Jetstress

Jetstress is designed to produce an Exchange-like IO pattern that can be used to determine the potential performance of a storage array based on a number of different parameters.

**Test Types**

**Mailbox Profile (Dell Compellent Recommended)** - This is a very specific test with very specific parameters that test a specific Exchange configuration. By providing mailbox count, mailbox quota, and IOPS/mailbox along with database count and copies, the config IO profile can be simulated similar to what you would find in that type of environment. This is the most common test used, and the test that is required for participating in Microsoft’s ESRP.

**Throughput** - This test will usually require some tuning of the thread count after the first run to obtain a passing test. As a result, this will give you a realistic idea of what the maximum capability of the configured array is. The throughput test takes two parameters: percentage of capacity (per volume), and percentage of IO. Jetstress reserves 25% of the initial database file size for its future growth during test runs. For example, if you decide to size database 100% of the storage capacity of 100 GB, Jetstress creates initial databases of 75 GB and reserves 25% of 80 GB (20 GB) for the database file growth. For the IOPS, if you choose 80% throughput percentage, in the first tuning phase, Jetstress determines the maximum throughput, for say 2000 IOPS, and in the second tuning phase, it determines the database transaction cycle rate/interval for 1600 IOPS (which is 80% of 2000 IOPS), and then, if the tuning phases got succeeded, it will sustain the disk sub-system at 1600 IOPS for the test duration, for say 2 hours (default).

**Test Durations**

Jetstress can be configured to run for any duration of time. The default durations are 2 hours, 6 hours, and 24 hours. **NOTE:** The performance test becomes a stress test when its duration is longer than six hours so that it uses a lenient set of the disk I/O latency thresholds.

**Test Thresholds**

<table>
<thead>
<tr>
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<th>Performance (&lt;= 6 hours)</th>
<th>Stress (&gt;6 hours)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Avg. Database Read Latency</td>
<td>20 ms</td>
<td>20 ms</td>
</tr>
<tr>
<td>Avg. Log Write Latency</td>
<td>10 ms</td>
<td>10 ms</td>
</tr>
<tr>
<td>Max. Database Read Latency</td>
<td>100 ms</td>
<td>200 ms</td>
</tr>
<tr>
<td>Max. Log Write Latency</td>
<td>100 ms</td>
<td>200 ms</td>
</tr>
</tbody>
</table>

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Testing Best Practices

Infrastructure, Operating System & Jetstress
1. Ensure that all applications service packs and hotfixes are installed and document any specific changes in versions between base OS and tested OS.
2. Ensure that all server device drivers, HBA drivers and firmware are up to date and documented. This should include the STORPORT version that is installed in Windows. (Check to make sure that you are running the latest STORPORT available)
3. Review HBA configuration for proper settings as recommended in the Compellent Best Practices. Verify advanced settings and queue depth.
4. Verify switch and fabric firmware and configuration. For performance runs, consider isolating the network and storage fabric to prevent environmental issues during testing.

Jetstress
1. Always use the latest available version of Jetstress and ESE binaries when testing.
2. Do not perform Jetstress tests on arrays where data already resides. Jetstress is a storage intensive application and will disrupt other activities on the array.
3. After a test run, exit Jetstress and reboot the server. This ensures consistency in performance and also allows the server to release memory or processes that are utilized during a Jetstress run.
4. If running Jetstress on more than one server, be sure that the multi-server mode checkbox is checked during testing. This ensures that you can dismount the databases at the same time.

Compellent Storage Center
1. Be sure that all database and log volumes are located on T1 storage for optimal performance. (If you are wishing to simulate user experience where data is spread across tiers via Data Progression, use LoadGen instead.)
   a. NOTE - In configurations with multiple tiers of Storage, where Tier 1 is designed to meet Exchange performance requirements, Jet Stress is not supported utilizing a Storage Profile that allows Data Progression movement to Tier 3 disk. Jet Stress does not accurately simulate expected Data Progression movement to lower tiers as expected in a production environment. If Jet Stress tests are failing, customers may be required to move all Jet Stress volume data to Tier 1 disk.
2. During test runs, Jetstress should be the only application running against the array.
3. Disable replays during Jetstress test runs.
   a. NOTE - Replay usage with Jet Stress testing will consume larger quantities of disk space, and does not accurately reflect Replay change rates in a normal production environment.

Revisions

<table>
<thead>
<tr>
<th>Version</th>
<th>Date</th>
<th>Description</th>
<th>Author</th>
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<tr>
<td>1.0</td>
<td>8/24/2011</td>
<td>Initial Release</td>
<td>JB/AW/DZ</td>
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