Q & A From Hitachi Data Systems WebTech Presentation:

“Path Management and Load Balancing with Hitachi Dynamic Link Manager and Hitachi Global Link Availability Manager”

1. How does the failover interact with a host based volume manager?
   If we use Veritas Volume Manager (VxVM) as an example of Hitachi Dynamic Link Manager and Hitachi Global Link Availability Manager integration, the appropriate Array Support Library (ASL) for the specific storage system must be installed. Following this, Hitachi Dynamic Link Manager is installed and configured for the relevant hosts. Hitachi Data Systems Professional Services can assist with this process if necessary.

2. Is Hitachi Dynamic Link Manager Active/Active configuration supported with Sun Volume Manager?
   Yes

3. Is there a notification when a path fails?
   Yes, if you are using Hitachi Global Link Availability Manager. It will send an alert notification when a path failure occurs.

4. Can we monitor the I/O for each path through Hitachi Dynamic Link Manager?
   Yes, with Hitachi HiCommand Tuning Manager.

5. How does a 60% of 350ms IO time (e.g., 200ms) relate to the expectation of sub 20ms response times?
   The 350 millisecond response time shown for the I/O transaction is for illustrative purposes only. The purpose was to point out that for typical online transaction processing (OLTP) applications approximately 60% of the duration of a transaction is consumed by actual I/O.

6. What is the cache block size on the Hitachi Universal System Platform?
   The Universal System Platform block size used in cache and RAID groups (chunk size) is fixed at 256KB. Each such block in cache is sharable, such as four independent 64KB I/Os packed into the one 256KB cache block.

7. Can you give us the numbers for the cache hit ratio? 85%? 90%?
   The expected cache hit ratio for various types of applications are described in the Hitachi Data Systems white paper, “Hitachi HiCommand Tuning Manager Software Rules of Thumb, A Guide to Key Metrics”. This and other technical white papers can be founds at http://www.hds.com/corporate/webfeeds/wp/.
8. For overlapping I/O where a read of a block overlaps a prior write before the write is complete, does Hitachi Data Systems implement ordered completion?
   Hitachi storage systems have been designed to maintain complete data integrity. This means that when a write transaction occurs, even if the update has not been destaged to disk when a subsequent read transaction occurs, the correct value will be returned by the storage system controller.

9. What options are available for Veritas DMP or MPIO?
   The available options depend on the specific storage system. Please contact Hitachi Data Systems technical support for specific options and availability.

10. Can Hitachi Dynamic Link Manager switch these policies (load balancing) by itself as needed or it has to be set manually?
    The load balancing policies are set by the Storage Administrator via Dynamic Link Manager or Global Link Availability Manager.

11. When you change load balancing methods in the Dynamic Link Manager GUI, is the change made on the fly for all operating systems?
    Yes, when the Storage Administrator changes the load balancing algorithm, this will be implemented immediately for all supported operating systems. If Global Link Availability Manager is used, the change will occur for all managed hosts within the scope of the change.

12. Can Hitachi Dynamic Link Manager handle other Vendors Storage, e.g., EMC and IBM?
    Hitachi Dynamic Link Manager on Windows supports EMC Storage. Currently, it does not support IBM.

13. How does Global Link Availability Manager communicate with Dynamic Link Manager?
    Dynamic Link Manager and Global Link Manager communicate via TCP/IP.

14. If it needs to be set manually then can it be done on the fly?
    Yes, the load balancing algorithm can be configured at any time via Dynamic Link Manager or Global Link Manager.

15. Will Hitachi Dynamic Link Manager work using a single host bus adapter (HBA) with multi paths to storage?
    Yes.

16. Does Hitachi Dynamic Link Manager really allow for concurrent I/O or does it just to load balancing (Example: If I have a 4 GB HBA zoned to two 2 GB ports on a system and I was getting the theoretical 400 MB/sec line speed, would the HBA write 200 MB/sec down each path concurrently)?
    Yes.

17. Where is the presentation for this session posted?
   The presentation is posted at http://www.hds.com/webtech/