DATACOM

DmOS

DATACOM OPERATING SYSTEM

VERSION 9.8.0

DATASHEET

134.4918.29 – July/2024

DMOS – DATACOM OPERATING SYSTEM

DmOS is a Network Operating System developed by Datacom to meeting high availability, scalability, compatibility, and performance applications. DmOS was developed within the most modern concepts of modularity, which guarantees portability characteristics for different hardware architectures, as well as the ability to quickly incorporate technological and functional new features. The management of equipment based on the DmOS operating system can be done through the traditional CLI standard, as well as through the modern NETCONF/YANG standards, allowing integration with different platforms.

The Operational System provides a set of L2, IP/MPLS, GPON, XGS-PON and DWDM allowing it to be used in a variety of network solutions, whether in access, aggregation, or core environments from telecom service providers to corporate network applications.

DMOS BENEFITS

DmOS is developed within the most modern concepts of modularity and created to provide high availability, performance, scalability, security and provide faster development of new products.

Since the Operating System is the same for Every product line, the cost of training is reduced, as the technical qualification of Engineers and Technicians is the same in all products with DmOS support.

Using the concepts of candidate-configuration and running-configuration, DmOS provides lower operational risk during active network maintenance with tools such as commits and configuration rollback. It allows the unification and simplification of operating processes, adopting the same procedures for the different network assets.

- Modular Operating System
- High Availability
- Scalability and Performance
- Portability and Compatibility
- One single Operating System for all network equipment
- Rich set of L2 protocols: LACP, ERPS, EAPS, L2CP, xSTP and beyond
- Static and dynamic routing via BGP, OSPF and GW redundancy using VRRP
- Dual-stack IPv4 and IPv6
- L2VPN, L3VPN and RSVP tunnels for MPLS solutions
- GPON and XGS-PON protocols and features
- Integrated security for user authentication via RADIUS and TACACS+
- Management and configuration using DmVIEW and CLI Templates

GPON and XGS-PON Product Line

- DM4610 OLT 4GPON+4GX+2XS
- DM4610 OLT 8GPON+4GT+2XS
- DM4611 OLT 4GPON+2GT+2XS
- DM4612 OLT 8GPON+2GT+2XS
- DM4615 OLT 16GPON+4GT+4XS
- DM4616 OLT 4XGS-PON+4XS
- DM4618 OLT

DWDM Product Line

- DM4920 Muxponder

SWITCH Product Line

- DM4050 24GX+6XS
- DM4050 24GT+6XS
- DM4170 24GX+12XS
- DM4170 24GX+4XS+2QX
- DM4250 24XS+2QX
- DM4270 24XS+2CX
- DM4270 48XS+6CX
- DM4270 8XS+16VS+6CX
- DM4360 4GT+4GX
- DM4370 4GT+4GX+4XS
- DM4380 12XS+3CX
- DM4770 16CX
- DM4770 32CX

Supported Platforms

DmOS equips several devices from Ethernet Switches, GPON/XGS-PON and DWDM product lines.

The **Switches** line contains models for applications ranging from access to the core, with high capacity and value added, with interfaces up to 100Gbps.

The **GPON** product line has OLTs with 4, 8, 16 and 32 GPON interfaces with support for expansion up to 64 GPON interfaces through the 32GPON Line Card. The **XGS-PON** product line has OLT with 4 XGSPON with possibility to use the PON interfaces in GPON mode. The set of OLT provides a compact and high-capacity solution for access networks for applications such as Broadband, Triple Play services, mobile backhaul, enterprise interconnection over LAN-to-LAN and cloud connectivity.

The **DWDM** line contains the Muxponder DM4920 model, with support for up to 16 100GE QSFP-28 interfaces aggregated into 4 tunable 400Gbps DWDM Coherent interfaces. The DM4920 has 2 slots for integrating boosters and EDFA preamps and/or an 8-channel multiplexer for 400Gbps DWDM implementation. It also allows implementing the optical regenerator function for long distance specificities.

Aggregation and Core Product Line – Switches IP / MPLS

DmOS

DM4170

SWITCH GbE, 10GbE and 40GbE

DM4170 24GX+12XS
DM4170 24GX+4XS+2QX

DmOS

DM4270

SWITCH 10GbE, 25GbE, 40GbE e 100GbE

DM4270 24XS+2CX
DM4270 48XS+6CX
DM4270 8XS+16VS+6CX

DmOS

DM4770

SWITCH 100GbE

DM4770 16CX
DM4770 32CX

Access and Aggregation Product Line – Switches IP / MPLS

DmOS

DM4360

EDD Gbe MPLS

DM4360 4GT+4GX

DmOS

DM4370

EDD 10Gbe MPLS

DM4370 4GT+4GX+4XS

DmOS

DM4380

EDD 100Gbe MPLS

DM4380 12XS+3CX

Aggregation Product Line – Switches L2 / L3

DM4050

SWITCH GbE, 10GbE

DM4050 24GX+6XS

DM4050 24GT+6XS

DM4250

SWITCH 10GbE, 40GbE

DM4250 24XS+2QX

Access Product Line – OLTs GPON / XGSPON

DM4611

OLT 4 GPON interfaces

DM4611 OLT 4GPON+2GT+2XS

DM4612

OLT 8 GPON interfaces

DM4612 OLT 8GPON+2GT+2XS

DM4610

OLT 8 GPON interfaces

DM4610 OLT 4GPON+4GX+2XS

DM4610 OLT 8GPON+4GT+2XS

DM4615

OLT 16 GPON interfaces

DM4615 OLT 16GPON+4GT+4XS

DM4618

Modular OLT

DM4618 OLT

DM4616

OLT 4 XGSPON interfaces

DM4616 OLT 4XGS-PON+4XS

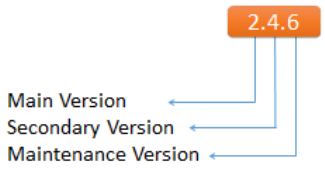
DWDM Product Line

DM4920

Compact DWDM Muxponder

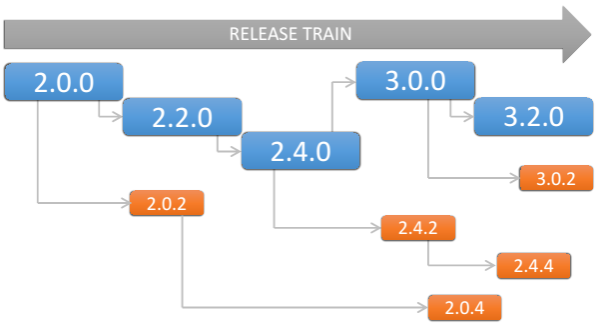
DmOS Releases

DmOS uses standard formatting to identify the versions available to customers. This format uses three identifiers X.Y.Z that represent the Main, Secondary, and Maintenance versions.



Software development is performed by agile methods and TDD (Test Driven Development) methodology. Verification and automated testing ensure the highest quality of deliveries and minimum regressions.

DmOS versions are developed through continuous delivery approach, releasing periodic versions focused in business or maintenance versions when there is a need to address issues detected internally or by customers.



Modular Architecture

The modular architecture and the layered software enable independent development of software modules, making them more robust, resilient, flexible, scalable and portable.

DmOS is able to adjust to different applications and product models through its agnostic architecture to processors and the use of a hardware abstraction layer. This flexibility enables portability and reuse in GPON OLTs, Metro Ethernet Switches from small Ethernet Demarcation Device to high-availability modular chassis, with a seamless user experience.

Management

DmOS equipment can be centrally managed through DmView (management software) through the NETCONF protocol. DmView presents its status and configuration screens dynamically, without the need of updating it when new features and applications are integrated into DmOS, substantially reducing the maintenance costs of the Management software.

DmView also provides the automation of DmOS operations through the CLI Templates functionality, for infrastructure deployment, service provisioning and troubleshooting across multiple devices simultaneously, reducing downtime and potential errors from activation and maintenance services.

DmOS updates can be performed through TFTP, SCP or HTTP protocols. Connectivity for configuration and verification of network elements is achieved through NETCONF, SSH and TELNET.

Features such as Syslog, SNMP and SNTP are supported to enable centralized and synchronized network management.

L2 Switching

Protocols such as EAPS, ERPS and the STP family can be configured to keep the network resilient to possible loops and link drops. For certain cases of link redundancy, Backup-Link can be used as a solution.

Port-Channel (IEEE 802.3ad) statically or dynamically (LACP - Link Aggregation Control Protocol) is used for link aggregation when higher throughput is needed and can be used together with Backup-Link for redundancy in certain cases.

Additional features such as QinQ, VLAN-Translate and the L2CP (Layer 2 Control Protocol) protocol enable transparency of private VLANs and tunneling of customers' network control protocols, delivering LAN-to-LAN services in a fully transparent manner

Traffic Load Balancing - LAG

Several balancing modes are available to traffic forwarding in L2, L3 and MPLS scenarios when there is more than one operational link between the source and the destination.

For L2 layer traffic, the **MAC addresses** based mode is available and for L3 and L4 layer traffic are available **IP addresses** and **TCP/UDP ports** based modes. For MPLS traffic, **Enhanced** and **Dynamic** modes can be used.

The **Enhanced** mode checks each packet and performs the load balance by MAC, IP addressing, L4 Ports and MPLS labels. **Dynamic** mode analyzes the traffic load periodically of each link and tries to even out the distribution between each LAG member. The Enhanced and Dynamic modes can be used to balance the traffic of L2, L3, L4 layers and MPLS labels too.

To obtain a more efficient balancing of MPLS traffic, **FAT** is available in L2VPNs, which adds a label based on the flow, increasing variability, and making the traffic routing between different links more efficient.

IP Routing

DmOS allows the use of **static routing** or **dynamic routing**, both in IPv4 and IPv6 addressing. Through static routing, the network administrator can manually define the destination of the traffic from its source. In some cases of DoS attacks, the target can be directed to **black-hole**.

DmOS also performs routing between VLANs, as long as they have an associated L3 interface supporting dynamic routing protocols IGP (Interior Gateway Protocol) and EGP (Exterior Gateway Protocol), it is possible to configure **OSPFv2**, **OSPFv3** and **BGP**. For OSPFv2, the **BFD** (Bidirectional Forwarding Detection) protocol can be used together to detect faults quickly.

To segment the network so that it is isolated and/or create a unique routing table for some networks, it is possible to use a **VRF** (Virtual Routing and Forwarding). All DmOS devices have an exclusive VRF for outband management (VRF mgmt).

DmOS also has **PBR** (Policy-based routing), where data traffic can be classified according to some predefined policies and forwarded to a specific destination as configured by the network Administrator. **VRRPv2** and **VRRPv3** are also supported and eliminate the single point of failure by providing one or more gateways to the network.

ECMP (Equal-Cost Multi-Path) is available for OSPFv2 and OSPFv3 protocols. The protocol uses parameters such as IP addresses, UDP/TCP port and VLAN as criteria to forward traffic between different next hops if they have the same cost in OSPF.

MPLS

DmOS supports the creation of **TE** and **non-TE MPLS** VPNs for different applications and topologies. The signaling of these L2VPNs is carried out through the **LDP** protocol. The transport of MPLS traffic can use the **LDP** protocol to create LSPs that follow the IGP, or the **RSVP** protocol that makes it possible to carry out Traffic Engineering according to the needs of each network.

For the transport of L2 services, VPNs of the **VPWS** and **VPLS** type are supported. These L2VPNs support point-to-point and multipoint **TLS** connections respectively.

For the transport of L3 services, VPNs of the **L3VPN IPv4** and **IPv6 (6VPE)** type are supported. The **VRF** and **MP-BGP** functionalities enable the creation of the MPLS infrastructure that aims to provide connectivity for IP services through an MPLS network.

GPON / XGS-PON

DmOS operating on OLTs, offers a complete solution of **GPON/XGS-PON** functionalities and unifies in a single software platform advanced functions of Ethernet/IP networks and PON networks. The configuration, management and monitoring of the network ONUs is carried out remotely by the OLTs through the OMCI protocol according to the ITU-T standards. **1:1, N:1** and **TLS applications** diversify the GPON/XGS-PON solutions possible with **Harpin Turn** available for **TLS applications**.

The **automatic provisioning of ONUs** is available and can act in the automatic activation of clients without the need for operator intervention. Protocols such as **PPPoE IA** and **DHCP Relay** are supported, including the provisioning of ONUs FXS ports to provide **VoIP services**.

In terms of security, the **anti-rogue** functionality stands out, which allows the individual isolation of a given ONU without the need for an on-site technician to reactivate the ONU.

QoS – Quality of Service

DmOS supports several forms of configuration in order to guarantee the QoS of the data through the network.

With the **ACLs** (Access Control List) it is possible to **classify**, **prioritize**, **accept** or **deny** packets directed to the CPU or that pass through the equipment ports. Using ACLs in conjunction with the **WFQ** (Weighted Fair Queuing) and **SP** (Strict Priority) scheduling algorithms, it is also possible to classify and prioritize packets directed to the CPU, control protocols that are sent by the CPU and packets that pass through the equipment interfaces.

It is also possible to limit the download and/or upload traffic of services delivered to customers using different types of **Policer**.

Security

For access security, DmOS uses privilege levels of **administrator** (admin), **configuration** (config) and **audit** (audit) for user registration, which can be done either locally on the equipment through **Local Users**, or by servers using the protocols **RADIUS** and **TACACS+**, providing centralized user management.

DmOS allows the user to control the maximum number of packets sent per second (pps) to the equipment's CPU in order to avoid **DoS** (Denial of Service) attacks and control flooding by broadcast, multicast or unknown unicast (DLF) traffic on the interfaces ethernet using **Storm-Control**.

ACLs (Access Control Lists) help in L2 and L3 traffic control by allowing, denying, classifying and marking packets according to implemented policies. In OLTs with DmOS, it is possible to enable the **anti-ip-spoofing** functionality to avoid attacks such as SYN flood, routing redirect, among others.

OAM

TWAMP and **CFM** protocols can be configured to monitor L3 and L2 networks performance ensuring end-to-end connectivity through multiple network equipment. **sFlow** can also be used in traffic analysis, as it captures a packet sample where it obtains packet content information such as protocols and sends it to a collector server for graphical analysis.

To guarantee the stable operation of the network, it is possible to configure the **EFM** (Ethernet in the First Mile - IEEE 802.3ah). This protocol aims to monitor the link status through OAMPDUs notifications. Upon detecting an event on an interface, EFM blocks that interface and sends a notification to assist network administrators.

RDM (Remote Devices Management) is a proprietary DATACOM protocol, and it is available for some specific platforms. RDM allows you to manage remote devices without the need to configure these devices. This allows the customer to take the equipment out of the box and be able to access the device without the need for configuration, reducing the operational cost, speeding up the delivery of new services to customers.

Traffic Analysis

DmOS has tools to analyze incoming and outgoing traffic on the equipment. **Throughput** checking commands and **traffic type statistics** such as Unicast, Multicast and Broadcast per interface are for initial analysis. The **Monitor (Port Mirror)** can be used to perform the complete capture of the packet, in this way a copy of the packet is made and sent to a specific interface where there must be a collector for data analysis.

DmOS also has the **Tcpdump tool** for analysis of traffic sent and received by the equipment's CPU and allows looping L2 flows through the **Traffic Loop** functionality to meet **RFC2544** tests or other traffic tests with the aim of validating the delivery of the circuit to the client.

Task Programming

It is possible to schedule the execution of tasks such as, for example, copying configuration backup files, updating firmware, adjusting the configuration based on events, among others, through the **Assistant-Task** functionality.

Fault Monitoring

Alarms to indicate faults in the equipment or in the network are available, mainly related to hardware devices such as CPU, Memory, FANs and PSUs.

DWDM

DmOS supports colored links using **100G and 400G Coherent DWDM Transponders** to be used on the DM4770 16CX platform and DM4920 Muxponder.

The DM4920 Muxponder supports 400G multiplexing configuration for up to 4 100G clients, or **Multirate mode**

reducing the rate to 300G or 200G on carriers, increasing the reach and OSNR limit.

Supports **optical amplification** via EDFA interfaces in **Booster and Pre-Amplifier modes** with **AGC** (constant gain) and **APC** (constant power) settings.

For managing the DWDM network, port statistics, **FEC counters**, link quality monitoring with **BER** and **Q factor** information, as well as the **OSNR status of the transponders** are available.

SUPPORTED PROTOCOLS AND STANDARDS

MANAGEMENT AND SERVICES

		DWDM	OLTs				SWITCHES						
Group	Feature	DM4920	DM4610 DM4615	DM4611 DM4612	DM4618	DM4616	DM4050	DM4250	DM4360 DM4370	DM4380	DM4170	DM4270	DM4770
DATABASE	File handling (load, copy, save) by TFTP/SCP	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	Support for configuration commit/rollback operations	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	Remote reboot	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	Device Inventory	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	Banner	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
DHCP	DHCP IPv4 L3-Relay (Interface-L3)	-	✓	✓	-	✓	✓	✓	✓	✓	✓	✓	✓
DmView	Configuration and Monitoring by DmView	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
MIBs	IETF - RFC1213 - Management Information Base for Network Management of TCP/IP-based internets: MIB-II (Obsoletes RFC 1158)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	IETF - RFC6933 - Entity MIB (Version 4)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	LLDP-v2-MIB (OID 1.3.111.2.802.1.1.13)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	DmOS-EAPS – DATACOM Proprietary MIB	-	✓	✓	-	✓	✓	✓	✓	✓	✓	✓	✓
	DmOS-ERPS – DATACOM Proprietary MIB	-	✓	✓	-	✓	✓	✓	✓	✓	✓	✓	✓
NETCONF YANGs	IETF - RFC4742 - Using the NETCONF Configuration Protocol over SSH	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	IETF - RFC5277 - NETCONF Event Notifications	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	IETF - RFC5717 - Partial Lock Remote Procedure Call (RPC) for NETCONF	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	IETF - RFC6020 - YANG - A Data Modeling Language for the Network Configuration Protocol (NET-CONF)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	IETF - RFC6021 - Common YANG Data Types	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	IETF - RFC6022 - YANG Module for NETCONF Monitoring	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	IETF - RFC6241 - Network Configuration Protocol (NETCONF) (Obsoletes RFC 4741)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	IETF - RFC6242 - Using the NETCONF Configuration Protocol over Secure Shell (SSH)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	IETF - RFC6243 - With-defaults capability for NETCONF	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	IETF - RFC6470 - NETCONF Base Notifications	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	IETF - RFC6536 - NETCONF Access Control Model	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	IETF - RFC6991 - Common YANG Data Types (Obsoletes RFC 6021)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
OUT-OF-BAND IN-BAND	Device Management through IPv4 address	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	Out-of-Band Management (Management port)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	In-band management (Ethernet ports)	-	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	Management traffic segmentation using a dedicated VLAN	-	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
SYSLOG	Syslog - Local	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	Syslog IPv4 – Remote	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
TELNET	Telnet Client (IPv4)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	Telnet Server for CLI access (IPv4)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

MANAGEMENT AND SERVICES

		DWDM	OLTs				SWITCHES						
Group	Feature	DM4920	DM4610 DM4615	DM4611 DM4612	DM4618	DM4616	DM4050	DM4250	DM4360 DM4370	DM4380	DM4170	DM4270	DM4770
	IETF - RFC854 - TELNET Protocol Specification	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
TFTP	TFTP Client (IPv4)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	IETF - RFC783 - The TFTP Protocol (Revision 2)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
LOCAL USERS	Local user accounts with privilege levels	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
SCRIPTING	Batch actions (assistance task)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
SNMP	Interface Index (ifIndex) Persistence (SNMP)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	Internal equipment temperatures available in SNMP	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	IETF - RFC1157 - A Simple Network Management Protocol (SNMPv1)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	IETF - RFC1215 - A Convention for Defining Traps for use with the SNMP - TRAPS MIB	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	IETF - RFC1441 - Introduction to version 2 of the Internet-standard Network Management Framework (SNMPv2)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	IETF - RFC1901 to RFC1908 - SNMPv2c	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	IETF - RFC3410 to RFC3418 - SNMPv3 agent	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	VLAN traffic monitoring by SNMP	-	✓	✓	-	✓	✓	✓	✓	✓	✓	✓	✓
SOFTWARE MANAGEMENT	Firmware (FW) Update by HTTP, TFTP, SCP (IPv4)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	Firmware rollback	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
SNTP	IETF - RFC2030 - Simple Network Time Protocol (SNTP) Version 4 for IPv4, IPv6 and OSI	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
FEATURE LICENSING	Support for a licensing mechanism to enable/disable groups of features	-	✓	-	-	-	-	-	✓	✓	✓	✓	✓
LINE CARD	Line Card Provisioning	✓	-	-	✓	-	-	-	-	-	-	-	-

INTERFACES, MONITORING AND TRAFFIC ANALYSIS

		DWDM	OLTs				SWITCHES						
Group	DM4920	DM4920	DM4610 DM4615	DM4611 DM4612	DM4618	DM4616	DM4050	DM4250	DM4360 DM4370	DM4380	DM4170	DM4270	DM4770
	Transceivers Digital Diagnostics (SFF-8472)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	IEEE - 802.3x - Flow Control (Pause Frames)	-	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	Configurable MTU per Ethernet port	-	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	Link Flap Detection	-	✓	✓	-	✓	✓	✓	✓	✓	✓	✓	✓
	Backup Link	-	✓	✓	-	✓	✓	✓	✓	✓	✓	✓	✓
LAG Port-Channel	Link Aggregation - LAG / Port channel (IEEE 802.1AX/802.3ad)	-	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	Support for LACP on Link Aggregations (IEEE 802.1AX/802.3ad)	-	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	Link Aggregation - OID SNMP for LAG counters	-	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	Port Channel load balancing: Dynamic (Flows)	-	-	-	-	-	-	-	-	✓	✓	✓	✓
	Port Channel load balancing: Enhanced (MPLS, IP, MAC and Ports)	-	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	Port Channel load balancing: Source IP and Destination IP (IP and TCP/UDP Ports)	-	✓	✓	-	✓	✓	✓	✓	✓	✓	✓	✓
	Port Channel load balancing: Source MAC and Destination MAC (MAC, VLAN and Ethertype)	-	✓	✓	-	✓	✓	✓	✓	✓	✓	✓	✓
	Port Channel load balancing: Source IP (IP and TCP/UDP Ports)	-	✓	✓	-	✓	✓	✓	✓	✓	✓	✓	✓
	Port Channel load balancing: Source MAC (MAC, VLAN and Ethertype)	-	✓	✓	-	✓	✓	✓	✓	✓	✓	✓	✓
	Port Channel load balancing: Destination IP (IP and TCP/UDP Ports)	-	✓	✓	-	✓	✓	✓	✓	✓	✓	✓	✓
	Port Channel load balancing: Destination MAC (MAC, VLAN and Ethertype)	-	✓	✓	-	✓	✓	✓	✓	✓	✓	✓	✓
MC-LAG	Multichassis Link Aggregation: Active/Standby Mode	-	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
ALARMS	Alarm for CPU overload	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	Alarm for low memory available	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	Alarm for PSU Unsupported	✓	-	-	-	-	-	-	-	-	-	✓	-
	Alarm for Line Card	✓	-	-	✓	-	-	-	-	-	-	-	-
PING	IETF - RFC792 - Internet Control Message Protocol (ICMP) (Ping IPv4)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	IETF - RFC4443 - Internet Control Message Protocol (ICMPv6) for the Internet Protocol Version 6 (IPv6) Specification (Ping IPv6) (obsoletes RFC2463 and RFC1885)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
PORT MIRROR	Port traffic mirroring	-	✓	✓	-	✓	✓	✓	✓	✓	✓	✓	✓
STATISTICS COUNTERS	Packet counters for ETH Interfaces (egress/ingress mode) – User Config	✓	✓	✓	-	✓	✓	✓	✓	✓	✓	✓	✓
	Packet counters per VLANs	-	✓	-	-	-	✓	✓	✓	✓	✓	✓	✓
	Show interface statistics per interface	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
SYSTEM MONITORING	CPU usage available for user consulting	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	System Memory usage available for user consulting	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	CPU usage and system memory available in SNMP	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	Support for Up Time reporting	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	Dying gasp	-	-	-	-	-	-	-	✓	-	-	-	-
	PSU Monitoring	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

INTERFACES, MONITORING AND TRAFFIC ANALYSIS

		DWDM	OLTs				SWITCHES						
Group	DM4920	DM4920	DM4610 DM4615	DM4611 DM4612	DM4618	DM4616	DM4050	DM4250	DM4360 DM4370	DM4380	DM4170	DM4270	DM4770
HARDWARE MONITORING	FAN monitoring	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	Temperature monitoring	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
TRACEROUTE	Traceroute IPv4/IPv6	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
TRAFFIC LOOP	L2 Traffic Loop	-	✓	✓	-	✓	✓	✓	✓	-	✓	-	-
TRAFFIC MONITORING	Show interfaces table utilization bandwidth	-	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	Sniffer tcpdump – CPU packets	-	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
DEBUG	Debugging	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
sFlow	IETF - RFC3176 - InMon Corporation's sFlow: A Method for Monitoring Traffic in Switched and Routed Networks (SFLOW)	-	✓	✓	-	✓	✓	✓	✓	✓	✓	✓	✓

OAM - OPERATION, ADMINISTRATION AND MANAGEMENT

		DWDM	OLTs				SWITCHES						
Group	DM4920	DM4920	DM4610 DM4615	DM4611 DM4612	DM4618	DM4616	DM4050	DM4250	DM4360 DM4370	DM4380	DM4170	DM4270	DM4770
CFM	IEEE - 802.1ag - Connectivity Fault Management (CFM) - Continuity Check Protocol	-	✓	✓	-	✓	✓	✓	✓	✓	✓	✓	✓
	IEEE - 802.1ag - Connectivity Fault Management (CFM) - Linktrace Protocol	-	✓	✓	-	✓	✓	✓	✓	✓	✓	✓	✓
	IEEE - 802.1ag - Connectivity Fault Management (CFM) - Loopback Protocol	-	✓	✓	-	✓	✓	✓	✓	✓	✓	✓	✓
TWAMP	IETF - RFC5357 - A Two-Way Active Measurement Protocol - TWAMP Session-Reflector and Server (Responder)	-	-	-	-	-	✓	✓	✓	✓	✓	✓	✓
	IETF - RFC5357 - A Two-Way Active Measurement Protocol - TWAMP Session-Sender and Control-Client (Controller)	-	-	-	-	-	✓	✓	✓	✓	✓	✓	✓
EFM	IEEE - 802.3ah - Link Monitoring (EFM)	-	✓	✓	-	✓	✓	✓	✓	✓	✓	✓	✓
LLDP	IEEE - 802.1AB - LLDP (Link Layer Discovery Protocol)	-	✓	✓	-	✓	✓	✓	✓	✓	✓	✓	✓
LOOPBACK DETECTION	Loopback Detection	-	✓	✓	-	✓	✓	✓	✓	✓	✓	✓	✓
Y.1731	ITU-T - Y.1731 - Fault Management - Ethernet alarm indication signal (ETH-AIS)	-	✓	✓	-	✓	✓	✓	✓	✓	✓	✓	✓
	ITU-T - Y.1731 - Fault Management - Ethernet continuity check (ETH-CC)	-	✓	✓	-	✓	✓	✓	✓	✓	✓	✓	✓
	ITU-T - Y.1731 - Performance Monitoring - Frame delay measurement (ETH-DM)	-	✓	✓	-	✓	✓	✓	✓	✓	✓	✓	✓
BFD	BFD for OSPF IPv4	-	-	-	-	-	-	-	✓	✓	✓	✓	✓
RDM	RDM - Remote Devices Management (only client mode)	-	-	-	-	-	-	-	✓	-	-	-	-

SWITCHING

		DWDM	OLTs				SWITCHES						
Group	DM4920	DM4920	DM4610 DM4615	DM4611 DM4612	DM4618	DM4616	DM4050	DM4250	DM4360 DM4370	DM4380	DM4170	DM4270	DM4770
AGING TIME	Configurable global MAC table aging time	-	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
EAPS	IETF - RFC3619 - EAPS	-	✓	✓	-	✓	✓	✓	✓	✓	✓	✓	✓
ERPS	ITU-T - G.8032v2 - Ethernet ring protection switching (ERPS)	-	✓	✓	-	✓	✓	✓	✓	✓	✓	✓	✓
L2CP	L2CP - Layer 2 Protocol Tunneling Protocols	-	-	-	-	-	✓	✓	✓	✓	✓	✓	✓
	BPDU transparency for ethernet ports	-	-	-	-	-	✓	✓	✓	✓	✓	✓	✓
	L2CP - Layer 2 Protocol Tunneling (cisco mode)	-	-	-	-	-	✓	✓	✓	✓	✓	✓	✓
QinQ	IEEE - 802.1ad - Double Tagging (Q-in-Q)	-	✓	✓	-	✓	✓	✓	✓	✓	✓	✓	✓
	Selective Q-in-Q	-	✓	✓	-	✓	✓	✓	✓	✓	✓	✓	✓
VLAN	IEEE - 802.1D - MAC bridges	-	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	IEEE - 802.1Q - Virtual Bridged LAN (VLAN)	-	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	VLAN Dual-Mode – Receive/Ttransmit both tagged/untagged traffic	-	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	Native VLAN	-	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	Port-based VLAN (with port overlap)	-	✓	✓	-	✓	✓	✓	✓	✓	✓	✓	✓
	VLAN translate	-	✓	-	-	-	✓	✓	✓	✓	✓	✓	✓
	TPID on interface	-	✓	✓	-	✓	✓	✓	✓	✓	✓	✓	✓
	PCP on vlan-mapping	-	✓	✓	-	✓	✓	✓	✓	✓	✓	✓	✓
xSTP	IEEE - 802.1D - Spanning Tree Protocol (STP)	-	✓	✓	-	✓	✓	✓	✓	✓	✓	✓	✓
	IEEE - 802.1w - Rapid Spanning Tree Protocol (RSTP)	-	✓	✓	-	✓	✓	✓	✓	✓	✓	✓	✓
	IEEE - 802.1s - Multiple Spanning Tree Protocol (MSTP)	-	✓	✓	-	✓	✓	✓	✓	✓	✓	✓	✓
	xSTP - BPDU Guard	-	✓	✓	-	✓	✓	✓	✓	✓	✓	✓	✓
	xSTP - Root Guard/Restricted Role	-	✓	✓	-	✓	✓	✓	✓	✓	✓	✓	✓
MAC	MAC Learning	-	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	MAC Learning per port (enable / disable)	-	✓	✓	-	✓	✓	✓	✓	✓	✓	✓	✓
	MAC Address Limit per VLAN	-	✓	✓	-	✓	✓	✓	✓	-	✓	-	-

ROUTING

		DWDM	OLTs				SWITCHES						
Group	DM4920	DM4920	DM4610 DM4615	DM4611 DM4612	DM4618	DM4616	DM4050	DM4250	DM4360 DM4370	DM4380	DM4170	DM4270	DM4770
BGP	IETF - RFC2385 - Protection of BGP Sessions via the TCP MD5 Signature Option	-	-	-	-	-	✓	✓	✓	✓	✓	✓	✓
	BGP IP Prefix Lists	-	-	-	-	-	✓	✓	✓	✓	✓	✓	✓
	BGP Route Map	-	-	-	-	-	✓	✓	✓	✓	✓	✓	✓
	BGP Route Policy (address-family IPv4/IPv6 and VPNv4/VPNv6)	-	-	-	-	-	✓	✓	✓	✓	✓	✓	✓
	BGP Community Route Map	-	-	-	-	-	✓	✓	✓	✓	✓	✓	✓
	BGP AS Control (enforce-first-as and remove-private-as)	-	-	-	-	-	✓	✓	✓	✓	✓	✓	✓
	IETF - RFC2918 - Route Refresh Capability for BGP-4	-	-	-	-	-	✓	✓	✓	✓	✓	✓	✓
	IETF - RFC4456 - BGP Route Reflection: An Alternative to Full Mesh Internal BGP (IBGP) (obsoletes RFC1966 and RFC2796)	-	-	-	-	-	✓	✓	✓	✓	✓	✓	✓
	IETF - RFC4271 - A Border Gateway Protocol 4 (BGP-4) (obsoletes RFC1771)	-	-	-	-	-	✓	✓	✓	✓	✓	✓	✓
	IETF - RFC1997 - BGP Communities Attribute - IPv4/IPv6	-	-	-	-	-	✓	✓	✓	✓	✓	✓	✓
	IETF - RFC4893 - BGP Support for Four-octet AS Number Space	-	-	-	-	-	✓	✓	✓	✓	✓	✓	✓
	IETF - RFC2545 - Use of BGP-4 Multiprotocol Extensions for IPv6 Inter-Domain Routing	-	-	-	-	-	✓	✓	✓	✓	✓	✓	✓
IP SERVICES	IP Routing: IPv4/IPv6	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	IETF - RFC826 - An Ethernet Address Resolution Protocol (ARP)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	IETF - RFC894 - A Standard for the Transmission of IP Datagrams over Ethernet Networks	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	IETF - RFC3021 - Using 31-Bit Prefixes on IPv4 Point-to-Point Links	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	IETF - RFC1700 - ASSIGNED NUMBERS	-	✓	✓	-	✓	✓	✓	✓	✓	✓	✓	✓
	IETF - RFC4632 - Classless Inter-domainRouting (CIDR): The Internet Address Assignment and Aggregation Plan	-	✓	✓	-	✓	✓	✓	✓	✓	✓	✓	✓
	IETF - RFC791 - Internet Protocol (IP)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	IETF - RFC4291 - IP Version 6 Addressing Architecture (obsoletes RFC3513 e RFC2373)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	IETF - RFC2460 - Internet Protocol, Version 6 (IPv6) Specification (obsoletes RFC1883)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	IETF - RFC2464 - Transmission of IPv6 packets over Ethernet networks (obsoletes RFC1972)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	IETF - RFC5396 - Textual Representation of Autonomous System (AS) Numbers		-	-	-	-	✓	✓	✓	✓	✓	✓	✓
	IETF - RFC793 - Transmission Control Protocol (TCP)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	Wirespeed L3 routing	-	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	Routes redistribution between L3 protocols	-	-	-	-	-	✓	✓	✓	✓	✓	✓	✓
	ECMP - Equal-Cost Multi-Path (only for OSPF)	-	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	Secondary IPv4 addresses	-	✓	✓	-	✓	✓	✓	✓	✓	✓	✓	✓
	IETF - RFC4861 - Neighbor Discovery for IP version 6 (IPv6)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	IETF - RFC4862 - IPv6 Stateless Address Autoconfguration	-	✓	✓	-	✓	✓	✓	✓	✓	✓	✓	✓
	IETF - RFC 3587 - IPv6 Global Unicast Address Format	-	✓	✓	-	✓	✓	✓	✓	✓	✓	✓	✓

ROUTING

		DWDM	OLTs				SWITCHES						
Group	DM4920	DM4920	DM4610 DM4615	DM4611 DM4612	DM4618	DM4616	DM4050	DM4250	DM4360 DM4370	DM4380	DM4170	DM4270	DM4770
	IETF - RFC 3246 - An Expedited Forwarding PHB (Per-Hop Behavior)	-	✓	✓	-	✓	✓	✓	✓	✓	✓	✓	✓
	IETF - RFC 2597 - Assured Forwarding PHB Group	-	✓	✓	-	✓	✓	✓	✓	✓	✓	✓	✓
OSPF	IETF - RFC2328 - OSPF Version 2 (obsoletes RFCs 2178, 1583, 1247 and 1131)	-	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	MD5 Authentication for OSPFv2 (RFC2328 - Apendix D)	-	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	IETF - RFC5250 - The OSPF Opaque LSA Option (obsoletes RFC2370)	-	✓	✓	-	✓	✓	✓	✓	✓	✓	✓	✓
	IETF - RFC3101 - The OSPF Not-So-Stubby Area (NSSA) Option (obsoletes RFC1587)	-	✓	✓	-	✓	✓	✓	✓	✓	✓	✓	✓
	OSPF Prefix Lists Filter	-	-	-	✓	-	✓	✓	✓	✓	✓	✓	✓
	IETF - RFC5340 - OSPF for IPv6 - OSPFv3 (obsoletes RFC2740)	-	-	-	-	-	✓	✓	✓	✓	✓	✓	✓
	Black-hole routes redistribution in OSPFv2 and OSPFv3	-	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	OSPF Overload (max-metric) in OSPFv2 and OSPFv3	-	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
STATIC ROUTING	Static Routing IPv4	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	Static Routing IPv6	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
VLAN ROUTING	Routing between VLANs	-	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	Configurable L3 MTU per VLAN	-	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
VRRP	IETF - RFC3768 - Virtual Router Redundancy Protocol (VRRPv2) (obsoletes RFC2338)	-	-	-	-	-	✓	✓	✓	✓	✓	✓	✓
	IETF - RFC5798 - Virtual Router Redundancy Protocol (VRRP) Version 3 for IPv4 and IPv6	-	-	-	-	-	✓	✓	✓	✓	✓	✓	✓
VRF	VRF-Lite (Virtual Routing Forwarding) IPv4/IPv6	-	-	-	-	-	-	✓	✓	✓	✓	✓	✓
PBR	Policy Based Routing IPv4 (PBR IPv4)	-	✓	-	-	-	✓	✓	-	✓	✓	✓	✓

MPLS

		DWDM	OLTs				SWITCHES						
Group	DM4920	DM4920	DM4610 DM4615	DM4611 DM4612	DM4618	DM4616	DM4050	DM4250	DM4360 DM4370	DM4380	DM4170	DM4270	DM4770
L2VPN	IETF - RFC4447 and RFC4448 - VPWS Virtual Pseudo Wire Service using LDP	-	ML	-	-	-	-	-	ML	ML	ML	ML	ML
	VPWS with Backup PW (only for LDP)	-	ML	-	-	-	-	-	ML	ML	ML	ML	ML
	VPWS in GPON Serviceport	-	ML	-	-	-	-	-	-	-	-	-	-
	VPLS in GPON Service-port	-	ML	-	-	-	-	-	-	-	-	-	-
	IETF - RFC4762 - VPLS Virtual Private LAN Service using LDP	-	ML	-	-	-	-	-	ML	ML	ML	ML	ML
	VPLS TLS (Transparent LAN Service)	-	ML	-	-	-	-	-	ML	ML	ML	ML	ML
	VPLS MAC Limit Tunning	-	ML	-	-	-	-	-	ML	ML	ML	ML	ML
	IETF - RFC6391 - Flow-Aware Transport of Pseudowires over an MPLS Packet Switched Network	-	-	-	-	-	-	-	ML	ML	ML	ML	ML
	Selective QinQ for VPWS and VPLS	-	ML	-	-	-	-	-	ML	ML	ML	ML	ML
	Selective Encapsulation for VPWS and VPLS – Untagged Traffic	-	ML	-	-	-	-	-	ML	ML	ML	ML	ML
L3VPN	IETF - RFC4364 - BGP/MPLS IP Virtual Private Networks (VPNs) (obsoletes RFC2547)	-	-	-	-	-	-	-	ML	ML	ML	ML	ML
	IPv6 VPN Provider Edge over MPLS (6VPE)	-	-	-	-	-	-	-	ML	ML	ML	ML	ML
LDP	IETF - RFC5036 - LDP Specification (obsoletes RFC3036)	-	ML	-	-	-	-	-	ML	ML	ML	ML	ML
	MD5 authentications for LDP sessions (reference to RFC5036)	-	ML	-	-	-	-	-	ML	ML	ML	ML	ML
RSVP	RFC 2205 - Resource ReSerVation Protocol (RSVP)	-	-	-	-	-	-	-	ML	ML	ML	ML	ML
	RFC3209 - RSVP-TE: Extensions to RSVP for LSP Tunnels: Explicit-Path and Affinity Bits	-	-	-	-	-	-	-	ML	ML	ML	ML	ML
	RFC3209 - RSVP-TE: Extensions to RSVP for LSP Tunnels: Hello Extension	-	-	-	-	-	-	-	ML	ML	ML	ML	ML

MULTICAST

		DWDM	OLTs				SWITCHES						
Group	DM4920	DM4920	DM4610 DM4615	DM4611 DM4612	DM4618	DM4616	DM4050	DM4250	DM4360 DM4370	DM4380	DM4170	DM4270	DM4770
IGMP	IGMPv2 snooping (without Querier mode)	-	✓	✓	-	✓	✓	✓	✓	✓	✓	✓	
	IGMPv3 snooping (without Querier mode)	-	✓	✓	-	✓	✓	✓	✓	✓	✓	✓	
	IGMP snooping with proxy report	-	✓	✓	-	✓	✓	✓	✓	✓	✓	✓	
	IGMP Quick Leave function (zapping time lower than 1 second)	-	✓	✓	-	✓	✓	✓	✓	✓	✓	✓	
	IETF - RFC1112 - Host Extensions for IP Multicasting - IGMPv1 Snooping	-	✓	✓	-	✓	✓	✓	✓	✓	✓	✓	
	IETF - RFC2236 - Internet Group Management Protocol, Version 2 - IGMPv2	-	✓	✓	-	✓	✓	✓	✓	✓	✓	✓	
	IETF - RFC3376 - Internet Group Management Protocol, Version 3 - IGMPv3	-	✓	✓	-	✓	✓	✓	✓	✓	✓	✓	

QoS – QUALITY OF SERVICE

		DWDM	OLTs				SWITCHES						
Group	DM4920	DM4920	DM4610 DM4615	DM4611 DM4612	DM4618	DM4616	DM4050	DM4250	DM4360 DM4370	DM4380	DM4170	DM4270	DM4770
CLASSIFICATION	Traffic Classes (8 active priorities)	-	✓	✓	-	✓	✓	✓	✓	✓	✓	✓	✓
	Packet QoS classification by IEEE 802.1p P-bit (PCP)	-	✓	✓	-	✓	✓	✓	✓	✓	✓	✓	✓
	Packet QoS classification by IP Precedence (DSCP)	-	✓	✓	-	✓	✓	✓	✓	✓	✓	✓	✓
	Packet QoS classification by Source/Destination MAC	-	✓	✓	-	✓	✓	✓	✓	✓	✓	✓	✓
	Packet QoS classification by VLAN ID	-	✓	✓	-	✓	✓	✓	✓	✓	✓	✓	✓
	Packet QoS classification by Source Ethernet Port	-	✓	✓	-	✓	✓	✓	✓	✓	✓	✓	✓
	Packet QoS classification by ACL filter action	-	✓	✓	-	✓	✓	✓	✓	✓	✓	✓	✓
	Packet QoS classification by Source/Destination IP	-	✓	✓	-	✓	✓	✓	✓	✓	✓	✓	✓
	Packet QoS classification by IP Precedence (DSCP) - IPv6	-	✓	✓	-	✓	✓	✓	✓	✓	✓	✓	✓
	Packet QoS classification by MPLS EXP	-	✓	✓	-	✓	-	-	✓	✓	✓	✓	✓
REMARKING AND MAPPING	IETF - RFC2474 - Definition of the Differentiated Services Field (DS Field) in the IPv4 Headers (DSCP Remarking for IPv4)	-	✓	✓	-	✓	✓	✓	✓	✓	✓	✓	✓
	P-bit (PCP) marking (IEEE 802.1p) according to the following criteria: VLAN TPID, Ethertype, Port and P-bit	-	✓	✓	-	✓	✓	✓	✓	✓	✓	✓	✓
	IETF - RFC2697 - A Single Rate Three Color Marker	-	✓	✓	-	✓	✓	✓	✓	✓	✓	✓	✓
	IETF - RFC2698 - A Two Rate Three Color Marker	-	✓	✓	-	✓	✓	✓	✓	✓	✓	✓	✓
	DSCP to CoS mapping	-	✓	✓	-	✓	✓	✓	✓	✓	✓	✓	✓
	IETF - RFC2475 - An Architecture for Differentiated Services	-	✓	✓	-	✓	✓	✓	✓	✓	✓	✓	✓
SCHEDULERS	QoS Packet Scheduler - Strict Priority (SP) / Low Latency Queueing (LLQ)	-	✓	✓	-	✓	✓	✓	✓	✓	✓	✓	✓
	QoS Packet Scheduler - Weighted Fair Queue (WFQ)	-	✓	✓	-	✓	✓	✓	✓	✓	✓	✓	✓
TRAFFIC POLICING	Policing by vlan, inner-vlan, PCP, inner-PCP and DSCP	-	✓	✓	-	✓	✓	✓	✓	✓	✓	✓	✓
	Policing by Service-Port	-	✓	-	-	-	-	-	-	-	-	-	-
	hQoS – Hierarchical Policers/meters QoS (only for ingress mode)	-	✓	✓	-	✓	✓	✓	✓	-	-	-	-
	Counters for policers	-	✓	✓	-	✓	✓	✓	✓	✓	✓	✓	✓
TRAFFIC SHAPING	Rate Limit on Egress Interface	-	✓	✓	-	✓	✓	✓	✓	✓	✓	✓	✓
	Rate Limit on Ingress Interface	-	✓	✓	-	✓	✓	✓	✓	-	✓	-	-

SECURITY

		DWDM	OLTs				SWITCHES						
Group	DM4920	DM4920	DM4610 DM4615	DM4611 DM4612	DM4618	DM4616	DM4050	DM4250	DM4360 DM4370	DM4380	DM4170	DM4270	DM4770
ACLs	IPv4 Access list - Manually configured	-	✓	✓	-	✓	✓	✓	✓	✓	✓	✓	✓
	ACL Match	-	✓	✓	-	✓	✓	✓	✓	✓	✓	✓	✓
	ACL – Actions: Deny, Permit and Set	-	✓	✓	-	✓	✓	✓	✓	✓	✓	✓	✓
	ACL – Match Layer2 (MAC address, Ethertype, PCP, VLAN, inner PCP and inner VLAN)	-	✓	✓	-	✓	✓	✓	✓	✓	✓	✓	✓
	ACL – Match Layer3 (IPv4/IPv6 addresses, IP Protocol, DSCP, ToS, TCP/UDP Port, PCP, VLAN, inner PCP and inner VLAN)	-	✓	✓	-	✓	✓	✓	✓	✓	✓	✓	✓
CPU-DOS-PROTECTION	CPU DoS Protection - Multiple CPU queues	-	✓	✓	-	✓	✓	✓	✓	✓	✓	✓	✓
	CPU DoS Protection - Global Rate-limit	-	✓	✓	-	✓	-	-	✓	✓	✓	✓	✓
	CPU DoS Protection - Rate limit for Protocols	-	✓	✓	-	✓	-	-	✓	✓	✓	✓	✓
IP SPOOFING	IP spoofing protection mechanisms	-	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
PASSWORD RECOVERY	Root password recovery	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
PORT SECURITY	MAC Address Limit per Port (Port Security Lite)	-	✓	✓	-	✓	✓	✓	✓	-	✓	-	-
RADIUS	CLI access authentication throught RADIUS	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	IETF - RFC2865 - Remote Authentication Dial In User Service (RADIUS) (obsoletes RFC 2138)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	IETF - RFC2866 - RADIUS Accounting (obsoletes RFC2139)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
SSH	SSHv2 Server for CLI access	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	SSHv2 Client	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
STORM-CONTROL	Storm Control protection for Unicast, Broadcast e Multicast	-	✓	✓	-	✓	✓	✓	✓	✓	✓	✓	✓
TACACS+	IETF - draft-grant-tacacs-02 - The TACACS+ Protocol - Authentication	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	IETF - draft-grant-tacacs-02 - The TACACS+ Protocol - Authorization	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	IETF - draft-grant-tacacs-02 - The TACACS+ Protocol - Accounting	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

VRF - PROTOCOLS AND SERVICES SUPPORTED

		DWDM	OLTs				SWITCHES						
Group	DM4920	DM4920	DM4610 DM4615	DM4611 DM4612	DM4618	DM4616	DM4050	DM4250	DM4360 DM4370	DM4380	DM4170	DM4270	DM4770
SERVICES	Out-of-Band Management (Management port)	-	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	In-band management (Ethernet ports)	-	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	DHCP IPv4 L3-Relay (Interface-L3)	-	✓	✓	-	✓	✓	✓	✓	✓	✓	✓	✓
	Firmware (FW) Update by HTTP, TFTP, SCP (IPv4)	-	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	Syslog IPv4 – Remote	-	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	SNMPv2/v3	-	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	SNTP - Simple Network Time Protocol for IPv4 and IPv6	-	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
OAM	TWAMP Sender and Reflector	-	-	-	-	-	✓	✓	✓	✓	✓	✓	✓
L3 PROTOCOLS	Static IP Routing – IPv4 and IPv6	-	✓	✓	-	✓	✓	✓	✓	✓	✓	✓	✓
	OSPF – only IPv4	-	✓	✓	-	✓	✓	✓	✓	✓	✓	✓	✓
	BGP – IPv4 and IPv6	-	-	-	-	-	✓	✓	✓	✓	✓	✓	✓
SECURITY	TACACS+ (IPv4) – Authentication, Authorization and Accounting	-	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	RADIUS (IPv6) – Authentication, Authorization and Accounting	-	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	SSHv2 Client andServer (IPv4/IPv6)	-	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
TRAFFIC ANALYSIS	Ping IPv4/IPv6	-	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	Traceroute IPv4/IPv6	-	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

GPON

		DWDM	OLTs				SWITCHES						
Group	DM4920	DM4920	DM4610 DM4615	DM4611 DM4612	DM4618	DM4616	DM4050	DM4250	DM4360 DM4370	DM4380	DM4170	DM4270	DM4770
BANDWIDTH CONTROL	Bandwidth control status	-	✓	✓	✓	✓	-	-	-	-	-	-	-
	DBA (dynamic bandwidth allocation) por NSR (Non-Status Reporting)	-	✓	✓	✓	✓	-	-	-	-	-	-	-
	DBA (dynamic bandwidth allocation) using SR (Status Reporting)	-	✓	✓	✓	✓	-	-	-	-	-	-	-
	SBA (static bandwidth allocation)	-	✓	✓	✓	✓	-	-	-	-	-	-	-
INTERFACES	AES (advanced encryption standard) 128 bits - dowstream	-	✓	✓	✓	✓	-	-	-	-	-	-	-
	FEC (forward error correction) – downstream and upstream	-	✓	✓	✓	✓	-	-	-	-	-	-	-
	GPON Laser Class B+	-	✓	✓	✓	✓	-	-	-	-	-	-	-
	GPON Laser Class C+	-	✓	✓	✓	✓	-	-	-	-	-	-	-
	GPON maximum reach of 60 Km	-	✓	✓	✓	✓	-	-	-	-	-	-	-
MONITORING	Alarms - comply with ITU-T G.984.3 (chapter 11)	-	✓	✓	✓	✓	-	-	-	-	-	-	-
	GPON link monitoring comply with ITU-T G.984.2 Amd 2	-	✓	✓	✓	✓	-	-	-	-	-	-	-
	GPON Performance available for user consulting (packet counters)	-	✓	✓	✓	-	-	-	-	-	-	-	-
	GEM Port Performance available for user consulting (packet counters)	-	✓	✓	✓	-	-	-	-	-	-	-	-
	GEM Port Performance monitoring available in SNMP	-	✓	✓	✓	-	-	-	-	-	-	-	-
	ONU Ethernet UNI available for user consulting (packet counters)	-	✓	✓	✓	-	-	-	-	-	-	-	-

GPON

		DWDM	OLTs				SWITCHES						
Group	DM4920	DM4920	DM4610 DM4615	DM4611 DM4612	DM4618	DM4616	DM4050	DM4250	DM4360 DM4370	DM4380	DM4170	DM4270	DM4770
	ONU information colletion available in SNMP	-	✓	✓	✓	-	-	-	-	-	-	-	-
	RSSI information (power level of ONU received at OLT)	-	✓	✓	✓	-	-	-	-	-	-	-	-
SERVICES	BPDU transparency for GPON	-	✓	✓	✓	✓	-	-	-	-	-	-	-
	DHCP IPv4 L2-Relay (VLAN)	-	✓	✓	✓	✓	-	-	-	-	-	-	-
	DHCP IPv6 L2-Relay (VLAN)	-	✓	✓	✓	✓	-	-	-	-	-	-	-
	DHCP IPv4 L2-Relay (VLAN) - Agent information (option 82)	-	✓	✓	✓	✓	-	-	-	-	-	-	-
	PPPoE IA - Intermediate Agent	-	✓	✓	✓	✓	-	-	-	-	-	-	-
	PPPoE IA – Circuit-ID configurable	-	✓	✓	✓	✓	-	-	-	-	-	-	-
	IETF - RFC2516 - A Method for Transmitting PPP Over Ethernet (PPPoE)	-	✓	✓	✓	✓	-	-	-	-	-	-	-
	GPON User isolation (N:1)	-	✓	✓	✓	✓	-	-	-	-	-	-	-
	Hairpin turn (TLS)	-	✓	✓	✓	✓	-	-	-	-	-	-	-
	Service-port - VLAN translate (GEM Port)	-	✓	✓	✓	✓	-	-	-	-	-	-	-
	VEIP - Virtual Ethernet Interface Point	-	✓	✓	✓	✓	-	-	-	-	-	-	-
STANDARDS	Broadband Forum: TR-156 Using GPON Access in the context of TR101	-	✓	✓	✓	✓	-	-	-	-	-	-	-
	Broadband Forum: TR-167 - GPON-fed TR-101 Ethernet Access Node	-	✓	✓	✓	✓	-	-	-	-	-	-	-
	Broadband Forum: TR-255 - GPON Interoperability Test Plan	-	✓	✓	✓	✓	-	-	-	-	-	-	-
	ITU-T - G.984.1 - Gigabit-capable Passive Optical Networks (GPON): General characteristics	-	✓	✓	✓	✓	-	-	-	-	-	-	-
	ITU-T - G.984.2 - Gigabit-capable Passive Optical Networks (GPON): Physical Media Dependent (PMD) layer specification	-	✓	✓	✓	✓	-	-	-	-	-	-	-
	ITU-T - G.984.2 Amendment 1 - G-PON Physical Media Dependent (PMD) layer specification Amendment 1	-	✓	✓	✓	✓	-	-	-	-	-	-	-
	ITU-T - G.984.3 - Gigabit-capable Passive Optical Networks (G-PON): Transmission convergence layer specification	-	✓	✓	✓	✓	-	-	-	-	-	-	-
	ITU-T - G.984.4 - Gigabit-capable Passive Optical Networks (G-PON): ONT management and control interface specification	-	✓	✓	✓	✓	-	-	-	-	-	-	-
	ITU-T - G.984.4 and G.988 - ONU management and control interface (OMCI) specification	-	✓	✓	✓	✓	-	-	-	-	-	-	-
	ITU-T - G.984.7 - Gigabit-capable passive optical networks (GPON): Long reach	-	✓	✓	✓	✓	-	-	-	-	-	-	-
	ITU-T - G.980.7.1 - 10-Gigabit-capable symmetric passive optical network (XGS-PON)	-	-	-	-	✓	-	-	-	-	-	-	-
ONU	GEM Port mapping	-	✓	✓	✓	✓	-	-	-	-	-	-	-
	GPON Profile-based ONU configuration	-	✓	✓	✓	✓	-	-	-	-	-	-	-
	MAC addresses limit configurable per port in ONU	-	✓	✓	✓	✓	-	-	-	-	-	-	-
	ONU DHCP (configurable)	-	✓	✓	✓	✓	-	-	-	-	-	-	-
	ONU Ethernet Ports attributes settings (negotiation, speed and duplex)	-	✓	✓	✓	✓	-	-	-	-	-	-	-
	ONU Firmware upgrade	-	✓	✓	✓	-	-	-	-	-	-	-	-
	ONU GEM Port rate control	-	✓	✓	✓	✓	-	-	-	-	-	-	-
	ONU in-band management over PON Link (IPHOST)	-	✓	✓	✓	✓	-	-	-	-	-	-	-

GPON

		DWDM	OLTs				SWITCHES						
Group	DM4920	DM4920	DM4610 DM4615	DM4611 DM4612	DM4618	DM4616	DM4050	DM4250	DM4360 DM4370	DM4380	DM4170	DM4270	DM4770
	ONU native VLAN port configuration for Ethernet interfaces	-	✓	✓	✓	✓	-	-	-	-	-	-	-
	ONU Residential gateway (RG-Profile)	-	✓	✓	✓	-	-	-	-	-	-	-	-
	ONU Static IPv4 and default gateway (configurable)	-	✓	✓	✓	✓	-	-	-	-	-	-	-
	ONU VLAN mapping (VLAN translate)	-	✓	✓	✓	✓	-	-	-	-	-	-	-
	Rogue ONU Isolation	-	✓	✓	✓	✓	-	-	-	-	-	-	-
	Third-Party ONU Interoperability	-	✓	✓	✓	-	-	-	-	-	-	-	-
	ONU distance information	-	✓	✓	✓	✓	-	-	-	-	-	-	-
ONU ACTIVATION	Automatic ONU discovery	-	✓	✓	✓	✓	-	-	-	-	-	-	-
	ONU activation using password	-	✓	✓	✓	✓	-	-	-	-	-	-	-
	ONU activation using serial number	-	✓	✓	✓	✓	-	-	-	-	-	-	-
	ONU activation using serial number and password	-	✓	✓	✓	✓	-	-	-	-	-	-	-
	ONU automatic provisioning	-	✓	✓	✓	✓	-	-	-	-	-	-	-
	ONU Pre-Provisioning	-	✓	✓	✓	✓	-	-	-	-	-	-	-
	Provisioning ONU FXS ports (VoIP/SIP)	-	✓	✓	✓	✓	-	-	-	-	-	-	-
	Support T-CONT types 1, 2, 3, 4 and 5	-	✓	✓	✓	✓	-	-	-	-	-	-	-

DWDM - Dense Wavelength Division Multiplexing

		DWDM	OLTs				SWITCHES						
Group	DM4920	DM4920	DM4610 DM4615	DM4611 DM4612	DM4618	DM4616	DM4050	DM4250	DM4360 DM4370	DM4380	DM4170	DM4270	DM4770
	100G DWDM Coherent Transponders (only for DM4770 16CX)	-	-	-	-	-	-	-	-	-	-	-	✓
	400G DWDM Coherent Transponders	✓	-	-	-	-	-	-	-	-	-	-	-
	Multirate – 100G/200G/300G/400G	✓	-	-	-	-	-	-	-	-	-	-	-
DWDM	Optical Amplification Modes: Booster and Pre-Amplifier	✓	-	-	-	-	-	-	-	-	-	-	-
	Optical Amplification Settings: AGC (Constant Gain) and APC (Constant Power)	✓	-	-	-	-	-	-	-	-	-	-	-
	Link Quality Monitoring: BER and Q-factor	✓	-	-	-	-	-	-	-	-	-	-	-
	Link Quality Monitoring: OSNR Status of Transponders	✓	-	-	-	-	-	-	-	-	-	-	-
	FEC and Port Statistics	✓	-	-	-	-	-	-	-	-	-	-	-

Legend	
✓	Supported
-	Not supported
ML	Supports through MPLS license separately purchased, except model DM4360 which already contains the MPLS functionality included in the product.

The platform **DM4610 OLT 8GPON+8GX+4GT+2XS** (P/N 800.5081.xx) has as LTS release (Long-Term Support) the **DmOS 5.0**. Therefore, to consult the features for this platform check the DmOS 5.0 Datasheet.

Protocols Scalability Supported by Platform

PRODUCT SCALABILITY

		DWDM	OLTs				SWITCHES							
Group	DM4920	DM4920	DM4610 DM4615	DM4611 DM4612	DM4618	DM4616	DM4050	DM4250	DM4360 DM4370	DM4380	DM4170	DM4270 24XS	DM4270 48XS/16VS	DM4770
SECURITY	Maximum number of ACL filters	-	767	767	-	767	320	1088	767	1023	1279	1023	1023	1023
	Maximum number of ACL filters (L2 matches)	-	256	256	-	256	128	512	256	256	512	256	256	256
	Maximum number of ACL filters (L3 matches)	-	256	256	-	256	128	512	256	256	512	256	256	256
	Maximum number of ACL filters (CPU protection)	-	255	255	-	255	64	64	255	511	255	511	511	511
	Maximum number of IP Spoofing Protection rules	-	1024	256	24576	256	-	-	-	-	-	-	-	-
QoS	Maximum number of WFQ scheduling profile	-	500	500	-	500	500	500	500	500	500	500	500	500
	Maximum number of ONU GEM Port Rate Control profiles	-	1024	1024	1024	1024	-	-	-	-	-	-	-	-
	Maximum number of QoS policer ingress instances	-	256	256	-	256	256	256	256	512	256	512	768	768
	Maximum number of QoS policer egress instances	-	128	128	-	128	128	256	128	256	256	256	256	256
MANAGEMENT	Maximum number of remote Syslog servers	6	6	6	6	6	6	6	6	6	6	6	6	6
	Maximum storage quantity of logs [MBytes]	10	10	10	10	10	10	10	10	10	10	10	10	10
	Maximum number of rollback configurations	64	64	64	64	64	64	64	64	64	64	64	64	64
	Number of Firmware (FW) images stored in memory (Flash)	2	2	2	2	2	2	2	2	2	2	2	2	2
SERVICES	Maximum number of RADIUS servers	1	1	1	1	1	1	1	1	1	1	1	1	1
	Maximum number of TACACS servers	5	5	5	5	5	5	5	5	5	5	5	5	5
	Maximum number of local users registered	32	32	32	32	32	32	32	32	32	32	32	32	32
	Maximum number of TELNET sessions	16	16	16	16	16	16	16	16	16	16	16	16	16
	Maximum number of SSH sessions	16	16	16	16	16	16	16	16	16	16	16	16	16
	Maximum number of CLI sessions	64	64	64	64	64	64	64	64	64	64	64	64	64
	Maximum number of SNMP sessions	64	64	64	64	64	64	64	64	64	64	64	64	64
	Maximum number of NETCONF sessions	64	64	64	64	64	64	64	64	64	64	64	64	64
	Maximum number of VLANs with enabled DHCP	-	234	234	234	234	234	234	234	234	234	234	234	234
	Maximum number of DHCP sessions	-	2048	2048	24576	2048	1024	1024	1024	1024	1024	1024	1024	1024
	Maximum number of DHCP sessions with filter-by-mac	-	2048	2048	-	2048	-	-	-	-	-	-	-	-
	Maximum number of DHCP sessions with filter-by-ip	-	1024	256	-	256	-	-	-	-	-	-	-	-
	Maximum number of PPPoE sessions	-	8192	8192	24576	8192	-	-	-	-	-	-	-	-
MONITORING	Maximum number of TWAMP Controller connections (1)	-	-	-	-	-	10	10	10	10	10	10	10	10
	Maximum number of TWAMP Controller test sessions (1)	-	-	-	-	-	10	10	10	10	10	10	10	10
	Maximum number of TWAMP Responder simultaneous test sessions (1)	-	-	-	-	-	10	10	10	10	10	256	256	256
	Maximum number of TWAMP Responder test sessions (1)	-	-	-	-	-	48	48	48	48	48	1024	1024	1024
SWITCHING	Maximum size of Ethernet frame - MTU [Bytes]	-	12266	12266	-	12266	16338	16338	12266	12262	16338	12262	9390	9390
	MAC Learning Table	-	64000	32000	-	32000	16000	32000	32000	112000	32000	112000	288000	288000
	Maximum number of RSTP instances	-	1	1	-	1	1	1	1	1	1	1	1	1
	Maximum number of MSTP instances	-	64	64	-	64	64	64	64	64	64	64	64	64

PRODUCT SCALABILITY

		DWDM	OLTs				SWITCHES							
Group	DM4920	DM4920	DM4610 DM4615	DM4611 DM4612	DM4618	DM4616	DM4050	DM4250	DM4360 DM4370	DM4380	DM4170	DM4270 24XS	DM4270 48XS/16VS	DM4770
	Maximum number of EAPS instances	-	64	64	-	64	64	64	64	64	64	64	64	64
	Maximum number of ERPS instances	-	64	64	-	64	64	64	64	64	64	64	64	64
	Maximum number of VLANs	-	4094	4094	4094	4094	4094	4094	4094	4094	4094	4094	4094	4094
	Maximum number of VLAN Mapping rules - ingress	-	4000	-	-	-	2000	4000	4000	3000	4000	3000	3000	3000
	Maximum number of VLAN Mapping rules - egress	-	4000	-	-	-	2000	2000	4000	3000	4000	3000	3000	3000
	Maximum number of addresses that can be limited by the MAC table (per interface or per VLAN)	-	16000	16000	-	16000	16000	16000	16000	-	16000	-	-	-
	Maximum number of aggregation interfaces - LAG	-	8	8	8	8	32	32	8	32	32	32	32	32
	Maximum number of Redudancy Groups (RGs) of MC-LAG	-	8	8	8	8	32	32	8	32	32	32	32	32
	Maximum number of physical interfaces per aggregation interface - LAG	-	8	4	8	4	8	8	4	16	16	16	16	16
	Maximum number of VLANs in MA x MEPs	-	41	32	-	32	64	128	64	128	128	128	128	128
	Maximum number of Multicast groups	-	4092	224	-	224	1022	4096	224	8190	8190	8190	8190	8190
MULTICAST	Number of VLANs with IGMP Snooping configured	-	8	8	-	8	8	8	8	8	8	8	8	8
	Maximum number of interfaces per IGMP instance	-	1024	1024	-	1024	30	30	12	30	30	30	30	30
BFD	Maximum number of BFD sessions	-	-	-	-	-	-	-	32	32	32	32	32	32
	Maximum size of L3 Interface packet – MTU [Bytes]	-	9198	9198	9198	9198	9198	9198	9198	9198	9198	9198	9198	9198
	Maximum number of routable VLANs	-	256	256	256	256	256	256	256	256	256	256	256	256
	Maximum number of IPv4 hosts	-	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000
	Maximum number of IPv6 hosts	-	1000	1000	-	1000	1000	1000	1000	1000	1000	1000	1000	1000
	Maximum number of IPv4 static routes (2)	-	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
	Maximum number of IPv6 static routes (2)	-	500	500	-	500	500	500	500	500	500	500	500	500
	Maximum number of IPv4 routes – Route Table (3)	-	28672	1024	28672	1024	1024	16384	1024	128000	32000	128000	168000	168000
ROUTING	Maximum number of IPv6 routes (/64 and /128) – Route Table (3)	-	512	512 + 256	-	512 + 256	512 + 256	8192 + 512	512 + 256	32000 + 4000	12000 + 2000	32000 + 4000	42000 + 10000	42000 + 10000
	Maximum number of OSPF adjacencies (4)	-	32	32	32	32	32	32	32	32	32	32	32	128
	Maximum number of OSPF areas	-	32	32	32	32	32	32	32	32	32	32	32	32
	Maximum number of BGP neighbors	-	-	-	-	-	64	64	128	256	256	256	256	256
	Maximum configurable VRFs	-	-	-	-	-	-	222	122	222	222	222	222	222
	Maximum number of VRRP groups	-	-	-	-	-	32	32	32	32	32	32	32	32
	Maximum number of LDP Link Sessions	-	32	-	-	-	-	-	8	32	32	32	32	32
	Maximum number of LDP Targeted Sessions	-	256	-	-	-	-	-	256	256	256	256	256	256
	Maximum number of LSPs (5) (shared: LDP + RSVP)	-	700	-	-	-	-	-	256	700	700	700	700	700
MPLS	Maximum number of L2VPN (6)	-	256	-	-	-	-	-	256	256	256	1024	1024	1024
	Maximum number of L2VPN – VPWS (7)	-	256	-	-	-	-	-	256	256	256	1024	1024	1024
	Maximum number of L2VPN – VPWS Port Based	-	8	-	-	-	-	-	8	12	24	24	48	32
	Maximum number of L2VPN – VPWS VLAN Based	-	256	-	-	-	-	-	256	256	256	1024	1024	1024

PRODUCT SCALABILITY

		DWDM	OLTs				SWITCHES							
Group	DM4920	DM4920	DM4610 DM4615	DM4611 DM4612	DM4618	DM4616	DM4050	DM4250	DM4360 DM4370	DM4380	DM4170	DM4270 24XS	DM4270 48XS/16VS	DM4770
	Maximum number of L2VPN – VPLS (7)	-	256	-	-	-	-	-	32	256	256	1024	1024	1024
	Maximum number of L2VPN – VPLS Port-Based	-	8	-	-	-	-	-	8	12	24	24	48	32
	Maximum number of L2VPN - VPLS VLAN Based	-	256	-	-	-	-	-	32	256	256	1024	1024	1024
	Maximum number of MACs in L2VPN - VPLS	-	32000	-	-	-	-	-	32000	112000	32000	112000	288000	288000
	Maximum size of MPLS label - MTU [Bytes]	-	9390	9390	9390	9390	9390	9390	9390	9390	9390	9390	9390	9390
	Maximum number of access interfaces in a L2VPN - VPLS	-	8	-	-	-	-	-	16	16	16	16	16	16
	Maximum number of service-ports in a L2VPN - VPLS	-	1040	-	-	-	-	-	-	-	-	-	-	-
	Maximum number of PWs (8)	-	1024	-	-	-	-	-	736	1024	1024	1024	1024	1024
	Maximum number of RSVP tunnels (9)	-	-	-	-	-	-	-	128	128	128	128	128	128
	Maximum number of MPLS TE path options (9)	-	-	-	-	-	-	-	128	128	128	128	128	128
	Maximum number of path options per RSVP tunnel (9)	-	-	-	-	-	-	-	6	6	6	6	6	6
GPON	Maximum number of VLANs using N:1, 1:1 and TLS services	-	1024	1024	1024	1024	-	-	-	-	-	-	-	-
	Maximum number of Service VLANs (N:1) with GPON Flood Traffic Blocking	-	1024	1024	-	1024	-	-	-	-	-	-	-	-
	Maximum size of GPON frame - MTU [Bytes]	-	2000	2000	2000	2000	-	-	-	-	-	-	-	-
	Maximum size of XGS-PON frame - MTU [Bytes]	-	-	-	-	9000	-	-	-	-	-	-	-	-
	Maximum number of ONUs per PON link	-	128	128	128	128	-	-	-	-	-	-	-	-
	Maximum number of T-CONTs per PON Link	-	768	768	768	768	-	-	-	-	-	-	-	-
	Maximum number of T-CONTs per ONU	-	6	6	6	6	-	-	-	-	-	-	-	-
	Maximum number of T-CONTs per ONU (traffic type 1)	-	3	3	3	3	-	-	-	-	-	-	-	-
	Maximum number of T-CONTs per ONU (traffic type 2 to 5)	-	4	4	4	4	-	-	-	-	-	-	-	-
	Maximum number of GEM Port per PON link	-	2048	2048	2048	2048	-	-	-	-	-	-	-	-
	Maximum number of GEM Port per ONU	-	16	16	16	16	-	-	-	-	-	-	-	-
	Maximum number of VEIP interfaces per ONU	-	1	1	1	1	-	-	-	-	-	-	-	-
	Maximum number of configurable MAC limit per ONU	-	255	255	255	255	-	-	-	-	-	-	-	-
	Maximum number of Service Ports	-	4096	4096	32768	4096	-	-	-	-	-	-	-	-
	Maximum number of Line Profiles	-	128	128	128	128	-	-	-	-	-	-	-	-
	Maximum number of RG Profiles	-	48	48	48	48	-	-	-	-	-	-	-	-
	Maximum number of Bandwidth Profiles	-	32	32	32	32	-	-	-	-	-	-	-	-
	Maximum number of SIP Agent Profiles	-	1024	1024	1024	1024	-	-	-	-	-	-	-	-
	Maximum number of POTS ports (10)	-	2048	2048	4096	2048	-	-	-	-	-	-	-	-
	Maximum number of POTS ports per ONU	-	4	4	4	4	-	-	-	-	-	-	-	-

1 The maximum scalability of TWAMP sessions depends on the time intervals that are configured for the tests. Please check the information available in the DmOS Configuration Guide

2 The values given refer to the maximum number of routes reached when route configurations are used in a single IP version. For mixed scenarios, those using IPv4 and IPv6 / 64 simultaneously, the maximum route values will be lower than those presented.

3 For OLT GPON DM461x and switches DM4050/DM4250 the IPv4, IPv6 / 64, and IPv6 / 128 addresses share the same table. For DM4170 and DM4370 lines, IPv6 / 128 addresses have a separate internal routing table, ie the maximum route scalability for these platforms is incremented respectively by 512 and 256 IPv6 / 128 routes.

4 Maximum number recommended for better system performance.

5 a) Total entries in mpls forwarding-table (FTN + ILM).
b) It is recommended to disable the label distribution to FEC prefix in equipment that performs this distribution in LDP session targeted to avoid unnecessary consumption of equipment resources. Datacom equipment already operates in this configuration.
c) Labels for FEC not present in forwarding-table mpls must be in LDP database.
d) The CLI command "**show mpls forwarding-table | include active | count**" can be used to get the table size.

6 Maximum of L2VPN circuits that can be configured regardless of type (VPLS and VPWS). It is not possible to add the values of each characteristic separately.

7 Maximum of VPWS or VPLS circuits independent of the characteristic (Port Based and Vlan Based). It is not possible to add the values of each characteristic separately.

8 Maximum of PWs possible to be configured in L2VPN circuits (VPWS and VPLS). This value is obtained with 32 VPLS with 16 PWs each (512 PWs) and 224 VPWS (224 PWs). It is the maximum number of PWs possible per configuration in the DM4370.

9 Maximum of 128 RSVP tunnels and up to 6 path options per RSVP tunnel, limited the total of 256 path options.

10 For the DM4615 platform, the limit is 2048 POTS ports. For DM4610 platforms the limit is 1024 POTS ports.

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