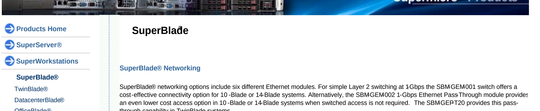

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SuperBlade

SuperBlade® Networking

SuperBlade® networking options include six different Ethernet modules. For simple Layer 2 switching at 1Gbps the SBMGEM001 switch offers a cost-effective connectivity option for 10-Blade or 14-Blade systems. Alternatively, the SBMGEM002 1-Gbps Ethernet PassThrough module provides an even lower cost access option in 10 -Blade or 14-Blade systems when switched access is not required. The SBMGEPT20 provides this pass-through capability in TwinBlade systems.

Access to 10 -Gigabit Ethernet networks is provided by either the Layer 2/3 1/10Gbps Ethernet Switch — SBM-GEM-X2C+ (up to 20 Blades), the 10 Gigabit Ethernet Switch — SBM-XEM-X10SM or the 10-Gigabit Ethernet PassThrough Module— SBM-XEM-002M (10-Blade or 14-Blade systems). These Ethernet modules can also be configured for redundant or dual loadsharing operation - or both.

For even faster connections, Supermicro offers three different InfiniBand connectivity options. A powerful new series of QDR InfiniBand switches (SBM-IBS-Q3618, SBM-IBS-Q3618M, SBMIBS-Q3616, and SBMIBS-Q3616M) provide connection from Blades to 4X QDR (40Gbps) InfiniBand networks - the fastest networking technology available for commercial use. Other InfiniBand options include a 4X DDR switch (SBMIBS001) and a 14-port 4X DDR PassThrough module(SBMIBPD14).

All SuperBlade® networking options are hot-pluggable.

*Manual- Release 1.1a

Gigabit Ethernet Modules

Switches
The 1-Gigabit Ethernet switch module (part #**SBM-GEM-001**) includes ten external 1-Gb/s uplink (RJ45) ports and fourteen internal 1Gb/s downlink ports for connection to the SuperBladeB\'s LAN interfaces. This layer 2 Ethernet switching module also has two internal Ethernet paths to the SBM#GEM001 Switch Management Module (CMM/x) to allow configuration, management, and control of the switch and its ports through a browser based management interface. Offering such advanced features as link aggregation (static), VLAN support, and Jumbo Frame support, the switch provides a connection between the Ethernet controller integrated on the mainboard and external Ethernet systems.

The 1/10-Gigabit Ethernet layer 2/3 Switch module (part #**SBM-GEM-X2C+**) offers advanced switching features and connection to 10 -Gigabit Ethernet networks. Internally it uses the same 1Gb/s downlink ports as the SBM-GEM001 for connection to the SuperBladeB \LAN interfaces. Externally it provides up to three 10Gb/s uplink connections (two with a CX4 connector which are stackable and one SFP+) and two 1Gb/s uplink connections(RJ45). It also has two internal Ethernet paths to the CMM(s) to allow configuration, management, and control of the switch and its ports through a browser -based management interface. In addition to the Wellbased GUI, it offers a CLI for flexibility in management and control of single o multiple switch networks. **SBM-GEM-X2C+** supports up to 20 Blades.

The 10-Gigabit Ethernet Layer2/3 Switch Module (part #**SBM-XEM-X10SM**) connects internally to an optional 10-Gigabit mezzanine card on the blade (either AOC-IBH-XQ, AOC-IBH-XQS or AOC-IBH-XDD).External 10-Gigabit SFP+ connectors are provided for uplinks. In twnBlade systems, there are ten 10-Gigabit connectors; in TwinBlade systems, there are four.

SBM-XEM-X10SM	
Internal Ports	• Ten (Ten-Blade) or 20 (TwinBlade) internal 10-Gigabit connections to Blades
External Uplink Ports	• Four (Twin Blade) or Ten (Ten-Blade) external 10-Gigabit Ethernet ports (SFP+) • One external 1GE port (RJ45)
Type	• Layer-3 10G switch
Switching Capacity	• 480 Gbps
Trunking	• Link Aggregation - 8 groups with 8 members per group
Jumbo Frame Support	• Up to 9K bytes
Remote Management	• Browser -based management / CLI
Protocols	• IGMP snooping, 802.1x
OS	• Firmware upgradeable CLICK HERE FOR MORE INFORMATION

10 Gigabit Ethernet Switch
SBM -XEM- X10SM

SBM-GEM-X2C+	
Internal Ports	• Up to twenty 1-Gbps downlink ports for LAN interfaces of the server blades
External Uplink Ports	• Three 10-Gbps uplinkports (Two CX4, stackable & One SFP+) • Two 1-Gbps RJ-45 uplink ports
Type	• Layer-2 / 3 switch
Switching Capacity	• 112Gbps
Trunking	• Link aggregation support (802.3adfull)
Jumbo Frame Support	• Up to 9k bytes
Remote Management	• Browser -based management / CLI
Protocols	• STP, RSTP, MSTP, IGMP snooping, 802.1x
OS	• Firmware upgradeable
Download	• CLI Manual [Download] • Firmware [Download]

1/10 Gigabit Ethernet Switch
SBM -GEM- X2C+

SBM-GEM-001	
Internal Ports	• Fourteen 1-Gbps downlink ports for LAN interfaces of the server blades
External Uplink Ports	• Ten 1-Gbps uplink RJ45 ports
Type	• Layer- 2 switch
Switching Capacity	• 48Gbps
Trunking	• Link aggregation support (802.3adstatic)
Jumbo Frame Support	• Up to 9k bytes
Remote Management	• Browser -based management
Protocols	• STP, RSTP, 802.1x
OS	• Firmware upgradeable
Download	• Firmware (PTP) - Release 2.0

Gigabit Ethernet Switch
SBM -GEM- 001

* = for SBE-720 series enclosures

Pass-Through
The 1-Gigabit Ethernet Passthrough Module (part #**SBM-GEM-002**) is a non-configurable pass through module that includes fourteen 1-Gb/s external uplink (RJ45) ports and fourteen internal 1Gb/s downlink ports for the SuperBladeB\'s LAN interfaces. This module also has two internal Ethernet paths to the CMM(s) for viewing module temperature and voltage (but not for configuration since all connections are fixed).

The 10-Gigabit Ethernet Passthrough Module (part #**SBM-XEM-002M**) is also a non-configurable pass through module. It provides fourteen 10-Gb/s external uplink (SFP+) ports and fourteen internal 10Gb/s downlink ports for the SuperBladeB\'s LAN interfaces. Internal links are provided by the use of a mezzanine card (e.g., AOC-IBH-XDS) with 10-Gigabit Ethernet support capability (see AOGIBH-XDS/XDD/XQS/XQP item descriptions below).

The TwinBlade 1-Gigabit Ethernet Passthrough Module (part #**SBM-GEPT20**) is a non-configurable pass- through module that includes twenty 1-Gb/s external uplink (RJ45) ports and twenty internal 1-Gb/s downlink ports for the TwinBlade\'s LAN interfaces. This module also has an internal I2C path to the CMM for viewing module temperature and voltage (but not for configuration since all connections are fixed).

SBM-XEM-002M *	
Internal Ports	• Fourteen 10-Gbps downlink XAUI ports
External Uplink Ports	• Fourteen SFP+ uplink ports fixed at 10Gbps (no auto-negotiation)
Type	• Ethernet pass-through module
Connections	• 10GBASESR, 10GBASELRM, 10GBASE ER, 10GBASBLR, Twinax

10 Gigabit Ethernet Pass - Thru Module
SBM -XEM- 002M

SBM-GEM-002	
Internal Ports	• Fourteen 1-Gbps downlink ports for LAN interfaces of server blades
External Uplink Ports	• Fourteen RJ-45 uplink ports fixed at 1-Gbps (no auto-negotiation)
Type	• Ethernet pass-through module
Protocols	• N/A

Gigabit Ethernet Pass - Thru Module
SBM -GEM- 002

SBM-GEPT20 *	
Internal Ports	• Twenty 1-Gbps downlink ports for LAN interfaces of the server blades
External Uplink Ports	• Twenty 1-Gbps uplink RJ45 ports fixed at 1-Gbp (no auto-negotiation)
Type	• Ethernet pass-through module
Protocols	• N/A

Gigabit Ethernet Pass - Thru Module
SBM -GEP- T20

† = for SBE-710E and SBE714E series enclosure
* = for SBE-720E enclosure only; one SBMGEPT20 per enclosure

InfiniBand Modules

InfiniBand Switch Module
The InfiniBand Switch Modules are switch-based, point-to-point bi-directional serial link systems. They provide highspeed interconnectivity among the blade modules and to external InfiniBand peripherals and are especially useful in supporting clustered Hig#erformance-Computing. The**SBM-IBS-001** InfiniBand switch supports up to fourteen internal and 10 external 4X DDR connections (20Gbps). The **SBM-IBS-Q3616** InfiniBand Switch Module supports up to 20 internal and up to 16 external 4X QDR connections (40 Gbps)The **SBM-IBS-Q3616M** InfiniBand Switch Module adds the capability for installation of a BM8CMM002 miniCMM, thus allowing dual/redundant links from each Blade (requires AOGIBH-XQD) to redundant switches. The **SBM-IBS-Q3618** InfiniBand Switch Module supports up to 18 internal and up to 18 external 4X QDR connections (40 Gbps). Like the SBM-IBS-Q3616M, the**SBM-IBS-Q3618M** InfiniBand Switch Module adds the capability for installation of a BM8CMM002 miniCMM, thus allowing dual/redundant links from each Blade (requires AOGIBH-XQD) to redundant switches.

InfiniBand Pass -Through
The **SBM-IBD-D14** InfiniBand Pass-Through is a non-configurable pass-through with fourteen internal downlinks to blades and fourteen external 4x DDR (20Gbps) connections using CX4 cables of up to 3M length.

SBM-IBS-Q3616 / SBM-IBS-Q3616M and SBM-IBS-Q3618 / SBM-IBS-Q3618M †	
Switch Chip	• Mellanox InfiniScale IV
Internal Ports	• Twenty (SBM-IBS-Q3616/M) • Eighteen (SBMIBS-Q3618/M)
External Uplink Ports	• Sixteen 4X QDR with QSFP connectors (SBM-IBS-Q3616/M) • Eighteen 4X QDR with QSFP connectors (SBM-IBS-Q3618/M)
Bandwidth	• 4x QDR (40 Gbps) non-blocking architecture 2.88Tbps total switch bandwidth (36 -Port)

40Gb InfiniBand Switch

SBM-IBS-001 (IB Switch) †	
Switch Chip	• Mellanox InfiniScale III
Internal Ports	• Fourteen Internal 4x DDR Ports
External Uplink Ports	• Ten 4x DDR external copper ports (CX4 Connectors)
Bandwidth	• 4x DDR (20Gbps) non-blocking architecture 960-Gbps total switch bandwidth (24-Port)

20Gb InfiniBand Switch

SBM-IBH-D14 (IB Pass-Through) †	
Internal Ports	• Fourteen internal 4x DDR ports (20Gbps)
External Uplink Ports	• Fourteen external 4x DDR copper ports (20Gbps - CX-4 connectors)

20Gb InfiniBand Pass - Through

* for SBE-710Q and SBE720E series enclosure
† = for SBE-710E and SBE714E series enclosure

Mezzanine HCA Cards
For any blade to access the InfiniBand module, it must have an InfiniBand mezzanine HCA card installed on its mainboard. T**AOC-IBH-002**, **AOC-IBH-XDD** and **AOC-IBH-XDS** mezzanine cards provide this 20-Gbps connectivity through the backplane to the InfiniBand switch module or InfiniBand Pass-through module. The**AOC-IBH-XQS** and **AOC-IBH-XQD**mezzanine cards provide this connectivity at the QDR (40Gbps) rate when used with the QDR InfiniBand switch.

The **AOC-IBH-XDS**, **AOC-IBH-XDD**, **AOC-IBH-XQS**, and **AOC-IBH-XQD** can alternatively be used for 10Gbps Ethernet connectivity when used in concert with the SBM-XEM002M 10Gbps Passthrough module or the SBMXEMX10SM 10Gbps switch. The **AOC-XEHiN2** is also available for 10Gbps connectivity.

AOC-IBH-XQD (Mezzanine HCA)	
Chipset	• Mellanox ConnectX2
InfiniBand Ports	• Two 4x QDR 40-Gbps ports
Ethernet Ports	• One or two 10-Gbps ports
Power Consumption	• 10.4W typical/ 11W max
CLICK HERE FOR MORE INFORMATION	

IBH - XQD

AOC-IBH-XQS (Mezzanine HCA)	
Chipset	• Mellanox ConnectX
InfiniBand Ports	• One 4x QDR 40Gbps port
Ethernet Ports	• One 10-Gbps port
Power Consumption	• 10.4W typical/ 11W max
CLICK HERE FOR MORE INFORMATION	

IBH - XQS

AOC-IBH-XDD (Mezzanine HCA)	
Chipset	• Mellanox ConnectX
InfiniBand Ports	• One or two 4x DDR 20-Gbps ports
Ethernet Ports	• One or two 10-Gbps ports
Power Consumption	• 10.4W typical/ 11W max
CLICK HERE FOR MORE INFORMATION	

IBH - XDD

AOC-IBH-XDS (Mezzanine HCA)	
Chipset	• Mellanox ConnectX
InfiniBand Port	• Single 4x DDR 20Gbps port
Ethernet Port	• Single 10-Gbps port
Power Consumption	• 10.4W typical/ 11W max
CLICK HERE FOR MORE INFORMATION	

IBH - XDS

AOC-IBH-002 (Mezzanine HCA)	
Chipset	• Mellanox InfiniHost III Lx DDR
InfiniBand Port	• Single 4x DDR 20Gbps port
Power Consumption	• 10.4W typical/ 11W max
CLICK HERE FOR MORE INFORMATION	

IBH - 002

AOC-XEHiN2 (Mezzanine HCA)	
Chipset	• Intel 82599 Niantic chip
Ethernet Ports	• Dual 10-Gbps Ethernet ports
Power Consumption	• 6.25W max
CLICK HERE FOR MORE INFORMATION	

XEH - IN2

AOC-IBH-001 *EOL (Mezzanine HCA)	
Chipset	• Mellanox InfiniHost III Ex DDR
InfiniBand Ports	• Dual 4x DDR 20Gbps ports
Power Consumption	• 10.4W typical/ 11W max
CLICK HERE FOR MORE INFORMATION	

IBH - 001

AOC-IBH-003 *EOL (Mezzanine HCA)	
Chipset	• Mellanox ConnectX
InfiniBand Ports	• One or two 4x DDR 20-Gbps ports
Ethernet Ports	• One or two 10-Gbps ports
Power Consumption	• 10.4W typical/ 11W max
CLICK HERE FOR MORE INFORMATION	

IBH - 003

* = End-of -Life - Please contact sales-rep for possible OEM production quantities.

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