Emulex Secure Gen 7 Fibre Channel HBA's

LPe37100/LPe38100-Series for Lenovo ThinkSystem Servers

Designed to deliver the highest level of security, performance, and manageability for mission-critical infrastructures

Highlights

Innovative Security Built on a Zero Trust, Quantum-Safe Platform
- Post-quantum cryptography algorithms to meet CNSA 2.0, DORA, and NIS 2 mandates.
- Secures data in-flight between servers and storage with EDIF support and simplified session-based key management.
- Zero Trust platform:
    - Security Protocol and Data Model (SPDM) cryptographic authentication of endpoints.
    - Silicon root-of-trust hardware-based firmware authentication. Compliance with the NIST 800-193 framework.
    - Secure boot, digitally signed drivers.

Cost-Effective Encryption
- Simple, session-based in-flight encryption: No complex and expensive key management application needed. Plus, No impact to storage array compression, dedupe, ransomware detection, or other advanced storage features.
- Runs on existing FC SAN infrastructure

Maximum Application Performance
- Crypto functions offloaded to hardware, enabling encryption without sacrificing system performance.
- Accelerate workloads with industry leading 64G performance:
    - Over 20% better application response time vs. other manufacturers' 64G HBAs.
    - 2x better application performance and up to 3x better latency than the previous generation.
    - Over 10M IOPS—3x more than the previous generation HBA.
    - Supports NVMe over FC and SCSI FC concurrently

Easy to Manage and Deploy
- Simplified HBA management and network performance remediation via optional in-band Emulex SAN Manager [2] :
    - Visualizes SAN congestion with a dashboard that presents congestion and bandwidth graphs.
    - Remediates congestion automatically via the Adaptive Congestion Management feature.
    - Captures complete SAN HBA host inventory; host names; and OS, software, and firmware versions.
    - Provides transceiver health information to help detect optic degradation.
    - Identifies multipath misconfiguration errors via the multipath validation tool.
    - Provides a fabric-wide view of encryption capabilities and policies, as well as detailed port-level information on encrypted connections and deployment of post-quantum cryptography

Overview

The Emulex® Secure Fibre Channel (FC) host bus adapters (HBAs) by Broadcom are designed to deliver the highest level of security, performance, and manageability for mission-critical infrastructures.

Cybersecurity is a focal point of enterprises and governments globally. The longstanding approach of protecting critical data via firewalls is no longer sufficient, and the combination of artificial intelligence (AI) and quantum computing magnifies the risk if data is not encrypted at all points in the data center including the network.

To address these concerns, governments have responded with new mandates—including the United States' Commercial National Security Algorithm (CNSA) 1.0/2.0 and the European Union's Network and Information Security (NIS) 2 and Digital Operational Resilience Act (DORA)—that require enterprises to modernize their IT infrastructures with more robust encryption requirements.

Security

Today IT managers rely on Fibre Channel (FC) with field-proven security for the world's mission-critical data in banking, finance, health care, government, transportation, and military. FC offers air gap protection with no connectivity to vulnerable IP networks.

Emulex Secure HBAs introduce a cost-effective, easy-to-manage solution that encrypts all data in-flight (EDIF), protecting data as it moves across databases, applications, servers, and storage. Emulex Secure HBAs integrate post-quantum cryptography (PQC) algorithms to ensure that encrypted data remains encrypted even as quantum computing and AI put legacy encryption at risk.

The session-based key management solution, based on the emerging ANSI/INCITS FC-SP-3 standard, does not require complex and prohibitively expensive key management software. Compared to other encryption methods, such as application-based encryption, Emulex Secure HBAs can encrypt all applications, at a lower cost, and with no impact to storage array services such as compression, dedupe, and ransomware detection.

Performance

Compared to alternative approaches to network encryption that significantly impact application performance or limit the ability to compress or dedupe data, the Emulex Secure HBA delivers network encryption with better performance and no impact to storage services. The Emulex Dynamic Multi-core architecture delivers unparalleled performance and the most efficient port utilization with 8 fully redundant data engines and 16 threads that dynamically apply ASIC resources to any port that requires them, ensuring that SLAs are met. Compared to Gen 6 HBAs, Emulex Gen 7 HBAs can support 64GFC to deliver up to 2x greater bandwidth, 25,600 MB/s (two 64GFC ports) full duplex; 3x better hardware latency; and deliver industry-leading performance over 10 million IOPS.

LPe38100-series offers backward compatibility to 32GFC and 16GFC networks, while the LPe37100-series offers backward compatibility to 16GFC and 8GFC networks.

Operational Efficiency

Emulex Gen 7 HBAs offer enhanced reliability, availability, and serviceability (RAS), including port isolation and port-based error isolation that enable users to easily detect, isolate, and recover from errors.

Emulex HBAs fully support industry standards that enhance Broadcom® autonomous SAN [1] innovations to self-learn, self-optimize, and self-heal, proactively keeping the SAN running at maximum speed and avoiding downtime. The new industry standards supported by Emulex HBAs around Fabric Performance Impact Notifications (FPINs) include Link Integrity notification (FPINLI), Congestion notification (FPIN-CN), Peer Congestion notification (FPIN-PN), and Delivery notification (FPIN-DN).

Emulex HBAs are easy to manage and save administrators time and operating costs with features such as no reboots for firmware updates, queue depth changes, or optics replacements. Emulex Gen 7 hot-plug (hot-swappable) optics enable optics to be removed and replaced without shutting down the system, allowing for uninterrupted service. The Emulex HBA Manager application provides centralized management of current and previous generations of Emulex FC HBAs. Emulex HBA troubleshooting is simplified with Emulex HBA Capture, an Emulex utility that gathers system, adapter, and device driver information. Data collected by HBA Capture is compressed into a single file and can be sent to Broadcom Technical Support for analysis when debugging system issues or for diagnostic purposes.

Emulex HBAs fully support the Brocade® Fabric Vision® suite of features, facilitating a solution from the switch to the server endpoints that have Emulex HBAs installed. Supported features include ClearLink™ (D_Port), Link Cable Beaconing, Host Name Registration, Read Diagnostic Parameters, VMID, BB Credit Recovery, FC Trace Route, FC Ping, REST APIs, and more. Visit www.broadcom.com for additional information on supported Fabric Vision features.

Additional Features

Performance Features
- The LPe37100-series HBAs double the maximum FC link rate from 16GFC to 32GFC and again to 64GFC with a 64GFC optics upgrade.[3]
- Support for NVMe/FC for low latency, high-performance, end-to-end NVMe/FC storage networks.
- Registration and support for FPINs and congestion signaling.
- Buffer-to-buffer credit recovery: automatic buffer credit loss detection and recovery for reliable performance.
- Frame-level multiplexing increases link efficiency and maximizes HBA performance.
- N_Port ID Virtualization (NPIV) increases network scalability by enabling a single FC adapter port to provide multiple virtual ports.
- Enhanced data protection is provided by T10 PI with high-performance offload. T10 PI provides additional data protection in environments such as Oracle Unbreakable Linux.

Emulex SAN Manager Application:
Simplifies HBA Management and Remediates Network Performance Problems

All Emulex Gen 7 and Secure HBAs work with the Emulex SAN Manager in-band application to reduce operational cost and complexity via the following:
- Automatically identifies and mitigates application performance problems with direct communication between Emulex HBAs and Brocade fabric switches and directors:
    - Remediates congestion automatically via the Adaptive Congestion Management feature.
    - Visualizes SAN congestion with a dashboard that presents congestion and bandwidth graphs.
- Enables optical transceiver statistics to be downloaded for analysis to help detect optic degradation.
- Captures complete SAN HBA host inventory; host names; and OS, software, and firmware versions; and lists queue depths by port.
- Identifies multipath misconfiguration errors via the multipath validation tool.
- Provides a fabric-wide view of encryption capabilities and policies, as well as detailed port-level information on encrypted connections and deployment of postquantum cryptography.
- Learn more about Emulex SAN Manager here.

Description	Part Number
ThinkSystem Emulex LPe37102 32Gb 2-Port PCIe Fibre Channel Adapter	4XC7A96457
ThinkSystem Emulex LPe38102 64Gb 2-Port PCIe Fibre Channel Adapter	4XC7A96458

1. https://docs.broadcom.com/docs/broadcom-autonomous-self-healing-sans
2. The Emulex SAN Manager application is available separately. Contact Broadcom sales information.

Emulex® HBAs set a new standard in speed and low latency performance for mission-critical enterprise workloads and emerging applications

Why Lenovo

Lenovo is a US$57 billion revenue global technology powerhouse, ranked #248 in the Fortune Global 500, and serving millions of customers every day in 180 markets. Focused on a bold vision to deliver Smarter Technology for All, Lenovo has built on its success as the world's largest PC company with a pocket-to-cloud portfolio of AI-enabled, AI-ready, and AI-optimized devices (PCs, workstations, smartphones, tablets), infrastructure (server, storage, edge, high performance computing and software defined infrastructure), software, solutions, and services. Lenovo's continued investment in world-changing innovation is building a more equitable, trustworthy, and smarter future for everyone, everywhere..

For More Information

To learn more, contact your Lenovo Business Partner or read the Lenovo Press Product Guide.