



BROADCOM[®]

Enclosure Interoperability Test Configuration Report

Test Report Name: IcyDock_MB994SP-4S_Enclosure_12GMR_int-sm6027R-001

Test Project ID: SCGCQ00917646

The following tables detail the hardware configuration, software configuration and testing performed to verify interoperability.

NOTE: The highlighted RED device is the device under test.

Updated: Mar 08 2016

Testing Result: Passed

RAID Controllers:

| Manufacturer | Model | Part Number |
|--------------|---------------------|--------------|
| Broadcom | MegaRAID SAS9361-8i | 03-25420-01C |

HDD/SSDs:

| Manufacturer | Type | Protocol | Link Speed | Model | FW Version | Capacity | Size | RPM | SectorSize | Self-Encrypting |
|--------------|------|----------|------------|-----------------------|------------|----------|------|------|------------|-----------------|
| Samsung | SSD | SATA | 6Gb/s | 850 PRO, MZ7KE128HMGA | 2B6Q | 128GB | 2.5" | NA | 512 | No |
| Seagate | HDD | SAS | 12Gb/s | ST2000NX0263 | K001 | 2TB | 2.5" | 7200 | 4k | No |
| Seagate | HDD | SAS | 12Gb/s | ST900MM0018 | E001 | 900GB | 2.5" | 7200 | 512e | No |
| Seagate | HDD | SATA | 6Gb/s | ST2000NX0253 | SN01 | 2TB | 2.5" | 7200 | 512e | No |

Servers:

| Manufacturer | Model | System Bios | CPU Information | Motherboard | Number of CPUs | Memory |
|--------------|------------------|-------------|---|-------------|----------------|--------|
| SuperMicro | SSG-6027R-E1R12T | 3.0b | Intel(R) Xeon(R) CPU E5-2660 v2 @ 2.20GHz | X9DRH | 1 | 128 |

Enclosures:

| Manufacturer | Model | Type | Expander Manufacturer | FW Rev | Slots | Protocol | Link Speed | Form Factor |
|--------------|------------|--------------|-----------------------|--------|-------|----------|------------|-------------|
| ICY Dock | MB994SP-4S | 1U Backplane | N/A | N/A | 4 | SAS/SATA | 6Gb/s | 2.5" |

SW, FW and Utilities:

| Vendor | Name | Version |
|--------|---------|---------|
| Oracle | vdbench | 50403 |

| | | |
|----------|--------------|--------------------|
| Broadcom | MegaCli | 8.07.09 |
| N/A | sg3utils | 1.28-4-el6 |
| Broadcom | MR FW | 6.9 - 24.10.0-0020 |
| Broadcom | Linux driver | 06.809.18.00 |
| Broadcom | msm | 15.08.01.02 |
| Broadcom | storcli | 1.17.08 |

Cables:

| Vendor | Model Number | Length (M) | Description |
|--------------|--------------|------------|---|
| SerialCables | SA-F43S7P-1M | 1 | Int. HD MiniSAS (SFF-8643) to 4 7-pin SATA breakout |

Operating Systems:

| Vendor | Name | 32/64 bit |
|--------|---------|-----------|
| RedHat | rhel6.6 | 64 |

Cache Modules

| Model | Part Number | Capacity |
|---------|------------------|----------|
| Ptolemy | 03-25444-00 C | 4G |

Offload Power:

| Model | Part Number | Type |
|-------|---------------|----------|
| FBU02 | LSI 49571-17C | SuperCap |

Other Equipment Used:

| Vendor | Model | Part Number | Description |
|--------|---------------------------|-----------------|------------------------|
| Quarch | Torridon Array Controller | QTL 1461-04-037 | Drive Push/Pull Module |

Testcase to RAID Volumes:

For Test Case Default

| Number of Drives | RAID Level | Strip Size | Read Cache | Write Cache | VDs |
|------------------|------------|------------|------------|-------------|-----|
| 3 | 5 | 64kb | Read Ahead | Write Back | 1 |
| 1 | 0 | 64kb | Read Ahead | Write Back | 1 |

For Test Case SCGCQ00735554

| Number of Drives | RAID Level | Strip Size | Read Cache | Write Cache | VDs |
|------------------|----------------------|------------|------------|-------------|-----|
| 2 | 1 | 64kb | Read Ahead | Write Back | 1 |
| 2 | Unconfigured Good | NA | NA | NA | 1 |

For Test Case SCGCQ00758562

| Number of Drives | RAID Level | Strip Size | Read Cache | Write Cache | VDs |
|------------------|------------|------------|------------|-------------|-----|
| 2 | 1 | 64kb | Read Ahead | Write Back | 1 |

For Test Case SCGCQ00775269

| Number of Drives | RAID Level | Strip Size | Read Cache | Write Cache | VDs |
|------------------|------------|------------|------------|-------------|-----|
|------------------|------------|------------|------------|-------------|-----|

| | | | | | |
|---|---|------|------------|------------|---|
| 1 | 0 | 64kb | Read Ahead | Write Back | 1 |
|---|---|------|------------|------------|---|

Testcase to HDD/SSDs:

For Test Case Default

| Manufacturer | Type | Protocol | Link Speed | Model | FW Version | Capacity | Size | RPM | SectorSize | Self-Encrypting |
|--------------|------|----------|------------|--------------|------------|----------|------|------|------------|-----------------|
| Seagate | HDD | SAS | 12Gb/s | ST2000NX0263 | K001 | 2TB | 2.5" | 7200 | 4k | No |

For Test Case SCGCQ00735554

| Manufacturer | Type | Protocol | Link Speed | Model | FW Version | Capacity | Size | RPM | SectorSize | Self-Encrypting |
|--------------|------|----------|------------|--------------|------------|----------|------|------|------------|-----------------|
| Seagate | HDD | SAS | 12Gb/s | ST2000NX0263 | K001 | 2TB | 2.5" | 7200 | 4k | No |

For Test Case SCGCQ00758562

| Manufacturer | Type | Protocol | Link Speed | Model | FW Version | Capacity | Size | RPM | SectorSize | Self-Encrypting |
|--------------|------|----------|------------|--------------|------------|----------|------|------|------------|-----------------|
| Seagate | HDD | SAS | 12Gb/s | ST2000NX0263 | K001 | 2TB | 2.5" | 7200 | 4k | No |

For Test Case SCGCQ00775269

| Manufacturer | Type | Protocol | Link Speed | Model | FW Version | Capacity | Size | RPM | SectorSize | Self-Encrypting |
|--------------|------|----------|------------|-----------------------|------------|----------|------|------|------------|-----------------|
| Samsung | SSD | SATA | 6Gb/s | 850 PRO, MZ7KE128HMGA | 2B6Q | 128GB | 2.5" | NA | 512 | No |
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| Seagate | HDD | SATA | 6Gb/s | ST2000NX0253 | SN01 | 2TB | 2.5" | 7200 | 512e | No |

Test Results:

| CQ ID | Title | Description | Test Result | Comments |
|---------------|--|---|-------------|----------|
| SCGCQ00735554 | Interop Test : CopyBack & Patrol Read - To verify IOs complete without error during while copyback is in progress followed by a PR | To verify that IOs run successfully while a copyback is on progress on every VD connected to the controller. Once copyback complete, a PR is started on all the volumes and the server is rebooted in between to ensure that PR resumes on all the VDs after the reboot without any issues. Test performs IO and copy-back (i.e. drive replacement) operations, followed by a patrol read, and reboots the server. The intent being to verify that these background operations continue across a reboot cycle and successfully complete. | Passed | |
| SCGCQ00735971 | Interop Test : IO's - To run long duration heavy IOs on Fully Initialized volumes with multiple RAID levels configured followed by CC on all the VDs | To configure multiple RAID level volumes, perform Full Initialization on all the volumes, run long duration (24 hrs) heavy IOs on all the configured volumes followed by a CC | Passed | |
| SCGCQ00737198 | Interop Test: System Configuration | To setup the system by bringing up the server with the OS, installing all the required Software/Hardware utilities and update to the latest firmware version to perform further testing. | Passed | |
| SCGCQ00758562 | Interop Test: Drive Pull/Push - To verify rebuild starts/resumes successfully when drives are being pulled/pushed with IOs in the background | To verify that rebuild starts successfully on all the drives when being interrupted (by being pulled and pushed) during a rebuild process and that it completes successfully at the end of 25 iterations. | Passed | |
| SCGCQ00758604 | Interop Test : Power Cycle - To perform multiple power cycles with server powered on within 30 sec of power off (150 cycles) | To perform multiple power cycles (N cycles) on the server without running IOs and checking for status of controller, VDs, PDs, BBU and verifying that the controller comes up at the expected PCIe speed and width during every cycle. N is defined for every test accordingly default is 150 cycles | Passed | |
| SCGCQ00775269 | Interop Test: To verify that a mix of SAS/SATA with various sector size (4kn, 512e, 512) and perform basic IO's without error | To configure multiple RAID level volumes, perform Full Initialization on all the volumes, run (3 hrs) basic IOs on all the configured volumes followed by a CC with mixed HDD Configuration (SAS/SATA, 4kn, 512e, 512) | Passed | |

| | | | | |
|---------------|---|--|--------|--|
| SCGCQ00776857 | Interop Test : Manual Enclosure Power Cycle - To manually perform multiple power cycles with enclosure powered on within 60 sec of power off (10 cycles) | To manually perform multiple power cycles (10 cycles) on the Enclosure without running IOs and checking for status of enclosure, controller, VDs, PDs, BBU at every cycle. | Passed | |
|---------------|---|--|--------|--|