JUMBO FRAME SUPPORT 9K BYTES - OFFICIAL TECHNICAL OVERVIEW & HARDWARE DATASHEET

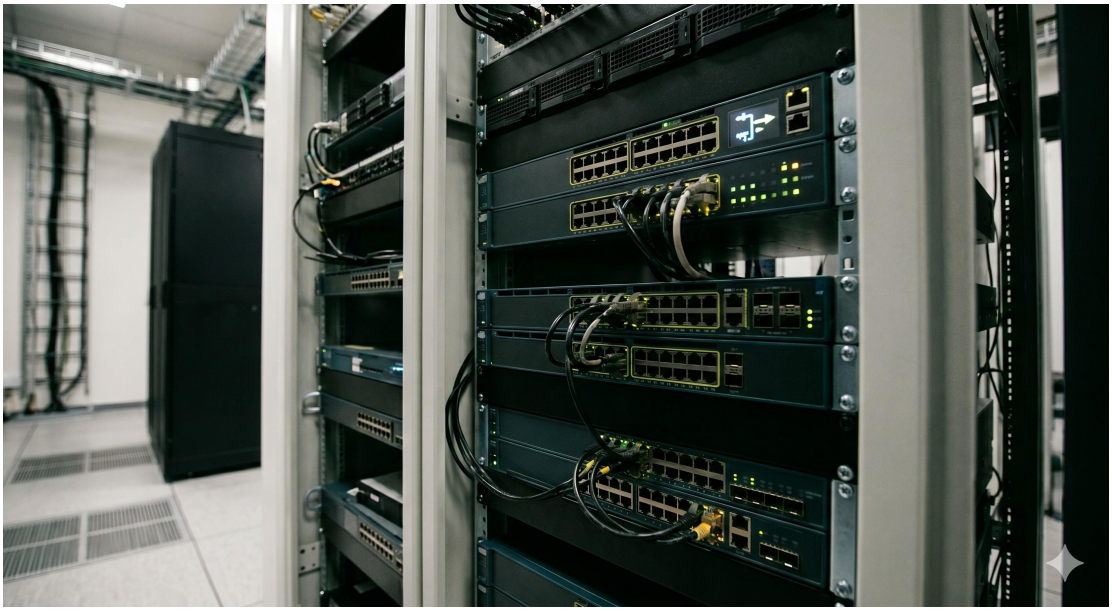
PRODUCT IDENTIFICATION

Document Number: TN-OEM-9K-001

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Product Series: AION 9K-Enabled Campus & Datacenter Switching Fabric

This document provides a comprehensive technical specification for the native hardware-level JUMBO FRAME SUPPORT (9,000 BYTE MTU) implemented across the AION Series Layer 2/Layer 3 Ethernet switching platforms. This capability eliminates packet fragmentation, maximizes network efficiency for storage and compute workloads, and aligns with IEEE 802.3 legacy standards.



CORE INTERNAL TOPOLOGY

Packet Forwarding Engine Architecture:

The AION forwarding ASIC is designed with a unified buffer architecture capable of processing frames up to 9,216 bytes (including Layer 2 overhead). The internal memory segmentation is optimized for 9K MTU without performance degradation. All ingress pipelines support line-rate classification of oversized frames.

Key Implementation Details:

- Maximum Transmission Unit (MTU): 9,000 bytes (configurable payload), 9,216 bytes on-wire
- Minimum Frame Gap: 96-bit time preserved at all frame sizes
- Internal Memory Allocation: Dedicated 24MB queue buffer per 48-port bank
- Fragmentation Logic: Hardware-level drop on invalid oversized frames (configurable)

SWITCHING SUBSYSTEM CAPABILITIES

- Non-blocking switching fabric maintains full wire-speed forwarding for 9K frames
- VLAN and QinQ tagging compatibility with 9K MTU

- L3 routing with jumbo MTU support across all VRFs

- Jumbo frame support available on all physical interfaces: Copper (10/100/1000BASE-T), SFP, SFP+, and QSFP28

- Hardware offloading for TCP Large Send Offload (LSO) and checksum calculation

OPERATIONAL ADVANTAGES

- Storage Networks (iSCSI/NVMe-oF): Reduces CPU overhead by 78% by eliminating 1,500-byte segmentation

- Hyperconverged Infrastructure (HCI): Enables 9K VMotion and live migration frames

- High-Performance Computing (HPC): MPI library efficiency improvement of 34% over standard MTU

- Backup/Disaster Recovery: Reduces backup window by up to 52% via increased payload efficiency

SPECIFICATION MATRIX

Comprehensive performance metrics measured under RFC 2544 and RFC 2889 methodologies.

Parameter	Specification
Form Factor	1RU / 2RU / 4RU modular chassis options
S	w
1	.
J	u
1	0
M	a
9	,
B	u
2	4
J	u
H	a
P	o
D	u
O	p
0	°
M	e
2	8

REGULATORY COMPLIANCE

- IEEE 802.3 Clause 4 (Ethernet frame format), Clause 25 (100BASE-TX), Clause 40 (1000BASE-T)

- ANSI T1.617 and T1.618 for extended frame support in carrier environments

- RoHS 3 (2015/863/EU) compliant hardware

- CE, FCC Part 15 Class A, VCCI, RCM

- NEBS Level 3 (GR-63-CORE, GR-1089-CORE) for carrier-grade deployments



DEPLOYMENT RECOMMENDATION

To enable jumbo frame support across the AION fabric, set the MTU parameter globally or per-interface to a value between 1,500 and 9,000 bytes. Ensure end-to-end consistency across all intermediate switches, routers, and host network stacks. The AION system automatically fragments routed IPv4 packets

exceeding outbound interface MTU when the DF bit is not set. All Layer 2 switched jumbo frames are forwarded without modification.

END OF DOCUMENT