Hewlett Packard Enterprise HPE Support Center

HPE Library and Tape Tools - Testing: Performance Tests

Using the Drive Performance test

Using the System Performance test

Link to product related documents

Using the Drive Performance test

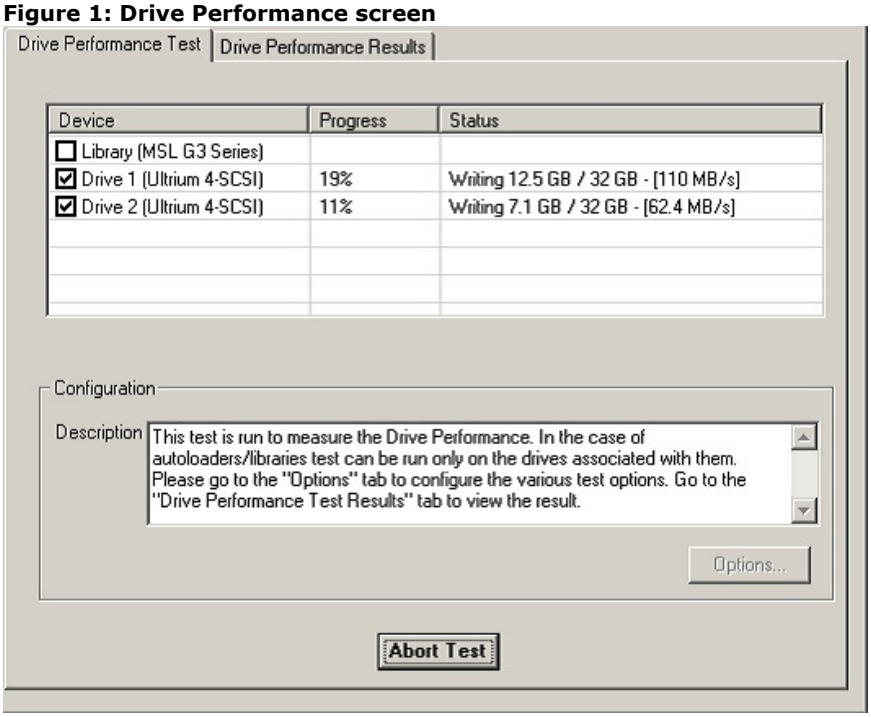
The Drive Performance test writes and reads data to/from the specified tape drive and calculates performance data for that drive. The results of the test are shown on the Drive Performance Results tab and also written to the event log.

CAUTION: This test is destructive to data on the tape. To avoid loss of data, use a blank tape when performing this test.

To start the Drive Performance test (Windows version):

1. In the device listing (the **By Product** or **By Connection** tab), select the library or drive to test.
2. Click **Dev Perf** on the main toolbar. The **Drive Performance** screen appears with the **Tape Drive Performance** tab selected. For libraries, the **Drive Performance test** tab shows the library and its associated drives. For a standalone drive, only a single drive will be shown.

   Figure 1: Drive Performance screen



3. Select the tape drives for the Drive Performance test. All of the drives will be tested in parallel.
4. Click the Options button to configure the test data in the **Drive Performance test** dialog.

   To return all of the options to their default values, click **Defaults**.

   In the **Test Logic** section of the dialog, use the drop down menus to select a data type for each of the four tests. The Drive Performance test is actually a series of four write/read subtests (labeled Step 1-4 on the Drive Performance screen) that measure performance using different types of data that can be specified.

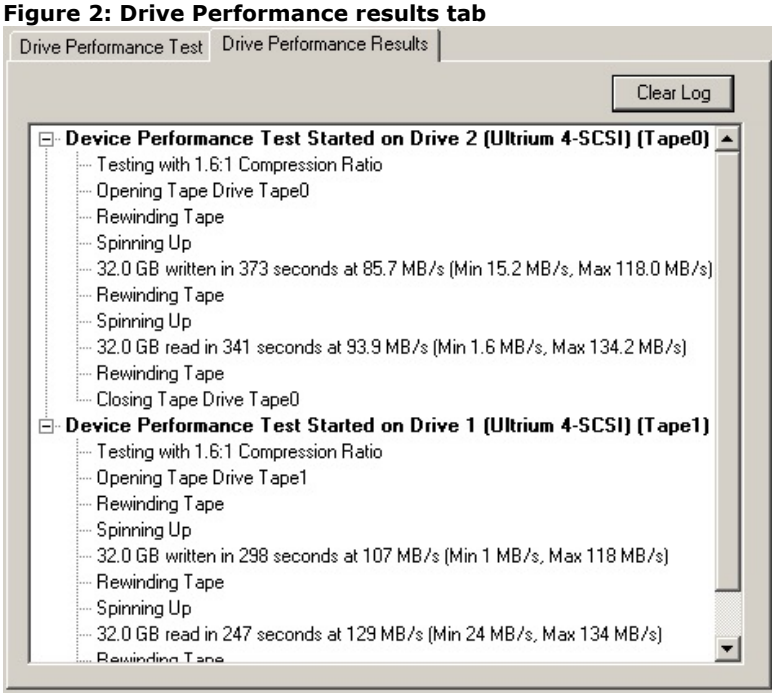
   The following data types can be selected:

   - Zeros
   - 1.6:1 Compression
   - 2:1 Compression (suggested starting value)
   - 3:1 Compression
   - 4:1 Compression

Specify a data type for Step 1, but can choose not to perform Steps 2 through4 by selecting **No Test** (suggested starting value for steps 2 through 4 is **No Test**).

5. Specify the following additional parameters:
   - **Block Mode** - Choose one of the following (suggested starting value is **Fixed**):
     - **Fixed** - The test uses a fixed block size (length) that can be specified in the **BlockSize** menu.
     - **Variable** - The test uses a different mode of data transfer. When this option is selected, the **Block Size** menu is disabled.
   - **Block Size** - If Block Mode is set to Fixed, specify the size of the data blocks used in the test. Data blocks can be from 16K to 256K (suggested starting value is 64K). This menu is disabled if Block Mode is set to Variable.
   - **I/O Size** - The maximum amount of data to be transferred by a single read/write operation. This length is typically a multiple of the Block Size and ranges from the specified Block Size to 1MB (suggested starting value is 1MB).
   - **Test Size** - The maximum amount of data written/read by the test. Valid choices are1GB, 2GB, 4GB, 8GB, 16GB, 32GB, 64GB, 128GB, and Full Tape. Larger values increase the time required to perform the test, but they produce more accurate test results (suggested starting value is 4GB).
   - **File Mark Mode** - Instructs the test to write a filemark at the specified interval (1MBto 1GB). The test can also be instructed not to write any filemarks (suggested starting value is **No filemarks**).
   - **Read After Write** - The test evaluates two sets of metrics when enabled, and one set when disabled (suggested starting value is **disabled**). When enabled, data is written to the tape and then the tape is read back. When disabled, only write performance is measured.
   - **Rate Limiting** - If rate limiting is enabled, the I/O rate is limited to the specified value(suggested starting value is **disabled**).
   - **Compare after Read** - This option checks the integrity of the data but will reduce the transfer rate of the test. Performance is not reported when this option is selected.To measure true performance, run the test with this option unselected. This option can be enabled only when **Read After Write** and **Fixed Block Mode** are selected.
6. Click **Start** to perform the test's Progress of the test is displayed under the Progress column for the corresponding drives. The numbers indicate the percentage of test completion. A dialog box will appear to inform when the test is complete.
7. Click the **Drive Performance Results** tab to view the results of the test. In the **Drive Performance Results** tab, all the operations corresponding to each of the individual drives are displayed under the corresponding tree nodes.

Figure 2: Drive Performance results tab



Running on non-Windows

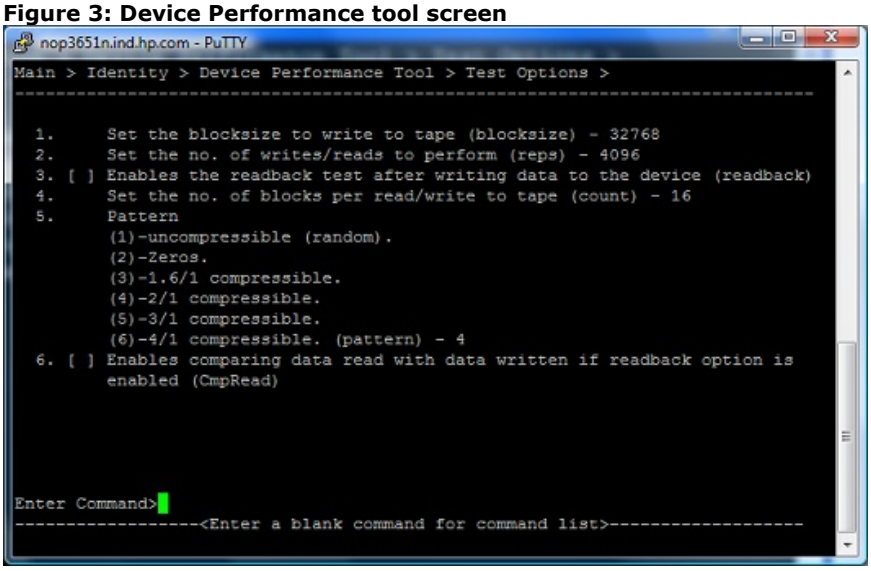
For Linux, HPE-UX, Solaris, VMS, and MAC OS X, the *devperf* command is available for libraries and tape drives. In the case of a library, the test can only be run on the drives associated with the selected library. If multiple drives are selected, the test will be run in parallel on all of the drives. For Tru64, the *devperf* command is only available for tape drives and the test can only be run on one drive at a time.

To start the Drive Performance test (CSI version):

1. Use the select command to select the device to be tested:`select <n>`
   (where <n> is the number of the device to be examined)

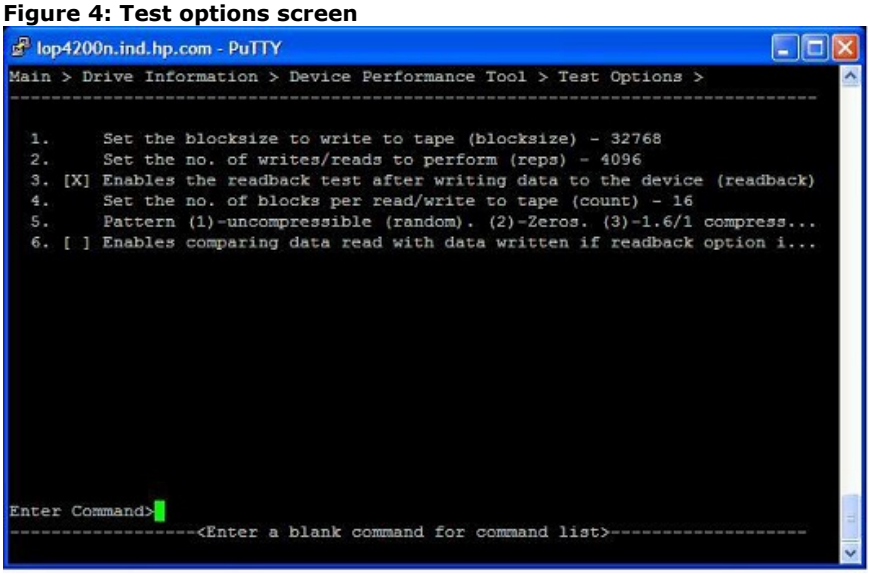
2. The **Device Performance Tool** screen shows the drives on which test can be run. For a library, only the drives associated with the library are selectable.

Figure 3: Device Performance tool screen



3. To see the test options for *devperf*, use the command *testoptions* in the **DevicePerformance Tool** screen. The *testoptions* are applicable to all devices selected forthe test.

Figure 4: Test options screen



4. Change the settings for one or more options. To change the settings, enter the number that corresponds with the option to change. Enter the new value at the prompt.

   The five available options for this test are:

   - **Blocksize** - Specify the blocksize, in bytes, to be written to the tape. Typical values are 32768 (32KB), 65536 (64KB). The default is 65536.
   - **Repetitions** - Specify how many write/read operations to perform. The default is4096.
   - **Readback** - Specify whether to enable the read back test after writing data to the device.

     This option measures read performance in addition to write performance in MB/s.

     This option is disabled by default.
   - **Count** - Specify how many blocks to write to the tape device per write operation. The default is 16.
   - **Pattern** - Specify the data pattern to be written to tape. Enter 2 for 2:1 compression ratio or 3 for 3.1:1 compression ratio. The default is 2.
   - **Compare after Read** - This option checks the integrity of the data but will reduce the transfer rate of the test. Performance is not reported when this option is selected.To measure true performance, run the test with this option unselected. This option is only valid when the **readback** option is enabled in the test.

5. Use the *start* command to start the test.
6. After the test is complete, use the *review* command to view the Drive Performance test results.

NOTE:

- The devperf command is not available until a device is selected.
- The library cannot be selected because the test only runs on tape drives.
- Writing filemarks at a frequent interval will reduce the performance of the test.
- The Drive Performance test is not supported for NetWare.
- In the following procedure, a suggested starting value is given for most parameters. These are not necessarily default values, but they are general values that will result in a simple,representative test. Use them as a starting point and modify them according to the needs.
- The Drive Performance test uses the tape driver rather than the NT Miniport (or ASPI) to model the backup application, so the appropriate tape driver must be loaded for this test.

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Using the System Performance test

The System Performance test has two modes:

- **Backup Performance test** - The test measures the read performance of the disk file system(simulating a backup).
- **Restore Performance test** - The test measures the write performance of the disk file system(simulating a restore).

Use these tests in conjunction with the Drive Performance test to identify any system bottlenecks.The backup Performance test is read-only and is safe to run on any part of the file system. There store Performance test creates data in the specified directory and can also be used to create test data for general backup testing.

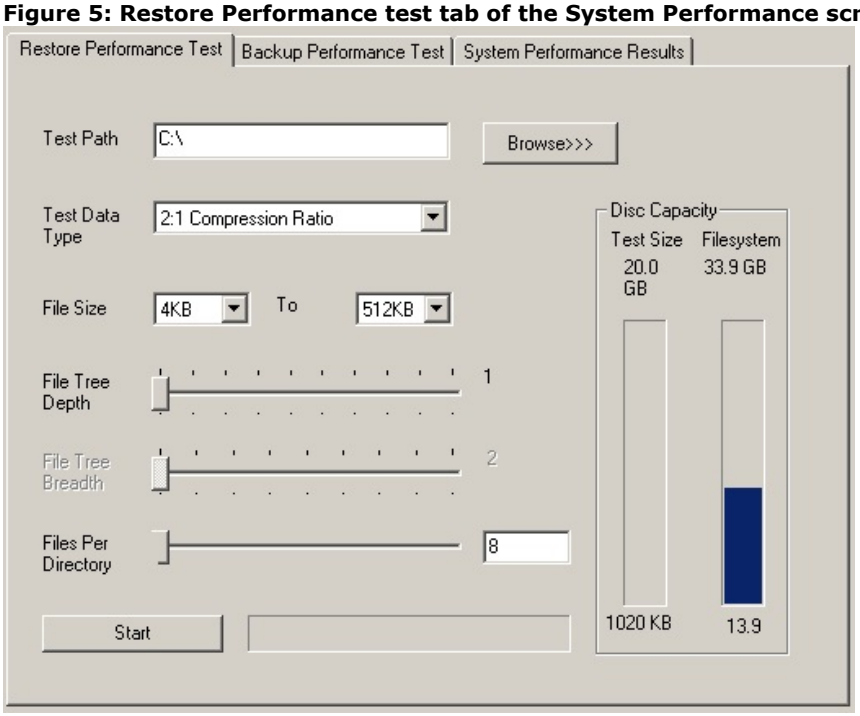
Performing the System Performance Restore Performance test (GUI)

NOTE: In the following procedure, a suggested starting value is given for most parameters.These are not necessarily default values, but they are general values that will result in a simple,representative test. Use them as a starting point, and modify them according to the needs.

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1. Click *Sys Perf* on the main toolbar. The System Performance screen appears.
2. Click the Restore Performance test tab.

   Figure 5: Restore Performance test tab of the System Performance screen



3. Specify the following parameters:
   - **Test Path** - Enter the destination directory to which the test will write data. This should be a directory on the backup server being tested. Make sure that the path is on the restore destination disk to measure the real data rate. Use a directory name that can be found easily such as **C:\Test** so that the data can be easily deleted later.
   - **Test Data Type** - Select the type of data pattern to be written. Choose from the following options:
     - Fixed Byte
     - Incrementing
     - Random

- Uncompressible Data
- 2:1 Compression Ratio (suggested starting value)
- 3:1 Compression Ratio
- 4:1 Compression Ratio

- **File Size** - Specify a range of possible file sizes for the test data (suggested starting value is to use the default value).
- **File Tree Depth** - Specify the number of levels of subdirectories the program will create from the specified directory (suggested starting value is 5).
- **File Tree Breadth** - Specify the number of directories to be created within each subdirectory (suggested starting value is 5).
- **Files Per Directory** - Specify the number of files to be created within each subdirectory (suggested starting value is 50).

NOTE: The gauges in the Disc Capacity section of the screen show the amount of disk space required for the System Performance test using the current settings, and the amount of space available in the indicated file system. If the required space exceeds the available space, the Test Size gauge displays OVERFLOW, and the test cannot be started.

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4. Click **Start** to perform the test. Progress of the test is displayed in the status bar to the right of the **Start** button, and a dialog box will appear when the test is complete.
5. Click the **System Performance Results** tab to view the test results.

Performing the System Performance Backup Performance test

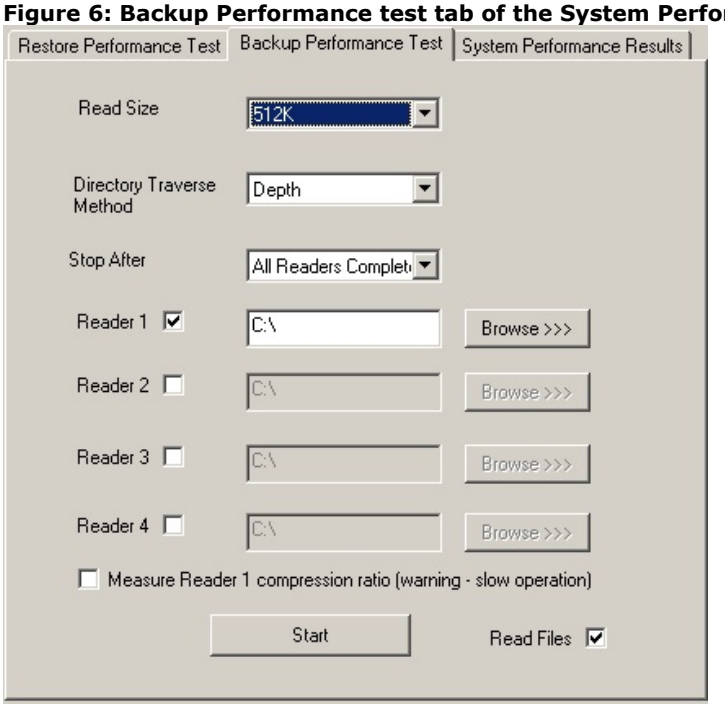
This test reads data from up to four separate locations on the file system. The reads are concurrent and simulate up to four concurrent backup data streams. The performance of these reads is measured and reported in the **System Performance Results** tab. Use this test to measure the performance of the file system to be used for backup. Use this test in conjunction with the Drive Performance test to identify performance bottlenecks in the system. This test is read-only and can be safely run on backup source data.

NOTE: In the following procedure, a suggested starting value is given for each parameter.These are not necessarily default values, but they are general values that will result in a simple,representative test. Use them as a starting point, and modify them according to the needs.

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1. Click *Sys Perf* on the main toolbar. The System Performance screen is displayed.
2. Click the **Backup Performance test** tab.

Figure 6: Backup Performance test tab of the System Performance screen



3. Specify the following parameters:
   - **Read Size** - Enter the maximum block size (in bytes) to transfer (suggested starting value is 512K).
   - **Directory Traverse Method** - Specify one of the following options (suggested starting value is depth):
     - Specify **Depth** to have the test read as far down the directory structure as possible before moving laterally to the next directory.

- Specify **Breadth** to read all directories at the same level before moving down to the next subdirectory level.

- **Stop After** - Specify a time limit for the test, or select **All Readers Complete** to continue testing until the test is complete (suggested starting value is 5 minutes).
- **Reader [1-4]** - Enter up to four target directories from which the test will read data.For each reader, a Restore Performance test must have first performed. Use the same directory or directories that were specified in the Restore Performance test.

  The number of readers to use depends on the backup application. If the application uses concurrent read streams, then select multiple readers. To guarantee an accurate measure of the access rate of the real data, point each reader at the data that each stream will back up.
- **Read Files** - Specifies whether the files must be read back from the tape after the write completes (suggested starting value is to select this option).
- **Measure Reader 1 compression ratio** - When this box is checked, the compression ratio of the files selected by Reader 1 is measured. When checked, the normal Backup Performance test is not run and the other readers are disabled, while the compression ratio is measured for Reader 1. When the test completes, the compression ratio for the files read by Reader 1 will be displayed in the **System Performance Results** tab.

  NOTE: This is a slow operation.

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4. Click **Start** to perform the test. A dialog box will appear when the test is complete.
5. Click the **System Performance Results** tab to view the test results.

Performing the System Performance test s (CSI) running in non-Windows

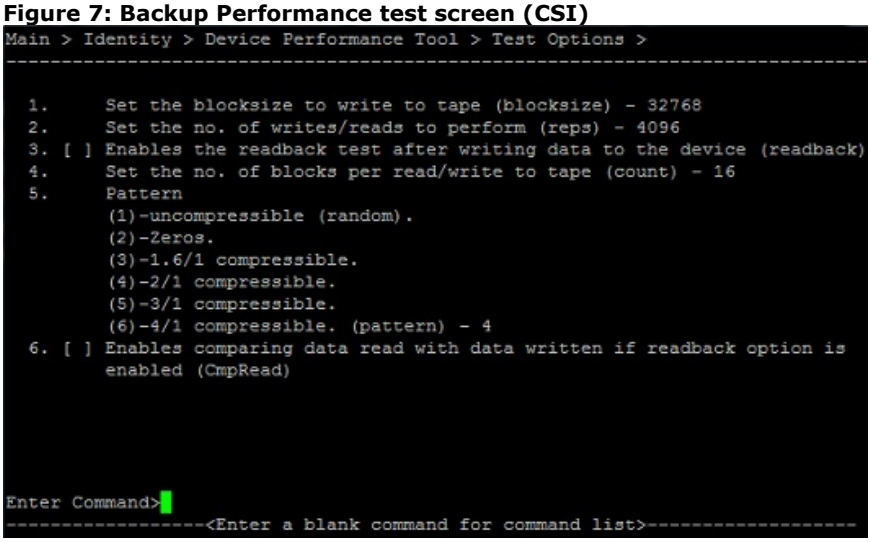
To start the CSI version of the System Performance Performance test :

NOTE: The System Performance Performance test s (backup and restore) are not availablefor NetWare.

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1. From the Main screen, enter the *sysperf* command to display the System Performance screen.
2. Enter one of the following commands for the Performance test to run:
   - **backup** - Runs the Backup Performance test .
   - **restore** - Runs the Restore Performance test .
3. To change the settings for one or more options, enter the number that corresponds with the option to change. Enter the new value at the prompt.

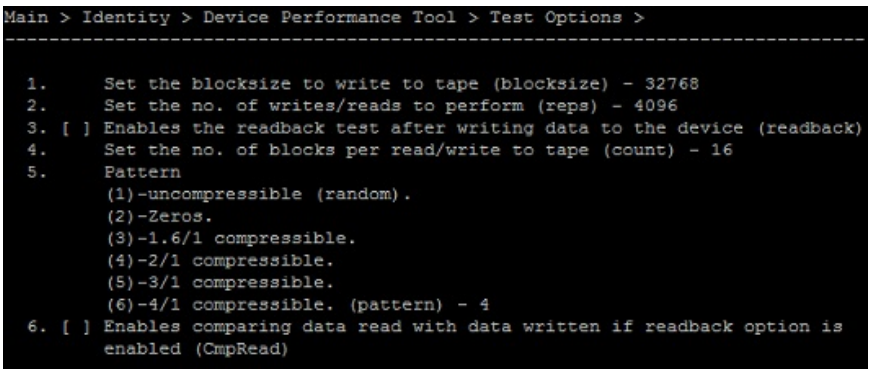
   Figure 7: Backup Performance test screen (CSI)



   The two options available for the Backup Performance test are as follows:

   - **Blocksize** - Specify the blocksize (in bytes) to be read. Typical values are 32768(32KB), 65536 (64KB). The default is 65536.
   - **Path** - Specify the path to the directory to be read from.

     Figure 8: Restore Performance test screen (CSI)



The following options are available for the Restore Performance test :

- **Filesize** - Specify the size, in bytes, of the test files to be created.
- **Number of Files** - Specify the number of files to be created.
- **Directory path** - Specify the path of the directory where the test files will be written.

  This must be a directory on the backup server being tested. Make sure that the path ison the restore destination disk to measure the real data rate. Use a directory name that can be easily found such as **C:\Test** so that the data can be easily deleted later.
- **Pattern** - Specify one of the following data patterns:
  - Fixed byte
  - Incrementing byte
  - Random data
  - 1.6:1 compressible data
  - 2:1 compressible data (suggested starting value)
  - 3.1:1 compressible data
  - 4.3:1 compressible data

4. Use the *start* command to start the test.

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Link to product related documents

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