

# MegaRAC® FPX2.0™

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## NVMe over Ethernet Fabric Management Firmware

*A powerful NVMe over Ethernet Fabric (NVMe-oF) firmware / software stack combining Ethernet Fabric management capabilities and NVMe drive management together to create and manage a true Server SAN solution, delivering highly manageable NVMe storage to remotely connected clients*

MegaRAC® FPX2.0™ NVMe-oF Management Firmware from American Megatrends (AMI) is a powerful firmware/software solution combining the complete functionality to support **Server SAN**, including Ethernet Fabric management and NVMe drive management, with that of a baseboard management controller (BMC).

MegaRAC FPX2.0 is a combination of firmware and software components that constitute a feature-rich, highly manageable

### FPX2.0 BUILDING BLOCKS

ETHERNET STORAGE  
MANAGER  
(ESM)

STORAGE SERVICES  
FABRIC SERVICES

X86/AMD/BLUEFIELD/STINGRAY

IPMI  
COMPONENT MANAGEMENT  
PCI FABRIC  
PSME  
REDFISH  
FPX2.0 EXTENSIONS

NVMe over Ethernet Fabric solution. The firmware component resides on the preexisting onboard BMC and maintains complete MegaRAC® SP-X™ based server manageability, along with MegaRAC FPX2.0 firmware extensions that enable completely secure, out-of-band (OOB) NVMe storage manageability, available right out of the box. The software component, called Ethernet Storage Manager (ESM), runs on the server chipset in case of storage server boxes, and on the built-in Arm® CPU core on the smart RNICs used in storage appliance boxes (JBOFs).

MegaRAC FPX2.0 supports all storage server architectures, including current Intel® x86 and AMD platforms, as well as future Arm based storage servers. MegaRAC FPX2.0 also enables Server SAN architectures on storage appliance boxes, when paired with Mellanox BlueField™ or Broadcom Stingray™ (PS1100R) smart NICs and storage adapters.

In addition to the high degree of out-of-band NVMe storage management for discovering storage pools, creating namespaces, attaching/detaching NVMe storage volumes to remote compute nodes, a key aspect of MegaRAC FPX2.0 is its inclusion of NVMe Management Interface (NVMe-MI) support to enable drive inventory and telemetry data support on the BMC OOB interface.

MegaRAC FPX2.0 is based on the proven, highly stable and industry-leading MegaRAC Core Technology. Like MegaRAC SP-X, MegaRAC FPX2.0 firmware provides a high level of modularity, with the ability to easily configure the complete firmware / software stack by selecting and deselecting features that are available in package form.

## KEY FEATURES

- True *Server SAN* solution: Out-of-the-box solution for commodity / white box storage hardware
- Caters to hyperscale (storage servers) as well as hyperconverged (storage appliance/JBOF) infrastructure needs
- Supported servers: Intel® x86, AMD, Arm®
- Supported appliances: Mellanox BlueField™, Broadcom Stingray™ (PS1100R)
- Quick, fully automated provisioning & installation to convert an off-the-shelf storage box into a Server SAN
- Completely secure, out-of-band (OOB) storage management
- Storage management network is separated from storage area network (Data Path)
- Drive inventory and telemetry data support
- Drive hot swap support (Add / Remove)
- Drive slicing support for storage optimization
- Runs on standard BMC hardware (including AST2500/AST2600)
- Complete "NVMe-MI" support on target
- High Availability / Failover support
- Complete MegaRAC SP-X server functionality on FPX2.0

## Technology Pack Features

- Redfish™ support
- Intel® RSD (Storage/Fabric PSME) support
- MegaRAC® Composer™ Pod Management Software

## MEGARAC FPX2.0 FEATURES AND SPECIFICATIONS

### Completely Secure, Out-of-band Server SAN Functionality

- MegaRAC FPX2.0 is supported on all commodity/white box storage platforms (servers and appliances), a fundamental Server SAN function
- Targeted for hyperscale environments / datacenters, as well as for hyperconverged infrastructure
- All storage management functions available over the existing out-of-band interface of the onboard BMC
- Storage network connectivity and management LAN connectivity are separated, for *highly secure* remote storage connectivity between targets and remote clients (initiators)

### Exceptional Remote Storage Manageability

- Simple storage pool abstraction with complete storage device discovery support
- Drive inventory and telemetry data, with NVMe-MI support
- Compliant with Intel® Rack Scale Design (RSD) specification for hyperscale infrastructure
- Storage/namespace creation with attach/detach storage to the remote computer node

### Auto-Provisioning and Installation

- Standard feature - no additional software installation required
- Storage box can be provisioned in the field to enable FPX2.0
- Simple, fully automated process to convert a commodity storage server box to a Server SAN target
- Storage boxes can also be configured as Server SAN units at the time of shipment

### Hot Swap (Add/Remove) and Drive Slicing

- Complete Hot Add and Hot Remove support for NVMe drives on commodity storage boxes
- Each NVMe drive can be split into multiple partitions/volumes and each partition/volume can be independently attached to a remote client machine
  - Drive slicing enables optimal use of available storage, where one physical NVMe drive can be shared across multiple remote client systems

### High Availability (HA) / Failover

- Per the specific hardware design, complete failover support can be enabled in FPX2.0
- Storage data paths are unaffected during failover
- Remote storage manageability is transparently available to the user throughout, with no disruption in service

### Continuous Server Manageability (MegaRAC SP-X)

- All existing MegaRAC SP-X functions remain on the storage platform.
- MegaRAC FPX2.0 functions are available in parallel to MegaRAC SP-X functionality
- DMTF Redfish® support available

### Stack Design and Packaging

- Robust NVMe over Ethernet Fabric (NVMe-oF) management using stable, fast and reliable RDMA based technology
- Each MegaRAC FPX2.0 feature is built and available as an individual package for a high level of stack modularity
- Each package contains clearly defined, separate common and hardware-specific modules for easy portability across various SoC and hardware platforms

For more information:

<https://ami.com/en/products/remote-management/nvmeof-nvme-over-ethernet-fabric-management-firmware/>



American Megatrends International LLC | [ami.com](http://ami.com)  
5555 Oakbrook Parkway, Bldg. 200  
GA 30093 | 770.246.8600