

# Installing and Using IOMeter:

## Introduction

IOMeter allows you to test the performance of the network and your PS array for iSCSI traffic. This document assumes you have properly installed the iSCSI initiator on your Windows host, and can connect to iSCSI targets on your PS array. IOMeter performs a configurable suite of I/O operations on a volume on your array and measures the performance. This test verifies your network configuration for optimal connectivity with your PS Array.

## Basic Steps:

1. Download/install IOMeter
2. Create a volume on your array and connect it to your host
3. Start IOMeter, configure Disk Target
4. Configure Access Specifications
5. Run Tests

## Download/Install IOMeter

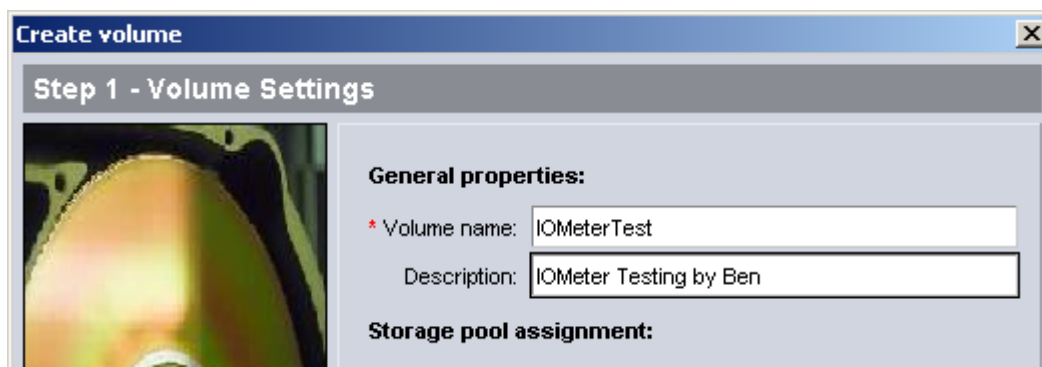
The IOMeter project lives at SourceForge, and can be found here:

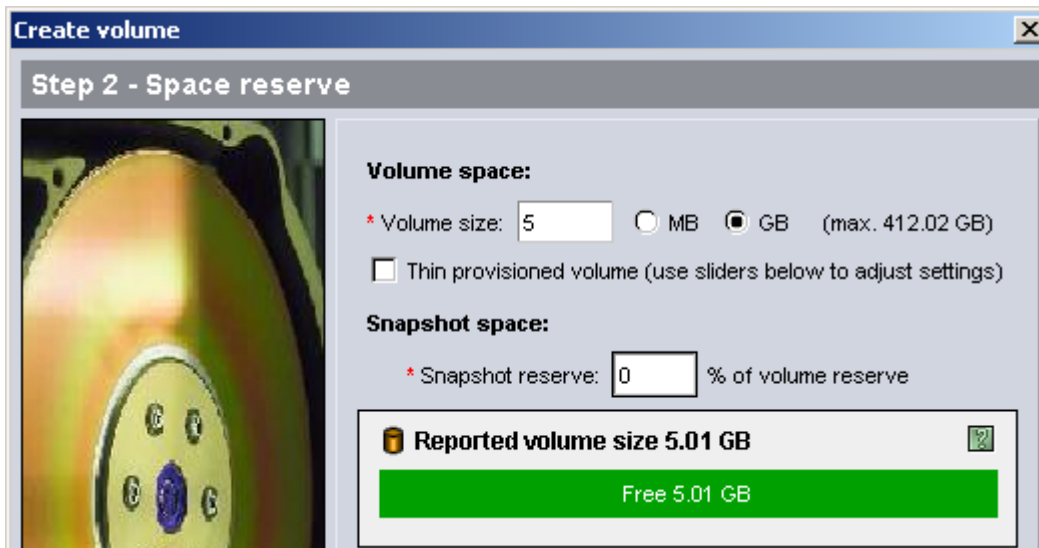
<http://sourceforge.net/projects/iometer/>

Click on the Download IOMeter link, and select the "iometer-stable" package from 2006-07-27 (or whatever more current stable version exists). Download and run the self-installing Windows host and client package on your chosen Windows machine (iometer-2006.07.27.win32.i386-setup.exe). This program is a self-installer, so you should run it to install the software on your host.

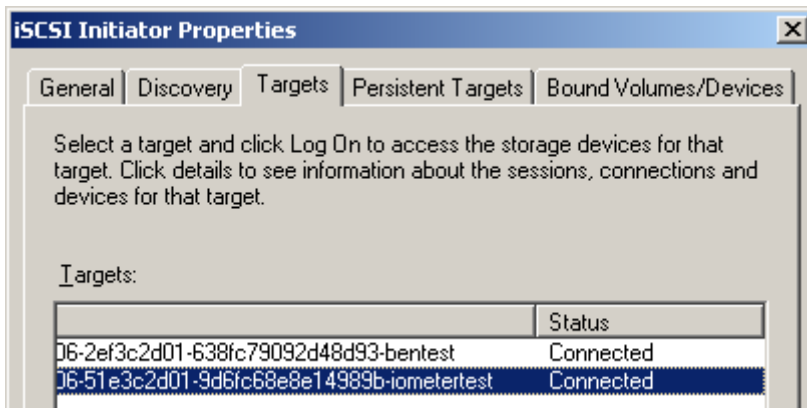
## Create Volume

Create a new, temporary volume on your PS array, then connect to it via iSCSI. The volume does not need to be large: 5GB is reasonable.





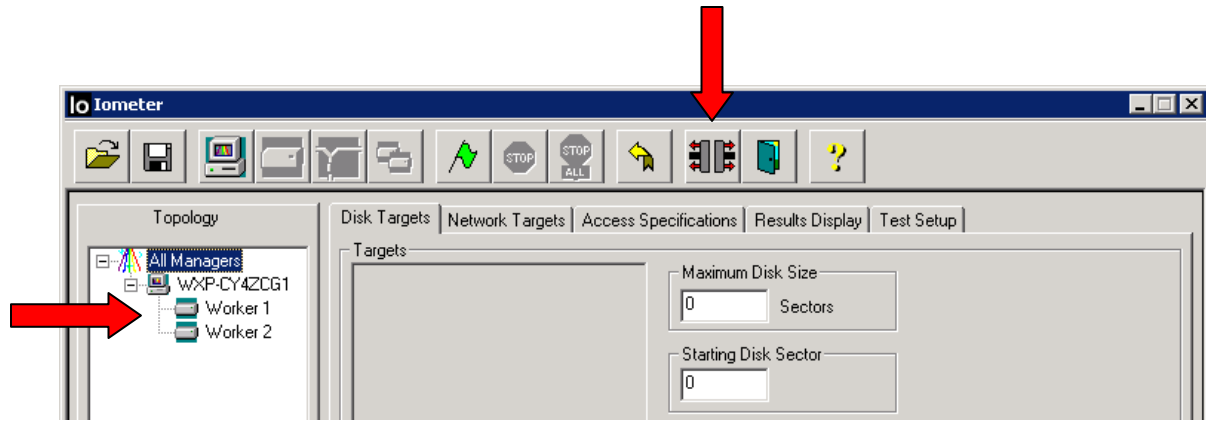
There is no need to write a signature to it or otherwise manipulate the drive in Disk Management. Do not put a file system on it. You must attach your volume via your initiator before IOMeter starts. IOMeter doesn't refresh its view of the local drive table without being restarted.



## Start IOMeter

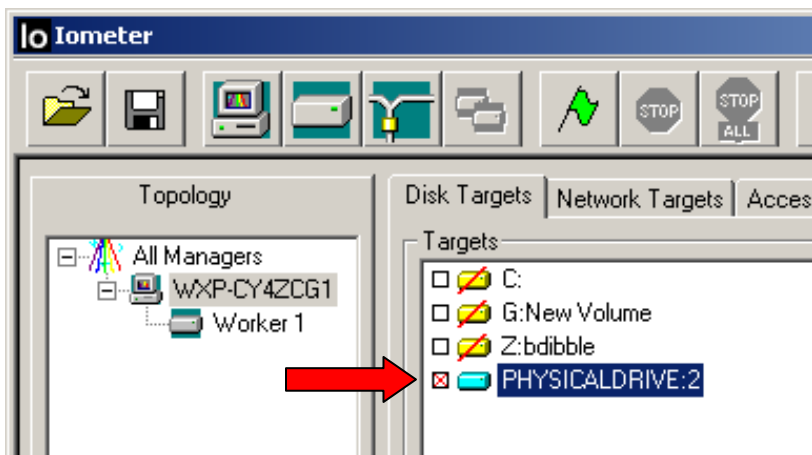
IOMeter has created a program group for itself. Start it from that.

Under "Topology", open the system tree and make sure only one worker ("Worker 1") is configured.

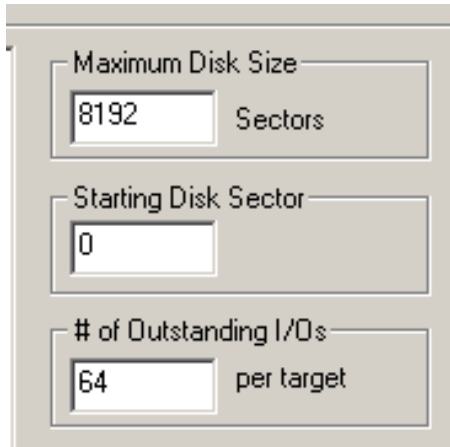


(If there is more than one worker, remove all but Worker 1 by selecting the others and clicking on the “Disconnect Selected Worker or Manager” icon; it’s supposed to look like data cables being pulled apart, with arrows pointing outward.)

Click on “Worker 1”, and note that the Disk Targets tab populates with your local disks. Note that disks with filesystems have red slashes through them, which is IOMeter’s way of discouraging you from using them.



Select the “PHYSICALDRIVE:#” that represents the PeerStorage volume you created. In the Disk Targets tab, set the “Maximum Disk Size” field to 8192 and the “# of Outstanding I/Os” to 64.



The image shows a configuration window with three sections, each containing a text input field and a label:

- Maximum Disk Size:** The input field contains the number "8192" and the label "Sectors" is to its right.
- Starting Disk Sector:** The input field contains the number "0".
- # of Outstanding I/Os:** The input field contains the number "64" and the label "per target" is to its right.

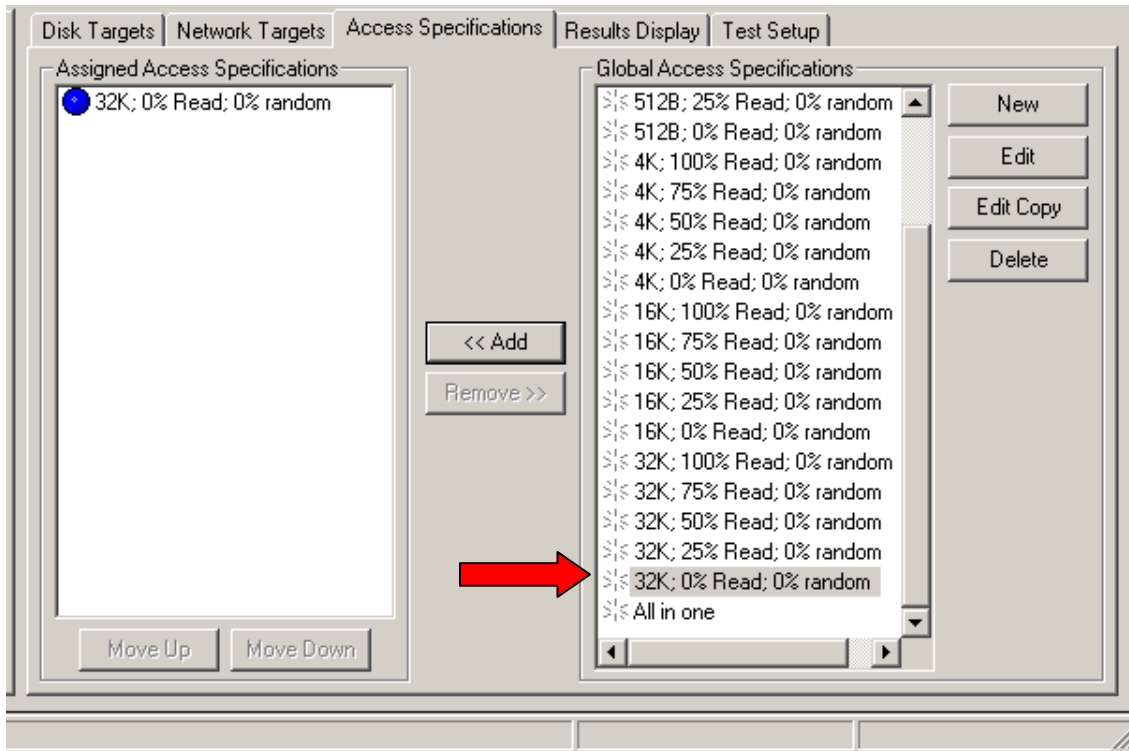
Note - “Maximum Disk Size” of 8192 sectors is to arbitrarily limit it, so nearly all I/Os will be “out of the cache” after the first set. The array has a cache memory that receives all in-coming Write data. If there is an immediate Read on the data, the array reads the data from the cache. The data is never written to the drives. Therefore, the array will turn I/Os around as quickly as they come in. This test is mainly to focus on verifying the switch/NIC/HBA configuration is correct.

## Configure Access Specifications

Access Specifications define what kind of I/O is going to be performed. You can define the data access profile with mixtures of reads and writes, random and sequential accesses, burst characteristics, and other options. We recommend using the predefined specifications until you are familiar enough to want to make more specific tests.

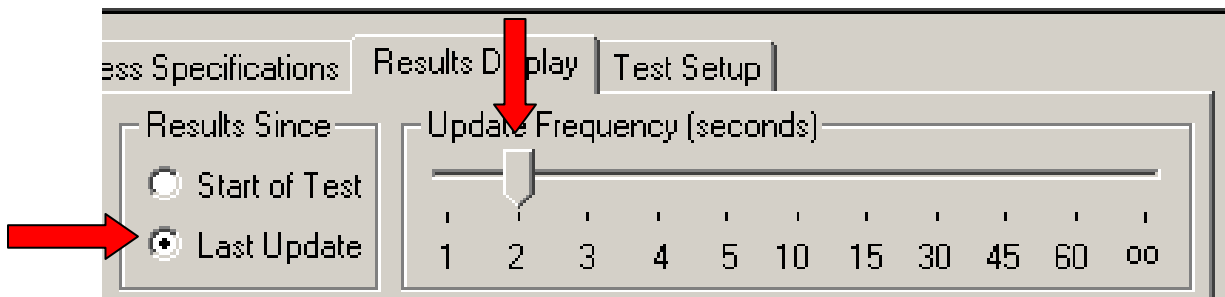
Select the “Access Specifications” tab. There are two columns: Global Access Specifications and Assigned Access Specifications. Choose one from the Global column, and hit the “<< Add” button to place it in the Assigned column. If you wish to change your access specifications, you must first select the current Assigned Access Specification, and “Remove >>” it. Then select another Access Specification and “<< Add” it. You should only have one Assigned Access Specification at a time.

We recommend testing initially with two of the Global Specifications: “32K; 0% Read; 0% Random” will test large sequential writes; and “32K; 100% Read; 0% Random” will test large sequential reads.

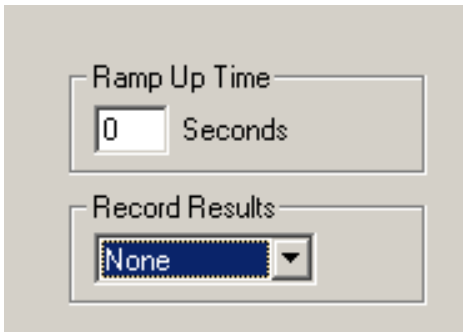


## Run Tests

Finally, select the “Results Display” tab. Slide the “Update Frequency” slider to 2 seconds. In the “Results Since” groupbox, select the radio button for “Last Update”.



Go to the last tab, Test Setup, and change the Record Results pull down in the middle of the tab to None.



Then, go back to the “Results Display” tab, and click on the green flag button at the top of the Iometer window to start the test. The test will now start running.



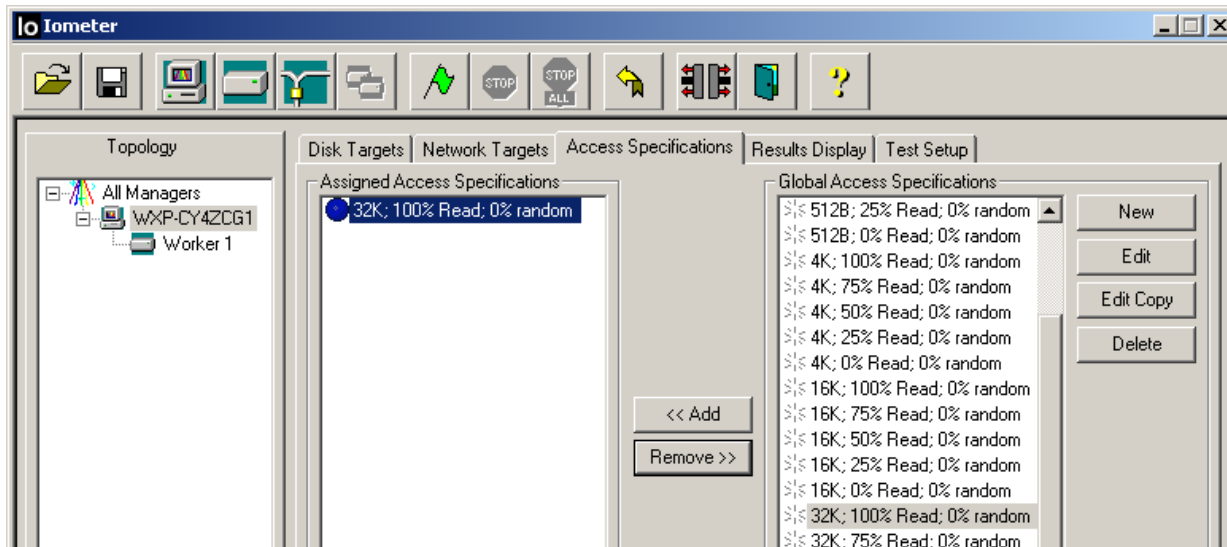
Wait for a few updates, and you should see >60 MB/sec Total MBs per Second. This is for the 0% Read mode test. Below shows 117MB/sec.

A screenshot of the Iometer Results Display window. The window has a title bar "Iometer" and a toolbar with various icons. The main area is divided into several sections: "Topology" on the left, "Disk Targets", "Network Targets", "Access Specifications", "Results Display" (selected), and "Test Setup". The "Results Display" section shows a table of performance metrics for "All Managers".

Metric	Value	Target
Total I/Os per Second	3749.68	10000
Total MBs per Second	117.18	1000
Average I/O Response Time (ms)	17.0731	100
Maximum I/O Response Time (ms)	18.7134	100
% CPU Utilization (total)	10.44 %	100 %
Total Error Count	0	10

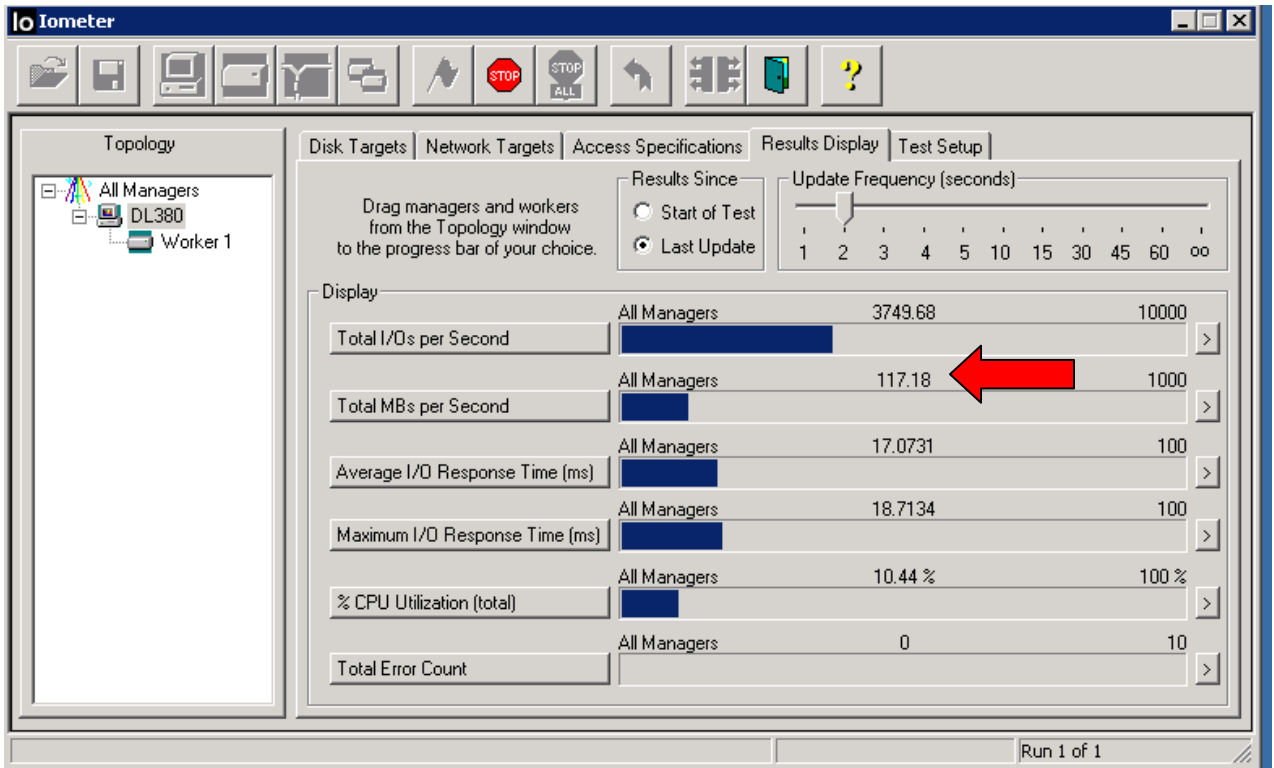
The "Update Frequency (seconds)" is set to 2. The status bar at the bottom right shows "Run 1 of 1".

After about 20 seconds of fairly stable results, you may stop the test and select another Access Specification, and then start the tests again. For example, this time you select the “32K; 100% Read; 0% Random” test.



Go to the Results Display, hit the green flag, and watch the bars. Wait for a few updates, and you should again see >60 MB/sec Total MBs per Second in the 100% Read mode as well.

NOTE – that IOMeter automatically changes the scale of the bar graphs as necessary. So below you see that the Maximum I/O Response time has been set to 1000, when before it was at 100.



So these results show that the I/O is flying at 117MB/second.