



ENTERPRISE D2D BACKUP IMPLEMENTATION MADE EASY: STEP BY STEP GUIDE TO RAPID DEPLOYMENT OF SYMANTEC NETBACKUP 7.1 AND EMC DATA DOMAIN



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The logo consists of the text 'EMC²' in a white, bold, sans-serif font, set against a solid blue background.

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Introduction

Disk to Disk (D2D) backup is becoming very popular in enterprise environments. However, there remains caution in implementing this solution. This is understandable considering the solutions available and the terminology being thrown around by different vendors which also often confuses and sometimes intimidates some backup administrators.

After several months of planning a move to a D2D backup solution and, more importantly, because of the peak frustration with our tape library's persistent "media" error, we decided to proceed with EMC Data Domain[®] solution which we intend to integrate with our NetBackup 7.1 environment.

Based on the size of our environment and the investment we made in acquiring these Data Domain (DD) appliances we decided to order an entry level DD appliance—DD160—for our staging lab. While waiting for our consultant to put his implementation team together, I decided to jump right into it and attempt to set up a complete DD/NetBackup infrastructure. I was able to get it up and running, backing up the entire staging environment (which is a replica of our production) on disk. It became the first successfully implemented enterprise D2D backup in our environment.

In achieving these however, I came across one major challenge which surprisingly is not lack of detail information but how challenging it is putting all these pieces of configuration information from different vendor guide (Symantec for NBU, Data Domain from EMC, DD Boost from EMC) together in order to make sense of the whole configuration process and to complete the implementation.

After successful implementation, I believe it may be worthwhile to have these pieces of information put together for administrators planning to deploy a similar solution. I believe some implementations may not necessarily require a consultant and can also save organizations thousands of dollars in implementing this solution, especially for organizations already using or familiar with the backup application mentioned in this article.

This article is specifically designed for those:

- Currently using or planning to deploy NetBackup 7.1. The NBU configuration and administrator console is the same as the previous NBU 6.x version so technically nothing changes from the NBU Administrator console side of things

- Deploying EMC Data Domain appliances as OpenStorage. The storage media selected is likely not affected by the model of DD you are planning to deploy. I believe the difference between various DD models may simply be capacity and licensed features. DD660 was used in this lab implementation.
- Deploying EMC DD Boost.
- Running Windows 2008 R2 64 bit OS on both Master and Media NetBackup servers.
- Data Domain storage system and all NetBackup servers are on the same Active Directory Domain with fully functional DNS server.

Please note that this step-by-step guide neither supersedes or replaces other reference guides mentioned in this article. The individual reference guides should be consulted for more detailed commands and features (such as performance tuning, load balancing, and so on). This article is meant as a quick integration guide that allows you to get going while also pointing you in the right direction as to when and where to get further detailed information.

Data Domain System Configuration

I will assume that you have successfully installed and set up your DD storage system by following the instruction in the *Installation and Setup Guide* that comes with the storage system. This guide is good enough to get you to where you need to be to start the system configuration

- i. Log in to the DD system with the user name *syadmin* and default password (system's serial number).
- ii. There are six sections to the configuration: Licenses, Network, File systems, System, CIFS, and NFS. I suggest you ignore or pay less attention to sections on CIFS and NFS if the sole purpose of your DD appliance is to use with DD Boost for OpenStorage.
- iii. Follow the configuration wizard's instructions that guide you through the configuration steps. At each prompt enter a value, OR enter a question mark (?) for more detail, OR press Enter to accept the value display. At the end of each configuration section, you can save the displayed configuration, Cancel to delete all new values and proceed to the next section, OR Retry to restart the input entry at the beginning of the current section

If the system configuration was done correctly and successfully joined to your domain from the steps above, you should be able to type the Data Domain unique host name into your browser

and every further configuration from this point could be done from the Graphical User Interface (GUI). For the purpose of this lab implementation, our Data Domain storage system is named **devdd**

Data Domain Data Access Configuration

Data Domain appliance provides multiple protocols for data access: NFS, CIFS, and DD Boost. You need to configure one or more protocols for data access depending on your environment which in our case will be *DD Boost*.

Data Domain Boost (DD Boost) is an enabler that allows your NetBackup media servers to communicate with your Data Domain storage systems without the need for Data Domain storage systems to emulate tape.



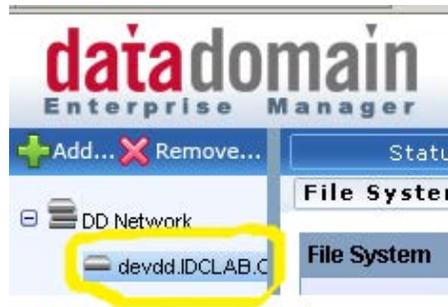
OST Plug-in & DD Boost: Two major components of our configuration
(Modified diagram from the reference guide)

In the context of our Symantec NetBackup application, there are two components to the software as shown in the diagram above.

1. Enable DD Boost on a Data Domain storage system
 - a. Type the Data Domain unique host name, *devdd*, into your browser



- b. Log in as an administrative user using *sysadmin* name and password
 - c. Click the DD unique name : *devdd.idclab.ca* on the left pane to expand the detail on the right pane



- d. Click on the Data Management tab
- e. From within the Data Management tab, click on the File System tab to verify and confirm that File System is enabled and running

Management Station: devdd
 devdd.IDCLAB.CA OS: 5.1.0.5-269447 Model: DD160

File System

State: **Enabled and running: 2 weeks, 1 day, 22 hours, 40 minutes** [Disable...]

Clean Status: Cleaning finished at 2012/01/17 06:00:45 [Start Cleaning...]

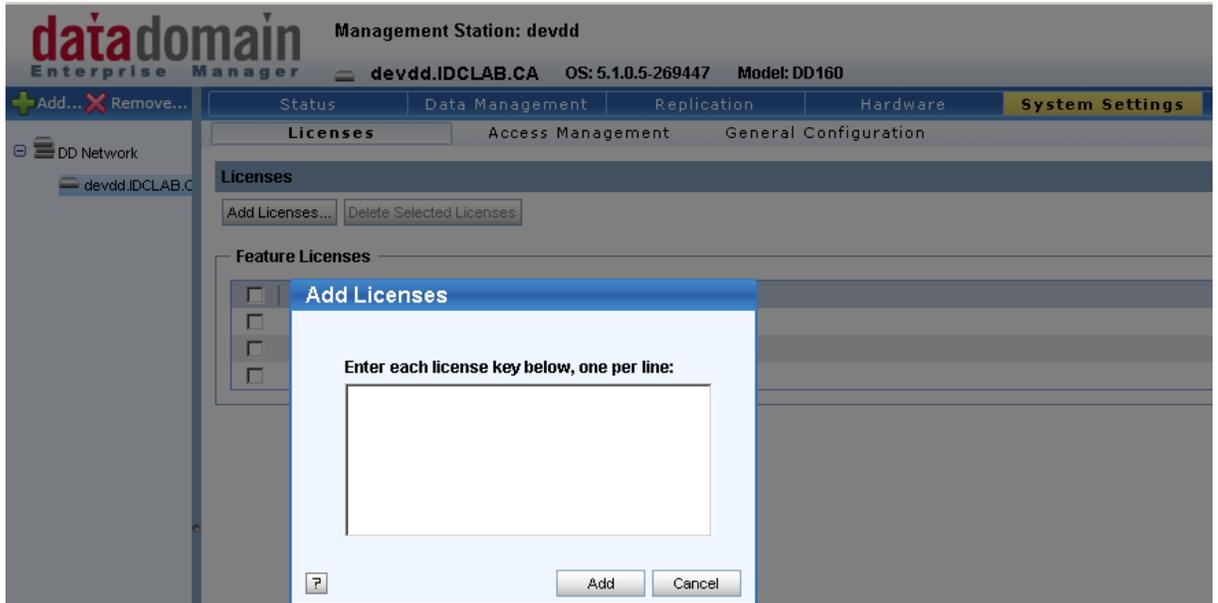
Summary | Configuration | Encryption | Space Usage | Consumption | Daily Written

Space Usage

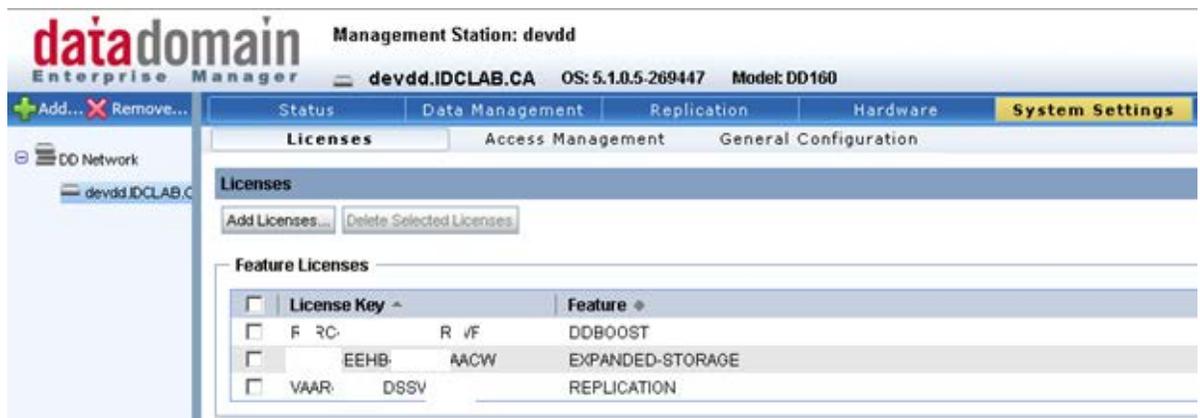
Resource	Size (GiB)	Used: (GiB)	Available: (GiB)	Cleanable (GiB)
/data:post-comp	3695.2	154.5	3540.7	0.0
/tdvar	78.7	0.9	73.8	

	Pre-Compression (GiB)	Post-Compression (GiB)	Global-Comp Factor	Local-Comp Factor	Total-Comp Factor (Reduction%)
Currently Used	243.0	154.5	-	-	1.6x(36.4)
Written in last 24 hrs	0.0	0.0	-	-	-

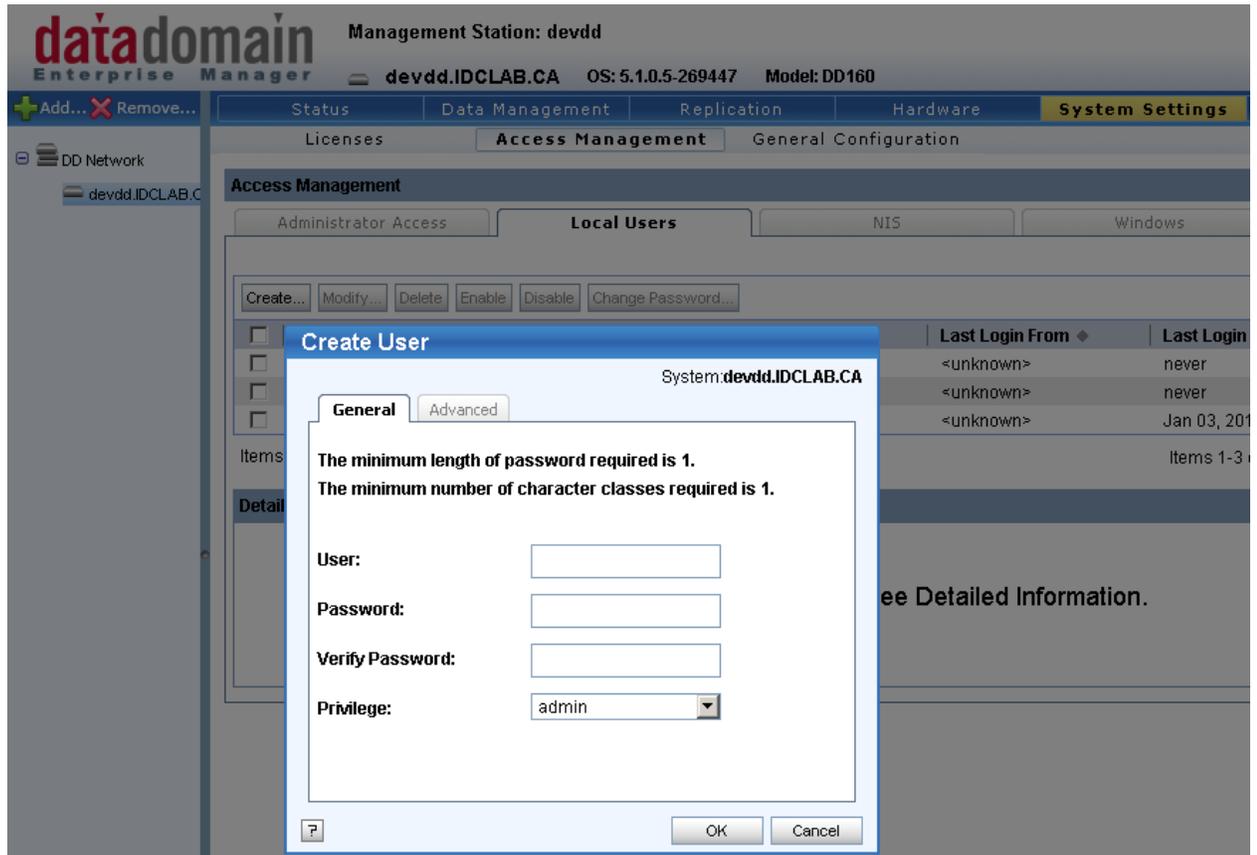
- f. Click on the System Settings and Click on the license tab to add the DD Boost license key provided (usually shipped with your appliances) or any other feature license purchased



- g. Confirm that the License entered are all showing in the licence view (please note that various license keys shown below have been distorted for confidentiality purposes)



- h. In the System Settings tab, click on the Access Management tab and Local user tab and click on the Create button to create a user



- i. ¹Create a new user (DD Boost user) with username `svc_ddboost` and password: `ddb00st`. This user will be configured later in the NetBackup applications Master and Media server to connect to the Data Domain storage system
- j. Enable DD Boost by clicking on the enable button in the DD Boost interface

2. Installing DD Boost Open Storage Technology (OST) plug-In on Media Servers

- a. DD Boost storage software must be installed on all media servers that need to access the data domain storage system.
- b. The software can be downloaded from the Data Domain Powerlink support site. When downloaded and extracted, the windows plug-in installer is `libstspidatdomainsetup.exe`. It supports both 32 bit and 64bit Windows plug-ins.

¹ Please note that this username and password will be used when Adding Credential in Application Integration

- c. Before starting installation locate NetBackup service name: *NetBackup Remote Manager and Monitor Service* and stop the service.
- d. Also ensure there is no previous DD Boost plug-in installed. If there is, ensure that any previous DD Boost plug-in version is removed.
- e. Proceed with installation by double clicking on the *libstspidatdomainsetup.exe* file.
- f. When installation is complete, you can click the Show details button to view the files installed and their location.
- g. Restart the *NetBackup Remote Manager and Monitor Service* from the Windows services panel.

Note: if this is your production environment you may want to do some performance tuning before proceeding. Refer to the DD Boost Knowledge Base article for tuning information.

Application integration

Once the Data Domain application has been successfully installed on the media servers, the next step is to integrate the plug-in to communicate with the Data Domain storage system. There are two sections; configuring the Data Domain System and NetBackup configuration.

1. Data Domain System Configuration

First, create one or more storage units for each Data Domain system enabled for OpenStorage in a NetBackup installation. In a NetBackup system, a storage unit corresponds to disk pool on the media server.

Creating Storage Units

- a. On the Data Domain system on the DD Boost tab, click on the create storage unit button and accept the default configuration settings.
- b. Repeat the above step for each Boost-enabled Data Domain system (or for each media server).

Our Data Domain storage system with DD Boost enabled is named *devdd*

2. NetBackup Servers Configuration

For the purpose of this documentation our master server is named *storage01* and media server named *storage02* both running NBU7.1

Also, to avoid the need for frequent DNS lookups, add every media server host/IP address to the Data Domain system using the net hosts add *ipaddr {host | "alias host"}...* command.

```
net hosts add 192.168.99.116 storage02
```

Also add the Data Domain system IP address into the media server's host file.

```
192.168.99.115          devdd.idclab.ca
```

On Windows server, the host file is located in C:\Windows\System32\drivers\etc\hosts

I. *Media servers configuration:*

First, **register** the DD storage system with the media server so the media server is aware of the DD storage system

- a. On the media server, ensure that the backup application's services are started.
- b. Verify that the plug-in is detected by the backup application by entering:
bpstsinfo -pi The output shows the vendor version, which is the plug-in version and the build version, which is the OST plug-in version.

Register a Data Domain system by entering:

```
# nbdevconfig -creatests -stype DataDomain -storage_server devdd -  
media_server storage02
```

Repeat the above procedure for each Data Domain system that will be running DD Boost.

The commands reside in the following directory:

Windows: install_path\Program Files\VERITAS\Netbackup\bin\admincmd

Once the DD storage system has been registered on the media server, establish a credential for access.

The media server is a data mover that can transfer data between the primary storage (the backup application's clients) and the storage server (Data Domain). Hence, the

backup application must always maintain a secure access path between the media server and the DD storage system.

a. Add Credential on NetBackup Servers

On a media server that is to communicate with a Data Domain system, enter:

```
# tpconfig -add -storage_server devdd -stype DataDomain -sts_user_id svc_ddboost  
-password ddb00st
```

Repeat the above command on each media server on which DD Boost plug-in is installed and that will communicate with the DD storage system including Master servers.

Note: This is somewhat tricky. It took me a while to realize that the credential should also be added to the Master server, especially since I did not install the plug-in on the Master server and this was not specifically mentioned in any of the guides and could cause endless troubleshooting.

The tpconfig command resides in the following directory:

Windows: install_path\Program Files\VERITAS\Volmgr\bin

Note: The username and password used here is the username created on the Data Domain when DD Boost was enabled. This also can be very tricky as none of the vendor documentation explicitly mentions this.

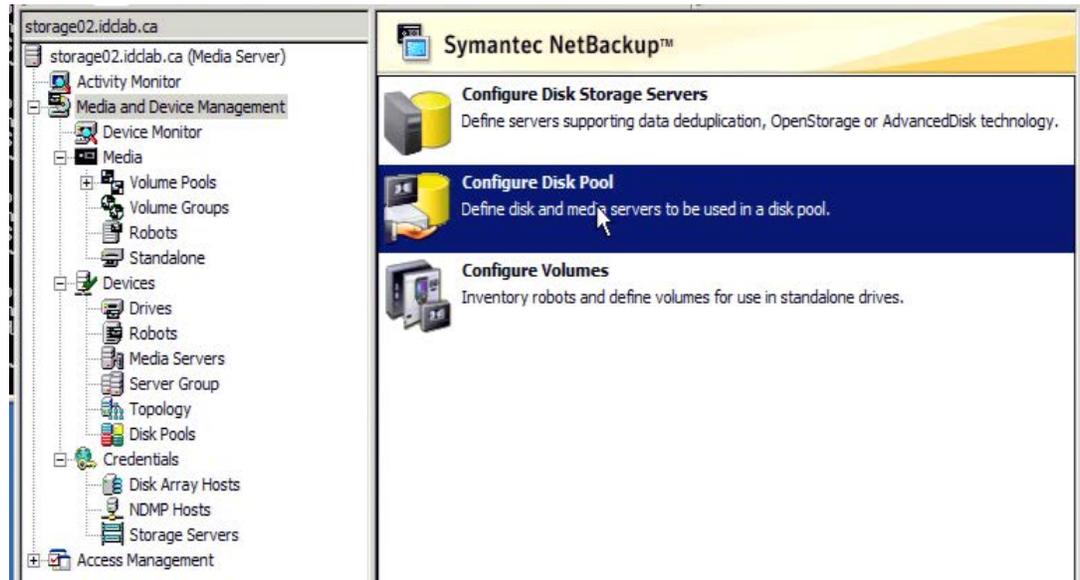
Once the credential has been added, the next thing is to confirm if the application can now communicate through the media server with the DD storage system. This is done by creating a pool on the media server.

II. Create Disk Pool

Disk pools are collections of disk volumes that the backup application administers as single entities. Disk pools correspond to storage units.

1. Open the NetBackup Administration Console's Devices window on the media server.

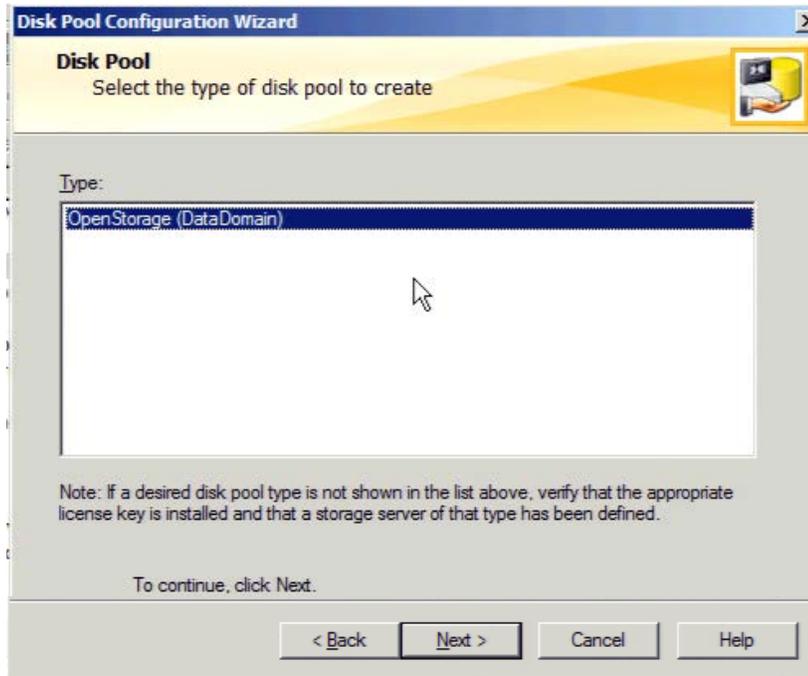
2. In the left pane of this window, click on the Media and Device Management node and click on Disk Pools in the left pane.



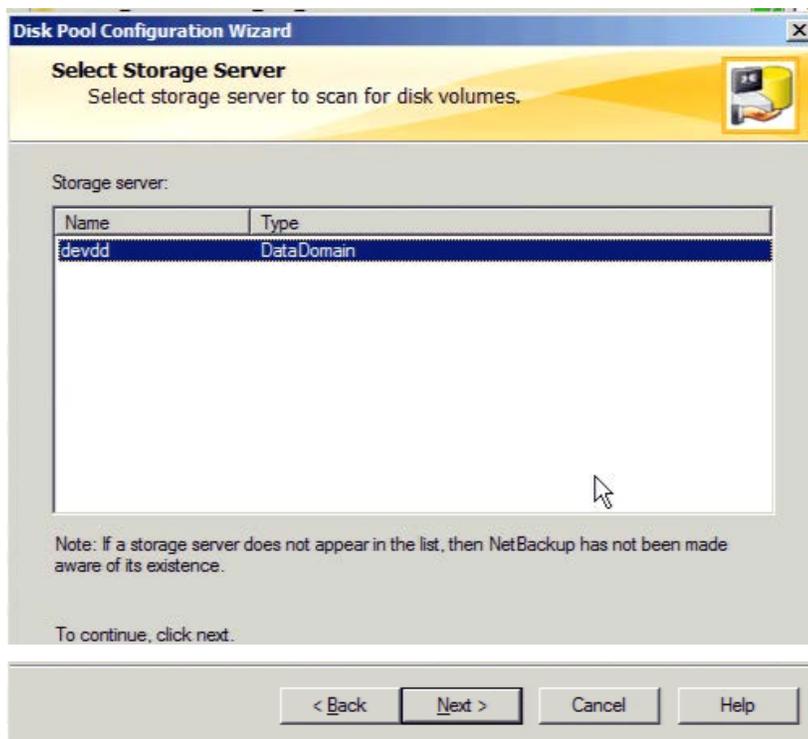
3. The Disk Pool Configuration Wizard displays.



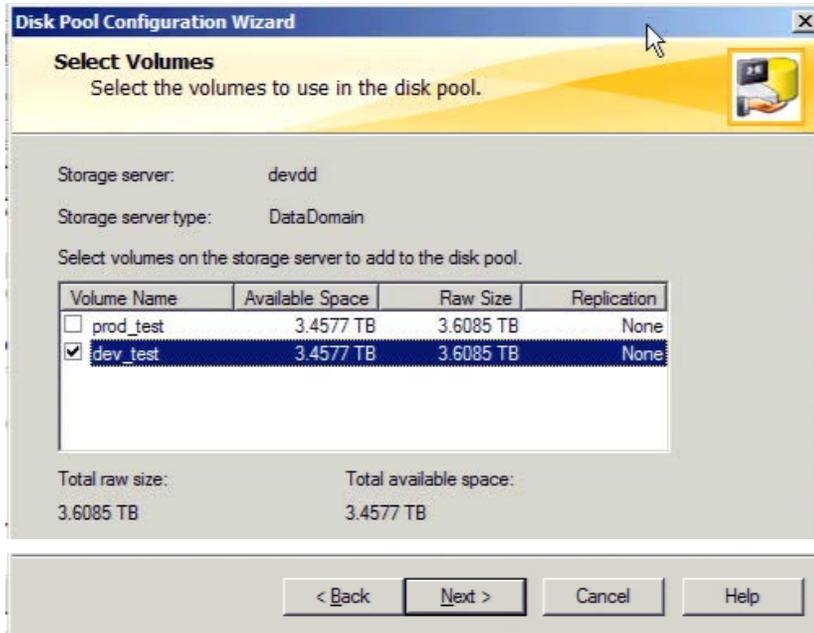
4. Select the type of Disk Pool to create.



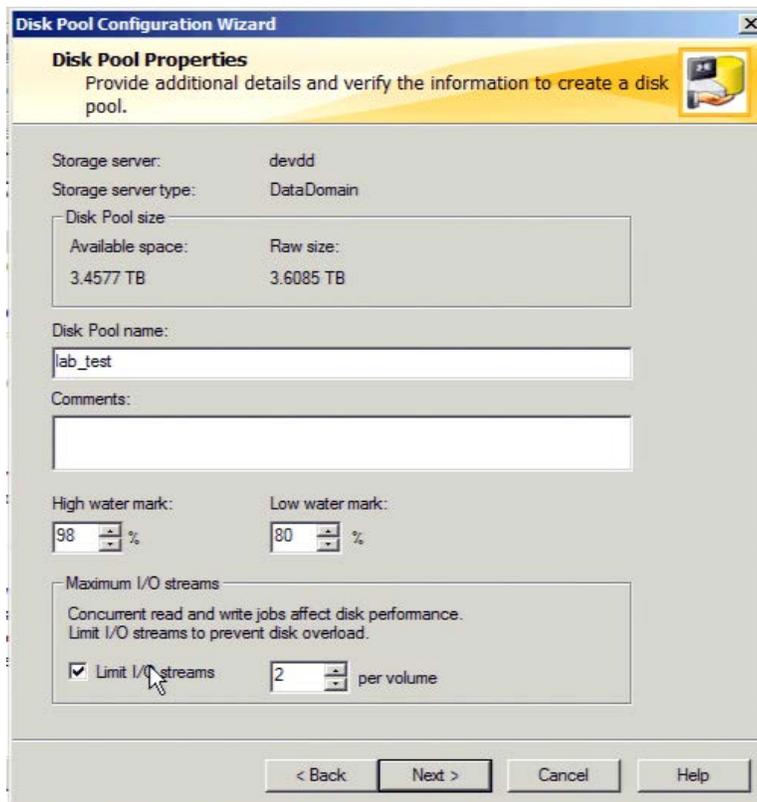
5. Select the Data Domain system from the Storage server list, and click Next.



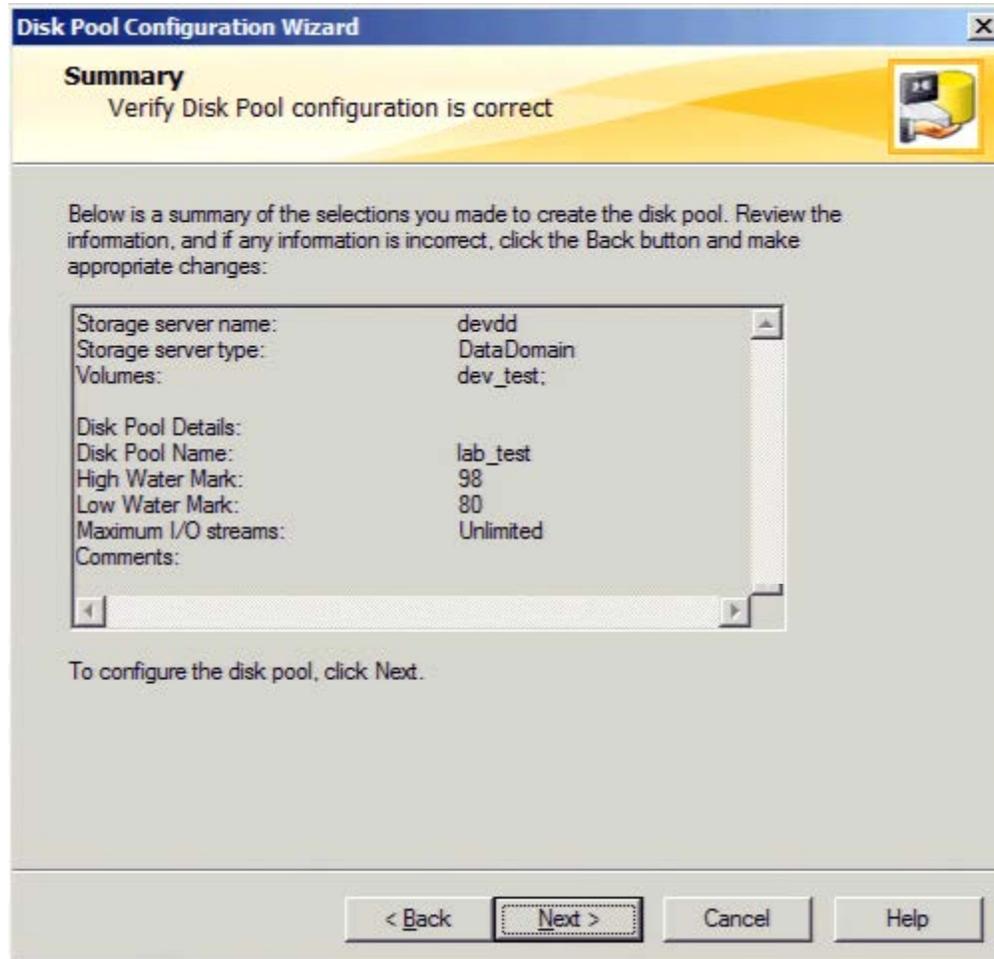
6. Select (check) the storage unit in the Volume Name list, and click Next.



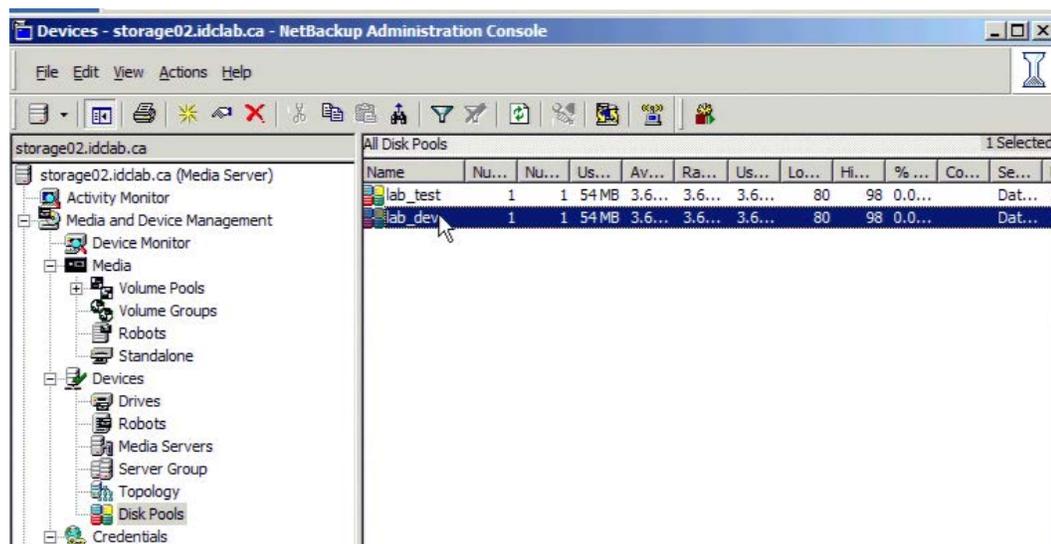
7. In the Disk Pool Properties window, enter a unique name for the disk pool in the Disk Pool name text box. Click Next.



8. Review the settings to ensure the right selection and click Next to complete the process.



9. In the NetBackup Administration console on the left pane, expand the Devices group and click on the Disk Pool to see the new Storage Pool that has just been created.



You can now start your first D2D Enterprise backup!!

Now you can start your backup jobs. If you are familiar with NetBackup 6.5 and above, all you need to do is create a new policy and modify the attribute of that policy to reference your new storage pool and run a quick manual backup. If you are not familiar with NetBackup Application, consult the Symantec NetBackup Administration guide on how to create a policy and run a quick manual backup job.

If this is your production environment and you think you may likely keep this backup configuration around for some time, I suggest you consider reviewing the following configurations settings in more detail.

- Configuring Distributed Segment Processing
- Configuring Advanced Load Balancing and Link Failover
- Enabling Low-Bandwidth Optimization
- Registering Each Data Domain System
- Enabling Encrypted Optimized Duplication

Steps in configuring these features can be found in references mentioned in this article.

Appendix/References

1. VERITAS NetBackup Shared Storage Guide -Release 6.5 by Symantec
2. Data Domain Boost for OpenStorage 2.4 Administration Guide Revision A by EMC²
3. Symantec NetBackup Administrator's Guide, Volume I Windows Release 7.1
4. All screen shots are actual creations of the author; hence all device names, host names, IP addresses, usernames, and passwords used or shown in the screen shots are used for the purpose of the lab test. Users are advised to choose their unique names as they deem appropriate.

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