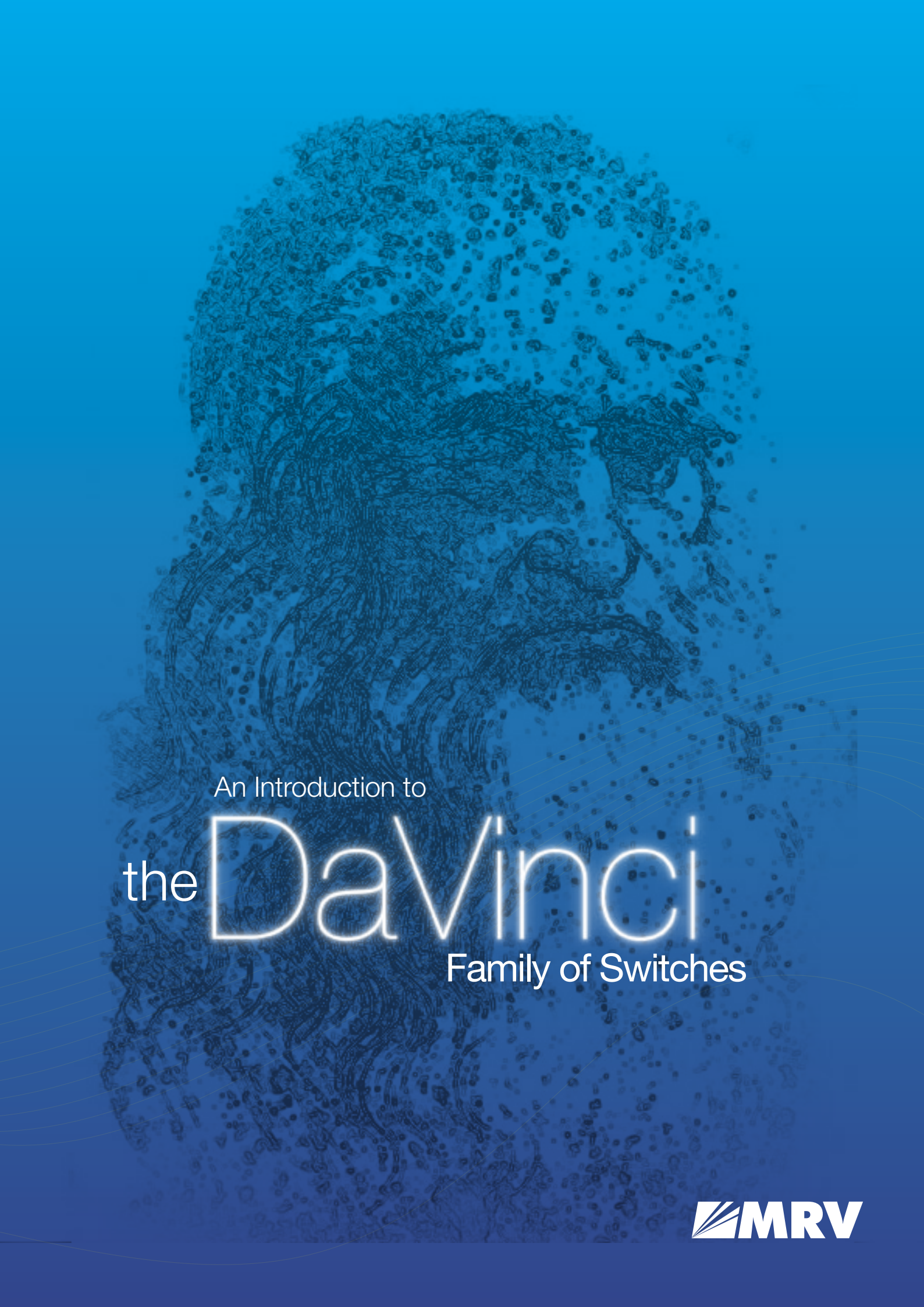


An Introduction to

# the DaVinci

## Family of Switches

MRV

# The DaVinci Family

The DaVinci family of Intelligent Ethernet Switches is a line of enterprise-class, stackable, multilayer switches that provide high availability, security and quality of service (QoS) to enhance the operation of the network. With a range of Fast Ethernet and Gigabit Ethernet configurations. The DaVinci Series can serve as a powerful access layer switch for small medium and large enterprise wiring closets, as well as a backbone switch for networks. Customers can deploy network-wide intelligent services, such as advanced QoS, rate-limiting, MRV's security-access-control lists, multicast management, and high-performance IP routing, while maintaining the simplicity of traditional local area network (LAN) switching. Also embedded in the the DaVinci series of switches is the MRV's Operating and Management Software, which is common to all the switches in the DaVinci series. The DaVinci Series of Switches enhances any network performance by intelligently providing 10, 100, and 1000 Mbps communication over existing Category 5 copper cabling as well as High Speed fiber-optic connectivity to the backbone through Small Form-Factor Pluggable (SFP) optical transceivers. The DaVinci Series Switches are in a 1-RU form factor ideal for wiring closet installation.

Layer 2/4 features in the series include Private VLAN, IEEE802.3ad (LACP) trunking and Link aggregation, port-based 802.1x, Access Control Lists, HTTPS/SSL and SSH security features, Layer 4 QoS features include: 802.1p and DiffServ, rate-limiting, WRR, strict scheduling and 4-level priority in switching to ensure the steady flow of data communication. Furthermore, the unique SMTP function will send alerts for unusual packets to the administrator's email box. The Jumbo packets found on the DaVinci family, can support up to 9K bytes under Gigabit speed that give administrators the flexibility to make performance adjustments. The switches also provide multiple security algorithms such as Port Security, SSL, Web management Encryption, RADIUS, TACACS+ and 802.1x.

MRV's DaVinci Layer 3 switches deliver high performance dynamic IP routing through DaVinci's hardware-based IP routing and enhanced Multilayer software. The routing architecture allows for increased scalability and performance with very high-speed lookups while ensuring the stability and scalability necessary to meet the needs of future requirements. In addition to dynamic IP unicast routing supported with the Routing Information Protocol (RIP) and the Open Shortest Path First (OSPF) protocol, the Layer 3 DaVinci switches are perfectly equipped for networks requiring multicast support. The Protocol Independent Multicast (PIM) and Internet Group Management Protocol (IGMP) snooping features in the hardware make the DaVinci Layer 3 switches ideal for intensive multicast environments.

- 10G Uplink Capability- Effective for future expansion and investment savings, the Layer 3 switches provide one optional I/O module for 10G uplink to fulfill any bandwidth-eager customer requirements.

# Layer 2/4 Switches

## MR2324-4C
## Layer 2/4 Gigabit Managed Switch

A 24 ports 10/100/1000 Layer 2/4 Gigabit Ethernet standalone switch comprised of 20 ports 10/100/1000 Base-T, and 4 Gigabit combo ports each comprised of an RJ-45 and an SFP. Gigabit Ethernet switching for bandwidth-intensive networks that require advanced-switching features. This Gigabit Ethernet switch provides advance features such as enhanced security, high availability and advanced QoS to the network edge.

### MR2324-4C

**STACKABLE:**
N/A

**PORT CONFIGURATION:**
20 X 10/100 Base-T
4 Gigabit combo ports
1 Console connect

**OPTIONAL MODULES:**
SFP-G-SX
SFP-G-MMX
SFP-G-LX
SFP-GD-ELX
SFP-GD-XD
SFP-GD-ZX
SFP-GD-EZX

## MR2228/52-S2C
## Layer 2/4 Stackable Switch

A switch comprised of 24/48 10/100BASE-T(RJ-45) ports, two Gigabit combo ports each comprised of an RJ-45 and an SFP interface for Gigabit uplink, and two 1Gbps ports for stacking. MR2228-S2C can stack up to 8 units with a total of 384 Fast Ethernet ports and 16 Gigabit combo ports. This high flexibility, stackable switch is packed with enhanced security, and advanced QoS to the network edge.

### MR2228-S2C

**STACKABLE:**
Yes (up to 8 units)

**PORT CONFIGURATION:**
24 X 10/100 Base-T
2 Gigabit combo ports
2 X 1000 Base-T stacking Ports
1 Console connect

**OPTIONAL MODULES:**
SFP-G-SX
SFP-G-MMX
SFP-G-LX
SFP-GD-ELX
SFP-GD-XD
SFP-GD-ZX
SFP-GD-EZX

### MR2252-S2C*

**STACKABLE:**
Yes (up to 8 units)

**PORT CONFIGURATION:**
48 X 10/100 Base-T
2 Gigabit combo ports
2 X 1000 Base-T stacking Ports
1 Console connect

**OPTIONAL MODULES:**
SFP-G-SX
SFP-G-MMX
SFP-G-LX
SFP-GD-ELX
SFP-GD-XD
SFP-GD-ZX
SFP-GD-EZX

* Check for availability

# Layer 3 Switches

## MR3312-4C
## Layer 3 Managed Switch

A 12 Gigabit SFP ports, including 4- 10/100/1000 Base-T ports (combo ports) Ethernet Routing standalone Switch. This versatile and affordable platform is simple to scale and manage and is designed especially for enterprises with diverse and evolving bandwidth requirements.

### MR3312-4C

**STACKABLE:**
N/A

**PORT CONFIGURATION:**
8 X 1000 SFP ports
4 Gigabit combo ports
1 Console connect

**OPTIONAL MODULES:**
SFP-G-SX
SFP-G-MMX
SFP-G-LX
SFP-GD-ELX
SFP-GD-XD
SFP-GD-ZX
SFP-GD-EZX

## MR3325/49-S4C
Layer 3 Managed Switch

A 24/48 ports 10/100/1000 Ethernet Routing, Stackable Switch comprised of 20/44 10/100/1000 Base-T ports, and 4 Gigabit combo ports each comprised of an RJ-45 and an SFP plus 1 optional I/O module for 10G uplink. MR3325-S4C/ MR3349-S4C switch is a stackable 10/100/1000Mbps routing switch that is designed to provide high density Gigabit desktop connectivity for mid-size and large enterprise customers' wiring closets. This device offers a scalable and resilient solution, and provides exceptional security functions and QoS features that support enhanced coverage of voice, video, data and storage. Using a 40Gbps stacking bandwidth the MR3325-S4C/ MR3349-S4C can mix and match up to 8 units with a total of 384 Gigabit Ethernet ports and 8 expansion slots for future use to adapt to network changes of all kinds while maintaining a high network performance.

### MR3325-S4C*

**STACKABLE:**
YES (up to 8 units)

**PORT CONFIGURATION:**
20 X 10/100/1000 Base-T
4 Gigabit combo ports
1 X 10 Giga expansion slot
1 Console connector

**OPTIONAL MODULES:**
SFP-G-SX
SFP-G-MMX
SFP-G-LX
SFP-GD-ELX
SFP-GD-XD
SFP-GD-ZX
SFP-GD-EZX

### MR3349-S4C*

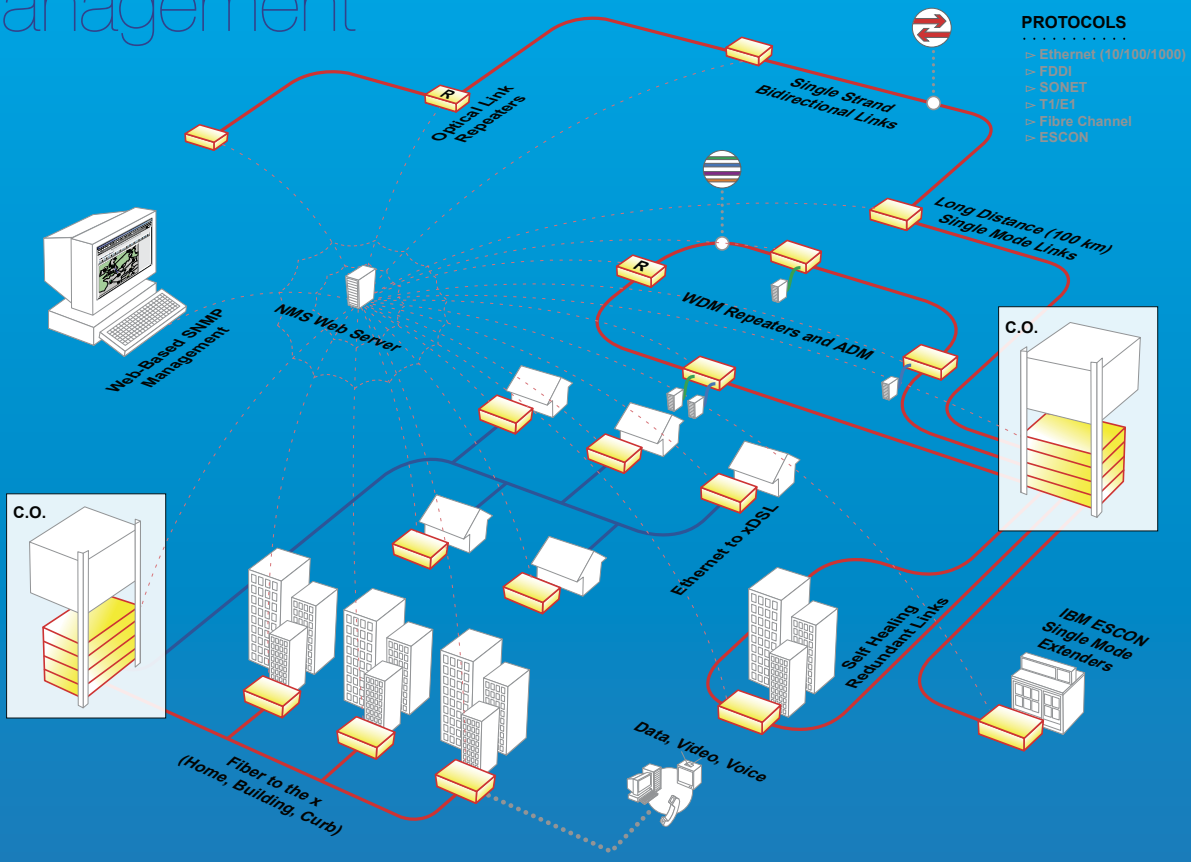
**STACKABLE:**
YES (up to 8 units)

**PORT CONFIGURATION:**
44 X 10/100/1000 Base-T
4 Gigabit combo ports
1 X 10 Giga expansion slot
1 Console connector

**OPTIONAL MODULES:**
SFP-G-SX
SFP-G-MMX
SFP-G-LX
SFP-GD-ELX
SFP-GD-XD
SFP-GD-ZX
SFP-GD-EZX

* Check for availability

# Management




## MegaVision Pro
## Full-Featured SNMP-Based NMS

MegaVision PRO is a full-featured, SNMP-based Network Management System (NMS) providing comprehensive management and control for all MRV Communications manageable products. MegaVision Pro combines complete end-to-end network viewing and performance monitoring with robust configuration and fault management features. In addition, MegaVision Pro automatically detects and monitors any SNMP or TCP/IP compliant device from any vendor.

All configuration and monitoring is performed via MegaVision Pro's feature-rich graphic user-interface (GUI). The MegaVision Pro Server operates on all major OS platforms, including: Win95, Win98, WinNT, Win2000 and WinXP. Using any Java-enabled Web browser, a Web-based remote management console provides a network administrator with Internet access to the MegaVision Pro Server from any location/OS platform. Additionally the MegaVision Pro product includes MegaVisionJ, a multi-platform Java-based software, which can be used for integration with any other NMS system (like HP OV NNM) running on any OS (like Solaris/HP-UX/Linux...).

MegaVision Pro may be used to monitor the performance of Layer 7 network services, helping network administrators pinpoint potential bottlenecks. It also offers Layer 2/4 and Layer 3 management capabilities including support for policies, filters, VLANs, and routing. Other MegaVision Pro features include support for RMON groups 1, 2, 3, and 9, and north-bound interfaces for OSS (operations support systems) integration (TL1, XML, SQL and SNMP interfaces). A standard SQL database is used to keep network management information and history alarm logs.

- Complete management of all MRV Communications product lines
- Ability to add and monitor any SNMP or TCP/IP compliant device
- Multi-platform capabilities
- All SNMP versions supported (SNMPv1, SNMPv2, SNMPv3)
- Rich and friendly GUI available to simultaneous users both locally (at the server) and via remote Web-based console
- Multiple devices monitored and controlled at the same time; Map system allows end-to-end network view and inventory
- TFTP/BootP client/server
- RMON groups 1,2,3,9 GUI supported for any RMON capable device
- GUI support for many standard and proprietary MIBs
- Full Routing, QoS, VLANs, DiffServ and more GUI-based management
- Embedded Telnet configuration option for non-SNMP compliant devices
- Configurable real-time visual and sound notifications of SNMP alarms/traps
- E-mail notification of alarms/traps
- Alarms Logging mechanism for saving alarm-history
- Device/Port/Interface performance is displayed in tables and graphs (line, bar and speedometer graph formats)
- Performances and traffic monitored over a period of time
- Powerful event monitoring with alarm settings and notification
- Service monitor: able to monitor performance of mission-critical Layer-7 network services, such as e-mail, FTP, and HTTP, et al
- MegaVisionJ - multi-platform Java-based software, which can be used for integration with any other NMS system
- Full TL1 gateway and TL1-SNMP translation software
- XML north-bound interface and XML-SNMP gateway translation software

# Feature Summary

| Product Model | | MR2228-S2C | MR2252-S2C* | MR2324-4C | MR3312-4C | MR3325-S4C* | MR3349-S4C* |
|---|---|---|---|---|---|---|---|
| **PHYSICAL CONFIGURATION** | | | | | | | |
| Fixed Ports | | 24 x 10/100 Base-T + 2 x ComboG (RJ-45 /SFP) Uplink Ports + 2 x 10/100/1000 Base-T Stacking Ports | 48 x 10/100 Base-T + 2 x ComboG (RJ-45 /SFP) Uplink Ports + 2 x 10/100/1000 Base-T Stacking Ports | 20 x 10/100/1000 Base-T + 4 x ComboG (RJ45/SFP) | 8 x 1000 Base-X SFP + 4 x Combo (RJ-45/SFP) | 20 x 10/100/1000 Base-T +4 x ComboG (RJ-45 / SFP) + 2 x Stacking Ports + 1 x RJ-45 in-band Mgmt Port | 44 x 10/100/1000 Base-T + 4 x ComboG (RJ-45 / SFP) + 2 x Stacking Ports + 1 x RJ-45 in-band Mgmt Port |
| Dimension (HxWxD) cm. | | 1 RU (4.3 x 44.0 x 32.4) | 1 RU (4.3 x 44.0 x 32.4) | 1 RU (4.4 x 44.0 x 35.4) | 1 RU (4.4 x 44 x23) | 1 RU (4.4 x 44 x 41) | 1 RU (4.4 x 44 x41) |
| Redundant Power Supply | | Yes; RPS Connector | Yes; RPS Connector | Yes; RPS Connector | Yes; RPS Connector | Yes; RPS Connector | Yes; RPS Connector |
| Out-of-Band Mgmt Console Port | | Yes | Yes | Yes | Yes | Yes | Yes |
| **STACKING FEATURES** | | | | | | | |
| No. of Units/Ports Supported in a Stack | | 8 Units; 192FE + 16GE | 8 Units; 384FE + 16GE | N/A | N/A | 8 Units; 192GE Ports | 8 Units; 384 GE Ports |
| Stacking Bandwidth | | 2 Gbps | 2 Gbps | N/A | N/A | 40 Gbps | 40 Gbps |
| Resilient Stacking | | Yes | Yes | N/A | N/A | Yes | Yes |
| Hot-Swappable of Stacked Unit | | Yes | Yes | N/A | N/A | Yes | Yes |
| Backup Stack Master Election | | Yes | Yes | N/A | N/A | Yes | Yes |
| **PERFORMANCE** | | | | | | | |
| MAC Address Table Size | | 8K | 8K | 16k | 16K | 16k | 16k |
| Switch Fabric | | 12.8 Gbps | 17.6 Gbps | 48 Gbps | 24 Gbps | 108 Gbps | 156 Gbps |
| Throughput | | 9.5 mpps | 13.39 mpps | 35.7 mpps | 17.8 mpps | 80 mpps | 115 mpps |
| **LAYER 2/4 FEATURES** | | | | | | | |
| Link Aggregation | IEEE 802.3ad with LACP | Yes | Yes | Yes | Yes | Yes | Yes |
| | Traffic Load Balancing | Yes | Yes | Yes | Yes | Yes | Yes |
| VLAN | 802.1Q Tagging | Yes | Yes | Yes | Yes | Yes | Yes |
| | Port-based | Yes | Yes | Yes | Yes | Yes | Yes |
| | GVRP | Yes | Yes | Yes | Yes | Yes | Yes |
| Spanning Tree/RSTP | | Yes | Yes | Yes | Yes | Yes | Yes |
| Multicast (IGMP) Snooping | IGMP | Yes | Yes | Yes | Yes | Yes | Yes |
| Broadcast (Storm) Control | | Yes | Yes | Yes | Yes | Yes | Yes |
| Flow Control | | Yes | Yes | Yes | Yes | Yes | Yes |
| Jumbo Frame Support | | Yes | Yes | Yes | Yes | Yes | Yes |

* Check for availability

# Feature Summary

| Product Model | | MR2228-S2C | MR2252-S2C* | MR2324-4C | MR3312-4C | MR3325-S4C* | MR3349-S4C* |
|---|---|---|---|---|---|---|---|
| **LAYER 3 FEATURES** | | | | | | | |
| Static Route | | N/A | N/A | Yes | Yes | Yes | Yes |
| Unicast Routing | RIP | N/A | N/A | Yes | Yes | Yes | Yes |
| | OSPF | N/A | N/A | Yes | Yes | Yes | Yes |
| Multicast Routing | IGMP | N/A | N/A | No | Yes | Yes | Yes |
| | DVMRP | N/A | N/A | No | Yes | Yes | Yes |
| | PIM-DM | N/A | N/A | No* | Yes* | Yes* | Yes* |
| **LAYER 4 FEATURES** | | | | | | | |
| Rate Limiting | | Yes | Yes | N/A | Yes | Yes | Yes |
| Priority Queue Scheduling | | Yes; WRR & Strict Priority | Yes; WRR & Strict Priority | Yes; WRR, Strict Priority | Yes; WRR, Strict Priority | Yes; WRR, Strict Priority | Yes; WRR, Strict Priority |
| CoS | IEEE 802.1p | Yes; 4 Queues | Yes; 4 Queues | Yes; 8 Queues | Yes | Yes; 8 Queues | Yes; 8 Queues |
| | IP Precedence | Yes | Yes | Yes | Yes | Yes | Yes |
| | DSCP | Yes | Yes | Yes | Yes | Yes | Yes |
| | TCP / UDP | Yes | Yes | Yes | Yes | Yes | Yes |
| **MANAGEMENT** | | | | | | | |
| Command Line Interface (CLI) | | Yes | Yes | Yes | Yes | Yes | Yes |
| Web Interface | | Yes | Yes | Yes | Yes | Yes | Yes |
| Telnet (RFC854) | | Yes | Yes | Yes | Yes | Yes | Yes |
| Port Mirroring | | Yes | Yes | Yes | Yes | Yes | Yes |
| Remote Ping | | Yes | Yes | Yes | Yes | Yes | Yes |
| SNTP (RFC 2030) | | Yes | Yes | Yes | Yes | Yes | Yes |
| Dual F/W Images | | Yes | Yes | Yes | Yes | Yes | Yes |
| Configuration Download / Upload | | Yes | Yes | Yes | Yes | Yes | Yes |
| SNMP | Agent | Yes; v1/v2c | Yes; v1/v2c | Yes; v1/v2c*/v3* | Yes; v1/v2c/v3 | Yes; v1/v2c/v3* | Yes; v1/v2/v3* |
| RMON | RMON I (1,2,3, & 9 groups) | Yes | Yes | Yes | Yes | Yes | Yes |
| DHCP (RFC 2131, 3046) | | Yes | Yes | Yes | Yes | Yes | Yes |
| Event / Error Log | Local Flash | Yes | Yes | Yes | Yes | Yes | Yes |
| DNS | | N/A | N/A | N/A | N/A | Yes; Client, Proxy | Yes; Client, Proxy |
| **SECURITY** | | | | | | | |
| Static Port Security (MAC-based) | | Yes | Yes | Yes | Yes | Yes | Yes |
| IEEE 802.1x | | Yes | Yes | Yes | Yes | Yes | Yes |
| ACL Rules | | Yes | Yes | Yes | Yes | Yes | Yes |
| RADIUS Authentication (RFC2138) | | Yes | Yes | Yes | Yes | Yes | Yes |
| TACACS+ Authentication | | Yes | Yes | Yes | Yes | Yes | Yes |
| HTTPS and SSL (Secured Web) | | Yes | Yes | Yes | Yes | Yes | Yes |
| SSH v1.5 / v2.0 (Secured Telnet Session) | | Yes | Yes | Yes | Yes | Yes | Yes |
| UserName / Password Authentication | | Yes | Yes | Yes | Yes | Yes | Yes |

* Check for availability

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