DATASHEET

WD Converged Gigabit Series Switch

WatchDog Converged Gigabit Switches

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Product Overview

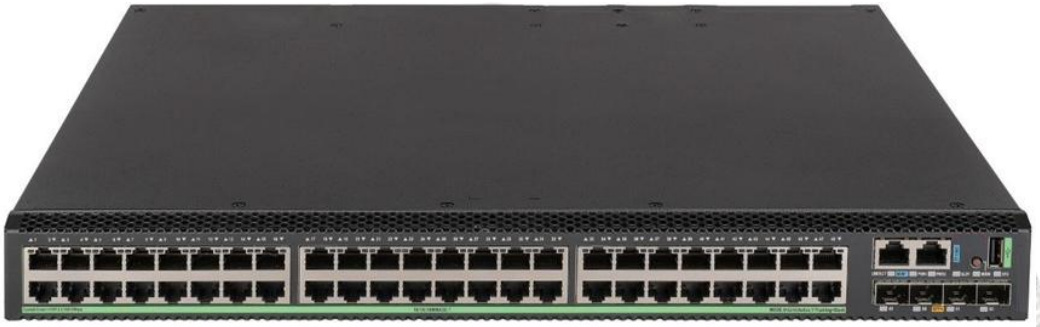
WD Converged Gigabit switches are a new generation of high-performance, high-port density, high-security Layer 3 Ethernet switches developed by Apollo Infoways Pvt. Ltd. using industry-leading ASIC technology, supporting IPv4/IPV6 Dual-stack management and forwarding, support static routing protocols and routing protocols such as RIP, OSPF, BGP, ISIS, etc., and support rich management and security features. It is a Gigabit Layer 3 Ethernet switch product for converged service networks.

In the campus network, WD Converged Gigabit switches can be used as aggregation layer equipment, or as thecore of small and medium-sized enterprises; downward can provide high-density GE tandem lower layer switches, upward through 10G/25G/40G/100G fiber or link aggregation is aggregated to the core switch to build a high-performance end-to-end IP network solution together with other WD products.

WD Conversed Gigabit switches series includes the following models:

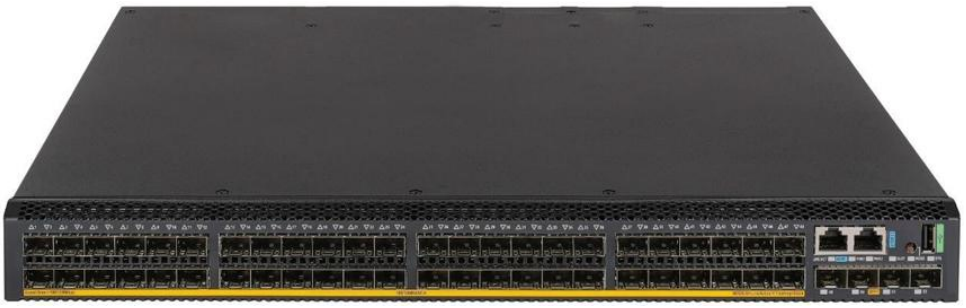
- WD-GS-28T8XC : 28 x 10/100/1000BASE-T ports, 4 x 100/1000BASE-X SFP Combo ports, 8 x 10G/1G BASE-X SFP+ ports, 1 x expansion slot, 2 x fan tray slots, 2 x power supply slots;
- WD-GS-48T4XC : 48 x 10/100/1000BASE-T ports, 4 x 10G/1G BASE-X SFP+ ports, 1 x expansion slot, 2x fan tray slots, 2 x power supply slots;
- WD-GS-28S8XC : 28 x 100/1000BASE-X SFP ports, 4 x 10/100/1000BASE-T Combo ports, 8 x 10G/1G BASE-X SFP+ ports, 1 x expansion slot, 2 x fan tray slots, 2 x power supply slots;
- WD-GS-48S4XC : 48 x 100/1000BASE-X SFP ports, 4 x 10G/1G BASE-X SFP+ ports, 1 x expansion slot, 2x fan tray slots, 2 x power supply slots;
- WD-GS-28P8XC : 28 x 10/100/1000BASE-T ports (PoE+), 4 x 100/1000BASE-X SFP Combo ports, 8x 10G/1G BASE-X SFP+ ports, 1 x expansion slot, 2 x fan tray slots, 2 x power supply slots;
- WD-GS-48P6XC : 48 x 10/100/1000BASE-T ports (PoE+), 6 x 10G/1G BASE-X SFP+ ports, 1 x expansion slot, 2 x fan tray slots, 2 x power supply slots;
- WD-GS-48TS4X2QC : 24 x 10/100/1000Base-T Ports, 24 x 100/1000 SFP Ports, 4 x 1G/10G SFP Plus Ports, 2 x 40G QSFP Plus Ports and 1 x Slot, 2 x power supply slots;
- WD8000-28DC : 24 x 1G/10G SFP Plus Ports,4 x 25G SFP28 Ports (2x 40/100G Ports optional) and 1 x expansion slot, 2 x powersupply slots;

WD-GS-28T8XC



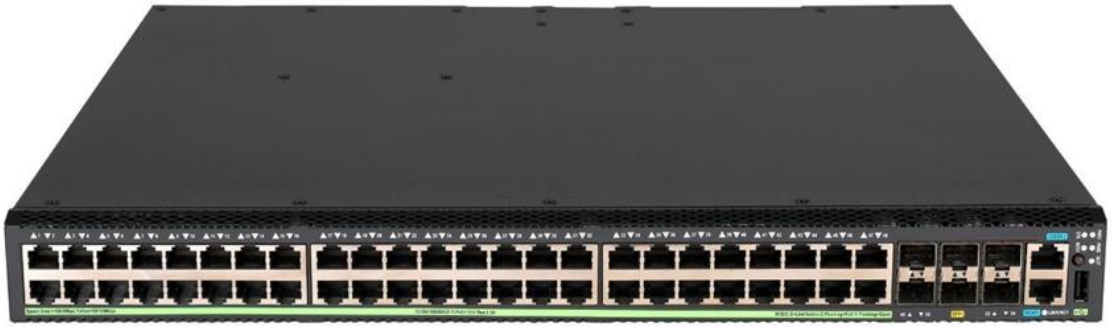
WD-GS-48T4XC

WD-GS-28S8XC



WD-GS-48S4XC

WD-GS-28P8XC



WD-GS-48P6XC

WD-GS-48TS4X2QC

WD8000-28DC

Features and Benefits

Smart Management Center

As the network scale increases, a large number of access devices are required at the network edge, which makes the management of these devices very cumbersome. The main purpose of Management Center is to solve the problem of centralized management of a large number of scattered network devices. It is designed to solvethe switch-based operation and maintenance tasks of small enterprises. Smart Management Center provides unified operation,maintenance, and management of the network by built-in graphical operation platform.

Smart Management Center simplifies the operation, maintenance, and management of Small and Medium-sized campuses:

- **Smart management:** includes device role selection, FTP server configuration, global configuration, and network management port configuration, etc.
- **Intelligent operation and maintenance:** include group management, equipment, or group upgrade backup, monitoring and equipment failure replacement, etc.
- **Visualization:** includes networking topology visualization and management, device list display, device ports display, etc.
- **Smart business:** includes user management, etc. After network access users are created and successfully activated, these users can access the Smart Management Center network through the one-key-armed port.

The WD Converged Gigabit switches can be used as the management device of Smart Management Center. You can log in to theSmart Management Center network through the Converged Gigabit Switch to manage the entire network in a unified manner.

Multi-Service Integration

Based on WD's Open Service Architecture (OAA), WD Converged Gigabit switches can not only provide the functions of traditional switches, but also integrate security module cards including FW, IPS, and load balancing, mini-iMC cards, and Eagle Vision cards. etc., making the Converged Gigabit switches a converged multi-service bearing platform.

High-Performance IPv4/IPv6 Service Capability

WD Converged Gigabit switches implement a hardware-based IPv4/IPv6 dual-stack platform, support multipletunnel technologies, rich IPv4 and IPv6 Layer 3 routing protocols, multicast technologies and policy routingmechanisms, providing users with complete IPv4/IPv6 solution.

VSS (Virtual Switching System)

WD Converged Gigabit switches support VSS (Virtual Switching System) technology, which is to connect multiple physical devices to each other to make it virtual as a logical device, users can regard these multiple devices as one Manage and use a single device. VSS can bring thefollowing benefits to users:

- Simplified management: VSS architecture is formed, it can be connected to any port of any device tolog in to a unified logical device. By configuring a single device, it can manage the entire intelligent elastic system and all member devices in the system. There is no need to physically connect to each member device to configure and manage them individually.
- Simplified service: VSS are also run as a single device. For example, the routing protocol will be calculated as a single device. With the application of the cross-device link aggregation technology, it can replace the original generation tree protocol, which saves the interaction of a large number of protocol packets between devices, simplifies network operation, and shortens the convergence time when the network is turbulent.
- Elastic expansion: can realize elastic expansion according to user needs and ensure user investment. And new devices can be "hot-swapped" when they join or leave the VSS architecture, without affectingthe normal operation of other devices.
- High reliability: high reliability VSS is reflected in three aspects: link, equipment and protocol. The physical ports between member devices support the aggregation function, and the physical connection between the VSS system and the upper and lower-layer devices also supports the aggregation function, which improves the reliability of the link through multi-link backup; the VSS

system consists of multiple member devices. Once the master device fails, the system will quickly and automatically elect a new master to ensure uninterrupted services through the system, thus realizing device-level 1:N backup; the VSS system will have a real-time protocol hot backup function responsiblefor the configuration information of the protocol. Backup to all other member devices to achieve 1:N protocol reliability.

- High performance: For high-end switches, the increase in performance and port density is limited bythe hardware structure. The performance and port density of an VSS system is the sum of the performance and port numbers of all devices inside the VSS. Therefore, the VSS technology can easilyexpand the switching capability of the device and the density of user ports several times, thereby greatly improving the performance of the device.

Complete Security Control Strategy

WD Converged Gigabit switches support the EAD (terminal access control) function, and cooperate with the background system to integrate terminal security measures such as terminal antivirus and patch repair withnetwork security measures such as network access control and access authority control into a linked security The system, through the inspection, isolation, repair, management and monitoring of network access terminals, makes the entire network change from passive defense to active defense, from single-point defense to comprehensive defense, and from decentralized management to centralized policy management. , worms and other emerging security threats overall defense capabilities.

WD Converged Gigabit switches support centralized MAC address authentication, 802.1x authentication, support dynamic or static binding of user identification elements such as user account, IP, MAC, VLAN, andport, and implement user policies (VLAN, QoS, ACL) dynamic distribution; support with WD's iMC system for real-time management of online users, timely diagnosis and disintegration of illegal network behavior.

WD Converged Gigabit switches provide enhanced ACL control logic, support large-capacity ingress and egress port ACLs, and support VLAN-based ACL delivery, which simplifies the user configuration process and avoids waste of ACL resources. In addition, WD Converged Gigabit switches will also support unicast reverse path finding technology (uRPF). The route between the interface and the source address specified in the packet is to verify its authenticity. If it does not exist, the packet is deleted, so that we can effectivelyprevent the source address spoofing that is increasingly flooding in the network.

MACsec Hardware Encryption

MACsec (Media Access Control Security, MAC security) defines the method of data security communication based on IEEE 802 local area network. MACsec can provide users with secure MAC layer data transmission and reception services, including user data encryption, data frame integrity check and data source authenticity verification.

MACsec is usually used in conjunction with the 802.1X authentication framework. After the 802.1X

authentication process is successful, it identifies the message sent by the authenticated device and uses the MKA (MACsec Key Agreement, MACsec Key Agreement) protocol to negotiate the generated key pair Authenticated user data is encrypted and integrity checked to prevent the port from processing packets from unauthenticated devices or tampered with unauthenticated devices.

WatchDog Converged Gigabit series switches support upgraded MACsec encryption technology and use 256-bit encryptionalgorithm to further improve data security; All ports of the device provide 256-bit MACsec encryption to ensure data security.

Precision Time Protocol (PTP)

WD Converged Gigabit switches support the 1588V2 function to meet the high-precision time synchronizationrequirements between network devices. Compared with GPS time synchronization with the same precision,it improves security and lowers deployment costs.

Quality Analyzer (QA)

WD Converged Gigabit switches support QA. QA provides the following benefits:

- True measurement results—QA measures the service packets directly to calculate packet loss results, thus reflecting the real network quality.
- Wide application range—Applicable to Layer 2 network and Layer 3 IP network. QA supports the network-level and direct link measurement flexibly.
- Fast fault location—QA obtains the packet loss time, packet loss location, and number of lost packets in real time.
- Applicable to different applications—You can apply QA to multiple scenarios, such as point-to-point, point-to-multipoint, and multipoint-to-multipoint.

Multi chassis Link Aggregation Group (M-LAG)

WD Converged Gigabit switches support M-LAG, which enables links of multiple switches to aggregate into oneto implement device-level link backup. M-LAG is applicable to servers dual-homed to a pair of access devicesfor node redundancy.

- **Streamlined topology:** M-LAG simplifies the network topology and spanning tree configuration by virtualizing two physical devices into one logical device.
- **Independent upgrading:** The DR member devices can be upgraded independently one by one to minimize the impact on traffic forwarding.
- **High availability:** The DR system uses a keepalive link to detect multi-active collision to ensure that only one member device forwards traffic after a DR system splits.

Visualization Ability

WD Converged Gigabit switches support Telemetry technology, which can send the switch's real-time resourceinformation and alarm information to the O&M platform through the gRPC protocol.

The platform can realize network quality backtracking, troubleshooting, risk early warning, architecture optimization and other functions to accurately guarantee user experience by analyzing real-time data.

AI-driven PoE

- Fast PoE: Typically, PIs does not deliver power to PDs the moment the PSE is powered on but wait until the PSE completes startup. Fast PoE enables PIs to deliver power to PDs within few seconds after power is supplied to the PSE.
- Perpetual PoE: Perpetual PoE continuously monitors the PD states and ensures continued power supply to PDs even when the PSE device is hot rebooting.
- AI-driven PoE: Innovatively integrating AI technologies into PoE switches, WD AI-driven PoE enables completely automated, intelligently managed, healed, and optimized PoE, bringing convenient and outstanding PoE experience to users.

Hardware Specifications

Feature	WD-GS-28T8XC	WD-GS-48T4XC	WD-GS-28S8XC	WD-GS-48S4XC	WD-GS-28P8XC	WD-GS-48P6XC
CPU	Dual Core, 1.2GHz					
SDRAM	2G					
Flash	4G					
Switching Capacity	2.4Tbps					
Latency (64byte/μs)	GE: < 5μs 10GE < 3μs					
Port Switching Capacity	616Gbps	576Gbps	616Gbps	576Gbps	616Gbps	616Gbps
Packet Forwarding Rate	462Mpps	432Mpps	462Mpps	432Mpps	462Mpps	462Mpps
Dimensions (W×D×H) (unit: mm)	440×360×44				440×400×44	
Weight	≤7kg					

Feature	WD-GS-28T8XC	WD-GS-48T4XC	WD-GS-28S8XC	WD-GS-48S4XC	WD-GS-28P8XC	WD-GS-48P6XC
Console Port	1					
Ethernet Port for Management	10/100/1000Base-T port: 1					
USB Port	1					
10/100/1000BASE-T auto-sensing Ethernet Port	28	48	4 (combo)	-	28	48
SFP port	4 (combo)	-	28	48	4 (combo)	-
SFP+ port	8	4	8	4	8	6
Expansion Card Slot	1	1	1	1	1	1
PoE	-	-	-	-	PoE+ Support	PoE+ Support
Input Voltage	AC: Rated voltage range: 100 to 240V AC: 50/60Hz Maximum voltage range: 90V ~ 290V AC, 47 ~ 63Hz				AC: Rated voltage range: 100 to 240V AC: 50/60Hz Maximum voltage range: 90V ~ 290V AC, 47 ~ 63Hz HVDC: Rated voltage: 240V DC Maximum voltage range: 180V ~ 320V DC	
80 PLUS	-				Y（80 PLUS Platinum）	
Power Consumption	MIN Single AC: 38W Dual AC:45W MAX Single AC: 108W Dual AC:114W	MIN Single AC: 41WDual AC:48W MAX Single AC: 105W Dual AC:108W	MIN Single AC: 39W Dual AC:46W MAX Single AC: 119W Dual AC:123W	MIN Single AC: 42W Dual AC:49W MAX Single AC: 137W Dual AC:142W	MIN Single AC: 48W Dual AC:53W MAX Single AC: 938W (PoE 770W) Dual AC: 1046W (with PoE 840W)	MIN Single AC: 52W Dual AC: 59W MAX Single AC: 945W (PoE 770W) Dual AC: 1745W (PoE 1440W)
MTBF(Year)	105.15	101.63	110.74	101.01	32.15	28.62
MTTR(Hour)	1	1	1	1	1	1
Working	-5 ºC to 45 ºC					

Feature	WD-GS-28T8XC	WD-GS-48T4XC	WD-GS-28S8XC	WD-GS-48S4XC	WD-GS-28P8XC	WD-GS-48P6XC
Temperature						
Relative Humidity of Working Environment	5 % to 95 % (non-condensing)					

Hardware Specifications

Feature	WD-GS-48TS4X2QC	WD8000-28DC
CPU	Dual Core, 1.2GHz	
SDRAM	2G	
Flash	4G	
Switching Capacity	2.4Tbps	
Latency (64byte/μs)	GE: < 5μs 10GE: < 3μs	
Port Switching Capacity	736Gbps	840Gbps
Packet Forwarding Rate	458Mpps	548Mpps
Dimensions (W×D×H) (unit: mm)	440×360 ×44	440×360 ×44
Weight	<7.0kg	<7.0kg
Console Port	1	1
Ethernet Port for Management	10/100/1000Base-T port: 1	
USB Port	1	1
10/100/1000BASE-T auto-sensing Ethernet Port	24	-
SFP port	24	24
SFP+ port	4	-
SFP28 port	-	4
QSFP+ port	2	-
Expansion Card Slot	1	1
Input Voltage	AC: 90v~264v DC: -48v~-60v	AC: 90v~264v DC: -48v~-60v

Feature	WD-GS-48TS4X2QC	WD8000-28DC
Power Consumption	MIN: Single AC:40W Dual AC:43W Single DC:34W Dual DC:42W MAX: Single AC:120W Dual AC:125W Single DC:120W Dual DC:125W	MIN: Single AC:30W Dual AC:37W Single DC:29W Dual DC:36W MAX: Single AC:95W Dual AC:102W Single DC:93W Dual DC:98W
MTBF(Year)	82.8	113.68
MTTR(Hour)	1	1
Working Temperature	-5 °C to 55 °C	
Relative Humidity of Working Environment	5 % to 95 % (non-condensing)	

Software Specifications

Feature	WatchDog Conversed Gigabit switch series
VLAN	VLAN ID range 0 to 4095(Total 4096) Access/Trunk/Hybrid VLAN Port-based VLAN/MAC-based VLAN/IP subnet-based VLAN/Protocol-based VLAN IEEE 802.1P(CoS priority) Super VLAN/Private VLAN/Voice VLAN QinQ(802.1Q-in-802.1Q) Vlan mapping Static/Dynamic/Blackhole/Multiport unicast MAC MAC automatic learning and aging Port-based/VLAN-based MAC learning limit MAC filter Port isolation IEEE 802.3x flow control (full duplex) Storm suppression based on port rate percentage PPS -based storm suppression bps -based storm suppression Loop detection(VLAN and VXLAN network) MVRP(Multiple VLAN Registration Protocol) GVRP(Generic VLAN Registration Protocol) STP(Spanning tree protocol)/RSTP(Rapid Spanning Tree Protocol)/MSTP(Multiple Spanning Tree Protocol)/PVST(Per-VLAN Spanning Tree) (compatible with PVST+/RPVST+) BPDU/root/loop/TC-BPDU/PVST BPDU/disputeloopback guard

Feature	WatchDog Conversed Gigabit Switch Series
	BPDU filter role/TC-BPDU transmission restriction LLDP(Link Layer Discovery Protocol) and LLDP-MED(Link Layer Discovery Protocol Media Endpoint Discovery) DCBX(Data Center Bridging Exchange Protocol) Broadcast/multicast/unknown unicast storm constrain Jumbo frame Store-and-forward(Default) Cut-through-forward
Ethernet link aggregation	Static aggregation Dynamic aggregation S-MLAG(Simple multichassis link aggregation) 10GE/25G/40GE/100GE port aggregation LACP(Link Aggregation Control Protocol) M-LAG (Multichassis Link Aggregation)
IP Services	Static/Dynamic/Gratuitous/proxy ARP ARP snooping/fast-reply/direct route advertisement/ping ARP attack detection ARP source suppression Ping, Tracert DHCP(Dynamic Host Configuration Protocol) DHCP Server/relay agent/client/snooping DHCP Option 43, Option 82, and Option 184, DNS(Domain Name System) DDNS(Dynamic Domain Name System) mDNS(Multicast Domain Name System) IRDP(ICMP Router Discovery Protocol) UDP helper ND(Neighbor Discovery) ND snooping/proxy/direct route advertisement/ping DHCPv6 Server/relay agent/client/snooping/guard GRE(Generic Routing Encapsulation) HTTP redirect GRE tunneling VXLAN tunneling and VXLAN-DCI tunneling IPv4/IPv6 over IPv4 tunneling, and IPv4/IPv6 over IPv6 tunneling IPv4/IPv6 Fast Forwarding
Routing	Static routing, RIP, OSPF, IS-IS, and BGP IPv6 static routing, RIPng, OSPFv3, IS-ISv6, and BGP4+ IPv4/IPv6 dual stack IPv4/IPv6 ECMP(Equal-cost multi-path routing) IPv4/IPv6 PBR(Policy-based routing) IPv4/IPv6 Routing policy

Feature	WatchDog Conversed Gigabit Switch Series
	Pingv6, Telnetv6, FTPv6, TFTPv6, DNSv6, ICMPv6 Dual-stack PBR(policy-based routing)
Multicast	PIM-DM, PIM-SM, PIM-SSM, and Any-RP PIM snooping MSDP(Multicast Source Discovery Protocol) IGMPv1/IGMPv2/IGMPv3 IGMP proxying/IGMP Snooping/IGMP snooping proxying IGMP Filter and IGMP Fast leave IPv6 PIM-DM, PIM-SM, PIM-SSM, and Any-RP IPv6 PIM snooping MLDv1/MLDV2 MLD proxying/MLD Snooping/MLD snooping proxying Multicast routing and forwarding Multicast VLAN MVPN(Multicast VPN) Multicast policy and Multicast QoS
ACL/QoS	ACL(Access Control List) advanced ACL User-defined ACL Ingress and Egress ACL Ingress/Egress CAR Diff-Serv QoS Eight queues each interface 802.1P/DSCP Priority marking and remarking 802.1p, TOS, DSCP, and EXP priority mapping Flexible queue scheduling algorithms including SP, WRR, SP+WRR, WFQ, SP+WRR Traffic shaping Time ranges Traffic classification based on source MAC, destination MAC, source IP, destination IP, port, protocol, and VLAN Congestion avoidance, Tail-Drop, RED(Random Early Detection) and WRED(Weighted Random Early Detection)
MPLS	Static LSP(label switched path) LDP(Label Distribution Protocol) IPv6 LDP Tunnel policies VRF(Virtual Routing and Forwarding) MPLS L2VPN/MPLS L3VPN MPLS Ping/Tracert MCE(Multi-VPN Instance Customer Edge) IPv6 MCE MPLS OAM
Security	RBAC(Role-based access control)

Feature	WatchDog Conversed Gigabit Switch Series
	AAA(Authentication, Authorization, and Accounting) RADIUS(Remote Authentication Dial-In User Service)(include DHCP, Radius, LLDP) TACACS(Terminal Access Controller Access Control System) TACACS+(Terminal Access Controller Access Control System) (Same authentication processes and implementations with TACACS+) User hierarchical management and password protection 802.1X authentication Portal authentication MAC authentication Web authentication Triple authentication Guest VLAN Port security SSH1.x and SSH2.0(Secure Shell) SSL(Secure Sockets Layer) HTTPs Public Key Infrastructure (PKI) Control Plane Protection (CoPP), Wireless Intrusion Prevention System (WIPS) Attack detection and prevention TCP attack prevention IPSG(IP source guard)/IPv6 RA Guard ARP/ND attack protection uRPF(Unicast Reverse Path Forwarding) MFF(MAC-forced forwarding) SAVI(Source Address Validation Improvement) FIPS(Federal Information Processing Standards) MACsec(Media Access Control Security) All ports AES256 MACsec Microsegmentation Hierarchical user management and password protection EAD(Endpoint Admission Defense) Basic and advanced ACLs for packet filtering OSPF, RIPv2, BGPv4 plain text and MD5 authentication
High Availability	Ethernet OAM(IEEE 802.3ah) CFD(Connectivity Fault Detection)(IEEE 802.1ag and ITU-T Y.1731) DLDP(Device Link Detection Protocol) RRPP(Rapid Ring Protection Protocol) ERPS(G.8032 Ethernet Ring Protection Switching) Smart Link Monitor Link VRRPv2(Virtual Router Redundancy Protocol) VRRPv3 BFD(Bidirectional forwarding detection) Hardware BFD

Feature	WatchDog Conversed Gigabit Switch Series
	BFD for VRRP/BGP/IS-IS/OSPF/RSVP/static routing, with a failover detection time less than 50 milliseconds Track Process redundancy/placement CPU protection Hot patching, online patch upgrade Link aggregation VCT(virtual cable test) Smart-Link ISSU(In-Service Software Upgrade)
Network Management	QA(Network quality analyzer)/QA(Network Quality Analyzer) eMDI(Enhanced Media Delivery Index) performance management through gRPC or NETCONF NTP(Network Time Protocol) PTP(Precision Time Protocol) IEEE 1588 version 2/IEEE 802.1AS/SMPTE ST 2059-2/AES67-2015 SNMPv1/SNMPv2c/SNMPv3 RMON(Remote Network Monitoring) and groups 1,2,3 and 9 NETCONF/YANG EAA(Embedded Automation Architecture) Port mirroring SPAN(Switch Port Analyzer)/RSPAN(Remote SPAN) Flow mirroring N:9 port mirroring local and remote port mirroring NetStream/IPv6 NetStream, traffic analysis sampling ratio 1:1 sFlow Information center VCF(Virtual Converged Framework) CWMP(CPE WAN Management Protocol/TR-069) Fault alarm and automatic fault recovery System logs Alarming based on severity Power, fan, and temperature alarming Debugging information output Device status monitoring mechanism, including the CPU engine, backplane, chips and other key components Configuration through CLI, Telnet, and console port Zero Touch Provisioning Loading and upgrading through XModem/FTP/TFTP/SFTP/USB Secure Boot Embedded AC, maximum support management 2K AP NMC network management system (embedded Smart Graphical Management Center)(built-in Web GUI)
Stacking	VSS

Feature	WatchDog Conversed Gigabit Switch Series
	Distributed device management Distributed link aggregation Distributed resilient routing Stacking through standard Ethernet ports Local device stacking and remote device stacking LACP-, BFD-, and ARP-based multi-active detection (MAD)
Automatic Configuration	Server-based automatic configuration USB-based automatic configuration
Programmability and Automation	Ansible Auto DevOps by using Python, NETCONF, TCL, and Restful APIs for automated network programming
Visualization	gRPC(Google remote procedure call) INT(Inband Telemetry) Flow group MOD (Mirror On Drop)
OpenFlow	OpenFlow 1.3 Multiple controllers (EQUAL, master/slave) Multiple tables flow Group table
VXLAN	VXLAN L2 switching VXLAN L3 routing Centralized VXLAN gateway Distributed VXLAN gateway VXLAN M-LAG VXLAN-DCI OVSDB(Open vSwitch Database) VXLAN VTEP MP-BGP EVPN control plane EVPN VXLAN EVPN M-LAG
Intelligent Lossless Network	PFC(Priority-based Flow Control) ECN(Explicit Congestion Notification)
Energy Saving	Port automatic power down function Port timing down function (Schedule job) EEE(802.3az Energy Efficient Ethernet)
EMC	FCC Part 15 Subpart B CLASS A VCCI CLASS A CISPR 32 CLASS A EN 55032 CLASS A CISPR 35

Feature	WatchDog Conversed Gigabit Switch Series
	EN 55035 EN 61000-3-2 EN 61000-3-3 EN 61000-4-2 EN 61000-4-3 EN 61000-4-4 EN 61000-4-5 EN 61000-4-6 EN 61000-4-11
Safety	IEC 62368-1 EN 62368-1 EN 60825-1
RoHS	RoHS2.0

Performance Specification

Entries	WatchDog Conversed Gigabit Switch Series
MAC address entries(maximum)	320K
VLAN table（Active VLAN）	4K
VLAN interface	4093
IPv4 routing entries(maximum)	80K
IPv4 ARP entries(maximum)	64K
IPv4 ACL entries	IN: 3.75K EG: 512
IPv4 multicast L2 entries	8K
IPv4 multicast L3 entries	4K
IPv6 unicast routing entries(maximum)	32K
IPv6 ACL entries	Ingress: 1.87K Egress: 256
IPv6 ND entries	32K
IPv6 multicast L2 entries	8K
IPv6 multicast L3 entries	4K
QOS forward queues	8
Jumbo frame length	13312
MPLS Labels	10K
MPLS Label Stack	5

Entries	WatchDog Conversed Gigabit Switch Series
MAX num in one link group	64
Link group num	256
Max Stacking Members	9
Max Stacking Bandwidth	480Gbps

Removable Components Matrix

FRU model	WD-GS-28T8XC WD-GS-28S8XC WD-GS-48T4XC WD-GS-48S4XC	WD-GS-28P8XC WD-GS-48P6XC	WD-GS-48TS4X2QC	WD8000-28DC
Removable power supplies				
WDPSR180-12A-B	Supported	Not supported	Supported	Supported
WDPSR180-12A-F	Supported	Not supported	Supported	Supported
WDPSR180-12D-B	Supported	Not supported	Supported	Supported
WDPSR600-54A-B	Not supported	Supported	Not supported	Not supported
WDPSR920-54A-B	Not supported	Supported	Not supported	Not supported
WDPSR1600-54A-B	Not supported	Supported	Not supported	Not supported
Removable fan trays				
LSPM1FANSA-SN	Supported	Supported	Supported	Supported
LSPM1FANSB-SN	Supported	Supported	Supported	Supported
Expansion cards				
LSPM6FWD	Supported	Supported	Supported	Not supported
LSPM6FWDB	Supported	Supported	Not supported	Not supported
WDWM2QP2P	Supported	Supported	Supported	Not supported
WDWM2SP8P	Supported	Supported	Supported	Not supported
WDWM2ZQP2P	Supported	Supported	Supported	Not supported
WDWM2ZSP8P	Supported	Supported	Supported	Not supported
WDWM2SP2PB	Supported	Supported	Supported	Supported
WDWM2SP4PB	Supported	Supported	Supported	Supported
WDWM2ZSP4P	Supported	Supported	Supported	Supported
WDWM2QP2PB	Not supported	Not supported	Supported	Supported

PoE Power Capacity

Power supply 1	Power supply 2	WD-GS28P8XC		WD-GS-48P6XC	
		Total PoE power capacity	PoE Ports Quantity	Total PoE power capacity	PoE Ports Quantity
PSR600-54A-B	/	450W	15.4W (802.3af): 28 30W (802.3at): 15	450W	15.4W (802.3af): 28 30W (802.3at): 15
PSR920-54A-B	/	770W	15.4W (802.3af): 28 30W (802.3at): 25	770W	15.4W (802.3af): 28 30W (802.3at): 25
PSR1600-54A-B (Input Voltage: 90V AC~176V AC)	/	770W	15.4W (802.3af): 28 30W (802.3at): 25	770W	15.4W (802.3af): 28 30W (802.3at): 25
PSR1600-54A-B (Input Voltage:176V AC~290V AC or 180V DC~320V DC)	/	840W	15.4W (802.3af): 28 30W (802.3at): 28	1440W	15.4W (802.3af): 48 30W (802.3at): 48
PSR600-54A-B	PSR600-54A-B	840W	15.4W(802.3af): 28 30W (802.3at): 28	1020W	15.4W (802.3af): 48 30W (802.3at): 34
PSR600-54A-B	PSR920-54A-B	840W	15.4W (802.3af): 28 30W (802.3at): 28	1020W	15.4W (802.3af): 48 30W (802.3at): 34
PSR600-54A-B	PSR1600-54A-B	840W	15.4W (802.3af): 28 30W (802.3at): 28	1020W	15.4W (802.3af): 48 30W (802.3at): 34
PSR920-54A-B	PSR920-54A-B	840W	15.4W (802.3af): 28 30W (802.3at): 28	1440W	15.4W (802.3af): 48 30W (802.3at): 48
PSR920-54A-B	PSR1600-54A-B	840W	15.4W (802.3af): 28 30W (802.3at): 28	1440W	15.4W (802.3af): 48 30W (802.3at): 48
PSR1600-54A-B	PSR1600-54A-B	840W	15.4W (802.3af): 28 30W (802.3at): 28	1440W	15.4W (802.3af): 48 30W (802.3at): 48

Standards And Protocols Compliance

Organization	Standards And Protocols
IEEE	IEEE 802.1D (STP) IEEE 802.1p (CoS) IEEE 802.1Q (VLANs) IEEE 802.1s (MSTP) IEEE 802.1w (RSTP) IEEE 802.1X (Security) IEEE 802.3ad (LACP) IEEE 802.1ae (MACsec) IEEE 802.3u (Fast Ethernet) IEEE 802.3ab (1000BASE-T) IEEE 802.3x (Flow Control) IEEE 802.3z (1000BASE-SX, 1000BASE-LX)
RFC	RFC1771 (BGPv4) RFC1772 (Application of the BGP) RFC1965 (BGPv4 autonomous system confederations) RFC1997 (Communities attribute) RFC2385 (Transmission Control Protocol (TCP) MD5 authentication for BGP) RFC2439 (Route flap dampening) RFC2796 (Route reflection) RFC1657 (Definitions of Managed Objects for BGPv4) RFC2328 (OSPF v2) RFC1587 (OSPF NSSA) RFC2370 (OSPF opaque link-state advertisement (LSA) option) RFC1850 (OSPF v2 Management Information Base (MIB), traps) ISO10589 (IS-IS) RFC1195 (IS-IS) RFC2973 (IS-IS mesh groups) RFC1058 (RIP v1) RFC1723 (RIP v2) RFC2453 (RIP v2) RFC2083 (PNG (Portable Network Graphics) Specification Version)

	RFC791 (IP) RFC792 (ICMP) RFC793 (TCP) RFC768 (UDP) RFC826 (ARP) RFC783 (TFTP) RFC854 (Telnet) RFC894 (IP Over Ethernet) RFC950 (Internet Standard Subnetting Procedure) RFC959 (FTP) RFC1141 (Incremental updating of the Internet checksum) RFC1122 (Requirements for Internet Hosts -Communication Layers) RFC1256 (ICMP Router Discovery Messages) RFC1393 (Trace route Using an IP Option) RFC 1812 (IPv4) RFC 2338 (VRRP) RFC 2787 (Definitions of Managed Objects for VRRP) RFC 2474 (Diffserv) RFC 2131 (DHCP) RFC 2132 (DHCP and BOOTP Extension) RFC2280 (Routing Policy Specification Language (RPSL)) RFC1305 (NTPv3) RFC1157 (SNMP) RFC857 (Telnet Echo Option) RFC858 (Telnet Suppress Go Ahead Option) RFC1093 (NSFNET routing architecture) RFC 2138 (Radius Authentication) RFC 2139 (Radius Accounting) RFC1492 (TACACS) RFC 1518, 1519 (CIDR) RFC 2622 (Routing policy) RFC 2338 (VRRP) RFC 1112 (Host extensions for IP multicasting) RFC 2236 (Internet Group Management Protocol, Version 2)

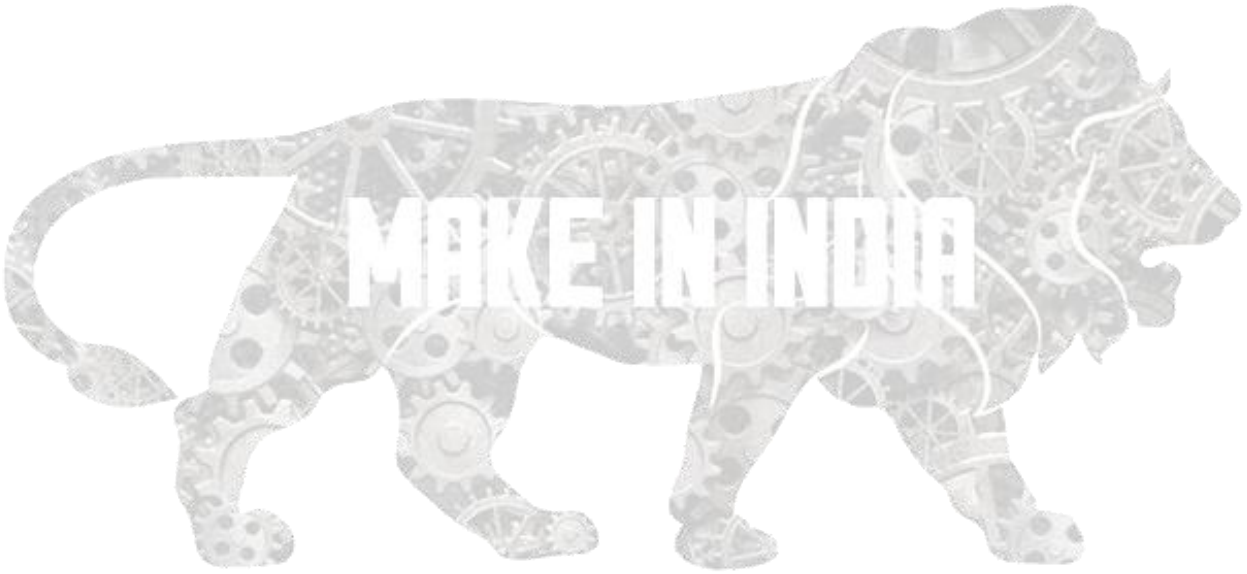
	RFC 2715 (Interoperability Rules for Multicast Routing Protocols) RFC 2362 (PIM-SM) Draft (PIM-DM:draft-ietf-idmr-pim-dm-06) RFC 2283 (Multi-protocol Extensions for BGPv4) RFC 2267 (Network Ingress Filtering) RFC2474 (Definition of the Differentiated Services Field (DS Field) in the IPv4 and IPv6 Headers) RFC2475 (Architecture for Differentiated Service) RFC3168 (The Addition of Explicit Congestion Notification (ECN) to IP) RFC2702 (Requirements for Traffic Engineering Over MPLS) RFC3031 (Multi-protocol Label Switching Architecture) RFC3032 (MPLS Label Stack Encoding) RFC3033 (The Assignment of the Information Field and Protocol Identifier in the Q.2941 Generic Identifier and Q.2957 User-to-user Signaling for the Internet Protocol) RFC3036 (LDP Specification) RFC3037 (LDP Applicability) RFC2547 (BGP/MPLS VPN) RFC2764 (A Framework for IP Based Virtual Private Networks) RFC2796 (BGP Route Reflection - An Alternative to Full Mesh IBGP) RFC2842 (Capabilities Advertisement with BGPv4) RFC2858 (Multi-protocol Extensions for BGPv4) RFC2917 (A Core MPLS IP VPN Architecture) RFC2918 (Route Refresh Capability for BGPv4) RFC3107 (Carrying Label Information in BGPv4) Draft (Draft-martini-l2circuit-trans-mpls-08.txt) Draft (Draft-martini-l2circuit-encap-mpls-04.txt) Draft (Draft-kompella-ppvpn-l2vpn-01.txt) RFC2080 (RIPng for IPv6) RFC1981 (Path MTU Discovery for IP version 6) RFC2460 (Internet Protocol, Version 6 (IPv6) Specification) RFC2461 (Neighbor Discovery for IP Version 6 (IPv6)) RFC2462 (IPv6 Stateless Address Auto configuration) RFC2463 (Internet Control Message Protocol (ICMPv6) for the Internet Protocol Version 6 (IPv6) Specification) RFC2545 (BGP support IPv6) RFC2740 (OSPF for IPv6)

	RFC3513 (Internet Protocol Version 6 (IPv6) Addressing Architecture) RFC3596 (DNS Extensions to Support IP Version 6) Draft (Draft-ietf-isis-ipv6-04.txt) RFC 1493 (Bridge MIB) RFC 2674 (VLAN MIB Extension) RFC 1573 (Private IF MIB) RFC 1213 (MIB II) RFC 1724 (RIP Version 2 MIB Extension) RFC 1850 (OSPF Version 2 MIB Extension) RFC 2787 (VRRP MIB) RFC 2618 (RADIUS Authentication Client MIB) RFC 2620 (RADIUS Accounting Client MIB) RFC 1155 (Structure and Mgmt Information (SMIv1)) RFC 1157 (SNMPv1/v2c) RFC 1213, 1573 (MIB II) RFC 1901-1907 (SNMPv2c, SMIv2 and Revised MIB-II) RFC 2271 (FrameWork) RFC 2578-2580 (SMIv2) RFC 2819 (RMON) RFC 2668 (IEEE 802.3 MAU MIB) RFC 2665 (Pause control) RFC 2233 (Interfaces MIB) RFC2452 (MIB for TCP6) RFC2454 (MIB for UDP6) RFC2466 (MIB for ICMP6) RFC 5905 (NTPv4)

Ordering Information

Product ID	Product Description
WD-GS-28T8XC	WD -GS-28T8XC L3 Ethernet Switch with 28*10/100/1000Base-T Ports(Including 4*SFP Combo Ports),8*1G/10GBase-X SFP Plus Ports and 1*Slot, Without Power Supplies
WD-GS-48T4XC	WD-GS-48T4XC L3 Ethernet Switch with 48*10/100/1000Base-T Ports, 4*1G/10GBase-X SFP Plus Ports and 1*Slot, Without Power Supplies

WD-GS-28S8XC	WD-GS-28S8XC L3 Ethernet Switch with 28*100/1000Base-X SFP Ports(Including 4*GE Combo Ports),8*1G/10GBase-X SFP Plus Ports and 1*Slot, Without Power Supplies
WD-GS-48S4XC	WD-GS-48S4XC L3 Ethernet Switch with 48*100/1000Base-X SFP Ports,4*1G/10GBase-X SFP Plus Ports and 1*Slot, Without Power Supplies
WD-GS-28P8XC	WD-GS-28P8XC L3 Ethernet Switch with 28*10/100/1000BASE-T PoE+ Ports (Including 4*SFP Combo Ports),8*1G/10G BASE-X SFP Plus Ports, and 1*Slot, Without Power Supplies Switch
WD-GS-48P6XC	WD-GS-48P6XC L3 Ethernet Switch with 48*10/100/1000BASE-T PoE+ Ports,6*1G/10G BASE-X SFP Plus Ports, and 1*Slot, Without Power Supplies Switch
WD8000-28DC	WD8000-28DC L3 Ethernet Switch with 24*1G/10G SFP Plus Ports,4*25G SFP28 Ports and 1*Slot, Without Power Supplies
WD-GS-48TS4X2QC	WD-GS-48TS4X2QC L3 Ethernet Switch with 24*10/100/1000Base-T Ports, 24*100/1000 SFP Ports, 4*1G/10G SFP Plus Ports, 2*40G QSFP Plus Ports and 1*Slot, Without Power Supplies
Fan	
LSPM1FANSA-SN	WD Fan Module (Fan Panel Side Intake A VSSlow)
LSPM1FANSB-SN	WD Fan Module (Fan Panel Side Exhaust A VSSlow)
Power supply	
WDPSR180-12A-B	180W Asset-Manageable AC Power Supply Module (Power Panel Side Exhaust A VSSlow)
WDPSR180-12A-F	180W Asset-Manageable AC Power Supply Module (Power Panel Side IntakeA VSSlow)
WDPSR180-12D-B	180W Asset-Manageable DC Power Supply (Power Panel Side Exhaust A VSS low)
WDPSR600-54A-B	WDPSR600-54A-B,600W/56V PoE Power Supply
WDPSR920-54A-B	WDPSR920-54A-B,920W/56V PoE Power Supply
WDPSR1600-54A-B	WDPSR1600-54A-B,920W/56V PoE Power Supply
Modules	
WDPM6FWDB	WD Series IV Next Generation Firewall B Module
WDPM6FWD	WD Series IV Next Generation Firewall Module
WDWM2QP2P	2-Port 40G QSFP Plus Interface Module
WDWM2SP8P	8-Port 10G SFP Plus Interface Module
WDWM2ZQP2P	2-Port 100G QSFP28 Interface Module
WDWM2ZSP8P	8-Port 25G SFP28 Interface Module
WDWM2SP2PB	2-Port 10G SFP Plus Interface Module
WDWM2SP4PB	4-Port 10G SFP Plus Interface Module
WDWM2ZSP4P	4-Port 25G SFP28 Interface Module



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