VLAN+ Single VLAN cross connect, dual VLAN cross connect			

Features	S7503X-M-G	S7503X-G	S7506X-G-PoE	S7510X-G-PoE
	GVRP			
	LLDP			
Routing	ARP proxy			
	DHCP relay			
	DHCP server			
	Static routing			
	RIPv1/v2			
	OSPFv2			
	IS-IS			
	BGPv4			
	OSPF/IS-IS/BGP GR (Graceful Restart)			
	ECMP load balancing			
	Policy-based routing			
	Routing policy			
	ICMPv6			
	ICMPv6 redirection			
	DHCPv6			
	ACLv6			
	OSPFv3			
	RIPng			
	BGP4+			
	IS-ISv6			
	Manual tunneling			
	ISATAP			
	6to4 tunneling			
	Dual stack (IPv4 and IPv6)			
Multicast	IGMPv1/v2/v3			
	IGMPv1/v2/v3 snooping			
	IGMP filter			
	IGMP fast leave			
	PIM-SM/PIM-DM/PIM-SSM			
	MSDP			
	Anycast RP			
	MLDv2/MLDv2 snooping			

Features	S7503X-M-G	S7503X-G	S7506X-G-PoE	S7510X-G-PoE
	PIM-SMv6, PIM-DMv6, PIM-SSMv6			
ACL/QoS	Basic and advanced ACLs VLAN-based ACLs Ingress/Egress ACLs Ingress/Egress CAR, at a granularity of 8 Kbps CAR Traffic shaping 802.1P/DSCP priority marking Hierarchical QoS (HQoS), three-level queue scheduling Queue scheduling algorithms: SP, WRR, SP+WRR, WFQ Congestion avoidance techniques, including tail drop and WERD Mirroring			
SDN/ OpenFlow	OpenFlow 1.3 Multi-controller (EQUAL mode, active/passive mode) Multi-flow table pipeline Group table Two-level meter			
VXLAN	VXLAN L2 switching VXLAN L3 routing VXLAN VTEP IS-IS+ENDP distributed control plane MP-BGP+EVPN distributed control plane OpenFlow+Netconf centralized control plane			
MPLS/VPLS	L3 MPLS VPN L2 VPN: VLL (Martini, Kompella) MCE MPLS OAM VPLS, VLL Hierarchy VPLS, QinQ+VPLS P/PE function LDP			
Multiservice Convergence	Integrated with access controller functions without using a separate access controller module			

Features	S7503X-M-G	S7503X-G	S7506X-G-PoE	S7510X-G-PoE
Security	Hierarchical user management and password protection EAD Portal authentication MAC authentication IEEE 802.1x and IEEE 802.1x SERVER AAA/Radius HWTACACS SSHv1.5/SSHv2 Basic and advanced Access Control Lists for packet filtering OSPF, RIPv2, BGPv4 pain text and MD5 authentication IP address, VLAN ID, MAC address multiple binding combination uRPF Active/standby data backup CPU DoS Protection ARP Attack Protection Microsegmentation			
System Management	IMC network management system Loading and upgrading through XModem/FTP/TFTP SNMP v1/v2/v3 sFlow, NetStream NQA (Network Quality Analysis) RMON and groups 1, 2, 3 and 9 NTP, PTP (1588v2) Fault alarm and automatic fault recovery System logs Device status monitoring mechanism, including the CPU engine, backplane, chips and other key components Intelligent power management, 802.3az EEE Online monitoring of the device and key components, including the MPUs, backplane, chips, and storage components Telemetry INQA, using the packet coloring and counting mechanism to collect device-wide and network-side packet loss statistics Built-in intelligent management module, enabling one-key deployment of device configuration and commands and intelligent version upgrade from the GUI interface			

Features	S7503X-M-G	S7503X-G	S7506X-G-PoE	S7510X-G-PoE
	eMDI			
Programmability	Using Ansible for automated configuration management and bulk configuration deployment			
	Using Python/NETCONF/Tcl for automated network orchestration and automated DevOps			
High vailability	1+1 redundancy for key components such as MPUs (MPU includes CPU + Switching Fabric)			
	1+1 redundancy for power modules			
	Passive backplane			
	Hot swapping for all components			
	Real-time data backup on active/standby MPUs			
	CPU protection			
	VRRP			
	Hot patching			
	NSR (Nonstop Routing)/GR (Graceful Restart) for OSFP/BGP/IS-IS/RSVP			
	Port aggregation and multi-card link aggregation			
	BFD for VRRP/BGP/IS-IS/OSPF/RSVP/static routing, with a failover detection time less than 50 milliseconds			
	Ethernet OAM (802.1ag and 802.3ah)			
	MAC Tracert			
	Hardware BFD			
	RRPP/ERPS			
	DLDP			
	VCT			
	Smart-Link			
	ISSU (In-service Software Upgrade)			
	+/–8 KV lightning protection			
EMC	FCC Part 15 Subpart B CLASS A			
	ICES-003 CLASS A			
	VCCI CLASS A			
	CISPR 32 CLASS A			
	EN 55032 CLASS A			
	AS/NZS CISPR32 CLASS A			
	CISPR 24			
	EN 55024			
	EN 61000-3-2			

Features	S7503X-M-G	S7503X-G	S7506X-G-PoE	S7510X-G-PoE
	EN 61000-3-3			
	ETSI EN 300 386			
Environmental Standards Compliance	RoHS REACH WEEE			
Safety	UL 60950-1 CAN/CSA C22.2 No 60950-1 IEC 60950-1 EN 60950-1 AS/NZS 60950-1 FDA 21 CFR Subchapter J GB 4943.1			

Ordering information

Product ID	Product Description
LS-7503X-M-G	H3C S7503X-M-G Ethernet Switch Chassis
LS-7503X-G	H3C S7503X-G Ethernet Switch Chassis
LS-7506X-G-PoE	H3C S7506X-G Ethernet Switch Chassis, PoE
LS-7510X-G-PoE	H3C S7510X-G Ethernet Switch Chassis, PoE
LSCM2CTGS12GPSC0	H3C S7503X-M-G Main Processing Unit with Switching and Routing, with 16*1000BASE Ethernet Optical Interfaces(SFP,LC)+ 12*10G Ethernet Optical Interfaces(SFP+,LC)(SC)
LSCM2CTGS12GTSC0	H3C S7503X-M-G Main Processing Unit with Switching and Routing, with 16*10/100/1000BASE-T Ethernet Copper Interfaces(RJ45)+ 12*10G Ethernet Optical Interfaces(SFP+,LC)(SC)
LSCM2CGP24TSSC0	H3C S7503X-M-G Main Processing Unit with Switching and Routing,with 24*1000BASE Ethernet Optical Interfaces(SFP,LC)+ 4*10G Ethernet Optical Interfaces(SFP+,LC)(SC)
LSCM2CGT24TSSC0	H3C S7503X-M-G Main Processing Unit with Switching and Routing, with 24*10/100/1000BASE-T Ethernet Copper Interfaces(RJ45)+ 4*10G Ethernet Optical Interfaces(SFP+,LC)(SC)
LSCM2SUP03B0	H3C S7503X-G Supervisor Engine Unit, Type B
LSCM2MPUS06AS0	H3C S7506X-G Main Processing Unit with Switching, Type AS
LSCM3MPUS06A0	H3C S7506X-G Main Processing Unit with Switching, Type A
LSCM3MPUS10B0	H3C S7510X-G Main Processing Unit with Switching, Type B

Product ID	Product Description
LSCM3QGS8CSSE0	H3C S7500X-G 8-Port 40G Ethernet Optical Interface(QSFP+)+4-Port 100G Ethernet Optical Interface Module(QSFP28)(SE)
LSCM3TGS48SE0	H3C S7500X-G 48-Port 10G Ethernet Optical Interface Module(SFP+,LC)(SE)
LSCM2GT24GPTSSD0	H3C S7500X-G 24-Port 10/100/1000BASE-T Ethernet Copper Interface(RJ45)+20-Port 1000BASE Ethernet Optical Interface(SFP,LC)+4-Port 10G Ethernet Optical Interface Module (SFP+,LC)(SD)
LSCM2TGS16GPSD0	H3C S7500X-G 16-Port 10G Ethernet Optical Interface(SFP+,LC)+24-Port 1000BASE Ethernet Optical Interface Module (SFP,LC)(SD)
LSCM2GV48SD0	H3C S7500X-G 48-Port 10/100/1000BASE-T Ethernet Copper Interface Module (RJ45)(SD),PoE Plus
LSCM2GP48SD0	H3C S7500X-G 48-Port 1000BASE Ethernet Optical Interface Module (SFP, LC)(SD)
LSCM2GP24GTSD0	H3C S7500X-G 24-Port 1000BASE Ethernet Optical Interface(SFP,LC)+8-Port 10/100/1000BASE-T Ethernet Copper Interface Module (RJ45)(SD)
LSCM2GT48SD0	H3C S7500X-G 48-Port 10/100/1000BASE-T Ethernet Copper Interface Module (RJ45)(SD)
LSCM2GT24GPSD0	H3C S7500X-G 24-Port 10/100/1000BASE-T Ethernet Copper Interface(RJ45)+8-Port 1000BASE Ethernet Optical Interface Module (SFP,LC)(SD)
LSQM2AC300-GL	H3C 300W AC Power Supply Module
LSQM2AC650-GL	H3C 650W AC Power Supply Module
LSQM1DC650-GL	H3C 650W DC Power Supply Module
PSR2500-12AHD-GL	H3C 2500W AC Power Supply Module, HVDC Supported
PSR2500-12D-GL	H3C 2500W DC Power Supply Module
LSQM1AC2800-GL	H3C 2800W AC PoE Power Supply Module

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