



## DM4170

### CARRIER ETHERNET SWITCH

DATASHEET

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### GE/10GE/40GE L2/L3/MPLS SWITCHES WITH HIGH CAPACITY UPLINKS FOR ETHERNET AGGREGATION AND ACCESS NETWORKS

DM4170 switches provide high switching capacity to meet the growing demands of traffic aggregation and access to high capacity services on Metro Ethernet and local area networks, always delivering high performance and reliability.

DM4170 family is equipped with DATACOM's DmOS modular network operating system, ensuring robustness and high availability of services on a platform with support for a number of L2/L3/MPLS functionalities. Features like VLAN operations such as QinQ and VLAN Translate, LAG/LACP, ring operation through the EAPS or ERPS protocol, RSTP support, static and dynamic IP routing protocols using OSPF and BGP, access policy creation (ACL) filters, QoS functionality, among others.

DM4170 switches can operate as either LER or LSR in an MPLS network, through the establishment of LSPs and MPLS tunnels, with LDP protocols. From the LDP infrastructure, it is possible to establish point-to-point VPNs for data transport services.

All L2/L3/MPLS packet forwarding is done in HW, as well as filter applications and QoS policies, ensuring wirespeed operation for any packet size.

The products offer configuration via command line (CLI) accessible by SSHv2, Telnet and RS-232 or USB console port. RADIUS and TACACS functionality enable the creation of user authentication and access authorization policies. Local and remote Syslog features, NTP, DHCP, and SNMP clients are also available to enable equipment remote management and troubleshooting.

DM4170 switches are compact 1U height units ready for installation on standard 19 inch racks. They feature power redundancy through two hot-swap slots for AC or DC power supplies, enabling the operation of high availability services.

- 24 optical Gigabit Ethernet ports (SFP)
- 12 10GE (SFP+) ports as uplink interfaces
- 40GE interface option for uplink
- Compact 1U height design
- VLAN, QinQ and EAPS/ERPS support for Metro Ethernet applications
- L2 tunneling protocols for LAN-to-LAN services
- Static and dynamics routing through OSPF or BGP
- MPLS VPNs creation support, LER and LSR operation
- Two hot-swap slots for AC or DC redundant power supplies

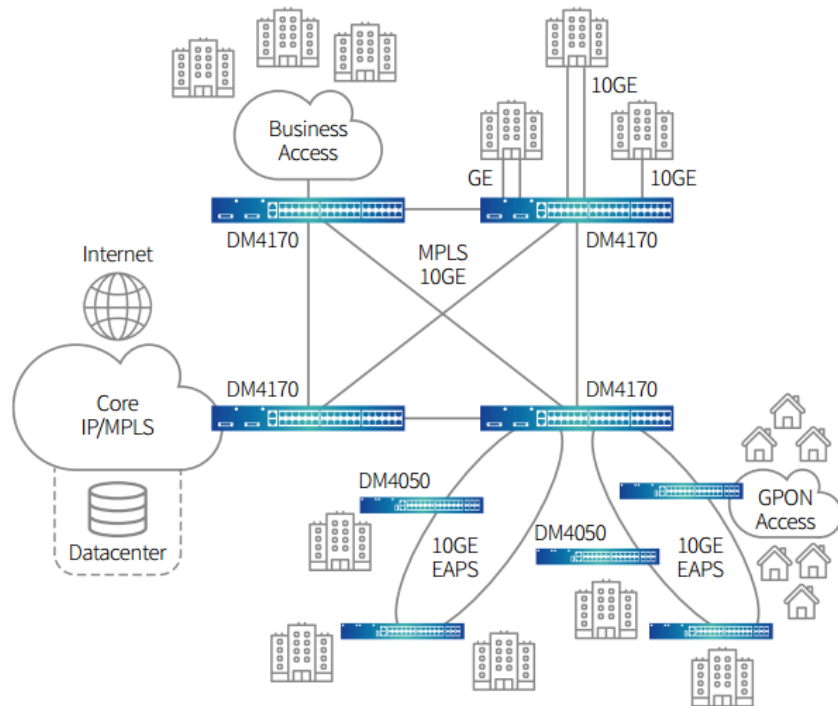
## 10GE AGGRREGATION

DM4170 switch has twelve 10GE SFP+ interfaces that can be used for both service access links greater than 1GE as well as an uplink interface for 10GE or more than 10GE aggregation rings through the use of Link Aggregation and LACP.

## APPLICATIONS

### METRO ETHERNET AGGREGATION

DM4170 line of switches, through its GE/10GE optical interfaces and support for L2 Metro Ethernet features and IP / MPLS routing capability, serve high-capacity Metro Ethernet traffic aggregation applications, delivering a reliable, high availability solution for corporate or residential services. The product supports the use of ring, star or linear topologies, allowing the network design that best suits the needs of the solution.



# FEATURE LIST

## MANAGEMENT

- Configuration commit and rollback
- In-band and out-of-band management
- Statistics per Ethernet port
- CPU and memory usage monitoring, with status available through SNMP
- Firmware rollback
- Firmware upgrade via TFTP
- RADIUS Accounting
- SNMPv1, SNMPv2, SNMPv2c, SNMPv3
- Command line interface (CLI) via SSHv2, Telnet and RS-232 or USB console
- Digital diagnostics of optical modules according to SFF 8472
- System status and alarms LEDs
- Inventory information
- Storage for up to 2 firmware and up to 8 configurations in Flash memory
- SNTP support
- Remote Syslog

## SWITCHING

- Switching capacity of up to 288 Gbit/s
- Packet forwarding of up to 214 Mpps
- EAPS / ERPS
- Static and dynamic Link Aggregation (LACP), of up to 8 groups with up to 8 ports per group
- VLAN
- VLAN Translate
- Q-in-Q
- Selective Q-in-Q
- Spanning Tree (STP), Rapid Spanning Tree (RSTP)
- Aging L2 Global configuration
- Auto negotiation interface configuration, with Auto MDI/MDIX support
- Support for a Jumbo Frames of up to 9200 bytes
- Configuration of up to 4k VLANs with up to 4k VLAN IDs
- MAC table with 24k addresses

## FILTERS AND SECURITY

- ACL Remark and deny actions
- ACL Match for L2 and L3
- Up to 512 ACL rules
- Local and remote Syslog
- Protection mechanisms against Broadcast, Multicast or DLF attacks
- CPU protection against Denial of service (DoS) attacks

- Protection mechanisms against IP spoofing
- Authentication of users through RADIUS or TACACS+

## QOS

- P-bit remarking (PCP)
- Packet classification based on DSCP, Src/Dst IP, Src/Dst MAC, VLAN, port
- DSCP mapping for COS
- Scheduling of queues by WFQ and Strict Priority
- Packet buffer of 4Mbytes
- Up to 8 priority queues per port

## ROUTING

- BGP, with MD5 authentication option
- BGP IP Prefix Lists and Route Map
- Up to 32 BGP neighbors
- Up to 16k IPv4 routes and up to 8k IPv6 routes (64bits)
- OSPFv2, with MD5 authentication option
- Up to 32 areas and 32 OSPFv2 adjacencies
- IPv4 and IPv6 static routing
- Routing between VLANs
- Up to 64 VLANs with configured IP
- Routes distribution between routing protocols
- Up to 2K IPv4 hosts or 1k IPv6
- VRRP support up to 32 instances

## MPLS

- LDP
- VPWS
- L2VPN
- MPLS LFIB with up to 1000 entries
- Up to 256 VPWS circuits

## SERVICES

- Ping IPv4
- SSH Client
- Telnet Client

## MULTICAST

- IGMPv2, IGMPv3
- IGMP snooping with proxy report
- Support for up to 1k multicast groups

# STANDARDS

## IETF

draft-grant-tacacs-02	The TACACS+ Protocol
RFC783	The TFTP Protocol (Revision 2)
RFC792	Internet Control Message Protocol (ICMP) (Ping IPv4)
RFC854	TELNET Protocol Specification
RFC894	A Standard for the Transmission of IP Datagrams over Ethernet Networks
RFC1157	A Simple Network Management Protocol (SNMPv1)
RFC1213	Management Information Base for Network Management of TCP/IP-based internets: MIB-II (Obsoletes RFC 1158)
RFC1215	A Convention for Defining Traps for use with the SNMP - TRAPS MIB
RFC1441	Introduction to version 2 of the Internet-standard Network Management Framework (SNMPv2)
RFC1700	ASSIGNED NUMBERS
RFC1901 to RFC1908	SNMPv2c
RFC2030	Simple Network Time Protocol (SNTP) Version 4 for IPv4, IPv6 and OSI
RFC2236	Internet Group Management Protocol, Version 2 - IGMPv2
RFC2328	OSPF Version 2 (obsoletes RFC2178, RC1583, RFC1247 e RFC1131)
RFC2348	TFTP Blocksize Option (obsoletes RFC1783)
RFC2385	Protection of BGP Sessions via the TCP MD5 Signature Option
RFC2474	Definition of the Differentiated Services Field (DS Field) in the IPv4 Headers (DSCP Remarking for IPv4)
RFC2865	Remote Authentication Dial In User Service (RADIUS) (obsoletes RFC 2138)
RFC2866	RADIUS Accounting (obsoletes RFC2139)
RFC3021	Using 31-Bit Prefixes on IPv4 Point-to-Point Links
RFC3376	Internet Group Management Protocol, Version 3 - IGMPv3
RFC3410 to RFC3418	SNMPv3 agent
RFC3619	EAPS
RFC4271	A Border Gateway Protocol 4 (BGP-4) (obsoletes RFC1771)
RFC4632	Classless Inter-domain Routing (CIDR): The Internet Address Assignment and Aggregation Plan

RFC4742	Using the NETCONF Configuration Protocol over Secure Shell (SSH)
RFC5277	NETCONF Event Notifications
RFC5717	Partial Lock Remote Procedure Call (RPC) for NETCONF
RFC6020	YANG - A Data Modeling Language for the Network Configuration Protocol (NET-CONF)
RFC6021	Common YANG Data Types
RFC6022	YANG Module for NETCONF Monitoring
RFC6241	Network Configuration Protocol (NETCONF) (Obsoletes RFC 4741)
RFC6242	Using the NETCONF Configuration Protocol over Secure Shell (SSH)
RFC6243	With-defaults capability for NETCONF
RFC6470	NETCONF Base Notifications
RFC6536	NETCONF Access Control Model
RFC6991	Common YANG Data Types (Obsoletes RFC 6021)

## IEEE

802.1ad	Double Tagging (Q-in-Q)
802.1AX/802.3ad	Link Aggregation
802.1D	MAC bridges
802.1D	Spanning Tree Protocol (STP)
802.1p	Traffic Class Expediting
802.1Q	Virtual Bridged LAN (VLAN)
802.1w	Rapid Spanning Tree Protocol (RSTP)
802.3ae	10 Gigabit Ethernet over fiber; 10GBASE-SR, 10GBASE-LR, 10GBASE-ER, 10GBASE-SW, 10GBASE-LW, 10GBASE-EW
802.3z	1000BASE-X Gbit/s Ethernet over Fiber-Optic at 1 Gbit/s (125 MB/s)

## ANATEL

Resolução 242 (Nov, 30, 2000)	Rules for Certification and Homologation of Telecommunication Products.
Resolução 323 (Nov, 7, 2002)	Standard for Certification of Telecommunication Products.

Resolução 442 (Jul, 21, 2006)

Rules for the Certification of Telecommunication  
Equipment in Aspects of Electromagnetic  
Compatibility.

### *ETSI*

EN 300 019-1-1, Class 1.2	Environmental Conditions for storage
EN 300 019-1-2, Class 2.3	Environmental Conditions for Transport
EN 300 386 V1.6.1 (2012-09)	Electromagnetic compatibility and Radio spectrum Matters (ERM)
EN 55022	Information technology equipment. Radio disturbance characteristics - Class A

### *IEC*

60825-1 Laser Safety Class

61000-4-11	Voltage dips, short interruptions and voltage variations immunity tests
61000-4-6	Immunity to conducted disturbances, induced by radio-frequency fields
EN 61000-4-2	Electrostatic Discharge Immunity Test
EN 61000-4-4	Electrical fast transient/burst immunity test
EN 61000-4-5	Surge immunity test

# TECHNICAL SPECIFICATIONS

		DM4170 24GX+12XS	DM4170 24GX+4XS+2QX
HARDWARE CHARACTERISTICS	Power supply	2 hot swappable slots for PSUs compatible with PSU 125 AC and PSU 125 DC	
	PSU 125 AC – Power input	100Vac to 240Vac	
	PSU 125 DC – Power input	-38,4Vdc to -72Vdc	
	Maximum power consumption	120 W	
	Typical power consumption	90 W	
	Operational temperature (*)	0°C to 55°C	
	Operational relative humidity	10% to 90%, non-condensed	
	Operational altitude	0 to 3000m	
	Storage temperature	-20°C to 70°C	
	Storage relative humidity	10% to 90%, non-condensed	
	Dimensions (H x D x W)	44mm x 265mm x 447mm (482mm with brackets)	
	Weight	3,3kg	
INTERFACES	1000Base-X (SFP)	24	24
	10G Base-X (SFP+)	12	4
	40G Base-X (QSFP+)	-	2
	GE Outband Management (RJ45)	1	
	Console (RJ45)	1	
	USB Console	1	
	USB Data	1	
	Alarms	1 output e 2 inputs (**)	
MEMORY	Flash Memory	1GB	
	RAM Memory	2GB	



(\*) For environments with temperatures above 45°C, it may be necessary to use extended temperature range optical modules, depending on the quantity and power of the modules.

(\*\*) Product / Feature in roadmap. Contact DATACOM for availability information.

# ACCESSORIES

Accessory	Description
<b>QSFP+ 40GE ER4</b> <i>PN: 377.1400.xx</i>	Optical 40 Gigabit Ethernet QSFP+ module. Single mode, dual fiber. Typical reach of up to 40km.
<b>QSFP+ 40GE LR4</b> <i>PN: 377.1401.xx</i>	Optical 40 Gigabit Ethernet QSFP+ module. Single mode, dual fiber. Typical reach of up to 10km.
<b>QSFP+ 40GE SR4</b> <i>PN: 377.1402.xx</i>	Optical 40 Gigabit Ethernet QSFP+ module. Single mode, dual fiber. Typical reach of up to 0,1km.
<b>QSFP+ to QSFP+ Direct Attach Copper Cable 1m</b> <i>PN: 710.0384.xx</i>	Copper cable for interconnection of 40 Gigabit Ethernet ports, 1m length.
<b>QSFP+ to QSFP+ Direct Attach Copper Cable 3m</b> <i>PN: 710.0391.xx</i>	Copper cable for interconnection of 40 Gigabit Ethernet ports, 3m length.
<b>SFP+ 10GbE</b> <i>PN: Inquire</i>	Optical 10 Gigabit Ethernet SFP+ modules. Several models with varying power and reach specifications are offered.
<b>SFP 1GbE</b> <i>PN: Inquire</i>	Optical Gigabit Ethernet SFP modules. Several models with varying power and reach specifications are offered.
<b>PSU 125 AC</b> <i>PN: 800.5187.</i>	AC full range (100V-240Vac) power supply.
<b>PSU 125 DC</b> <i>PN: 800.5188.xx</i>	DC full range (48V-60Vdc) power supply.

# ORDERING INFORMATION

Model	Description	
<b>DM4170 24GX+12XS</b> <i>800.5186.xx</i>	Manageable L2/L3/MPLS wirespeed Ethernet Switch, 24x 100/1000Base-X ports (SFP), 12x 1/10 Gigabit Ethernet optical ports (SFP/SFP+). Up to two AC or DC power supplies (not included). MPLS support (MPLS license required).	
<b>DM4170 24GX+4XS+2QX</b> <i>800.5184.xx</i>	Manageable L2/L3/MPLS wirespeed Ethernet Switch, 24x 100/1000Base-X ports (SFP), 4x 1/10 Gigabit Ethernet optical ports (SFP/SFP+), 2x 40Gigabit Ethernet optical ports (QSFP+). Up to two AC or DC power supplies (not included). MPLS support (MPLS license required).	
<b>DM4170 SW MPLS license</b> <i>012.4203.00</i>	Software with MPLS capabilities for DM4170. License per unit.	-



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