Community Driver Features – Initial Release (rev 1.0, 1/16/2012)

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| --- | --- | --- | --- |
| **Feature** | **Spec Ref** | **Y/N** | **Notes** |
| Performance Features |  |  |  |
| NUMA Optimized Queues |  | Y | * Queues allocated per core via local memory * IOs submitted on optimal queue for CPU * MSIX vectors mapped to NUMA optimized Queue pair * ‘All or Nothing’ optimization, each core gets a queue and a vector or driver reverts to singe queue pair |
| Pre-allocated Memory |  | Y | Working memory (PRP lists, NVMe SQEs, etc) are allocated at initialization with correct alignment and managed via simple driver techniques avoiding dynamic memory allocation during run time |
| Use of BuildIO |  | Y | All SCSI translation (command and SGL) is done during BuildIO |
| Interrupt Coalescing |  | Y | Configurable via registry |
|  |  |  |  |
| Admin Commands |  |  |  |
| Delete IO Submission Queue | 5 | Y |  |
| Create IO Submission Queue | 5 | Y | * Priorities not implemented * Only contiguous queues implemented |
| Get Log Page | 5 | Y |  |
| Delete IO Completion Queue | 5 | Y |  |
| Create IO Completion Queue | 5 | Y |  |
| Identify | 5 | Y |  |
| Abort | 5 | N |  |
| Set Features | 5 | Y | See Get Features for feature information |
| Get Features | 5 | Y | Internally Used:   * LBA Range Type * Number of Queues * Interrupt Coalescing   Supported via Pass Through or SCSI Xlation:   * Power Management * Arbitration * Error Recovery * Interrupt Vector Configuration * Temperature Threshold * Volatile Write Cache * Write Atomicity * Asynchronous Event Configuration * Software Progress Marker |
| Async Event Request | 5 | Y | Default 4, number is a compile option |
| Firmware Activate | 5 | Y | Via Pass Through |
| Firmware Image Download | 5 | y | Via Pass Through |
| Format NVM | 5 | Y | Via Pass Through |
| Security Send | 5 | Y | Per NVMe SCSI Translation Guidelines |
| Security Receive | 5 | y | Per NVMe SCSI Translation Guidelines |
|  |  |  |  |
| SCSI Translation |  |  |  |
| NVMe Guidelines |  | Y | Fully implemented |
|  |  |  |  |
| NVMe Commands |  |  |  |
| Flush | 6 | Y |  |
| Write | 6 | Y |  |
| Read | 6 | Y |  |
| Write Uncorrectable | 6 | Y | Via Pass Through |
| Compare | 6.5 | Y | Via Pass Through |
| Dataset Management | 6.6 | Y | Via Pass Through |
| Vendor Specific | 6 | Y | Via Pass Through |
| Fused Operations | 6.2 | N |  |
| End-End Protection | 6.4 | N | Some partial coding is done per NVMe SCSI Translation Guidelines but support is not implemented |
|  |  |  |  |
| Resets |  |  |  |
| Controller Level | 7.3.1 | Y | Used for all error recovery |
| Queue Level | 7.3.2 | N | Not applicable due to our queue design |
| Queue Abort | 7.4.3 | N | Not applicable due to our queue design |
|  |  |  |  |
| Interrupts | 7.5 |  |  |
| MSI |  | Y |  |
| MSI-X |  | Y |  |
| Line Based |  | Y |  |
|  |  |  |  |
| Misc |  |  |  |
| Command NOT supported via Pass Through (all others will be passed through) |  | Y | Delete IO queue (submission and completion)  Create IO queue (submission and completion)  Abort  Set features – number of queues  Asynchronous Event Request  Read  Write |
| Event Tracing for Windows |  | N | Desired |
| System Event Logging |  | Y | Currently only reports inability to start controller |
| Multiple Namespaces |  | Y | 16, mapped to Bus 0 Tgt 0, LUNs 0-15 |
| Microsoft Public IOCTLs |  | N | Desired |
| In line tracing for debug |  | N | Desired |
| Registry Parameters  (min, max, default) |  | Y | Namespaces: Number of Namespaces (1,16,16)  MaxTXSize: Max transfer size per request (4,1024,128)  AdQEntries: # Admin queue entries (2,4096,128)  IoQEntries: # IO queue entries (2,4096,1024)  IntCoalescingTime: time threshold 100ms incr (0,255,80)  IntCoalescingEntries: # entries threshold (1,256,16) |
| WMI Support |  | N |  |
| OS Versions Tested |  |  | Windows 7 32/64 w/SP1, Windows Server 2008R2 |