

# IBM® BladeCenter S SAS RAID Module Interoperability Matrix

## Section 1 – Hardware Options

| BladeCenter Chassis  | Type        | Required |
|----------------------|-------------|----------|
| BladeCenter S (BC-S) | 8886 / 1948 | Yes      |

| RAID Controller | Option / AAS Feature | Required |
|-----------------|----------------------|----------|
| SAS RAID Module | 43W3584 / 3734       | Yes      |

| Management Modules               | Option / AAS Feature | Required |
|----------------------------------|----------------------|----------|
| Advanced Management Module (AMM) | 25R5778 / 3201       | Yes      |

| Battery Backup Unit (BBU) - One Per Module | Option / AAS Feature                | Required |
|--------------------------------------------|-------------------------------------|----------|
| IBM BladeCenter RAID Battery Backup Module | Part of 43W3584 / NA (part of 3734) | Yes      |

| Disk Storage Module (DSM) – At least one DSM is required | Option / AAS Feature | Required |
|----------------------------------------------------------|----------------------|----------|
| 6 Disks Storage Module (Disk Drives: 6 x 3.5")           | 43W3581 / 4545       | Optional |
| 12 Disks Storage Module (Disk Drives: 12 x 2.5")         | 49Y3234 / A3KS       | Optional |

| Blade Server                  | Type             | Required |
|-------------------------------|------------------|----------|
| IBM BladeCenter HS12          | 8014, 8028, 1916 | Optional |
| IBM BladeCenter HS20          | 8843, 1883       | Optional |
| IBM BladeCenter HS21          | 8853, 1885       | Optional |
| IBM BladeCenter HS21 XM       | 7995, 1915       | Optional |
| IBM BladeCenter HS22          | 7870, 1936       | Optional |
| IBM BladeCenter HS22V         | 7871, 1949       | Optional |
| IBM BladeCenter HS23          | 7875             | Optional |
| IBM BladeCenter HS23E         | 8038, 8039       | Optional |
| IBM BladeCenter HX5           | 7872, 7873       | Optional |
| IBM BladeCenter LS20          | 8850             | Optional |
| IBM BladeCenter LS21          | 7971             | Optional |
| IBM BladeCenter LS22          | 7901             | Optional |
| IBM BladeCenter LS41          | 7972             | Optional |
| IBM BladeCenter LS42          | 7902             | Optional |
| IBM BladeCenter JS12          | 7998             | Optional |
| IBM BladeCenter JS22          | 7998             | Optional |
| IBM BladeCenter JS23          | 7778             | Optional |
| IBM BladeCenter JS43          | 7778             | Optional |
| IBM BladeCenter PS700/701/702 | 8406-70Y/71Y     | Optional |
| IBM BladeCenter PS703/704     | 7891-73X/74X     | Optional |

**Note:** All levels in this document are minimum required levels or current levels available at the time of publication.

**Note 1:** 12 Disks Storage Module only support HX5, HS12, HS22, HS22V, HS23, HS23E.

**Note 2:** JS12, JS22, JS23, JS43, PS700/701/702, PS703/704 are supported when configured with 6 Disks Storage Module only and RSSM firmware level is 1.2.4.xxx and below.

| Host SAS Adapter – One required per blade                             | Option / AAS Feature                | Required                                            |
|-----------------------------------------------------------------------|-------------------------------------|-----------------------------------------------------|
| SAS Expansion Card (CFFv)                                             | 39Y9190 / 8250                      | Yes, on all supported Legacy Connector PCI-x Blades |
| SAS Connectivity Card (CIOv)                                          | 43W4068 / Varies by blade - See COG | Yes, on HS22/HS22v/HS23/ HX5*                       |
| ServeRAID H1135 Controller for IBM Flex System and BladeCenter (CIOv) | 90Y4750 / NA                        | Yes, on HS23E                                       |
| SAS Connectivity Card (CFFv)                                          | 43W3974 / NA                        | Yes, supported only on HS21XM, HS12 (8028)          |
| SSD Expansion Card for IBM HX5*                                       | 46M6908/5765                        | Yes, only on HX5, also requires 43W4068             |

**Note 1:** COG: <http://www-03.ibm.com/systems/xbc/cog/>

| Ethernet - One switch is required in "Bay 1" | Option / AAS Feature | Required |
|----------------------------------------------|----------------------|----------|
| Nortel 1/10Gb Uplink Ethernet Switch Module  | 44W4404 / 1590       | Yes      |
| Nortel Layer 2/3 Copper Gb Ethernet Switch   | 32R1860 / 3212       | Yes      |
| Nortel Layer 2/3 Fiber Gb Ethernet Switch    | 32R1861 / 3213       | Yes      |
| Nortel Layer 2/7 Copper Gb Ethernet Switch   | 32R1859 / 3211       | Yes      |
| Cisco Catalyst Switch Module 3012            | 43W4395 / 3174       | Yes      |
| Server Connectivity Module                   | 39Y9324 / 3220       | Yes      |
| Nortel 10G Uplink Ethernet Switch            | 32R1783 / 3210       | Yes      |
| Intelligent Copper Pass-thru Module          | 44W4483 / 5452       | Yes      |

| Storage Devices      | Option / AAS Feature | FRU     | Capacity | Form Factor | Speed |
|----------------------|----------------------|---------|----------|-------------|-------|
| Hot-Swap SAS HDD     | 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       | 44W2235 | 300GB    | 3.5"        | 15K   |
| Hot-Swap SAS HDD     | 42D0519 / 3762       | 42D0520 | 450GB    | 3.5"        | 15K   |
| Hot-Swap SAS HDD     | 44W2239 / 3762       | 44W2240 | 450GB    | 3.5"        | 15K   |
| Hot-Swap SAS HDD     | 44W2244 / 3763       | 44W2245 | 600GB    | 3.5"        | 15K   |
| Hot-Swap NL 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  | 81Y9758 / A281       | 81Y9759 | 3TB      | 3.5"        | 7.2K  |
| Hot-Swap SFF SAS HDD | 81Y9650 / A282       | 81Y9651 | 900GB    | 2.5"        | 10K   |
| Hot-Swap SFF SAS HDD | 81Y9670 / A283       | 81Y9671 | 300GB    | 2.5"        | 15K   |
| G2HS SFF SAS HDD     | 90Y8877 / A2XC       | 90Y8878 | 300GB    | 2.5"        | 10K   |
| G2HS SFF SAS HDD     | 90Y8872 / A2XD       | 90Y8873 | 600GB    | 2.5"        | 10K   |
| G2HS SFF SAS HDD     | 00AJ300 / A4VB       | 00AJ301 | 600GB    | 2.5"        | 15K   |
| G2HS SFF SAS HDD     | 00AD075 / A48S       | 00AD076 | 1.2TB    | 2.5"        | 10K   |

**Note 1:** Drives not included in the above list are not supported by IBM.

| External SAS Devices | Required |
|----------------------|----------|
|----------------------|----------|

**Note:** All levels in this document are minimum required levels or current levels available at the time of publication.

|                                                     |          |
|-----------------------------------------------------|----------|
| TS2240 Tape Device (Connects to External SAS ports) | Optional |
| TS2250 Tape Device (Connects to External SAS ports) | Optional |
| TS2900 Tape Device (Connects to External SAS ports) | Optional |
| TS2230 Tape Device (Connects to External SAS ports) | Optional |
| TS2340 Tape Device (Connects to External SAS ports) | Optional |
| TS3100 Tape Device (Connects to External SAS ports) | Optional |

## Section 2 – Supported Operating Systems

| Supported Operating Systems | Versions                                                                                                                                                                                                                                                                      |
|-----------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Red Hat Linux               | Enterprise Linux 5.2/5.3/5.4/5.7/5.8/5.9/5.10/6.1/6.2/6.3/6.4/6.5 AS & ES for x86/AMD64/EM64T (HS and LS Blades)<br>Enterprise Linux 5.3 minimal is required for HS22 Blades                                                                                                  |
| Novell SUSE Linux           | SUSE LINUX Enterprise Server 10.2/10.3/10.4 for x86/AMD64/EM64T<br>SUSE LINUX Enterprise Server 11/11.1/11.2/11.3 for x86/AMD64/EM64T                                                                                                                                         |
| Microsoft Windows           | 2003 Server Standard (x32/x64), Enterprise (x32/x64)<br>2008 Server Std/Ent/DC/DC with EBS (x32/x64)<br>2008 Server R2 Std/Ent/DC (x64 only)<br>2008 Server R2 SP1 Std/Ent/DC (x64 only)<br>2012 Server<br>2012 Server R2                                                     |
| AIX                         | 6.1 TL3 with Service Pack version 5<br>6.1 TL4 with Service Pack version 5<br>6.1 TL6 with Service Pack version 5<br>6.1 TL7 with Service Pack version 2<br>7.1 TL0 with Service Pack version 1<br>7.1 TL0 with Service Pack version 3<br>7.1 TL1 with Service Pack version 2 |

**Note 1: REQUIRED ACTION** - If running a Windows Server 2003-based OS, the following Microsoft Hotfixes are required to be downloaded and installed using the following links:

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

**Note 2: REQUIRED ACTION** - If running a Windows Server 2008-based OS, the following Microsoft Hotfixes are required to be downloaded and installed using the following links:

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

**Note 3:** If running a Red Hat based OS on HS22 Blades, Red Hat Enterprise 5.3 is the minimum supported level.

**Note 4:** Refer to the Host System Attachment Guide for updated levels and additional information.

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

**Note 5:** AIX 7.1 TL0 with SP1 is minimal for using native AIX PCM multipath driver and AIX 7.1 TL0 SP3 is minimal for using AIX SDDPCM multipath driver.

**Note 6:** When using HS23 and HS23E Blades with 39Y9195, IBM BladeCenter SAS Connectivity Module or 43W3584, IBM BladeCenter S SAS RAID Controller Module, RHEL 5 and SLES 10 are not supported.

| Operating System Updates                                                            | Updated Version                                                                                                                                                                                                                                                                                                 |
|-------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| RedHat Linux 5.2 / 5.3 / 5.4 / 5.7 / 5.8 / 5.9 / 5.10 / 6.1 / 6.2 / 6.3 / 6.4 / 6.5 | 5.2: 2.6.18-92.el5 / 0.4.7-17.el5; 5.3: 2.6.18-128.el5 / 0.4.7-23.el5; 5.4: 2.6.18-164.el5 / 0.4.7-30.el5; 5.7: 2.6.18-274.el5; 5.8: 2.6.18-308.el5; 5.9: 2.6.18-348.el5; 5.10: 2.6.18-371.el5; 6.1: 2.6.32-131.el6; 6.2: 2.6.32-220.el6; 6.3: 2.6.32-279.el6.x86_64; 6.4: 2.6.32-358.el6; 6.5: 2.6.32-431.el6. |
| SUSE Linux Enterprise Server 10.2 / 10.3 / 10.4                                     | 10.2: 2.6.16.60-0.21/0.4.7-34.38; 10.3: 2.6.16.60-0.54.5 / 0.4.7-34.50; 10.4:                                                                                                                                                                                                                                   |

**Note:** All levels in this document are minimum required levels or current levels available at the time of publication.

Interoperability Matrix: SAS RAID Module – IBM BladeCenter S - Version 2.00 (08/21/2015)

|                                            |                                                                                                                  |
|--------------------------------------------|------------------------------------------------------------------------------------------------------------------|
| SUSE Linux Enterprise Server 11            | 11 – 2.6.27.42.-0.1 / 0.4.8-40.6.1; 11.1 – 2.6.32.12-0.7 / 0.4.8-40.21.1; 11.2 - 3.0.13-0.27; 11.3 - 3.0.76-0.11 |
| Windows Server 2003 / 2008 /2012 / 2012 R2 | Windows 2003: SP2; Windows 2008: SP1 / R2 SP1; Windows 2012 ; Windows 2012 R2                                    |
| AIX                                        | Refer to <b>Note 4</b> above                                                                                     |

**Note:** All levels in this document are minimum required levels or current levels available at the time of publication.

### Section 3 – Virtualization Environments

| Supported Platforms | Tested Versions                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|---------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| VMWare              | ESX Server 3.5u4 (3.5u4 is the minimum required level)<br>ESX Server 4.0 update1<br>ESX Server 4.0 update3<br>ESX Server 4.1<br>ESX Server 4.1 update1<br>ESX Server 4.1 update2<br>ESX Server 4.1 update3<br>ESXi 4.0 update1<br>ESXi 4.0 update3<br>ESXi 4.1 update1<br>ESXi 4.1 update2<br><b>ESXi 4.1 update3</b><br>ESXi 5.0<br>ESXi 5.0 update1<br>ESXi 5.0 update2<br>ESXi 5.0 update3<br>ESXi 5.1 update1<br>ESXi 5.1 update2<br>ESXi 5.5<br>ESXi 5.5 update1<br>ESXi 5.5 update2 |
| VIOS                | VIOS 2.2.0.12-FP-24SP02                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Windows             | 2008 Hyper-V R2                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |

| Platform Updates | Updated Version                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| VMWare           | VMWare ESX 3.5 Update 5 (3.5u5) ( <a href="http://www.vmware.com/download/vi">http://www.vmware.com/download/vi</a> )<br>VMWare ESX 4.0 ( <a href="http://www.vmware.com/download/vi">http://www.vmware.com/download/vi</a> )<br>VMWare ESXi 4.0 ( <a href="http://www.vmware.com/download/vi">http://www.vmware.com/download/vi</a> )<br>VMWare ESX 4.0 Update 3 ( <a href="http://www.vmware.com/download/vi">http://www.vmware.com/download/vi</a> )<br>VMWare ESXi 4.0 Update 3 ( <a href="http://www.vmware.com/download/vi">http://www.vmware.com/download/vi</a> )<br>VMWare ESX 4.1 ( <a href="http://www.vmware.com/download/vi">http://www.vmware.com/download/vi</a> )<br>VMWare ESX 4.1 Update1 ( <a href="http://www.vmware.com/download/vi">http://www.vmware.com/download/vi</a> )<br>VMWare ESXi 4.1 Update1 ( <a href="http://www.vmware.com/download/vi">http://www.vmware.com/download/vi</a> )<br>VMWare ESX 4.1 Update2 ( <a href="http://www.vmware.com/download/vi">http://www.vmware.com/download/vi</a> )<br>VMWare ESXi 4.1 Update2 ( <a href="http://www.vmware.com/download/vi">http://www.vmware.com/download/vi</a> )<br>VMWare ESX 4.1 Update3 ( <a href="http://www.vmware.com/download/vi">http://www.vmware.com/download/vi</a> )<br>VMWare ESXi 4.1 Update3 ( <a href="http://www.vmware.com/download/vi">http://www.vmware.com/download/vi</a> )<br>VMWare ESXi 5.0 ( <a href="http://www.vmware.com/download/vi">http://www.vmware.com/download/vi</a> )<br>VMWare ESXi 5.0 Update1 ( <a href="http://www.vmware.com/download/vi">http://www.vmware.com/download/vi</a> )<br>VMware ESXi 5.1 Update1 ( <a href="http://www.vmware.com/download/vi">http://www.vmware.com/download/vi</a> ) Refer to <b>Note 2</b> below<br>VMware ESXi 5.0 Update2 ( <a href="http://www.vmware.com/download/vi">http://www.vmware.com/download/vi</a> ) Refer to <b>Note 2</b> below<br>VMware ESXi 5.5 ( <a href="http://www.vmware.com/download/vi">http://www.vmware.com/download/vi</a> )<br>VMware ESXi 5.0 Update3 ( <a href="http://www.vmware.com/download/vi">http://www.vmware.com/download/vi</a> ) Refer to <b>Note 2</b> below<br>VMware ESXi 5.1 Update2 ( <a href="http://www.vmware.com/download/vi">http://www.vmware.com/download/vi</a> ) Refer to <b>Note 2</b> below<br>VMware ESXi 5.5 Update1 ( <a href="http://www.vmware.com/download/vi">http://www.vmware.com/download/vi</a> ) Refer to <b>Note 2</b> below<br>VMware ESXi 5.5 Update2 ( <a href="http://www.vmware.com/download/vi">http://www.vmware.com/download/vi</a> ) Refer to <b>Note 2</b> below |

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|            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| AIX / VIOS | Refer to <b>Note 1</b> below                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Windows    | 2008 Hyper-V R2 ( <a href="http://www.microsoft.com/en-us/download/details.aspx?id=3512">http://www.microsoft.com/en-us/download/details.aspx?id=3512</a> )<br>2012 ( <a href="http://www.microsoft.com/en-us/server-cloud/windows-server/default.aspx">http://www.microsoft.com/en-us/server-cloud/windows-server/default.aspx</a> )<br>2012 R2 ( <a href="http://www.microsoft.com/en-us/server-cloud/windows-server/default.aspx">http://www.microsoft.com/en-us/server-cloud/windows-server/default.aspx</a> ) |

**Note 1:** Refer to the Host System Attachment Guide for updated levels and additional information.

**Note 2:** Refer to the Host System Attachment Guide for detail information before installing VMware ESXi 5.1 Update1.

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

## Section 4 – Supported Software / Services

| Microsoft Cluster Service (MSCS) Support | 2 Node    | 4 Node    | 6 Node    |
|------------------------------------------|-----------|-----------|-----------|
| Windows Server 2003 (32bit /64bit)       | Supported | Supported | Supported |
| Windows Server 2008 R2 (64bit)           | Supported | Supported | Supported |
| Windows Server 2012 (64bit)              | Supported | Supported | Supported |
| Windows Server 2012 R2 (64bit)           | Supported | Supported | Supported |

**Note 1:** Please refer to Chapter 7 in the Installation and User's Guide "Configuring blades for Microsoft Cluster Service".

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

| Linux Clustering Support                                                           | Supported |
|------------------------------------------------------------------------------------|-----------|
| RedHat Linux 5.2 / 5.3 / 5.4 / 5.7 / 5.8 / 5.9 / 5.10 / 6.1 / 6.2 / 6.3/ 6.4 / 6.5 | Supported |
| SUSE Enterprise Server 10.2 / 10.3 / 10.4 / 11 / 11.1 / 11.2/ 11.3                 | Supported |

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## Section 5 – SAS RAID Module Firmware

| SAS RAID Module Firmware                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Version   |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|
| SAS RAID Module Firmware Package                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 1.3.4.006 |
| <b>Detailed Firmware Levels Included within the Package</b> <ol style="list-style-type: none"> <li>1. Software Version: H-3.1.1.1</li> <li>2. Battery Backup Unit Firmware: 58.0</li> <li>3. BMC Firmware: S0BT10A</li> <li>4. Disk Storage Module Firmware: 7.31</li> <li>5. SAS Switch Firmware: R1.09</li> <li>6. FPGA: 1.07</li> <li>7. SES Firmware: 01.07</li> <li>8. Drive Firmware Levels <ol style="list-style-type: none"> <li>3.5" HDD <ol style="list-style-type: none"> <li>a. Option 43W7523 (73GB): A496, BA2D, SA0A</li> <li>b. Option 43W7524 (146GB): A496, BA2D, SA0A, BA4D</li> <li>c. Option 43X0802 (300GB): A496, BA2D, A529-300, SA0A, BA4D</li> <li>d. Option 44W2234 (300GB): BA5A, A3C4</li> <li>e. Option 42D0519 (450GB): BA4D</li> <li>f. Option 44W2239 (450GB): BA5A, A3C4</li> <li>g. Option 44W2244 (600GB): BA5A, A3C4</li> <li>h. Option 42D0546 (750GB): BC1I, BC2D, BC4A</li> <li>i. Option 42D0547 (1TB): BC1I, BC5D, XA36, BC4B, XA39</li> <li>j. Option 42D0777 (1TB): BC2D, BC4A, BC4B</li> <li>k. Option 42D0767 (2TB): XA36, BC2D, BC5D, J3K8, BC4A, J3L6, BC4B, XA39</li> <li>l. Option 81Y9758 (3TB): BC3E, BC5D, J3K8, XA36, J3L6, XA39</li> </ol> </li> <li>2.5" HDD <ol style="list-style-type: none"> <li>m. Option 90Y8877 (300GB): B56K, ZA33, SB2F, D3A6, B55E, J2EG, SB35, J2EH, ZA34</li> <li>n. Option 90Y8872 (600GB): B56K, ZA33, SB2F, D3A6, B55E, J2EG, SB35, J2EH, ZA34</li> <li>o. Option 81Y9650 (900GB): B56K, ZA33, B55E, J2EG, SB35, J2EH, ZA34</li> <li>p. Option 81Y9670 (300GB): B63G, SC2E, J2G4, B63K, SC36</li> <li>q. Option 00AJ300 (600GB): SC35, J2G4, SC36</li> <li>r. Option 00AD075 (1.2TB): J2M8, B578, J2MA, B57B</li> </ol> </li> </ol> </li> </ol> |           |

| SAS RAID Module Firmware Update Utility – Supported Operating Systems |                               |               |
|-----------------------------------------------------------------------|-------------------------------|---------------|
|                                                                       | Storage Configuration Manager | Command Line  |
| Microsoft Windows XP                                                  | Supported                     | Supported     |
| Microsoft Windows Server 2003                                         | Supported                     | Supported     |
| Microsoft Windows Vista                                               | Not Supported                 | Not Supported |
| Microsoft Windows 7                                                   | Not Supported                 | Supported     |
| Microsoft Windows Server 2008                                         | Supported                     | Supported     |
| Red Hat Enterprise Linux 4 AS/ES                                      | Supported                     | Supported     |
| Red Hat Enterprise Linux 5 AS/ES                                      | Supported                     | Supported     |
| Red Hat Enterprise Linux 6 AS/ES                                      | Supported                     | Supported     |
| SUSE Linux Enterprise Server 9                                        | Supported                     | Supported     |
| SUSE Linux Enterprise Server 10                                       | Supported                     | Supported     |
| SUSE Linux Enterprise Server 11                                       | Supported                     | Supported     |

**Note:** All levels in this document are minimum required levels or current levels available at the time of publication.

|                   |               |           |
|-------------------|---------------|-----------|
| VMWare            | Supported     | Supported |
| AIX / IBMi / VIOS | Not Supported | Supported |

**Section 6 – Path Management**

| <b>Windows – Path Management</b>                                                                                                                                                                                                                                                                | <b>Version</b> | <b>Comments</b>      |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|----------------------|
| IBM Subsystem Device Driver Device Specific Module (SDDDSM)                                                                                                                                                                                                                                     |                |                      |
| Windows Server 2003 (32bit /64bit) / Windows Server 2008 R2 (64bit)                                                                                                                                                                                                                             | 2.4.3.3-2      | Required for Windows |
| Windows Server 2012 (64bit)                                                                                                                                                                                                                                                                     | 2.4.3.3-5      | Required for Windows |
| Windows Server 2012 R2 (64bit)                                                                                                                                                                                                                                                                  | 2.4.3.3-5      | Required for Windows |
| <b>Windows Path Management Support Download URL (Installable Package)</b>                                                                                                                                                                                                                       |                |                      |
| <a href="http://www.ibm.com/support/docview.wss?rs=540&amp;context=ST52G7&amp;dc=D430&amp;uid=ssg1S4000350&amp;loc=en_US&amp;cs=utf-8&amp;lang=en">http://www.ibm.com/support/docview.wss?rs=540&amp;context=ST52G7&amp;dc=D430&amp;uid=ssg1S4000350&amp;loc=en_US&amp;cs=utf-8&amp;lang=en</a> |                |                      |

| <b>Linux - Path Management</b>                                                                                                                                                                                                                                                                  | <b>Version</b>                    | <b>Comments</b>    |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------|--------------------|
| Red Hat Enterprise Linux 5.2/5.3/5.4 device-mapper-multipath                                                                                                                                                                                                                                    | OS Default / Config File: 3.02    | Required for Linux |
| Red Hat Enterprise Linux 5.7 device-mapper-multipath                                                                                                                                                                                                                                            | OS Default / Config File: 3.05    | Required for Linux |
| Red Hat Enterprise Linux 5.8 device-mapper-multipath                                                                                                                                                                                                                                            | OS Default / Config File: 3.05    | Required for Linux |
| Red Hat Enterprise Linux 5.9 device-mapper-multipath                                                                                                                                                                                                                                            | OS Default / Config File: 3.05    | Required for Linux |
| Red Hat Enterprise Linux 5.10 device-mapper-multipath                                                                                                                                                                                                                                           | OS Default / Config File: 3.05    | Required for Linux |
| Red Hat Enterprise Linux 6.1 device-mapper-multipath                                                                                                                                                                                                                                            | OS Default / Config File: 3.06    | Required for Linux |
| Red Hat Enterprise Linux 6.2 device-mapper-multipath                                                                                                                                                                                                                                            | OS Default / Config File: default |                    |
| Red Hat Enterprise Linux 6.3 device-mapper-multipath                                                                                                                                                                                                                                            | OS Default / Config File: default |                    |
| Red Hat Enterprise Linux 6.4 device-mapper-multipath                                                                                                                                                                                                                                            | OS Default / Config File: default |                    |
| Red Hat Enterprise Linux 6.5 device-mapper-multipath                                                                                                                                                                                                                                            | OS Default / Config File: default |                    |
| SUSE Linux Enterprise Server 10 device-mapper-multipath                                                                                                                                                                                                                                         | OS Default / Config File: 3.03    | Required for Linux |
| SUSE Linux Enterprise Server 11 device-mapper-multipath                                                                                                                                                                                                                                         | OS Default / Config File: 3.04    | Required for Linux |
| SUSE Linux Enterprise Server 11.2 device-mapper-multipath                                                                                                                                                                                                                                       | OS Default / Config File: 3.07    | Required for Linux |
| SUSE Linux Enterprise Server 11.3 device-mapper-multipath                                                                                                                                                                                                                                       | OS Default / Config File: 3.08    | Required for Linux |
| <b>Linux Path Management Support Download URL (Configuration File)</b>                                                                                                                                                                                                                          |                                   |                    |
| <a href="http://www.ibm.com/support/docview.wss?rs=540&amp;context=ST52G7&amp;dc=D430&amp;uid=ssg1S4000107&amp;loc=en_US&amp;cs=utf-8&amp;lang=en">http://www.ibm.com/support/docview.wss?rs=540&amp;context=ST52G7&amp;dc=D430&amp;uid=ssg1S4000107&amp;loc=en_US&amp;cs=utf-8&amp;lang=en</a> |                                   |                    |

| <b>AIX - Path Management</b>                                                                                                                                                                                                                                                                    | <b>Version</b> | <b>Comments</b>                                                              |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|------------------------------------------------------------------------------|
| Native AIX PCM                                                                                                                                                                                                                                                                                  | OS Default     | Required for AIX if SDDPCM is not installed.                                 |
| AIX Subsystem Device Driver Path Control Module (SDDPCM)                                                                                                                                                                                                                                        | 2.6.2.1        | SDDPCM is required if SAS connectivity card is installed; otherwise optional |
| <b>AIX Subsystem Device Driver Path Control Module (SDDPCM)</b>                                                                                                                                                                                                                                 |                |                                                                              |
| <a href="http://www.ibm.com/support/docview.wss?rs=540&amp;context=ST52G7&amp;dc=D430&amp;uid=ssg1S4000201&amp;loc=en_US&amp;cs=utf-8&amp;lang=en">http://www.ibm.com/support/docview.wss?rs=540&amp;context=ST52G7&amp;dc=D430&amp;uid=ssg1S4000201&amp;loc=en_US&amp;cs=utf-8&amp;lang=en</a> |                |                                                                              |

**Note:** All levels in this document are minimum required levels or current levels available at the time of publication. 11

**Section 7 – SAS Expansion Card**

| <b>SAS Expansion Card (CFFv) BIOS &amp; FW</b>                                         | <b>Minimum Version</b>                     |
|----------------------------------------------------------------------------------------|--------------------------------------------|
| SAS Expansion Card (CFFv) (39Y9190 / 8250) (DOS, Linux & Windows)                      | 2.72                                       |
| SAS Expansion Card (CFFv) (39Y9190 / 8250) (AIX)                                       | 00105000.1004912782<br>00105000.1004913005 |
| SAS Connectivity Card (CIOv) (43W4068 / 8246) for HS22/23, HS23E, JS23, JS23/43, PS70x | Refer to Section 11                        |
| SAS Connectivity Card (CFFv) (43W3974 / NA) for HS21 XM, HS12, HS22                    | Refer to Section 11                        |

**Note:** All levels in this document are minimum required levels or current levels available at the time of publication. 12

Section 8 – Utilities & Management

| Advanced Management Module                   | Recommended Version |
|----------------------------------------------|---------------------|
| BladeCenter Advanced Management Module (AMM) | 66N                 |

| Start Now Advisor Utility (SNA)     | Minimum Version |
|-------------------------------------|-----------------|
| Start Now Advisor – IBM BladeCenter | 2.2             |

| IBM Storage Configuration Manager (SCM) | Minimum Version |
|-----------------------------------------|-----------------|
| IBM Storage Configuration Manager       | 2.20.0          |

**Note 1:** SNA and SCM are supported when configured with 6 Disks Storage Module only and RSSM firmware level is 1.2.4.xxx and below.

## Section 9 – Ethernet Switch Modules

| Ethernet Switch Firmware                                  | Minimum Version |
|-----------------------------------------------------------|-----------------|
| Nortel 1/10Gb Uplink Ethernet Switch Module (GbESM-1-10U) | 1.0.1.0         |
| Nortel Layer 2/3 GbE Switch Module (GbESM)                | 1.5.4.0         |
| Nortel Layer 2-7 GbE Switch Module (GbESM)                | 21.0.12.0       |
| Cisco Systems Catalyst Switch                             | 12.2-46.SE      |
| Server Connectivity Module                                | 1.1.2.0         |
| Nortel 10G Uplink Ethernet Switch Module                  | 1.2.5.0         |
| Intelligent Copper Pass-Thru Module                       | 1.0.2.0         |

**Note:** All levels in this document are minimum required levels or current levels available at the time of publication. 14

**Section 10 – SAS Device Drivers**

| <b>SAS Device Drivers – Windows</b>          | <b>Minimum Version</b> |
|----------------------------------------------|------------------------|
| For 3Gbs SAS Host                            |                        |
| Microsoft Windows Server 2003, 2008 and 2012 | 1.31.02.00             |
| For 6Gbs SAS Host                            |                        |
| Microsoft Windows Server 2008 and 2012       | 2.00.60                |
| Microsoft Windows Server 2012 R2             | 2.0.60.82              |
| <b>SAS Device Drivers - Linux</b>            | <b>Minimum Version</b> |
| For 3Gbs SAS Host                            |                        |
| Linux RHEL5                                  | 4.22.80.04             |
| RHEL5.7                                      | 4.22.80.06             |
| RHEL5.8                                      | 4.22.80.06             |
| RHEL5.9                                      | 4.22.80.06             |
| RHEL 5.10                                    | 4.22.80.06             |
| RHEL6.1                                      | 4.22.80.08             |
| RHEL6.2                                      | 4.22.80.08             |
| RHEL6.3                                      | OS Default             |
| RHEL6.4                                      | 4.22.80.04             |
| RHEL6.5                                      | 4.22.80.08             |
| SLES 10 / 10.2 / 10.3                        | 4.22.80.06             |
| SLES 10.4                                    | OS Default             |
| SLES 11 / 11.1                               | OS Default             |
| SLES 11.2                                    |                        |
| SLES 11.3                                    |                        |
| For 6Gbs SAS Host                            |                        |
| Linux RHEL6.1                                | 15.00.00.00            |
| RHEL6.2                                      | 15.00.00.00            |
| RHEL6.3                                      | 15.00.00.00            |
| RHEL6.4                                      | OS Default             |
| RHEL6.5                                      | OS Default             |
| SLES 11 / 11.1 / 11.2                        | OS Default             |
| SLES 11.3                                    |                        |

**Note:** All levels in this document are minimum required levels or current levels available at the time of publication.

**Section 11 – Blade Server Software & Drivers**

| <b>HS12 Blade Server - Software and Drivers</b>                       | <b>Minimum Version</b> |
|-----------------------------------------------------------------------|------------------------|
| Flash BIOS (DOS, Linux & Windows)                                     | 1.11                   |
| Baseboard Management Controller (BMC) Firmware (DOS, Linux & Windows) | 1.04                   |
| LSI 1064e SAS Controller BIOS and Firmware (DOS, Linux & Windows)     | 2.72                   |

| <b>HS20 Blade Server - Software and Drivers</b>                       | <b>Minimum Version</b> |
|-----------------------------------------------------------------------|------------------------|
| Flash BIOS (DOS, Linux & Windows)                                     | 1.13                   |
| Baseboard Management Controller (BMC) Firmware (DOS, Linux & Windows) | 1.34                   |

| <b>HS21 Blade Server - Software and Drivers</b>                       | <b>Minimum Version</b> |
|-----------------------------------------------------------------------|------------------------|
| Flash BIOS (DOS, Linux & Windows)                                     | 1.20                   |
| Baseboard Management Controller (BMC) Firmware (DOS, Linux & Windows) | 1.23                   |
| LSI 1064e SAS Controller BIOS and Firmware (DOS, Linux & Windows)     | 2.66                   |

| <b>HS21 XM Blade Server - Software and Drivers</b>                    | <b>Minimum Version</b> |
|-----------------------------------------------------------------------|------------------------|
| Flash BIOS update v1.14 (DOS, Linux & Windows)                        | 1.16                   |
| Baseboard Management Controller (BMC) Firmware (DOS, Linux & Windows) | 1.34                   |
| LSI 1064e SAS Controller BIOS and Firmware (DOS, Linux & Windows)     | 2.72                   |

| <b>HS22 Blade Server - Software and Drivers</b>                   | <b>Minimum Version</b> |
|-------------------------------------------------------------------|------------------------|
| IBM Flash uEFI/BIOS (DOS, Linux & Windows)                        | 1.10                   |
| LSI 1064e SAS Controller BIOS and Firmware (DOS, Linux & Windows) | 2.71                   |

| <b>HS22v Blade Server - Software and Drivers</b>                  | <b>Minimum Version</b> |
|-------------------------------------------------------------------|------------------------|
| IBM Flash uEFI/BIOS (DOS, Linux & Windows)                        | 1.10                   |
| LSI 1064e SAS Controller BIOS and Firmware (DOS, Linux & Windows) | 2.72                   |

| <b>HS23 Blade Server - Software and Drivers</b>                  | <b>Minimum Version</b> |
|------------------------------------------------------------------|------------------------|
| IBM Flash uEFI/BIOS (DOS, Linux & Windows)                       | tkE112O                |
| LSI 2004 SAS Controller BIOS and Firmware (DOS, Linux & Windows) | 1.10.08                |

| <b>HS23E Blade Server - Software and Drivers</b>                 | <b>Minimum Version</b> |
|------------------------------------------------------------------|------------------------|
| IBM Flash uEFI/BIOS (DOS, Linux & Windows)                       | 1.00 (AHE112D)         |
| LSI 2004 SAS Controller BIOS and Firmware (DOS, Linux & Windows) | 1.10.06                |

| <b>LS20 Blade Server - Software and Drivers</b>              | <b>Minimum Version</b> |
|--------------------------------------------------------------|------------------------|
| Flash BIOS (DOS, Linux & Windows)                            | 1.30                   |
| Baseboard Management Controller (BMC) (DOS, Linux & Windows) | 2.20                   |

**Note:** All levels in this document are minimum required levels or current levels available at the time of publication.

| <b>LS21 &amp; LS41 Blade Server - Software and Drivers</b>            | <b>Minimum Version</b> |
|-----------------------------------------------------------------------|------------------------|
| Flash BIOS (DOS, Linux & Windows)                                     | 1.12                   |
| Baseboard Management Controller (BMC) Firmware (DOS, Linux & Windows) | 1.32                   |
| LSI 1064 SAS Controller BIOS and Firmware (DOS, Linux & Windows)      | 2.72                   |

| <b>LS22 &amp; LS42 Blade Server - Software and Drivers</b>            | <b>Minimum Version</b> |
|-----------------------------------------------------------------------|------------------------|
| Flash BIOS (DOS, Linux & Windows)                                     | 1.06                   |
| Baseboard Management Controller (BMC) Firmware (DOS, Linux & Windows) | 1.06                   |
| LSI 1064e SAS Controller BIOS and Firmware (DOS, Linux & Windows)     | 2.72                   |

| <b>JS12 Blade Server - Software and Drivers</b> | <b>Minimum Version</b>                     |
|-------------------------------------------------|--------------------------------------------|
| BIOS/Firmware Inband update (AIX & VIOS)        | 3.5.6 / 01EA350.103.074                    |
| SAS Expansion Card (CFFv) Firmware (AIX)        | 00105000.1004912782<br>00105000.1004913005 |

| <b>JS22 Blade Server - Software and Drivers</b> | <b>Minimum Version</b>                     |
|-------------------------------------------------|--------------------------------------------|
| BIOS/Firmware Inband (AIX & VIOS)               | 3.5.6 / 01EA350.103.074                    |
| SAS Expansion Card (CFFv) Firmware (AIX)        | 00105000.1004912782<br>00105000.1004913005 |

| <b>JS23 &amp; JS43 Blade Server – Software and Drivers</b> | <b>Minimum Version</b>  |
|------------------------------------------------------------|-------------------------|
| BIOS/Firmware Inband (AIX & VIOS)                          | 3.5.6 / 01EA350.103.074 |
| Integrated SAS Controller BIOS and Firmware (AIX & VIOS)   | 53495320.04200029       |

| <b>PS700, PS701 &amp; PS702 Blade Server – Software and Drivers</b> | <b>Minimum Version</b>     |
|---------------------------------------------------------------------|----------------------------|
| BIOS/Firmware Inband (AIX & VIOS)                                   | 7.1.6 /<br>01AA710_114_043 |
| Integrated SAS Controller BIOS and Firmware (AIX & VIOS)            | 53495320.04200029          |

| <b>PS703 &amp; PS704 Blade Server – Software and Drivers</b> | <b>Minimum Version</b> |
|--------------------------------------------------------------|------------------------|
| BIOS/Firmware Inband (AIX)                                   | 7.3.0 / 0AA730_029_029 |
| Integrated SAS Controller BIOS and Firmware (AIX)            | 53495322.04220029      |

**Note:** All levels in this document are minimum required levels or current levels available at the time of publication. 17