



# IBM BladeCenter

## The Right Choice – Open, Easy, Green

### Interoperability Guide

October 18, 2010

Document Purpose: Quick reference for BladeCenter Interoperability.

Compliment to ServerProven, COG, and the Configuration tools with

ServerProven being the most reliable, accurate, and up to date tool.

This paper is intended to provide information regarding BladeCenter Interoperability. It assembles data from other published IBM tools. Findings may not be realized in all customer environments, and implementation in such environments may require additional steps, configurations, and performance analysis. The information herein is provided "AS IS" with no warranties, express or implied. This information does not constitute a specification or form part of the warranty for any IBM, Intel, Brocade, Cisco, Emulex, McData, Myrinet, NetXen or QLogic products.

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## Terminology

**aMM** Advanced Management Module

**CFFh** Combo Form Factor Horizontal I/O Expansion Card

**CFFv** Combo Form Factor Vertical I/O Expansion Card

**CIOv** Combinational (or Combo) IO Vertical expansion card

**cMM** Chassis Management Module

**cMM2** Chassis Management Module II

**EC** I/O Expansion Card

**HSEC** High Speed I/O Expansion Card

(Formerly referred to as HSFF)

**LFF HSEC** Large Form Factor High Speed I/O Expansion Card

**MSIM** Multi Switch Interconnect Module

**NEBS** Network Equipment-Building System

**BOFM** BladeCenter Open Fabric Manager

**OPM** Optical Pass-Thru Module

**SFF** Small Form Factor

**SFF EC** Small Form Factor I/O Expansion Card

**StFF** Standard Form Factor (may require removal of Primary or secondary HDD)

## Blades & Management Modules to Chassis Interoperability

| Blade Servers                                                   | S<br>(8886/<br>1948) | T <sup>1</sup> (DC<br>8720,<br>AC<br>8730) | H<br>(8852,<br>7989) | HT <sup>1</sup> (DC<br>8740,<br>AC<br>8750) | aMM/<br>cMM2 | MM  |
|-----------------------------------------------------------------|----------------------|--------------------------------------------|----------------------|---------------------------------------------|--------------|-----|
| HX5 (7872)                                                      | Y                    | -                                          | Y                    | Up to<br>105W <sup>1,2</sup>                | Y            | -   |
| HS12 (8014, 8028)                                               | Y                    | Y                                          | Y                    | Y                                           | Y            | -   |
| HS21 Quad Core (8853)                                           | Y                    | Up to<br>50W <sup>2</sup>                  | Y                    | Up to<br>120W <sup>1,2</sup>                | Y            | Y   |
| HS21 XM Quad Core (7995)                                        | Up to<br>80W         | Up to<br>50W <sup>2</sup>                  | Up to<br>80W         | Up to<br>80W <sup>2</sup>                   | Y            | Y   |
| HS22 (7870)                                                     | Y                    | -                                          | Y                    | Up to<br>130W <sup>1,2,4</sup>              | Y            | -   |
| HS22V (7871)                                                    | Y                    | -                                          | Y                    | Up to<br>130W <sup>1,2,4</sup>              | Y            | -   |
| LS22 (7901)                                                     | Y                    | -                                          | Y                    | Y                                           | Y            | -   |
| LS42 (7902)                                                     | Y                    | -                                          | Y                    | Y                                           | Y            | -   |
| JS12 (7998-60x)                                                 | Y                    | Y                                          | Y                    | Y                                           | Y            | -   |
| JS22 (7998-61x)                                                 | Y                    | -                                          | Y                    | Y <sup>3</sup>                              | Y            | -   |
| JS23/43 (7778-23x)                                              | Y                    | -                                          | Y                    | Y                                           | Y            | -   |
| PS700/701/702 (8406-70Y/71Y)                                    | Y                    | -                                          | Y                    | Y                                           | Y            | -   |
| QS21 (0792)                                                     | Y                    | -                                          | Y                    | Y <sup>1</sup>                              | Y            | -   |
| QS22 (0793)                                                     | Y                    | -                                          | Y                    | Y <sup>1</sup>                              | Y            | -   |
| <b>Management Modules</b>                                       |                      |                                            |                      |                                             |              |     |
| Management Module (MM)                                          | -                    | -                                          | -                    | -                                           | N/A          | N/A |
| Advanced Management Module<br>(aMM)                             | Y                    | -                                          | Y                    | Y                                           | N/A          | N/A |
| Advanced Management Module<br>for Telco (also known as<br>cMM2) | -                    | Y                                          | -                    | -                                           | N/A          | N/A |

W = CPU power in watts, TDP watts

**Note 1** Enterprise environment only (max 32°C). See **'Telco blades to Telco chassis Interoperability'** table (next table) for NEBS statements.

**Note 2** May require power management policy to be set to "Redundant with Potential Performance Impact" in both domains to support higher-wattage CPUs.

**Note 3** Ten is the maximum number of JS22 blades supported in BCHT chassis.

**Note 4** Ten is the maximum number of 130W HS22 or HS22V supported in BCHT chassis.

## Blades & Management Modules to Chassis Interoperability continued

| Blade Servers                                                   | E<br>(8677);<br>1200W,<br>1400W<br>power<br>supplies | E<br>(8677);<br>1800W<br>power<br>supplies | E<br>(8677);<br>2000W<br>power<br>supplies | E<br>(8677);<br>2320W<br>power<br>supplies | aMM | MM  |
|-----------------------------------------------------------------|------------------------------------------------------|--------------------------------------------|--------------------------------------------|--------------------------------------------|-----|-----|
| HX5 (7872)                                                      | -                                                    | -                                          | -                                          | -                                          | Y   | -   |
| HS12 (8014, 8028)                                               | Y                                                    | Y                                          | Y                                          | Y                                          | Y   | -   |
| HS21 Quad Core (8853)                                           | Up to<br>80W                                         | Up to<br>80W                               | Up to<br>80W                               | Up to 80W                                  | Y   | Y   |
| HS21 XM Quad Core (7995)                                        | Up to<br>80W <sup>1</sup>                            | Up to<br>80W <sup>1</sup>                  | Up to<br>80W <sup>1</sup>                  | Up to<br>80W <sup>1</sup>                  | Y   | Y   |
| HS22 (7870)                                                     | -                                                    | -                                          | Y <sup>2</sup>                             | Y                                          | Y   | -   |
| HS22V (7871)                                                    | -                                                    | -                                          | Y <sup>2</sup>                             | Y                                          | Y   | -   |
| LS22 (7901)                                                     | Up to<br>79W                                         | Up to<br>79W                               | Up to<br>79W                               | Y                                          | Y   | -   |
| LS42 (7902)                                                     | Up to<br>79W                                         | Up to<br>79W                               | Up to<br>79W                               | Y                                          | Y   | -   |
| JS12 (7998-60x)                                                 | Y                                                    | Y                                          | Y                                          | Y                                          | Y   | -   |
| JS22 (7998-61x)                                                 | -                                                    | -                                          | -                                          | -                                          | -   | -   |
| JS23/43 (7778-23x)                                              | -                                                    | -                                          | -                                          | -                                          | -   | -   |
| PS700                                                           | -                                                    | -                                          | -                                          | Y                                          | Y   | -   |
| PS701/702                                                       | -                                                    | -                                          | -                                          | -                                          | -   | -   |
| QS21 (0792)                                                     | -                                                    | -                                          | -                                          | -                                          | -   | -   |
| QS22 (0793)                                                     | -                                                    | -                                          | -                                          | -                                          | -   | -   |
| <b>Management Modules</b>                                       |                                                      |                                            |                                            |                                            |     |     |
| Management Module (MM)                                          | Y                                                    | Y                                          | -                                          | -                                          | N/A | N/A |
| Advanced Management<br>Module (aMM)                             | Y                                                    | Y                                          | Y                                          | Y                                          | N/A | N/A |
| Advanced Management<br>Module for Telco (also<br>known as cMM2) | -                                                    | -                                          | -                                          | -                                          | N/A | N/A |

W = CPU power in watts, TDP watts

**Note 1** When fully configuring a BC-E (8677) chassis with the maximum possible HS21 XM blade server configuration (fourteen HS21 XM blade servers, each with two 80W processors, eight 4GB memory DIMMs, one SAS HDD, one USB-based flash drive, one I/O card and one cKVM card), there could be periods of time that Power Domain 2 exceeds the 13.5amp rating guidance (Power Domain 1 will not exceed the rating guidance). While this is not violating any safety rules, we recommend that your clients review the electrical infrastructure and power distribution of their installations to account for a peak of 14.4A

**Note 2** HS22 and HS22V configurations supported in BC-E with 2000W power supplies:

|                                   |                                |                          | Power domain 1 |       |       |       |       |       | Power domain 2 |       |       |        |        |        |        |        |                                   |
|-----------------------------------|--------------------------------|--------------------------|----------------|-------|-------|-------|-------|-------|----------------|-------|-------|--------|--------|--------|--------|--------|-----------------------------------|
| Power rating of HS22 or HS22V CPU | Max HS22 or HS22Vs installable | Total blades installable | Bay 1          | Bay 2 | Bay 3 | Bay 4 | Bay 5 | Bay 6 | Bay 7          | Bay 8 | Bay 9 | Bay 10 | Bay 11 | Bay 12 | Bay 13 | Bay 14 | Total bays that must remain empty |
| 95 W                              | 11                             | 11                       |                |       |       |       |       | E     |                |       |       |        |        |        | E      | E      | 3                                 |
| 95 W                              | 6                              | 12                       |                |       |       |       |       |       |                |       |       |        |        |        | E      | E      | 2                                 |
| 95 W                              | 5                              | 13                       |                |       |       |       |       | E     |                |       |       |        |        |        |        |        | 1                                 |
| 80 W                              | 12                             | 12                       |                |       |       |       |       | E     |                |       |       |        |        |        |        | E      | 2                                 |
| 80 W                              | 7                              | 13                       |                |       |       |       |       |       |                |       |       |        |        |        |        | E      | 1                                 |
| 60 W                              | 13                             | 13                       |                |       |       |       |       |       |                |       |       |        |        |        |        | E      | 1                                 |
| 60 W                              | 6                              | 14                       |                |       |       |       |       |       |                |       |       |        |        |        |        |        | 0                                 |
| 40 W                              | 14                             | 14                       |                |       |       |       |       |       |                |       |       |        |        |        |        |        | 0                                 |

- A green square  in a bay means it can hold any blade server supported in the BladeCenter E *including* the HS22 and HS22V.
- A blue square  in a bay means it can hold any blade server *except* an HS22 or HS22V.
- An E in a square means that the bay must remain empty.
- No support for 130W HS22 and HS22V on BladeCenter E

HX5, HS22 and HS22V configurations supported in BC-H with 2900W power supplies:

| Blade         | Power rating of HX5, HS22 or HS22V CPU | Max blades installable | Power domain 1 |       |       |       |       |       |       | Power domain 2 |       |        |        |        |        |        | Total bays that must remain empty |
|---------------|----------------------------------------|------------------------|----------------|-------|-------|-------|-------|-------|-------|----------------|-------|--------|--------|--------|--------|--------|-----------------------------------|
|               |                                        |                        | Bay 1          | Bay 2 | Bay 3 | Bay 4 | Bay 5 | Bay 6 | Bay 7 | Bay 8          | Bay 9 | Bay 10 | Bay 11 | Bay 12 | Bay 13 | Bay 14 |                                   |
| HS22 or HS22V | Up to 95W                              | 14                     |                |       |       |       |       |       |       |                |       |        |        |        |        |        | 0                                 |
|               | 130W**                                 | 12                     |                |       |       |       |       |       | E     |                |       |        |        |        |        | E      | 2                                 |
| HX5           | Up to 105W                             | 14                     |                |       |       |       |       |       |       |                |       |        |        |        |        |        | 0                                 |
|               | 130W**                                 | 10                     |                |       |       |       |       | E     | E     |                |       |        |        |        | E      | E      | 4                                 |
| HX5+MAX5      | Up to 105W                             | 7                      |                |       |       |       |       |       |       |                |       |        |        |        |        |        | 0                                 |
|               | 130W                                   | 6                      |                |       |       |       |       |       |       |                |       |        |        |        | E      | E      | 2                                 |

- A green square  in a bay means blade supported
- An E in a square means that the bay must remain empty. Bay Number for representation only – bay number not relevant (example: empty bay 14 can be substituted for empty bay 1)
- Enhanced blowers (PN 68Y6650) must be installed to support 130W HS22, 130W HS22V and 130W HX5 in BladeCenter H

## HX5, HS22 and HS22V support across BladeCenter H, S and HT and E chassis

|                          | BCH 4SX        |                                 |                    |                  | BCH 4TX          |
|--------------------------|----------------|---------------------------------|--------------------|------------------|------------------|
|                          | 2900W          |                                 | 2980W (PN 68Y6601) |                  | 2980W            |
|                          | Legacy blowers | Enhanced blowers<br>PN: 68Y6650 | Legacy blowers     | Enhanced blowers | Enhanced blowers |
| HX5 (95W & 105W)         | 14             | 14                              | 14                 | 14               | 14               |
| HX5 (130W)               | No support     | 10                              | No support         | 12               | 12               |
| HX5 + MAX5 (95W, 105W)   | 7              | 7                               | 7                  | 7                | 7                |
| HX5 + MAX5 (130W)        | 6              | 6                               | 7                  | 7                | 7                |
| HS22 & HS22V (up to 95W) | 14             | 14                              | 14                 | 14               | 14               |
| HS22 & HS22V (130W)      | No support     | 12                              | No support         | 14               | 14               |

|                          | BC-S | BC-HT<br>(AC only)<br>Non NEBS | BladeCenter E |            |
|--------------------------|------|--------------------------------|---------------|------------|
|                          |      |                                | 2000W         | 2320W      |
| HX5 (95W & 105W)         | 5    | 10                             | No support    | No support |
| HX5 (130W)               | 4    | 8                              | No support    | No support |
| HX5 + MAX5 (95W, 105W)   | 2    | 5                              | No support    | No support |
| HX5 + MAX5 (130W)        | 2    | 5                              | No support    | No support |
| HS22 & HS22V (up to 95W) | 6    | 12                             | See Note 2^   | 14         |
| HS22 & HS22V (130W)      | 5    | 10                             | No support    | No support |

**Note:** HX5 not supported in BladeCenter E, BladeCenter HT NEBS and BladeCenter T

Refer to "**Note 2** HS22 and HS22V configurations supported in BC-E with 2000W power supplies:"

## Telco Blades to Telco Chassis Interoperability

This table provides guidance on blade servers that have been tested for NEBS Level 3 and ETSI compliance for use in a central office environment. The vendor CPU identifiers are listed for each blade server type (AMD, Cell, Intel, Power)

| <b>NEBS-Compliant Blade Servers</b>      | <b>T<br/>NEBS3 / ETSI</b> | <b>HT<br/>NEBS3 / ETSI</b>                                                             |
|------------------------------------------|---------------------------|----------------------------------------------------------------------------------------|
| HX5 (7872)                               | -                         | -                                                                                      |
| HS12 (8014,8028)                         | -                         | -                                                                                      |
| HS21 Dual Core (8853)                    | 5138 (35W)                | 5138 (35W)<br>5140 (65W)                                                               |
| HS21 Quad Core (8853)                    | L5408 (40W)               | E5345 (80W)<br>E5440 (80W)<br>L5408 (40W)                                              |
| HS21 XM Dual Core (7995)                 | 5138 (35W)                | 5138 (35W)                                                                             |
| HS21 XM Quad Core (7995)                 | L5408 (40W)               | E5345 (80W/4c)<br>E5440 (80W/4c)<br>L5408 (40W/2c)                                     |
| HS22 (7870)<br>Intel® Xeon® 5500 series  | -                         | E5540 (80W/4c)<br>L5518 (60W/4c)<br>L5508 (38W/2c)                                     |
| HS22 (7870)<br>Intel® Xeon® 5600 series  | -                         | Planned 4Q'10:<br>E5620 (80W/4c)<br>E5645 (80W/6c)<br>L5638 (60W/6c)<br>L5618 (40W/4c) |
| HS22V (7871)<br>Intel® Xeon® 5600 series | -                         | Planned 4Q'10:<br>E5620 (80W/4c)<br>E5645 (80W/6c)<br>L5638 (60W/6c)<br>L5618 (40W/4c) |
| LS22 (7901)                              | -                         | -                                                                                      |
| LS42 (7902)                              | -                         | 8376 HE (55W)                                                                          |
| JS12 (7998-60X)                          | -                         | -                                                                                      |
| JS22 (7998; except 60X)                  | -                         | P6 DC 4.0GHz                                                                           |
| JS23/43 (7778-23x)                       | -                         | P6+ 4.2GHz                                                                             |
| PS700/701/702 (8406-70Y/71Y)             | -                         | Planned 4Q'10                                                                          |
| QS21 (0792)                              | -                         | -                                                                                      |
| QS22 (0793)                              | -                         | Cell BE 3.2GHz                                                                         |

## BladeCenter HT Average Blade Power

Average per slot blade power is determined by AC or DC power chassis, power policy (user definable), and to a lesser extent, the power domain. The following table is for the BladeCenter HT, and assumes that all four power supplies are installed and all switch bays are occupied:

|                                             |                  | BLADE PWR  |            |  |                  | BLADE PWR  |            |
|---------------------------------------------|------------------|------------|------------|--|------------------|------------|------------|
|                                             | AC-W /<br>Domain | AC-<br>PD1 | AC-<br>PD2 |  | DC-W /<br>Domain | DC-<br>PD1 | DC-<br>PD2 |
| Redundant w/o Performance Impact            | 3160             | 404        | 410        |  | 2535             | 300        | 305        |
| Redundant with Potential Performance Impact | 3420             | 447        | 454        |  | 3160             | 404        | 410        |
| Non-Redundant                               | 4000             | 544        | 550        |  | 3420             | 447        | 453        |

## Blades to Expansion Units Interoperability

| Blade Servers                     | Storage I/O<br>39R7563 | Memory and<br>I/O<br>Expansion<br>Blade<br>42C1600 | Multi-Proc<br>Unit<br>26K5934 | PCI<br>Expansion<br>Unit II<br>25K8373 | BladeCenter<br>PCI Express<br>I/O<br>Expansion<br>Unit<br>43W4391 |
|-----------------------------------|------------------------|----------------------------------------------------|-------------------------------|----------------------------------------|-------------------------------------------------------------------|
| HX5 (7872)                        | -                      | -                                                  | -                             | -                                      | -                                                                 |
| HS12 (8014,8028)                  | Y                      | -                                                  | -                             | -                                      | Note 2                                                            |
| HS21 Dual and Quad Core (8853)    | Y                      | Y                                                  | -                             | Y                                      | Y                                                                 |
| HS21 XM Dual and Quad Core (7995) | Y                      | -                                                  | -                             | Y                                      | Y                                                                 |
| HS22 (7870)                       | -                      | -                                                  | -                             | -                                      | Y                                                                 |
| HS22V (7871)                      | -                      | -                                                  | -                             | -                                      | Y                                                                 |
| LS22 (7901)                       | Y                      | -                                                  | -                             | Y                                      | Y                                                                 |
| LS42 (7902)                       | Y                      | -                                                  | -                             | Y                                      | Y                                                                 |
| JS12 (7998-60X)                   | -                      | -                                                  | -                             | -                                      | -                                                                 |
| JS22 (7998; except 60X)           | -                      | -                                                  | -                             | -                                      | -                                                                 |
| JS23/43 (7778-23x)                | -                      | -                                                  | -                             | -                                      | -                                                                 |
| PS700/701/702 (8406-70Y/71Y)      | -                      | -                                                  | -                             | -                                      | -                                                                 |
| QS21 (0792)                       | -                      | -                                                  | -                             | -                                      | Y                                                                 |
| QS22 (0793)                       | -                      | -                                                  | -                             | -                                      | Y                                                                 |

**Note 1** If you need support on the PCI Expansion Unit II (PEU2) for the LS21/41, contact your IBM Representative. IBM System x Sales representative, a SPORE is required to execute the LS21/41 on PEU2 solution.

**Note 2** Support only for machine type 8028

## Expansion Units Detail

| Expansion Units                                    | Max<br>#<br>CPU | RAID<br>Contr<br>ol | #<br>HDD | Memo<br>ry<br>DIMM<br>Slots | On<br>Board<br>NICS | Exp<br>Slot 1 | Exp<br>Slot 2 | Exp Slot<br>3 |
|----------------------------------------------------|-----------------|---------------------|----------|-----------------------------|---------------------|---------------|---------------|---------------|
| Storage and I/O Expansion Unit<br>(39R7563)        | 0               | Y                   | 3        | 0                           | 0                   | Note 1        | Note 2        | Note 3        |
| Memory and I/O Expansion Unit<br>(42C1600)         | 0               | -                   | 0        | 4                           | 2                   | Note 1        | Note 2        | Note 3        |
| Multi-proc Expansion Unit<br>(26K5934)             | 2               | -                   | 1        | 8                           | 2                   | Note 1        | Note 2        | Note 3        |
| PCI I/O Expansion Unit II<br>(25K8373) Note 4      | 0               | 0                   | 0        | 0                           | 0                   | -             | -             | -             |
| PCI Express I/O Expansion Unit<br>(43W4391) Note 4 | 0               | 0                   | 0        | 0                           | 0                   | -             | -             | -             |

**Note 1** Slot 1: Either StFF, SFF, or CFFv card can be used in slot. The card in Slot 1 must be an Ethernet card.

**Note 2** Either StFF, SFF or CFFv can be used in slot (when StFF or SFF is installed, CFFh cannot be in adjacent slot)

**Note 3** HSEC or CFFh can be used in slot (when HSEC is installed, StFF or SFF cannot be in adjacent slot)

**Note 4** HSEC or CFFh can NOT be used on a blade on which a PEU II or BPE3 is installed

The following PCI-x adapters can be used in slot 1 or 2 of the PCI I/O Expansion Unit II (25K8373).

|         |                                                         |
|---------|---------------------------------------------------------|
| 02R0988 | IBM ServeRAID-6M Ultra320 SCSI Controller (256MB Cache) |
| 06P3601 | IBM 10/100 Ethernet Server Adapter                      |
| 13N2249 | IBM Ultra320 SCSI Controller 2                          |
| 24P0960 | DS4000 Host Bus Adapter                                 |
| 22P6901 | Wireless PCI                                            |
| 32P0033 | IBM ServeRAID-6M Ultra320 SCSI Controller (128MB Cache) |
| 39R8815 | IBM ServeRAID-6M Ultra320 SCSI Controller (128MB Cache) |
| 39R8816 | IBM ServeRAID-6M Ultra320 SCSI Controller (256MB Cache) |
| 39Y6079 | NetXtreme 1000 T + Ethernet Adapter                     |
| 39Y6088 | NetXtreme 1000 SX + Fiber Ethernet Adapter              |
| 39Y6093 | NetXtreme 1000 T + Dual Port Ethernet Adapter           |
| 73P4001 | NetXtreme 1000 SX+ Ethernet Adapter-PCI-X               |
| 73P4101 | NetXtreme 1000+ Server Adapter                          |
| 73P4201 | NetXtreme 1000+ Dual Port Server Adapter                |
| 90P3741 | CMM Redundant Management Module for BladeCenter T       |

The following PCI-e adapters can be used in slot 1 or 2 of the PCI Express I/O Expansion Unit(43W4391).

|         |                                                     |
|---------|-----------------------------------------------------|
| 39R6525 | QLogic 4Gb FC Single-Port PCIe HBA for IBM System x |
| 39R6527 | QLogic 4Gb FC Dual-Port PCIe HBA for IBM System x   |
| 39Y6066 | NetXtreme II 1000 Express Ethernet Adapter          |
| 39Y6136 | PRO/1000 PT Quad Port Server Adapter by Intel       |
| 43W4324 | IBM Ultra 320 SCSI Controller PCIe                  |
| 43W4339 | ServeRAID-MR10M SAS/SATA Controller                 |

## Blade Server to I/O Adapters/Modules Interoperability

| Option Part Number /<br>Feature Code for x /<br>Feature Code for p | I/O Expansion adapters/cards or<br>connection devices (Form Factor) | H<br>X<br>5 | H<br>S<br>1<br>2 | H<br>S<br>2<br>1 | H<br>S<br>2<br>1<br>X<br>M | H<br>S<br>2<br>2  | H<br>S<br>2<br>2<br>V | L<br>S<br>2<br>2 | L<br>S<br>4<br>2 |
|--------------------------------------------------------------------|---------------------------------------------------------------------|-------------|------------------|------------------|----------------------------|-------------------|-----------------------|------------------|------------------|
|                                                                    | <b>SAS</b>                                                          |             |                  |                  |                            |                   |                       |                  |                  |
| 43W3974                                                            | SAS Connectivity Card (CFFv)                                        | -           | Y                | -                | Y                          | -                 | -                     | -                | -                |
| 39Y9190//8250                                                      | SAS Expansion Card (CFFv)                                           | -           | -                | Y                | -                          | -                 | -                     | -                | -                |
| 43W4068//8246                                                      | SAS Connectivity Card (CIOv)                                        | Y           | -                | -                | -                          | Y <sup>6</sup>    | Y <sup>6</sup>        | -                | -                |
| 46C7167//8257                                                      | ServeRAID MR10ie (CIOv)                                             | -           | Y <sup>4</sup>   | -                | -                          | Y <sup>6, 7</sup> | Y <sup>6, 8</sup>     | -                | -                |
|                                                                    | <b>InfiniBand</b>                                                   |             |                  |                  |                            |                   |                       |                  |                  |
| 32R1760                                                            | Cisco Systems 4X InfiniBand Expansion Card (HSFF) <sup>3</sup>      | -           | Y                | Y                | Y                          | -                 | -                     | Y                | Y                |
| 43W4420//8298                                                      | Voltaire 4x InfiniBand DDR Expansion Card (CFFh) <sup>3</sup>       | -           | Y                | Y                | Y                          | Y                 | Y                     | Y                | Y                |
| 43W4423//8258                                                      | 4x InfiniBand DDR Expansion Card (CFFh) <sup>3</sup>                | -           | Y                | Y                | Y                          | Y                 | Y                     | Y                | Y                |
| 46M6001//8272                                                      | 2-port 40Gb InfiniBand Expansion Card (CFFh) <sup>3</sup>           | Y           | Y                | Y                | Y                          | Y                 | Y                     | Y                | Y                |
|                                                                    | <b>Ethernet</b>                                                     |             |                  |                  |                            |                   |                       |                  |                  |
| 39R8624                                                            | IBM SFF Gb Expansion Card (SFF)                                     | -           | Y                | Y                | Y                          | -                 | -                     | Y                | Y                |
| 39Y9310 / / 8249                                                   | Ethernet Expansion Card (CFFv)                                      | -           | Y                | Y                | Y                          | -                 | -                     | Y                | Y                |
| 44W4465                                                            | 4 port 10Gb card (CFFh) <sup>5</sup>                                | -           | Y                | Y                | Y                          | Y                 | Y                     | Y                | Y                |
| 44W4466                                                            | Broadcom 10Gb 2-port Ethernet Exp Card (CFFh) <sup>5</sup>          | -           | Y                | Y                | Y                          | Y                 | Y                     | Y                | Y                |
| 44W4475// 8243                                                     | Ethernet Expansion Card (CIOv)                                      | Y           | -                | -                | -                          | Y                 | Y                     | -                | -                |
| 44W4479//8291                                                      | 2/4 Port Ethernet Expansion Card (CFFh) <sup>9</sup>                | Y           | Y                | Y                | Y                          | Y                 | Y                     | Y                | Y                |
| 46M6164//8293                                                      | Broadcom 10 Gb Gen 2 4-port Ethernet Expansion Card (CFFh)          | Y           | -                | Y                | Y                          | Y                 | Y                     | Y                | Y                |
| 46M6168//8292                                                      | Broadcom 10 Gb Gen 2 2-port Ethernet Expansion Card (CFFh)          | Y           | -                | Y                | Y                          | Y                 | Y                     | Y                | Y                |
| 49Y4235                                                            | Emulex Virtual Fabric Adapter (CFFh)                                | Y           | -                | -                | -                          | Y                 | Y                     | -                | -                |
| 42C1810                                                            | Intel 10 Gb 2-port Ethernet Expansion Card                          | -           | -                | -                | -                          | Y                 | Y                     | -                | -                |
|                                                                    | <b>Fibre Channel over Ethernet (FCoE)</b>                           |             |                  |                  |                            |                   |                       |                  |                  |
| 81Y1650                                                            | Brocade 2-port 10GbE Converged Network Adapter for IBM BladeCenter  | -           | -                | -                | -                          | Y                 | Y                     | -                | -                |
| 42C1830 //8275                                                     | QLogic 2-port 10Gb Converged Network Adapter (CFFh)                 | Y           | Y                | Y                | Y                          | Y                 | Y                     | Y                | Y                |

## Blade Server to I/O Adapters/Modules Interoperability Continued

| Option Part Number /<br>Feature Code for x /<br>Feature Code for p | I/O Expansion adapters/cards or<br>connection devices (Form Factor) | J<br>S<br>1<br>2 | J<br>S<br>2<br>2 | J<br>S<br>2<br>3 | J<br>S<br>4<br>3 | P<br>S<br>7<br>0<br>0 | P<br>S<br>7<br>0<br>1 | P<br>S<br>7<br>0<br>2 | P<br>N<br>4<br>1 | Q<br>S<br>2<br>1 | Q<br>S<br>2<br>2 |
|--------------------------------------------------------------------|---------------------------------------------------------------------|------------------|------------------|------------------|------------------|-----------------------|-----------------------|-----------------------|------------------|------------------|------------------|
|                                                                    | <b>SAS</b>                                                          |                  |                  |                  |                  |                       |                       |                       |                  |                  |                  |
| 43W3974                                                            | SAS Connectivity Card (CFFv)                                        | -                | -                | -                | -                | -                     | -                     | -                     | -                | -                | -                |
| 39Y9190//8250                                                      | SAS Expansion Card (CFFv)                                           | Y                | Y                | -                | -                | -                     | -                     | -                     | -                | -                | -                |
| 43W4068//8246                                                      | SAS Connectivity Card (CIOv)                                        | -                | -                | Y <sup>12</sup>  | Y <sup>12</sup>  | Y <sup>12</sup>       | Y <sup>12</sup>       | Y <sup>12</sup>       | -                | -                | -                |
| 46C7167//8257                                                      | ServeRAID MR10ie (CIOv)                                             | -                | -                | -                | -                | -                     | -                     | -                     | -                | -                | -                |
|                                                                    | <b>InfiniBand</b>                                                   |                  |                  |                  |                  |                       |                       |                       |                  |                  |                  |
| 32R1760                                                            | Cisco Systems 4X InfiniBand Expansion Card (HSFF) <sup>3</sup>      | Y                | Y                | -                | -                | -                     | -                     | -                     | -                | Y                | Y                |
| 43W4420//8298                                                      | Voltaire 4x InfiniBand DDR Expansion Card (CFFh) <sup>3</sup>       | Y                | Y                | Y                | Y                | -                     | -                     | -                     | -                | -                | -                |
| 43W4423//8258                                                      | 4x InfiniBand DDR Expansion Card (CFFh) <sup>3</sup>                | Y                | Y                | Y                | Y                | Y                     | Y                     | Y                     | -                | Y                | Y                |
| 46M6001//8272                                                      | 2-port 40Gb InfiniBand Expansion Card (CFFh) <sup>3</sup>           | -                | -                | -                | -                | -                     | -                     | -                     | -                | -                | -                |
|                                                                    | <b>Ethernet</b>                                                     |                  |                  |                  |                  |                       |                       |                       |                  |                  |                  |
| 39R8624                                                            | IBM SFF Gb Expansion Card (SFF)                                     | -                | -                | -                | -                | -                     | -                     | -                     | -                | -                | -                |
| 39Y9310 // 8249                                                    | Ethernet Expansion Card (CFFv)                                      | Y                | Y                | -                | -                | -                     | -                     | -                     | -                | -                | -                |
| 44W4465                                                            | 4 port 10Gb card (CFFh) <sup>5</sup>                                | -                | -                | -                | -                | -                     | -                     | -                     | -                | -                | -                |
| 44W4466                                                            | Broadcom 10Gb 2-port Ethernet Exp Card (CFFh) <sup>5</sup>          | -                | -                | -                | -                | -                     | -                     | -                     | -                | -                | -                |
| 44W4475// 8243                                                     | Ethernet Expansion Card (CIOv)                                      | -                | -                | -                | -                | -                     | -                     | -                     | -                | -                | -                |
| 44W4479 // 8291                                                    | 2/4 Port Ethernet Expansion Card (CFFh) <sup>9</sup>                | Y                | Y                | Y                | Y                | Y                     | Y                     | Y                     | -                | -                | -                |
| 46M6164//8293                                                      | Broadcom 10 Gb Gen 2 4-port Ethernet Expansion Card (CFFh)          | -                | -                | -                | -                | -                     | -                     | -                     | -                | -                | -                |
| 46M6168//8292                                                      | Broadcom 10 Gb Gen 2 2-port Ethernet Expansion Card (CFFh)          | -                | -                | -                | -                | -                     | -                     | -                     | -                | -                | -                |
| 49Y4235                                                            | Emulex Virtual Fabric Adapter (CFFh)                                | -                | -                | -                | -                | -                     | -                     | -                     | -                | -                | -                |
| 42C1810                                                            | Intel 10 Gb 2-port Ethernet Expansion Card                          | -                | -                | -                | -                | -                     | -                     | -                     | -                | -                | -                |
|                                                                    | <b>Fibre Channel over Ethernet (FCoE)</b>                           |                  |                  |                  |                  |                       |                       |                       |                  |                  |                  |
| 81Y1650                                                            | Brocade 2-port 10GbE Converged Network Adapter for IBM BladeCenter  | -                | -                | -                | -                | -                     | -                     | -                     | -                | -                | -                |
| 42C1830 //8275                                                     | QLogic 2-port 10Gb Converged Network Adapter (CFFh)                 | Y <sup>10</sup>  | Y <sup>10</sup>  | Y <sup>10</sup>  | Y <sup>10</sup>  | Y <sup>10</sup>       | Y <sup>10</sup>       | Y <sup>10</sup>       | -                | -                | -                |

**Note 3** Only one CFFh/HS Option is allowed PER single-wide or multi-width Blade configuration, with one exception; the JS43. Except for the JS43, it the CFFh/HS Option must be installed on the top unit of the multi-width blade. In the JS43, the CFFh/HS option may be stored in the top and/or bottom unit of the double-wide configuration.

**Note 4** a. Supported only on machine type 8028.

b. Attach to other disks not on the server blade (e.g. DSM, EXP 3000) requires the SAS Connectivity Card (43W3974) to be installed

**Note 5** Supported only on BC-H and BC-HT

**Note 6** HS22 cannot physically accommodate both the SRMR10ie (46C7167) and the SAS Connectivity Card (43W4068) as they both go in the same connector.

**Note 7** Does not support the use of SATA or SSD drives on the HS22 blade.

**Note 8** Installation of optional battery-backed RAID adapter is for connection to external storage, not for internal SSD drives.

**Note 9** This 1Gb CFFh adapter drives HSSM bays 7,8,9,10

**Note 10** See FCoE Configuration Matrix for JS/PS Blades

**Note 11** Limitations (per 30mm HX5 blade)

- Both CPUs must be populated
  - Not supported on HX5 with 130W CPUs
  - Not supported with 105W CPUs on BCS chassis
- Up to 12 memory DIMMs populated
- For BCH, supported only in the BCH 4TX model with enhanced blowers

**Note 12** IBM BladeCenter S 6-Disk Storage Module, Options PN 43W3581 FC#4545 must be installed in BCS Chassis to support external SAS storage using the SAS Connectivity Card in JS and PS blades.

## Blade Server to I/O Adapters/Modules Interoperability continued

| Option Part Number<br>/ Feature Code for x<br>/ Feature Code for p | I/O Expansion<br>adapters/cards or<br>connection devices (Form<br>Factor)         | H<br>X<br>5 | H<br>S<br>1<br>2 | H<br>S<br>2<br>1 | H<br>S<br>2<br>1<br>X<br>M | H<br>S<br>2<br>2 | H<br>S<br>2<br>2<br>V | L<br>S<br>2<br>2 | L<br>S<br>4<br>2 |
|--------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------|------------------|------------------|----------------------------|------------------|-----------------------|------------------|------------------|
| <b>Fibre Channel</b>                                               |                                                                                   |             |                  |                  |                            |                  |                       |                  |                  |
| 26R0890                                                            | QLogic 4Gb SFF Fibre<br>Channel Expansion Card<br>(SFF) <sup>4</sup>              | -           | -                | Y                | Y                          | -                | -                     | -                | -                |
| 39Y9186                                                            | Emulex 4Gb SFF Fibre<br>Channel Expansion Card<br>(SFF) <sup>5</sup>              | -           | -                | Y                | Y                          | -                | -                     | -                | -                |
| 39Y9306 // 8252                                                    | QLogic Ethernet and 4Gb<br>Fibre Channel Expansion Card<br>(CFFh) <sup>3,4</sup>  | Y           | Y                | Y                | Y                          | -                | -                     | Y                | Y                |
| 43W6859 // 8251                                                    | Emulex 4Gb Fibre Channel<br>Expansion Card (CFFv) <sup>5</sup>                    | -           | Y                | Y                | Y                          | -                | -                     | Y                | Y                |
| 41Y8527 // 8248                                                    | QLogic 4Gb Fibre Channel<br>Expansion Card (CFFv) <sup>4</sup>                    | -           | Y                | Y                | Y                          | -                | -                     | Y                | Y                |
| 44X1940//8271                                                      | QLogic Ethernet and 8 GB<br>Fibre Channel Expansion Card<br>(CFFH) <sup>3,6</sup> | Y           | Y                | Y                | Y                          | Y                | Y                     | Y                | Y                |
| 44X1945 // 8242                                                    | Qlogic 8GB Fibre Channel<br>Card (CIOv) <sup>1</sup>                              | Y           | -                | -                | -                          | Y                | Y                     | -                | -                |
| 46M6065//8241                                                      | QLogic 4Gb Fibre Channel<br>Expansion Card (CIOv) for<br>IBM BladeCenter          | Y           | -                | -                | -                          | Y                | Y                     | -                | -                |
| 46M6140 //8240                                                     | Emulex 8Gb Fibre Channel<br>Expansion Card (CIOv)                                 | Y           | -                | -                | -                          | Y                | Y                     | -                | -                |
| <b>Myrinet</b>                                                     |                                                                                   |             |                  |                  |                            |                  |                       |                  |                  |
| 73P6000 // 8247                                                    | Myrinet Cluster Expansion<br>Card (StFF)                                          | -           | -                | Y                | Y                          | -                | -                     | Y                | Y                |
| <b>iSCSI</b>                                                       |                                                                                   |             |                  |                  |                            |                  |                       |                  |                  |
| 32R1923                                                            | QLogic iSCSI Expansion Card<br>(StFF)                                             | -           | -                | Y                | Y                          | -                | -                     | Y                | Y                |
| <b>Other Blade Options</b>                                         |                                                                                   |             |                  |                  |                            |                  |                       |                  |                  |
| 38R4163                                                            | PCI NVRAM Blade Adapter                                                           | -           | -                | -                | -                          | -                | -                     | -                | -                |
| 26K5939                                                            | cKVM Feature Card                                                                 | -           | Y                | Y                | Y                          | -                | -                     | Y                | Y                |

## Blade Server to I/O Adapters/Modules Interoperability continued

| Option Part Number<br>/ Feature Code for x<br>/ Feature Code for p | I/O Expansion adapters/cards or<br>connection devices (Form<br>Factor)       | J<br>S<br>1<br>2 | J<br>S<br>2<br>2 | J<br>S<br>2<br>3 | J<br>S<br>4<br>3 | P<br>S<br>7<br>0<br>0 | P<br>S<br>7<br>0<br>1 | P<br>S<br>7<br>0<br>2 | P<br>N<br>4<br>1 | Q<br>S<br>2<br>1 | Q<br>S<br>2<br>2 |
|--------------------------------------------------------------------|------------------------------------------------------------------------------|------------------|------------------|------------------|------------------|-----------------------|-----------------------|-----------------------|------------------|------------------|------------------|
| <b>Fibre Channel</b>                                               |                                                                              |                  |                  |                  |                  |                       |                       |                       |                  |                  |                  |
| 26R0890                                                            | QLogic 4Gb SFF Fibre Channel Expansion Card (SFF) <sup>4</sup>               | -                | -                | -                | -                | -                     | -                     | -                     | -                | -                | -                |
| 39Y9186                                                            | Emulex 4Gb SFF Fibre Channel Expansion Card (SFF) <sup>5</sup>               | -                | -                | -                | -                | -                     | -                     | -                     | -                | -                | -                |
| 39Y9306 // 8252                                                    | QLogic Ethernet and 4Gb Fibre Channel Expansion Card (CFFh) <sup>3, 4</sup>  | Y                | Y                | Y                | Y                | Y                     | Y                     | Y                     | -                | -                | -                |
| 43W6859 // 8251                                                    | Emulex 4Gb Fibre Channel Expansion Card (CFFv) <sup>5</sup>                  | Y                | Y                | -                | -                | -                     | -                     | -                     | -                | -                | -                |
| 41Y8527 // 8248                                                    | QLogic 4Gb Fibre Channel Expansion Card (CFFv) <sup>4</sup>                  | Y                | Y                | -                | -                | -                     | -                     | -                     | -                | -                | -                |
| 44X1940//8271                                                      | QLogic Ethernet and 8 GB Fibre Channel Expansion Card (CFFh) <sup>3, 6</sup> | Y <sup>2</sup>   | Y <sup>2</sup>   | Y <sup>2</sup>   | Y <sup>2</sup>   | Y <sup>2</sup>        | Y <sup>2</sup>        | Y <sup>2</sup>        | -                | -                | -                |
| 44X1945 // 8242                                                    | Qlogic 8GB Fibre Channel Card (CIOv) <sup>1</sup>                            | -                | -                | Y                | Y                | Y                     | Y                     | Y                     | -                | -                | -                |
| 46M6065//8241                                                      | QLogic 4Gb Fibre Channel Expansion Card (CIOv) for IBM BladeCenter           | -                | -                | Y                | Y                | Y                     | Y                     | Y                     | -                | -                | -                |
| 46M6140 //8240                                                     | Emulex 8Gb Fibre Channel Expansion Card (CIOv)                               | -                | -                | Y                | Y                | Y                     | Y                     | Y                     | -                | -                | -                |
| <b>Myrinet</b>                                                     |                                                                              |                  |                  |                  |                  |                       |                       |                       |                  |                  |                  |
| 73P6000 // 8247                                                    | Myrinet Cluster Expansion Card (StFF)                                        | -                | -                | -                | -                | -                     | -                     | -                     | -                | -                | -                |
| <b>iSCSI</b>                                                       |                                                                              |                  |                  |                  |                  |                       |                       |                       |                  |                  |                  |
| 32R1923                                                            | QLogic iSCSI Expansion Card (StFF)                                           | Y                | Y                | -                | -                | -                     | -                     | -                     | -                | -                | -                |
| <b>Other Blade Options</b>                                         |                                                                              |                  |                  |                  |                  |                       |                       |                       |                  |                  |                  |
| 38R4163                                                            | PCI NVRAM Blade Adapter                                                      | -                | -                | -                | -                | -                     | -                     | -                     | -                | -                | -                |
| 26K5939                                                            | cKVM Feature Card                                                            | -                | -                | -                | -                | -                     | -                     | -                     | -                | -                | -                |

**Note 1** Not supported on Brocade 10 port – 4Gb SAN Switch (32R1813) and Brocade 20 port – 4Gb SAN Switch (32R1812)

**Note 2** Supported only as a Fibre Channel card with both Linux AIX, and IBM i.

**Note 3** Only one CFFh/HS Option is allowed PER Blade. It must be installed on the top unit of the multi-width blade

**Note 4** Internal switch connections to blade ports only supported at 2Gb FC in BC-T and BCH-T chassis with all switches except for 44X1905 / 3241 and 44X1907 / 3241 which support a max of 4Gb internal port speed in BC-HT only. External FC ports max speed is based on the individual switch capabilities.

**Note 5** Internal switch connections to blade ports only supported at 2Gb FC in BC-T and BCH-T chassis. External FC ports max speed is based on the individual switch capabilities.

**Note 6** Supported only in BCH with MSIM

## Blade Expansion cards Form Factors

| Blade Servers                   | CFFh | CFFv | CIOv           | HSEC | SFF | StFF           |
|---------------------------------|------|------|----------------|------|-----|----------------|
| HX5 (7872)                      | Y    | -    | Y              | -    | -   | -              |
| HS12 (8014,8028)                | Y    | Y    | Y <sup>2</sup> | -    | Y   | -              |
| HS21 (8853)                     | Y    | Y    | -              | Y    | Y   | Y              |
| HS21 XM (7995)                  | Y    | Y    | -              | Y    | Y   | Y              |
| HS22 (7870)                     | Y    | -    | Y              | -    | -   | -              |
| HS22 V (7871)                   | Y    | -    | Y              | -    | -   | -              |
| LS22                            | Y    | Y    | -              | Y    | Y   | Y              |
| LS41 (7972)                     | Y    | Y    | -              | Y    | Y   | Y              |
| LS42 (                          | Y    | Y    | -              | Y    | Y   | Y              |
| JS12 (7998-60X)                 | Y    | Y    | -              | Y    | -   | Y              |
| JS22 (7998-61x)                 | Y    | Y    | -              | Y    | -   | Y <sup>1</sup> |
| JS23/43 (7778-23x)              | Y    | -    | Y              | -    | -   | -              |
| PS700/701/702<br>(8406-70Y/71Y) | Y    | -    | y              | -    | -   | -              |
| QS21 (0792)                     | Y    | Y    | -              | Y    | -   | -              |
| QS22 (0793)                     | Y    | Y    | -              | Y    | -   | -              |

**Note 1** JS12 and JS22 can physically accommodate the StFF form factor, but no StFF option cards will be tested and/or supported on it.

**Note 2** Only works with ServeRAID-MR10ie (46C7167)

## Chassis to I/O Modules Interoperability

| Option Part Number/<br>Feature Code for x/<br>Feature Code for p | I/O Module                                                   | S (88 86)       | E <sup>5</sup> (86 77) | T (DC 8720, AC 8730) | H <sup>7, 10</sup> (8852, 7989) | HT <sup>7, 10</sup> (8740, 8750) | MSIM <sub>3</sub> | MSIM-HT <sup>3</sup> | aMM/cMM2        | MM |
|------------------------------------------------------------------|--------------------------------------------------------------|-----------------|------------------------|----------------------|---------------------------------|----------------------------------|-------------------|----------------------|-----------------|----|
| <b>SAS</b>                                                       |                                                              |                 |                        |                      |                                 |                                  |                   |                      |                 |    |
| 39Y9195//32 67                                                   | SAS Connectivity Module                                      | Y               | Y <sup>6</sup>         | Y                    | Y                               | Y                                | -                 | -                    | Y               | -  |
| 43W3584 //3734                                                   | IBM BladeCenter S SAS RAID Controller Module <sup>4</sup>    | Y               | -                      | -                    | -                               | -                                | -                 | -                    | Y               | -  |
| <b>Ethernet</b>                                                  |                                                              |                 |                        |                      |                                 |                                  |                   |                      |                 |    |
| 32R1859 // 3211                                                  | BNT Layer 2-7 Gb Ethernet Switch                             | Y               | Y                      | Y <sup>13</sup>      | Y                               | Y <sup>13</sup>                  | -                 | -                    | Y               | Y  |
| 32R1860 // 3212                                                  | BNT Layer 2/3 Copper Gb Ethernet Switch                      | Y <sup>12</sup> | Y                      | Y <sup>13</sup>      | Y                               | Y <sup>13</sup>                  | Y <sup>1</sup>    | Y                    | Y               | Y  |
| 32R1861 // 3213                                                  | BNT Layer 2/3 Fiber Gb Ethernet Switch                       | Y <sup>12</sup> | Y                      | Y <sup>13</sup>      | Y                               | Y <sup>13</sup>                  | Y <sup>1</sup>    | -                    | Y               | Y  |
| 32R1888 // 3214                                                  | Cisco Systems Intelligent Gb Fiber Ethernet Switch           | -               | Y                      | Y <sup>13</sup>      | Y                               | Y <sup>13</sup>                  | Y <sup>1</sup>    | -                    | Y               | -  |
| 32R1892                                                          | Cisco Systems Intelligent Gb Ethernet Switch                 | -               | Y                      | Y <sup>13</sup>      | Y                               | Y <sup>13</sup>                  | Y <sup>1</sup>    | Y                    | Y               | -  |
| 39Y9267                                                          | BNT 6-port 10Gb Ethernet Switch Module                       | -               | -                      | -                    | Y <sup>8</sup>                  | Y <sup>13</sup>                  | -                 | -                    | Y               | -  |
| 39Y9324// 3220                                                   | Server Connectivity Module                                   | Y               | Y                      | Y <sup>13</sup>      | Y                               | Y <sup>13</sup>                  | Y <sup>1</sup>    | -                    | Y               | Y  |
| 41Y8522 / 2988 / 3171                                            | Cisco Catalyst Switch Module 3110X                           | -               | Y                      | Y <sup>13</sup>      | Y <sup>14</sup>                 | Y <sup>13</sup>                  | Y <sup>1</sup>    | Y                    | Y               | -  |
| 41Y8523 / 2989 / 3173                                            | Cisco Catalyst Switch Module 3110G                           | -               | Y                      | Y <sup>13</sup>      | Y <sup>14</sup>                 | Y <sup>13</sup>                  | Y <sup>1</sup>    | Y                    | Y               | -  |
| 43W4395 / 5450 / 3174                                            | Cisco Catalyst Switch Module 3012                            | Y <sup>12</sup> | Y                      | Y <sup>13</sup>      | Y                               | Y <sup>13</sup>                  | Y <sup>1</sup>    | Y                    | Y               | -  |
| 44W4404 // 1590                                                  | BNT 1/10 Gb Uplink Ethernet Switch Module                    | Y <sup>12</sup> | Y                      | Y <sup>13</sup>      | Y <sup>14</sup>                 | Y <sup>13</sup>                  | Y <sup>1</sup>    | Y                    | Y               | -  |
| 46C7191// 3248                                                   | BNT 10-Port 10 Gb Ethernet Switch Module for IBM BladeCenter | -               | -                      | -                    | Y                               | Y <sup>13</sup>                  | -                 | -                    | Y               | -  |
| 46M6071                                                          | Cisco Nexus 4001I Switch Module                              | -               | -                      | -                    | Y                               | Y                                | -                 | -                    | Y               | -  |
| 46M6172// 3268                                                   | QLogic Virtual Fabric Extension Module                       | -               | -                      | -                    | Y                               | -                                | -                 | -                    | Y <sup>11</sup> | -  |
| 46M6181// 5412                                                   | 10Gb Ethernet Pass-Thru Module                               | -               | -                      | -                    | Y                               | Y                                | -                 | -                    | Y               | -  |
| 69Y1909                                                          | Brocade Converged 10GbE Switch Module for IBM BladeCenter    | -               | -                      | -                    | Y                               | Y                                | -                 | -                    | -               | -  |
| <b>InfiniBand</b>                                                |                                                              |                 |                        |                      |                                 |                                  |                   |                      |                 |    |
| 32R1756 // 3217                                                  | Cisco Systems 4X InfiniBand Switch Module                    | -               | -                      | -                    | Y                               | -                                | -                 | -                    | Y               | -  |
| 43W4419// 3216                                                   | 4x InfiniBand Pass-Thru Module                               | -               | -                      | -                    | Y                               | -                                | -                 | -                    | Y               | -  |
| 46M6005// 3204                                                   | Voltaire 40Gb InfiniBand Switch Module                       | -               | -                      | -                    | Y                               | -                                | -                 | -                    | Y               | -  |

**Note 1** Supported in left I/O Module bay of MSIM (39Y9314) with I/O cards QLogic Ethernet and 4 Gb Fibre Channel Expansion Card (CFFh, 39Y9306) and QLogic Ethernet and 8 GB Fibre Channel Expansion Card (CFFH, 44X1940). Supported in left and right I/O bay with 2/4 Port Ethernet Expansion Card (CFFh, 44W4479).

**Note 2** Supported in right I/O Module bay of MSIM (39Y9314) in BC-H or MSIM-HT = 44R5913 in BC-HT with I/O card QLogic Ethernet and 4 Gb Fibre Channel Expansion Card (CFFh, 39Y9306)

**Note 3** MSIM = 39Y9314. MSIM-HT = 44R5913

**Note 4** a. SAS RAID Controller Module minimum quantity of 2 is supported and must be installed in BladeCenter S I/O Bays 3 and 4  
b. SAS RAID Controller supports new Nearline SAS disk, (42D0546), which have features similar to SATA disks. The SAS RAID Controller Module does not support SATA disks  
c. SAS RAID Controller should be used with the SAS Expansion Card (CFFv) for IBM BladeCenter (39Y9190), the SAS Connectivity Card (CFFv) for IBM BladeCenter (43W3974) or the SAS Connectivity Card (CIOv) for IBM BladeCenter (43W4068) as appropriate by blade type specified elsewhere in this document (current pages 14-15).  
d. One Battery Backup Unit is shipped / packaged with each SAS RAID Controller  
e. External storage or host attachment via the external SAS ports on the SAS RAID Controller is not supported.

**Note 5** BCE chassis came standard with the Management Module, not the Advanced Management Module (AMM).

**Note 6** When using BCE chassis with SAS Connectivity module (39Y9195), you must also have a AMM installed in the chassis.

**Note 7** 44W4479 is a four port 1GB Ethernet adapter. It requires the MSIM in the BC-H or MSIM-HT in the BC-HT and an ethernet switch in the left and right side of the MSIMs or up to 4 BNT Virtual Fabric 10Gb (46C7191) or Cisco Nexus 4001i (46M6071) high-speed switch modules.

**Note 8** BC-H and BC-HT now supports four BNT 6-port 10Gb Ethernet Switches (39Y9267) when combined with Broadcom 4 port 10GB card (44W4465)

**Note 10** Power supplies 3 and 4 are required when installing a switch module into Bays 5 through 10

**Note 11** Supports only aMM

**Note 12** Supported in BC-S chassis bay 1 or bay 2 with a CFFh Ethernet card

**Note 13** Switch is NEBS Level 3 compliant in respective chassis. Reports are available upon request.

**Note 14** Link Aggregation is not supported with the SOL ethernet port on JS and PS blades.

## Chassis to I/O Modules Interoperability continued

A Brocade SAN Switch Module for BladeCenter or any other Brocade switch or director utilizing the Fabric OS Access Gateway mode can connect to an INCITS T11 NPIV compliant device. The Brocade Access Gateway mode was designed to adhere to this standard. In addition, any INCITS T11 NPIV compliant device can connect to a Brocade switch or director that supports NPIV connectivity. Brocade does not test or make a discreet statement of support for any other vendor's devices. Brocade will assist IBM with problem determination for compliant configurations.

| Option Part Number / Feature Code for x / Feature Code for p | I/O Module                                               | S (88 86) | E (86 77)       | T (DC 8720, AC 8730) | H <sup>12</sup> (8852, 7989) | HT <sup>12</sup> (8740, 8750) | MSIM               | MSIM-HT        | aMM/cMM2 | MM |
|--------------------------------------------------------------|----------------------------------------------------------|-----------|-----------------|----------------------|------------------------------|-------------------------------|--------------------|----------------|----------|----|
| <b>Fibre Channel</b>                                         |                                                          |           |                 |                      |                              |                               |                    |                |          |    |
| 32R1812 // 3206                                              | Brocade 20 port – 4Gb SAN Switch                         | -         | Y               | Y <sup>6, 15</sup>   | Y                            | Y <sup>6, 15</sup>            | Y <sup>2, 5</sup>  | -              | Y        | Y  |
| 32R1813 // 3207                                              | Brocade 10 port – 4Gb SAN Switch                         | Y         | Y               | Y <sup>6, 15</sup>   | Y                            | Y <sup>6, 15</sup>            | Y <sup>2, 5</sup>  | -              | Y        | Y  |
| 39Y9280 // 3242                                              | Cisco Systems 4Gb 20 port Fibre Channel Switch Module    | -         | Y               | Y <sup>6</sup>       | Y                            | Y <sup>6, 15</sup>            | Y <sup>2, 5</sup>  | -              | Y        | Y  |
| 39Y9284 // 3241                                              | Cisco Systems 4Gb 10 port Fibre Channel Switch Module    | Y         | Y               | Y <sup>6</sup>       | Y                            | Y <sup>6, 15</sup>            | Y <sup>2, 5</sup>  | -              | Y        | Y  |
| 43W6723 // 3245                                              | 4Gb Intelligent Pass-thru Module for IBM BladeCenter     | Y         | Y               | Y <sup>6</sup>       | Y                            | Y <sup>6</sup>                | Y <sup>2, 5</sup>  | -              | Y        | Y  |
| 43W6724 // 3243                                              | QLogic 10 port – 4Gb SAN Switch Module                   | Y         | Y               | Y <sup>6, 15</sup>   | Y                            | Y <sup>6, 15</sup>            | Y <sup>2, 5</sup>  | Y <sup>2</sup> | Y        | Y  |
| 43W6725 // 3244                                              | QLogic 20 port – 4Gb SAN Switch Module                   | -         | Y               | Y <sup>6, 15</sup>   | Y                            | Y <sup>6, 15</sup>            | Y <sup>2, 5</sup>  | Y <sup>2</sup> | Y        | Y  |
| 44X1905 // 3284                                              | QLogic(R) 20-port 8 Gb SAN Switch Module <sup>7</sup>    | Y         | Y               | Y <sup>8</sup>       | Y                            | Y <sup>9, 15</sup>            | Y <sup>2, 5</sup>  | -              | Y        | -  |
| 44X1907 // 5449                                              | QLogic(R) 8 Gb Intelligent Pass-thru Module <sup>7</sup> | Y         | Y               | Y <sup>8</sup>       | Y                            | Y <sup>9, 15</sup>            | Y <sup>2, 5</sup>  | -              | Y        | -  |
| 42C1828                                                      | Brocade Enterprise 20port switch with software           | -         | Y <sup>10</sup> | -                    | Y <sup>10</sup>              | Y <sup>9, 10, 15</sup>        | Y <sup>5, 11</sup> | -              | Y        | -  |
| 44X1920//5869                                                | Brocade 20-port 8Gb SAN Switch Module                    | -         | Y <sup>10</sup> | -                    | Y <sup>10</sup>              | Y <sup>9, 10, 15</sup>        | Y <sup>5, 11</sup> | -              | Y        | -  |
| 44X1921//5045                                                | Brocade 10-port 8Gb SAN Switch Module                    | -         | Y <sup>10</sup> | -                    | Y <sup>10</sup>              | Y <sup>9, 10, 15</sup>        | Y <sup>5, 11</sup> | -              | Y        | -  |
| <b>Other Modules</b>                                         |                                                          |           |                 |                      |                              |                               |                    |                |          |    |
| 39Y9314 // 3239                                              | Multi-switch Interconnect Module (MSIM)                  | -         | -               | -                    | Y                            | -                             | -                  | -              | Y        | -  |
| 44R5913 //                                                   | Multi-switch Interconnect Module (MSIM-HT)               | -         | -               | -                    | -                            | Y <sup>15</sup>               | -                  | -              | Y        | -  |
| 39Y9316 // 3218                                              | Optical Pass-thru Module                                 | Y         | Y               | Y <sup>15</sup>      | Y                            | Y <sup>15</sup>               | Y <sup>4</sup>     | -              | Y        | Y  |
| 39Y9320 // 3219                                              | Copper Pass-thru Module                                  | Y         | Y <sup>13</sup> | Y <sup>15</sup>      | Y                            | Y <sup>15</sup>               | Y <sup>1, 14</sup> | -              | Y        | Y  |
| 44W4483                                                      | Intelligent Copper Pass-thru Module                      | Y         | Y               | Y <sup>15</sup>      | Y                            | Y <sup>15</sup>               | Y <sup>1, 14</sup> | -              | Y        | -  |

**Note 1** Supported in left I/O Module bay of MSIM (39Y9314) with I/O card QLogic Ethernet and 4 Gb Fibre Channel Expansion Card (CFFh, 39Y9306) and supported in left and right I/O module bay of MSIM (39Y9314) with I/O card 2/4 Port Ethernet Expansion Card (CFFh, 44W4479).

**Note 2** Supported in right I/O Module bay of MSIM and MSIM-HT with I/O card QLogic Ethernet and 4 Gb Fibre Channel Expansion Card (CFFh, 39Y9306)

**Note 3** Not supported or not applicable for use with MSIM (39Y9314) or MSIM-HT (44R5913)

**Note 4** OPM is supported in MSIM (39Y9314) for Ethernet in left or right I/O module bay with I/O card 2/4 Port Ethernet Expansion Card (CFFh, 44W4479) or Fibre Channel in right I/O module bay with I/O card QLogic Ethernet and 4 Gb Fibre Channel Expansion Card (CFFh, 39Y9306)

**Note 5** Supported in right I/O Module bay of MSIM with I/O card QLogic Ethernet and 8 Gb Fibre Channel Expansion Card (CFFh, 44X1940)

**Note 6** Internal switch connections to blade ports only supported at 2Gb FC. External ports support full 4Gb FC.

**Note 7** Not supported in combination with Cell blade (QS)

**Note 8** Internal switch connections to blade ports only supported at 2Gb FC. External ports support up to 8Gb FC.

**Note 9** Internal switch connections to blade ports supported at 2Gb or 4Gb maximum speed depending on the type of FC expansion card being used. See the Blade Server to I/O Adapters/Modules Interoperability Table in this document for more details. External ports support up to 8Gb FC.

**Note 10** Does not support Emulex 4Gb Expansion cards

**Note 11** Supports only 8Gb CFFh expansion cards in MSIM

**Note 12** Power supplies 3 and 4 are required when installing a switch module into Bays 5 through 10

**Note 13** Must be paired with an additional switch or Intelligent Copper Pass-thru Module (44W4483) to flash HS22 firmware through the aMM

**Note 14** QLogic Ethernet and 8 GB Fibre Channel Expansion Card (44X1940, CFFH) supported in MSIM bays 7/9

**Note 15** Switch is NEBS Level 3 compliant in respective chassis. Reports are available upon request.

## Enhance I/O Redundancy on BladeCenter S

|     |   | Ethernet                                                        | Ethernet                                                                                            | Ethernet                                                                       |
|-----|---|-----------------------------------------------------------------|-----------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------|
|     |   | 2 Ports                                                         | 4 Ports                                                                                             | 6 Ports                                                                        |
| SAS | 0 | Base NIC on Blade                                               | Base NIC +<br>2/4 port 1Gb CFFh<br>(44W4479)                                                        | Base NIC +<br>2 port 1Gb CFFv<br>(39Y9310) +<br>2/4 port 1Gb CFFh<br>(44W4479) |
| SAS | 2 | Base NIC +<br>SAS Expansion card (CFFv)<br>(39Y9190 or 43W3974) | Base NIC +<br>SAS Expansion card (CFFv)<br>(39Y9190 or 43W3974) +<br>2/4 port 1Gb CFFh<br>(44W4479) |                                                                                |

## Enhance I/O Flexibility on BladeCenter H and BladeCenter HT

|               |   | Ethernet;<br>requires MSIM in<br>High Speed Bays                                                                                              | Ethernet; requires MSIM or MSIM-HT in<br>High Speed Bays                                                                                                                                                                  | Ethernet; requires<br>MSIM or MSIM-HT<br>in High Speed Bays                                                                                        | Ethernet; requires<br>MSIM or MSIM-HT<br>in High Speed Bays                                                        |
|---------------|---|-----------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------|
| Fibre Channel |   | 2 Ports                                                                                                                                       | 4 Ports                                                                                                                                                                                                                   | 6 Ports                                                                                                                                            | 8 Ports                                                                                                            |
| Fibre Channel | 0 | Base NIC on Blade                                                                                                                             | Base NIC +<br>2 port 1Gb CFFv<br>(39Y9310)                                                                                                                                                                                | Base NIC +<br>2/4 port 1Gb CFFh<br>(44W4479) or 4<br>port 10Gb CFFh<br>(44W4465)                                                                   | Base NIC +<br>2 port 1Gb CFFv<br>(39Y9310) +<br>2/4 port 1Gb CFFh<br>(44W4479) or 4<br>port 10Gb CFFh<br>(44W4465) |
| Fibre Channel | 2 | Base NIC +<br>2 port 4Gb FC<br>card (CFFv)<br>(41Y8527)<br>OR<br>2 port 4Gb FC<br>card (CFFv)<br>(43W6859)                                    | B Base NIC +<br>2 FC & 2 Ethernet Combo card (CFFh)<br>(39Y9306 or 44X1940)<br>OR<br>Base NIC +<br>2 port 4Gb FC card (CFFv)<br>(41Y8527 or 43W6859) +<br>2/4 port 1Gb CFFh<br>(44W4479) or 2 port 10Gb CFFh<br>(44W4466) | Base NIC +<br>2 port 4Gb FC card<br>(CFFv)<br>(41Y8527) or<br>(43W6859)<br>+<br>2/4 port 1Gb CFFh<br>(44W4479) or 4<br>port 10Gb CFFh<br>(44W4465) | N/A                                                                                                                |
| Fibre Channel | 4 | Base NIC +<br>2 port 4Gb FC<br>card (CFFv)<br>(41Y8527 or<br>43W6859) +<br>2 FC & 2 Ether<br>net Combo card<br>(CFFh) (39Y9306<br>or 44X1940) | Base NIC +<br>2 port 4Gb FC card (CFFv)<br>(41Y8527 or 43W6859) +<br>2 FC & 2 Ethernet Combo card (CFFh)<br>(39Y9306 or 44X1940)                                                                                          | N/A                                                                                                                                                | N/A                                                                                                                |

## Switch to card Interoperability

| Option Part Number | I/O Module                                                   | 1GB to the blade                           |                                     |                                        |                                        |                                                 | 10GB to the blade                                      |                                                             |                                 |                                                       |                                                                    |                                              |                                                                    |                                                           |
|--------------------|--------------------------------------------------------------|--------------------------------------------|-------------------------------------|----------------------------------------|----------------------------------------|-------------------------------------------------|--------------------------------------------------------|-------------------------------------------------------------|---------------------------------|-------------------------------------------------------|--------------------------------------------------------------------|----------------------------------------------|--------------------------------------------------------------------|-----------------------------------------------------------|
|                    |                                                              | 32R1923 QLogic iSCSI Expansion Card (StFF) | 39R8624 SFF Gb Expansion Card (SFF) | 39Y9310 Ethernet Expansion Card (CFFv) | 44W4475 Ethernet Expansion Card (CIOv) | 44W4479 2/4 Port Ethernet Expansion Card (CFFh) | 81Y1650 Brocade 2-port 10GbE Converged Network Adapter | 42C1830 QLogic 2-port 10Gb Converged Network Adapter (CFFh) | 44W4465 4 port 10Gb card (CFFh) | 44W4466 Broadcom 10Gb 2-port Ethernet Exp Card (CFFh) | 46M6164 Broadcom 10 Gb Gen 2 4-port Ethernet Expansion Card (CFFh) | 49Y4235 Emulex Virtual Fabric Adapter (CFFh) | 46M6168 Broadcom 10 Gb Gen 2 2-port Ethernet Expansion Card (CFFh) | 42C1810 Intel 10 Gb 2-port Ethernet Expansion Card (CFFh) |
|                    | <b>Ethernet</b>                                              |                                            |                                     |                                        |                                        |                                                 |                                                        |                                                             |                                 |                                                       |                                                                    |                                              |                                                                    |                                                           |
| 32R1859            | BNT Layer 2-7 Gb Ethernet Switch                             | -                                          | -                                   | Y                                      | Y                                      | Y <sup>5</sup>                                  | -                                                      | -                                                           | -                               | -                                                     | -                                                                  | -                                            | -                                                                  | -                                                         |
| 32R1860            | BNT Layer 2/3 Copper Gb Ethernet Switch                      | -                                          | -                                   | Y                                      | Y                                      | Y <sup>1</sup>                                  | -                                                      | -                                                           | -                               | -                                                     | -                                                                  | -                                            | -                                                                  | -                                                         |
| 32R1861            | BNT Layer 2/3 Fiber Gb Ethernet Switch                       | -                                          | -                                   | Y                                      | Y                                      | Y <sup>1</sup>                                  | -                                                      | -                                                           | -                               | -                                                     | -                                                                  | -                                            | -                                                                  | -                                                         |
| 32R1888            | Cisco Systems Intelligent Gb Fiber Ethernet Switch           | Y                                          | Y                                   | Y                                      | Y                                      | Y <sup>1</sup>                                  | -                                                      | -                                                           | -                               | -                                                     | -                                                                  | -                                            | -                                                                  | -                                                         |
| 32R1892            | Cisco Systems Intelligent Gb Ethernet Switch                 | Y                                          | Y                                   | Y                                      | Y                                      | Y <sup>1</sup>                                  | -                                                      | -                                                           | -                               | -                                                     | -                                                                  | -                                            | -                                                                  | -                                                         |
| 39Y9267            | BNT 10G Ethernet Switch Module for IBM BladeCenter           | -                                          | -                                   | -                                      | -                                      | -                                               | -                                                      | -                                                           | Y                               | Y                                                     | Y                                                                  | Y <sup>3</sup>                               | Y                                                                  | Y <sup>7</sup>                                            |
| 39Y9324            | Server Connectivity Module                                   | -                                          | -                                   | Y                                      | Y                                      | Y <sup>1</sup>                                  | -                                                      | -                                                           | -                               | -                                                     | -                                                                  | -                                            | -                                                                  | -                                                         |
| 41Y8522            | Cisco Catalyst Switch Module 3110X                           | Y                                          | Y                                   | Y                                      | Y                                      | Y <sup>1</sup>                                  | -                                                      | -                                                           | -                               | -                                                     | -                                                                  | -                                            | -                                                                  | -                                                         |
| 41Y8523            | Cisco Catalyst Switch Module 3110G                           | Y                                          | Y                                   | Y                                      | Y                                      | Y <sup>1</sup>                                  | -                                                      | -                                                           | -                               | -                                                     | -                                                                  | -                                            | -                                                                  | -                                                         |
| 43W4395            | Cisco Catalyst Switch Module 3012                            | Y                                          | Y                                   | Y                                      | Y                                      | Y <sup>1</sup>                                  | -                                                      | -                                                           | -                               | -                                                     | -                                                                  | -                                            | -                                                                  | -                                                         |
| 44W4404            | BNT 1/10 Gb Uplink Ethernet Switch Module                    | -                                          | -                                   | Y                                      | Y                                      | Y <sup>1</sup>                                  | -                                                      | -                                                           | -                               | -                                                     | -                                                                  | -                                            | -                                                                  | -                                                         |
| 44W4483            | Intelligent Copper Pass-thru Module                          | Y                                          | Y                                   | Y                                      | Y                                      | Y <sup>1</sup>                                  | -                                                      | -                                                           | -                               | -                                                     | -                                                                  | -                                            | -                                                                  | -                                                         |
| 46C7191            | BNT 10-Port 10 Gb Ethernet Switch Module for IBM BladeCenter | -                                          | -                                   | -                                      | -                                      | Y                                               | -                                                      | Y                                                           | Y                               | Y                                                     | Y                                                                  | Y <sup>2</sup>                               | Y                                                                  | Y                                                         |
| 46M6181            | 10Gb Ethernet Pass-Thru Module                               | -                                          | -                                   | -                                      | -                                      | -                                               | -                                                      | Y                                                           | -                               | -                                                     | Y                                                                  | Y <sup>3</sup>                               | Y                                                                  | Y                                                         |
| 46M6071            | Cisco Nexus 4001I Switch Module                              | -                                          | -                                   | -                                      | -                                      | Y                                               | -                                                      | Y <sup>6</sup>                                              | Y                               | Y                                                     | Y                                                                  | Y <sup>3</sup>                               | Y                                                                  | Y                                                         |
| 46M6172            | QLogic Virtual Fabric Extension Module                       | -                                          | -                                   | -                                      | -                                      | -                                               | -                                                      | Y <sup>4</sup>                                              | -                               | -                                                     | -                                                                  | -                                            | -                                                                  | -                                                         |
| 69Y1909            | Brocade Converged 10GbE Switch Module for IBM BladeCenter    | -                                          | -                                   | -                                      | -                                      | -                                               | Y                                                      | Y <sup>6</sup>                                              | -                               | -                                                     | -                                                                  | -                                            | -                                                                  | -                                                         |

**Note 1** Requires MSIM in BC-H or MSIM-T in BC-HT**Note 2** Supports vNic capability as long as 46C7191 is not stacked**Note 3** Supports only pNic mode**Note 4** Requires BNT Virtual Fabric 10Gb switch module for IBM BladeCenter (46C7191)**Note 5** Supports only BC-S**Note 6** This combination is not supported with JS or PS blades**Note 7** Force switch port to 10Gb fixed, WoL not supported

## Switch to card Interoperability continued

| Option Part Number   | I/O Module                                            | 4GB | 26R0890 QLogic 4Gb SFF Fibre Channel Expansion Card (SFF) | 39Y9186 Emulex 4Gb SFF Fibre Channel Expansion Card (SFF) | 39Y9306 QLogic Ethernet and 4Gb Fibre Channel Expansion Card (CFFh) | 43W6859 Emulex 4Gb Fibre Channel Expansion Card (CFFv) | 41Y8527 QLogic 4Gb Fibre Channel Expansion Card (CFFv) | 46M6065 QLogic 4Gb Fibre Channel Expansion Card (CIOv) | 8GB | 44X1940 QLogic Ethernet and 8 GB Fibre Channel Expansion Card (CFFh) | 44X1945 QLogic 8GB Fibre Channel Card (CIOv) | 46M6140 Emulex 8Gb Fibre Channel Expansion Card (CIOv) |
|----------------------|-------------------------------------------------------|-----|-----------------------------------------------------------|-----------------------------------------------------------|---------------------------------------------------------------------|--------------------------------------------------------|--------------------------------------------------------|--------------------------------------------------------|-----|----------------------------------------------------------------------|----------------------------------------------|--------------------------------------------------------|
| <b>Fibre Channel</b> |                                                       |     |                                                           |                                                           |                                                                     |                                                        |                                                        |                                                        |     |                                                                      |                                              |                                                        |
| 4GB                  |                                                       |     |                                                           |                                                           |                                                                     |                                                        |                                                        |                                                        |     |                                                                      |                                              |                                                        |
| 32R1812              | Brocade 20 port – 4Gb SAN Switch                      |     | Y                                                         | Y                                                         | Y                                                                   | Y                                                      | Y                                                      | Y                                                      |     | Y                                                                    | -                                            | Y                                                      |
| 32R1813              | Brocade 10 port – 4Gb SAN Switch                      |     | Y                                                         | Y                                                         | Y                                                                   | Y                                                      | Y                                                      | Y                                                      |     | Y                                                                    | -                                            | Y                                                      |
| 39Y9280              | Cisco Systems 4Gb 20 port Fibre Channel Switch Module |     | Y                                                         | Y                                                         | Y                                                                   | Y                                                      | Y                                                      | Y                                                      |     | Y                                                                    | Y                                            | Y                                                      |
| 39Y9284              | Cisco Systems 4Gb 10 port Fibre Channel Switch Module |     | Y                                                         | Y                                                         | Y                                                                   | Y                                                      | Y                                                      | Y                                                      |     | Y                                                                    | Y                                            | Y                                                      |
| 43W6723              | 4Gb Intelligent Pass-thru Module for IBM BladeCenter  |     | Y                                                         | Y                                                         | Y                                                                   | Y                                                      | Y                                                      | Y                                                      |     | Y                                                                    | Y                                            | Y                                                      |
| 43W6724              | QLogic 10 port – 4Gb SAN Switch Module                |     | Y                                                         | Y                                                         | Y                                                                   | Y                                                      | Y                                                      | Y                                                      |     | Y                                                                    | Y                                            | Y                                                      |
| 43W6725              | QLogic 20 port – 4Gb SAN Switch Module                |     | Y                                                         | Y                                                         | Y                                                                   | Y                                                      | Y                                                      | Y                                                      |     | Y                                                                    | Y                                            | Y                                                      |
| 8GB                  |                                                       |     |                                                           |                                                           |                                                                     |                                                        |                                                        |                                                        |     |                                                                      |                                              |                                                        |
| 44X1905              | QLogic 20-port 8Gb SAN Switch Module <sup>7</sup>     |     | Y                                                         | Y                                                         | Y                                                                   | Y                                                      | Y                                                      | Y                                                      |     | Y                                                                    | Y                                            | Y                                                      |
| 44X1907              | QLogic 8Gb Intelligent Pass-thru Module               |     | Y                                                         | Y                                                         | Y                                                                   | Y                                                      | Y                                                      | Y                                                      |     | Y                                                                    | Y                                            | Y                                                      |
| 42C1828              | Brocade Enterprise 20port switch with software        |     | Y                                                         | -                                                         | Y                                                                   | Y                                                      | Y                                                      | Y                                                      |     | Y                                                                    | Y                                            | Y                                                      |
| 44X1920              | Brocade 20-port 8Gb SAN Switch Module                 |     | Y                                                         | -                                                         | Y                                                                   | Y                                                      | Y                                                      | Y                                                      |     | Y                                                                    | Y                                            | Y                                                      |
| 44X1921              | Brocade 10-port 8Gb SAN Switch Module                 |     | Y                                                         | -                                                         | Y                                                                   | Y                                                      | Y                                                      | Y                                                      |     | Y                                                                    | Y                                            | Y                                                      |

## Switch to card Interoperability continued

| Option Part Number | I/O Module                                | 32R1760<br>Cisco Systems 4X InfiniBand Expansion Card (HSFF) | 43W4420<br>Voltaire 4x InfiniBand DDR Expansion Card (CFFh) | 43W4423<br>4x InfiniBand DDR Expansion Card (CFFh) | 46M6001<br>2-port 40Gb InfiniBand Expansion Card (CFFh) |
|--------------------|-------------------------------------------|--------------------------------------------------------------|-------------------------------------------------------------|----------------------------------------------------|---------------------------------------------------------|
|                    | <b>InfiniBand</b>                         |                                                              |                                                             |                                                    |                                                         |
| 32R1756            | Cisco Systems 4X InfiniBand Switch Module | Y                                                            | -                                                           | -                                                  | -                                                       |
| 43W4419            | 4x InfiniBand Pass-Thru Module            | -                                                            | Y                                                           | Y                                                  | -                                                       |
| 46M6005            | Voltaire 40Gb InfiniBand Switch Module    | -                                                            | Y                                                           | Y                                                  | Y                                                       |

| Option Part Number | I/O Module                                           | 39Y9190<br>SAS Expansion Card for IBM BladeCenter (CFFv)s | 43W3974<br>SAS Connectivity Card (CFFv) | 43W4068<br>SAS Connectivity Card (CIOv) | 46C7167<br>ServeRAID MR10ie (CIOv) |
|--------------------|------------------------------------------------------|-----------------------------------------------------------|-----------------------------------------|-----------------------------------------|------------------------------------|
|                    | <b>SAS</b>                                           |                                                           |                                         |                                         |                                    |
| 39Y9195            | IBM BladeCenter SAS Connectivity Module              | Y                                                         | Y                                       | Y                                       | Y                                  |
| 43W3584            | SAS RAID Controller Module for BladeCenter S Chassis | Y                                                         | Y                                       | Y                                       | N                                  |

## FCoE Configuration Matrix for IBM BladeCenter

| Blade Converged Network Adapter (IBM PN, Vendor PN) | BladeCenter Switch Module                                                                          | FCoE Top of Rack Switch                                 | Supported SAN Fabric                      |
|-----------------------------------------------------|----------------------------------------------------------------------------------------------------|---------------------------------------------------------|-------------------------------------------|
| QLogic CNA (42C1830, QMI8142)                       | 10Gb Ethernet Pass-Thru Module (46M6181)                                                           | IBM Converged Switch B32 (Brocade 8000) <sup>1</sup>    | Brocade                                   |
| QLogic CNA (42C1830, QMI8142)                       | 10Gb Ethernet Pass-Thru Module (46M6181)                                                           | Cisco Nexus 5010/5020 <sup>2</sup>                      | Cisco                                     |
| QLogic CNA (42C1830, QMI8142)                       | Cisco® Nexus 4001I Switch Module (46M6071)                                                         | Cisco Nexus 5010/5020 <sup>2</sup>                      | Cisco                                     |
| QLogic CNA (42C1830, QMI8142)                       | BNT Virtual Fabric 10Gb Switch Module (46C7191) + QLogic Virtual Fabric Extension Module (46M6172) | Not Required                                            | Brocade <sup>3</sup> & Cisco <sup>3</sup> |
| QLogic CNA (42C1830, QMI8142)                       | Brocade Converged 10GbE Switch (69Y1909)                                                           | IBM Converged Switch B32 (Brocade 8000) <sup>1, 4</sup> | Brocade                                   |
| QLogic CNA (42C1830, QMI8142)                       | Brocade Converged 10GbE Switch (69Y1909)                                                           | Not Required                                            | Brocade                                   |
| Brocade CNA (81Y1650, IB-1007)                      | Brocade Converged 10GbE Switch (69Y1909)                                                           | IBM Converged Switch B32 (Brocade 8000) <sup>1, 4</sup> | Brocade                                   |
| Brocade CNA (81Y1650, IB-1007)                      | Brocade Converged 10GbE Switch (69Y1909)                                                           | Not Required                                            | Brocade                                   |

**Note 1** For full interoperability for IBM Converged Switch B32 (Brocade 8000), go to <http://www-03.ibm.com/systems/storage/san/b-type/library.html>

**Note 2** For full interoperability for Cisco Nexus Switch for IBM System go to <http://www-03.ibm.com/systems/networking/hardware/ethernet/c-type/nexus/index.html>

**Note 3** Must be through Intelligent Pass Through Mode through QLogic Virtual Fabric Extension Module

**Note 4** Ethernet traffic only to ToR, FibreChannel traffic direct to SAN from BladeCenter Switch Module

## FCoE Configuration Matrix for JS/PS Blades

| Blade Converged Network Adapter (FC# for P, Option PN) | BladeCenter Switch Module             | FCoE Top of Rack Switch                              |
|--------------------------------------------------------|---------------------------------------|------------------------------------------------------|
| QLogic CNA (FC#8275 , 42C1830) <sup>2</sup>            | 10Gb Ethernet Pass-Thru Module        | IBM Converged Switch B32 (Brocade 8000) <sup>1</sup> |
| QLogic CNA (FC#8275 , 42C1830) <sup>3</sup>            | BNT Virtual Fabric 10Gb Switch Module | TOR w/NIC traffic only                               |

**Note 1** For full interoperability for IBM Converged Switch B32 (Brocade 8000), go to <http://www-03.ibm.com/systems/storage/san/b-type/library.html>

**Note 2** Support for NPIV with VIOS 2.1.3.0, AIX 5.3 TL 12 and 6.1 TL 5 or later

**Note 3** Supports VIOS 2.1.3.0, AIX 5.3 TL 12 and 6.1 TL 5 or later

## Switch to Transceiver Interoperability

| Option Part Number | I/O Module                                                   | 32R1877 IBM 10GBase-SR XFP | 44W4408 10GBase-SR 10GbE 850 nm Fiber SFP+ | BN-CKM-SP-LR BLADE 10GBase-LR SFP+ | BN-CKM-SP-SR BLADE 10Gbase-SR SFP+ | BN-CKM-S-T BLADE 1000Base-T SFP | BN-CKM-S-SX BLADE 1000Base-SX SFP | BN-CKM-S-LX BLADE 1000Base-LX SFP | BN-CKM-SR BLADE 10GBase-SR XFP | BN-CKM-X-CX4 BLADE 10GBase-CX4 XFP | JXP-01LWAA1 JDSU 10Gbase-LR XFP (requires SW ver. 1.2.5.1 or newer) | Cisco CVR-X2-SFP | Cisco X2-10GB-CX4 | Cisco X2-10GB-SR | Cisco SFP-H10GB-CU1M | Cisco SFP-H10GB-CU3M | Cisco SFP-H10GB-CU5M | Cisco X2-10GB-LX4 | Cisco TwinGig Converter Module (model CVR-X2-SFP) | Cisco 1000BASE T SFP (GLC-T(=)) | GE SFP, LC connector SX (GLC-SX-MM(=)) | GE SFP, LC connector LX/LH (GLC-LH-SM(=)) | 45W2398 Copper Direct Attach Cable – 1M | 45W2408 Copper Direct Attach Cable – 3M | 45W3039 Copper Direct Attach Cable – 5M |
|--------------------|--------------------------------------------------------------|----------------------------|--------------------------------------------|------------------------------------|------------------------------------|---------------------------------|-----------------------------------|-----------------------------------|--------------------------------|------------------------------------|---------------------------------------------------------------------|------------------|-------------------|------------------|----------------------|----------------------|----------------------|-------------------|---------------------------------------------------|---------------------------------|----------------------------------------|-------------------------------------------|-----------------------------------------|-----------------------------------------|-----------------------------------------|
|                    | <b>Ethernet</b>                                              |                            |                                            |                                    |                                    |                                 |                                   |                                   |                                |                                    |                                                                     |                  |                   |                  |                      |                      |                      |                   |                                                   |                                 |                                        |                                           |                                         |                                         |                                         |
| 32R1861            | BNT Layer 2/3 Fiber Gb Ethernet Switch                       | -                          | -                                          | -                                  | -                                  | -                               | Y                                 | -                                 | -                              | -                                  | -                                                                   | -                | -                 | -                | -                    | -                    | -                    | -                 | -                                                 | -                               | -                                      | -                                         | -                                       | -                                       | -                                       |
| 32R1888            | Cisco Systems Intelligent Gb Fiber Ethernet Switch           | -                          | -                                          | -                                  | -                                  | -                               | -                                 | -                                 | -                              | -                                  | -                                                                   | -                | -                 | -                | -                    | -                    | -                    | -                 | -                                                 | -                               | -                                      | -                                         | -                                       | -                                       | -                                       |
| 39Y9267            | BNT 10G Ethernet Switch Module                               | Y                          | -                                          | -                                  | -                                  | -                               | -                                 | -                                 | Y                              | Y                                  | Y                                                                   | -                | -                 | -                | -                    | -                    | -                    | -                 | -                                                 | -                               | -                                      | -                                         | -                                       | -                                       | -                                       |
| 41Y8522            | Cisco Catalyst Switch Module 3110X                           | -                          | -                                          | -                                  | -                                  | -                               | -                                 | -                                 | -                              | -                                  | -                                                                   | Y                | Y                 | Y                | -                    | -                    | -                    | Y                 | Y                                                 | -                               | -                                      | -                                         | -                                       | -                                       | -                                       |
| 43W4395            | Cisco Catalyst Switch Module 3012                            | -                          | -                                          | -                                  | -                                  | -                               | -                                 | -                                 | -                              | -                                  | -                                                                   | -                | -                 | -                | -                    | -                    | -                    | -                 | -                                                 | -                               | -                                      | -                                         | -                                       | -                                       | -                                       |
| 41Y8523            | Cisco Catalyst Switch Module 3110G                           | -                          | -                                          | -                                  | -                                  | -                               | -                                 | -                                 | -                              | -                                  | -                                                                   | -                | -                 | -                | -                    | -                    | -                    | -                 | -                                                 | -                               | -                                      | -                                         | -                                       | -                                       | -                                       |
| 44W4404            | BNT 1/10 Gb Uplink Ethernet Switch Module                    | -                          | Y                                          | Y                                  | Y                                  | -                               | -                                 | -                                 | -                              | -                                  | -                                                                   | -                | -                 | -                | -                    | -                    | -                    | -                 | -                                                 | -                               | -                                      | -                                         | Y                                       | Y                                       | Y                                       |
| 46C7191            | BNT 10-Port 10 Gb Ethernet Switch Module for IBM BladeCenter | -                          | Y                                          | Y                                  | Y                                  | Y                               | Y                                 | Y                                 | -                              | -                                  | -                                                                   | -                | -                 | -                | -                    | -                    | -                    | -                 | -                                                 | -                               | -                                      | -                                         | Y                                       | Y                                       | Y                                       |
| 46M6071            | Cisco Nexus 4001I Switch Module                              | -                          | -                                          | -                                  | -                                  | -                               | -                                 | -                                 | -                              | -                                  | -                                                                   | -                | -                 | -                | Y                    | Y                    | Y                    | -                 | -                                                 | Y                               | Y                                      | Y                                         | -                                       | -                                       | -                                       |
| 46M6172            | QLogic Virtual Fabric Extension Module                       | Y                          | Y                                          | -                                  | -                                  | -                               | -                                 | -                                 | -                              | -                                  | -                                                                   | -                | -                 | -                | -                    | -                    | -                    | -                 | -                                                 | -                               | -                                      | -                                         | -                                       | -                                       | -                                       |
| 46M6181            | 10Gb Ethernet Pass-Thru Module                               | -                          | Y                                          | -                                  | -                                  | -                               | -                                 | -                                 | -                              | -                                  | -                                                                   | -                | -                 | -                | Y                    | Y                    | Y                    | -                 | -                                                 | -                               | -                                      | -                                         | Y                                       | Y                                       | Y                                       |

## Switch to Transceiver Interoperability continued

| Option<br>Part<br>Number | I/O Module                                            |                                   |                                                  |                                                   |                                   |                                        |                                         |                                       |                                         |                                   |                                                 |                                   |                                 |                                          |                                        |                                             |                                        |
|--------------------------|-------------------------------------------------------|-----------------------------------|--------------------------------------------------|---------------------------------------------------|-----------------------------------|----------------------------------------|-----------------------------------------|---------------------------------------|-----------------------------------------|-----------------------------------|-------------------------------------------------|-----------------------------------|---------------------------------|------------------------------------------|----------------------------------------|---------------------------------------------|----------------------------------------|
|                          |                                                       | 22R4902 4 Gbps SW SFP Transceiver | 44x1962 Brocade 8Gb SFP + SW Optical Transceiver | 49&4216 Brocade 10Gb SFP + SR Optical Transceiver | 45W0493 SFP Transceiver 4 Gbps SW | 45W0495 SFP Transceiver 4 Gbps 10Km LW | 45W0499 SFP Transceiver 4 Gbps 30Km ELW | 45W0494 SFP Transceiver 4 Gbps 4Km LW | 45W1216 SFP Transceiver 8 Gbps 10 km LW | 45W0500 SFP Transceiver 8 Gbps SW | 41Y8598 Cisco Systems 4Gb Short-wave Length SFP | 39R6475 4-Gbps SW SFP Transceiver | 26K7941 Short Wave 4Gb SFP pair | 44X1964 8Gb SFP + SW Optical Transceiver | 23R1703 SFP Transceiver 4 Gbps 4 km LW | 23R1704 SFP Transceiver 4 pk 4 Gbps 4 km LW | 22R4897 SFP Transceiver 4 pk 4 Gbps SW |
|                          | <b>Fibre Channel</b>                                  |                                   |                                                  |                                                   |                                   |                                        |                                         |                                       |                                         |                                   |                                                 |                                   |                                 |                                          |                                        |                                             |                                        |
| 32R1812                  | Brocade 20 port – 4Gb SAN Switch                      | Y                                 | -                                                | -                                                 | Y                                 | -                                      | -                                       | -                                     | -                                       | -                                 | -                                               | Y                                 | Y                               | -                                        | -                                      | -                                           | -                                      |
| 32R1813                  | Brocade 10 port – 4Gb SAN Switch                      | Y                                 | -                                                | -                                                 | Y                                 | -                                      | -                                       | -                                     | -                                       | -                                 | -                                               | Y                                 | Y                               | -                                        | -                                      | -                                           | -                                      |
| 39Y9280                  | Cisco Systems 4Gb 20 port Fibre Channel Switch Module | -                                 | -                                                | -                                                 | -                                 | -                                      | -                                       | -                                     | -                                       | -                                 | Y                                               | -                                 | -                               | -                                        | -                                      | -                                           | -                                      |
| 39Y9284                  | Cisco Systems 4Gb 10 port Fibre Channel Switch Module | -                                 | -                                                | -                                                 | -                                 | -                                      | -                                       | -                                     | -                                       | -                                 | Y                                               | -                                 | -                               | -                                        | -                                      | -                                           | -                                      |
| 43W6723                  | 4Gb Intelligent Pass-thru Module for IBM BladeCenter  | Y                                 | -                                                | -                                                 | -                                 | -                                      | -                                       | -                                     | -                                       | -                                 | -                                               | Y                                 | Y                               | -                                        | -                                      | -                                           | -                                      |
| 43W6724                  | QLogic 10 port – 4Gb SAN Switch Module                | Y                                 | -                                                | -                                                 | -                                 | -                                      | -                                       | -                                     | -                                       | -                                 | -                                               | Y                                 | Y                               | -                                        | -                                      | -                                           | -                                      |
| 43W6725                  | QLogic 20 port – 4Gb SAN Switch Module                | Y                                 | -                                                | -                                                 | -                                 | -                                      | -                                       | -                                     | -                                       | -                                 | -                                               | Y                                 | Y                               | -                                        | -                                      | -                                           | -                                      |
| 44X1905                  | QLogic(R) 20-port 8 Gb SAN Switch Module              | Y                                 | -                                                | -                                                 | -                                 | -                                      | -                                       | -                                     | -                                       | -                                 | -                                               | Y                                 | Y                               | Y                                        | Y                                      | Y                                           | Y                                      |
| 44X1907                  | QLogic(R)8 Gb Intelligent Pass-thru Module            | Y                                 | -                                                | -                                                 | -                                 | -                                      | -                                       | -                                     | -                                       | -                                 | -                                               | Y                                 | Y                               | Y                                        | Y                                      | Y                                           | Y                                      |
| 46M6172                  | QLogic Virtual Fabric Extension Module                | Y                                 | -                                                | -                                                 | -                                 | -                                      | -                                       | -                                     | -                                       | -                                 | -                                               | Y                                 | Y                               | Y                                        | Y                                      | Y                                           | Y                                      |
| 44X1920                  | Brocade 20-port 8Gb SAN Switch Module                 | -                                 | Y                                                | -                                                 | Y                                 | Y                                      | Y                                       | Y                                     | Y                                       | Y                                 | -                                               | -                                 | -                               | -                                        | -                                      | -                                           | -                                      |
| 44X1921                  | Brocade 10-port 8Gb SAN Switch Module                 | -                                 | Y                                                | -                                                 | Y                                 | Y                                      | Y                                       | Y                                     | Y                                       | Y                                 | -                                               | -                                 | -                               | -                                        | -                                      | -                                           | -                                      |
| 42C1828                  | Brocade 20-port Enterprise 8Gb SAN Switch Module      | -                                 | Y                                                | -                                                 | Y                                 | Y                                      | Y                                       | Y                                     | Y                                       | Y                                 | -                                               | -                                 | -                               | -                                        | -                                      | -                                           | -                                      |
|                          | <b>Fibre Channel over Ethernet (FCoE)</b>             |                                   |                                                  |                                                   |                                   |                                        |                                         |                                       |                                         |                                   |                                                 |                                   |                                 |                                          |                                        |                                             |                                        |
| 69Y1909                  | Brocade Converged 10GbE Switch Module                 | -                                 | Y                                                | Y                                                 | -                                 | -                                      | -                                       | -                                     | -                                       | -                                 | -                                               | -                                 | -                               | -                                        | -                                      | -                                           | -                                      |

## Fibre Channel NPIV Support Matrix on JS and PS Blades

| NPIV Compatibility Matrix                                       | AIX Client                                      |                                                 |                                    | IBM i Client                                    |                                                 |                                    | Linux Client                                    |                                                 |                                    |
|-----------------------------------------------------------------|-------------------------------------------------|-------------------------------------------------|------------------------------------|-------------------------------------------------|-------------------------------------------------|------------------------------------|-------------------------------------------------|-------------------------------------------------|------------------------------------|
|                                                                 | QLogic 8Gb CIOv Feature Code #8242 <sup>1</sup> | QLogic 8Gb CFFh Feature Code #8271 <sup>1</sup> | Emulex 8Gb CIOv Feature Code #8240 | QLogic 8Gb CIOv Feature Code #8242 <sup>1</sup> | QLogic 8Gb CFFh Feature Code #8271 <sup>1</sup> | Emulex 8Gb CIOv Feature Code #8240 | QLogic 8Gb CIOv Feature Code #8242 <sup>1</sup> | QLogic 8Gb CFFh Feature Code #8271 <sup>1</sup> | Emulex 8Gb CIOv Feature Code #8240 |
| QLogic 4Gb Switch Modules Feature Codes #3243, #3244 See Note 2 | N                                               | N                                               | N                                  | N                                               | N                                               | N                                  | N                                               | N                                               | N                                  |
| QLogic 8Gb Switch Module Feature Code #3284 See Note 3          | Y                                               | Y                                               | N                                  | Y <sup>4</sup>                                  | Y <sup>4</sup>                                  | N                                  | Y                                               | Y                                               | N                                  |
| Brocade 4Gb Switch Modules Feature Codes #3206, #3207           | N                                               | N                                               | Y <sup>5</sup>                     | N                                               | N                                               | Y <sup>4</sup>                     | N                                               | N                                               | Y                                  |
| Brocade 8Gb Switch Modules Feature Codes #5045, #5869           | Y                                               | Y                                               | Y                                  | Y <sup>4</sup>                                  | Y <sup>4</sup>                                  | Y <sup>4</sup>                     | Y                                               | Y                                               | Y                                  |
| Cisco 4Gb Switch Module Feature Code #3242                      | N                                               | N                                               | Y <sup>6</sup>                     | N                                               | N                                               | Y <sup>4</sup>                     | N                                               | N                                               | N                                  |

**Note 1** Requires firmware version level 5.02.01 or later

**Note 2** Requires firmware version level 6.5.0.22.00 or later

**Note 3** Requires firmware version level 7.10.1.04 or later

**Note 4** Virtual Tape only with VIOS 2.1.2 or later

**Note 5** Requires AIX 6.1 TL5 and AIX 5.3 TL12, Emulex adapter FW level 1.11A8 and Brocade switch firmware level v6.2.1b ; or later levels.

**Note 6** Requires AIX 6.1 TL5 or AIX 5.3 TL11 or later levels, Emulex adapter FW 1.11A8 and Cisco switch firmware level v4.2(3); or later levels.

# BladeCenter S SAS RAID Controller Module Support; Hardware, Software and Blade Interoperability

The IBM BladeCenter S SAS RAID Module Interoperability Matrix is a separate document that contains the detailed information for the SAS RAID Module.

## **SAS RAID Module Interoperability - General Contents**

Hardware Requirements:

- BladeCenter Chassis
- Management Modules
- Ethernet Switch Modules
- Blade Servers
- Storage Devices (Drives)

Software Requirements:

- Operating Systems
- IBM Storage Configuration Manager
- Path Management Support (SAS Expansion Card - Multipath Drivers)
- Management Module
- SAS RAID Controller Firmware Update Package
- SAS Device Drivers
- SAS Expansion Card (CFFv) BIOS and Firmware

**Note:** One Battery Backup Module (22R6833) is provided/included with each SAS RAID Module (43W3584/3734)

## **SAS RAID Module Interoperability – How to obtain the document**

**Option 1** – Find from SAS RAID Module ibm.com support page.

1. Go to: <http://www.ibm.com/systems/support/supportsite.wss/docdisplay?Indocid=MIGR-5078481&brandind=5000020>

2. Click "Guide" Link for "SAS RAID Module - Interoperability Guide"

3. View / Download: "SAS RAID Module Interoperability Guide"

**Option 2** – Direct Link to SAS RAID Module Interoperability Guide Download Page

1. Go to: <http://www.ibm.com/systems/support/supportsite.wss/docdisplay?Indocid=MIGR-5078491&brandind=5000020>

2. View / Download: "SAS RAID Module Interoperability Guide"

**Note:** REQUIRED ACTION: Review SAS RAID Module Support website prior to installing the BladeCenter S SAS RAID Module. This website contains links and documentation for all requirements related to the SAS RAID Module option.

Direct link to SAS RAID Module support page.

1. Go to: <http://www.ibm.com/systems/support/supportsite.wss/docdisplay?Indocid=MIGR-5078481&brandind=5000020>

**Note:** SAS RAID Module requires the following Host SAS Adapter. Details about the Host SAS Adapter are contained within the SAS RAID Module Interoperability Guide.

| Option Number/AAS Feature | Description                                        |
|---------------------------|----------------------------------------------------|
| 39Y9190 / 8250            | SAS Expansion Card (CFFv)                          |
| 43W4068 / 8246            | SAS Connectivity Card (CIOv)                       |
| 43W3974 / NA              | SAS Connectivity Card (CFFv) (HS21 XM, HS12, HS22) |

**Note:** SAS RAID Module drive support details are contained within the SAS RAID Module Interoperability Guide. Mixing SAS and Nearline SAS is supported as long as each drive type is part of a separate array in the BladeCenter S SAS RAID Controller Module. To ensure maximum availability, it's recommended that configurations include at least 1 spare of each drive type.

| Option Number/AAS Feature Code | FRU Number | Drive Capacity | Form Factor | Speed | Description         |
|--------------------------------|------------|----------------|-------------|-------|---------------------|
| 43W7523 / 3748                 | 43W7525    | 73Gb           | 3.5"        | 15K   | Hot Swap SAS HDD    |
| 43W7524 / 3749                 | 43W7526    | 146Gb          | 3.5"        | 15K   | Hot Swap SAS HDD    |
| 43X0802 / 3747                 | 43X0805    | 300Gb          | 3.5"        | 15K   | Hot Swap SAS HDD    |
| 44W2234 / 3747                 | 42D0568    | 300Gb          | 3.5"        | 15K   | Hot Swap SAS HDD    |
| 42D0519 / 3762                 | 42D0520    | 450Gb          | 3.5"        | 15K   | Hot Swap SAS HDD    |
| 44W2239 / 3762                 | 42D0573    | 450Gb          | 3.5"        | 15K   | Hot Swap SAS HDD    |
| 44W2244 / 3763                 | 42D0578    | 600Gb          | 3.5"        | 15K   | Hot Swap SAS HDD    |
| 42D0546 / NA                   | 42D0548    | 750Gb          | 3.5"        | 7.2K  | Hot Swap NL SAS HDD |
| 42D0547 / NA                   | 42D0549    | 1Tb            | 3.5"        | 7.2K  | Hot Swap NL SAS HDD |
| 42D0777 / NA                   | 42D0778    | 1Tb            | 3.5"        | 7.2K  | Hot Swap NL SAS HDD |
| 42D0767 / NA                   | 42D0768    | 2Tb            | 3.5"        | 7.2K  | Hot Swap NL SAS HDD |

**Note:** SAS RAID Module requires path management software. Details about path management software are contained within the SAS RAID Module Interoperability Guide.

**Windows:** IBM Subsystem Device Driver Device Specific Module (SDDDSM)

- [http://www.ibm.com/support/docview.wss?rs=540&context=ST52G7&dc=D430&uid=ssg1S4000350&loc=en\\_US&cs=utf-8&lang=en](http://www.ibm.com/support/docview.wss?rs=540&context=ST52G7&dc=D430&uid=ssg1S4000350&loc=en_US&cs=utf-8&lang=en)

**Linux:** Red Hat/SUSE Device Mapper Multipath (DMM)

- [http://www.ibm.com/support/docview.wss?rs=540&context=ST52G7&dc=D430&uid=ssg1S4000107&loc=en\\_US&cs=utf-8&lang=en](http://www.ibm.com/support/docview.wss?rs=540&context=ST52G7&dc=D430&uid=ssg1S4000107&loc=en_US&cs=utf-8&lang=en)

**AIX:** Subsystem Device Driver Path Control Module (SDDPCM)

- [http://www.ibm.com/support/docview.wss?rs=540&context=ST52G7&dc=D430&uid=ssg1S4000201&loc=en\\_US&cs=utf-8&lang=en](http://www.ibm.com/support/docview.wss?rs=540&context=ST52G7&dc=D430&uid=ssg1S4000201&loc=en_US&cs=utf-8&lang=en)

**Note:** REQUIRED ACTION: If running a Windows Server 2003-based OS, the following Microsoft Hotfixes are required to be downloaded & installed using the following links:

- <http://support.microsoft.com/kb/941276/en-us>
- <http://support.microsoft.com/kb/934739/en-us>

**Note:** REQUIRED ACTION: If running a Windows Server 2008-based OS, the following Microsoft Hotfixes are required to be downloaded & installed using the following links:

- <http://support.microsoft.com/kb/967349>

**Note:** IBM Storage Configuration Manager Support information can be found within the IBM Storage Configuration Manager documentation, including operating system and browser support. The SAS RAID Module support page contains a link to the IBM Storage Configuration Manager pages.

## Tape on BladeCenter Solution Requirements

| <b>System x Tape<br/>Description (Machine Type or Part Number)</b>                                       | <b>Comments</b>                                            |
|----------------------------------------------------------------------------------------------------------|------------------------------------------------------------|
| BladeCenter Chassis<br>S (8886, 7779), E (8677), H (8852, 7989)                                          | Supported Chassis'                                         |
| HX5 (7872), HS21 (8853), HS21 XM (7995), LS21 (7971), LS41 (7972), HS22 (7870), LS22 (7901), LS42 (7902) | Supported Blades                                           |
| HH LTO3 (43W8478), HH LTO4 (44E8895)                                                                     | Supported Tape Devices. Must be housed in a Tape Enclosure |
| Tape Enclosures (8767HHX, 8767HNX, 87651UX, 87651NX, 87664UX, 87664NX)                                   | Supported Tape Enclosures                                  |
| IBM BladeCenter SAS Connectivity Module (39Y9195)                                                        | One in each chassis                                        |
| SAS Expansion Card (CFFv) for IBM BladeCenter (39Y9190)                                                  | One in each blade                                          |

| <b>Storage Group Tape<br/>Description (Machine Type or Part Number)</b>                          | <b>Comments</b>        |
|--------------------------------------------------------------------------------------------------|------------------------|
| BladeCenter Chassis<br>S (8886), E (8677), T (DC 8720, AC 8730), H (8852, 7989), HT (8740, 8750) | Supported Chassis'     |
| Blades<br>HX5 (7872), HS21 (8853), HS21 XM (7995), LS21 (7971) LS22 (7901), LS42 (7902)          | Supported Blades       |
| Tape Devices<br>TS3100/3200, TS2230, TS2240, TS2900, TS3310                                      | Supported Tape Devices |
| IBM BladeCenter SAS Connectivity Module (39Y9195)                                                | One in each chassis    |
| SAS Expansion Card (CFFv, 39Y9190)                                                               | One in each blade      |

| <b>Storage Group Tape<br/>Description (Machine Type or Part Number)</b>                          | <b>Comments</b>        |
|--------------------------------------------------------------------------------------------------|------------------------|
| BladeCenter Chassis<br>S (8886), E (8677), T (DC 8720, AC 8730), H (8852, 7989), HT (8740, 8750) | Supported Chassis'     |
| Blades<br>HX5 (7872), HS22 (7870)                                                                | Supported Blades       |
| Tape Devices<br>TS3100/3200, TS2230, TS2240, TS3310, TS3500                                      | Supported Tape Devices |
| SAS Connectivity Card (CIOv, 43W4068)                                                            | One in each blade      |

| <b>Storage Group Tape<br/>Description (Machine Type or Part Number)</b>                     | <b>Comments</b>           |
|---------------------------------------------------------------------------------------------|---------------------------|
| BladeCenter Chassis<br>S (8886, 7779), H (8852, 7989), HT (8740, 8750)                      | Supported Chassis'        |
| Blades<br>JS23 (7778), JS43 (7778), PS700 (8406-70Y), PS701 (8406-71Y),<br>PS702 (8406-71Y) | Supported Blades          |
| Tape Devices<br>TS2900, TS3100/3200, TS3310, TS2230, TS2240, TS2250, TS2350                 | Supported Tape<br>Devices |
| SAS Connectivity Card (CIOv, 43W4068)                                                       | One in each blade         |

| <b>Storage Group Tape<br/>Description (Machine Type or Part Number)</b>                                     | <b>Comments</b>           |
|-------------------------------------------------------------------------------------------------------------|---------------------------|
| BladeCenter Chassis<br>S (8886, 7779), H (8852, 7989), HT (8740, 8750),<br>T (DC 8720, AC 8730) – JS12 ONLY | Supported Chassis'        |
| Blades<br>JS12 (7998-60X), JS22 (7998-61X)                                                                  | Supported Blades          |
| Tape Devices<br>TS2900, TS3100/3200, TS3310, TS2230, TS2240, TS2250, TS2350                                 | Supported Tape<br>Devices |
| SAS Expansion Card (CFFv, 39Y9190 / 8250 )                                                                  | One in each blade         |

| <b>Storage Group Tape<br/>Description (Machine Type or Part Number)</b>                                                                                                                                                                                       | <b>Comments</b>           |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------|
| BladeCenter Chassis<br>S (8886), E (8677), H (8852, 7989)                                                                                                                                                                                                     | Supported Chassis'        |
| Blades<br>HX5 (7872), HS21 (8853), HS21 XM (7995), LS21 (7971), LS41 (7972) LS22<br>(7901), LS42 (7902)                                                                                                                                                       | Supported Blades          |
| Tape Devices<br>TS3100/3200, TS2230, TS2240, TS3310, TS3500                                                                                                                                                                                                   | Supported Tape<br>Devices |
| Emulex 4Gb Fibre Channel Expansion Card (CFFv, 3W6859)<br>Qlogic 4Gb Fiber Channel Expansion Card (CFFv, 41Y8527)<br>Qlogic Ethernet and 4Gb Fiber Channel Expansion Card (CFFh, 39Y9306)<br>QLogic CFFh 8Gb Fibre Channel/10Gb Enet Expansion Card (44X1940) | One in each blade         |

| <b>Storage Group Tape<br/>Description (Machine Type or Part Number)</b>                                                                                                                                                                                     | <b>Comments</b>           |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------|
| BladeCenter Chassis<br>S (8886), E (8677), H (8852, 7989)                                                                                                                                                                                                   | Supported Chassis'        |
| Blades<br>HX5 (7872), HS22 (7870)                                                                                                                                                                                                                           | Supported Blades          |
| Tape Devices<br>TS3100/3200, TS2230, TS2240, TS3310, TS3500                                                                                                                                                                                                 | Supported Tape<br>Devices |
| QLogic CFFh 8Gb Fibre Channel/10Gb Enet Expansion Card (44X1940)<br>Emulex 1XE 8Gb Fiber Channel Expansion Card (46M6140)<br>QLogic 1XE 4Gb Fibre Channel Expansion Card (46M6065)<br>QLogic 1XE 8Gb Fibre Channel Expansion Card for BladeCenter (44V1945) | One in each blade         |

| <b>Storage Group Tape<br/>Description (Machine Type or Part Number)</b>                                                                                                                                                                                                                                                                                                                                                                                    | <b>Comments</b>           |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------|
| BladeCenter Chassis<br>S (8886, 7779), H (8852, 7989), HT (8740, 8750)                                                                                                                                                                                                                                                                                                                                                                                     | Supported Chassis'        |
| Blades<br>JS23 (7778), JS43 (7778), PS700 (8406-70Y), PS701 (8406-71Y),<br>PS702 (8406-71Y)                                                                                                                                                                                                                                                                                                                                                                | Supported Blades          |
| Tape Devices<br>TS2900, TS3100/3200, TS3310, TS3500, TS2230, TS2240, TS2350                                                                                                                                                                                                                                                                                                                                                                                | Supported Tape<br>Devices |
| QLogic CFFh 8Gb Fibre Channel/1Gb Enet Expansion Card (44X1940 / 8271)<br>QLogic Ethernet and 4Gb Fibre Channel Expansion Card (CFFh) (39Y9306 / 8252)<br>Emulex 1XE 8Gb Fiber Channel Expansion Card (46M6140/8240)<br>QLogic 1XE 4Gb Fibre Channel Expansion Card (46M6065/8241)<br>QLogic 1XE 8Gb Fibre Channel Expansion Card for BladeCenter (44X1945/8242)<br>QLogic 2-port 10Gb Converged Network Adapter (CFFh) for IBM BladeCenter (42C1830/8275) | One in each blade         |

| <b>Storage Group Tape<br/>Description (Machine Type or Part Number)</b>                                                                                                                                                                                                                                                                                                                  | <b>Comments</b>           |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------|
| BladeCenter Chassis<br>S (8886, 7779), H (8852, 7989), HT (8740, 8750),<br>T (DC 8720, AC 8730) – JS12 ONLY                                                                                                                                                                                                                                                                              | Supported<br>Chassis'     |
| Blades<br>JS12 (7998-60X), JS22 (7998-61X)                                                                                                                                                                                                                                                                                                                                               | Supported<br>Blades       |
| Tape Devices<br>TS3100/3200, TS3310, TS3500                                                                                                                                                                                                                                                                                                                                              | Supported<br>Tape Devices |
| QLogic CFFh 8Gb Fibre Channel/1Gb Enet Expansion Card (44X1940 / 8271)<br>QLogic Ethernet and 4Gb Fibre Channel Expansion Card (CFFh) (39Y9306 / 8252)<br>Emulex 4Gb Fibre Channel Expansion Card (CFFv) (43W6859 / 8251)<br>QLogic 4Gb Fibre Channel Expansion Card (CFFv) (41Y8527 / 8248)<br>QLogic 2-port 10Gb Converged Network Adapter (CFFh) for IBM BladeCenter (42C1830 / 8275) | One in each<br>blade      |

## BladeCenter Tape Interoperability

| Red Hat Linux                                   | Blades                                                                                                   | Tape Product                                                                                                                                         |
|-------------------------------------------------|----------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------|
| Red Hat Enterprise Linux 4 for x86              | HS21 (8853), HS21 XM (7995), LS21 (7971), LS41 (7972), HS22 (7870), LS22 (7901), LS42 (7902)             | HH LTO3 (43W8478), HH LTO4 (44E8895), TS3100/3200, TS2230, TS2240, TS2900, TS3310, TS3500                                                            |
| Red Hat Enterprise Linux 4 for AMD64/EM64T      | HS21 (8853), HS21 XM (7995), LS21 (7971), LS41 (7972), HS22 (7870), LS22 (7901), LS42 (7902)             | HH LTO3 (43W8478), HH LTO4 (44E8895), TS3100/3200, TS2230, TS2240, TS2900, TS3310, TS3500                                                            |
| Red Hat Enterprise Linux 5 for x86              | HS21 (8853), HS21 XM (7995), LS21 (7971), LS41 (7972), HS22 (7870), LS22 (7901), LS42 (7902)             | HH LTO3 (43W8478), HH LTO4 (44E8895), TS3100/3200, TS2230, TS2240, TS2900, TS3310, TS3500                                                            |
| Red Hat Enterprise Linux 5 for AMD64/EM64T      | HX5 (7872), HS21 (8853), HS21 XM (7995), LS21 (7971), LS41 (7972), HS22 (7870), LS22 (7901), LS42 (7902) | HH LTO3 (43W8478), HH LTO4 (44E8895), TS3100/3200, TS2230, TS2240, TS2900, TS3310, TS3500                                                            |
| <b>Novell SUSE LINUX</b>                        |                                                                                                          |                                                                                                                                                      |
| SUSE LINUX Enterprise Server 9 for x86          | HS21 (8853), HS21 XM (7995), LS21 (7971), LS41 (7972), HS22 (7870), LS22 (7901), LS42 (7902)             | HH LTO3 (43W8478), HH LTO4 (44E8895)                                                                                                                 |
| SUSE LINUX Enterprise Server 9 for AMD64/EM64T  | HS21 (8853), HS21 XM (7995), LS21 (7971), LS41 (7972), HS22 (7870), LS22 (7901), LS42 (7902)             | HH LTO3 (43W8478), HH LTO4 (44E8895)                                                                                                                 |
| SUSE LINUX Enterprise Server 10 for x86         | HS21 (8853), HS21 XM (7995), LS21 (7971), LS41 (7972), HS22 (7870), LS22 (7901), LS42 (7902)             | HH LTO3 (43W8478), HH LTO4 (44E8895), TS3100/3200, TS2230, TS2240, TS2900, TS3310, TS3500                                                            |
| SUSE LINUX Enterprise Server 10 for AMD64/EM64T | HS21 (8853), HS21 XM (7995), LS21 (7971), LS41 (7972), HS22 (7870), LS22 (7901), LS42 (7902)             | HH LTO3 (43W8478), HH LTO4 (44E8895), TS3100/3200, TS2230, TS2240, TS2900, TS3310, TS3500                                                            |
| <b>IBM</b>                                      |                                                                                                          |                                                                                                                                                      |
| AIX Version 5.3                                 | JS12, JS21, JS22 (7998), JS23/43 (7778) PS700 (8406-70Y), PS701 (8406-71Y), PS702 (8406-71Y)             | TS2900, TS3100/3200, TS2230, TS2240, TS2250, TS3310, TS3500                                                                                          |
| AIX Version 6.1                                 | JS12, JS22 (7998), JS23/43 (7778) PS700 (8406-70Y), PS701 (8406-71Y), PS702 (8406-71Y)                   | TS2900, TS3100/3200, TS2230, TS2240, TS2250, TS3310, TS3500                                                                                          |
| IBM i 6.1.1 and 7.1 <sup>1</sup>                | JS12, JS22 (7998), JS23/43 (7778) PS700 (8406-70Y), PS701 (8406-71Y), PS702 (8406-71Y)                   | TS2240, TS2250                                                                                                                                       |
| IBM i 6.1.1 and 7.1 <sup>2</sup>                | JS12, JS22 (7998), JS23/43 (7778) PS700 (8406-70Y), PS701 (8406-71Y), PS702 (8406-71Y)                   | TS3100/TS3200/TS3310/TS3500 with LTO3, LTO4 and LTO5 tape drives, TS3400/TS3500 with TS1120 and TS1130 tape drives, TS3500 with 3592-J1A tape drives |
| <b>Microsoft</b>                                |                                                                                                          |                                                                                                                                                      |
| Microsoft Windows Server 2003                   | HS21 (8853), HS21 XM (7995), LS21 (7971), LS41 (7972), HS22 (7870), LS22 (7901), LS42 (7902)             | HH LTO3 (43W8478), HH LTO4 (44E8895), TS3100/3200, TS2230, TS2240, TS2900, TS3310, TS3500                                                            |
| Microsoft Windows Server 2008                   | HX5 (7872), HS21 (8853), HS21 XM (7995), LS21 (7971), HS22 (7870), LS22 (7901), LS42 (7902)              | HH LTO3 (43W8478), HH LTO4 (44E8895), TS3100/3200, TS2230, TS2240, TS2900, TS3310, TS3500                                                            |

**Note 1** Requires VIOS 2.1.1 or later.

**Note 2** Requires VIOS 2.1.3 or later using NPIV. For supported NPIV HBAs and Switch Modules see "Fibre Channel NPIV Support Matrix on JS Blades" in this document.

## Server Drive Compatibility

| Option Part Number / Feature Code for x / Feature Code for p | Drives                                      | H X 5 | H S 1 2        | H S 2 1 | H S 2 1 X M | H S 2 2 | H S 2 2 V | L S 2 2        | L S 4 2        | J S 1 2 | J S 2 2 | J S 2 3 | J S 4 3 | P S 7 0 0 | P S 7 0 1 | P S 7 0 2 | P N 4 1 | Q S 2 1 | Q S 2 2 |
|--------------------------------------------------------------|---------------------------------------------|-------|----------------|---------|-------------|---------|-----------|----------------|----------------|---------|---------|---------|---------|-----------|-----------|-----------|---------|---------|---------|
|                                                              | <b>Solid State</b>                          |       |                |         |             |         |           |                |                |         |         |         |         |           |           |           |         |         |         |
| 43W7618                                                      | ServerBlade 31.4GB SSD SATA 2.5" NHS        | -     | Y <sup>4</sup> | -       | Y           | -       | -         | Y <sup>2</sup> | Y <sup>2</sup> | -       | -       | -       | -       | -         | -         | -         | -       | -       | -       |
| 43W7648                                                      | 31.4GB SSD SATA 2.5" Slim-HS                | -     | Y <sup>5</sup> | -       | -           | Y       | -         | -              | -              | -       | -       | -       | -       | -         | -         | -         | -       | -       | -       |
| 43W7706                                                      | 50 GB SATA 2.5" SFF NHS High IOPS SSD       | -     | -              | -       | Y           | -       | -         | Y              | Y              | -       | -       | -       | -       | -         | -         | -         | -       | -       | -       |
| 43W7714                                                      | 50GB SATA 2.5" SFF Slim-HS High IOPS SSD    | -     | -              | -       | -           | Y       | -         | -              | -              | -       | -       | -       | -       | -         | -         | -         | -       | -       | -       |
| 43W7734                                                      | 50GB SATA 1.8" NHS SSD for HS22V            | Y     | -              | -       | -           | -       | Y         | -              | -              | -       | -       | -       | -       | -         | -         | -         | -       | -       | -       |
|                                                              | <b>Flash</b>                                |       |                |         |             |         |           |                |                |         |         |         |         |           |           |           |         |         |         |
| 39R8697                                                      | 4GB Modular Flash Drive                     | -     | -              | -       | Y           | -       | -         | -              | -              | -       | -       | -       | -       | -         | -         | -         | -       | -       | -       |
| 43W3934                                                      | 8GB Modular Flash Drive                     | -     | -              | -       | Y           | -       | -         | -              | -              | -       | -       | -       | -       | -         | -         | -         | -       | -       | Y       |
| 60H4324                                                      | 8GB Modular Flash Drive                     | -     | -              | -       | -           | -       | -         | -              | -              | -       | -       | -       | -       | -         | -         | -         | -       | -       | Y       |
|                                                              | <b>Hot Swap</b>                             |       |                |         |             |         |           |                |                |         |         |         |         |           |           |           |         |         |         |
| 39M4558                                                      | 500GB 3.5" Dual Port Hot-Swap SATA II       | -     | -              | -       | -           | -       | -         | -              | -              | -       | -       | -       | -       | -         | -         | -         | -       | -       | -       |
| 39R7388                                                      | 36GB 10K SAS SFF HS in BSE-3 with           | -     | Y              | Y       | Y           | -       | -         | -              | -              | -       | -       | -       | -       | -         | -         | -         | -       | -       | -       |
| 39R7389                                                      | 73GB 10K SAS SFF HS in BSE-3 with           | -     | Y              | Y       | Y           | -       | -         | -              | -              | -       | -       | -       | -       | -         | -         | -         | -       | -       | -       |
| 42D0519                                                      | 450GB 15K SAS                               | -     | -              | -       | -           | -       | -         | -              | -              | -       | -       | -       | -       | -         | -         | -         | -       | -       | -       |
| 42D0546                                                      | 750GB 7200 NL SAS HS 3.5" HDD               | -     | -              | -       | -           | -       | -         | -              | -              | -       | -       | -       | -       | -         | -         | -         | -       | -       | -       |
| 42D0547                                                      | 1 TB 7200 NL SAS HS 3.5" HDD                | -     | -              | -       | -           | -       | -         | -              | -              | -       | -       | -       | -       | -         | -         | -         | -       | -       | -       |
| 42D0632                                                      | 146GB 10K 6Gbps SAS 2.5" SFF Slim-HS        | -     | Y <sup>5</sup> | -       | -           | Y       | -         | -              | -              | -       | -       | -       | -       | -         | -         | -         | -       | -       | -       |
| 42D0637                                                      | 300GB 10K 6Gbps SAS 2.5" SFF Slim-HS        | -     | Y <sup>5</sup> | -       | -           | Y       | -         | -              | -              | -       | -       | -       | -       | -         | -         | -         | -       | -       | -       |
| 42D0672                                                      | 73GB 15K 6Gbps SAS 2.5" SFF Slim-HS         | -     | Y <sup>5</sup> | -       | -           | Y       | -         | -              | -              | -       | -       | -       | -       | -         | -         | -         | -       | -       | -       |
| 42D0677                                                      | 146GB 15K 6Gbps SAS 2.5" SFF Slim-HS        | -     | Y <sup>5</sup> | -       | -           | Y       | -         | -              | -              | -       | -       | -       | -       | -         | -         | -         | -       | -       | -       |
| 42D0747                                                      | 160GB 7200 NL SATA 2.5" SFF Slim-HS HDD     | -     | Y <sup>5</sup> | -       | -           | Y       | -         | -              | -              | -       | -       | -       | -       | -         | -         | -         | -       | -       | -       |
| 42D0752                                                      | 500GB 7200 NL SATA 2.5" SFF Slim-HS HDD     | -     | Y <sup>5</sup> | -       | -           | Y       | -         | -              | -              | -       | -       | -       | -       | -         | -         | -         | -       | -       | -       |
| 43W7523                                                      | 73GB 15K 3.5" SAS Hot-Swap                  | -     | -              | -       | -           | -       | -         | -              | -              | -       | -       | -       | -       | -         | -         | -         | -       | -       | -       |
| 43W7524                                                      | 146GB 15K 3.5" Hot-Swap SAS                 | -     | -              | -       | -           | -       | -         | -              | -              | -       | -       | -       | -       | -         | -         | -         | -       | -       | -       |
| 43W7535                                                      | 73GB 10K SAS SFF SAS Slim-HS                | -     | Y <sup>5</sup> | -       | -           | Y       | -         | -              | -              | -       | -       | -       | -       | -         | -         | -         | -       | -       | -       |
| 43W7536                                                      | 146GB 10K SAS SFF SAS Slim-HS               | -     | Y <sup>5</sup> | -       | -           | Y       | -         | -              | -              | -       | -       | -       | -       | -         | -         | -         | -       | -       | -       |
| 43W7545                                                      | 73GB 15K SAS SFF SAS Slim-HS                | -     | Y <sup>5</sup> | -       | -           | Y       | -         | -              | -              | -       | -       | -       | -       | -         | -         | -         | -       | -       | -       |
| 43W7580                                                      | 750GB Hot-Swap SATA Dual Port               | -     | -              | -       | -           | -       | -         | -              | -              | -       | -       | -       | -       | -         | -         | -         | -       | -       | -       |
| 43W7630                                                      | 1000GB Hot Swap Dual Port SATA              | -     | -              | -       | -           | -       | -         | -              | -              | -       | -       | -       | -       | -         | -         | -         | -       | -       | -       |
| 43W7670                                                      | 300GB 10K SATA 2.5" Slim-HS HDD             | -     | Y <sup>5</sup> | -       | -           | Y       | -         | -              | -              | -       | -       | -       | -       | -         | -         | -         | -       | -       | -       |
| 43X0802                                                      | 300GB 15K 3.5" Hot-Swap SAS                 | -     | -              | -       | -           | -       | -         | -              | -              | -       | -       | -       | -       | -         | -         | -         | -       | -       | -       |
| 43X0853                                                      | 73GB SAS 15K 2.5" SFF HS DD-SAS in SIO with | -     | Y              | Y       | Y           | -       | -         | -              | -              | -       | -       | -       | -       | -         | -         | -         | -       | -       | -       |

**Note 1** LS41 (7972) can support two solid state drives in 2 separate HDD bays.

**Note 2** Code level to support SSD's on linux on the LS22/42 is LSI 1064e SAS Controller BIOS and firmware update v2.50

**Note 4** HS12 Machine Type 8014 only

**Note 5** HS12 Machine Type 8028 only

## Server Drive Compatibility continued

| Option Part Number / Feature Code for x / Feature Code for p | Drives                                            | H X 5          | H S 1 2        | H S 2 1 | H S 2 1 X M | H S 2 2        | H S 2 2 V      | L S 2 2 | L S 4 2 | J S 1 2 | J S 2 2 | J S 2 3 | J S 4 3 | P S 7 0 0 | P S 7 0 1 | P S 7 0 2 | P N 4 1 | Q S 2 1 | Q S 2 2 |
|--------------------------------------------------------------|---------------------------------------------------|----------------|----------------|---------|-------------|----------------|----------------|---------|---------|---------|---------|---------|---------|-----------|-----------|-----------|---------|---------|---------|
|                                                              | <b>Other</b>                                      |                |                |         |             |                |                |         |         |         |         |         |         |           |           |           |         |         |         |
| 22P7196                                                      | Portable 40GB USB 2.0 Hard Drive                  | -              | -              | -       | -           | -              | -              | -       | -       | -       | -       | -       | -       | -         | -         | -         | -       | -       | -       |
| 26K5776                                                      | 36GB 10K SFF SAS NHS                              | -              | -              | Y       | Y           | -              | -              | -       | -       | -       | -       | -       | -       | -         | -         | -         | -       | -       | -       |
| 26K5777                                                      | 73GB 10K SFF SAS NHS                              | -              | -              | Y       | Y           | -              | -              | Y       | Y       | Y       | Y       | Y       | Y       | -         | -         | -         | -       | -       | -       |
| 41Y8268                                                      | USB Memory Key for VMware ESXi 3.5 U3             | -              | -              | -       | -           | -              | -              | Y       | Y       | -       | -       | -       | -       | -         | -         | -         | -       | -       | -       |
| 41Y8269                                                      | USB Memory Key for VMware ESXi 3.5 U4             | -              | -              | -       | -           | Y <sup>2</sup> | Y <sup>2</sup> | Y       | Y       | -       | -       | -       | -       | -         | -         | -         | -       | -       | -       |
| 41Y8278                                                      | USB Memory Key for VMware ESXi                    | Y <sup>3</sup> | -              | -       | -           | Y <sup>3</sup> | Y <sup>3</sup> | -       | -       | -       | -       | -       | -       | -         | -         | -         | -       | -       | -       |
| 42D0421                                                      | 146GB SAS 10K SFF NHS                             | -              | -              | Y       | Y           | -              | -              | Y       | Y       | Y       | Y       | Y       | Y       | -         | -         | -         | -       | -       | -       |
| 42D0627                                                      | 300GB 10K 6Gbps SAS 2.5" SFF NHS HDD              | -              | -              | Y       | Y           | -              | -              | Y       | Y       | Y       | Y       | Y       | Y       | Y         | Y         | Y         | -       | -       | -       |
| 42D0667                                                      | 146GB 15K 6Gbps SAS 2.5" SFF NHS HDD              | -              | -              | Y       | Y           | -              | -              | Y       | Y       | -       | -       | -       | -       | -         | -         | -         | -       | -       | -       |
| 42D0737                                                      | 160GB 7200 NL SATA 2.5" SFF NHS HDD               | -              | Y <sup>1</sup> | Y       | Y           | -              | -              | Y       | Y       | -       | -       | -       | -       | -         | -         | -         | -       | -       | -       |
| 42D0742                                                      | 500GB 7200 NL SATA 2.5" SFF NHS HDD               | -              | Y <sup>1</sup> | Y       | Y           | -              | -              | Y       | Y       | -       | -       | -       | -       | -         | -         | -         | -       | -       | -       |
| 43W7640                                                      | 80GB 7200 SATA ED 2.5" NHS                        | -              | Y <sup>1</sup> | -       | -           | -              | -              | -       | -       | -       | -       | -       | -       | -         | -         | -         | -       | -       | -       |
| 43W7666                                                      | 300GB 10K SATA 2.5" NHS HDD                       | -              | -              | Y       | Y           | -              | -              | Y       | Y       | -       | -       | -       | -       | -         | -         | -         | -       | -       | -       |
| 43X0844                                                      | 36GB SAS 15K SFF Blade Option                     | -              | -              | -       | -           | -              | -              | -       | -       | -       | -       | -       | -       | -         | -         | -         | -       | -       | -       |
| 43X0845                                                      | 73GB SAS 15K SFF Blade Option                     | -              | -              | Y       | Y           | -              | -              | Y       | Y       | -       | -       | -       | -       | -         | -         | -         | -       | -       | -       |
| 8276                                                         | 600GB 10K 6Gbps SAS 2.5" NHS HDD                  | -              | -              | -       | -           | -              | -              | -       | -       | -       | -       | Y       | Y       | Y         | Y         | Y         | -       | -       | -       |
| 39R7563                                                      | IBM BladeCenter Storage and I/O Expansion Blade   | -              | Y <sup>1</sup> | Y       | Y           | -              | -              | Y       | Y       | -       | -       | -       | -       | -         | -         | -         | -       | -       | -       |
|                                                              | <b>IBM RDX Removable Hard Disk Storage System</b> |                |                |         |             |                |                |         |         |         |         |         |         |           |           |           |         |         |         |
| 362516X                                                      | IBM RDX 160 GB External USB Drive                 | -              | Y              | Y       | Y           | -              | -              | Y       | Y       | Y       | Y       | -       | -       | -         | -         | -         | -       | -       | Y       |
| 362532X                                                      | IBM RDX 320 GB External USB Drive                 | -              | Y              | Y       | Y           | -              | -              | Y       | Y       | -       | -       | -       | -       | -         | -         | -         | -       | -       | -       |
| 362550X                                                      | IBM RDX 500 GB External USB Drive                 | -              | Y              | Y       | Y           | -              | -              | Y       | Y       | -       | -       | -       | -       | -         | -         | -         | -       | -       | -       |

**Note 1** HS12 Machine Type 8014 only**Note 2** For E5500 series processors only**Note 3** Contains ESXi 4.0

## Chassis Drive Compatibility

| Option Part Number / Feature Code for x / Feature Code for p | Drives                                                              | BC-S chassis with SAS Connectivity Module | BC-S chassis with RAID Controller Module | BC-E chassis | BC-H chassis |
|--------------------------------------------------------------|---------------------------------------------------------------------|-------------------------------------------|------------------------------------------|--------------|--------------|
| 22P7196                                                      | Portable 40GB USB 2.0 Hard Drive                                    | Y                                         | Y                                        | -            | -            |
| 362516X                                                      | RDX Removable Hard Disk Storage System – External USB 160 GB Bundle | Y                                         | Y                                        | -            | -            |
| 362532X                                                      | RDX Removable Hard Disk Storage System – External USB 320 GB Bundle | Y                                         | Y                                        | -            | -            |
| 362550X                                                      | RDX Removable Hard Disk Storage System – External USB 500 GB Bundle | Y                                         | Y                                        | -            | -            |
| 39M4558                                                      | 500GB 3.5" Dual Port Hot-Swap SATA II                               | Y                                         | -                                        | -            | -            |
| 42D0519                                                      | 450GB 15K SAS                                                       | Y                                         | Y                                        | -            | -            |
| 42D0546                                                      | 750GB 7200 NL SAS HS 3.5" HDD                                       | Y                                         | Y                                        | -            | -            |
| 42D0547                                                      | 1 TB 7200 NL SAS HS 3.5" HDD                                        | Y                                         | Y                                        | -            | -            |
| 43W7524                                                      | 146GB 15K 3.5" Hot-Swap SAS                                         | Y                                         | Y                                        | -            | -            |
| 42D0767                                                      | 2 TB 7200 NL SAS HS 3.5" HDD                                        | ???                                       | Y                                        | -            | -            |
| 42D0777                                                      | 1 TB 7200 NL SAS HS 3.5" HDD                                        | ???                                       | Y                                        | -            | -            |
| 43W7523                                                      | 73GB 15K 3.5" Hot-Swap SAS                                          | ???                                       | Y                                        | -            | -            |
| 43W7580                                                      | 750GB Hot-Swap SATA Dual Port                                       | Y                                         | -                                        | -            | -            |
| 43W7630                                                      | 1000GB Hot Swap Dual Port SATA                                      | Y                                         | -                                        | -            | -            |
| 43X0802                                                      | 300GB 15K 3.5" Hot-Swap SAS                                         | Y                                         | Y                                        | -            | -            |
| 44W2234                                                      | 300GB15K 6Gbps SAS 3.5" Hot-Swap HDD                                | Y                                         | Y                                        | -            | -            |
| 44W2239                                                      | 450GB15K 6Gbps SAS 3.5" Hot-Swap HDD                                | Y                                         | Y                                        | -            | -            |
| 44W2244                                                      | 600GB15K 6Gbps SAS 3.5" Hot-Swap HDD                                | Y                                         | Y                                        | -            | -            |
| 46C5364                                                      | RDX Removable Hard Disk Storage System – Internal USB 160GB Bundle  | Y                                         | -                                        | -            | -            |
| 46C5387                                                      | RDX Removable Hard Disk Storage System – Internal USB 320GB Bundle  | Y                                         | -                                        | -            | -            |
| 46C5388                                                      | RDX Removable Hard Disk Storage System – Internal USB 500GB Bundle  | Y                                         | -                                        | -            | -            |
| 46M0901                                                      | UltraSlim Enhanced SATA DVD-ROM                                     | Y                                         | Y                                        | Y            | -            |
| 46M0902                                                      | UltraSlim Enhanced SATA Multi-Burner                                | Y                                         | Y                                        | Y            | Y            |

## Memory

| Option<br>Part<br>Number | Memory                                                               | H<br>X<br>5 <sup>5</sup> | H<br>S<br>1<br>2 | H<br>S<br>2<br>1 | H<br>S<br>2<br>1<br>X<br>M | H<br>S<br>2<br>2 | H<br>S<br>2<br>2<br>V | L<br>S<br>2<br>2 | L<br>S<br>4<br>2 | J<br>S<br>1<br>2 | J<br>S<br>2<br>2 | J<br>S<br>2<br>3 | J<br>S<br>4<br>3 | P<br>S<br>7<br>0<br>0 | P<br>S<br>7<br>0<br>1 | P<br>S<br>7<br>0<br>2 | P<br>N<br>4<br>1 | Q<br>S<br>2<br>1 | Q<br>S<br>2<br>2 <sup>2</sup> |
|--------------------------|----------------------------------------------------------------------|--------------------------|------------------|------------------|----------------------------|------------------|-----------------------|------------------|------------------|------------------|------------------|------------------|------------------|-----------------------|-----------------------|-----------------------|------------------|------------------|-------------------------------|
| 39M5782                  | 1GB Kit (2x 512MB DIMM) PC2 5300 DDR2 FBD CL4                        | -                        | -                | Y                | Y                          | -                | -                     | -                | -                | -                | -                | -                | -                | -                     | -                     | -                     | -                | -                | -                             |
| 39M5861                  | 1GB (2x512MB) PC2-5300 CL5 ECC DDR2 VLP RDIMM                        | -                        | Y                | -                | -                          | -                | -                     | -                | -                | -                | -                | -                | -                | -                     | -                     | -                     | -                | Y <sup>1</sup>   | -                             |
| 39M5864                  | 2GB (2x1GB) PC2-5300 CL5 ECC DDR2 VLP RDIMM                          | -                        | Y                | -                | -                          | -                | -                     | -                | -                | -                | -                | -                | -                | -                     | -                     | -                     | -                | -                | -                             |
| 41Y2825                  | 2GB (2x1GB Kit) PC2-5300 CL5 DDR2 667 DIMM                           | -                        | -                | -                | -                          | -                | -                     | -                | -                | -                | -                | -                | -                | -                     | -                     | -                     | -                | -                | -                             |
| 41Y2828                  | 4GB (2x 2GB Kit) PC2-5300 CL5 DDR2 667 DIMM                          | -                        | -                | -                | -                          | -                | -                     | -                | -                | -                | -                | -                | -                | -                     | -                     | -                     | -                | -                | -                             |
| 42C1600                  | IBM BladeCenter Memory and I/O Blade                                 | -                        | -                | Y                | -                          | -                | -                     | -                | -                | -                | -                | -                | -                | -                     | -                     | -                     | -                | -                | -                             |
| 44T1485                  | 1GB 1Rx8 1Gbit PC3-10600R-999, VLP RDIMM                             | -                        | -                | -                | -                          | Y                | -                     | Y                | -                | -                | -                | -                | -                | -                     | -                     | -                     | -                | -                | -                             |
| 44T1486                  | 2GB DDR3-1333 2Rx8 VLP RDIMM                                         | Y <sup>4</sup>           | -                | -                | -                          | Y                | -                     | Y                | -                | -                | -                | -                | -                | -                     | -                     | -                     | -                | -                | -                             |
| 44T1487                  | 2GB 1Rx4 1Gbit PC3-10600R-999, VLP RDIMM                             | -                        | -                | -                | -                          | Y                | -                     | Y                | -                | -                | -                | -                | -                | -                     | -                     | -                     | -                | -                | -                             |
| 44T1488                  | 4GB 2Rx4 1Gbit PC3-10600R-999, VLP RDIMM                             | -                        | -                | -                | -                          | Y                | Y                     | Y                | -                | -                | -                | -                | -                | -                     | -                     | -                     | -                | -                | -                             |
| 44T1579                  | 8GB PC3-8500 CL7 ECC DDR3 1066MHz Chipkill VLP RDIMM                 | -                        | -                | -                | -                          | Y                | -                     | Y                | -                | -                | -                | -                | -                | -                     | -                     | -                     | -                | -                | -                             |
| 44T1596                  | 4GB DDR3-1333 2Rx8 VLP RDIMM                                         | Y                        | -                | -                | -                          | Y                | Y                     | Y                | Y                | -                | -                | -                | -                | -                     | -                     | -                     | -                | -                | -                             |
| 46C7451                  | 8GB PC3-10600 CL9 ECC DDR3 1333MHz Chipkill VLP RDIMM                | -                        | -                | -                | -                          | Y                | -                     | Y                | -                | -                | -                | -                | -                | -                     | -                     | -                     | -                | -                | -                             |
| 44T1547 <sup>3</sup>     | 16GB (2x8GB)                                                         | -                        | -                | -                | -                          | -                | -                     | -                | Y                | Y                | -                | -                | -                | -                     | -                     | -                     | -                | -                | -                             |
| 46C0501                  | 2GB (2x1GB) PC2-6400 CL6 ECC DDR2 VLP RDIMM                          | -                        | -                | -                | -                          | -                | -                     | -                | -                | -                | -                | -                | -                | -                     | -                     | -                     | -                | -                | Y                             |
| 46C0509                  | 4GB (2x2GB) 800MHz VLP PC2-6400 DDR2 Memory Kit                      | -                        | -                | -                | -                          | -                | -                     | -                | -                | -                | -                | -                | -                | -                     | -                     | -                     | -                | -                | Y                             |
| 46C0510                  | 8GB (2x4GB) PC2-6400 CL6 ECC DDR2 VLP RDIMM                          | -                        | -                | -                | -                          | -                | -                     | -                | -                | -                | -                | -                | -                | -                     | -                     | -                     | -                | -                | Y                             |
| 46C0511                  | 16GB (2x8GB kit) PC2-4200 CL4 ECC DDR2 VLP RDIMM                     | -                        | -                | -                | -                          | -                | -                     | -                | -                | Y                | -                | -                | -                | -                     | -                     | -                     | -                | -                | -                             |
| 46C0512                  | 4GB (2x2GB) PC2-5300 CL5 ECC DDR2 667 Single Rank VLP RDIMM          | -                        | Y                | -                | -                          | -                | -                     | -                | -                | Y                | -                | -                | -                | -                     | -                     | -                     | -                | -                | -                             |
| 46C0513                  | 8GB (2x4GB) PC2-5300 CL5 ECC DDR2 667 Dual Rank VLP RDIMM            | -                        | Y                | -                | -                          | -                | -                     | -                | -                | -                | -                | -                | -                | -                     | -                     | -                     | -                | -                | -                             |
| 46C0522                  | 2GB (2 x 1GB) PC2-5300 CL5 ECC DDR2 667MHz VLP                       | -                        | -                | -                | -                          | -                | -                     | -                | Y                | Y                | -                | -                | -                | -                     | -                     | -                     | -                | -                | -                             |
| 46C0512                  | 4GB (2 x 2GB) PC2-5300 CL5 ECC DDR2 667MHz VLP                       | -                        | -                | -                | -                          | -                | -                     | -                | Y                | Y                | -                | -                | -                | -                     | -                     | -                     | -                | -                | -                             |
| 46C0561                  | 2GB 1R PC3L-10600R CL9, VLP RDIMM 1333MHz (1.35v)                    | -                        | -                | -                | -                          | -                | Y                     | -                | Y                | -                | -                | -                | -                | -                     | -                     | -                     | -                | -                | -                             |
| 46C0567                  | 4GB 2R PC3L-10600R CL9, VLP RDIMM 1333MHz (1.35v)                    | -                        | -                | -                | -                          | -                | Y                     | -                | Y                | -                | -                | -                | -                | -                     | -                     | -                     | -                | -                | -                             |
| 46C0569                  | 8GB 2R PC3L-8500R CL7, VLP RDIMM 1066MHz (1.35v)                     | -                        | -                | -                | -                          | -                | Y                     | -                | Y                | -                | -                | -                | -                | -                     | -                     | -                     | -                | -                | -                             |
| 46C7418                  | 2GB (2x1GB) Single Rank PC2-5300 CL5 ECC FBD 667MHz Low Power Memory | -                        | -                | Y                | Y                          | -                | -                     | -                | -                | -                | -                | -                | -                | -                     | -                     | -                     | -                | -                | -                             |
| 46C7419                  | 4GB (2x2GB) Dual Rank PC2-5300 CL5 ECC FBD 667MHz Low Power Memory   | -                        | -                | Y                | Y                          | -                | -                     | -                | -                | -                | -                | -                | -                | -                     | -                     | -                     | -                | -                | -                             |
| 46C7420                  | 8GB (2x4GB) Quad Rank PC2-5300 CL5 ECC FBD 667MHz Low Power Memory   | -                        | -                | Y                | Y                          | -                | -                     | -                | -                | -                | -                | -                | -                | -                     | -                     | -                     | -                | -                | -                             |
| 46C7499                  | 8GB DDR3-1066 4Rx8 VLP RDIMM                                         | Y                        | -                | -                | -                          | -                | -                     | -                | -                | -                | -                | -                | -                | -                     | -                     | -                     | -                | -                | -                             |
| 46C7524                  | 8GB (2 x 4GB) PC2-5300 CL5 ECC DDR2 667MHz VLP                       | -                        | -                | -                | -                          | -                | -                     | -                | Y                | Y                | -                | -                | -                | -                     | -                     | -                     | -                | -                | -                             |
| 46C7525                  | 8GB (2 x 4GB) PC2-6400 CL5 ECC DDR2 800MHz VLP                       | -                        | -                | -                | -                          | -                | -                     | -                | Y                | Y                | -                | -                | -                | -                     | -                     | -                     | -                | -                | -                             |
| 46C7577                  | 16GB (2x8GB) PC2-5300 CL5 ECC DDR2 667 FBDIMM AMB+                   | -                        | -                | Y                | Y                          | -                | -                     | -                | -                | -                | -                | -                | -                | -                     | -                     | -                     | -                | -                | -                             |

## Memory (continued)

| Option<br>Part<br>Number | Memory                                   | H<br>X<br>5 <sup>5</sup> | H<br>S<br>1<br>2 | H<br>S<br>2<br>1 | H<br>S<br>2<br>1<br>X<br>M | H<br>S<br>2<br>2 |      | H<br>S<br>2<br>2<br>V |      | L<br>S<br>2<br>2 | L<br>S<br>4<br>2 | J<br>S<br>1<br>2 | J<br>S<br>2<br>2 | J<br>S<br>2<br>3 | J<br>S<br>4<br>3 | P<br>S<br>7<br>0<br>0 | P<br>S<br>7<br>0<br>1 | P<br>S<br>7<br>0<br>2 | P<br>N<br>4<br>1 | Q<br>S<br>2<br>1 | Q<br>S<br>2<br>2 <sup>2</sup> |
|--------------------------|------------------------------------------|--------------------------|------------------|------------------|----------------------------|------------------|------|-----------------------|------|------------------|------------------|------------------|------------------|------------------|------------------|-----------------------|-----------------------|-----------------------|------------------|------------------|-------------------------------|
|                          |                                          |                          |                  |                  |                            | 5500             | 5600 | 5500                  | 5600 |                  |                  |                  |                  |                  |                  |                       |                       |                       |                  |                  |                               |
| 49Y1427                  | 1GB 1R PC3L-10600 CL9, VLP RDIMM 1333MHz | -                        | -                | -                | -                          | Y                | Y    | Y                     | Y    | -                | -                | -                | -                | -                | -                | -                     | -                     | -                     | -                | -                | -                             |
| 49Y1428                  | 2GB 2R PC3L-10600 CL9, VLP RDIMM 1333MHz | -                        | -                | -                | -                          | Y                | Y    | Y                     | Y    | -                | -                | -                | -                | -                | -                | -                     | -                     | -                     | -                | -                | -                             |
| 49Y1429                  | 2GB 1R PC3L-10600 CL9, VLP RDIMM 1333MHz | -                        | -                | -                | -                          | Y                | Y    | Y                     | Y    | -                | -                | -                | -                | -                | -                | -                     | -                     | -                     | -                | -                | -                             |
| 49Y1430                  | 4GB 2R PC3L-10600 CL9, VLP RDIMM 1333MHz | -                        | -                | -                | -                          | Y                | Y    | Y                     | Y    | -                | -                | -                | -                | -                | -                | -                     | -                     | -                     | -                | -                | -                             |
| 49Y1431                  | 8GB 2R PC3L-10600 CL9, VLP RDIMM 1333MHz | -                        | -                | -                | -                          | Y                | Y    | Y                     | Y    | -                | -                | -                | -                | -                | -                | -                     | -                     | -                     | -                | -                | -                             |
| /8229                    | 4GB(2X2GB) MEMORY, 667MHz VLP RDIMMS     | -                        | -                | -                | -                          | -                | -    | -                     | -    | -                | -                | Y                | -                | -                | -                | -                     | -                     | -                     | -                | -                | -                             |
| /8239                    | 8GB(2X4GB) MEMORY, 667 MHz VLP RDIMMS    | -                        | -                | -                | -                          | -                | -    | -                     | -    | -                | -                | Y                | -                | Y                | Y                | -                     | -                     | -                     | -                | -                | -                             |
| /8245                    | 16GB(2X8GB) MEMORY, 400MHz VLP RDIMMS    | -                        | -                | -                | -                          | -                | -    | -                     | -    | -                | -                | Y                | -                | Y                | Y                | -                     | -                     | -                     | -                | -                | -                             |
| /8208                    | 8GB(2X4GB), 1066MHz, DDR3, VLP DIMMS     | -                        | -                | -                | -                          | -                | -    | -                     | -    | -                | -                | -                | -                | -                | -                | Y                     | Y                     | Y                     | -                | -                | -                             |
| /8209                    | 16GB(2X8GB), 1066MHz, DDR3, VLP DIMMS    | -                        | -                | -                | -                          | -                | -    | -                     | -    | -                | -                | -                | -                | -                | -                | Y                     | Y                     | Y                     | -                | -                | -                             |

**Note 1** Optional as I/O buffer memory only

**Note 2** Total processor memory on IBM BladeCenter QS22 is variable from 4-32 GB. Memory DIMMs are 1GB, 2GB, and 4GB in size and must be installed in sets of 4 up to a total of 8 DIMMs per QS22. Highest memory bandwidth and optimal performance can be achieved when all eight memory DIMM sockets are populated. It is recommended that option memory be added such that all memory DIMM sockets are used.

**Note 3** This memory will operate at 533MHz in the LS22 and LS42

**Note 4** 2GB memory not supported on MAX5

**Note 5** For optimal performance on HX5, all memory DIMMs must be populated

## Shared Storage Subsystem and Storage Enclosures

| Part Number or MT-Model | Shared Storage Subsystem or Enclosure                                  | H X 5 | H S 1 2 | H S 2 1 | H S 2 1 X M | H S 2 2 | H S 2 2 V | L S 2 2 | L S 4 2 | J S 1 2 | J S 2 2 | J S 2 3 | J S 4 3 | P S 7 0 0 | P S 7 0 1 | P S 7 0 2 | P N 4 1 | Q S 2 1 | Q S 2 2 |
|-------------------------|------------------------------------------------------------------------|-------|---------|---------|-------------|---------|-----------|---------|---------|---------|---------|---------|---------|-----------|-----------|-----------|---------|---------|---------|
| 172621X                 | IBM System Storage DS3200 Storage Controller - SAS Single Controller   | 1     | 1       | 1       | 1           | 1       | 1         | 1       | 1       | 1       | 1       | 1       | 1       | 1         | 1         | 1         | -       | -       | -       |
| 172622X                 | IBM System Storage DS3200 Storage Controller - SAS Dual Controller     | 1     | 1       | 1       | 1           | 1       | 1         | 1       | 1       | 1       | 1       | 1       | 1       | 1         | 1         | 1         | -       | -       | -       |
| 172631X                 | IBM System Storage DS3300 Storage Controller - iSCSI Single Controller | 1     | 1       | 1       | 1           | 1       | 1         | 1       | 1       | 1       | 1       | 1       | 1       | 1         | 1         | 1         | -       | -       | -       |
| 172632X                 | IBM System Storage DS3300 Storage Controller-- iSCSI Dual Controller   | 1     | 1       | 1       | 1           | 1       | 1         | 1       | 1       | 1       | 1       | 1       | 1       | 1         | 1         | 1         | -       | -       | -       |
| 172641X                 | IBM System Storage DS3400 Storage Controller-- FC Single Controller    | 1     | 1       | 1       | 1           | 1       | 1         | 1       | 1       | 1       | 1       | 1       | 1       | 1         | 1         | 1         | -       | -       | -       |
| 172642X                 | IBM System Storage DS3400 Storage Controller-- FC Dual Controller      | 1     | 1       | 1       | 1           | 1       | 1         | 1       | 1       | 1       | 1       | 1       | 1       | 1         | 1         | 1         | -       | -       | -       |
| 172701X                 | IBM System Storage EXP3000 Expansion Unit                              | 2     | 2       | -       | -           | 2       | 2         | -       | -       | -       | -       | -       | -       | -         | -         | -         | -       | -       | -       |
| 1746A2D                 | IBM System Storage DS3512 Express Dual Controller Storage System       | 1     | 1       | 1       | 1           | 1       | 1         | 1       | 1       | 1       | 1       | 1       | 1       | 1         | 1         | 1         | -       | -       | -       |
| 1746A2S                 | IBM System Storage DS3512 Express Single Controller Storage System     | 1     | 1       | 1       | 1           | 1       | 1         | 1       | 1       | 1       | 1       | 1       | 1       | 1         | 1         | 1         | -       | -       | -       |
| 1746A4D                 | IBM System Storage DS3524 Express Dual Controller Storage System       | 1     | 1       | 1       | 1           | 1       | 1         | 1       | 1       | 1       | 1       | 1       | 1       | 1         | 1         | 1         | -       | -       | -       |
| 1746A4S                 | IBM System Storage DS3524 Express Single Controller Storage System     | 1     | 1       | 1       | 1           | 1       | 1         | 1       | 1       | 1       | 1       | 1       | 1       | 1         | 1         | 1         | -       | -       | -       |
| 1750-511                | IBM TotalStorage DS6800 1750 model 511                                 | -     | -       | Y       | Y           | -       | Y         | -       | -       | -       | -       | -       | -       | -         | -         | -         | -       | -       | -       |
| 18149xx                 | IBM System Storage DS3950 Express                                      | 1     | 1       | 1       | 1           | 1       | 1         | 1       | 1       | 1       | 1       | 1       | 1       | 1         | 1         | 1         | -       | -       | -       |
| 1814-20A                | IBM System Storage DS5020 Midrange Disk System                         | 1     | 1       | 1       | 1           | 1       | 1         | 1       | 1       | 1       | 1       | 1       | 1       | 1         | 1         | 1         | -       | -       | -       |
| 1818-51A                | IBM System Storage DS5100 Midrange Disk System                         | 1     | 1       | 1       | 1           | 1       | 1         | 1       | 1       | 1       | 1       | 1       | 1       | 1         | 1         | 1         | -       | -       | -       |
| 1818-53A                | IBM System Storage DS5300 Midrange Disk System                         | 1     | 1       | 1       | 1           | 1       | 1         | 1       | 1       | 1       | 1       | 1       | 1       | 1         | 1         | 1         | -       | -       | -       |

**Note 1** – DS3000 and DS5000 storage system support on a given blade will vary by attachment type (FC, iSCSI, SAS), operating system, and storage controller firmware level. Refer to the IBM System Storage Interoperation Center (SSIC) for up-to-date and comprehensive interoperability information:

<http://www.ibm.com/systems/support/storage/config/ssic>

**Note 2** – The IBM System Storage EXP3000 Expansion Unit is supported for direct connection to selected BladeCenter systems using the ServeRAID-MR10ie (CIOv) Controller for IBM BladeCenter w/Battery CIO (PN 46C7167). The EXP3000 is compatible with all BladeCenter systems and operating systems supported by the ServeRAID-MR10ie controller.

## Shared Storage Subsystem and Storage Enclosures continued

| Part Number            | Shared Storage Subsystem or Enclosure                               | H<br>X<br>5 | H<br>S<br>1<br>2 | H<br>S<br>2<br>1 | H<br>S<br>2<br>1<br>X<br>M | H<br>S<br>2<br>2 | H<br>S<br>2<br>2<br>V | L<br>S<br>2<br>2 | L<br>S<br>4<br>2 | J<br>S<br>1<br>2 | J<br>S<br>2<br>2 | J<br>S<br>2<br>3 | J<br>S<br>4<br>3 | P<br>S<br>7<br>0<br>0 | P<br>S<br>7<br>0<br>1 | P<br>S<br>7<br>0<br>2 | P<br>N<br>4<br>1 | Q<br>S<br>2<br>1 | Q<br>S<br>2<br>2 |
|------------------------|---------------------------------------------------------------------|-------------|------------------|------------------|----------------------------|------------------|-----------------------|------------------|------------------|------------------|------------------|------------------|------------------|-----------------------|-----------------------|-----------------------|------------------|------------------|------------------|
| 2107-92E/9AE           | IBM TotalStorage DS8000 Expansion Unit 2107 model 92E/9AE           | Y           | -                | Y                | Y                          | Y                | Y                     | Y                | Y                | Y                | Y                | Y                | Y                | Y                     | Y                     | Y                     | -                | -                | -                |
| 2107-xxx               | IBM TotalStorage DS8100 2107 (all models)                           | Y           | -                | Y                | Y                          | Y                | Y                     | Y                | Y                | Y                | Y                | Y                | Y                | Y                     | Y                     | Y                     | -                | -                | -                |
| 2107-xxx               | IBM TotalStorage DS8300 2107(all models)                            | Y           | -                | Y                | Y                          | Y                | Y                     | Y                | Y                | Y                | Y                | Y                | Y                | Y                     | Y                     | Y                     | -                | -                | -                |
| 2412-xxx               | IBM System Storage DS8700 2412 (all models)                         | -           | -                | -                | -                          | -                | -                     | -                | -                | Y                | Y                | -                | Y                | Y                     | Y                     | Y                     | -                | -                | -                |
| 2145 v5.1.x            | IBM SAN Volume Controller version 5.1.x                             | Y           | -                | -                | -                          | -                | Y                     | -                | -                | Y                | Y                | Y                | Y                | Y                     | Y                     | Y                     | -                | -                | -                |
| 2812-A14               | IBM XIV Storage System Model A14                                    | -           | -                | -                | -                          | -                | -                     | -                | -                | Y                | Y                | Y                | Y                | Y                     | Y                     | Y                     | -                | -                | -                |
| 2858-A10, A20          | IBM System Storage N6040 model A10/A20 and Gateway feature          | -           | -                | Y                | Y                          | Y                | Y                     | Y                | Y                | Y                | Y                | Y                | Y                | Y                     | Y                     | Y                     | -                | -                | -                |
| 2858-A11, A21          | IBM System Storage N6070 model A11/A21 and Gateway feature          | -           | -                | Y                | Y                          | Y                | Y                     | Y                | Y                | Y                | Y                | Y                | Y                | Y                     | Y                     | Y                     | -                | -                | -                |
| 2858-A12, A22          | IBM System Storage N6060 model A12/A22 and Gateway feature          | -           | -                | Y                | Y                          | Y                | Y                     | Y                | Y                | Y                | Y                | Y                | Y                | Y                     | Y                     | Y                     | -                | -                | -                |
| 2859-A10, A20          | IBM System Storage N3300 model A10/A20                              | -           | -                | Y                | Y                          | Y                | Y                     | Y                | Y                | Y                | Y                | Y                | Y                | Y                     | Y                     | Y                     | -                | -                | -                |
| 2859-A11/ A21, G11/G21 | IBM System Storage N3400 model A11/A21 G11/G21                      | -           | -                | -                | -                          | -                | -                     | -                | -                | Y                | Y                | Y                | Y                | Y                     | Y                     | Y                     | -                | -                | -                |
| 2862-A10, A20          | IBM System Storage N3600 model A10/A20                              | -           | -                | Y                | Y                          | Y                | Y                     | Y                | Y                | Y                | Y                | Y                | Y                | Y                     | Y                     | Y                     | -                | -                | -                |
| 2863-A10, A20          | IBM System Storage N3700 model A10, A20                             | -           | -                | Y                | -                          | Y                | Y                     | Y                | Y                | Y                | Y                | Y                | Y                | Y                     | Y                     | Y                     | -                | -                | -                |
| 2864-A10,A20,G10,G20   | IBM System Storage N5200 model A10, A20, G10, G20                   | -           | -                | Y                | Y                          | Y                | Y                     | Y                | Y                | Y                | Y                | Y                | Y                | Y                     | Y                     | Y                     | -                | -                | -                |
| 2865-A10,A20,G10,G20   | IBM System Storage N5500 model A10, A20, G10, G20                   | -           | -                | Y                | Y                          | Y                | Y                     | Y                | Y                | Y                | Y                | Y                | Y                | Y                     | Y                     | Y                     | -                | -                | -                |
| 2866-A10,A20,G10,G20   | IBM System Storage N7600 model A10, A20, G10, G20                   | -           | -                | Y                | Y                          | Y                | Y                     | Y                | -                | -                | Y                | Y                | Y                | Y                     | Y                     | Y                     | -                | -                | -                |
| 2866-A11,A21,G11,G21   | IBM System Storage N7700 model A11, A21, G11, G21                   | -           | -                | Y                | Y                          | Y                | Y                     | Y                | Y                | Y                | Y                | Y                | Y                | Y                     | Y                     | Y                     | -                | -                | -                |
| 2867-A10,A20,G10,G20   | IBM System Storage N7800 model A10, A20, G10, G20                   | -           | -                | Y                | Y                          | Y                | Y                     | -                | -                | -                | Y                | Y                | Y                | Y                     | Y                     | Y                     | -                | -                | -                |
| 2867-A11,A21,G11,G21   | IBM System Storage N7900 model A11, A21, G11, G21                   | -           | -                | Y                | Y                          | Y                | Y                     | Y                | Y                | Y                | Y                | Y                | Y                | Y                     | Y                     | Y                     | -                | -                | -                |
| 2868-A10,A20,G10,G20   | IBM System Storage N5600 model A10, A20, G10, G20                   | -           | -                | -                | Y                          | Y                | Y                     | Y                | Y                | Y                | Y                | Y                | Y                | Y                     | Y                     | Y                     | -                | -                | -                |
| 2869-A10,A20,G10,G20   | IBM System Storage N5300 model A10, A20, G10, G20                   | -           | -                | -                | Y                          | Y                | Y                     | Y                | Y                | Y                | Y                | Y                | Y                | Y                     | Y                     | Y                     | -                | -                | -                |
| 9406-xxx               | IBM System i (all models) Integration with BladeCenter and System x | -           | -                | Y                | Y                          | -                | -                     | Y                | Y                | -                | -                | -                | -                | -                     | -                     | -                     | -                | -                | -                |

BladeCenter Open Fabric Manager<sup>1</sup> Compatibility

| M/T or Part Number    | Description       | BOFM Basic (44W3981 = 2019B1X) | BOFM 2.1 Advanced Upgrade (46C3551, stand alone) | BOFM 3.0 Advanced Upgrade (4812S3X, stand alone) | BOFM Advanced 2.1 Upgrade for IBM Director (46C3552, plug-in) | BOFM Advanced 3.0 Upgrade for IBM Director (4812S3D, plug-in) |
|-----------------------|-------------------|--------------------------------|--------------------------------------------------|--------------------------------------------------|---------------------------------------------------------------|---------------------------------------------------------------|
| <b>Chassis</b>        |                   |                                |                                                  |                                                  |                                                               |                                                               |
| 8677                  | IBM BladeCenter E | Y                              | Y                                                | Y                                                | Y                                                             | Y                                                             |
| 8852                  | IBM BladeCenter H | Y                              | Y                                                | Y                                                | Y                                                             | Y                                                             |
| 8740, 8750            | BladeCenter HT    | Y                              | Y                                                | Y                                                | Y                                                             | Y                                                             |
| 8720, 8730            | BladeCenter T     | Y                              | Y                                                | Y                                                | Y                                                             | Y                                                             |
| 8886                  | BladeCenter S     | Y                              | Y                                                | Y                                                | Y                                                             | Y                                                             |
| <b>Blades Servers</b> |                   |                                |                                                  |                                                  |                                                               |                                                               |
| 7872                  | HX5               | Y                              | -                                                | Y                                                | -                                                             | Y                                                             |
| 8014,8028             | HS12              | Y                              | Y                                                | Y                                                | Y                                                             | Y                                                             |
| 8853                  | HS21              | Y                              | Y                                                | Y                                                | Y                                                             | Y                                                             |
| 7995                  | HS21 XM           | Y                              | Y                                                | Y                                                | Y                                                             | Y                                                             |
| 7870                  | HS22              | Y                              | -                                                | Y                                                | -                                                             | Y                                                             |
| 7871                  | HS22V             | Y                              | -                                                | Y                                                | -                                                             | Y                                                             |
| 7901                  | LS22              | Y                              | Y                                                | Y                                                | Y                                                             | Y                                                             |
| 7902                  | LS42              | Y                              | Y                                                | Y                                                | Y                                                             | Y                                                             |
| 7998-60x              | JS12              | Y <sup>2</sup>                 | Y <sup>2</sup>                                   | Y <sup>2</sup>                                   | Y <sup>2</sup>                                                | Y <sup>2</sup>                                                |
| 7998-61x              | JS22              | Y <sup>2</sup>                 | Y <sup>2</sup>                                   | Y <sup>2</sup>                                   | Y <sup>2</sup>                                                | Y <sup>2</sup>                                                |
| 7778-23x              | JS23/JS43         | Y <sup>2</sup>                 | Y <sup>2</sup>                                   | Y <sup>2</sup>                                   | Y <sup>2</sup>                                                | Y <sup>2</sup>                                                |
| 8406-70Y/71Y          | PS700/701/702     | Y <sup>2</sup>                 | -                                                | Y <sup>2</sup>                                   | -                                                             | Y <sup>2</sup>                                                |
| 0792                  | QS21              | -                              | -                                                | -                                                | -                                                             | -                                                             |
| 0793                  | QS22              | Y                              | Y                                                | Y                                                | Y                                                             | Y                                                             |

**Note 1** Reflects single instance compatibility.

**Note 2** BOFM is not supported for SAS adapters on JSxx or PSxxx blades.

BladeCenter Open Fabric Manager<sup>1</sup> Compatibility continued

| M/T or Part Number     | Description                                                  | BOFM Basic (44W3981 = 2019B1X) | BOFM 2.1 Advanced Upgrade (46C3551, stand alone) | BOFM 3.0 Advanced Upgrade (4812S3X, stand alone) | BOFM Advanced 2.1 Upgrade for IBM Director (46C3552, plug-in) | BOFM Advanced 3.0 Upgrade for IBM Director (4812S1D, plug-in) |
|------------------------|--------------------------------------------------------------|--------------------------------|--------------------------------------------------|--------------------------------------------------|---------------------------------------------------------------|---------------------------------------------------------------|
| <b>Expansion Cards</b> |                                                              |                                |                                                  |                                                  |                                                               |                                                               |
| 26R0884                | QLogic 4Gb Standard Fibre Channel Expansion Card             | Y                              | Y                                                | Y                                                | Y                                                             | Y                                                             |
| 26R0890                | QLogic 4 Gb SFF Fibre Channel Expansion Card                 | Y                              | Y                                                | Y                                                | Y                                                             | Y                                                             |
| 39R8624                | IBM SFF Gb Ethernet Expansion Card                           | Y                              | Y                                                | Y                                                | Y                                                             | Y                                                             |
| 39Y9186                | Emulex 4 Gb SFF Fibre Channel Expansion Card                 | Y                              | Y                                                | Y                                                | Y                                                             | Y                                                             |
| 39Y9190                | SAS Expansion Card for IBM BladeCenter (CFFv)                | Y                              | -                                                | Y                                                | -                                                             | Y                                                             |
| 39Y9306                | QLogic Ethernet and 4 Gb Fibre Channel Expansion Card (CFFh) | Y                              | Y                                                | Y                                                | Y                                                             | Y                                                             |
| 39Y9310                | Ethernet Expansion Card (CFFv)                               | Y                              | Y                                                | Y                                                | Y                                                             | Y                                                             |
| 41Y8527                | QLogic 4 Gb Fibre Channel Expansion Card (CFFv)              | Y                              | Y                                                | Y                                                | Y                                                             | Y                                                             |
| 42C1830                | QLogic 2-port 10Gb Converged Network Adapter (CFFh)          | Y                              | -                                                | Y                                                | -                                                             | Y                                                             |
| 43W3974                | SAS Connectivity Card (CFFh)                                 | Y                              | -                                                | Y                                                | -                                                             | Y                                                             |
| 43W4068                | SAS Connectivity Card (CIOv)                                 | Y                              | -                                                | Y                                                | -                                                             | Y                                                             |
| 43W6859                | Emulex 4Gb Fibre Channel Expansion Card (CFFv)               | Y                              | Y                                                | Y                                                | Y                                                             | Y                                                             |
| 44W4465                | Broadcom 10Gb 4-port Ethernet Exp Card (CFFh)                | Y                              | Y                                                | Y                                                | Y                                                             | Y                                                             |
| 44W4466                | Broadcom 10Gb 2-port Ethernet Exp Card (CFFh)                | Y                              | Y                                                | Y                                                | Y                                                             | Y                                                             |
| 44W4475                | Ethernet Expansion Card (CIOv)                               | Y                              | Y                                                | Y                                                | Y                                                             | Y                                                             |
| 44W4479                | 2/4 Port Ethernet Expansion Card (CFFh)                      | Y                              | Y                                                | Y                                                | Y                                                             | Y                                                             |
| 44X1940                | QLogic Ethernet and 8 Gb Fibre Channel Expansion Card (CFFh) | Y                              | Y                                                | Y                                                | Y                                                             | Y                                                             |
| 44X1945                | QLogic 8Gb Fibre Channel Expansion Card (CIOv)               | Y                              | -                                                | Y                                                | -                                                             | Y                                                             |
| 46M6065                | QLogic 4 Gb Fibre Channel Expansion Card (CIOv)              | Y                              | Y                                                | Y                                                | Y                                                             | Y                                                             |
| 46M6140                | Emulex 8Gb Fibre Channel Expansion Card (CIOv)               | Y                              | -                                                | Y                                                | -                                                             | Y                                                             |

**Note 1** Reflects single instance compatibility

## Blades & BladeBoot (iSCSI SW Boot) Compatibility

Provides iSCSI communication

BladeBoot™ enables you to boot from a SAN over a standard Ethernet port using the iSCSI protocol. This allows for storage consolidation, efficiencies in storage utilization, simplified deployment, improved reliability, and simpler ecosystem management. No local disk is required to reside within the blade server.

| Blade Servers            | Windows Server 2003 | Windows Server 2008 | SLES10 SP1 | RHEL 5 <sup>1</sup> |
|--------------------------|---------------------|---------------------|------------|---------------------|
| HX5 (7872)               | -                   | Y                   | Y          | Y                   |
| HS12 (8014,8028)         | Y                   | Y                   | Y          | Y                   |
| HS21 Dual Core (8853)    | Y                   | Y                   | Y          | Y                   |
| HS21 Quad Core (8853)    | Y                   | Y                   | Y          | Y                   |
| HS21 XM Dual Core (7995) | Y                   | Y                   | Y          | Y                   |
| HS21 XM Quad Core (7995) | Y                   | Y                   | Y          | Y                   |
| HS22 (7870)              | Y                   | Y                   | Y          | Y                   |
| HS22V (7871)             | Y                   | Y                   | Y          | Y                   |
| LS22                     | -                   | -                   | -          | -                   |
| LS42                     | -                   | -                   | -          | -                   |
| JS12 (7998-60X)          | -                   | -                   | -          | -                   |
| JS22 (7988; except 60X)  | -                   | -                   | -          | -                   |
| JS23/43 (7778-23x)       | -                   | -                   | -          | -                   |
| PS700                    | -                   | -                   | -          | -                   |
| PS701                    | -                   | -                   | -          | -                   |
| PS702                    | -                   | -                   | -          | -                   |
| QS21 (0792)              | -                   | -                   | -          | -                   |
| QS22 (0793)              | -                   | -                   | -          | -                   |

**Note 1** RHEL 5 represents limited support, with full support targeted for RHEL 5.2

**Targets:** IBM System Storage N series iSCSI Models and DS3300

## Blades NOS Compatibility

| Operating System                                                           | H<br>X<br>5 | H<br>S<br>1<br>2 | H<br>S<br>2<br>1 | H<br>S<br>2<br>1<br>X<br>M | H<br>S<br>2<br>2 | H<br>S<br>2<br>2<br>V | L<br>S<br>2<br>2 | L<br>S<br>4<br>2 | J<br>S<br>1<br>2 | J<br>S<br>2<br>2 | J<br>S<br>2<br>3 | J<br>S<br>4<br>3 | P<br>S<br>7<br>0<br>0 | P<br>S<br>7<br>0<br>1 | P<br>S<br>7<br>0<br>2 | P<br>N<br>4<br>1 | Q<br>S<br>2<br>1 | Q<br>S<br>2<br>2 |
|----------------------------------------------------------------------------|-------------|------------------|------------------|----------------------------|------------------|-----------------------|------------------|------------------|------------------|------------------|------------------|------------------|-----------------------|-----------------------|-----------------------|------------------|------------------|------------------|
| <b>Microsoft</b>                                                           |             |                  |                  |                            |                  |                       |                  |                  |                  |                  |                  |                  |                       |                       |                       |                  |                  |                  |
| Windows Vista <sup>1</sup>                                                 | -           | -                | -                | -                          | -                | -                     | -                | -                | -                | -                | -                | -                | -                     | -                     | -                     | -                | -                | -                |
| Windows Server 2003 <sup>1</sup>                                           | -           | Y                | Y                | Y                          | -                | -                     | Y                | Y                | -                | -                | -                | -                | -                     | -                     | -                     | -                | -                | -                |
| Windows Small Business Server 2003 <sup>1</sup>                            | -           |                  |                  |                            | -                |                       | Y                | -                | -                | -                | -                | -                | -                     | -                     | -                     |                  |                  |                  |
| Windows Server 2008 <sup>1</sup>                                           | Y           | Y                | Y                | Y                          | Y                | Y                     | Y                | Y                | -                | -                | -                | -                | -                     | -                     | -                     | -                | -                | -                |
| Windows Server 2003 Compute Cluster <sup>1</sup>                           | -           | Y                | Y                | Y                          | -                | -                     | Y                | Y                | -                | -                | -                | -                | -                     | -                     | -                     | -                | -                | -                |
| <b>IBM</b>                                                                 |             |                  |                  |                            |                  |                       |                  |                  |                  |                  |                  |                  |                       |                       |                       |                  |                  |                  |
| 4690 Operating System <sup>1</sup>                                         | -           | Y                | -                | -                          | -                | -                     | -                | -                | -                | -                | -                | -                | -                     | -                     | -                     | -                | -                | -                |
| VIOS <sup>1</sup>                                                          | -           | -                | -                | -                          | -                | -                     | -                | -                | Y                | Y                | Y                | Y                | Y                     | Y                     | Y                     | -                | -                | -                |
| IBM i operating system <sup>1</sup>                                        | -           | -                | -                | -                          | -                | -                     | -                | -                | Y                | Y                | Y                | Y                | Y                     | Y                     | Y                     | -                | -                | -                |
| AIX <sup>1</sup>                                                           | -           | -                | -                | -                          | -                | -                     | -                | -                | Y                | Y                | Y                | Y                | Y                     | Y                     | Y                     | -                | -                | -                |
| <b>Cloudshield</b>                                                         |             |                  |                  |                            |                  |                       |                  |                  |                  |                  |                  |                  |                       |                       |                       |                  |                  |                  |
| Cloudshield Packetworks Operating System                                   | -           | -                | -                | -                          | -                | -                     | -                | -                | -                | -                | -                | -                | -                     | -                     | -                     | Y                | -                | -                |
| <b>Red Hat</b>                                                             |             |                  |                  |                            |                  |                       |                  |                  |                  |                  |                  |                  |                       |                       |                       |                  |                  |                  |
| Red Hat Enterprise Linux 5 <sup>1</sup>                                    | Y           | -                | Y <sup>2</sup>   | Y <sup>2</sup>             | Y                | Y                     | Y                | Y                | -                | -                | -                | -                | -                     | -                     | -                     | -                | -                | -                |
| Red Hat Enterprise Linux 5 for System i and System p <sup>1</sup>          | -           | -                | -                | -                          | -                | -                     | -                | -                | Y                | Y                | Y                | Y                | Y                     | Y                     | Y                     | -                | Y                | Y                |
| Red Hat Enterprise Linux 4 <sup>1</sup>                                    | -           | -                | Y <sup>2</sup>   | Y <sup>2</sup>             | -                | -                     | Y                | Y                | Y                | Y                | Y                | Y                | -                     | -                     | -                     | -                | -                | -                |
| Red Hat Enterprise Linux 4 AS for iSeries and pSeries <sup>1</sup>         | -           | -                | -                | -                          | -                | -                     | -                | -                | Y                | Y                | Y                | Y                | -                     | -                     | -                     | -                | -                | -                |
| Red Hat Enterprise Linux 3 <sup>1</sup>                                    | -           | -                | Y <sup>2</sup>   | -                          | -                | -                     | -                | -                | -                | -                | -                | -                | -                     | -                     | -                     | -                | -                | -                |
| Red Hat Enterprise MRG 1.0 Realtime (x64) <sup>1</sup>                     | -           | -                | -                | Y                          | Y                | Y                     | Y                | -                | -                | -                | -                | -                | -                     | -                     | -                     | -                | -                | -                |
| <b>VMware</b>                                                              |             |                  |                  |                            |                  |                       |                  |                  |                  |                  |                  |                  |                       |                       |                       |                  |                  |                  |
| VMware ESX Server 4.0 <sup>1</sup>                                         | Y           | -                | Y                | Y                          | Y                | Y                     | Y                | Y                | -                | -                | -                | -                | -                     | -                     | -                     | -                | -                | -                |
| VMware ESX Server 3.5 <sup>1</sup>                                         | -           | -                | Y                | Y                          | Y                | Y                     | Y                | Y                | -                | -                | -                | -                | -                     | -                     | -                     | -                | -                | -                |
| VMware ESX Server 3.0 <sup>1</sup>                                         | -           | -                | Y                | Y                          | -                | -                     | -                | -                | -                | -                | -                | -                | -                     | -                     | -                     | -                | -                | -                |
| VMware ESX Server 2.5 <sup>1</sup>                                         | -           | -                | Y                | -                          | -                | -                     | -                | -                | -                | -                | -                | -                | -                     | -                     | -                     | -                | -                | -                |
| VMware ESX Server 2.1 <sup>1</sup>                                         | -           | -                | -                | -                          | -                | -                     | -                | -                | -                | -                | -                | -                | -                     | -                     | -                     | -                | -                | -                |
| VMware ESX Server 2.0 <sup>1</sup>                                         | -           | -                | -                | -                          | -                | -                     | -                | -                | -                | -                | -                | -                | -                     | -                     | -                     | -                | -                | -                |
| <b>Novell</b>                                                              |             |                  |                  |                            |                  |                       |                  |                  |                  |                  |                  |                  |                       |                       |                       |                  |                  |                  |
| SUSE Linux Enterprise Server 11 <sup>1</sup>                               | Y           | Y                | Y                | Y                          | Y                | Y                     | Y                | Y                | -                | -                | -                | -                | -                     | -                     | -                     | -                | -                | -                |
| SUSE LINUX Enterprise Server 11 for IBM POWER <sup>1</sup>                 | -           | -                | -                | -                          | -                | -                     | -                | -                | -                | -                | Y                | Y                | Y                     | Y                     | Y                     | -                | -                | -                |
| SUSE Linux Enterprise Server 10 <sup>1</sup>                               | Y           | Y                | Y <sup>2</sup>   | Y <sup>2</sup>             | Y                | Y                     | Y                | Y                | -                | -                | -                | -                | -                     | -                     | -                     | -                | -                | -                |
| SUSE LINUX Enterprise Server 10 for IBM POWER <sup>1</sup>                 | -           | -                | -                | -                          | -                | -                     | -                | -                | Y                | Y                | Y                | Y                | Y                     | Y                     | Y                     | -                | -                | -                |
| SUSE Linux Enterprise Server 9 <sup>1</sup>                                | -           | Y                | Y <sup>2</sup>   | Y <sup>2</sup>             | -                | -                     | Y                | Y                | -                | -                | -                | -                | -                     | -                     | -                     | -                | -                | -                |
| Open Enterprise Server 2 (SLES 10) <sup>1</sup>                            | -           | -                | Y                | Y                          | -                | -                     | -                | -                | -                | -                | -                | -                | -                     | -                     | -                     | -                | -                | -                |
| Open Enterprise Server/Open Enterprise Server 2 (NetWare 6.5) <sup>1</sup> | -           | -                | Y                | Y                          | -                | -                     | -                | -                | -                | -                | -                | -                | -                     | -                     | -                     | -                | -                | -                |
| Open Enterprise Server (SLES 9) <sup>1</sup>                               | -           | -                | Y                | Y                          | -                | -                     | -                | -                | -                | -                | -                | -                | -                     | -                     | -                     | -                | -                | -                |
| SUSE LINUX Enterprise Real Time 10 AMD64/EM64T <sup>1</sup>                | -           | -                | -                | Y                          | Y                | Y                     | Y                | -                | -                | -                | -                | -                | -                     | -                     | -                     | -                | -                | -                |

**Note 1** See ServerProven for specific version & servicepac levels.

<http://www-03.ibm.com/servers/eserver/serverproven/compat/us/nos/ematrix.shtml>

**Note 2** Available for purchase with new Blade servers

**Note 3** Supports model 8843-J1Y only

## BladeCenter NOS Compatibility - Chassis

The BladeCenter S chassis supports VMware ESX 3.0, 3.5 & 4.0

Additional detail can be found at [http://www.vmware.com/pdf/vi3\\_io\\_guide.pdf](http://www.vmware.com/pdf/vi3_io_guide.pdf)

## Tools Compatibility

| Tool Name                                            | H<br>X<br>5 | H<br>S<br>1<br>2 | H<br>S<br>2<br>1 | H<br>S<br>2<br>1<br>X<br>M | H<br>S<br>2<br>2 | H<br>S<br>2<br>2<br>V | L<br>S<br>2<br>2 | L<br>S<br>4<br>2 | J<br>S<br>1<br>2 | J<br>S<br>2<br>2 | J<br>S<br>2<br>3 | J<br>S<br>4<br>3 | P<br>S<br>7<br>0<br>0 | P<br>S<br>7<br>0<br>1 | P<br>S<br>7<br>0<br>2 | P<br>N<br>4<br>1 | Q<br>S<br>2<br>1 | Q<br>S<br>2<br>2 |
|------------------------------------------------------|-------------|------------------|------------------|----------------------------|------------------|-----------------------|------------------|------------------|------------------|------------------|------------------|------------------|-----------------------|-----------------------|-----------------------|------------------|------------------|------------------|
| Microsoft Windows<br>Preinstallation Environment 2.1 | Y           | Y                | Y                | Y                          | Y                | Y                     | Y                | Y                | -                | -                | -                | -                | -                     | -                     | -                     | -                | -                | -                |
| IBM Director                                         | Y           | Y                | Y                | Y                          | Y                | Y                     | Y                | Y                | Y                | Y                | Y                | Y                | Y                     | Y                     | Y                     | -                | Y                | Y                |
| Remote Deployment Manager                            | -           | Y                | Y                | Y                          | -                | -                     | Y                | Y                | -                | -                | -                | -                | -                     | -                     | -                     | -                | Y                | -                |
| Tivoli Provisioning Manager for<br>OS Deployment     | Y           | -                | -                | -                          | Y                | Y                     | Y                | Y                | -                | -                | -                | -                | -                     | -                     | -                     | -                | -                | Y                |
| IBM Dynamic System Analysis<br>Preboot               | -           | Y                | -                | -                          | Y                | -                     | Y                | Y                | -                | -                | -                | -                | -                     | -                     | -                     | -                | Y                | Y                |
| IBM Dynamic System Analysis<br>3.0x                  | Y           | -                | -                | -                          | -                | Y                     | -                | -                | -                | -                | -                | -                | -                     | -                     | -                     | -                | -                | -                |
| IBM Dynamic System Analysis<br>Online 2.12           | -           | -                | Y                | Y                          | Y                | -                     | Y                | Y                | -                | -                | -                | -                | -                     | -                     | -                     | -                | -                | -                |
| Active Energy Manager                                | Y           | Y                | Y                | Y                          | Y                | Y                     | Y                | Y                | Y                | Y                | Y                | Y                | Y                     | Y                     | Y                     | -                | Y                | Y                |
| Power Configurator                                   | Y           | -                | Y                | Y                          | Y                | Y                     | Y                | Y                | -                | Y                | -                | -                | Y                     | Y                     | Y                     | -                | Y                | Y                |
| IBM UpdateXpress System Pack<br>Installer 2.01       | -           | -                | Y                | Y                          | Y                | -                     | -                | -                | -                | -                | -                | -                | -                     | -                     | -                     | -                | -                | -                |
| IBM UpdateXpress System Pack<br>Installer 3.x        | Y           | -                | -                | -                          | -                | Y                     | -                | -                | -                | -                | -                | -                | -                     | -                     | -                     | -                | -                | -                |

**Note 1** See ServerProven for specific version information

## Select BladeCenter related URLs

BladeCenter User's Guides for chassis, servers, and options -  
<http://www.redbooks.ibm.com/abstracts/tips0756.html>

BladeCenter Interoperability Guide - <http://www-947.ibm.com/systems/support/supportsite.wss/docdisplay?Indocid=MIGR-5073016&brandind=5000020>

Configurations and Options Guide (COG) - <http://www.ibm.com/systems/xbc/cog/>

System Storage Interoperation Center (SSIC) - [http://www-03.ibm.com/systems/support/storage/config/ssic/displayesssearchwithoutjs.wss?start\\_over=yes](http://www-03.ibm.com/systems/support/storage/config/ssic/displayesssearchwithoutjs.wss?start_over=yes)

Director - <http://www.ibm.com/systems/management/director/>

Electronic Service Agent (eSA) -  
[http://www.ibm.com/jct03004c/support/electronic/portal/!ut/p/kcxm/04\\_Sj9SPykssy0xPLMnMz0vM0Y\\_QjzKLt4y3dAXJgFku-pHllgbxjnCBIH1vfV-P\\_NxU\\_QD9gtzQiHJHR0UAHunMNw!!/delta/base64xml/L2dJQSEvUUt3QS80SVVFLzZfOV85RQ!!?category=5&locale=en\\_US](http://www.ibm.com/jct03004c/support/electronic/portal/!ut/p/kcxm/04_Sj9SPykssy0xPLMnMz0vM0Y_QjzKLt4y3dAXJgFku-pHllgbxjnCBIH1vfV-P_NxU_QD9gtzQiHJHR0UAHunMNw!!/delta/base64xml/L2dJQSEvUUt3QS80SVVFLzZfOV85RQ!!?category=5&locale=en_US)

Power Calculation Tool - <http://www.ibm.com/systems/bladecenter/resources/powerconfig/index.html>

Redbooks – for BladeCenter - <http://www.redbooks.ibm.com/cgi-bin/searchsite.cgi?query=bladecenter>

ServerGuide - <http://www.ibm.com/systems/support/supportsite.wss/docdisplay?Indocid=SERV-GUIDE&brandind=5000008>

ServerGuide Scripting Toolkit - <http://www.ibm.com/systems/management/sgstk.html>

ServerProven - <http://www.ibm.com/servers/eserver/serverproven/compat/us/eserver.html>

Stand-alone Solutions Configuration Tool (SSCT) -  
<http://www.ibm.com/systems/support/supportsite.wss/docdisplay?Indocid=MIGR-62168&brandind=5000008>

Techline System x Repository - IBM W3: <http://techlinelinuxshare.greenock.uk.ibm.com/index.shtml>  
Partnerworld: <http://www.ibm.com/services/weblectures/techline>

WorkLoad Estimator (WLE) - <http://www.ibm.com/wle/EstimatorServlet>

xRef Sheets - <http://www.redbooks.ibm.com/Redbooks.nsf/pages/xref?Open>

IBM BladeCenter iSCSI BladeBoot™ -  
<http://www.ibm.com/systems/bladecenter/hardware/storage/iscsi.html>

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