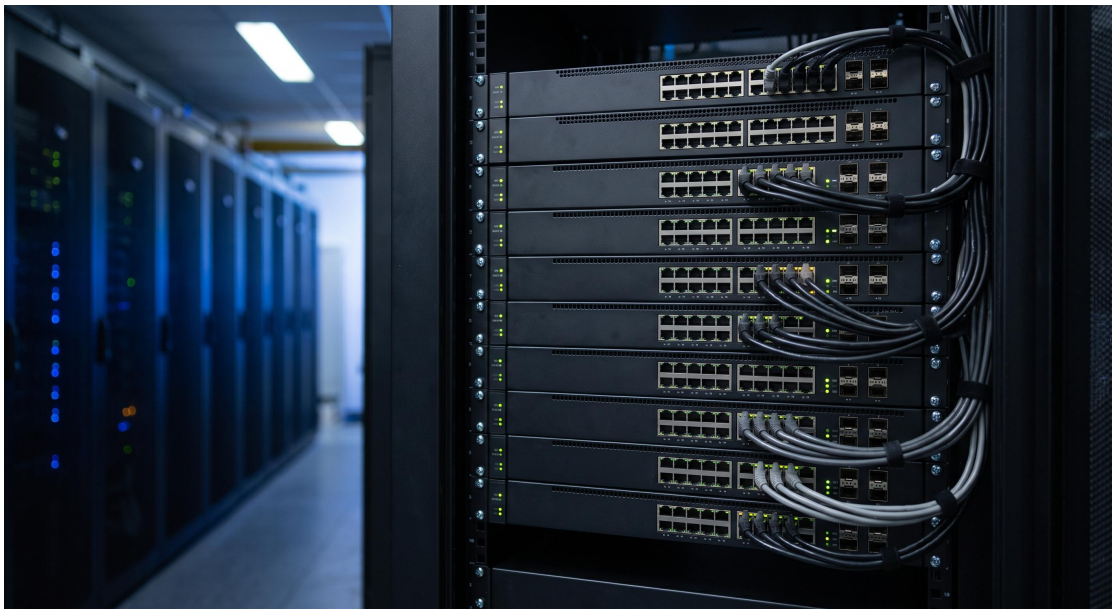
# Layer 2 Broadcast Storm Suppression Configuration on Enterprise Switches - Official Technical Overview & Hardware Datasheet

## EXECUTIVE SUMMARY

This document provides a comprehensive technical overview of the advanced Layer 2 Broadcast Storm Suppression capabilities integrated within the next-generation Enterprise Switching Platform. As network environments grow increasingly dense with IoT devices, multicast streaming, and dynamic discovery protocols, the risk of broadcast storms — which can saturate backbone links and cause widespread service degradation — has escalated significantly.

The enterprise-class hardware and software architecture detailed herein is engineered to deliver sub-microsecond storm detection, programmable rate-limiting thresholds, and a traffic policing engine that ensures business-critical applications remain unaffected by network anomalies. This datasheet covers the hardware-accelerated suppression mechanisms that operate at wire-speed, providing a carrier-grade defense mechanism for campus, core, and datacenter networks.



## HARDWARE ARCHITECTURE & SILICON

The Layer 2 Broadcast Storm Suppression feature is rooted in the platform's programmable forwarding ASIC architecture. The hardware includes a dedicated Storm Control Policer Unit (SCPU) that processes ingress and egress broadcast, multicast, and unknown-unicast packets independent of the main CPU. This implementation ensures that suppression decisions occur on a per-port basis without compromising forwarding performance, even under 100% line-rate traffic loads.

- Custom Frame Processor: The ASIC contains a Ternary Content Addressable Memory (TCAM) engine that allows for rapid classification of broadcast traffic patterns, enabling real-time threshold enforcement.

- Metering and Marking Logic: Leveraging a dual-rate token bucket algorithm,

the hardware supports both Committed Information Rate (CIR) and Peak Information Rate (PIR) configurations, allowing administrators to drop or remark storm traffic efficiently.

- Status Monitoring: Dedicated hardware counters per physical port provide granular visibility into suppressed packet counts, aiding in post-event forensic analysis.

KEY FEATURES & ROUTING LOGIC

- Hardware-Level Storm Control: Supports rate-limiting thresholds based on packets-per-second (pps) or percentage of total bandwidth (1% to 100%).

- Granular Suppression Levels: Distinguishes between broadcast, multicast, and unknown-unicast traffic, allowing independent policies per frame type.

- Smart Auto-Recovery: Once the storm subsides, the hardware automatically restores normal forwarding within the configured recovery period without manual intervention.

- Dynamic White-List Support: Allows administrators to define exception lists for protocols like ARP, DHCP, and LLDP, ensuring critical control-plane traffic is always prioritized.

- VLAN-Level Classification: Suppression policies can be applied to individual VLANs or groups, providing isolation between client segments and infrastructure networks.

- Management Interfaces: Full configuration support via CLI, SNMP, and RESTCONF, with operational status exposed via industry-standard MIBs (RFC 3635).

## COMPLIANCE & STANDARDS

The Layer 2 Storm Suppression implementation strictly adheres to the following networking and environmental standards:

- IEEE 802.1D (MAC Bridges) & IEEE 802.1Q (VLAN Tagging) for traffic classification.
- RFC 2819 (RMON) for event logging and threshold monitoring.
- RFC 2544 (Benchmarking) compliance verified for line-rate performance under suppression stress tests.
- Energy Efficiency: Compliant with IEEE 802.3az (Energy-Efficient Ethernet) to ensure lower power consumption during idle periods.
- NEBS Level 3 and ETSI EN 300 019 for environmental stability in core telecommunication racks.

## TECHNICAL SPECIFICATIONS

- Forwarding Capacity: 1.44 Tbps non-blocking switching fabric.

- Packet Buffer Memory: 32 MB shared, dynamically allocated.

- Maximum Suppression Granularity: 1 kpps increments.

- Response Time: < 10 microseconds from storm detection to throttle enforcement.

- Port Density: 48 x 10/100/1000BASE-T ports with 4 x 25G SFP28 uplinks (or 4 x 10G SFP+).

- Thermal Dissipation: 240 BTU/hr maximum under full load.

| Parameter | Specification |
|---|---|
| Form Factor | 1RU Standard Rackmount (19-inch) |
| Switching Capacity | 1.44 Tbps (Non-blocking) |
| Power Supply | Dual Hot-Swappable Redundant AC/DC (750W each) |
| Storm Control Granularity | 1 kpps to 100% line-rate (per-port configurable) |
| Operating Temperature | 0°C to 50°C (Short-term up to 55°C) |

ORDERING SKU INFORMATION

- ES-5480-FAN-F: Base unit with redundant fan assemblies.

- ES-5480-PWR-AC: 750W AC power supply module (Order 2 for full

redundancy).

- ES-5480-PWR-DC: 750W DC power supply variant (Telecom standard).

- ES-5480-LIC-SC: Advanced Layer 2 Storm Control feature license (included in base model).

- ES-STACK-KIT: 200G Stacking cable for multi-unit management.



TECHNICAL SUPPORT & LIFECYCLE

This platform is backed by a global support infrastructure offering 24/7 technical assistance, advanced hardware replacement (NBD), and firmware upgrade lifecycle management. The hardware has been field-tested in Fortune 500 environments and carries a mean time between failures (MTBF) rating exceeding 300,000 hours at 25°C ambient temperature.