

SNMP v1 v2c v3 MIB Database - Official Technical Overview & Hardware Datasheet

PRODUCT IDENTIFICATION

Product Series: NetObservant SNMP Engine Suite (Hardware-Integrated MIB Database Appliance).

Vendor: [OEM Name Redacted]. Part Number: NOS-MIB-2400 series.

Abstract: The NetObservant series represents a carrier-grade, purpose-built hardware appliance designed to host and process SNMP v1, v2c, and v3 MIB (Management Information Base) databases at line rate. Unlike software-only solutions, this appliance integrates a high-speed indexing engine, non-volatile MIB storage, and real-time OID resolution hardware acceleration.



SYSTEM HARDWARE TOPOLOGY

The architecture employs a dedicated control plane processor (ARM Cortex-A78 Octa-core at 2.1 GHz) and a separate data plane FPGA for parallel MIB tree walks. The system supports up to 128 GB of dedicated MIB cache RAM, enabling sub-10ms response times for GET/NEXT/BULK operations. The backplane consists of a PCIe 4.0 x8 bus interconnecting the SNMP agent processor, the MIB database storage controller (NVMe RAID 1), and two 10GbE management ports.

DATA & CONTROL PLANE CAPABILITIES

Control Plane: Runs a hardened Linux OS with an optimized SNMP engine. Supports full SNMPv3 USM (User-based Security Model) and VACM (View-based Access Control Model) hardware offload.

Data Plane: The FPGA transparently parses incoming SNMP PDUs, extracts OIDs, and performs a hardware-based MIB tree traversal. This reduces CPU load by 94% under full saturation.

MIB Database Engine: Native support for SMIv1 (RFC 1155) and SMIv2 (RFC 2578). Automatic OID resolution and dynamic MIB compilation. Maximum OID count: 10 million entries.

COMPONENT BREAKDOWN

- SNMP Agent Processor: Dedicated core for v1/v2c community string validation and v3 encryption (AES-256, DES, 3DES).
- MIB Storage Module: Dual 480GB Enterprise NVMe SSDs in RAID 1 for persistent MIB files, trap receivers, and audit logs.
- Hardware Security Module (HSM): Optional plug-in card for storing SNMPv3 private keys and usernames, tamper-protected.
- Management Interfaces: 2x 10/100/1000BASE-T (out-of-band management), 2x SFP+ 10GbE (for SNMP query/trap traffic).

OPERATIONAL SPECS MATRIX

Protocol versions: SNMPv1, SNMPv2c, SNMPv3 (RFC 3411-3418).

Maximum SNMP operations per second (Get/GetNext/GetBulk): 250,000 pps (64-byte OID).

Maximum trap receivers: 1,000 concurrent destinations.

MIB walk time (full 10,000 OID tree): < 0.8 seconds.

SNMPv3 encryption hardware offload latency: < 150 microseconds.

Parameter	Specification
Form Factor	1RU Rackmount Chassis (19-inch standard)

Switching Capacity (SNMP Engine)	2.5 Million OIDs per second (sustained)
Power Supply	Dual 1+1 Redundant AC/DC, 250W, 100-240VAC, 50/60Hz
Operating Temperature	0°C to 50°C (32°F to 122°F)
Storage Capacity (MIB + Logs)	960 GB (2x 480 GB NVMe RAID 1)
SNMPv3 Encryption Offload	AES-256-CBC, AES-192, AES-128, 3DES, DES (hardware accelerated)
Management Ports	2x RJ45 (10/100/1000) + 2x SFP+ 10GbE
Typical Power Consumption	85W (idle), 150W (peak)

REGULATORY COMPLIANCE

- FCC Part 15 Class A (EMC)
- CE Marking (EN 55032, EN 55035)
- RoHS 3 (Directive 2015/863/EU)
- REACH (EC 1907/2006)
- NEBS Level 3 (GR-63-CORE, GR-1089-CORE)
- Common Criteria EAL2+ for SNMPv3 secure deployment

