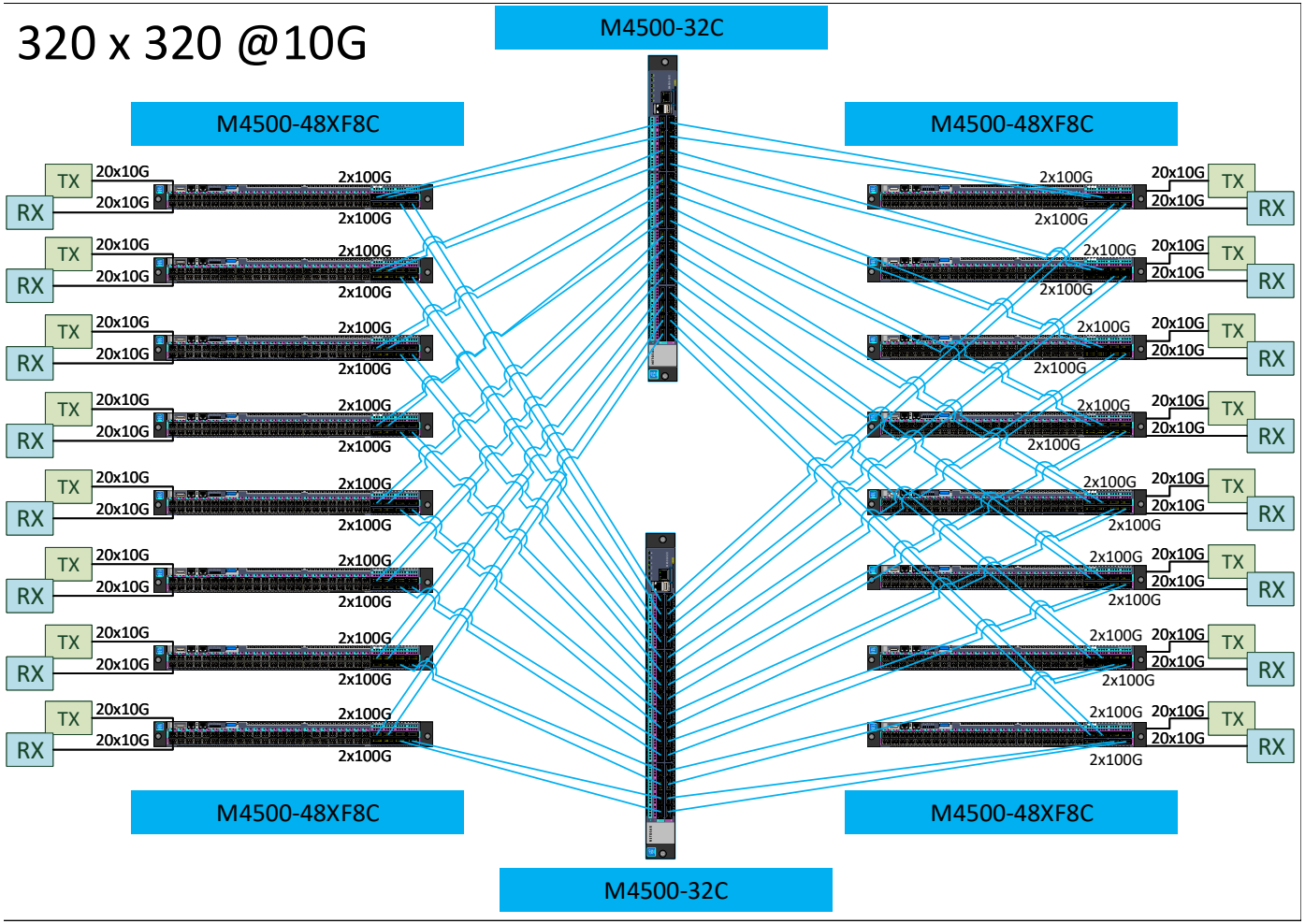
M4500 Series: AVoIP Aggregation

SDVoE-ready 100G and 10G Ethernet switches combining the configurability of a matrix switch with the power and scalability of Ethernet to support hundreds of AV over IP endpoints.

NETGEAR®
AV Line



Target Application



For AV over IP installations

Installers opting to use M4500-48XF8C switch in their installation will find that it is already preconfigured out of the box. Experience true AV and multicast Zero Touch network configuration. Connect AV over IP encoders and decoders, and power on the switch. It just works! Then use the M4500-32C switch to aggregate the edge switches for a complete set up in large projects up to 320x320 SDVoE (10Gb) devices in a single architecture.

Intelligent IGMP Plus

IGMP Plus multicast allows for scalable ProAV installations at Layer 2 without the PIM (Protocol Independent Multicast) complexity. IGMP Plus is default on VLAN 1 out of the box and can be configured on another VLAN for automatic IGMP across M4500 and M4300 switches on that VLAN.

M4500 Series Features

The NETGEAR M4500 series is a powerful 10G, 25G, and 100G solution designed for the edge, the server room, and the core. M4500 delivers nonstop Multi-Chassis Link Aggregation MLAG, spine and leaf, edge to core connectivity for AV and IT networks. In AV environments, the AV User Interface, Engage Controller and AV profiles are certified by 200+ AV manufacturers.

Key features

- Cost effective 100G aggregation and 10G access layer for AV deployments and redundant spine & leaf topologies
- Zero Touch AV-over-IP with pre-configured L2 Multicast on all models (10G AV encoders and decoders) and SDVoE-ready
- Advanced Layer 3 feature set including IP Multinetting/CIDR, Static, PBR, VRRPv2, OSPFv3, PIM-SM, VxLAN, BGP4, VRF-Lite
- Optimized for "Spine and Leaf" redundant AV installations, with or without MLAG between spine switches
- Up to 320 TX / 320 RX (10 Gigabit) Nodes all line rate with each other in a redundant spine and leaf architecture
- 2 power supply units (APS750W) and 6 redudant fan trays (AFT402) pre-installed for 1+1 power and 4+2 fan redundancy
- Ultra-low latency (spine 0.13µs @100G; leaf 0.119µs @10G) and scalable table size (32K MAC, 8K ARP, 4K VLANs, 32K routes)

AV Software features

- Designed for the most demanding AV over IP installations of up to thousands of endpoints
- AV-centric User Interface allows for simple, profile-based, per-port configuration in a snap
- Works out of the box with automatic, multi-switch configuration for most AV-over-IP installs
- All the simplicity of the M4250 AV Line packed in more Enterprise-class hardware with redundant PSUs and larger fabrics
- Less time to install and configure using the NETGEAR Engage™ Controller
- NETGEAR IGMP Plus™ means AV-over-IP multicasting will work out of the box and not flood your network
- With Auto-Trunk and Auto-LAG, simply connect M4500 switches together and you are done!

Other Software features

- Advanced classifier-based, time-based hardware implementation for L2 (MAC), L3 (IP) and L4 (UDP/TCP) security and prioritization
- Selectable Port-Channel / LAG (802.3ad - 802.1AX) L2/L3/L4 hashing for fault tolerance and load sharing with any Ethernet channeling
- Up to 64 Link Aggregation Groups (LAG, Port-Channel, LACP) with 32 ports per LAG and Multi-chassis Link Aggregation (MLAG)
- Comprehensive IPv4/IPv6 static and dynamic routing including IP Multinetting/CIDR, PBR, VRRPv2, OSPFv3, PIM-SM6, BGP4, VRF-Lite
- Advanced IPv4/IPv6 security including malicious code detection, DHCP Snooping, IP Source Guard, and Control Plane Policing (CoPP)
- Priority-Based Flow Control (PFC), DCBX Bridging, Enhanced Transmission Selection (ETS) and VXLAN Gateway for server installations

Availability

- Two (2) redundant, modular power supplies are pre-installed contributing to business continuity management
- Six (6) hot-swappable fan trays are pre-installed for 4+2 fan redundancy
- Spine and leaf architecture with every leaf switch (10G/25G access) connecting to every spine switch (distributed 100G core)
- Up to 48 paths ECMP routing for load balancing and redundancy
- Link Dependency feature enables or disables ports based on the link state of different ports

Management

- Industry standard SNMP, RMON, MIB, LLDP, AAA, sFlow and RSPAN remote mirroring implementation
- Service port for out-of-band 1 Gigabit Ethernet management (OOB)
- Standard RS232 straight-through RJ45 for local management console (USB 2.0 to RS232 converter with PL203 chipset is advised)
- Non-Disruptive Configuration for applying a new configuration file without disrupting the operation of unchanged features
- Industry standard command line interface (CLI) only

NETGEAR M4500 warranty and support

- NETGEAR M4500 series is covered under NETGEAR Enterprise Lifetime Warranty*
- 3 years of Sprint support included with 24/5 Technical Support (phone, online) and Advance RMA Replacement
- Overdrive support contracts available for 24/7 Technical Support (phone, online, 2h SLA) and Next Business Day RMA Replacement

Hardware at a Glance

			FRONT		REAR		MANAGEMENT	
Model name	Form-Factor	Switching Fabric	25GBASE-X SFP28 ports	100GBASE-X QSFP28 ports	PSU	Fans	Out-of-band Console	Model number
M4500-32C	**Full width** 1-unit 1U rack mount	6.4 Tbps		**32 ports** 1x100G; 1x50G; 1x40G; 4x25G; 4x10G **1x100G default mode**	**Modular 2 bays** 2 PSU included (1+1 redundancy): 2 x APS750W	**Modular 6 slots** 6 Fans included (4+2 redundancy): 6 x ATF402 Front-to-back 64.0dB	Ethernet: Out-of-band 1G port (Front) Console: RJ45 RS232 (Front) Storage: USB (Front)	CSM4532
M4500-48XF8C	**Full width** 1-unit 1U rack mount	4 Tbps	**48 ports** 1x25G; 1x10G; 1x1G* **1x10G default mode**	**8 ports** 1x100G; 1x100G; 1x50G; 1x40G; 4x25G; 4x10G **1x100G default mode**	**Modular 2 bays** 2 PSU included (1+1 redundancy): 2 x APS750W	**Modular 6 slots** 6 Fans included (4+2 redundancy): 6 x ATF402 Front-to-back 68.0dB	Ethernet: Out-of-band 1G port (Front) Console: RJ45 RS232 (Front) Storage: USB (Front)	XSM4556

* SFP28 port speed is configurable by multiples of 4 ports (Port-1 for 1-2-3-4; Port-5 for 5-6-7-8; etc.)

Front View

M4500-32C



M4500-48XF8C



Rear View

M4500-32C



M4500-48XF8C



Software at a Glance

LAYER 3 PACKAGE												
Model name	Management	AV Dedicated UI	IPv4/IPv6 ACL and QoS, DiffServ	IPv4/IPv6 Multicast Filtering	IPv4 / IPv6 Policing and Convergence	VLANs	Trunking Port Channel	IPv4/IPv6 Authentication Security	IPv4/IPv6 Static Routing	IPv4/IPv6 Dynamic Routing	Datacenter Features	Model number
M4500 series	NETGEAR Engage Controller Out-of-band; CLI; Telnet; SSH SNMP, MIBs RSPAN Radius Users, TACACS+	AV Web-based GUI Designed for AV installers AV-related controls Audio over IP profiles Video over IP profiles Mixed Audio and Video profiles	Ingress/egress 1 Kbps shaping rate limit	IGMP Plus for automatic IGMP IGMPv3 MLDv2 Snooping, Proxy SSM IGMPv1,v2 Querier (compatible v3) Control Packet Flooding	Policy-based routing (PBR) LLDP-MED IEEE 1588 PTPv2 1-Step End-to-End Transparent Clock (TC)	Static, Dynamic Double VLAN mod (QinQ)	Auto-Trunk and Auto-LAG between M4250, M4300, M4350, and M4500 Switches Static LAG, or Dynamic LACP Seven (7) L2/L3/L4 hashing algorithms Multi Chassis Link Aggregation Group (MLAG)	Successive Tiering (DOT1X; MAB) DHCP Snooping Dynamic ARP Inspection IP Source Guard	Port, Subnet, VLAN routing DHCP Relay Multicast static routes	IP Multinetting/ CIDR PBR VRRPv2, OSPFv3 PIM-SM/ SSM BGP4, VRF-Lite	PFC DCBX CoS Queuing and ETS VXLAN Gateway	All models

Performance at a Glance

	TABLE SIZE												
Model name	MAC ARP/NDP	Routing / Switching Capacity	Throughput	Application Route Scaling	Packet Buffer	Latency	IP Multicast Forwarding Entries	CPU	Multicast IGMP Group membership	VLANs	Link Aggregation Port Channel	sFlow	Model number
M4500-32C	32K MAC 8K ARP 2.5K NDP	6.4 Tbps Line-rate	2 Bpps	Static routes: 128 IPv4 routes: 32K IPv6 routes: 24K IP IGMP/MLD: 2,048 PIM-SM: 1536 PIM-SMv6: 512	256 Mb	64-byte frames <0.13µs 100G QSFP28 <0.417µs 50G QSFP28 <0.15µs 40G QSFP+ <0.125µs 4x25G breakout <0.766µs 4x10G breakout	2,048 IPv4 2.048 IPv6	x86 Intel Atom® Processor C3558 8GB DDR3/ECC RAM 128GB SSD storage	4K IPv4 / IPv6	4K VLANs	64 groups (LAG) 802.3ad with LACP 32 members/LAG 63 groups (MLAG) Multichassis LAG 32 members/MLAG	sFlow v5 8 sessions 416 samplers 416 pollers 8 receivers	**CSM4532**
M4500-48XF8C	32K MAC 8K ARP 2.5K NDP	4 Tbps Line-rate	2 Bpps	Static routes: 128 IPv4 routes: 32K IPv6 routes: 24K IP IGMP/MLD: 2,048 PIM-SM: 1536 PIM-SMv6: 512	256 Mb	64-byte frames <0.117µs 25G SFP28 <0.119µs 10G SFP+ <0.129µs 100G QSFP28 <0.129µs 50G QSFP28 <0.144µs 40G QSFP+							**XSM4556**

Components and Modules

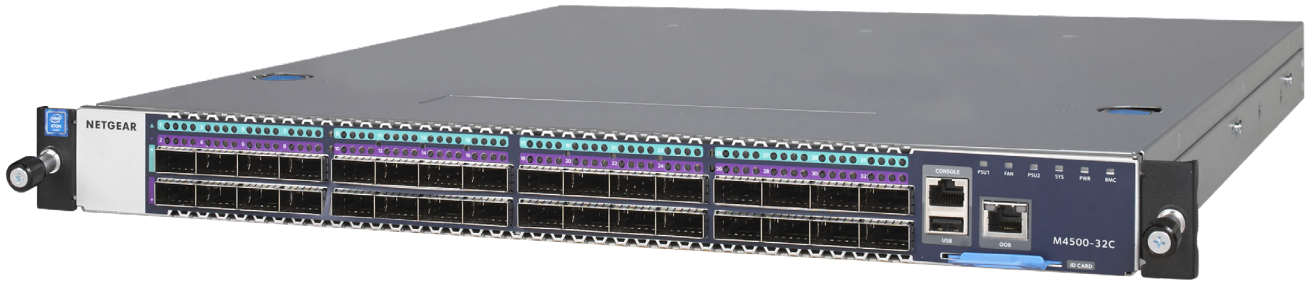
M4500-32C
100GE Managed Switch

Ordering information

- Americas, Europe: CSM4532-100NAS
- Europe: CSM4532-100EUS
- Asia Pacific: CSM4532-100AJS
- China: CSM4532-100PRS
- Warranty: Lifetime ProSAFE Hardware Warranty

- The M4500-32C provides 32-port QSFP28 (100G, 50G and 40G)
- QSFP28 ports are preconfigured for 100G
- 6.4Tbps non-blocking fabric for 32 x 100G bi-directional
- Two modular power supplies APS750W are pre-installed for 1+1 redundancy
- Six modular fan trays AFT402 are pre-installed for 4+2 redundancy
- Two mounting ears and screws for rack mounting (front)
- One set of rail kits for rack mounting (back)
- Out-of-band 1G Ethernet Management port
- RJ45 RS232 console port and USB storage port
- L2/L3/L4 rich services for AV over IP (certified SDVoE-ready)
- Enhanced IGMP Plus for plug & play L2 Multicast between M4300/M4500 switches
- Line-rate spine and leaf with M4500-48XF8C (48-port SFP28 and 8-port QSFP28)
- Static and dynamic routing with VRRP, OSPF, BGP, VRF-Lite and PIM-SM/SSM
- 64dB @25°C / 77°F





Components and Modules

M4500-48XF8C
25/100GE Managed Switch

Ordering information

- Americas, Europe: XSM4556-100NAS
- Europe: XSM4556-100EUS
- Asia Pacific: XSM4556-100AJS
- China: XSM4556-100PRS
- Warranty: Lifetime ProSAFE Hardware Warranty

- The M4500-48XF8C switch provides 48-port SFP28 (25G, 10G and 1G fiber)
- And it also provides 8-port QSFP28 (100G, 50G and 40G fiber)
- SFP28 ports are preconfigured for 10G, QSFP28 ports for 100G
- 4Tbps non-blocking fabric for 48 x 25G and 8 x 100G bi-directional
- Two modular power supplies APS750W are pre-installed for 1+1 redundancy
- Six modular fan trays AFT402 are pre-installed for 4+2 redundancy
- Two mounting ears and screws for rack mounting (front)
- One set of rail kits for rack mounting (back)
- Out-of-band 1G Ethernet Management port
- RJ45 RS232 console port and USB storage port
- L2/L3/L4 rich services for AV over IP (certified SDVoE-ready)
- Enhanced IGMP Plus for plug & play L2 Multicast between M4300/M4500 switches
- Line-rate spine and leaf with M4500-32C (32-port QSFP28)
- Static and dynamic routing with VRRP, OSPF, BGP, VRF-Lite and PIM-SM/SSM
- 68dB @25°C / 77°F





Accessories

APS750W
Power Supply Unit

Ordering information

- Wordwide: APS750W-10000S
- Without power cord
- Warranty: 5 years



- Modular PSU for M4500-32C and M4500-48XF8C
- C14 connector
- Spare unit (M4500 switches ship with two PSUs already)
- Capacity:
  - Up to 750W output power at 110V-240V AC

AFT402
Fan Tray

Ordering information

- Wordwide: AFT402-10000S
- Warranty: 5 years



- Modular fan tray for M4500-32C and M4500-48XF8C
- Front-to-back
- Spare unit (M4500 switches ship with six fans already)

GBIC QSFP28, QSFP+, SFP+ and SFP Optics for M4500 series

AGM734
1000BASE-T RJ45 SFP (Gigabit)

Ordering information

- Worldwide: AGM734-10000S
- Warranty: 5 years



- Fits into M4500 models SFP28 interfaces
- 1 port Gigabit RJ45
- Supports only 1000Mbps full-duplex mode
- Up to 100m (328 ft) with Cat5 RJ45 or better
- Conveniently adds 1G copper connectivity to M4500 fiber interfaces

AXM765
10GBASE-T RJ45 SFP+ (10 Gigabit)

Ordering information

- Worldwide: AXM765-10000S
- Warranty: 5 years



- Fits into M4500 models SFP28 interfaces
- 1 port 10GBASE-T RJ45
- Copper connectivity up to 30 m (98 feet) distance
- CAT6a or better wiring required for 10GBASE-T up to 30 meters
- Conveniently adds 10G copper connectivity to M4500 fiber interfaces

Accessories

GBIC QSFP28, QSFP+, SFP+ and SFP Optics for M4500 series

Ordering information • Worldwide: see table below • Warranty: 5 years	Multimode Fiber (MMF)		Single mode Fiber (SMF)
	OM1 or OM2 62.5/125µm	OM3 or OM4 50/125µm	9/125µm
100 Gigabit QSFP28  • Fits into M4500 models QSFP28 interfaces		**ACM761** 100GBASE-SR4 Duplex 4 MMF links - MTP/MPO connector up to 100m (328 ft) ACM761-10000S (1 unit)	**ACM762** 100GBASE-LR4 long reach single mode LC duplex connector up to 10km (6.2 miles) ACM762-10000S (1 unit)
40 Gigabit QSFP+  • Fits into M4500 models QSFP28 interfaces		**AXLM761** 40GBASE-MR4 Duplex 1 MMF link - LC duplex connector up to 150m (492 ft) AXLM761-10000S (1 unit)	**AXLM762** 40GBASE-LR4 long reach single mode LC duplex connector up to 10km (6.2 miles) AXLM762-10000S (1 unit)
10 Gigabit SFP+  • Fits into M4500 models QSFP28 interfaces	**AXM763** 10GBase-LRM long reach multimode 802.3aq - LC duplex connector up to 220m (722 ft) AXM763-10000S (1 unit)	**AXM763** 10GBase-LRM long reach multimode 802.3aq - LC duplex connector up to 260m (853 ft) AXM763-10000S (1 unit)	**AXM762** 10GBase-LR long reach single mode LC duplex connector up to 10km (6.2 miles) AXM762-10000S (1 unit) AXM762P10-10000S (pack of 10 units)
		AXM761 10GBase-SR short reach multimode LC duplex connector OM3: up to 300m (984 ft) OM4: up to 550m (1,804 ft) AXM761-10000S (1 unit) AXM761P10-10000S (pack of 10 units)	**AXM764** 10GBase-LR LITE single mode LC duplex connector up to 2km (1.2 mile) AXM764-10000S (1 unit)
Gigabit SFP  • Fits into M4500 models QSFP28 interfaces	**AGM731F** 1000Base-SX short range multimode LC duplex connector up to 275m (902 ft) AGM731F (1 unit)	**AGM731F** 1000Base-SX short range multimode LC duplex connector OM3: up to 550m (1,804 ft) OM4: up to 1,000m (3,280 ft) AGM731F (1 unit)	**AGM732F** 1000Base-LX long range single mode LC duplex connector up to 10km (6.2 miles) AGM732F (1 unit)

Accessories

Direct Attach Cables for M4500 series

Ordering information			
WORLDWIDE: SEE TABLE BELOW **WARRANTY: 5 YEARS**	QSFP28 to QSFP28		
	1 meter (3.3 ft)	3 meters (9.8 ft)	
100 Gigabit DAC • Fits into M4500 models QSFP28 interfaces	**ACC761** 100G QSFP28 Cu (passive) QSFP28 connectors ACC761-10000S (1 unit)	**ACC763** 100G QSFP28 Cu (passive) QSFP28 connectors ACC763-10000S (1 unit)	
	QSFP+ to QSFP+		
40 Gigabit DAC • Fits into M4500 models QSFP28 interfaces	**AXLC761** 40G QSFP+ Cu (passive) QSFP+ connectors AXLC761-10000S (1 unit)	**AXLC763** 40G QSFP+ Cu (passive) QSFP+ connectors AXLC763-10000S (1 unit)	
	SFP+ to SFP+		
10 Gigabit DAC  • Fits into M4500 models QSFP28 interfaces	1 meter (3.3 ft)	3 meters (9.8 ft)	5 meters (16.4 ft)
	AXC761 10GSFP+ Cu (passive) SFP+ connectors AXC761-10000S (1 unit)	**AXC763** 10GSFP+ Cu (passive) SFP+ connectors AXC763-10000S (1 unit)	**AXC765** 10GSFP+ Cu (active) SFP+ connectors AXC765-10000S (1 unit)
	7 meters (23.0 ft)	10 meters (32.8 ft)	15 meters (49.2 ft)
	AXC767 10GSFP+ Cu (active) SFP+ connectors AXC767-10000S (1 unit)	**AXC7610** 10GSFP+ Cu (active) SFP+ connectors AXC7610-10000S (1 unit)	**AXC7615** 10GSFP+ (duplex fiber optic) SFP+ connectors AXC7615-10000S (1 unit)
	20 meters (65.6 ft)		
	AXC7620 10GSFP+ (duplex fiber optic) SFP+ connectors AXC7620-10000S (1 unit)		

** This product comes with a limited warranty that is valid only if purchased from a NETGEAR authorized reseller and modifications to product may void the warranty; covers hardware, fans and internal power supplies - not software or external power supplies See http://www.netgear.com/about/warranty/ for details. Lifetime technical support includes basic phone support for 90 days from purchase date and lifetime online chat support when purchased from a NETGEAR authorized reseller.

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