

For complete instructions, refer to the readme file of the firmware version to apply, available on the same IBM Support Web site on which the firmware can be downloaded:

<http://www.ibm.com/servers/storage/support/disk>

Select your DS4000 model in a drop-down menu and click **Download** on the right side. The appropriate versions of the drivers, Storage Manager, documentation, or other tools can be selected to download.

5.3 Configuring the DS4000 storage subsystem

This section describes the major steps in the configuration of a DS4000 storage server:

1. Configuration planning
2. Naming your storage server, synchronizing the clock, and setting the password
3. Defining a hot-spare
4. Creating arrays and logical drives
 - a. Using the Automatic Configuration Wizard
 - b. Using the manual procedure
5. Configuring storage partitioning
6. Monitoring and alert options

5.3.1 Planning your configuration

A configuration of a DS4000 storage server can be complex, especially when different operating systems and storage partitioning are involved. Therefore, you should plan the configuration that you must apply in advance.

On one hand, you must define the arrays and the logical drives that you need, including considerations such as number of drives in the arrays, size of the logical drives, RAID level, and segment size. To plan the disk layout, you must know the attached hosts, their operating system, and the applications using the DS4000 storage server. You also must consider the performance aspects and requirements.

On the other hand, you also must define the layout of the attached hosts with their host bus adapters and the mappings of the logical drives to specific host groups or hosts. You should prepare a mapping table, similar to the one presented in Table 5-3, where you keep all necessary information regarding the storage partitioning.

Table 5-3 Sample plan for storage partitioning

Host group	Host name	Port name	WWN	OS type
Windows 2000	Windows_Host	MailAdp_A	200000E08B28773C	Windows 2000 Non-Clustered
		MailAdp_B	200000E08B08773C	
Linux	Linux_Host	LinAdp_A	200100E08B27986D	Linux
		LinAdp_B	200000E08B07986D	
RS6000	AIX_Host	AIXAdp_A	20000000C926B6D2	AIX
		AIXAdp_B	20000000C926B084	

The name of a given logical drive allows you later to differentiate easily between all the logical drives defined on the DS4000. We suggest that you use a combination of the server name and its usage.

5.3.2 Initial setup

Before defining any arrays or logical drives, you must perform some basic configuration steps. This also applies when you reset the configuration of your DS4000 storage server.

1. If you installed more than one DS4000 storage server, it is important to give it a literal name that let you precisely identify. To rename the DS4000 storage server, open the Subsystem Management window. Right-click the subsystem and click **Storage Subsystem** → **Rename** (Figure 5-37).

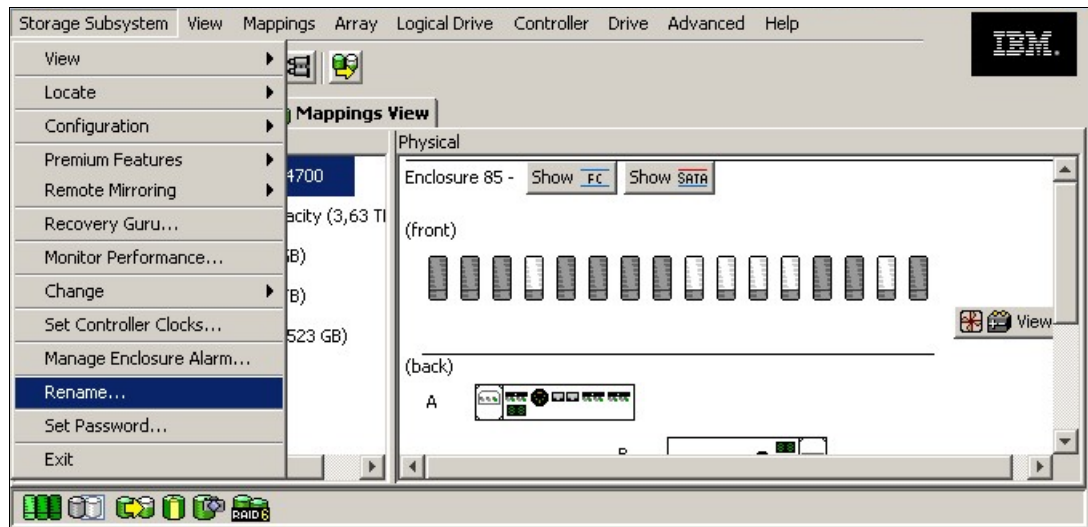


Figure 5-37 Renaming the DS4000 storage server

2. Enter a new name for the subsystem in the Rename Storage Subsystem dialog box (Figure 5-38).

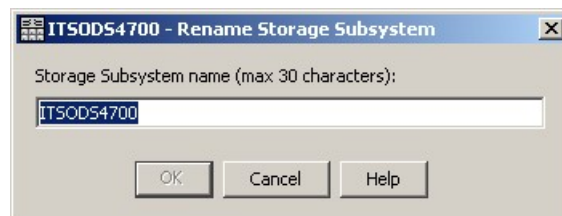


Figure 5-38 Renaming the DS4000 storage server

3. Because the DS4000 storage server stores its own event log, synchronize the controller clocks with the time of all the host systems accessing it. This improves problem determination procedures. If you have not already set the clocks on the storage servers, set them now. Be sure that your local system is working using the correct time. Then click **Storage Subsystem** → **Set Controller Clock** (Figure 5-39).

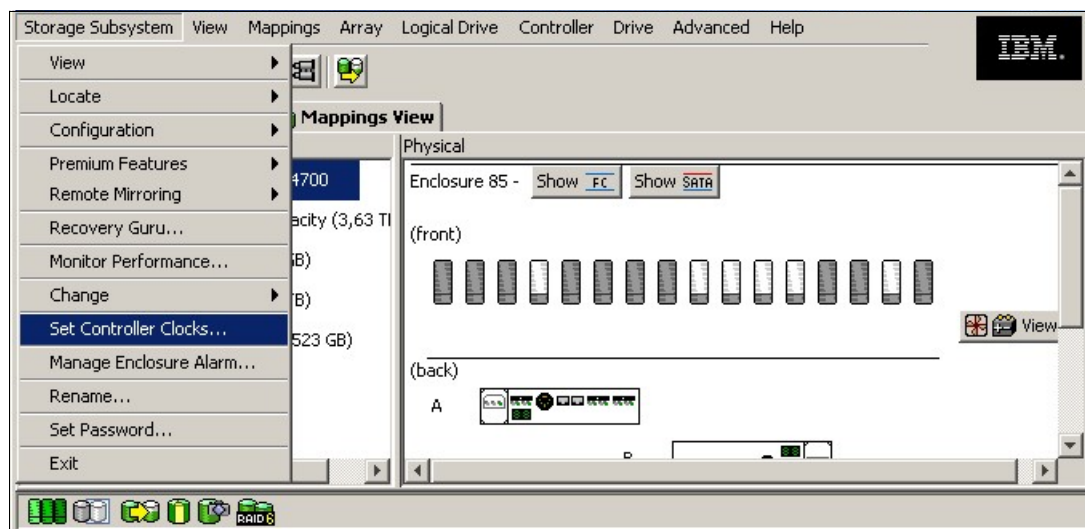


Figure 5-39 Setting the controller clock

4. For security reasons, especially if the DS4000 storage server is directly attached to the network, you should set a password. This password is required for all actions on the DS4000 storage server that change or update the configuration in any way.

To set a password, highlight the storage system, right-click, and click **Change** → **Password** (Figure 5-40). This password is then stored on the DS4000 storage server. It is used if you connect through another SMclient, no matter whether you are using in-band or out-of-band management.



Figure 5-40 Setting password

Note: Setting an access password provides additional protection for DS4000 in a public LAN. However, you gain higher protection by connecting the DS4000 to a private network, reserved for administration.

Be aware that once the password is set, no modification commands will be allowed without the new password, so make sure to not forget the password configured. It can be changed/cleared by authorized IBM Support personnel only, by direct connection to the serial port of the DS4000 controller.

5.3.3 Automatic configuration

In this section we cover the necessary steps to configure unconfigured storage subsystem capacity into logical drives using the automatic configuration wizard integrated into the DS4000 Storage Manager software.

The automatic configuration wizard can be used to create multiple arrays with logical drives, and hot spare drives using the same attributes for all arrays, such as RAID level, number of drives per array, number of logical drives, and I/O type. The wizard configures all the non-configured disk drives in the system.

If you must define your space not used in already defined arrays, or unconfigured capacity with some specific parameters, you will find the manual configuration method more useful. It is described in 5.3.4, “Manual configuration” on page 250, and allows you to select each of the parameters for the creation of both arrays and logical drives.

- ▶ From the Subsystem Management Task Assistant select **Configure Storage Subsystem** → **Automatic Configuration**.
- ▶ From the Subsystem Management interface, select **Storage Subsystem** → **Configuration** → **Automatic**.

We cover an example showing the necessary steps:

1. Select **Storage Subsystem** → **Configuration** → **Automatic**, as seen in Figure 5-41.

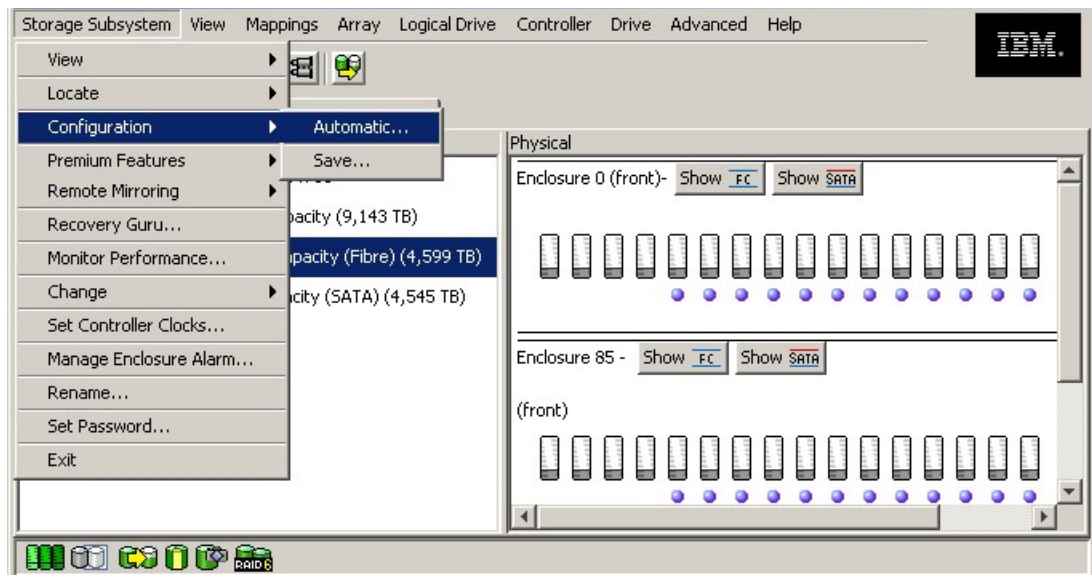


Figure 5-41 Automatic configuration

2. Read the introduction window. It reminds you to quit the wizard and start a manual configuration process if your requirements need different RAID levels, volume sizes, and so on. If this is not your case, click **Next** to continue.

3. In the window that follows, choose between a suggested configuration, selecting the RAID level desired, or create your own configuration (Figure 5-42).

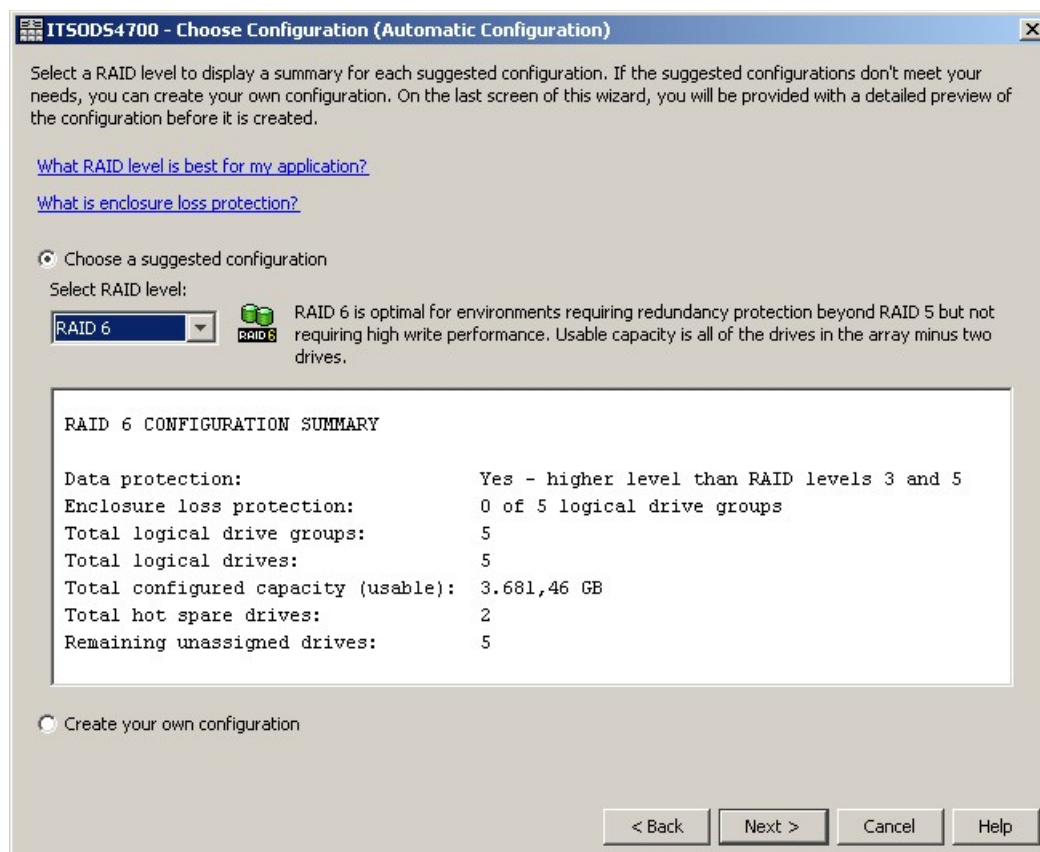


Figure 5-42 Choosing configuration

The options are:

- Suggested configuration: This is the default option, where you only must select the RAID level to be applied to all unconfigured disks. Once you select the protection RAID level, a summary is presented according the resources available in your configuration.

Click **Next** to see a preview of the resulting configuration according to the RAID level selected, and the quantity of free drives in the system. Review the information carefully, and if okay, click **Finish** to proceed.

- Create your own configuration: This allows you to customize the configuration by selecting the additional parameters shown in Figure 5-43.

ITS0D54700 - Create Your Own (Automatic Configuration)

FIBRE **SATA**

Use the following worksheet to define the appropriate number of logical drive groups, drives, and logical drives you want to create.

[Tips and examples on allocating capacity](#)

Number of logical drive groups/drives

Drives available for configuration: 24

[What RAID level is best for my application?](#)

Select RAID level:

RAID 6 RAID 6 is optimal for environments requiring redundancy protection beyond RAID 5 but not requiring high write performance. Usable capacity is all of the drives in the array minus two drives.

Number of logical drive groups: 2

Drives per array: 11

Hot spare drives: 2

Total allocated drives (24 maximum) : 22

Remaining unassigned drives: 0

Number of logical drives

Number of equal-sized capacity logical drives (per array): 8

[What is the I/O characteristic type?](#)

I/O characteristic type: Database

Dynamic cache read prefetch: Enabled

Segment size: 128 KB

[Change I/O Type...](#)

[Show Summary](#)

< Back Next > Cancel Help

Figure 5-43 Customized automatic configuration

The options are:

- RAID level: 0, 1, 3, 5, 6 (and RAID-10 selecting more than two drives in RAID-1)
- Number of logical drive groups or arrays
- Number of drives per array
- Number of hot spares
- Number of logical drives per array
- I/O type characteristics

The window presented lets you modify each of the parameters, as in a worksheet, turning on some red warning if you overpass the available resources with your selections. If you have both FC and SATA drives, you must complete two separate worksheet windows to select your desired configuration.

You can select the online help for an explanation of each of the parameters. For additional information, refer to 4.2.3, “Arrays and logical drives” on page 139.

Click **Change I/O type** if you want to set up your logical drives for other type of access (different from the defaults preset for regular file systems, as seen in Figure 5-44).

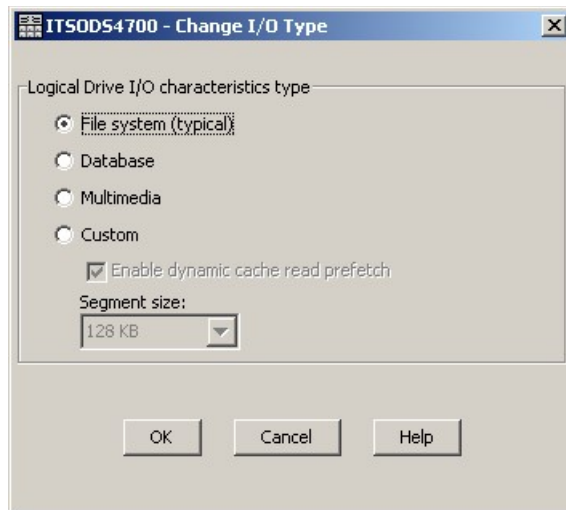


Figure 5-44 Changing I/O characteristics

For additional information about the above values, refer to 4.2.4, “Segment size” on page 148.

Once you have specified all of your desired values, click **Next** (Figure 5-43 on page 247) to bring up the window shown in Figure 5-45.

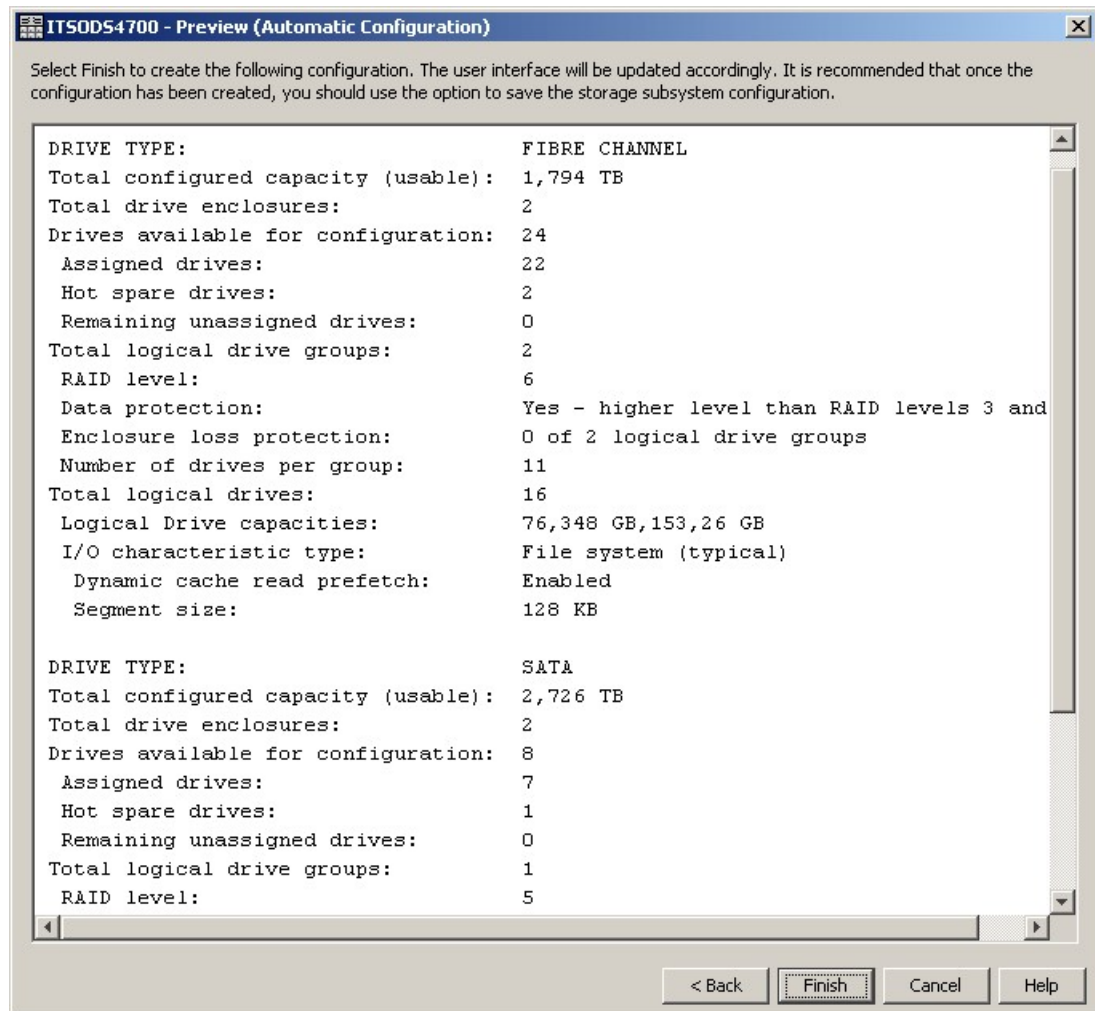


Figure 5-45 Preview automatic configuration

- Review the configuration that will be created based on your input and click **Finish** to proceed. You see a confirmation message informing that, depending on the number of drives and volumes, it might take time for all the changes to appear in the Management window. Do not submit another request until this configuration is complete. You can check the event log to see whether the operation was successful.

5. After completion, the Storage Manager shows the arrays, logical drives, and hot spares created automatically based on your input.

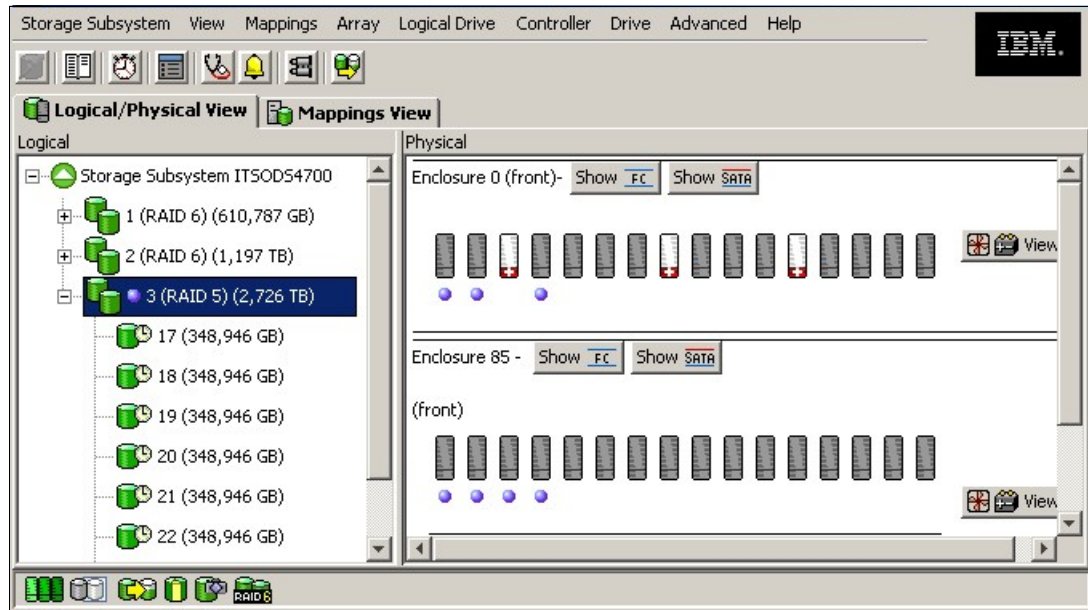


Figure 5-46 Automatic configuration results

5.3.4 Manual configuration

In this section we cover the necessary steps to configure available storage subsystem capacity into logical drives using the DS4000 Storage Manager interface. We already covered the automatic procedure, where the options are limited. Now we cover the additional parameters that you could select to better configure the storage for your environment.

We split the tasks into two sections, starting with the creation of global hot spares. This is the recommended first task to ensure that you have enough spare drives before the creation of the logical drives.

Defining hot spare drives

The concept of a hot spare drive is explained in 4.2.5, “Hot spare drive” on page 149. Here we cover the available methods of defining hot spare drives with Storage Manager 10:

- Automatic assign
- Manual assign

Considerations: Beginning with Storage Manager 10.10, there are no limits to the number of disk drives to assign as global hot spares.

Select as spares drives of equal or greater size than the total capacity of the largest disk in the storage subsystem.

Especially in large configurations with arrays containing a lot of drives, it might be necessary to define multiple hot spares, since the reconstruction of a failed drive to a hot spare can take a long time.

Consider having both FC and SATA drives as hot spares if you have both types of disks in your DS4000, since a FC would not protect a SATA disk, and vice versa.

Automatic assign

To automatically create the hot spare coverage using the drives that are available:

1. Select **Drive** → **Hot Spare Coverage**, as in Figure 5-47.

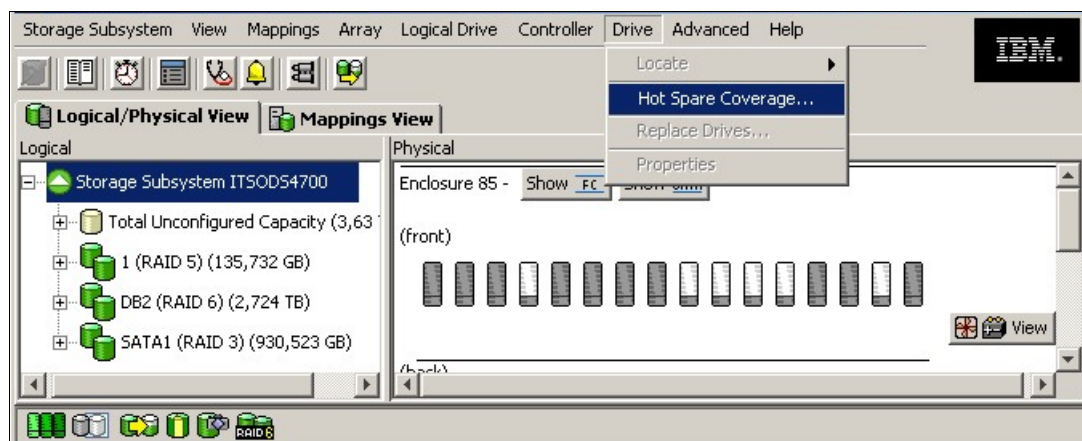


Figure 5-47 Selecting automatic hot spare coverage

2. This opens the Hot Spare Drive Options box, as shown in Figure 5-48. Select **Automatically assign drives**. The automatic function sets one hot spare drive for each 30-disk drive of the same type (FC/SATA).

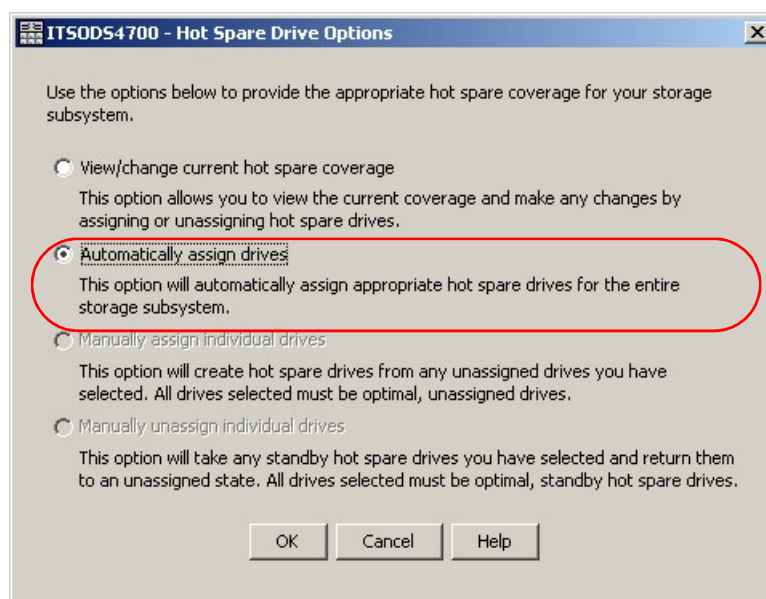


Figure 5-48 Hot Spare Drive Options: Automatic host spare coverage

Manual assign

To manually define a hot spare drive:

1. Highlight a non-assigned drive that you want to use and then select the pull-down menu option **Drive** → **Hot Spare Coverage**.

2. This opens the Hot Spare Drive Options box (Figure 5-48 on page 251), but this time with the option **Manually assign individual drives** selected by default. If any array on the DS4000 storage server contains larger drives than the drive that you have chosen, a warning message appears notifying you that not all arrays are protected by the hot spare drive.
3. To unassign a hot spare drive and have it available again as a free drive, highlight it, select **Drive → Hot Spare Coverage**, and then select the **Manually unassign individual drives** option.

View/change hot spare coverage

After you have configured your spare drives, you can review or modify your settings using this option. To do that, perform the following:

1. To start the option from the Storage Manager Client, select the pull-down menu option **Drive → Hot Spare Coverage**.
2. This opens the Hot Spare Drive Options box (Figure 5-48 on page 251). Select the option **View/Change current hot spare coverage** and click **OK**. This generates a window similar to Figure 5-49.

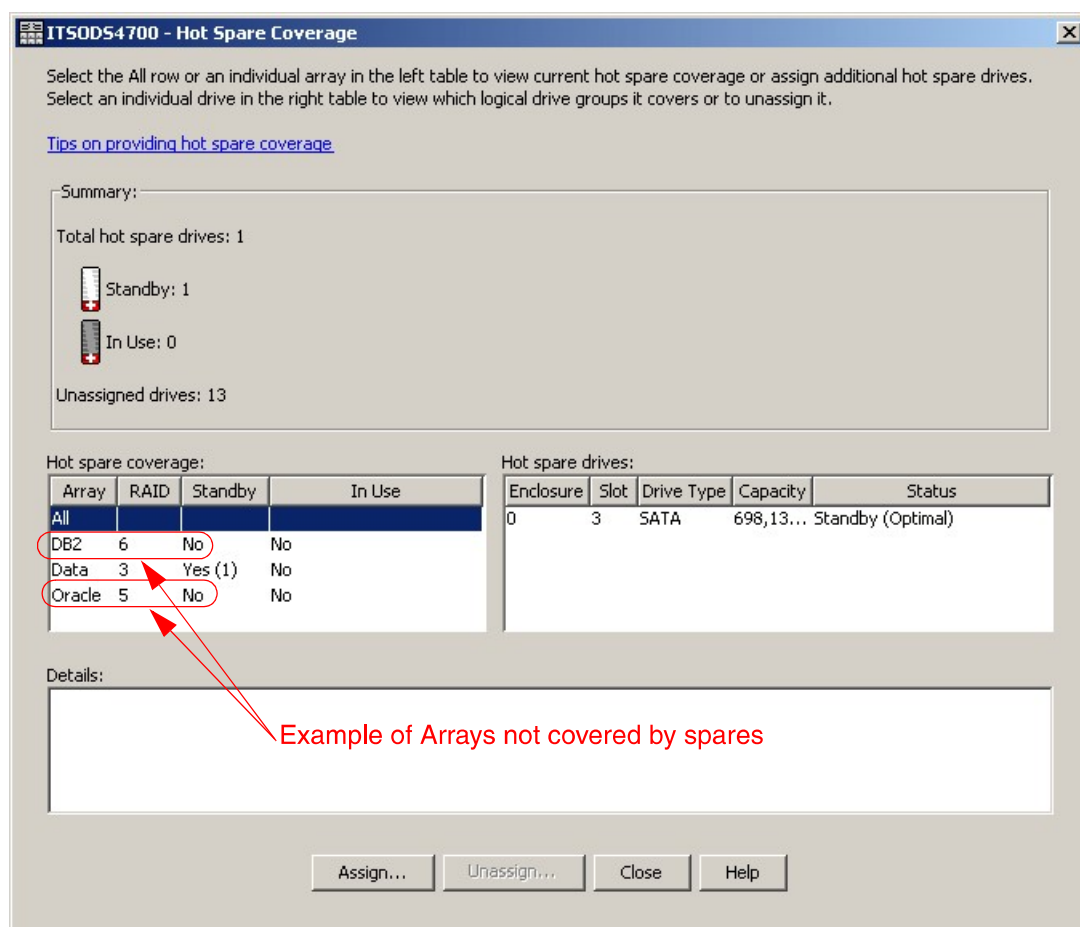


Figure 5-49 View/Change hot spare coverage

Notice in this example that there is only one spare drive assigned, and it is a SATA drive. The only covered array is the array named data, while the other arrays are not hot spare protected. You can run into this situation if the arrays are created before assigning hot

spare drives or by adding drives of different types once the storage is defined. Let us assign an additional hot spare drive using this interface to solve this issue.

3. Click the **Assign** option button. The window shown in Figure 5-50 appears.

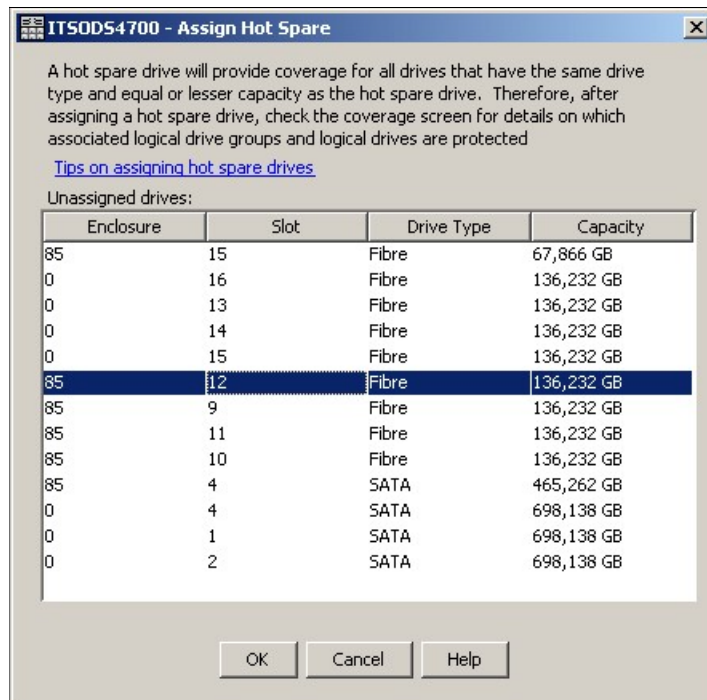


Figure 5-50 Assign hot spare

We can see in Figure 5-50 that we have both FC and SATA drives. One of the reasons that some drives are not hot spare protected is because there are no FC hot spares assigned. Another reason could be the size of the drives. To correct that:

1. Select the drive to assign as the hot spare. If you only want to assign one hot spare, remember to select a drive type of equal or greater capacity than the disks to protect. In our example we have drives of 67 GB and thirteen 6 GB usable capacity, so we choose one of the 136 GB drives. Select the disk drive to assign as the hot spare (in this case slot 12 of system enclosure (ID 85)), then click **OK**.
2. Check hot spare protection coverage by selecting **View/Change current hot spare coverage**. Click **OK** to view the current protection. Check that all arrays are protected.

Creating arrays and logical drives

At this stage of the process the storage system is installed, upgraded to the newest microcode level, and at least one hot spare drive is defined. Arrays and logical drives can now be configured. Refer to 4.2, “DS4000 management concepts and basics” on page 136, for guidance on how to divide the available storage capacity into arrays or logical drives, and which restrictions apply, to avoid improper or inefficient configurations.

You can define logical drives from unconfigured capacity or from free capacity already available in previously defined arrays on the storage system.

- ▶ When you create a logical drive from unconfigured capacity, you create an array first choosing the RAID type, and so on, and then the needed logical drives.
- ▶ When you create a logical drive from free capacity, the array is already defined, so you create an additional logical drive on an already existing array.

The illustration that follows assumes that there is unconfigured capacity on the DS4000. Note that the unconfigured capacity for Fibre Channel and SATA disks are grouped separately. This procedure illustrates the most common steps to follow in setting up a logical drive from unconfigured drives:

1. In the Subsystem Management window (Figure 5-51), right-click the unconfigured capacity. Since we have selected unconfigured capacity we first create an array option. Choosing **Create Logical Drive** opens a pop-up window that informs you to create the array first. Select **Create Array**.

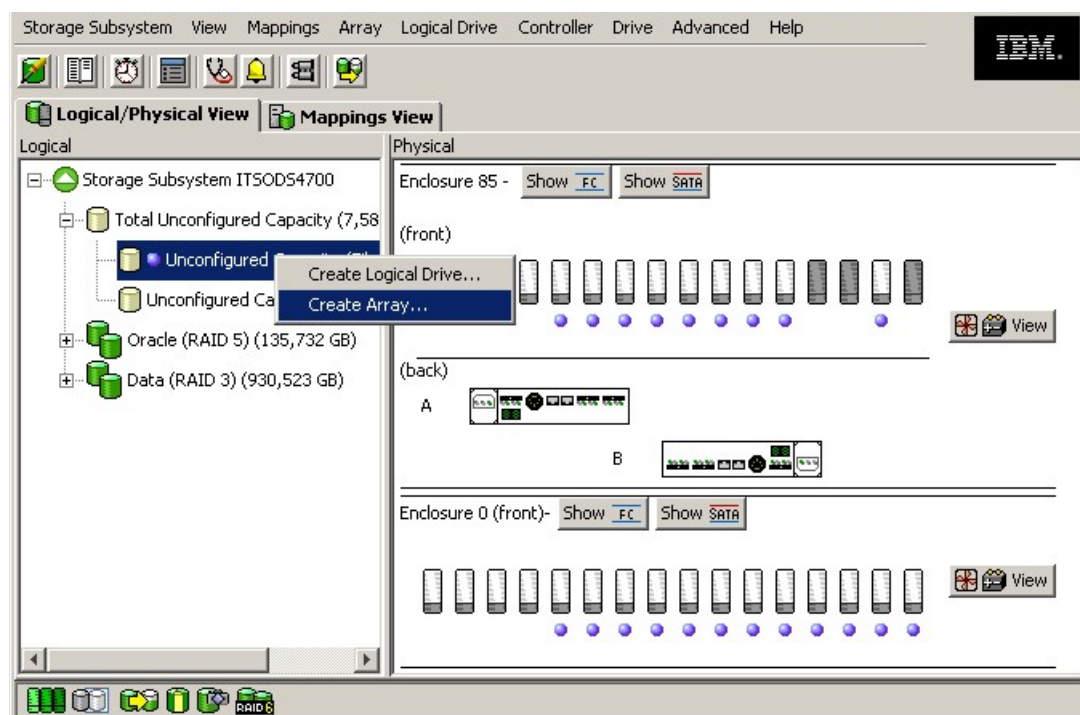


Figure 5-51 Create logical drive from unconfigured capacity

This action starts the wizard for creating the array first and then the logical drives. The first window of the wizard is an introduction to the process. It displays the available unconfigured capacity for the type of disks selected. Read the introduction and then click **Next** to proceed.

2. In the Create array window presented, type a meaningful array name that describes your set of disks, and then select either automatic mode or manual mode. Automatic mode is the default option. By selecting the automatic option, the Storage Manager software selects a combination of available drives to optimize performance and availability, attempting to select physical drives from different enclosures in order to provide enclosure protection whenever possible. Click **Next**.

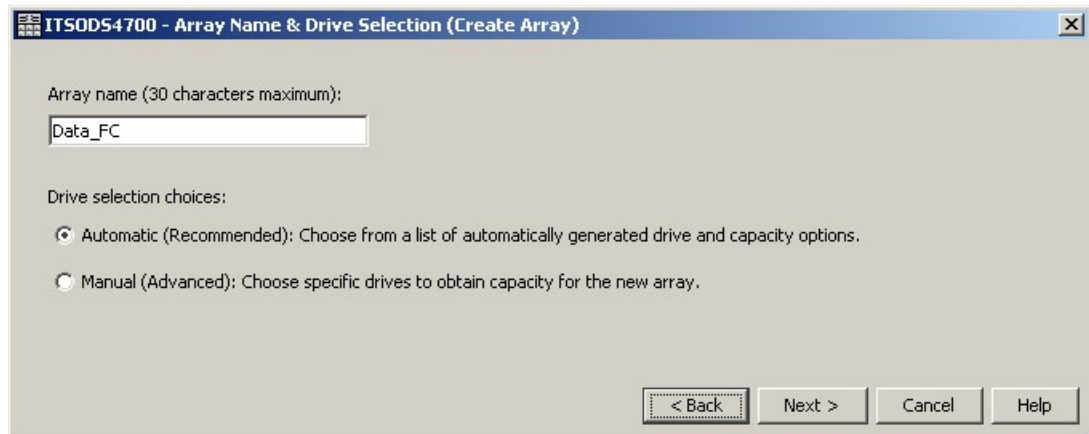


Figure 5-52 Create array-assign name and mode

The automatic creation of the array selects the drives considering the following order:

- Same capacity-same speed-enclosure redundancy
- Same capacity-mixed speed-enclosure redundancy
- Same capacity-mixed speed-no enclosure redundancy
- Mixed capacity-same or mixed speed-no enclosure redundancy

Creating the array using the manual option presents a window different from that shown in Figure 5-52. In manual mode, you must select all the drives individually. Make sure that you select them with consideration to maximize performance and availability.

3. Click **Next** to be presented with the option to select the RAID level.

Note: Starting with controller firmware 7.10 and Storage Manager 10.10, new possibilities are available for arrays:

- ▶ RAID level 6 is available for DS4200 and DS4700.
- ▶ More than 30 drives per array are now supported for RAID-0 and RAID-10. The maximum number of drives for DS4800 is 224, and 112 for DS4700 or DS4200.
- ▶ The possible RAID level options supported by the DS4000 are 0, 1, 3, 5, and 6 (and RAID-10 if selecting RAID-1 with more than two drives).

- a. Select the desired RAID level. The window now displays the different capacity options depending on the unconfigured drives available in your configuration. If you have different disk sizes, you have more than one option for the same number of disks. See the discussion in 4.2.3, “Arrays and logical drives” on page 139, to determine the best RAID level for your specific environment and application.
- b. Select the total capacity required and click **Finish**.

In our example (Figure 5-57 on page 261) we create a RAID-6 array with 12 drives.

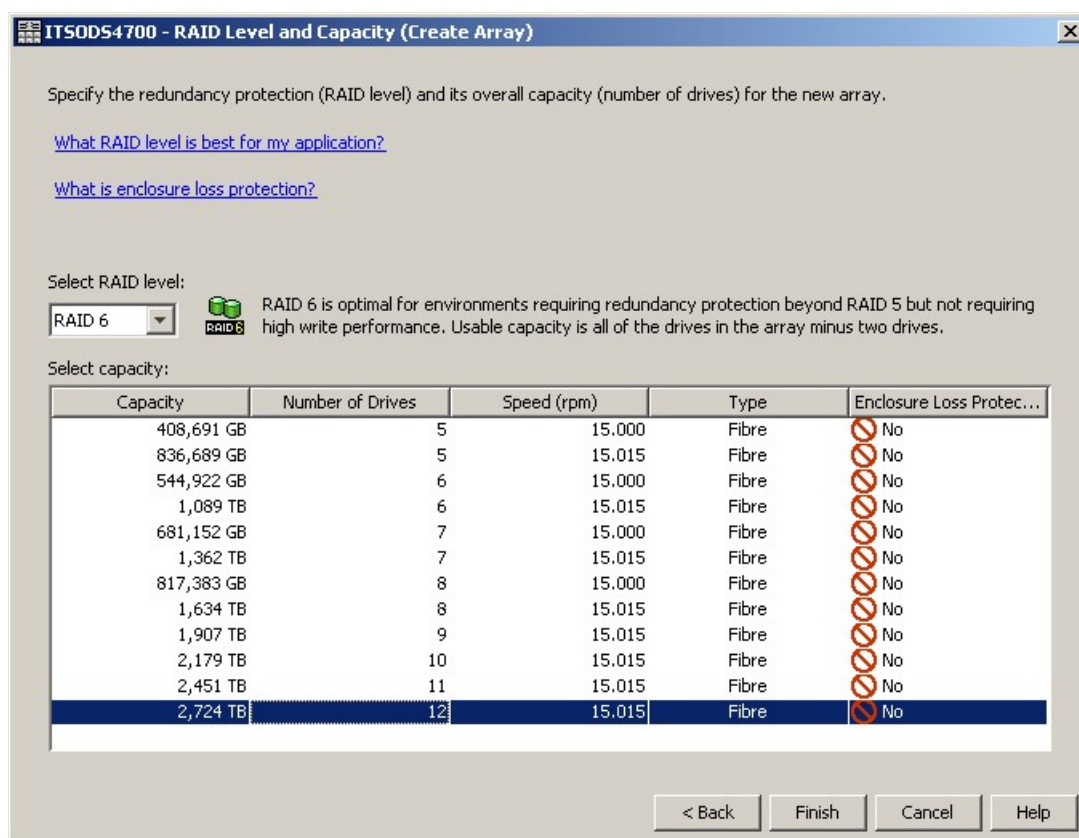


Figure 5-53 RAID Level and Capacity

4. The Array Success dialog appears as a confirmation that the array is now created. Click **YES** to continue with the creation of a logical drive.
5. Right-click the selected free capacity icon and select **Create Logical Drive**. In a wizard window click **Next** to start configuring the logical drive.
6. In the Specify Capacity/Name dialog window:
 - a. If you want to define more than one logical drive in the array, enter the desired size capacity below the limit of the array capacity.

Note: Beginning with controller firmware 7.10 and Storage Manager 10.10, logical drives larger than 2 TB are allowed.

- b. Assign a name to the logical drive.

- c. If you want to change advanced logical drive settings such as the segment size or cache settings, select the **Customize settings** option and click **Next**.

Note: The recommended settings values for creating volumes (Figure 5-54 on page 257) are dynamic cache read prefetch enabled for all RAID types, and segment size 128 KB for all but RAID-3, which is set to 256 KB.

Figure 5-54 Specifying logical drive capacity

7. The Customize Advanced Logical Drive Parameters dialog appears (Figure 5-55 on page 258). You can set your new logical drive using any of the predefined I/O types listed, or manually set the cache read ahead multiplier, segment size, and controller ownership.
 - For logical drive I/O characteristics, you can specify file system, database, or multimedia defaults. The custom option allows you to disable or enable the dynamic cache read prefetch and the segment size. Table 5-4 shows the defaults predefined for each I/O type.

Table 5-4 Logical drive defaults

	File system	Database	Multimedia
Segment size	128 K	128 K	256 K
Modification priority	High	High	High
Read cache	Enable	Enable	Enable
Write cache	Enable	Enable	Enable
Write cache with out batteries	Disable	Disable	Disable
Write cache with mirroring	Enable	Enable	Enable
Flush write cache after	10 seconds	10 seconds	10 seconds

	File system	Database	Multimedia
Dynamic cache prefetch	Enable	Enabled	Enable
Enable background media scan	Enable	Enable	Enable
Media scan with redundancy check	Disable	Disable	Disable
Pre-read redundancy check	Disabled	Disabled	Disabled

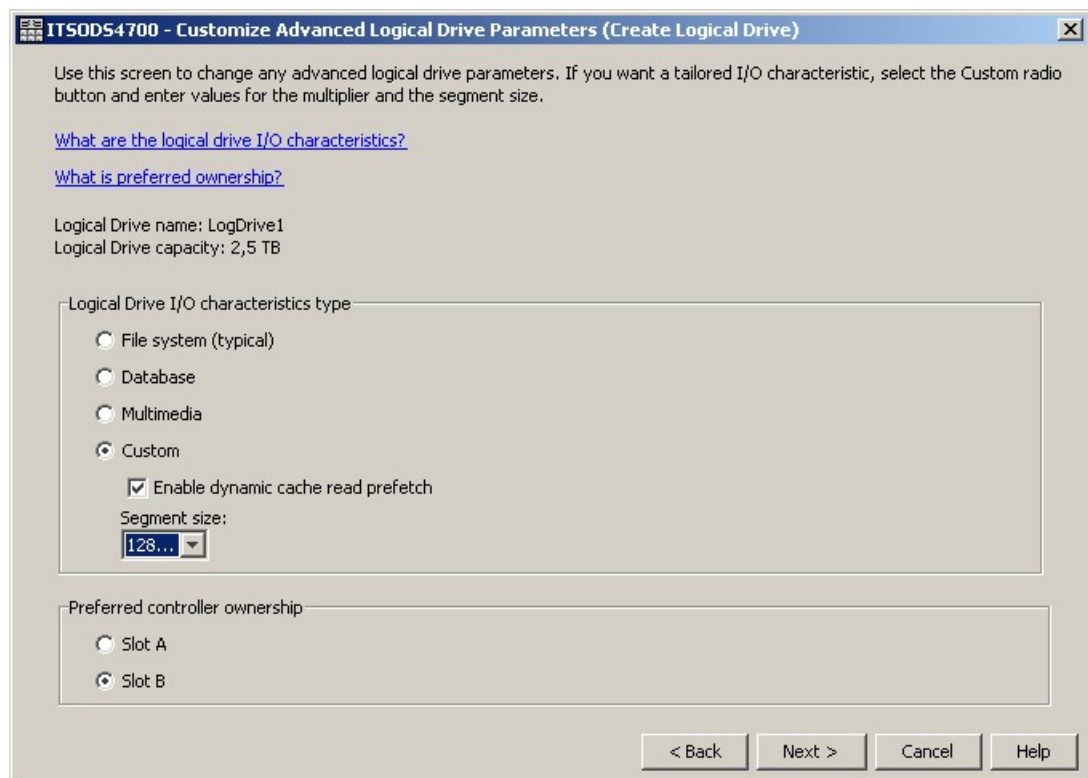


Figure 5-55 Customize logical drive parameters

- The segment size is chosen according to the usage pattern. For custom settings, you can directly define the segment size.
- Dynamic cache read prefetch is important for multimedia applications that use sequential I/O by allowing the controller, while it is reading and copying host-requested data blocks from disk, to copy additional data blocks into the cache. In previous SM versions, it is enabled by selecting any number other than 0. For more information refer to “Read-ahead multiplier” on page 168.
- The preferred controller handles the logical drive normally if both controllers and I/O paths are online. You can distribute your logical drives between both controllers to provide better load balancing between them. The default is to alternate the logical drives on the two controllers.

It is better to spread the logical drives by the load that they cause on the controller. If you do not know the expected access pattern for each logical drive, you can evaluate it by using the performance monitor option integrated with the Storage Manager client.

Based on data gathered from the Performance Monitor, move some logical drives to the other preferred controller to balance the load if required (see 4.2.7, “Performance monitor data” on page 155, and 4.3.5, “Controller ownership” on page 164).

8. The Specify Logical Drive-to-LUN Mapping dialog appears (Figure 5-56). This step allows you to choose between mapping your created logical drive to the default group, or to map later using the mappings view. If you choose **Default mapping** then the physical volume is mapped to the default host group and is available to any host zoned to the DS4000, so we do not recommend this option if your DS4000 supports more than a single partition.

Important: Manually mapping logical drives to hosts prevents unwanted mapping and is always the recommended choice.

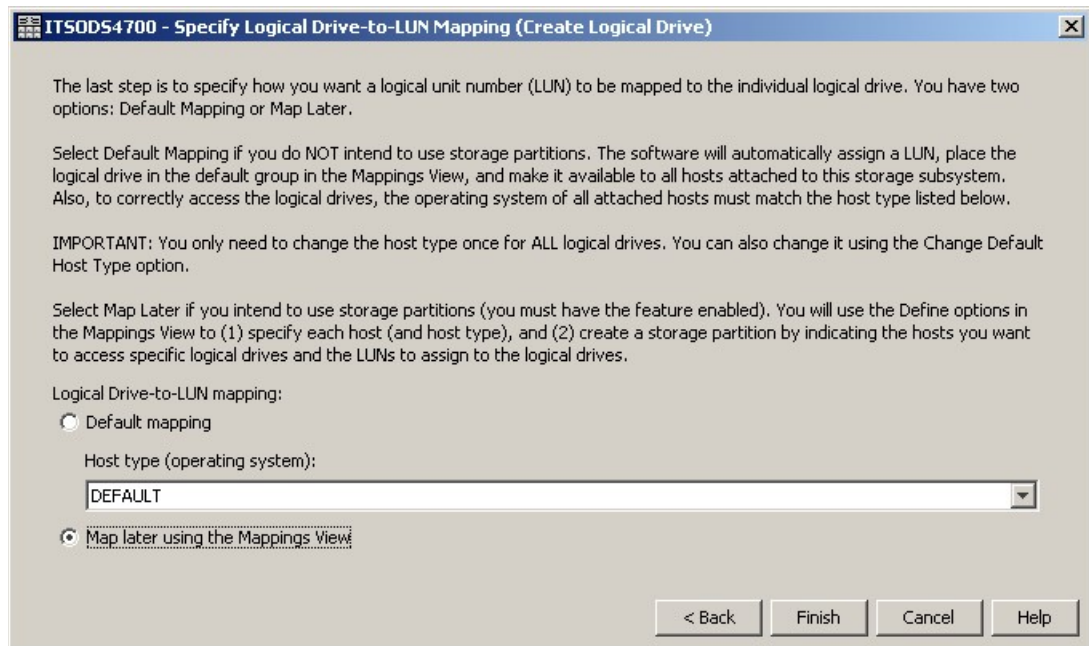


Figure 5-56 Logical drive mapping

9. Click **Finish** and the Creation Successful dialog appears. You are prompted as to whether you want to create another logical drive. Click **No** if you have finished creating logical drives or wish to finish at a later time.
10. The Completed dialog appears, using the mapping section to present the logical volume to a desired host. Click **OK** and you are done.

If you left unconfigured capacity inside the array, you can later define another logical drive in this array. Simply highlight this capacity, right-click, and choose **Create Logical Drive**. Follow the steps that we previously outlined in this section, except for the selection of drives and RAID level (since the array is already defined).

After defining each of the logical drives, the disk space is initialized, but is immediately accessible if mapped.

5.3.5 Configuring storage partitioning

We explained the concept of storage partitioning in 4.2.6, “Storage partitioning” on page 151.

Since heterogeneous hosts can be attached to the DS4000 storage server, you must configure storage partitioning for two reasons:

- ▶ Each host operating system requires slightly different settings on the DS4000 storage server. You must tell the storage system the host type that it is attached to.
- ▶ There is interference between the hosts if every host has access to every logical drive. By using storage partitioning and LUN masking, you ensure that each host or host group only has access to its assigned logical drives. You can have up to 256 LUNs assigned to a single storage partition. You might have a maximum of 2048 LUNs configured per DS4000 depending on the model.

Depending on your DS4000 model and premium features enabled, you may have the option to configure partitions. If your DS4000 does not allow creating partitions, you should proceed by mapping all your logical drives to the default host group.

The overall process of defining the storage partitions is as follows:

1. Define host groups.
2. Define hosts.
3. Define host ports for each host.
4. Define storage partitions by assigning logical drives to the hosts or host groups.

Note: Controller firmware 7.10 and later increases the maximum number of partitions allowed from 64 to 512 for the DS4800. See Chapter 4, “Managing the DS4000” on page 115, for additional information about the maximum supported for your specific DS4000 model and feature.

The Subsystem Management Task Assistant has wizards that can assist you with setting up the storage partitioning:

- ▶ Define the host wizard.
- ▶ Create the new storage partitions wizard.

The first step is to select the **Mappings View** in the Subsystem Management window. If you have not defined any storage partitions yet, the Mapping Start-Up Help window pops up (as shown in Figure 5-57). The information in the window advises you to only create host groups if you really need them. For example, if you want to attach a cluster of host servers, then you must create a host group for them. On the other hand, if you want to attach a host that is not a part of the cluster, it is not necessary to put it into any particular host group. However, as requirements can change, we recommend that you create a host group anyway if your DS4000 configuration allows it.

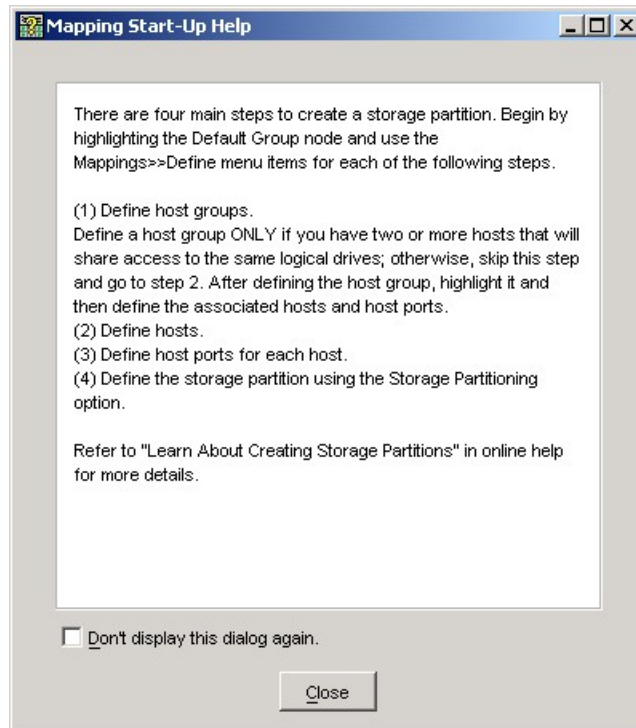


Figure 5-57 Mappings Start-Up Help

Figure 5-58 shows an example of the mappings view. The right side of the window lists all mappings that are owned by the object that you select on the left side. If you highlight the storage system, you see a list of all defined mappings. If you highlight a specific host group or host, its mappings are listed.

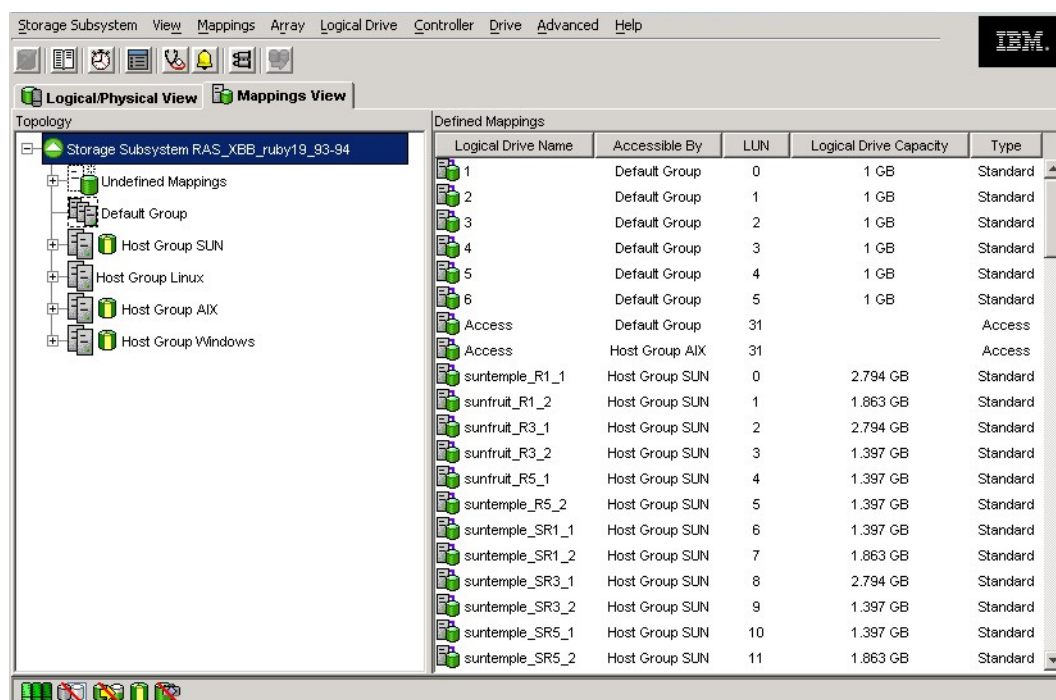


Figure 5-58 Mappings View in Subsystem Management window

In our example, we show you how to configure the following storage partitioning scenario:

1. We have a host named WindowsITSO. We want that host to have access to the logical drives WindowsLD1 and WindowsLD2.
2. This host contains two HBAs.
3. This host became part of a Windows 2003 cluster, so we must put it into a host group. The host group name will be WinHostGroupITSO.
4. We map the two logical drives (WindowsLD1 and Windows LD2) to that host group.

Note: Before configuring partitioning, if you have your storage connected to a FC switch, make sure to first define the zonings appropriately.

Next do a hardware re-scan on each host that is to be mapped to the DS4000 to reconfigure the FC devices and allow the WWPN to be presented in the Storage Manager.

Respect best practices by configuring only one host HBA per zone, together with one DS4000 controller if possible. Both the DS4000 controllers must be seen by the host.

Define Host wizard

The steps are:

1. Right-click **Default Group** and select **Define Host**, as shown in Figure 5-59.

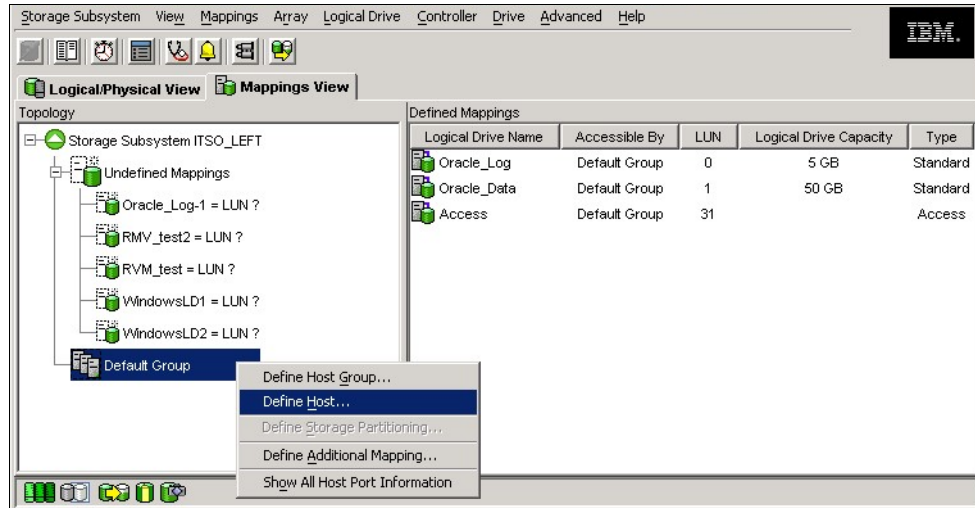


Figure 5-59 Selecting Define Host

2. This launches the wizard for defining a new host. You must provide the following information during the process:
 - Name of the new host.
 - HBA host port identifiers and aliases.
 - Host type (the operating system that runs on the host).
 - Information as to whether the host is going to participate in a cluster. Remember that clustered hosts must be put into a host group.
3. The first window of the wizard is an introduction (Figure 5-60). You are asked whether you plan to use storage partitioning.

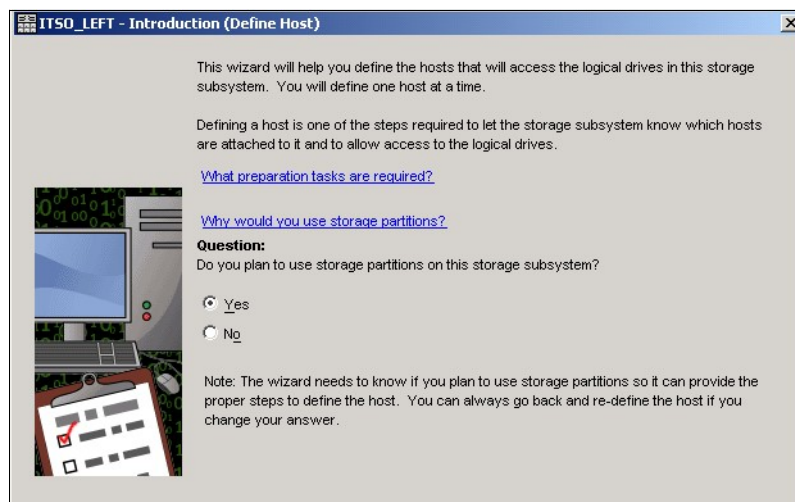


Figure 5-60 Introduction to define host wizard

4. If you only plan to attach a single host server, then you do not need storage partitioning. But the customers usually attach many hosts to their storage servers, so the usual reply is **Yes**.
5. The next window allows you to specify the host name and the HBA host port information (host port identifier and alias). Remember that the HBA host port identifier is the world-wide port name of the particular HBA. Figure 5-61 shows our example. Our host name is WindowsITSO and we have defined two HBA host ports. If you must enter a host port name that is not currently active, type the world-wide port name directly in the field.

The host communicates with the storage subsystem through its host bus adapters (HBAs). Each physical port on an HBA has a unique identifier called a worldwide name. The list below displays all of the known HBA host port identifiers.

In this step, you need to (1) specify a unique name for the host, (2) match the specific HBA host port identifiers (one or more) to the particular host that you are defining and select Add, and (3) specify an alias by highlighting the identifier in the right table and selecting Edit. If you don't see a particular identifier, select Refresh or manually enter it yourself by selecting New. If you need to make a change, highlight the identifier and select Edit.

Specify name of host

Host name (30 characters maximum):

WindowsITSO

Match HBA host port identifier (select one or more)

[How do I match an HBA host port identifier to a host?](#)

Known HBA host port identifiers:

10000000c937469f
10000000c9374668

Add >

< Remove

Refresh

Selected HBA host port identifiers/aliases:

Identifier	Alias
210000e08b1ba006	WinITSO_HBA1
210000e08b1b4e06	WinITSO_HBA2

New... Edit...

< Back Next > Cancel Help

Figure 5-61 Define host: Specifying the host name and HBA attributes

Click **Edit** to assign a name to each WWN address added and click **Next**.

6. The next window requires you to specify the host type. This is basically the operating system running on the host. It is vital that you select the appropriate host type because the RDAC and ADT settings rely on this. In addition, this is the part of the configuration where you configure the heterogeneous host support. Each operating system expects slightly different settings and handles SCSI commands differently. If you make a wrong choice, your operating system might not boot anymore or path failover cannot be used.

We show an example of this window in Figure 5-62. In our case, we selected **Windows 2000/Server 2003 Clustered**.

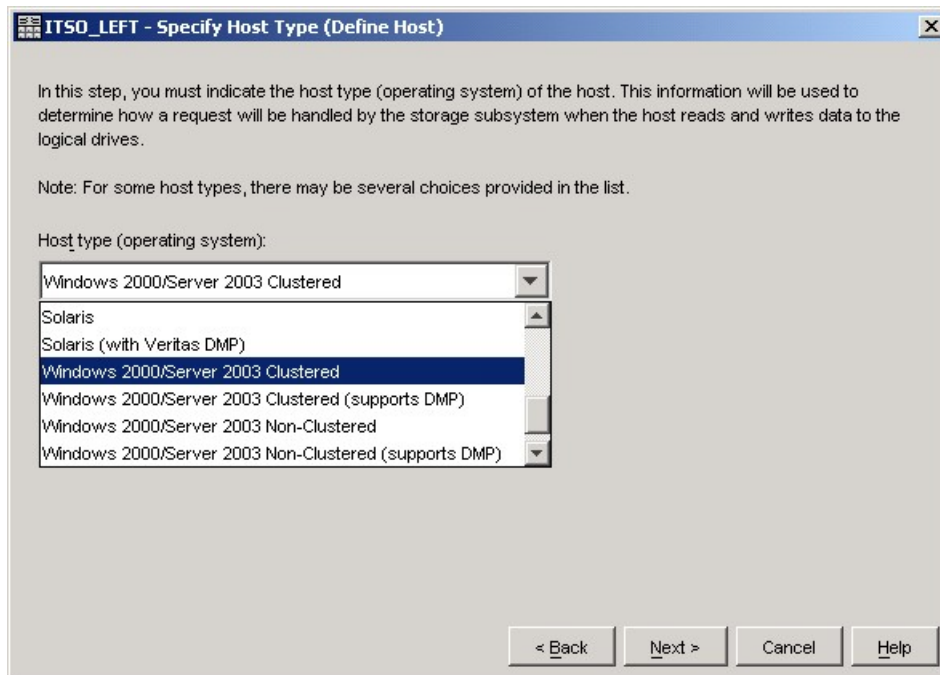


Figure 5-62 Define host: Specifying the host type

7. In the next step, you are asked whether the host is a part of a cluster. If the answer is yes, then you must specify a host group. The host group can be either a new or an existing one, as shown in Figure 5-63.

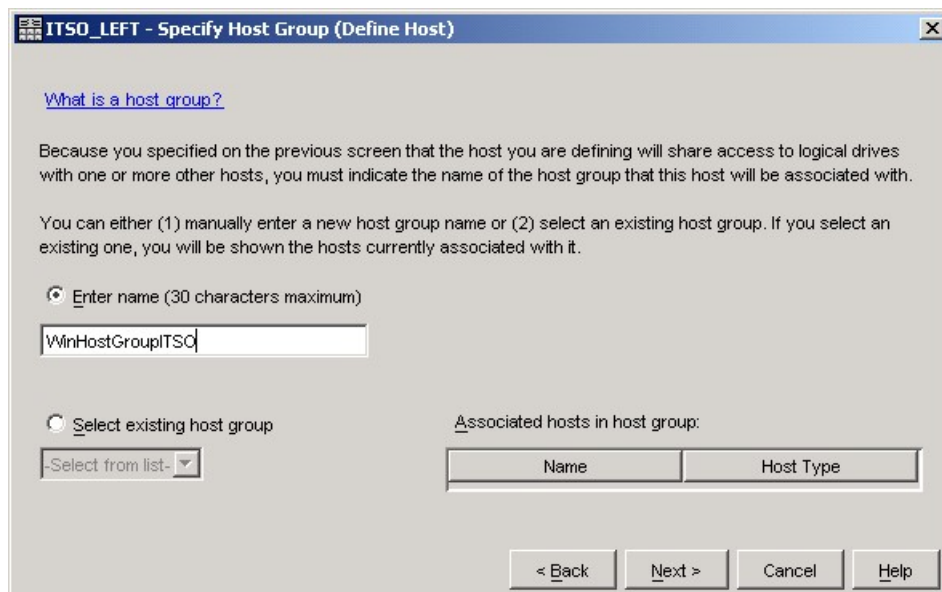


Figure 5-63 Define host: Specifying a host group

- Finally, you have the chance to preview the new host definition (Figure 5-64). If all the selections are correct, click **Finish** to define the new host.

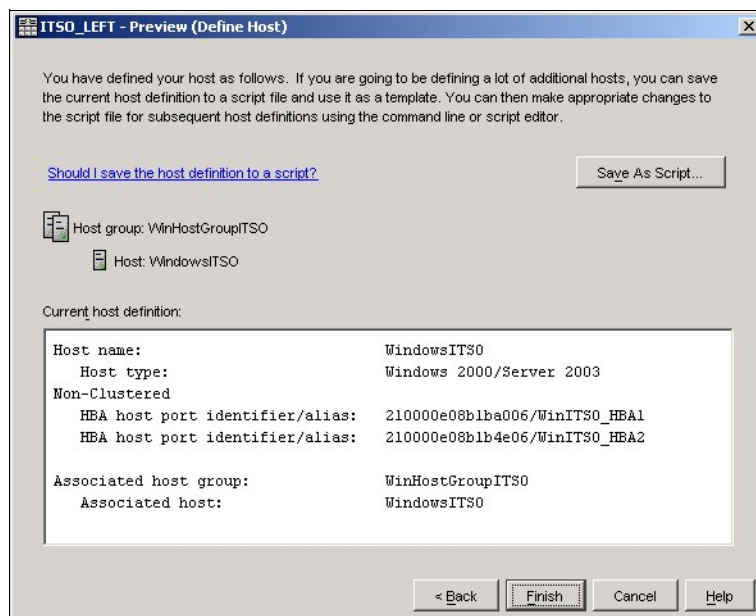


Figure 5-64 Define Host: Preview

- The new host (and the host group, if it was also defined) is placed in the default group. It will stay there until you actually create a storage partition by assigning the logical drives to that host (or group). Figure 5-65 shows an example.

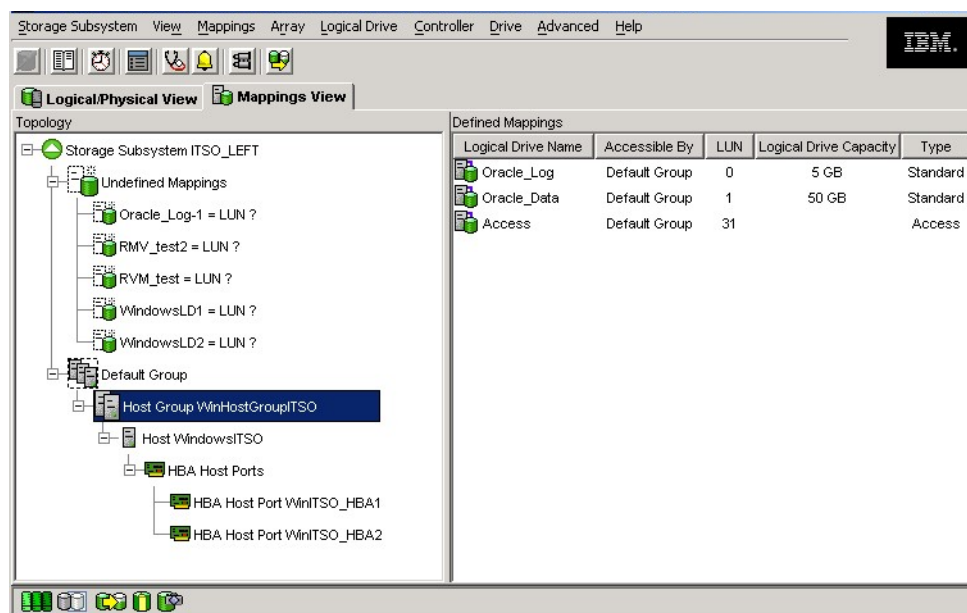


Figure 5-65 New host and host group, placed in the default group

Note: The Storage Manager 10 does not show each host HBA port in the Mappings view. You can see HBAs in the Properties window of the selected host (Figure 5-66).

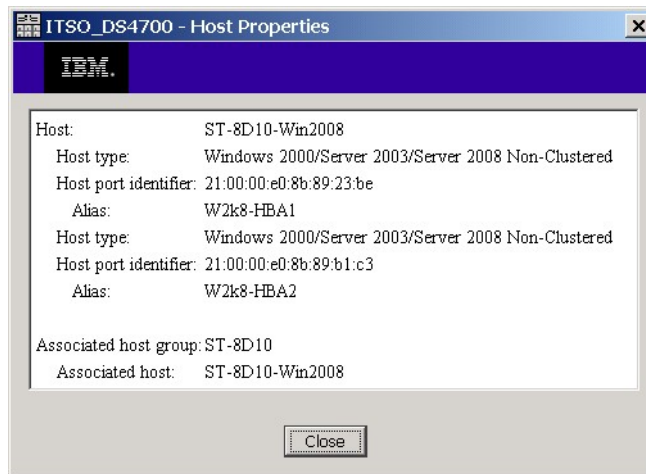


Figure 5-66 Host properties in SMclient 10

Storage partitioning wizard

Next we use the storage partitioning wizard:

1. We start by creating a storage partition by assigning the logical drives to the hosts or host groups. The storage partitioning wizard leads you through the process, and you initiate it by right-clicking **Default Group** and selecting **Define Storage Partitioning**. We show an example in Figure 5-67.

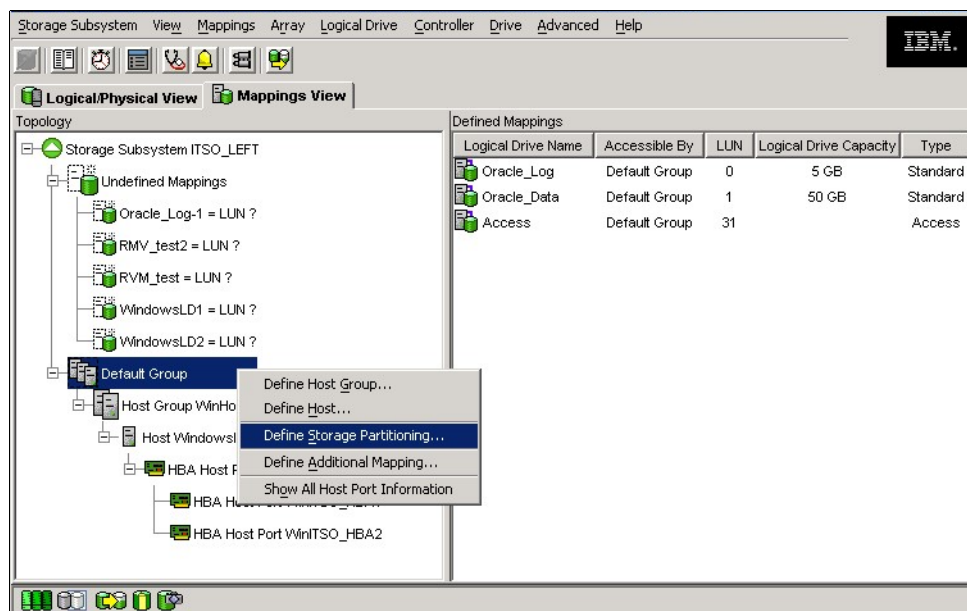


Figure 5-67 Define storage partitioning

2. After the introduction, the wizard asks you to select either a host or a group of hosts. If you are creating a storage partition for clustered host servers, specify the appropriate group. Otherwise, you can select an individual host.

- The next window allows you to select the logical drives that are going to be mapped to the host or the group. You also must specify a LUN for each logical drive. In our example, shown in Figure 5-68, we selected WindowsLD1 and WindowsLD2. We assigned the LUNs 0 and 1, respectively, to these two logical drives.

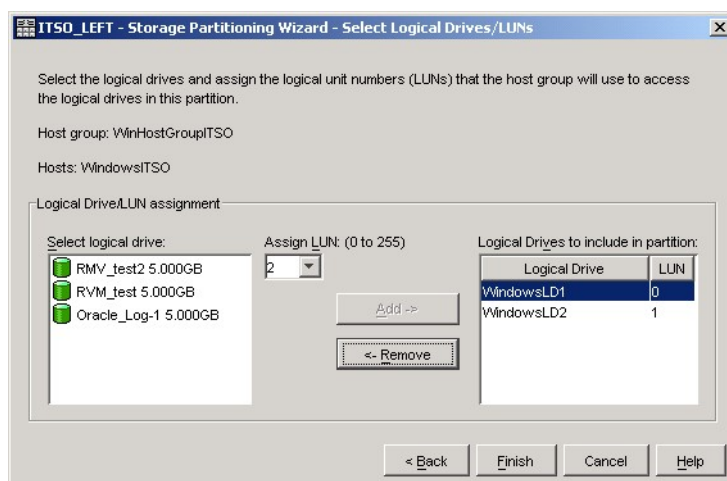


Figure 5-68 Storage Partitioning wizard: Selecting logical drives/LUNs

- Click **Finish** when you are done with selecting the logical drives and assigning the LUNs. This completes the process. Figure 5-69 shows an example of our newly created storage partition in the mappings view.

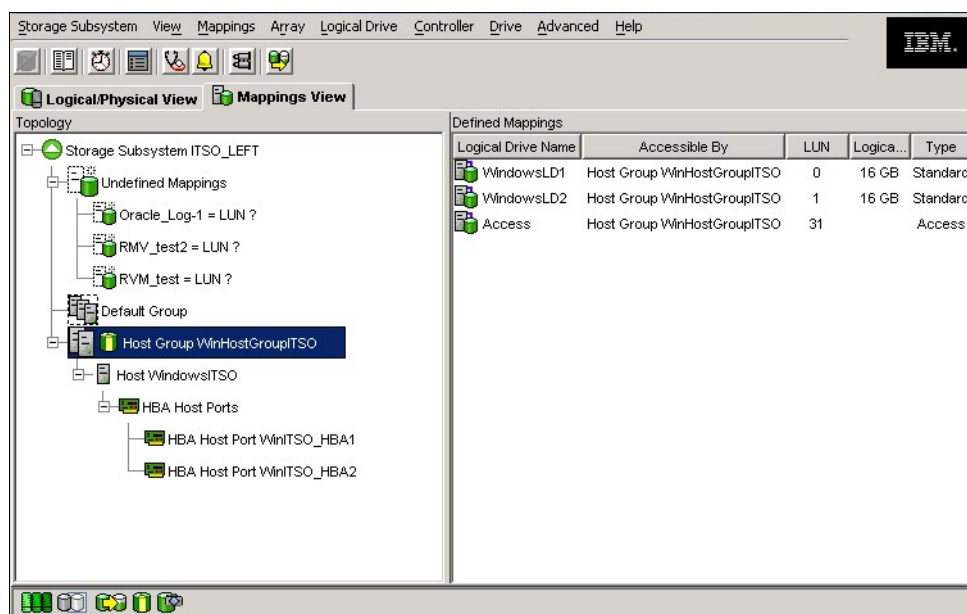


Figure 5-69 A new storage partition in Mappings View

Now you can use the Windows Disk Administrator utility to scan for new storage, create and format partitions, and begin using the new disk space.

Define host group option

Because the host groups can be created with the define host wizard, there is usually no need to define the groups from outside the wizard. But you still have the option to do so:

1. Right-click **Default Group** and select **Define Host Group** (as shown in Figure 5-70 on page 269).

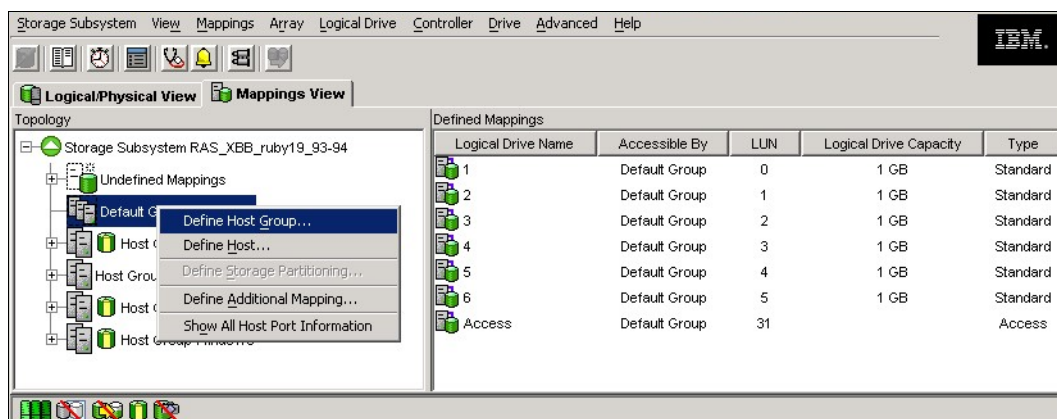


Figure 5-70 Define Host Group

2. The Define Host Group window (Figure 5-71) opens. Enter the name of the host group that you wish to add. If you must define more host groups, click **Add**. When you are finished, click **Close** to exit the dialog.

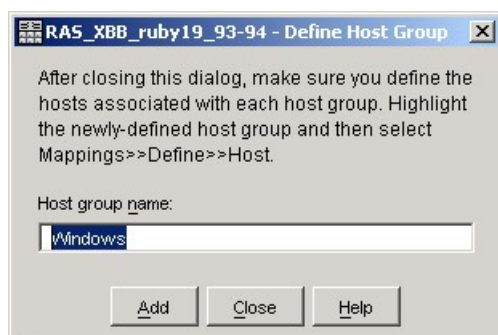


Figure 5-71 Define Host Group name

3. If you accidentally assigned a host to the wrong host group, you can move the host to another group. Simply right-click the host and select **Move**. A pop-up window opens and asks you to specify the host group name.
4. Because the storage partitioning of the DS4000 storage server is based on the world-wide port names of the host ports, the definitions for the host groups and the hosts only represent a view of the physical and logical setup of your fabric. When this structure is available, it is much easier to identify which host ports are allowed to see the same logical drives and which are in different storage partitions.

Define additional mapping option

Suppose that a particular host (or a host group) is already a part of a certain storage partition. This means that the logical drives are already mapped to that host or group. If you must map additional logical drives to the same host or group, use the define additional mapping option:

1. Right-click the host or group to which you want to map a new logical drive. Select **Define Additional Mapping**, as you can see in Figure 5-72.

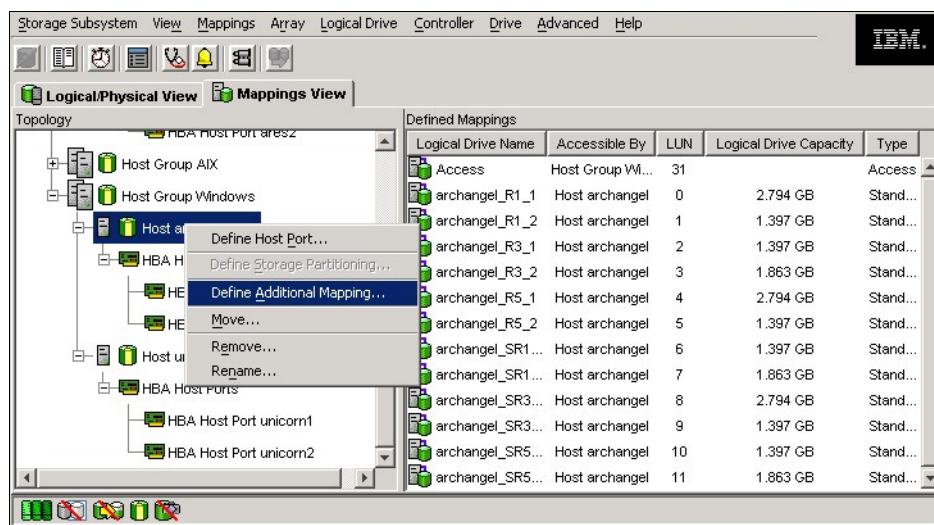


Figure 5-72 Define Additional Mapping

2. In the Define Additional Mapping window, select the logical drive that you want to map to this host group or host and assign the correct LUN number (Figure 5-73).

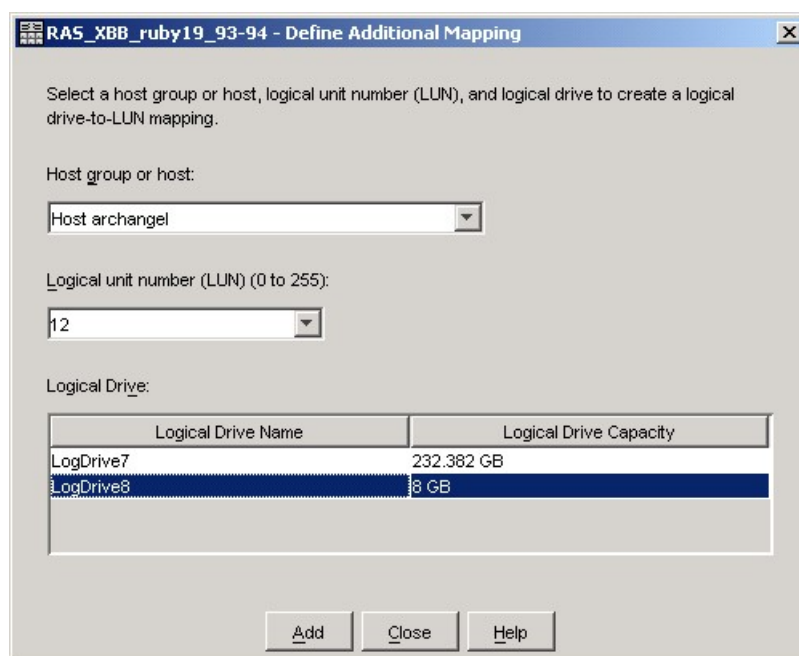


Figure 5-73 Define Additional Mapping