

IBM TotalStorage[®] DS6000



Reference

IBM TotalStorage[®] DS6000



Reference

Note:

Before using this information and the product it supports, read the information in "Notices" on page 287.

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Notices and publication information

This section contains information about safety notices that are used in this guide, environmental notices for this product, publication information, and information about sending your comments to IBM.

Safety notices

Complete this task to find information about safety notices.

To find the translated text for a danger or caution notice:

1. Look for the identification number at the end of each danger notice or each caution notice. In the following examples, the numbers **1000** and **1001** are the identification numbers.

DANGER

A danger notice indicates the presence of a hazard that has the potential of causing death or serious personal injury.

1000

CAUTION:

A caution notice indicates the presence of a hazard that has the potential of causing moderate or minor personal injury.

1001

2. Find the number that matches in the *IBM System Storage Solutions Safety Notices for IBM Versatile Storage Server and IBM System Storage Enterprise Storage Server*, GC26-7229.

Environmental notices

This section identifies the environmental guidelines that pertain to this product.

Product recycling and disposal

This unit contains recyclable materials.

This unit must be recycled or discarded according to applicable local and national regulations. IBM® encourages owners of information technology (IT) equipment to responsibly recycle their equipment when it is no longer needed. IBM offers a variety of product return programs and services in several countries to assist equipment owners in recycling their IT products. Information on IBM product recycling offerings can be found on IBM's Internet site at <http://www.ibm.com/ibm/environment/products/prp.shtml>.



Notice: This mark applies only to countries within the European Union (EU) and Norway.

Appliances are labeled in accordance with European Directive 2002/96/EC concerning waste electrical and electronic equipment (WEEE). The Directive determines the framework for the return and recycling of used appliances as applicable throughout the European Union. This label is applied to various products to indicate that the product is not to be thrown away, but rather reclaimed upon end of life per this Directive.

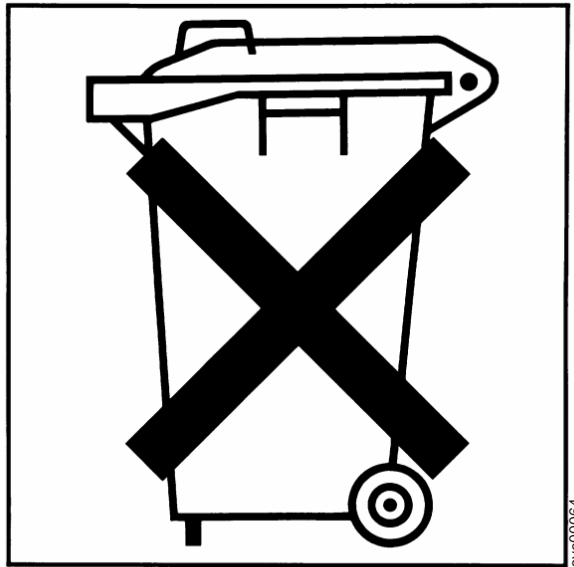
In accordance with the European WEEE Directive, electrical and electronic equipment (EEE) is to be collected separately and to be reused, recycled, or recovered at end of life. Users of EEE with the WEEE marking per Annex IV of the WEEE Directive, as shown above, must not dispose of end of life EEE as unsorted municipal waste, but use the collection framework available to customers for the return, recycling and recovery of WEEE. Customer participation is important to minimize any potential effects of EEE on the environment and human health due to the potential presence of hazardous substances in EEE. For proper collection and treatment, contact your local IBM representative.

Battery return program

This product may contain sealed lead acid, nickel cadmium, nickel metal hydride, lithium, or lithium ion battery. Consult your user manual or service manual for specific battery information. The battery must be recycled or disposed of properly. Recycling facilities may not be available in your area. For information on disposal of batteries outside the United States, go to <http://www.ibm.com/ibm/environment/products/batteryrecycle.shtml> or contact your local waste disposal facility.

In the United States, IBM has established a return process for reuse, recycling, or proper disposal of used IBM sealed lead acid, nickel cadmium, nickel metal hydride, and other battery packs from IBM Equipment. For information on proper disposal of these batteries, contact IBM at 1-800-426-4333. Please have the IBM part number listed on the battery available prior to your call.

In the Netherlands the following applies:



For Taiwan:



Please recycle batteries.

廢電池請回收

How to send your comments

Your feedback is important to help us provide the highest quality information. If you have any comments about this information or any other DS6000™ series documentation, you can submit them in the following ways:

- e-mail

Submit your comments electronically to the following e-mail address:

starpubs@us.ibm.com

Be sure to include the name and order number of the book and, if applicable, the specific location of the text you are commenting on, such as a page number or table number.

- Mail

Fill out the Readers' Comments form (RCF) at the back of this book. Return it by mail or give it to an IBM representative. If the RCF has been removed, you can address your comments to:

International Business Machines Corporation
RCF Processing Department
Department 61C
9032 South Rita Road
TUCSON AZ 85775-4401

Chapter 1. Reference

The topics in this section provide reference information related to your DS6000. Topics covered include a glossary, page help, advanced functions, physical characteristics, and a planning reference.

Chapter 2. Accessibility

Accessibility features provide users who have disabilities with the ability to successfully access information and use technology.

Accessibility features help a user who has a physical disability, such as restricted mobility or limited vision, to use software products successfully.

Features

These are the major accessibility features in the IBM System Storage™ DS6000 information:

- You can use screen-reader software and a digital speech synthesizer to hear what is displayed on the screen. IBM Home Page Reader version 3.0 has been tested.
- You can operate features using the keyboard instead of the mouse.

Navigating by keyboard

You can use keys or key combinations to perform operations and initiate menu actions that can also be done through mouse actions. You can navigate the IBM System Storage DS6000 information from the keyboard by using the shortcut keys for your browser or Home Page Reader. See your browser Help for a list of shortcut keys that it supports. See the following Web site for a list of shortcut keys supported by Home Page Reader: http://www-306.ibm.com/able/solution_offerings/keyshort.html

Accessing the publications

You can find HTML versions of the IBM System Storage DS6000 information at the following Web site: <http://www.ehone.ibm.com/public/applications/publications/cgi-bin/pbi.cgi>

You can access the information using IBM Home Page Reader 3.0.

Chapter 3. Advanced functions

The topic provides information about Copy Services functions and terminology as well as recommended settings for host systems and adapters.

Copy Services terminology

This topic introduces you to the new terminology for Copy Services.

Purpose

The table below lists the terms for Copy Services functions that are introduced and that are available on the DS6000. These functions are part of the core technology of IBM's System Storage Resiliency family. Previously defined Copy Services terms are shown in parenthesis.

Description	Name	Feature
Local point-in-time copy	FlashCopy®	Point-in-time (FlashCopy)
Synchronous copy of your data at a distance	Metro Mirror (Synchronous PPRC)	Remote Mirror and Copy (PPRC)
Continuous copy without data consistency	Global Copy (PPRC Extended Distance)	Remote Mirror and Copy (PPRC)
Long-distance continuous volume replication	Global Mirror (Asynchronous PPRC)	Remote Mirror and Copy (PPRC)
Asynchronous copy controlled by z/OS® host software	z/OS Global Mirror (Extended Remote Copy)	Remote Mirror for z/OS

Comparison of licensed functions

A key decision that you must make in planning for a disaster is deciding which licensed functions to use to best suit your environment.

Table 1 provides a brief summary of the characteristics of the Copy Services features that are available for the storage unit.

Table 1. Comparison of licensed functions

Licensed function	Description	Advantages	Considerations
Metro/Global Mirror	Three-site, long distance disaster recovery replication	A backup site is maintained regardless of which one of the sites is lost.	Recovery point objective (RPO) might grow if bandwidth capability is exceeded.
Metro Mirror	Synchronous data copy at a distance	No data loss, rapid recovery time for distances up to 300 km.	Slight performance impact.

Table 1. Comparison of licensed functions (continued)

Licensed function	Description	Advantages	Considerations
Global Copy	Continuous copy without data consistency	Nearly unlimited distance, suitable for data migration, only limited by network and channel extenders capabilities.	Copy is normally fuzzy but can be made consistent through synchronization.
Global Mirror	Asynchronous copy	Nearly unlimited distance, scalable, and low RPO. The RPO is the time needed to recover from a disaster; that is, the total system downtime.	RPO might grow when link bandwidth capability is exceeded.

Remote mirror and copy volume states

In order to manage a remote mirror and copy configurations, you need to know the state of your volumes.

Simplex

The initial state of a volume. A volume pair relationship has not been established between the source and target volumes or a remote mirror and copy relationship has been withdrawn.

Pending

The initial state of a defined volume pair. The remote mirror and copy feature is in the process of copying data from the source volume to the target volume. During the pending period, the volume pair is not synchronized.

Duplex

The state of a volume pair after remote mirror and copy has completed the copy operation of the source volume to the target volume. At this time, the volume pair is synchronized, and all writes have been applied from the source to target volume.

Suspended

The state of the volume pair when the source storage unit cannot complete a write operation to the target storage unit or when the volume pair has been suspended manually.

System adapter identification

The Fibre Channel Protocol (FCP) adapters are specified by their System Adapter Identification (SAID).

When you create remote mirror and copy paths over FCP links, you must specify the world wide node names (WWNNs) of the source (or local) and target (or remote) storage units. The WWPN and the SAIDs of the source and destination adapters are used to generate a World Wide Port Name (WWPN). The WWPN is used for communicating to the remote storage unit.

The SAID on the source storage unit identifies the location of the associated storage unit. The first value is zero and the last two values are hexadecimal SAID byte values that correspond to FCP interfaces. FCP adapters are specified by their SAID numbering scheme. Figure 1 shows a fibre-channel interface identification diagram. DS6000 only has two adapters: B00 and B06.

This side belongs to cluster 0 (Top cluster)

Enclosure 0						
Slot 0	1	2	3	4	5	
Fibre Host Adapter ID:						
B00**	B01	1002	B03	B04	1005	
Port	Logical name (cpssfcxxxx):					
	000	001		003	004	
0	0000	0010		0030	0040	
1	0001	0011		0031	0041	
2	0002	0012		0032	0042	
3	0003	0013		0033	0043	
System Adapter Identification (Tag):						
0	0000	0010		0030	0040	
1	0001	0011		0031	0041	
2	0002	0012		0032	0042	
3	0003	0013		0033	0043	

This side belongs to cluster 1 (Bottom cluster)

Enclosure 1						
Slot 0	1	2	3	4	5	
Fibre Host Adapter ID:						
B06**	B07	1008	B09	B0A	100B	
Port	Logical name (cpssfcxxxx):					
	010	011		013	014	
0	0100	0110		0130	0140	
1	0101	0111		0131	0141	
2	0102	0112		0132	0142	
3	0103	0113		0133	0143	
System Adapter Identification (Tag):						
0	0100	0110		0130	0140	
1	0101	0111		0131	0141	
2	0102	0112		0132	0142	
3	0103	0113		0133	0143	

Enclosure 2						
Slot 0	1	2	3	4	5	
Fibre Host Adapter ID:						
B0C	B0D	100E	B0F	B10	1011	
Port	Logical name (cpssfcxxxx):					
	020	021		023	024	
0	0200	0210		0230	0240	
1	0201	0211		0231	0241	
2	0202	0212		0232	0242	
3	0203	0213		0233	0243	
System Adapter Identification (Tag):						
0	0200	0210		0230	0240	
1	0201	0211		0231	0241	
2	0202	0212		0232	0242	
3	0203	0213		0233	0243	

Enclosure 3						
Slot 0	1	2	3	4	5	
Fibre Host Adapter ID:						
B12	B13	1014	B15	B16	1017	
Port	Logical name (cpssfcxxxx):					
	030	031		033	034	
0	0300	0310		0330	0340	
1	0301	0311		0331	0341	
2	0302	0312		0332	0342	
3	0303	0313		0333	0343	
System Adapter Identification (Tag):						
0	0300	0310		0330	0340	
1	0301	0311		0331	0341	
2	0302	0312		0332	0342	
3	0303	0313		0333	0343	

Figure 1. Fibre-channel interface identification

The enclosure numbers (EE) are for expansion frames (from the back), slot 0 adapter ID. All values are shown in hexadecimal values and they apply to all models. The following categories apply to Figure 1:

Adapter ID

Displayed as 0B00 plus EE*6 plus slot

Logical name

Displayed as cpssfcEESP (enclosure, slot, port)

SAID Displayed as 0xEESP

Device adapters

Logical names are displayed as issEESP and adapter IDs are displayed as 0x10XX.

Table 2 on page 8 displays the SAIDs for the associated racks.

Table 2. SAID for racks 1-6








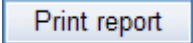
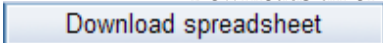
Rack 6		Rack 5		Rack 4		Rack 3		Rack 2		Rack 1	
14 B78	15 B7E	10 B60	11 B66	C B48	D B4E	8 B30	9 B36	4 B18	5 B1E	0 B00	1 B06
16 B84	17 B8A	12 B6C	13 B72	E B54	F B5A	A B3C	B B42	6 B24	7 B2A	2 B0C	3 B12

Chapter 4. DS Storage Manager icons and buttons

This section contains the table icons and buttons that are included in the IBM System Storage DS Storage Manager.

Table icons and buttons

Table 3. Descriptions for table icons and buttons

Table icon	Description
	Selects all items in the table.
	Clears all items in the table.
	Displays a row of filters for the field categories.
	Hides filters for the field categories.
	Removes all filters that you selected.
	Allows you to sort field categories in ascending or descending order.
	Removes all sorted field categories.
	Prints all of the information in the table.
	Downloads all of the information in the table.

Chapter 5. Using hexadecimal values

Use this conversion table to determine the hexadecimal value for a field or DS CLI command parameter that requires a hexadecimal value, or to determine the decimal value for a field or DS CLI command parameter that displays a hexadecimal value, such as the LSS and LUN fields or values.

Purpose

Table 4 provides a list of common decimal to hexadecimal conversion values. For values not listed in the table, you can use the Windows calculator to convert values. From the Windows calculator, click **View**, then **Scientific**. If you are converting from decimal to hexadecimal, ensure that **DEC** is selected in the row of radio buttons, enter a decimal number, and then select **HEX**. If you are converting from hexadecimal to decimal, ensure that **HEX** is selected in the row of radio buttons, enter a hexadecimal number, and then select **DEC**.

Table 4. Decimal to hexadecimal conversion

Decimal	Hexadecimal
1	1
2	2
3	3
4	4
5	5
6	6
7	7
8	8
9	9
10	A
11	B
12	C
13	D
14	E
15	F
16	10
17	11
18	12
19	13
20	14
21	15
22	16
23	17
24	18
25	19

Table 4. Decimal to hexadecimal conversion (continued)

Decimal	Hexadecimal
26	1A
27	1B
28	1C
29	1D
30	1E
31	1F
32	20
64	40
100	64
128	80
200	C8
256	100
500	1F4
1000	3E8
8192	2000
10000	2710
64384	FB80
65280	FF00

Chapter 6. Understanding ESD requirements

Always wear an electrostatic discharge (ESD) wrist strap that is properly connected to the ESD ground bracket when you service this machine. This prevents possible damage to the hardware and decreases any possible impact to your operations.

Purpose

To prevent damage when you work with ESD-sensitive parts, perform these instructions carefully.

- Never touch or work on any electronic circuits without wearing the ESD wrist strap.
- Keep the ESD-sensitive part in a special ESD bag until you are ready to install the part into the machine.
- Make the fewest possible movements with your body to prevent an increase of static electricity from clothing, fibers, carpets, and furniture.
- If you are instructed to do so, switch off the machine power before you remove ESD-sensitive parts.
- Just before you touch the ESD-sensitive part, discharge to the machine any static electricity in your body by touching the metal frame or the cover of the machine. If possible, keep one hand on the frame when you install or remove an ESD-sensitive part.
- Do not place any ESD-sensitive parts on the machine cover or on a metal table because large metal objects can become discharge paths if they are not grounded. If you must set aside an ESD-sensitive part, first place it into the special ESD bag.
- Prevent ESD-sensitive parts from being accidentally touched by others.
- Be very careful when you work with ESD-sensitive parts in cold weather. Low humidity and heating increase static electricity.

Chapter 7. Notices

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This section contains the electronic emission notices or statements for the United States and other countries.

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This Class A digital apparatus complies with Canadian ICES-003.

Cet appareil numérique de la classe A est conform à la norme NMB-003 du Canada.

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This product is in conformity with the protection requirements of EC Council Directive 89/336/EEC on the approximation of the laws of the Member States relating to electromagnetic compatibility. IBM cannot accept responsibility for any failure to satisfy the protection requirements resulting from a nonrecommended modification of the product, including the fitting of non-IBM option cards.

Germany only

Zulassungsbescheinigung laut Gesetz ueber die elektromagnetische Vertraeglichkeit von Geraeten (EMVG) vom 30. August 1995.

Dieses Geraet ist berechtigt, in Uebereinstimmung mit dem deutschen EMVG das EG-Konformitaetszeichen - CE - zu fuehren.

Der Aussteller der Konformitaetserklaeung ist die IBM Deutschland.

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Das Geraet erfuehlt die Schutzanforderungen nach EN 50082-1 und EN 55022 Klasse A.

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Nach dem EMVG:

"Geraete duerfen an Orten, fuer die sie nicht ausreichend entstoert sind, nur mit besonderer Genehmigung des Bundesministeriums fuer Post und Telekommunikation oder des Bundesamtes fuer Post und Telekommunikation betrieben werden. Die Genehmigung wird erteilt, wenn keine elektromagnetischen Stoerungen zu erwarten sind." (Auszug aus dem EMVG, Paragraph 3, Abs.4)

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"Dies ist eine Einrichtung der Klasse A. Diese Einrichtung kann im Wohnbereich Funkstoerungen verursachen; in diesem Fall kann vom Betreiber verlangt werden, angemessene Massnahmen durchzufuehren und dafuer aufzukommen."

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VS07171L

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3F, No 7, Song Ren Rd., Taipei Taiwan
Tel: 0800-016-888

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台灣國際商業機器股份有限公司
台北市松仁路7號3樓
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f2c00790

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This section contains information about safety notices that are used in this guide, environmental notices for this product, publication information, and information about sending your comments to IBM.

Safety notices

Complete this task to find information about safety notices.

To find the translated text for a danger or caution notice:

1. Look for the identification number at the end of each danger notice or each caution notice. In the following examples, the numbers **1000** and **1001** are the identification numbers.

DANGER

A danger notice indicates the presence of a hazard that has the potential of causing death or serious personal injury.

1000

CAUTION:

A caution notice indicates the presence of a hazard that has the potential of causing moderate or minor personal injury.

1001

2. Find the number that matches in the *IBM System Storage Solutions Safety Notices for IBM Versatile Storage Server and IBM System Storage Enterprise Storage Server*, GC26-7229.

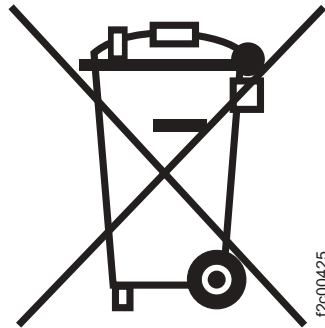
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This section identifies the environmental guidelines that pertain to this product.

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This unit contains recyclable materials.

This unit must be recycled or discarded according to applicable local and national regulations. IBM encourages owners of information technology (IT) equipment to responsibly recycle their equipment when it is no longer needed. IBM offers a variety of product return programs and services in several countries to assist equipment owners in recycling their IT products. Information on IBM product recycling offerings can be found on IBM's Internet site at <http://www.ibm.com/ibm/environment/products/prp.shtml>.



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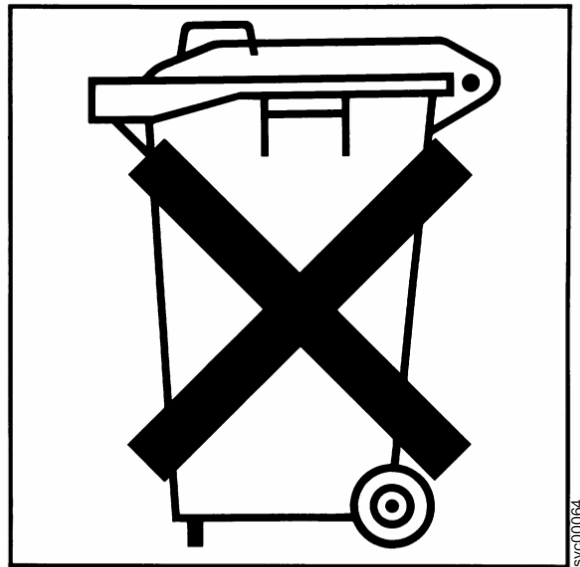
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Please recycle batteries.

廢電池請回收

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Chapter 8. Page help

The page help in this category covers the range of functions that are available in the DS Storage Manager. Clicking on the Arrays topic, for example, presents a list of the help that is available for the specified array-related pages.

Arrays

The topics in this section provide page help related to using the various array pages. If the pages are displayed in a wizard, they are listed in the order that they are displayed.

Arrays — Main page

Use this page to work with established storage arrays.

Introduction

An array is an arrangement of related hard disk drive modules that have been assigned to a group. A disk array is a group of disk drive modules (DDMs) that are arranged in a relationship (for example, a RAID 5 or a RAID 10 array).

Menu path

Real-time manager or Simulated manager → Configure storage → Arrays

Fields

Select storage unit

Specifies the storage unit that is being configured. You must have a storage unit that is configured to perform storage configuration tasks. This field is required.

Refresh button

Refreshes the information in the summary table. The last refresh date and time are also updated.

Last refresh

The most recent date and time of the information that is displayed in the summary table.

Select Allows you to select an array to perform additional actions.

Number

A unique identifier that consists of a storage unit identifier and an array number (for example, A44).

Data State (Real-time only)

The data state indicates the current operational status of the array. The links take you to the status page.

- Normal — The array is in the Normal state if the array is unassigned and none of the other data states apply.
- Attention — The data state is set to one of the following: Degraded, Read-only, or Repairing.

- Degraded — The array is in the Degraded state when one or more array members must be rebuilt. This occurs when a storage device has an array that is rebuilding or when a storage device has failed and would be rebuilding if there was an available spare.
- Read-only — The array is in the Read-only state if one or more storage devices have failed, if there are insufficient spares to supported all rebuild operations, and if continued write operation without redundancy might result in data loss.
- Repairing — The array is in the Repairing state if the array was previously in the failed state and if initialization of the storage devices in the array is now in progress. The data state transitions to the Normal state after the array initialization completes successfully. The data state transitions to the Failed state if the action completes unsuccessfully and there are no other available storage devices to replace those that can not be initialized.
- Failed — The array is in the Failed state if the array is not accessible. Any data on the array is lost. If all storage devices that are associated with the array are accessible and operational, then the array data state automatically transitions to the Repairing state.
- Inaccessible — The array is in the Inaccessible state if the storage unit cannot access a set of storage devices that are sufficient to access all the data on the array. If a sufficient set of storage devices becomes available to access all data on the array, the state automatically returns to the Normal, Degraded, or Read-only state.

RAID The RAID type of the array (for example, RAID 5 or RAID 10) and the array site configuration (for example, 6+P+S, 7+P, 3x2+2S, 4x2). The array site configuration indicates the configuration of the disks within the array sites that are associated with this array. This information determines which storage devices in the array sites are used for which position of the array or which are used as spares. The following array site configurations are defined:

- 4 DDM Configurations:
 - RAID 1 - 1x2+2S
 - RAID 5- 2+P+S, 3+P
 - RAID 10 – 2x2
- 8 DDM Configurations:
 - RAID 5 – 6+P+S – 7+P
 - RAID 10 – 3x2+2S – 4x2

Status The status of the array is set to one of the following values:

- Assigned — The array is assigned to a rank.
- Unassigned — The array is not assigned to a rank and all of the storage devices that are indicated by the disk serial numbers are in the Normal state.
- Unavailable — The array is not assigned to a rank and one or more of the disk drive modules are not in the Normal state.

Rank The unique number that identifies the rank that the array is assigned to (for example, R67). If the array is not assigned to a rank, then the rank is not displayed.

DA Pair

The device adapter (DA) pair number identifies which DA pair is associated with the array (for example, 12).

DDM GB

The disk capacity in gigabytes (for example, 300).

DDM RPM (K)

The disk revolutions in thousands per minute (for example, 15).

DDM Class

The disk class, either enterprise or near-line. Enterprise is a high end disk drive and has the highest reliability. Near-line is a lower end disk drive and has lower reliability than enterprise disk drives. Near-line storage is a compromise between online storage (constant, very rapid access to data) and offline storage (infrequent access for backup purposes or long-term storage). Near-line storage is for applications that require quicker random access, but do not require the continuous, instantaneous access that is provided by online storage.

Actions

Create Allows you to create an array.

Delete Allows you to delete the selected arrays. If the selected arrays currently have volumes using storage on the array, those volumes are deleted when you delete the arrays.

Status Displays the status of the selected arrays.

Add Array to Rank

Allows you to add the selected array to a rank.

Array DDMs

Displays DDM information for the selected arrays.

Add array to rank

Use this page to specify the storage type for the rank.

Introduction

This page is available in the **Select Action** drop-down list only when you select one of the unassigned arrays in the Arrays — Main Page table. If the arrays are not assigned to a rank, that means that the **Add these arrays to ranks** checkbox was not selected during array creation.

Menu path

Real-time manager or Simulated manager → Configure storage → Arrays → Select an unassigned array in the table → Select Action: Add Array to Rank → Go

Fields

Rank number

The unique number that identifies the rank (for example, R67).

Storage type

The supported or available storage types [for example, count key data (CKD) or fixed block (FB)]. This field is required.

- Fixed block – In fixed block architecture, the data (the logical volumes) are mapped over fixed-size blocks or sectors.
- Count key data – In count-key-data architecture, the data field stores the user data.

Array disk drive modules

Use this page to review information for each array in the selected storage unit.

Menu path

Real-time manager or Simulated manager → Configure storage → Arrays → Select an array → Select Action: Arrays DDMs → Go

Fields

DDM serial number (Real-time only)

The 16-digit disk serial numbers that are associated with the eight storage devices in the array site. The ordering of the serial numbers determines the array site position attribute of the storage device.

Location

The location code of the disk drive module.

State (Real-time only)

This value reflects the current DDM status for all DDMs in the array. This value will be one of the following:

- Normal — The DDM is operational and functional in its current disk usage. If it is configured as a spare or array member, there are no unusual operations in progress.
- Installing — A new DDM has been discovered. It is either a replacement DDM for a failed DDM or it is additional capacity that is being added to the storage unit.
- Verifying — The DDM is made accessible to the device adapter, its characteristics are determined, cabling is checked, and diagnostics are run.
- Formatting — A verified DDM requires low-level formatting and the formatting operation is in progress.
- Initializing — The DDM is being initialized with all zero sectors. This is required so that the DDM can be added to an array without regenerating parity.
- Certifying — The DDM is being read accessed to determine that all sectors can be read. If a bad sector is detected, an alternate sector replaces the bad sector.
- New — The storage device is new and integration of the DDM into the system has not begun.
- Missing — The storage device is missing. The DDM has been pulled out from the system and removal has not been processed by the system.
- Rebuilding — Sparing has occurred and this formerly spare DDM is being rebuilt with data from the array for which it is now a member.
- Migration Target — DDM migration is migrating another array member storage device to this spare storage device.
- Migrating Source — DDM migration is migrating this array member DDM to another spare storage device.

- Failed — The storage device has failed and an immediate repair action is required. If spares are available, sparing has been initiated if this DDM was an array member.
- Removed — The storage device is removed. The DDM is not in the system and its removal has been processed by the system.
- Prepared for service — The storage device is prepared for service (for example, going offline or quiescing). The DDM can safely be pulled out without causing any adverse effects.
- Missing, failed — The storage device is missing and the previous state of the device was “Failed” before it was pulled out.
- Removed, failed — The storage device is removed from the system and removal has been processed by the system. The previous state was “Missing, failed.”
- Inappropriate — The storage device is inappropriate for the system. For example, a storage device that is of the wrong capacity or RPM. The DDM is not failed as it may be valid for other systems and locations.
- Interfailed — The resource is operational, but faulty. The resource will fail soon and should be replaced as soon as possible.
- Failed - Deferred Service — The DDM has failed and a repair action is not immediately required. If this DDM was an array member, sparing has been initiated and there are sufficient spares at the time of this failure to allow the service to be deferred.

DDM Usage (Real-time only)

The DDM usage indicates the way that the DDM is currently being used.

- Unassigned — The DDM is not assigned to an array site.
- Unconfigured — The DDM is assigned to an array site, but the array site is not configured and the DDM is not a required spare.
- Spare-Required — The DDM is assigned to an array site and is a required spare.
- Spare-Not Required — The DDM is assigned to an array site that is configured with an array and a spare, but the spare is not a required spare.
- Array Member — The DDM is assigned to an array site that is configured and the array site position of the DDM makes it part of the array.

Disk capacity

The storage capacity of the disk in gigabytes.

Disk RPM

The disk revolutions per minute (for example, 15 000).

Disk Class

The disk class, either enterprise or near-line. Enterprise is a high end disk drive and has the highest reliability. Near-line is a lower end disk drive, and has lower reliability than enterprise disk drives.

Array status (real-time only)

Use this page to view the status of an array.

Introduction

Use the **Refresh** button to obtain current data.

Menu path

Real-time manager → Configure storage → Arrays → Select an array → Select
Action: Status → Go

Fields

Array status

This value reflects the current array status. A description of the array status is displayed in the **Details** column. For example, if the status is "Assigned," the description contains the assigned rank number. This value will be one of the following:

- Assigned — The array is assigned to a rank.
- Unassigned — The array is not assigned to a rank and all of the storage devices that are indicated by the disk serial numbers attribute are in the normal state.
- Unavailable — The array is not assigned to a rank and one or more of the disk drive modules (DDMs) indicated by the disk serial numbers attribute are not in the normal state.

Data state

This value reflects the current data status. A description of the data status is displayed in the **Details** column. This value will be one of the following:

- Normal — The array is in the Normal data state if none of the other data states applies. This status applies if the array is unassigned.
- Degraded — The array is in the Degraded data state if both of the following conditions exist:
 - The Read-only, Failed, Repairing, or Inaccessible data states do not apply
 - One or more redundancy groups are rebuilding (that is, there is a DDM with a rebuilding state in the array)
- Read Only — The array is in the Read-only data state if all of the following conditions exist:
 - The Failed, Repairing, and Inaccessible data states do not apply
 - One or more DDMs have failed
 - There are insufficient spares to support all rebuild operations
 - Continued write operation without redundancy could result in data loss
- Failed — The array is in the Failed data state if all of the following conditions exist:
 - The Repairing and Inaccessible data states do not apply
 - Two or more DDMs in the array have failed
 - There are insufficient DDMs left in the array to rebuild the data that was lost on the failing storage devices

All data on the array has been lost.

- Repairing — The array is in the Repairing data state if all of the following conditions exist:
 - The Inaccessible data status does not apply
 - The array has previously entered the failed state
 - The repair array function has been accepted
 - The repair array function has not completed

The data status returns to Normal if the array repair completes successfully, or it returns to Failed if the array repair action completes unsuccessfully.

- Inaccessible — The array is in the Inaccessible data state if the storage unit cannot access a set of storage devices that are sufficient to access all the data on the array.

DDM state

This value reflects the current DDM status for all DDMs in the array. A description of the DDM status is displayed in the Details column. For example, if all DDMs are Normal, DDM state is Normal. (If one of the 8/16 DDMs in the array is not normal, the table is presented with **Serial Number**, **State**, and **Description** fields.) This DDM state value will be one of the following:

- Normal — The DDM is operational and functional in its current disk usage. If it is configured as a spare or array member, there are no unusual operations in progress.
- Installing — A new DDM has been discovered. It is either a replacement DDM for a failed DDM or it is additional capacity that is being added to the storage unit.
- Verifying — The DDM is made accessible to the device adapter, its characteristics are determined, cabling is checked, and diagnostics are run.
- Formatting — A verified DDM requires low-level formatting and the formatting operation is in progress.
- Initializing — The DDM is being initialized with all zero sectors. This is required so that the DDM can be added to an array without regenerating parity.
- Certifying — The DDM is being read accessed to determine that all sectors can be read. If a bad sector is detected, an alternate sector replaces the bad sector.
- New — The storage device is new and integration of the DDM into the system has not begun.
- Missing — The storage device is missing. The DDM has been pulled out from the system and removal has not been processed by the system.
- Rebuilding — Sparing has occurred and this formerly spare DDM is being rebuilt with data from the array for which it is now a member.
- Migration Target — DDM migration is migrating another array member storage device to this spare storage device.
- Migrating Source — DDM migration is migrating this array member DDM to another spare storage device.
- Failed — The storage device has failed and an immediate repair action is required. If spares are available, sparing has been initiated if this DDM was an array member.
- Removed — The storage device is removed. The DDM is not in the system and its removal has been processed by the system.
- Prepared for service — The storage device is prepared for service (for example, going offline or quiescing). The DDM can safely be pulled out without causing any adverse effects.
- Missing, failed — The storage device is missing and the previous state of the device was “Failed” before it was pulled out.

- **Removed, failed** — The storage device is removed from the system and removal has been processed by the system. The previous state was “Missing, failed.”
- **Inappropriate** — The storage device is inappropriate for the system. For example, a storage device that is of the wrong capacity or RPM. The DDM is not failed as it may be valid for other systems and locations.
- **Interfailed** — The resource is operational, but faulty. The resource will fail soon and should be replaced as soon as possible.
- **Failed - Deferred Service** — The DDM has failed and a repair action is not immediately required. If this DDM was an array member, sparing has been initiated and there are sufficient spares at the time of this failure to allow the service to be deferred.

View DDMs button

Displays the Array DDMs page. This button is shown and enabled only when the DDM state table for non-normal DDMs is displayed.

Create array — Definition method

Use this page to specify the method that you want to use to define the arrays.

Introduction

This page allows you the option of specifying the array sites yourself or of having the application specify them. The choice that you make here determines which page is displayed next in the process of creating arrays.

Menu path

Real-time manager or Simulated manager → **Configure storage** → **Arrays** → **Select Action: Create...** → **Go**

Fields

Create arrays automatically

If you choose this option, the array sites are automatically selected. The next page is Array configuration (Auto).

Create custom arrays

If you choose this option, you must select the array sites for the arrays. The next page is Array configuration (Custom).

Create array — Array configuration (auto)

Use this page to specify the quantity and RAID type for the arrays.

Introduction

This page is displayed when you choose to have the application specify the array sites. You must add at least one array before you can proceed to the next page. After you complete the input fields, select **Next**. The Add array to rank page is displayed.

Menu path

Real-time manager or Simulated manager → **Configure storage** → **Arrays** → **Select Action: Create...** → **Go**

Fields

Quantity of arrays with 73 GB, 15K RPM drives

Displayed only if these DDM types are physically installed in the storage unit. If this DDM type is installed, the maximum number is the number that is installed. You can overwrite the current default value and enter up to the maximum value (number of installed or number of unformatted) for the configuration of the specified RAID type.

Quantity of arrays with 146 GB, 10K RPM drives

Displayed only if these DDM types are physically installed in the storage unit. If this DDM type is installed, the maximum number is the number that is installed. You can overwrite the current default value and enter up to the maximum value (number of installed or number of unformatted) for the configuration of the specified RAID type.

Quantity of arrays with 300 GB, 10K RPM drives

Displayed only if these DDM types are physically installed in the storage unit. If this DDM type is installed, the maximum number is the number that is installed. You can overwrite the current default value and enter up to the maximum value (number of installed or number of unformatted) for the configuration of the specified RAID type.

Quantity of arrays with 500 GB, 7.2K RPM drives

Displayed only if these DDM types are physically installed in the storage unit. If this DDM type is installed, the maximum number is the number that is installed. You can overwrite the current default value and enter up to the maximum value (number of installed or number of unformatted) for the configuration of the specified RAID type.

RAID type

The supported or available RAID types (for example, RAID 5 and RAID 10). This field is required.

Create an 8 disk array

Select this checkbox to make the array that you are creating an 8-disk array.

Create array — Array configuration (custom)

Use this page to specify the array configuration.

Introduction

This page is displayed when you choose to specify the array configuration rather than have it specified automatically. Complete the input fields and select **Next**. The Add arrays to ranks page is displayed.

Menu path

Real-time manager or Simulated manager → Configure storage → Arrays → Select Action: Create... → Go

Fields

RAID type

The supported or available RAID types (for example, RAID 5 and RAID 10). This field is required.

Create an 8 disk array

The checkbox that you select to make the array an 8-disk array.

Array sites for arrays

The available array sites for creating arrays. You must select at least one array site from the table, and no more than half of the available array sites. This allows you to have enough space to configure a second array site. The table columns are defined as follows:

Select Allows you to select an array site.

Array Site Number

The identifying number for the array site (for example, S1123).

DA Pair

The device adapter (DA) pair number which identifies the DA pair that is associated with the array (for example, 11).

DDM capacity

The specified capacity in gigabytes (for example, 146 or 300).

RPM The revolutions per minute (for example, 15 000).

Class The disk class, either enterprise or near-line. Enterprise is a high end disk drive and has the highest reliability and near-line is a lower end disk drive that has lower reliability than enterprise disk drives. Near-line storage is a compromise between online storage (constant, very rapid access to data) and offline storage (infrequent access for backup purposes or long-term storage). Near-line storage is for applications that require quicker random access, but do not require the continuous, instantaneous access that is provided by online storage.

Create array — Second array-site selection (custom)

Use this page to specify the second array site for multiple site arrays.

Introduction

This page is displayed if you select a multiple site array or if you check the Create an 8-disk array check box during custom configuration. Complete the input fields and select **Next**. The Add arrays to ranks page is displayed.

Menu path

Real-time manager or Simulated manager → Configure storage → Arrays → Select Action: Create... → Go

Fields

Select second array sites for multiple-site arrays

For each array site that you selected for this configuration, you can select a second array site for that array. Only the compatible array sites are displayed for selection. To be compatible, the second array site must have the same device adapter pair and the same disk characteristics (capacity, rpm, interface type, and interface rate).

Create array — Add arrays to rank

Use this page to add arrays to ranks.

Menu path

Real-time manager or Simulated manager → Configure storage → Arrays → Select Action: Create... → Go

Fields

Add these arrays to ranks

Indicates that the new arrays will be put into ranks (checked) or indicates that the new arrays will not be put into ranks (unchecked). If this box is checked, the **Storage type** field is required.

Storage type (Required if box above is checked)

The type of extent for which the rank is to be configured.

Note: Once you select either count key data (CKD) or fixed block (FB), the arrays are assigned.

The storage type can be set to one of the following values:

- Fixed block (FB) extents -- 1 GB. In fixed block architecture, the data (the logical volumes) are mapped over fixed-size blocks or sectors.
- Count key data (CKD) extents -- CKD Mod 1. In count-key-data architecture, the data field stores the user data.

Create array — Verification

Use this page to view the list of properties that represent the array.

Menu path

Real-time manager or Simulated manager → Configure storage → Arrays → Select Action: Create... → Go

Fields

RAID type

The RAID array types that are specified during the process of creating new arrays (for example, RAID 5 or RAID 10).

Quantity of ranks created

The number of ranks that are created if the arrays are converted into ranks.

Array number

The unique array identifier, consisting of a storage unit identifier and an array number (for example, A44).

Primary array site

The selected array site (for example, S21).

Secondary array site

The selected second array site. This item is displayed only if multiple array sites are specified for the configuration.

DA pair

The device adapter (DA) pair number, consisting of a storage unit identifier and a DA pair number, identifies which DA pair is associated with the array (for example, 12).

Configuration files

The topics in this section present information related to managing and creating enterprise configuration files. The information includes the purpose of a page, its field definitions, and a menu path to find it.

Manage configuration files (simulated only)

Use this page to view and manage enterprise configuration files.

Introduction

The default sorting on this page is alphabetical, by enterprise name. If no enterprises exist, the table is displayed with no rows of data.

Menu path

Simulated manager → **Manage configuration files**

Fields

Select The radio buttons for the enterprise configuration files.

Enterprise name

The user-defined or default name.

Date created

Indicates when the enterprise configuration file was created.

Date last modified

Indicates when the enterprise configuration file was last modified.

State Indicates whether the configuration file is open or closed.

Create new configuration file (simulated only)

Use this page to create a new enterprise configuration file for an offline configuration.

Introduction

Creating a configuration file in simulated mode allows you to create logical configurations when disconnected from the network. After creating the configuration file, you can save it and then apply it to a new or de-configured Storage Unit at a later time.

Note: This task is only necessary if you plan to have multiple configuration files. Otherwise, you can use the default configuration file.

The benefits of simulated configuration are as follows:

- Practice performing logical configurations using the GUI, without connection to an actual machine
- Determine the ideal configuration prior to applying it
- Apply a pre-created configuration file at the time of your choice

The file will contain information for one or more storage complexes, one or more storage units (including both physical and logical), and one or more host systems. Once you select this item from the **Select Action** drop-down list, the work area displays the Welcome page.

Only one configuration file is permitted. If there is another configuration file on the storage unit, you will receive the following error message:

Only one enterprise configuration can be open at any time.
Select OK to save the current configuration. Select Continue to continue without saving the current configuration.

- Select **OK** if you plan to use the existing configuration file
- Select **Continue** to proceed with creating a new configuration file

Menu path

Simulated manager → Manage configuration files → Select Action: Create new... → Go

Save as configuration file (simulated only)

Use this page to save an enterprise configuration file with a name that you specify.

Introduction

This page allows you to save a configuration file under a name that you specify.

Menu path

Simulated manager → Manage configuration files

Fields

Enterprise file name

The user-defined or default name. This field is limited to 16 characters and is required. If you select Cancel, the default name or the name that was last saved will remain unchanged.

Description

The configuration file description. This field is optional.

Import configuration files (simulated only)

Use this page to import enterprise configuration files.

Introduction

The purpose of a pre-created configuration file is to determine the ideal configuration prior to applying it, and provide the flexibility to apply it at the appropriate time. In addition, a configuration from an already configured machine can be applied to one or more machines.

Pre-created configuration files are often created by IBM sales specialists and business partners to make configuration quick and easy. There are three types of configuration files you can import:

1. Existing simulated configuration file
2. eConfig File (.cfr)
3. XML File (.xml)

Note: This page is used to import XML files only.

To import an existing simulated configuration file, create a new configuration file and then go to: **Simulated manager** → **Manage hardware** → **Storage Unit** → **Select Action: Import** → **Go**

To import an eConfig file, create a new configuration file and then go to: **Simulated manager** → **Manage hardware** → **Storage Unit** → **Select Action: Import from eConfig File** → **Go**

The XML file contains information for one or more storage complexes, one or more storage units (including both physical and logical), and one or more host systems. Import an XML configuration file to apply a pre-created XML-based configuration to storage.

Menu path

Simulated manager → **Manage configuration files** → **Select Action: Import** → **Go**

Fields

Select file to import

The XML enterprise configuration file to import.

Browse button

Displays the browse dialogue so that you can select the configuration file that you want to import from your local workstation. Look for a file with an .xml extension.

Configure storage

The topics in this section present information related to configuring storage. The information includes the purpose of a page, its field definitions, and a menu path to find it.

Express configure — Express path: definition method

Use this page to initiate the task of configuring volumes.

Introduction

Depending on the type of volumes that you are configuring, you can select to enable volume group creation, host creation, or host mapping. You can use express configuration for creating single host volumes, and you can mix volume types within a configuration.

Menu path

Real-time manager or Simulated manager → **Configure storage** → **Express configuration wizard**

Select a storage unit

Select the storage unit for the volume that you are configuring. You must create the storage unit before you can configure volumes.

Select volume type

Select the volume type for the volume to configure.

Express configure — Open systems volumes

Use this page to create open systems volumes.

Introduction

You can select the RAID type, amount of space to configure, and volume quantity or volume size for your open system volumes.

Menu path

Real-time manager or Simulated manager → Configure storage → Express configuration wizard

Select RAID type

Select the RAID type for the open systems volumes in the storage complex.

RAID 5

Select to configure the most capacity for the open systems volumes in the storage complex.

RAID 10

Select to configure the highest performance for the open systems volumes in the storage complex.

Total available storage

The total amount of unused storage that you can configure for the open system volumes.

Select the amount of available storage to configure

The amount of space to configure for the volumes in the storage complex.

Amount of available storage to use

The percentage of the unused space that you want to configure for the volumes.

User defined (GB)

Enter a number less than or equal to the total unused capacity.

User defined (%)

Enter a percent of the total unused capacity.

Volume size

The maximum size (in 1 GB increments) for each of the open systems volumes in the storage complex.

Volume quantity

The number of open systems volumes to configure for the storage complex.

Calculate button

Click to calculate either the maximum size for each of the volumes or the number of volumes for the storage complex, depending on the parameters that you selected for the amount of available storage. Two of the three parameters must be provided.

Total available volumes

The maximum number of open systems volumes that you can configure for the storage complex.

Create host

Select to enable host creation in this configuration. If you select this check box, additional pages appear for host creation during this configuration.

Express configure — iSeries volumes

Use this page to create iSeries volumes.

Introduction

You can select the RAID type, volume type, volume size, and amount of space to configure for your iSeries volumes.

Menu path

Real-time manager or Simulated manager → Configure storage → Express configuration wizard

Select RAID type

Select the RAID type for the iSeries volumes in the storage complex.

RAID 5

Select to configure the most capacity for the iSeries volumes in the storage complex.

RAID 10

Select to configure the highest performance for the iSeries volumes in the storage complex.

Total available storage

The total amount of unused storage that you can configure for the iSeries volumes.

Select volume type

The type of iSeries volume (protected or unprotected) for the storage complex.

Set volume size

The size for each of the iSeries volumes in the storage complex.

Amount of available storage to use

The percentage of the unused space that you want to configure for the iSeries volumes.

User defined (GB)

Enter a number (in 1 GB increments) less than or equal to the total unused capacity.

User defined (%)

Enter a percent of the total unused capacity.

Volume quantity

The number of iSeries volumes to configure for the storage complex.

Calculate button

Click to calculate either the maximum size for each of the volumes or the number of volumes for the storage complex, depending on the parameters that you selected for the amount of available storage. Two of the three parameters must be provided.

Total available volumes

The maximum number of iSeries volumes you can configure for the storage complex.

Create host

Select to enable host creation in this configuration. If you select this check box, additional pages appear for host creation during this configuration.

Express configure — zSeries volumes

Use this page to create zSeries volumes.

Introduction

You can select the RAID type, volume type, and amount of space to configure for your zSeries volumes.

Menu path

Real-time manager or Simulated manager → Configure storage → Express configuration wizard

Select RAID type

Select the RAID type for the zSeries volumes in the storage complex.

RAID 5

Select to configure the most capacity for the zSeries volumes in the storage complex.

RAID 10

Select to configure the highest performance for the zSeries volumes in the storage complex.

Total available storage

The total amount of unused storage that you can configure for the zSeries volumes.

Volume type

The type of zSeries volume (3380 Mod 2, 3380 Mod 3, 3390 Custom, 3390 Standard Mod 3, and 3390 Standard Mod 9) for the storage complex.

Select amount of available storage to configure

The amount of space to configure for the zSeries volumes in the storage complex.

Amount of available storage to use

Select to enter the amount of unused space that you want to configure for the zSeries volumes.

User defined (GB)

Enter a number less than or equal to the total unused capacity.

User defined (%)

Enter a percent of the total unused capacity.

Volume quantity

The number of zSeries volumes to configure for the storage complex.

Calculate

Click to calculate either the volume quantity or the amount of unused storage to configure, depending on the parameters that you selected. Two of the three parameters must be provided.

Total available addresses

The maximum number of addresses that you can configure for the storage complex. This number includes new LCUs.

Express configure — LCU/SSID

Use this page to set up a logical control unit.

Introduction

You can specify the appropriate starting logical control unit (LCU), LCU type, and SSID for the storage complex.

Menu path

Real-time manager or Simulated manager → Configure storage → Express configuration wizard

Select starting LCU

Select a starting LCU from the list of all available LCUs on the system.

LCU type

The CKD base control unit type for the LCU that you are defining.

SSID The SSID for the LCU that you are defining. The default is the next available SSID in order of creation, but you can highlight and type over the number to change it.

PAVs Indicates that the PAV feature is activated. If PAVs does not appear, the PAV feature is not active.

Define number of aliases per base

Select to enable entering the number of aliases per base.

Aliases/Base

Enter the number of aliases per base.

Utilize all addresses in each LCU

Select to utilize all the addresses in the specified number of LCUs for the quantity of base volumes created.

Spread volumes equally across LCUs

Select to spread the quantity of base volumes created in the specified number of LCUs equally across the LCUs.

Number of LCUs to create

The number of new LCUs to configure for the storage complex. This is limited to the number of available LCUs on the server. To change, highlight the number and type over it.

Total LCUs will be created

The number of LCUs that will be created with your configuration. This number is calculated using the percentage of available storage and the type of volume you selected.

Express configure — Set volume naming

Use this page to generate a sequence of nicknames for the volumes that you are creating.

Introduction

You can specify an alphabetic prefix and a numeric suffix for the volumes.

Menu path

Real-time manager or Simulated manager → Configure storage → Express configuration wizard

Quantity of volumes

The number of volumes in the storage complex.

Generate a sequence of nicknames based on the following

Click to specify a sequence of volume names for the volumes.

Use hexadecimal sequence

Click to specify a hexadecimal sequence for the volumes.

Verify nicknames are unique

Select to verify whether volume names that are generated here are unique. The storage unit is queried for existing volume names, which are then compared to the new names. This process can take an extensive amount of time.

Prefix A character string that precedes the nickname.

Numeric suffix

A decimal or hexadecimal value that follows the nickname. This number increases sequentially for the number of volumes that are created.

Express configure — Group volumes

Use this page to group volumes for management.

Introduction

You can select volumes to add to a volume group. The volume groups are used to assign hosts to volumes.

Menu path

Real-time manager or Simulated manager → Configure storage → Express configuration wizard

Volume group name

A name for the volume group consisting of up to 16 characters.

Select volumes

Table used to select volumes to add to the volume group.

Volume name

The nickname for the volume.

Volume number

The volume number generate by the system.

Express configure — General host information

Use this page to enter host information.

Introduction

You can specify the host type, host nickname, and host description.

Menu path

Real-time manager or Simulated manager → Configure storage → Express configuration wizard

Host system

The host system for the storage complex configuration.

Nickname

The name for the storage complex host. You can enter up to 16 characters.

Description

The optional description for the storage complex host. You can enter up to 256 characters.

Express configure — Host ports

Use this page to set the quantity and type of host ports.

Introduction

You can group host ports and define WWPNs.

Menu path

Real-time manager or Simulated manager → Configure storage → Express configuration wizard

Quantity

The maximum number of host ports.

Type The host attachment type.

Group ports to share common set of volumes

Select to group the number of ports in the Quantity field. This group is treated as a single host attachment.

Express configure — Define WWPNs

Use this page to identify valid WWPNs for the host attachment.

Introduction

An identifier is a mechanism to reference each defined grouping of host attachments.

Menu path

Real-time manager or Simulated manager → Configure storage → Express configuration wizard

WWPNs for host attachment

The 16-digit WWPNs for each host port that is included in the identifier. Either select or enter a 16-digit WWPN.

Express configure — Assign host to volume group

Use this page to map a volume group to the host attachment.

Menu path

Real-time manager or Simulated manager → Configure storage → Express configuration wizard

Assign host attachment to volume group

Select to create the mapping for the volume group to the host attachment.

Current volume group

If a volume group was created, information for that volume group appears.

Current host identifier

If a host attachment was created, the host identifier appears with details below it.

Express configure — Verification

Use this page to review the information you entered for the configuration.

Introduction

The fields that appear on this page depend on the volume type, volume nicknaming, volume grouping, the host, and host attachment mapping.

Menu path

Real-time manager or Simulated manager → Configure storage → Express configuration wizard

Open systems volumes

If you selected open systems volumes for this configuration, the following information appears.

Field	Description
Volume type	Standard open systems
RAID type	RAID 5 or RAID 10
Amount of storage used	Number in GB
Volume size	Number in GB
Number of volumes created	Number representing quantity of volumes
Volume Nicknames	If nicknames are defined, this displays the range of character strings
Volume group name	If volume groups are defined, this displays the names
Number of volumes in group	Number of volumes you selected for the group
Host system type	Host attachments
Host nickname	If nicknames are defined, this displays the nicknames
Host identifier	System mechanism for referencing a host attachment group
Quantity host ports	Number of host ports in the configuration
Host port type	Type of host ports selected for the configuration
Host ports grouped	Indication of host port grouping

iSeries volumes

If you selected iSeries volumes for this configuration, the following information appears.

Field	Description
Volume	iSeries
RAID type	RAID 5 or RAID 10

Field	Description
Amount of storage used	Number in GB
Volume size	Number in GB
Volume type	Protected or unprotected
Number of volumes created	Number representing quantity of volumes
Volume Nicknames	If nicknames are defined, this displays the range of character strings
Volume group name	If volume groups are defined, this displays the names
Number of volumes in group	Number of volumes you selected for the group
Host system type	Host attachments
Host nickname	If nicknames are defined, this displays the nicknames
Host identifier	System mechanism for referencing a host attachment group
Quantity host ports	Number of host ports in the configuration
Host port type	Type of host ports selected for the configuration
Host ports grouped	Indication of host port grouping

zSeries volumes

If you selected zSeries volumes for this configuration, the following information appears.

Field	Description
Volume type	zSeries
RAID type	RAID 5 or RAID 10
Volume type	3380 Mod 2, 3380 Mod 3, 3390 Standard Mod 3, 3390 Standard Mod 9, 3390 Standard Mod 27
Amount of storage used	Number in GB
Volume size	Number displayed in both GB and cylinders
Number of volumes created	Number representing quantity of volumes
Starting LCU	The name of the LCU
Number of LCUs created	If you entered a number of LCUs in the configuration, it appears. If you did not enter a number, the system default appears.
SSID	If you entered a number of SSIDs in the configuration, it appears. If you did not enter a number, the system default appears.
Number aliases/base	The Range of character strings you entered in the configuration
Volume Nicknames	If nicknames are defined, this displays the range of character strings

Extent pools

The topics in the section provide information that is related to using the extent pool pages. If the pages are displayed in a wizard, they are listed in the sequence that they are displayed.

Extent pools — Main page

Use this page to create new extent pools or to modify, delete, or view information about existing extent pools for a selected storage unit.

Introduction

The work area displays a drop-down list to select a storage unit and a multi selection table with a toolbar and a drop-down action list. The default table sort order is by extent pool nickname. If no extent pools exist, the table appears in the work area with the table toolbar, column headers and table footer but no rows of data.

Menu path

Real-time manager or Simulated manager → Configure storage → Extent pools

Fields

Select storage unit

The nicknames of storage units that are available for selection. This list includes any nickname that is associated with any storage unit that is currently displayed in the Storage units main page. The default value for this field is "None selected".

Select The check boxes for selecting items in the table on which to perform actions on the extent pools displayed. The default value for this field is not selected.

Nickname

The user- or system-defined nickname for the extent pool, limited to 16 characters. The nickname is a link to the Extent Pool Properties page. You can change the values for the Nickname, Storage threshold, and Reserved storage attributes on the Extent Pool Properties page. Nicknames are created by the user when resources are created and are used as part of an overall scheme or naming convention for making resources easier to identify and manage.

Number

A 4-decimal digit extent pool number with no leading zeroes, prefixed by the letter *P* (for example, P5). Even numbered extent pools are associated with rank group 0. Odd numbered extent pools are associated with rank group 1.

Storage Type

The extents of the ranks are formatted in the architecture associated with the specified storage type. The extent pool storage type determines the volume storage type. One of the following values displays:

- **FB.** These are fixed block extents - 1 GB. In fixed block architecture, the data (the logical volumes) are mapped over fixed-size blocks or sectors. Use the FB storage type for open-systems host volumes.

- CKD. These are count-key-data extents - CKD Mod 1. In count-key-data architecture, the data field stores the user data. Use the CKD storage type for IBM eServer™ zSeries® or S/390® volumes.

RAID The type of RAID that is used by the ranks in the extent pool. RAID is a methodology for grouping disk drives to protect against data loss from a failing disk drive. One of the following values is displayed:

- RAID 5. A type of RAID that optimizes cost-effective performance while emphasizing use of available capacity through data striping. RAID 5 provides fault tolerance for up to two failed disk drives by distributing parity across all the disk drives in the array plus one parity disk drive.
- RAID 10. A type of RAID that optimizes high performance while maintaining fault tolerance for up to two failed disk drives by striping volume data across several disk drives and mirroring the first set of disk drives to an identical set of disk drives.
- Mixed. Is displayed only if you have assigned a rank to the extent pool and the array that was used to create the newly added rank has a different RAID type than the existing RAID type of the extent pool. The RAID type conversion operation might take some time to complete, and the RAID type remains Mixed until the conversion completes. The RAID type remains Mixed if you have chosen not to convert the RAID type of the newly added rank to ensure that all ranks in the extent pool have the same RAID type.
- Not specified. Is displayed when no ranks have been assigned to the extent pool.

Primary Server

The server enclosure processor card of the storage unit from which the extent pool is accessed under normal operating conditions when both of the server enclosure processor cards are operating in dual mode. Each extent pool is defined to be accessed by only one primary server. Valid values are 0 and 1. The processor cards are located in the rear of the enclosure. One of the cards is below the rear operator panel and above the battery backup units. The other card is located below the battery backup units and above the system service card.

Ranks The number of ranks that are assigned to the extent pool. The value is an integer between 0 and 128.

Total GB

The total amount of potentially usable storage in the extent pool in gigabytes.

Reserved %

The user-defined percentage of extents in the extent pool that the storage unit is not allowed to allocate. The value for Reserved % is an integer between 0 and 100. When the extent pool is created or modified, the field is named Reserved storage (%) and the default value is 0, which indicates that no extents are reserved. This value can be changed by the Modify... action or on the Extent Pool Properties page.

Available GB

The amount of storage in the extent pool that is not allocated and not reserved, in gigabytes.

Threshold Exceeded

A Yes or No value that indicates if the percentage of unavailable storage is greater than the Storage threshold percentage. The Storage threshold

provides a warning when the percentage of unavailable space in the extent pool exceeds a user specified percentage. The Storage threshold is a user defined percentage of the total number of extents in the extent pool. The Storage threshold is an integer value between 0 and 100, and defaults to 100 if it is not specified when the extent pool is created. Unavailable GB is determined by subtracting Available GB from Total GB. The percentage of Unavailable GB is determined by dividing Unavailable GB by Total GB. Percentage of Unavailable GB is the percentage of storage in the extent pool that is no longer available for creating new volumes.

A "Yes" value for Threshold Exceeded indicates that the percentage of Unavailable GB is greater than the Storage threshold. A "No" value indicates that the percentage of Unavailable GB is less than or equal to the Storage threshold. The Threshold Exceeded value (Yes or No) is a link to the Extent Pool Properties page. You can change the values for the Nickname, Storage threshold and Reserved storage attributes on the Extent Pool Properties page.

Actions

Create...

This action is always available on this page. When you select Create..., the Create Extent Pool->Definition method page is displayed in the work area. This page is the first page of the Create Extent Pool wizard.

Delete This action is available when you select one or more extent pools in the table. When you select Delete, a confirmation warning message is displayed. If you click Continue on the message, you delete the selected extent pool and any volumes that are configured from the selected extent pool.

Modify...

This action is available when you select one extent pool in the table. When you select Modify..., the Modify Extent Pool->Define properties page is displayed in the work area. This page is the first page of the Modify Extent Pool wizard. Use the Modify... action to change the nickname and Reserved storage for the selected extent pool.

Properties

This action is available when you select one extent pool in the table. When you select Properties, the Extent Pool Properties page displays the attributes of the selected extent pool and their corresponding values. You can change the values for all three of the displayed attributes on the Extent Pool Properties page, which are Nickname, Storage threshold, and Reserved storage.

Create extent pool — Definition method

Use this page to specify a method for defining the extent pool.

Introduction

This page allows you to create automatic or custom extent pools and to specify extent pool parameters. You must select one of the radio buttons. The next page to appear depends on your selection.

Menu path

Real-time manager or Simulated manager → Configure storage → Extent pools → Select Action: Create... → Go

Fields

Create extent pool automatically based on storage requirements

With this option, the necessary arrays and ranks are automatically created and put into the extent pool based on the storage requirements. After you select **Next**, the Define extent pool requirements page is displayed.

Create custom extent pool

With this option, you must select the ranks for the extent pool. After you select **Next**, the Define extent pool properties page is displayed.

Create extent pool — Define extent pool requirements

Use this page to define the storage requirements for this extent pool.

Introduction

In this page, you can create the applicable arrays and ranks for the extent pool. The arrays are formatted in the specified RAID type, and the ranks are formatted in the specified storage type. The storage amount is rounded up to the nearest array size to support the specified amount of storage.

Menu path

Real-time manager or Simulated manager → Configure storage → Extent pools → Select Action: Create... → Go

Fields

Nickname

The user- or system-defined nickname. If you choose to keep the default nickname, the number in subsequent default nicknames increases by 1 (for example, Extent pool 1, Extent pool 2).

Storage type

The supported or available storage types [for example, count key data (CKD) or fixed block (FB)].

RAID

The supported or available RAID types (for example, RAID 5 and RAID 10).

Required amount of storage

The amount of storage required for the extent pool up to the maximum available. The default is the total available RAID 5 storage in the specified unit (GB or TB).

Note: An extent pool uses all of the available storage in arrays or ranks that make up the extent pool, even if you specify a storage amount that is less than the entire array or rank storage amount. For example, if you have a 385 GB rank and need 100 GB of storage, your extent pool will contain 385 GB of storage. However, if you

have two ranks with 100 GB of storage in each rank and you need 120 GB in your extent pool, your extent pool will contain two ranks with 200 GB of storage.

Unit The amount of storage in terms of gigabytes (GB) or terabytes (TB).

Use any existing unassigned arrays and ranks

If checked, the application creates the extent pool by using existing arrays and ranks as well as creating new arrays and ranks. If not checked, the application does not use any existing arrays or ranks to create the extent pool.

Create extent pool — Define extent pool properties

Use this page to define the properties for the extent pool.

Menu path

Real-time manager or Simulated manager → Configure storage → Extent pools → Select Action: Create... → Go

Fields

Nickname

The user- or system-defined nickname. If you choose to keep the default nickname, the number in subsequent default nicknames increases by 1 (for example, Extent pool 1, Extent pool 2).

Storage type

The supported or available storage types [for example, count key data (CKD) or fixed block (FB)].

RAID

The supported or available RAID types (for example, RAID 5 and RAID 10).

Select server

The default (0 or 1) is a function of which server has fewer extents currently defined in extent pools. This selection determines on which side of the storage unit the extent pool will be located.

Create extent pool — Select ranks

Use this page to select the ranks for the extent pool.

Introduction

You must select at least one rank. If no ranks are displayed, you can create a rank by completing the process that begins when you click on the **Create new rank** button.

Menu path

Real-time manager or Simulated manager → Configure storage → Extent pools → Select Action: Create... → Go

Fields

Available ranks

You must select at least one rank. The columns are as follows:

Select The radio buttons for the ranks.

Number

The rank number (for example, R67).

RAID The supported or available RAID types (for example, RAID 5 and RAID 10).

Total GB

The total amount of available usable storage in gigabytes.

Create new rank button

Creates a new rank. After you complete the rank creation process, the table resets to display the new rank, which you can then select for the extent pool.

Create extent pool — Reserve storage

Use this page to enable and define any reserved storage for the extent pool.

Menu path

Real-time manager or Simulated manager → Configure storage → Extent pools → Select Action: Create... → Go

Fields

Reserved storage %

The amount of storage that you choose to reserve for later use. This allows you to optionally reserve a percentage of your storage for later as overhead. This amount is a function of the designated extent limit. The extent limit is the maximum number of extents that the storage unit should allow to be allocated in this extent pool.

Create extent pool — Verification

Use this page to view properties and basic capacity calculations for the new extent pool.

Menu path

Real-time manager or Simulated manager → Configure storage → Extent pools → Select Action: Create... → Go

Fields

Nickname

The nickname of the extent pool.

Storage type

The value that was specified in the wizard (CKD or FB).

RAID type

The value that was specified in the wizard (for example, RAID 5 or RAID 10).

Quantity of ranks

The quantity of ranks to be assigned to the extent pool.

Reserved storage %

The amount of storage that you choose to reserve for later use. This

amount is a function of the designated extent limit. The extent limit is the maximum number of extents that the storage unit should allow to be allocated in this extent pool.

Total requested storage (GB or TB)

For the automatic path. The total requested storage specified in the Define requirements page.

Total usable storage (GB)

For the custom path. The total amount of usable or effective storage in ranks specified in the Define extent pool properties page minus the reserve storage defined in the Reserve storage page.

Extent pool properties

Use this page to modify the nickname and define and view thresholds for storage use in the specified extent pool.

Introduction

Use the **General** tab to access the page fields.

Menu path

Real-time manager or Simulated manager → Configure storage → Extent pools → Select an extent pool → Select Action: Properties... → Go

Fields

Nickname

The currently defined nickname or a default nickname (for example, extent pool 1, extent pool 2). The nickname is limited to 16 characters.

Storage threshold (%)

The threshold for used storage in this extent pool.

Reserved storage (%)

The amount of reserved storage in this extent pool.

Modify extent pool — Define extent pool properties

Use this page to modify the properties for the extent pool.

Introduction

A modification is valid only for the **Nickname** on this page.

Menu path

Real-time manager or Simulated manager → Configure storage → Extent pools → Select an extent pool → Select Action: Modify... → Go

Fields

Nickname

The user- or system-defined nickname. If you choose to keep the default nickname, the number in subsequent default nicknames increases by 1 (for example, Extent pool 1, Extent pool 2).

Storage type

The supported or available storage types [for example, count key data (CKD) or fixed block (FB)].

RAID type

The supported or available RAID types (for example, RAID 5 and RAID 10).

Select server

The default (0 or 1) is a function of which server has fewer extents currently defined in extent pools. This selection determines on which side of the storage unit the extent pool will be located.

Modify extent pool — Select ranks

Use this page to modify the ranks for the extent pool.

Introduction

You can add a rank to an extent pool at any time if the status of the rank is unassigned. You can remove a rank from an extent pool only if no extents are used on that rank.

Menu path

Real-time manager or Simulated manager → Configure storage → Extent pools → Select an extent pool → Select Action: Modify... → Go

Fields

Currently Defined and Available Ranks

Select at least one rank. The columns are as follows:

Select The check boxes for the ranks.

Number

The rank number (for example, R67).

RAID The supported or available RAID types (for example, RAID 5 and RAID 10).

Total GB

The total amount of available usable storage in gigabytes.

Create new rank button

Creates a new rank. After you create the new rank, the table refreshes and you can select the new rank for this extent pool.

Modify extent pool — Reserve storage

Use this page to modify the reserved storage for the extent pool.

Menu path

Real-time manager or Simulated manager → Configure storage → Extent pools → Select an extent pool → Select Action: Modify... → Go

Fields

Reserved storage %

The amount of storage that you choose to reserve for later use. This allows

you to optionally reserve a percentage of your storage for later as overhead. This amount is a function of the designated extent limit. The extent limit is the maximum number of extents that the storage unit should allow to be allocated in this extent pool.

Modify extent pool — Verification

Use this page to view properties and basic capacity calculations for the modified extent pool.

Menu path

Real-time manager or Simulated manager → Configure storage → Extent pools → Select an extent pool → Select Action: Modify... → Go

Fields

Nickname

The nickname of the extent pool.

Storage type

The storage type of the extent pool [count key data (CKD) or fixed block (FB)].

RAID type

The value specified in the Define extent pool properties page (for example, RAID 5, RAID 10, or Mixed). Mixed appears in the Modify extent pool — Verification page only if you assigned a rank to the extent pool of a different RAID type than the existing RAID type.

Quantity of ranks

The quantity of ranks to be assigned to the extent pool.

Reserved storage %

The percentage of storage reserved for the extent pool.

Total usable storage (GB)

The total amount of usable or effective storage in ranks minus the reserve storage defined in the Reserve storage page.

FlashCopy

FlashCopy is an optional feature that makes an instant, point-in-time copy from a source volume on a storage unit to a target volume on the same storage unit. Use the tasks provided to help you create, monitor, and manage your FlashCopy operations.

The FlashCopy feature is accessible only from the Real-time Manager; the FlashCopy feature is not accessible from the Simulated Manager.

FlashCopy — Main page

Use this page to create new FlashCopy relationships between volume pairs or to modify, delete, or view information about existing FlashCopy relationships between volume pairs. After you create a FlashCopy relationship, you can read and write to both the source and the target volumes.

Introduction

A FlashCopy relationship cannot be established between volumes of different storage types. For example, if you select a fixed block (FB) volume as a source volume, the page that is displayed for target volume selection does not display any count-key-data (CKD) volumes. A source volume can participate in a maximum of twelve FlashCopy relationships at one time. The source volume cannot be a target volume for another relationship.

The FlashCopy feature is accessible only from the Real-time Manager; the FlashCopy feature is not accessible from the Simulated Manager.

The top of the work area displays two sets of filters. Based on the user's filter selection, the table is populated with source and target volumes. Nicknames are created by the user when resources are created and are used as part of an overall scheme or naming convention for making resources easier to identify and manage.

Menu path

Real-time manager → Copy services → FlashCopy

Fields

Storage complex

The nicknames of storage complexes that are available for selection. This list includes any 2107 and 1750 storage complexes and 2105 Copy Services domains that have been added using the Storage complex main page. A storage complex describes a group of storage units such as the DS6000s that are managed by a single management console. If you have only one DS6000 storage unit, your storage complex consists of one storage unit. The default value for this field is "None selected".

Storage unit

The nicknames of storage units that are available for selection. This list includes any nickname that is associated with any 2107, 1750 and 2105 Model 800 that is currently displayed on the Storage units main page. The default value for this field is "None selected".

Resource type

The type of resource (LSS, Host, Volume group, Show All Volumes) from which to select volumes. The value of the selection in this field determines the field that is displayed to the right of this field. The default value for Resource type is LSS. The following resource type values and the respective field names are displayed:

- For LSS: Specify LSS
- For Host: Specify Host attachment
- For Volume Group: Specify Volume group
- For Show All Volumes: Specify Storage type

Specify LSS

The list of LSS identifiers that are available for selection. An LSS is a group of up to 256 logical volumes that have the same disk format, either count key data (CKD) for zSeries environments or fixed block (FB) for open-system environments. The default value for this field is "None selected".

Specify Host attachment

The list of host attachment identifiers that are available for selection. A host attachment identifier specifies the host type, attachment port type (either FC Switch fabric (P-P) or FC Arbitrated loop) and worldwide port name (WWPN) of a host port. The default value for this field is "None selected".

Specify Volume group

The list of volume groups that are available for selection. A volume group, specified as a nickname, is a collection of logical volumes. The default value for this field is "None selected".

Show All volumes

The list of volume types that are available for selection. The entries in the list are "None selected", "All FB Volumes", and "All CKD Volumes". If "None selected" is selected, the table is empty. For the zSeries environments, the data that is stored in a storage unit is arranged in a count-key-data (CKD) format. For the open system environments, the data that is stored in the storage unit is arranged in a fixed-block (FB) format. The default value for this field is "None selected".

Select The check boxes for selecting items in the table on which to perform actions. The default value for this field is not selected.

Source Nickname

The nickname of the source volume. If you click on the link for a particular source nickname in the table, the FlashCopy properties — General page is displayed for that FlashCopy relationship. If a FlashCopy relationship does not exist, the table is empty.

Source Number

The volume number (or name, such as 1E3B) of the source volume. The volume number is a 4-digit hexadecimal value that consists of the logical subsystem (LSS) number and the volume device number, LLVV, where *LL* is the LSS number and *VV* is the volume device number.

Target Nickname

The nickname of the target volume.

Target Number

The volume number (or name, such as 1E2C) of the target volume. The volume number is a 4-digit hexadecimal value that consists of the logical subsystem (LSS) number and the volume device number, LLVV, where *LL* is the LSS number and *VV* is the volume device number.

Status The status of the FlashCopy relationship displays one of the following:

- Copy complete (A background copy has initiated and has completed.)
- Background copy initiated (A background copy has initiated and has not completed.)
- Out of synch tracks >0 (A background copy has not been initiated).

Persistent

Displays whether the FlashCopy relationship between the volume pair is persistent (Yes or No). For persistent FlashCopy relationships, the relationship between the source and target volumes remains after a background copy completes and continues until you delete it. Creating a persistent FlashCopy relationship prevents another FlashCopy task from writing to the target volume before you have explicitly withdrawn the FlashCopy relationship. This option is a prerequisite for using the Refresh

target volume operation to incrementally resynchronize the FlashCopy relationship, and is automatically selected when you select the Enable change recording option.

Change Recording

Displays whether the FlashCopy Change recording feature is Enabled or Disabled on the volume pair. When the Change recording feature is enabled, the storage unit keeps track of updates to both the source and target volumes from the time that you create the FlashCopy relationship. When change recording is enabled on a FlashCopy volume pair, the persistent option is automatically enabled on the same volume pair as well because both are required when you want to use the Refresh target volume operation later to incrementally resynchronize the FlashCopy relationship. The Refresh target volume operation makes the target volume current with the newly established point in time source copy efficiently because only changed tracks must be copied.

Restorable

Displays whether the FlashCopy relationship is restorable (Yes or No). This feature is relevant only to FlashCopy consistency group operations within a Global Mirror configuration. If the FlashCopy relationship is restorable, changes to the FlashCopy target volumes can be discarded or committed to recover from a failure during the formation of a FlashCopy consistency group.

Sequence number

Displays the sequence number that is defined for the specified FlashCopy relationship when it is created. The sequence number corresponds to a particular FlashCopy relationship and is a maximum of 8 hexadecimal digits in length.

Actions

Create...

This action is always available on this page. When you select Create..., the Create FlashCopy -> Define relationship type page displays in the work area. This page is the first page of the Create FlashCopy wizard.

FlashCopy Revertible

This action is available when you select a FlashCopy relationship in the table and the relationship that you have selected has a Restorable value of No. When you select FlashCopy Revertible, the FlashCopy Revertible-> Select Common Options page is displayed in the work area. This page is the first page of the FlashCopy Revertible wizard. This action saves the target volume data to memory for disaster recovery purposes before the FlashCopy starts.

Delete This action is available when you select one or more FlashCopy relationships in the table. When you select Delete, a confirmation warning message displays. If you click OK on the message, you delete the selected FlashCopy relationship.

Initiate Background Copy

This action is available when you select one or more FlashCopy relationships in the table. When you select Initiate Background Copy, the Initiate background copy page is displayed. When Initiate background copy is selected on a source volume that has more than one target volume, these relationships are listed on the Initiate background copy page.

Resync Target

This action is available when you select a FlashCopy relationship in the table and the relationship you have selected has a Persistent value of Yes and a Change Recording value of Enabled. If you do not enable the Persistent and Change Recording options when you create a FlashCopy relationship, you cannot perform the Resync Target action on that relationship later. When you select Resync Target, the Resync FlashCopy page is displayed. This action copies only changed data from the source to the target volume.

Reverse FlashCopy

This action is available when you select a FlashCopy relationship in the table and the relationship you have selected has a Persistent value of Yes and a Change Recording value of Enabled. If you do not enable the Persistent and Change Recording options when you create a FlashCopy relationship, you cannot perform the Reverse FlashCopy action on that relationship later. When you select Reverse FlashCopy, the Reverse FlashCopy page is displayed. This action changes the direction of the FlashCopy such that the original source volume is now the target, and the original target volume is now the source of the FlashCopy relationship.

Discard Changes

This action is available when you select a FlashCopy relationship in the table and the relationship that you have selected has a Restorable value of Yes. You might use this action only after the operation to form a FlashCopy consistency group has failed. When you select Discard Changes, the Discard Changes page is displayed. This action removes changes to the target volume that might have occurred during the failed operation to form a consistency group and resets the Restorable value to No. FlashCopy relationships that are not persistent are deleted upon confirmation of this action.

Commit Changes

This action is available when you select a FlashCopy relationship in the table and the relationship you have selected has a Restorable value of Yes. You might use this action only after the operation to form a FlashCopy consistency group has failed. When you select Commit Changes, the Commit Changes page displays. This action retains changes to the target volume that might have occurred during the failed operation to form a consistency group, and resets the Restorable value to No. FlashCopy relationships that are not persistent will be deleted upon confirmation of this action.

Properties

This action is available when you select a FlashCopy relationship in the table. When you select Properties, the FlashCopy Properties page displays with the General tab defaulted. This action displays attributes of the FlashCopy relationship and their corresponding values. The Out-of-sync tracks tab on the FlashCopy Properties page displays the source and target volume nickname and ID, and the number of tracks that have not been copied to the target volume.

Create FlashCopy relationship — Define relationship types

Use this page to define the type of FlashCopy relationship that you want to create.

Introduction

This page allows you to define the type of FlashCopy relationship that you want to create: either a 1:1 FlashCopy relationship (a single source volume and a single target volume) or a 1:*n* multiple FlashCopy relationship (a single source volume and multiple target volumes). The relationships must all be of the same type.

Menu path

Real-time manager → Copy services → FlashCopy → Select Action: Create... → Go

Fields

Select the type of FlashCopy relationship to create and click Next.

The type of FlashCopy relationships that you want to create for your source and target volumes. You must select one of the following options as a prerequisite for creating FlashCopy relationships. You cannot select both. If you select either option, the other option is automatically not selected.

A single source with a single target

A FlashCopy relationship that consists of a volume pair: a single source volume and a single target volume. This is the default selection.

A single source with multiple targets

A FlashCopy relationship that consists of a source volume with multiple target volumes (also known as multiple relationship FlashCopy). Choose this option if you want to create more than one point-in-time copy of the source volume. For example, you might want to use one target volume for testing and have another target volume that remains unchanged for comparison.

< Back

Takes you to the previous step of the wizard.

This button is disabled because this is the first step of the Create FlashCopy wizard.

Next >

Takes you to the next step of the wizard. You cannot proceed to the next step until you have completed all required fields.

You must select one of the two radio buttons to proceed to the next step. The next step of the Create FlashCopy wizard is Select source volumes.

Finish Completes the task and takes you to the main page. This button is disabled until you enter all of the required information in the wizard.

This button is disabled because this is not the last step of the Create FlashCopy wizard.

Cancel

Ends the wizard and returns you to the main page without completing the task.

If you click the Cancel button, the FlashCopy main page is displayed.

Create FlashCopy relationship — Select source volumes

Use this page to select source volumes for a single FlashCopy relationship (a single target volume for each source volume) or for a multiple relationship FlashCopy (a single source volume and multiple target volumes). You can select one or more source volumes.

Introduction

When you create a FlashCopy relationship between a source and target volume, data is copied from the source volume to its associated target volume. When you select source and target volumes, the volumes must reside in the same storage unit; however, the source and target volumes can be in different LSSs.

Source volume selection guidelines:

- You *cannot* select all volumes in the table as FlashCopy source volumes because there must be volumes that are available to select associated FlashCopy target volumes. The number of source volumes that you select must be less than or equal to the number of remaining, unselected volumes to be used as target volumes.
- A volume can only be a FlashCopy source volume or a FlashCopy target volume at any given time.
- You cannot select a FlashCopy source volume that is already identified as a FlashCopy target volume.
- You can copy a FlashCopy source volume to multiple (up to 12) FlashCopy target volumes. You cannot select a FlashCopy source volume that is participating in more than 12 FlashCopy relationships at one time.

Menu path

Real-time manager → Copy services → FlashCopy → Select Action: Create... → Go

Fields

Storage complex

The nicknames of storage complexes that are available for selection. This list includes any 2107 and 1750 storage complexes and 2105 Copy Services domains that have been added using the Storage complex main page. A storage complex describes a group of storage units such as the DS6000s that are managed by a single management console. If you have only one DS6000 storage unit, your storage complex consists of one storage unit. The default value for this field is "None selected". This field is hidden unless the Create FlashCopy Wizard has been accessed by the Global Mirror page.

Storage unit

The nicknames of storage units that are available for selection. This list includes any nickname that is associated with any 2107, 1750 or 2105 Model 800 that is currently displayed on the Storage units main page. The default value for this field is "None selected". This field is hidden unless the Create FlashCopy Wizard has been accessed by the Global Mirror page.

Resource type

The type of resource from which to select target volumes. You must select one type of resource from the drop-down menu. The type of resource that defaults corresponds to the selection that you made on the FlashCopy main page. The following values are available for type of resource:

- **LSS:** The logical subsystem identifier. An LSS is a group of logical volumes that have the same disk format, either count key data (CKD) for zSeries environments or fixed block (FB) for open-system environments. There is a one-to-one mapping between a CKD logical subsystem and a zSeries control-unit image. For zSeries hosts, a logical subsystem represents a logical control unit (LCU). Each control-unit image is associated with only one logical subsystem.
- **Host attachment:** A host attachment identifier that specifies the host type, attachment port type (either FC Switch fabric [P-P] or FC Arbitrated loop), and worldwide port name (WWPN) of a host port.
- **Volume group:** A collection of logical volumes that is specified as a nickname.
- **Show All volumes:** Displays all volumes that are eligible to be selected as target volumes for the selected source volume.

The value in this field determines the Specify field that is displayed to the right of this field. The following resource type values and the respective field names are displayed:

- For LSS: Specify LSS
- For Host: Specify Host attachment
- For Volume Group: Specify Volume group
- For Show All Volumes: Specify Storage type

Specify LSS

The list of LSS identifiers that are available for selection. An LSS is a group of up to 256 logical volumes that have the same disk format, either count key data (CKD) for zSeries environments or fixed block (FB) for open-system environments. The default value for this field is "None selected".

Specify Host attachment

The list of host attachment identifiers that are available for selection. A host attachment identifier specifies the host type, attachment port type (either FC Switch fabric (P-P) or FC Arbitrated loop) and worldwide port name (WWPN) of a host port. The default value for this field is "None selected".

Specify Volume group

The list of volume groups that are available for selection. A volume group, specified as a nickname, is a collection of logical volumes. The default value for this field is "None selected".

Show All volumes

The list of volume types that are available for selection. The entries in the list are "None selected", "All FB Volumes", and "All CKD Volumes". If "None selected" is selected, the table is empty. For the zSeries environments, the data that is stored in a storage unit is arranged in a count-key-data (CKD) format. For the open system environments, the data that is stored in the storage unit is arranged in a fixed-block (FB) format. The default value for this field is "None selected".

Select The check boxes for selecting source volumes in the table. The default value for this field is not selected.

Nickname

The nickname of the volume. If there are no volumes that meet the selection criteria that you specified, the table is empty.

Volume Number

The volume number (also called Volume ID). The volume number is a 4-digit hexadecimal value that consists of the logical subsystem (LSS) number and the volume device number, *LLVV*, where *LL* is the LSS number and *VV* is the volume device number.

Volume type

Type The unit type of volume capacity. The following values can display:

- DS: Specifies that the unit is 2^{30} bytes (binary gigabytes).
- ESS: Specifies that the unit is 10^9 bytes (decimal gigabytes).
- Block: Specifies that the unit is 512 blocks.

GB(2^{30})

The size, in binary gigabytes, of the volume. One binary GB (2^{30}) = 1 073 741 824 bytes. Volumes of Type DS are configured in binary format. This method provides volumes that fully use the capacity in every extent.

GB(10^9)

The size, in decimal gigabytes, of the volume. One decimal GB (10^9) = 1 000 000 000 bytes. ESS 2105 volumes are configured in decimal format.

Extent Pool

The nickname of the extent pool to which the volume is assigned.

Note: An extent pool is a grouping of extents. An extent is a contiguous set of allocated tracks and consists of a beginning track, an end track, and all tracks in between. Extent size can range from a single track to an entire volume.

< Back

Takes you to the previous step of the wizard.

The previous step of the Create FlashCopy wizard is Define relationship type.

Next >

Takes you to the next step of the wizard. You cannot proceed to the next step until you have completed all required fields.

The next step of the Create FlashCopy wizard is Select target volumes.

Finish Completes the task and takes you to the main page. This button is disabled until you enter all of the required information in the wizard.

This button is disabled because this is not the last step of the Create FlashCopy wizard.

Cancel

Ends the wizard and returns you to the main page without completing the task.

If you click the Cancel button, the FlashCopy main page is displayed.

Create FlashCopy relationship — Select target volumes for the 1:1 relationship

When you select "A single source with a single target" on the Define relationship type page to create one-to-one FlashCopy relationships, you must select the same number of target volumes as you selected source volumes. Use this page to select target volumes to participate in a one-to-one FlashCopy relationship.

Introduction

After you select source volumes, use this page to select target volumes to participate in a one-to-one FlashCopy relationship. Consider the following guidelines when you select target volumes:

- The size of the target volume must be at least as large as the source volume that you selected. If you plan to reverse the direction of the FlashCopy relationship, the size of the source and target volumes must be identical. When the current target volume becomes the new source volume, the new target (the current source) volume must be at least as large as the new source.
- The source and target volume for FlashCopy must reside in the same storage unit; however, the source and target volumes can be in different LSSs.
- The storage type (fixed block [FB] or count key data [CKD] format) of the volumes that you select as a target volume must match the storage type of the source volume. For example, if the source volume is FB format, you must select only an FB format volume as the target volume for that source volume. If the source volume is CKD format, you must select only a CKD format volume as the target volume for that source volume.
- Volumes that are already defined to another FlashCopy relationship are not eligible for selection and are not displayed.
- If you have selected more than one FlashCopy source volume, the FlashCopy target volumes that you select are associated with source volumes sequentially by volume ID such that the lowest source volume ID will be paired with the lowest target volume ID, the next highest source volume ID will be paired with the next highest target volume ID, and so on.

Menu path

Real-time manager → Copy services → FlashCopy → Select Action: Create... → Go

Fields

Resource type

The type of resource from which to select target volumes. You must select one type of resource from the drop-down menu. The type of resource that defaults corresponds to the selection that you made on the Select source volumes page. The following values are available for type of resource:

- **LSS:** The logical subsystem identifier. An LSS is a group of logical volumes that have the same disk format, either count key data (CKD) for zSeries environments or fixed block (FB) for open-system environments. There is a one-to-one mapping between a CKD logical subsystem and a zSeries control-unit image. For zSeries hosts, a logical subsystem represents a logical control unit (LCU). Each control-unit image is associated with only one logical subsystem.
- **Host attachment:** A host attachment identifier that specifies the host type, attachment port type (either FC Switch fabric [P-P] or FC Arbitrated loop) and worldwide port name (WWPN) of a host port.
- **Volume group:** a collection of logical volumes that is specified as a nickname.
- **Show All volumes:** All volumes that are eligible to be selected as target volumes for the selected source volume.

The value in this field determines the Specify field that is displayed to the right of this field. The following resource type values and the respective field names are displayed:

- For LSS: Specify LSS
- For Host: Specify Host attachment
- For Volume Group: Specify Volume group
- For Show All Volumes: Specify Storage type

Specify LSS

The list of LSS identifiers that are available for selection. An LSS is a group of up to 256 logical volumes that have the same disk format, either count key data (CKD) for zSeries environments or fixed block (FB) for open-system environments. The default value for this field is "None selected".

Specify Host attachment

The list of host attachment identifiers that are available for selection. A host attachment identifier specifies the host type, attachment port type (either FC Switch fabric [P-P] or FC Arbitrated loop), and worldwide port name (WWPN) of a host port. The default value for this field is "None selected".

Specify Volume group

The list of volume groups that are available for selection. A volume group, specified as a nickname, is a collection of logical volumes. The default value for this field is "None selected".

Specify Storage Type

The list of volume types that are available for selection. The entries in the list are "None selected", "All FB Volumes", and "All CKD Volumes". If "None selected" is selected, the table is empty. For the zSeries environments, the data that is stored in a storage unit is arranged in a count-key-data (CKD) format. For the open system environments, the data that is stored in the storage unit is arranged in a fixed-block (FB) format. The default value for this field is "None selected".

Select The check boxes for selecting target volumes in the table. The default value for this field is not selected.

Nickname

The nickname of the volume. If there are no volumes that meet the selection criteria that you specified, the table is empty.

Volume Number

The volume number (also called the Volume ID). The volume number is a 4-digit hexadecimal value that consists of the logical subsystem (LSS) number and the volume device number, LLVV, where LL is the LSS number and VV is the volume device number.

GB(2³⁰)

The size, in binary gigabytes, of the volume. One binary GB (2³⁰) = 1 073 741 824 bytes. Volumes of Type DS are configured in binary format. This method provides volumes that fully use the capacity in every extent.

GB(10⁹)

The size, in decimal gigabytes, of the volume. One decimal GB (10⁹) = 1 000 000 000 bytes. ESS 2105 volumes are configured in decimal format.

Extent Pool

The nickname of the extent pool to which the volume is assigned.

Note: An extent pool is a grouping of extents. An extent is a contiguous set of allocated tracks and consists of a beginning track, an end track, and all tracks in between. Extent size can range from a single track to an entire volume.

Host Attachments

The number of host attachments (interfaces) that are used to connect open-systems hosts to the volume. The value in this field is a hyperlink to the Host systems main page.

< Back

Takes you to the previous step of the wizard.

The previous step of the Create FlashCopy wizard is Select source volumes.

Next >

Takes you to the next step of the wizard. You cannot proceed to the next step until you have completed all required fields.

The next step of the Create FlashCopy wizard is Select common options.

Finish Completes the task and takes you to the main page. This button is disabled until you enter all of the required information in the wizard.

This button is disabled because this is not the last step of the Create FlashCopy wizard.

Cancel

Ends the wizard and returns you to the main page without completing the task.

If you click the Cancel button, the FlashCopy main page is displayed.

Create FlashCopy relationship — Select target volumes for the 1:*n* relationships

Use this page to select target volumes for multiple FlashCopy relationships.

Introduction

If you selected a FlashCopy relationship type that included a single source with multiple targets (this is known as multiple relationship FlashCopy), you can select a maximum of 12 (hence 1:*n*) target volumes for each source volume. This page repeats for each source volume that you selected. That is, each time through the wizard, you can create multiple 1:12 relationships.

Menu path

Real-time manager → Copy services → FlashCopy → Select Action: Create... → Go

Fields

Select by resource type

The type of resource (LSS, Volume group, Host attachment, Show all volumes) from which to select target volumes. The type of resource that defaults corresponds to the selection that you made on the select source volumes page.

Specify (LSS, Volume group, Host attachment, Storage type)

The type of resource (LSS, Volume group, Host attachment, storage type)

from which to select target volumes. The type of resource that defaults corresponds to the selection that you made on the select source volumes page.

Select target volumes

The storage type of the target volumes must be the same as that of the source volumes. That is, both must be either fixed block (FB) or count key data (CKD).

Consider the following guidelines when you select target volumes:

- The size of the target volume must be at least as large as the source volume that you selected.
- The storage type of volume that you select for the target volumes must be the same as the source volumes. That is, the target volumes must be the same type of format: fixed block or count key data as the source volumes.
- Target volumes that are already involved in other FlashCopy relationships are not eligible volumes for selection.

OK Reads and stores the current selection and takes you to the next step of the wizard.

Note: If you used the < **Back** button in the wizard to arrive at this page, the previous selection remains in effect. If you then change the selection and click the **OK** button, the current selection replaces the previous selection and takes you to the next step of the wizard.

Cancel

Ends the wizard and returns you to the main page without completing the task.

Create FlashCopy relationship — Select common options

After you select source and target volumes for FlashCopy relationships, you can select one or more copy options for the FlashCopy volume pairs. Use this page to select one or more copy options for the volumes that are participating in FlashCopy relationships.

Introduction

The options that you select determine the type of operations to be performed on the volume pairs during the FlashCopy operation.

Menu path

Real-time manager → **Copy services** → **FlashCopy** → **Select Action: Create...** → **Go**

Fields

Make relationship(s) persistent

Retains the FlashCopy relationship after the background copy completes on the volume pair. When you select this option, the relationship between the source and the target volume remains indefinitely until the FlashCopy relationship is deleted. This option is a prerequisite for using the **Refresh target volume** operation. If you do not select this option, an automatic withdrawal of the FlashCopy relationship occurs when the background copy completes. This option defaults to not selected and displays on the Verification page as disabled).

Note: When you select the **Enable change recording** option, the **Make relationship(s) persistent** option is automatically selected and you cannot deselect it unless you first deselect the **Enable change recording** option. This occurs because a relationship must be persistent to enable change recording.

Initiate background copy

Starts a physical copy of all tracks on the source volume to the target volume. After a FlashCopy pair is created, an automatic withdrawal of the FlashCopy relationship occurs when all tracks on the source volume have been physically copied to the target volume unless the **Make relationship(s) persistent** option is selected. This is the only option that defaults to selected (which displays on the Verification page as enabled).

Note: If you deselect this option, a track is copied from the source volume to the target volume only if a track on the source volume is modified, a track on the target volume is read, or a background copy is initiated later. A track might also be copied as a result of internal performance enhancement algorithms.

Enable change recording

Monitors writes and records changes on the volume pair that is participating in a FlashCopy relationship. Selecting this option automatically enables the **Make relationship(s) persistent** option and makes disabling it unavailable since a relationship must be persistent to enable change recording. Both options are required to refresh a FlashCopy relationship later. This option defaults to not selected and displays on the Verification page as disabled.

Permit FlashCopy to occur if target volume is online for host access

Allows a FlashCopy relationship to be created if the target volume is online to a zSeries host system. If this option is not selected and the target volume is online to a zSeries host system, the create FlashCopy relationship task fails. This option defaults to not selected and displays on the Verification page as disabled.

Establish target on existing Metro Mirror source

Creates a point-in-time copy of a volume, and, through Metro Mirror, makes a copy of that point-in-time copy at a remote site. This option creates a local point-in-time backup *and* a remote point-in-time backup. If this option is not selected and the FlashCopy target volume is a Metro Mirror source volume, the create FlashCopy relationship task fails. This option defaults to not selected and displays on the Verification page as disabled.

Displays the sequence number that is defined for the FlashCopy relationships. The sequence number is a maximum of eight hexadecimal digits in length. The FlashCopy sequence number corresponds to a particular relationship that is created. If the FlashCopy sequence number that is specified does not match the sequence number of a current relationship or if a sequence number is not specified, the selected operation is performed. If the FlashCopy sequence number that is specified matches the sequence number of a current relationship, the operation is not performed. The default value is zero.

< Back

Takes you to the previous step of the wizard.

The previous step of the Create FlashCopy wizard is Select target volumes.

Next >

Takes you to the next step of the wizard. You cannot proceed to the next step until you have completed all required fields.

There are no required fields. The next step of the Create FlashCopy wizard is Verification.

Finish Completes the task and takes you to the main page. This button is disabled until you enter all of the required information in the wizard.

This button is disabled because this is not the last step of the Create FlashCopy wizard.

Cancel

Ends the wizard and returns you to the main page without completing the task.

If you click the Cancel button, the FlashCopy main page is displayed.

Create FlashCopy relationship — Verification

Use this page to verify the characteristics of the volume pairs and the copy options for the FlashCopy relationships that you want to create.

Introduction

After you specify FlashCopy relationships and select the copy options for the volume pairs, use the information that is displayed on this page to verify your selections. When you click the **Finish** button, a FlashCopy relationship is created between the source and target volumes, and the copy options are applied to the FlashCopy volumes that you selected.

Menu path

Real-time manager → Copy services → FlashCopy → Select Action: Create... → Go

Fields

Sequence number

Displays the sequence number that is defined for a FlashCopy relationship. The FlashCopy sequence number corresponds to a particular relationship that is being created. The sequence number is a maximum of eight hexadecimal digits in length.

Copy options

Displays the copy options that are enabled and disabled for the FlashCopy relationships that are created if the Finish button is clicked.

FlashCopy relationships created

The characteristics of the FlashCopy relationships that are created if the Finish button is clicked.

Source nickname

The nicknames of the FlashCopy source volumes.

Source Number

The volume number of the FlashCopy source volumes. The volume number is a 4-digit hexadecimal value that consists of the logical subsystem (LSS) number and the volume device number, *LLVV*, where *LL* is the LSS number and *VV* is the volume device number.

GB(2³⁰)

The size, in binary gigabytes, of the volume. One binary GB (2³⁰) = 1 073 741 824 bytes. Volumes of Type DS are configured in binary format. This method provides volumes that fully use the capacity in every extent.

GB(10⁹)

The size, in decimal gigabytes, of the volume. One decimal GB (10⁹) = 1 000 000 000 bytes. ESS 2105 volumes are configured in decimal format.

Target nickname

The nicknames of the FlashCopy target volumes.

Target number

The volume number of the FlashCopy target volumes. The volume number is a 4-digit hexadecimal value that consists of the logical subsystem (LSS) number and the volume device number, *LLVV*, where *LL* is the LSS number and *VV* is the volume device number.

GB(2³⁰)

The size, in binary gigabytes, of the volume. One binary GB (2³⁰) = 1 073 741 824 bytes. Volumes of Type DS are configured in binary format. This method provides volumes that fully use the capacity in every extent.

GB(10⁹)

The size, in decimal gigabytes, of the volume. One decimal GB (10⁹) = 1 000 000 000 bytes. ESS 2105 volumes are configured in decimal format.

Size inconsistency (Yes/No)

Indicates whether there is a size inconsistency with the volumes that you selected for the FlashCopy relationships. The capacity of the target volume must be greater than or equal to the capacity of the source volume. If the value of the Size inconsistency field is Yes, that FlashCopy relationship is not created.

Note: If you click the **Finish** button and there is a target volume in a FlashCopy relationship that is not the same type (fixed block [FB] or count key data [CKD] format) as the source volume, an error message indicates that the relationship cannot be created.

< Back

Takes you to the previous step of the wizard.

The previous step of the Create FlashCopy wizard is Select common options.

Next >

Takes you to the next step of the wizard. You cannot proceed to the next step until you have completed all required fields.

This button is disabled because this is the last step of the Create FlashCopy wizard.

Finish Completes the task and takes you to the main page. This button is disabled until you enter all of the required information in the wizard.

This task establishes a FlashCopy relationship between the defined source and target volumes with the options selected.

Cancel

Ends the wizard and returns you to the main page without completing the task.

If you click the Cancel button, the FlashCopy main page is displayed.

Initiate background copy — Confirm

Use this page to confirm the volume pairs on which to initiate a FlashCopy background copy.

Introduction

If you have selected a 1:*n* FlashCopy relationship from the main page, all one to *n* relationships are displayed on this page.

Menu path

Real-time manager → **Copy services** → **FlashCopy** → **Select one or more volume pairs** → **Select Action: Initiate Background Copy** → **Go**

Fields

Select The check boxes for selecting FlashCopy relationships in the table on which to initiate a FlashCopy background copy. The default value for this field is selected.

Source nickname

The nickname of the FlashCopy source volume.

Source number

The volume number (also named Volume ID) of the source volume. The volume number is a 4-digit hexadecimal value that consists of the logical subsystem (LSS) number and the volume device number, *LLVV*, where *LL* is the LSS number and *VV* is the volume device number.

Target nickname

The nickname of the FlashCopy target volume.

Target number

The volume number (also named Volume ID) of the target volume. The volume number is a 4-digit hexadecimal value that consists of the logical subsystem (LSS) number and the volume device number, *LLVV*, where *LL* is the LSS number and *VV* is the volume device number.

Relationship Will Remain

The value of this field is either Yes or No. A value of Yes indicates that the FlashCopy relationship remains and is not withdrawn when the background copy is completed. A value of No indicates that the FlashCopy relationship is withdrawn when the background copy is completed. The value in this field is determined by the value of the Persistent characteristic, which is set to Yes if you select the **Make relationship(s) persistent** option when the FlashCopy relationship is created or modified.

Reset target writes inhibit

The check box for selecting to prevent (inhibit) host write operations on the FlashCopy target volumes. The default value for this field is not selected.

OK Initiates a FlashCopy background copy for the relationships that you have selected and returns you to the FlashCopy main page.

Cancel

Returns you to the FlashCopy main page without completing the task.

Refresh target volume — Select copy options

Use this page to select which copy options are used to refresh the target volumes of selected FlashCopy volume pairs. Only changed data is copied from the source to target volume when subsequent FlashCopy operations are run.

Introduction

The FlashCopy operation provides the capability to resync a FlashCopy relationship. When you establish an initial FlashCopy relationship with **Make relationships persistent** and the **Enable change recording** options enabled, only changed data is copied from the source to target volume when subsequent FlashCopy operations are run. If you did not enable these options when you created the FlashCopy relationships, the target volumes of these FlashCopy volume pairs cannot be resync later and the process fails.

Menu path

Real-time manager → **Copy services** → **FlashCopy** → **Select one or more volume pairs** → **Select Action: Resync Target** → **Go**

Fields

Make relationships persistent

Indicates whether the FlashCopy relationship is retained after the background copy completes. When the FlashCopy is persistent, the relationship between the source and the target volume remains indefinitely and the FlashCopy relationship must be deleted. The persistent option is a prerequisite if you want to resync the target volume of a FlashCopy relationship later. It is automatically enabled if you selected the **Enable change recording** option.

Note: If the FlashCopy relationship is not persistent, Resync is not available from the Select Action pull down.

Enable change recording

Indicates whether change recording is enabled or disabled. The change recording function monitors write operations and records changes on the volume pair.

When change recording is enabled on a FlashCopy volume pair, the persistent option is automatically enabled on the same volume pair as well because both are required when you want to resync the FlashCopy relationship later.

Permit FlashCopy to occur if target volume is online for host access

Indicates whether a FlashCopy relationship is allowed to be created if the target volume in that relationship is online to a zSeries host system.

Inhibit writes to target volume

Indicates whether writes are inhibited to the target volume of the selected FlashCopy pair as long as the FlashCopy relationship exists. That is, when this option is enabled, any write operations to the target volume of the selected FlashCopy volume pair will fail as long as the FlashCopy relationship still exists. In addition, when this option is enabled, the target volume is protected from any updates from the host system and ensures that writes are prohibited on the target volume until a resync operation is complete.

Note: If the **Inhibit writes to target volume** option is enabled for a specific FlashCopy relationship, the change recording feature is not effective on the target volume of that FlashCopy pair.

Sequence number for these relationships

Displays the sequence number that is defined for the FlashCopy relationships if the number is the same for all relationships. Otherwise, this value does not display.

Establish target on existing Metro Mirror source

Creates a point-in-time copy of a volume, and, through Metro Mirror, makes a copy of that point-in-time copy at a remote site. This option creates a local point-in-time backup and a remote point-in-time backup.

Reverse relationship — Select copy options

Use this page to select one or more copy options to reverse the FlashCopy relationship. That is, the original source volume is now the target, while the original target volume becomes the source of the FlashCopy relationship.

Introduction

When a relationship is reversed, only the data required to bring the target current to the source's point-in-time is copied. If no updates were made to the target since the last refresh, the direction change could be used to restore the source back to the previous point-in-time state.

Menu path

Real-time manager → **Copy services** → **FlashCopy** → **Select one or more volume pairs** → **Select Action: Reverse FlashCopy** → **Go**

Fields

Make relationships persistent

Indicates whether the FlashCopy relationship is retained after the background copy completes. When the FlashCopy is persistent, the relationship between the source and the target volume remains indefinitely and the FlashCopy relationship must be deleted.

Enable change recording

Indicates whether change recording is enabled. The change recording function monitors write operations and records changes on the volume pair.

When change recording is enabled on a FlashCopy volume pair, the persistent option is automatically enabled on the same volume pair as well because both are required when you want to refresh the FlashCopy relationship later.

Permit FlashCopy to occur if target volume is online for host access

Indicates whether a FlashCopy relationship is allowed to be created if the target volume in that relationship is online to a zSeries host system.

Inhibit writes to target volume

Indicates whether writes are prohibited to the target volume of the selected FlashCopy pair as long as the FlashCopy relationship exists. That is, when this option is enabled, any write operations to the target volume of the selected FlashCopy volume pair will fail as long as the FlashCopy relationship still exists. In addition, the target volume is protected from

any updates from the host system and ensures that writes are prohibited on the target volume until a refresh target volume operation is complete.

Note: If you the **Inhibit writes to target volume** option is enabled for a specific FlashCopy relationship, the change recording feature is not effective on the target volume of that FlashCopy pair.

Fast reverse

Indicates whether the selected FlashCopy relationship can be reversed without waiting for the background copy of the previous FlashCopy to complete. This option is used with Global Mirror operations.

Sequence number for these relationships

Displays the sequence number that is defined for the FlashCopy relationships if the number is the same for all relationships. Otherwise, this value does not display.

Note: If the FlashCopy sequence number that is specified matches the sequence number of a current relationship or if a sequence number is not specified, then the selected operation is performed. If the FlashCopy relationships do not have the same sequence number, the sequence number is not displayed and the operation is not performed.

FlashCopy revertible — Select common options

Use this page to select copy options when restarting an existing, persistent FlashCopy relationship that was created without the change recording feature enabled.

Introduction

This process is used on a FlashCopy pair that was part of a Global Mirror configuration.

Menu path

Real-time manager → **Copy services** → **FlashCopy** → **Select one or more volume pairs** → **Select Action: FlashCopy Revertible** → **Go**

Fields

Make relationship(s) persistent

Indicates whether the FlashCopy relationship is retained after the background copy completes. When the FlashCopy is persistent, the relationship between the source and the target volume remains indefinitely and the FlashCopy relationship must be deleted. The persistent option is a prerequisite if you want to refresh the target volume of a FlashCopy relationship later. It is automatically enabled if you selected the **Enable change recording** option. This option is disabled by default.

Initiate background copy

Starts a physical copy of all tracks on a source volume to a target volume. After a FlashCopy pair is created, an automatic withdrawal of the FlashCopy relationship occurs when all source tracks have been physically copied to the target volume.

Note: If you do not select this option, data is copied only from the source volume to the target volume if a track on the source volume is modified, a target track is read, or a background copy is started for performance reasons. This option is disabled by default.

Enable change recording

Indicates whether the FlashCopy relationship is enabled or disabled. With change recording enabled, the storage unit keeps track of updates to both the source and target volumes from the time that you create a FlashCopy relationship. The storage unit can identify updates that have occurred since the last FlashCopy relationship was created. This option is disabled by default.

Establish target on existing Metro Mirror source

Creates a point-in-time copy of a volume, and, through Metro Mirror, makes a copy of that point-in-time copy at a remote site. This option creates a local point-in-time backup and a remote point-in-time backup.

FlashCopy revertible — Select advanced options

Use this page to select advanced copy options to use when you want to allow a target volume to be restored in an existing, persistent FlashCopy relationship that was created without the revertible feature enabled.

Introduction

You can select more advanced copy options from this page when you restart an existing, persistent FlashCopy relationship. You must have previously created a persistent FlashCopy relationship without the change recording feature enabled on a volume B to volume C FlashCopy pair in a Global Mirror configuration.

Menu path

Real-time manager → Copy services → FlashCopy → Select Action: FlashCopy Revertible → Go → Select common options → Next

Fields

Inhibit writes to source volume

Prevents writes to the source volume of a FlashCopy relationship, which is also the target volume of an existing Global Copy relationship at a remote site.

Selecting this option protects a target volume that is part of an existing FlashCopy relationship from updates from the host system that is attached to a storage unit at a remote site. This option is disabled by default.

Inhibit writes to target volume

Prevents writes to the target volume of a FlashCopy pair as long as the FlashCopy relationship exists. That is, any write operations to the target volume of the volume pair fail as long as that relationship still exists. Selecting this option protects the target volume from any updates from the host system and ensures that writes are prohibited on the target volume until a refresh target volume operation is complete.

Note: If you select the **Inhibit writes to target volume** option, the change recording feature is not effective on the target volume. This option is disabled by default.

Allow target to be restored to pre-FlashCopy state

Saves data on the target volume to memory for disaster recovery purposes before a FlashCopy operation occurs. This option is disabled by default.

Displays the sequence number that is defined for a FlashCopy relationship. The FlashCopy sequence number corresponds to a particular relationship that is being created.

Note: If the FlashCopy sequence number that you specify matches the sequence number of a current relationship or if a sequence number is not specified, the selected operation is performed. If you specify a FlashCopy sequence number that does not match, the selected operation is not performed.

< Back

Takes you to the previous step of the wizard.

Next >

Takes you to the next step of the wizard. You cannot proceed to the next step until you have completed all required fields.

Finish Completes the task and takes you to the main page. This button is disabled until you enter all of the required information in the wizard.

Cancel

Ends the wizard and returns you to the main page without completing the task.

FlashCopy revertible — Verification

Use this page to verify the characteristics of the volume pair and the desired options to use when restarting an existing, persistent FlashCopy relationship

Introduction

Use the information that is displayed on this page to verify your selections for the existing FlashCopy relationships.

Menu path

Real-time Mmanager → Copy services → FlashCopy → Select one or more FlashCopy relationships → Select Action: FlashCopy Revertible → Go → Select common options → Next → Select advanced options → Next

Fields

Sequence number

Displays the sequence number that is defined for a FlashCopy relationship. The FlashCopy sequence number corresponds to a particular relationship that is being created.

Copy options

Displays the copy options that are enabled and disabled for the FlashCopy relationships.

FlashCopy to record changes

The FlashCopy relationships are displayed based on the following criteria:

Source nickname

The nickname of the FlashCopy source volume.

Source number

The volume of the FlashCopy source volume.

Source capacity

The size, in gigabytes, of the FlashCopy source volume.

Target nickname

The nickname of the FlashCopy target volume.

Target number

The volume number of the FlashCopy target volume.

Target capacity

The size, in gigabytes, of the FlashCopy target volume.

< Back

Takes you to the previous step of the wizard.

Next >

Takes you to the next step of the wizard. You cannot proceed to the next step until you have completed all required fields.

Finish Completes the task and takes you to the main page. This button is disabled until you enter all of the required information in the wizard.

Cancel

Ends the wizard and returns you to the main page without completing the task.

Commit changes — Confirm

Use this page to confirm which FlashCopy target volume will be updated with data from its source volume when data is not consistent between the volume pair.

Introduction

This process commits the updates to the target volume of a FlashCopy pair when data is not consistent with the source volume of that volume pair. This process is used for recovery or a planned failover during Global Mirror operations.

Menu path

Real-time manager → Copy services → FlashCopy → Select one or more volume pairs → Select Action: Commit Changes → Go

Fields

Targets to update

The FlashCopy volume pairs on which data on their associated target volumes will be updated, based on the following criteria:

Note: Only the restorable volume pairs will be displayed and all the restorable pairs will be restored.

Source nickname

The nickname of the source volume of the FlashCopy volume pair.

Source ID

The volume ID of the source volume of the FlashCopy volume pair.

Target nickname

The nickname of the target volume of the FlashCopy volume pair.

Target ID

The volume ID of the target volume of the FlashCopy volume pair.

Discard changes — Confirm

Use this page to confirm the FlashCopy volume pair on which updates to the target volume of the volume pair will be discarded and restored to a previous FlashCopy relationship. The FlashCopy relationship is not deleted until changes are discarded.

Introduction

During Global Mirror operations, if a FlashCopy target volume has inconsistent data, you can discard data and restore the FlashCopy pair back to a previous FlashCopy relationship. In most of the cases, the volumes are consistent and this process is not necessary.

When you select Discard changes from the action drop down and select a source volume that has more than one target volume, all related FlashCopy relationships will be listed on this page. Of the volumes that you select, at least one or more must be restorable.

Menu path

Real-time manager → Copy services → FlashCopy → Select one or more FlashCopy relationships → Select Action: Discard Changes → Go

Fields

Source to restore

The source volumes of FlashCopy volume pairs to restore, based on the following criteria:

Note: Only the restorable volume pairs will be displayed and all the restorable pairs will be restored.

Source nickname

The nickname of the source volume of the FlashCopy volume pair.

Source ID

The volume ID of the source volume of the FlashCopy volume pair.

Target nickname

The nickname of the target volume of the FlashCopy volume pair.

Target ID

The volume ID of the target volume of the FlashCopy volume pair.

FlashCopy properties — General

Use this page to view information about existing FlashCopy relationships, including information about source and target volumes.

Introduction

Use this page to view information about a selected FlashCopy relationship, including information about the source and target volumes. This page displays the relationship and lists all enabled or disabled copy options that you have selected for the relationship.

Menu path

Real-time manager → Copy services → FlashCopy → Select one volume pair → Select Action: Properties → Go

Fields

Created

The date and time that the FlashCopy relationship was created.

Last refresh

The most recent date and time that the target volume in the FlashCopy relationship was refreshed.

Relationship will remain

Indicates whether the FlashCopy relationship remains after the copy process is complete. If the FlashCopy relationship is persistent, then the value is Yes; otherwise, the value is No. Use the Create FlashCopy relationship — Select common options page to set this value when you create the FlashCopy relationship. If you have selected the Make relationship(s) persistent option on this page, the value of the Relationship will remain field on the FlashCopy properties — General page is Yes.

Change recording

Indicates whether the change recording function is enabled on the selected FlashCopy volume pair. Change recording is a feature that the storage unit uses to monitor writes and record changes made to FlashCopy volumes since the last refresh on the volume pair. If the change recording function is enabled on the selected FlashCopy volume pair, then the value is Yes; otherwise, the value is No. Use the Create FlashCopy relationship — Select common options page to set this value when you create the FlashCopy relationship. If you have selected the Enable change recording option on this page, the value of the Change recording field on the FlashCopy properties — General page is Yes.

Indicates whether you can choose to discard or commit changes to the FlashCopy target volume. When a FlashCopy relationship is established, this value defaults to No. If the option is enabled on the selected FlashCopy volume pair, then the value of the field is Yes; otherwise, the value is No. This option is only relevant in the context of a Global Mirror environment. The option must be set to Yes during a Global Mirror FlashCopy consistency group formation failure using the FlashCopy Revertible action on the FlashCopy main page. In most of the cases, the volumes are consistent and this process is not necessary. If a FlashCopy target volume has data that is inconsistent with data on at least one other target volume of the consistency group, and you have changed the FlashCopy relationship to , you have two choices. You can discard data and restore the FlashCopy pair back to a previous FlashCopy relationship, or you can commit the current target volume data. After you have discarded or committed the target volume data, the value is automatically changed from Yes to No.

Background copy initiated

Indicates whether the background copy process has been initiated to physically copy data from the source volume to the target volume of the FlashCopy pair. If the FlashCopy background copy has been initiated, then the value is Yes; otherwise, the value is No. Use the Create FlashCopy relationship — Select common options page to set this value when you create the FlashCopy relationship. If you have selected the Initiate background copy option on this page, the value of the Background copy initiated field on the FlashCopy properties — General page is Yes. You can also use the Initiate Background Copy action on the FlashCopy main page to set this value to Yes on a persistent FlashCopy relationship.

Source is write inhibited

Indicates whether writes to the source volume of the FlashCopy volume pair are prohibited. If writes to the source volume of the FlashCopy volume pair are prohibited, then the value is Yes; otherwise, the value is No. When a FlashCopy relationship is established, this value defaults to No. This value is only set to Yes in a limited circumstance during a Global Mirror FlashCopy consistency group formation failure scenario. If a FlashCopy consistency group target volume has data that is inconsistent with data on at least one other target volume in the consistency group, you must change the FlashCopy relationships in the consistency group to Revertible using the FlashCopy Revertible action on the FlashCopy main page to enter the FlashCopy Revertible wizard. After you select common options, the next step of the wizard is the FlashCopy revertible — Select advanced options page. Inhibit writes to source volume is the first option on this page, and prevents further writes to the source volume from the time that you make the FlashCopy relationship revertible until the time that you discard or commit the changes to the target volumes. When you discard or commit changes to the target volumes that you have made revertible, you also automatically remove the source write inhibit option and the value of the Source is write inhibited field on the FlashCopy properties — General page changes from Yes to No.

Target is write inhibited

Indicates whether writes to the target volume of the FlashCopy volume pair are prohibited. If writes to the target volume of the FlashCopy volume pair are prohibited, then the value is Yes; otherwise, the value is No. When a FlashCopy relationship is established, this value defaults to No. This value is only set to Yes in a limited circumstance during a Global Mirror FlashCopy consistency group formation failure scenario. If a FlashCopy consistency group target volume has data that is inconsistent with data on at least one other target volume in the consistency group, you must change the FlashCopy relationships in the consistency group to Revertible using the FlashCopy Revertible action on the FlashCopy main page to enter the FlashCopy Revertible wizard. After you select common options, the next step of the wizard is the FlashCopy revertible — Select advanced options page. Inhibit writes to target volume is the second option on this page, and prevents further writes to the target volume from the time that you make the FlashCopy relationship revertible until the time that you discard or commit the changes to the target volumes. When you discard or commit changes to the target volumes that you have made revertible, you also automatically remove the target write inhibit option and the value of the Target is write inhibited field on the FlashCopy properties — General page changes from Yes to No.

Source Number

The volume ID or number of the FlashCopy source volume. The volume number is a 4-digit hexadecimal value that consists of the logical subsystem (LSS) number and the volume device number, *LLVV*, where *LL* is the LSS number and *VV* is the volume device number.

Source Nickname

The nickname of the FlashCopy source volume. Click on the link to view the Volume Properties page.

Target Number

The volume ID or number of the FlashCopy target volume. The volume number is a 4-digit hexadecimal value that consists of the logical subsystem (LSS) number and the volume device number, *LLVV*, where *LL* is the LSS number and *VV* is the volume device number.

Target Nickname

The nickname of the FlashCopy target volume. Click on the link to view the Volume Properties page.

OK

Closes the FlashCopy properties — General page and returns to the FlashCopy main page.

FlashCopy properties — Out-of-sync tracks

Use this page to view information about the out-of-synchronous tracks on the source and target volumes in existing FlashCopy relationships.

Introduction

After you have created FlashCopy relationships, you can use this page to view out-of-synchronous tracks on the source and target volumes in existing FlashCopy relationships. You can access this page by clicking the link that is associated with the source volume nickname from the main page.

Menu path

Real-time manager → Copy services → FlashCopy → Select one volume pair → Select Action: Properties → Go → ->Out-of-sync tracks

Fields

Source nickname

The nickname of the FlashCopy source volume. Click on the link to view the open systems or zSeries volume properties page.

Source ID

The volume ID of the FlashCopy source volume.

Target nickname

The nickname of the FlashCopy target volume. Click on the link to view the open systems or zSeries volume properties page.

Target ID

The volume ID of the FlashCopy target volume.

Refresh interval

The value that indicates how often to refresh the out-of-sync tracks on the source and target volumes of the selected volume pair. The values include Disable, 1 minute, 2 minutes, 5 minutes, and 15 minutes.

Out-of-sync tracks

This number of out-of-sync tracks for the selected FlashCopy volume pair.

Global Mirror

This topic provides information to help you get started using Global Mirror functions. Global Mirror asynchronously copies data from a host to a remote site, and maintains data on a storage unit at the remote site.

The Global Mirror feature is accessible only from the Real-time Manager; the Global Mirror feature is not accessible from the Simulated Manager.

Global Mirror — Main page

Use this page to create and manage Global Mirror sessions for one or several sets of volumes.

Introduction

The Global Mirror function provides a two-site extended distance remote copy option for disaster recovery. With Global Mirror, the data that the host writes to the storage unit at the local site is asynchronously copied to the storage unit at the remote site. A consistent copy of the data is then automatically maintained on the storage unit at the remote site.

If you select a storage unit that is not a master storage unit, a message displays informing you that the storage unit is not a master (or primary) for Global Mirror. If the storage unit is a master, then the table displays data about existing Global Mirror sessions.

This page is the starting point for creating Global Mirror sessions for one or more volumes. You can select the storage complex (and storage unit) from which to select volumes to include in a Global Mirror session.

This page also displays existing established Global Mirror sessions and associated session number and consistency group information for example. If the table is empty, no sessions have been defined for the selected storage complex.

You can select the volume pair that you want to manage by selecting the check box that is associated with the volume pair. The Select Actions options are changed based on the attributes of the selected volume pair, which determine the possible actions that can be performed on the volume pair. The following are actions that can be display for the selected volume pair.

Create A Global Mirror session is created for one or more volumes.

Delete The Global Mirror session is deleted.

Modify

The selected Global Mirror session that allows you add or remove volumes from the session.

Pause The Global Mirror session for a set of volumes between the master storage image and all its Subordinates LSSs is paused.

View session volumes

The selected volumes of the Global Mirror session are displayed.

Properties

The properties of the Global Mirror session and its associated volumes are displayed.

The Global Mirror feature is accessible only from the Real-time Manager; the Global Mirror feature is not accessible from the Simulated Manager.

Menu path

Real-time manager → Copy services → Global Mirror → Go

Fields

Storage complex

The nicknames of storage complexes that are available for selection. When you create new Global Mirror sessions for volumes, the storage complex (and storage unit and LSS, for example) that you select through filtering determines where the selection of volumes are accessed. Nicknames are created by the user when resources are created and can be used as part of an overall scheme or naming convention for making resources easier to identify and manage.

A storage complex describes a group of storage units such as the DS6000s that is managed by a single management console. If you have only one DS6000 storage unit, then your storage complex consist of one storage unit.

Storage unit

The nickname of storage units that are available for selection. This list can include any nickname that is associated with any 2107, 1750, and 2105 Model 800 that is currently displayed in the Storage units main page. A storage unit consists of a single DS6000.

Select

Check the select box to perform actions on specific table rows

Session number

The user-assigned session number, which consists of two hexadecimal characters ranging from 01 - FF (1-255 in decimal). This number is unique across the enterprise and uniquely identifies the session. It identifies volumes that will be included in the Global Mirror session.

If you click on the link for a particular session number in the table, the Global Mirror properties — General page is displayed. If no Global Mirror sessions exist, the table is empty.

Storage units

The quantity of storage units on which this session has volumes.

State The copy state of the session (Running, Paused, Fatal)

Running

When a Global Mirror session is resumed, the state is Running.

Paused

The Global Mirror session is paused. You can pause a session and later resume the session.

Failed The Global Mirror session has failed.

Consistency group time

The time recorded when the last successful consistency group was formed.

Create Global Mirror session — Select volumes

Use this page to select the volumes that will participate in your new Global Mirror session.

Introduction

When you select volumes, you must identify the LSSs and volumes within those LSSs that are going to participate in the Global Mirror session:

- Global Mirror source volumes at the local sites
- Global Mirror target volumes (FlashCopy source volumes) at the remote sites
- FlashCopy target volumes at the remote sites
- LSSs to be used to connect the master and subordinate storage units

Menu path

Real-time manager → Copy services → Global Mirror → Select Action: Create... → Go

Fields

Select volumes

A navigation tree whose nodes contain or are source Global Mirror volumes that are not already in Global Mirror relationships. You can select any combination of volumes by navigating through the levels described below.

Storage complex

The list of storage complexes that are available for selection.

Storage units

The nicknames of storage units that are available for selection.

LSS The numbers of LSS that are available for selection.

Volume Number

The volume number (nickname).

Selected volumes

The list of volumes that you have selected.

Create FlashCopy

Allows you to create a new FlashCopy relationship (optional). When you select this button, the Create FlashCopy page is displayed.

Create Metro Mirror

Allows you to create a new Metro Mirror relationship (optional). When you select this button, the Create Metro Mirror page is displayed.

Note: If you create a Metro Mirror relationship from this Create Global Mirror session page, the navigation refreshes to reflect the new valid volumes for selection.

< Back

Takes you to the previous step of the wizard.

Next >

Takes you to the next step of the wizard. You cannot proceed to the next step until you have completed all required fields.

Finish Completes the task and takes you to the main page. This button is disabled until you enter all of the required information in the wizard.

Cancel

Ends the wizard and returns you to the main page without completing the task.

Create Global Mirror session — Define properties

Use this page to define properties of your new Global Mirror session.

Introduction

This page allows you to define the properties of your Global Mirror session, including the consistency group interval time, maximum coordination interval, and the maximum amount of time that the writes are inhibited to the remote side.

Menu path

Real-time manager → **Copy services** → **Global Mirror** → **Select Action: Create...** → **Go**

Fields

Enter session number

The session number consists of two hexadecimal characters ranging from 01 - FF (1-255 in decimal). This number is unique across the enterprise and uniquely identifies the session. It identifies volumes that are included in the Global Mirror session.

Get available session numbers

Available session numbers for the volumes that are associated with the Global Mirror session are displayed when you click the button.

Select master LSS

The master LSSs that are available for selection depend on which storage complex you specified for **Select storage complex for master LSS**.
Navigate through the following levels to select the master LSS:

Storage complex

The list of storage complexes that are available for selection. This is the first filter that displays in the table.

Storage unit

The nicknames of the storage units that are available for selection. The storage unit (from the selected storage complex) is the second filter that displays in the table.

LSS The LSS number that is associated with the master storage unit. The LSS (from the selected storage unit) is the third filter that displays in the table.

Consistency group interval time (seconds)

Indicates how long you must wait between the formation of consistency groups. If the value is set to zero, the consistency group will be formed continuously. The default value is 0. The maximum value is 65535 seconds. This field is optional.

Maximum coordination interval (milliseconds)

Indicates the maximum time that the primary host I/O is paused to begin

forming a consistency group. The default value is 50. The maximum value is 65535 milliseconds. This field is optional.

Maximum time writes inhibited to remote site (seconds)

Indicates the maximum amount of time that writes are inhibited to the remote site before the current consistency group stops. The default value is 30 seconds. This field is optional.

< Back

Takes you to the previous step of the wizard.

Next >

Takes you to the next step of the wizard. You cannot proceed to the next step until you have completed all required fields.

Finish Completes the task and takes you to the main page. This button is disabled until you enter all of the required information in the wizard.

Cancel

Ends the wizard and returns you to the main page without completing the task.

Create Global Mirror session — Select session paths

Use this page to select the session paths for the master LSS that you selected in the previous page.

Introduction

You can select one or more master and subordinate LSS pairs to be used as Global Mirror session paths for specified master LSS.

Menu path

Real-time manager → Copy services → Global Mirror → Select Action: Create... → Go

Fields

Select

Select the subordinates by navigating through the following levels. You can select one of the LSSs under a single storage unit. There can be only one subordinate LSS per storage unit.

Master storage unit

The serial number (nickname) of the master storage unit.

Master LSS

The number of the master LSS.

Subordinate ID

The serial number (nickname) of the subordinate storage unit and LSS.

Create path

Creates a new path (optional). When you select this button, the Create path page is displayed.

Note: If you create new paths from this Create Global Mirror session, the navigation refreshes to reflect the new valid subordinates for selection.

< Back

Takes you to the previous step of the wizard.

Next >

Takes you to the next step of the wizard. You cannot proceed to the next step until you have completed all required fields.

Finish Completes the task and takes you to the main page. This button is disabled until you enter all of the required information in the wizard.

Cancel

Ends the wizard and returns you to the main page without completing the task.

Create Global Mirror session — Verification

Use this page to verify the properties you selected when you are creating your Global Mirror session.

Introduction

After you create Global Mirror relationships and select the properties for the volumes that are included in Global Mirror relationships, use the information that is displayed on this page to verify your selections. When you click the **Finish** button, a Global Mirror relationship is created and the properties are applied to the volumes that you selected.

Menu path

Real-time manager → Copy services → Global Mirror → Select Action: Create... → Go

Fields

Session number

The user-assigned session number , which consists of two hexadecimal characters ranging from 01 - FF (1-255 in decimal). This number is unique across the enterprise and uniquely identifies the session. It identifies volumes that are included in the Global Mirror session.

Volumes

The quantity of volumes that are selected for this session.

Master LSS

The LSS number.

Master-subordinate pairs

The quantity of defined master-subordinate pairs.

< Back

Takes you to the previous step of the wizard.

Next >

Takes you to the next step of the wizard. You cannot proceed to the next step until you have completed all required fields.

Finish Completes the task and takes you to the main page. This button is disabled until you enter all of the required information in the wizard.

Cancel

Ends the wizard and returns you to the main page without completing the task.

Modify Global Mirror session — Select volumes

Use this page to modify the volumes participating in the existing Global Mirror session.

Introduction

Note: You can add or remove only those LSSs that already exist in the Metro Mirror session and that have Global Copy relationships established. You cannot add a new LSS to the session, but you can add volumes from existing LSSs.

When you select volumes, you must identify the LSSs and volumes within those LSSs that are going to participate in the Global Mirror session:

- Global Copy primary volumes at the local sites
- Global Copy secondary volumes (FlashCopy source volumes) at the remote sites
- FlashCopy target volumes at the remote sites
- LSSs to be used to connect the master and subordinate storage units

Menu path

Real-time manager → Copy services → Global Mirror → Select Action: Modify... → Go

Fields

Select volumes

A navigation tree whose nodes are volumes that contain or are source Global Mirror volumes that are not already in Global Mirror relationships. You can select any combination of volumes by navigating through the levels described below.

Storage complex

The list of storage complexes that are available for selection.

Storage unit

The nicknames of storage units that are available for selection.

LSS The LSS number.

Volume Number

The volume number (nickname).

Selected volumes

A navigation tree whose nodes are volumes that you have selected.

Create FlashCopy

Creates a new FlashCopy relationship (optional). When you select this button, the Create FlashCopy page is displayed.

Create Metro Mirror

Allows you to create a new Metro Mirror relationship (optional). When you select this button, the Modify Metro Mirror page is displayed.

Note: If you create a Metro Mirror relationship from this Create Global Mirror session page, the navigation refreshes to reflect the new valid volumes for selection.

Modify Global Mirror session — Define properties

Use this page to modify the properties that you defined in the existing Global Mirror session.

Introduction

This page allows you to modify the properties of your Global Mirror session, including the consistency group interval time, maximum coordination interval, and the maximum amount of time that the writes are inhibited to the remote side.

Menu path

Real-time manager → **Copy services** → **Global Mirror** → **Select Action: Modify...** → **Go**

Fields

Enter session number

The session number. The session number consists of two hexadecimal characters ranging from 01 - FF (1-255 in decimal). This number is unique across the enterprise and uniquely identifies the session. It identifies volumes that are included in the Global Mirror session.

Note: You cannot change the session number or the master LSS after the session has been created.

Select master LSS

A navigation tree whose nodes are master LSSs that can be selected. The master LSSs that are available for selection depend on which storage complex you specified for **Select storage complex for master LSS**.

Note: You cannot change the master LSS
Navigate through the following levels to select the master LSS:

Storage complex

The list of storage complexes that are available for selection. This is the first filter that displays in the table.

Storage unit

The nicknames of the storage units that are available for selection. The storage unit (from the selected storage complex) is the second filter that displays in the table.

LSS The LSS number that is associated with the master storage unit. The LSS (from the selected storage unit) is the third filter that displays in the table.

Consistency group interval time (seconds)

Indicates how long you must wait between the formation of consistency groups. If the value is set to zero, the consistency group is formed continuously. The default value is 0. The maximum value is 65535 seconds. This field is optional.

Maximum coordination interval (milliseconds)

Indicates the maximum time that the primary host I/O is paused to form a consistency group. The default value is 50. The maximum value is 65535 milliseconds. This field is optional.

Maximum time writes inhibited to remote site (seconds)

Indicates the maximum amount of time that writes are inhibited to the remote site before the current consistency group stops. The default value is 30 seconds. This field is optional.

Create Global Mirror session — Select subordinates

Use this page to select the subordinate storage units for your new Global Mirror session.

Introduction

A Global Mirror session can be managed across a group of storage units at the local site. Select one storage unit at the local site as the master storage unit to coordinate the Global Mirror session. The other storage units at the local site are subordinate storage units. You must select subordinate storage units only if you have subordinate storage units in your Global Mirror session. The master storage unit must have paths to communicate with each of the subordinate storage units.

Menu path

Real-time Manager → Copy Services → Global Mirror → Select Action: Create... → Go

Fields

Select subordinates

Select the subordinates by navigating through the following levels. You can select one of the LSSs under a single storage unit. There can be only one subordinate LSS per storage unit.

Storage complex

The list of storage complexes that are available for selection.

Storage unit

The nicknames of storage units that are available for selection.

Storage unit

The nicknames of storage units that are available for selection.

Selected subordinates

A navigation tree whose nodes are the selected subordinates. You can select a maximum number of 16 subordinates.

Create path

Creates a new path (optional). When you select this button, the Create path page is displayed.

Note: If you create new paths from this Create Global Mirror session — Select subordinates page, the navigation refreshes to reflect the new valid subordinates for selection.

Pause Global Mirror session

Use this page to select which existing Global Mirror session to pause. You must have created a Global Mirror session and it must be listed in the table before you can pause it.

Introduction

Pausing a Global Mirror session temporarily stops the session until you resume the session. The specific session will be paused following your confirmation.

Menu path

Real-time manager → Copy services → Global Mirror → Select one or more sessions → Select Action: Pause → Go

Resume Global Mirror session

Use this page to select which existing Global Mirror session to resume. You must have paused a Global Mirror session and it must be listed in the table before you can resume it.

Introduction

You can resume a Global Mirror session that has been paused. The specific session is resumed following your confirmation

Menu path

Real-time manager → Copy services → Global Mirror → Select one or more sessions → Select Action: Resume → Go

Global Mirror properties — General

Use this page to view information about general properties of Global Mirror relationships.

Introduction

This page is available in the **Select Action** drop-down list only when you select one of the units in the table.

Menu path

Real-time manager → Copy services → Global Mirror → Select Action: Properties → Go → General

Fields

Global Mirror properties

Session ID

The session ID in hex (00-FF).

Master storage unit

The master storage unit serial number (nickname).

Master LSS

The LSS number.

Subordinate ID

The storage unit serial number (nickname) of the subordinate and the LSS, if applicable.

Consistency group interval

The interval time between attempts to form a consistency group, up to 65,535 seconds.

Maximum coordination interval

The extended distance consistency maximum coordination interval, up to 65,535 milliseconds.

Time writes inhibited at remote site

The maximum time that will be spent sending the current consistency group to the remote site before completion of the current consistency group fails. The default is 30 seconds.

Consistency group attempts

The number of attempts recorded since the last successful consistency group was formed in a Global Mirror session.

Global Mirror failures

Use this page to view information about failures on the Global Mirror session.

Menu path

Real-time manager → Copy services → Global Mirror → Select Action: Properties → Go → Failures

Fields**Select failure****Most recent failure**

Specifies that information about the most recent failure of the consistency group formation attempt is displayed.

Previous failure

Specifies that information about the next to last failure of the consistency group formation attempt is displayed.

First failure

Specifies that information about the first failure of the consistency group formation is displayed.

Failure data

Failure information includes:

Storage unit sequence number

The five-digit storage unit sequence number.

Failing LSS

The LSS number that has caused the failure of the consistency group formation.

Failure reason

The error reason of the failure of the consistency group formation attempt.

Master state

The state of the entire Global Mirror session.

Global Mirror session volumes

Use this page to view general information about the volumes participating in the Global Mirror session.

Introduction

Menu path

Real-time manager → Copy services → Global Mirror

Fields

Global Mirror session volumes

Nickname

The volume nickname in the selected session.

Number

The volume number in the selected session.

Status The status of the volumes participating in a Global Mirror session.

Active When a session is active, the status of the volume is in this state.

Joined pending

When a volume is added to a Global Mirror session, the volume is put into this state until the next consistency group is formed.

Remove pending

When an existing volume is removed from a session, the volume is put into a remove pending state until the next consistency group is formed.

Type The volume type [FB, CKD].

Capacity

The volume capacity.

RAID The RAID type [RAID 5, RAID 10, Mixed].

Extent pool

The extent pool nickname.

Host systems

The topics in this section present information that is related to using the host systems pages. If the pages are displayed in a wizard, they are listed in the sequence that they are displayed.

Host systems — Main page

Use this page to work with user-defined host systems that can access the storage units.

Introduction

For open systems and iSeries hosts, a host system must be created each host, and one or more host system attachments must be created and attached to the storage unit before the storage unit allows the host to access the data.

Note: Host systems do not need to be created for FICON hosts, since they provide anonymous attachment to the storage unit.

No data is displayed in the table if no hosts are defined.

Menu path

Real-time manager or Simulated manager → Manage hardware → Host systems

Fields

Select Select the check box to perform actions on specific table rows.

Nickname

The nickname for the host. Nicknames are user-specified when the host is created, and can be used as part of an overall scheme or naming convention for making resources easier to identify and manage. The name is limited to 16 characters.

Type The host manufacturer, platform, and host type abbreviation (in parentheses). The host type is selected when the host system is created.

Host ports

The total quantity of host ports that are defined for this host system. A host port refers to a single physical port on a host bus adapter with a unique WWPN.

Attachments

The quantity of host attachments that are defined for this host. A host attachment consists of one or more host ports that are grouped together so that multiple host ports can easily be configured in the same way. Configuring the host attachment for connection to one or more storage units configures all of the ports in that host attachment to connect to the same storage units.

Attachment types

The type of attachment (for example, FCAL, FCSF, or FICON). The attachment types indicate both the Upper Layer Protocol (ULP) and the topology of the attachments that are defined for this host. The FcAl type indicates a SCSI ULP with a FC-AL topology. The FcSf type indicates a SCSI ULP with a point-to-point or switched fabric topology. The FICON type indicates a FICON ULP with a point-to-point or switched fabric topology.

Storage units

The quantity of storage units to which this host system is attached via one or more host attachments. If the host is attached to only a single storage unit, then the storage unit nickname is displayed. If the host is attached to more than one storage unit, then the quantity of storage units is displayed as a hyperlink that takes you to the Storage Units page, but shows you only the storage units attached to this host.

Create host system — General host information

Use this page to define general host information.

Introduction

For open systems and iSeries hosts, a host system must be created for each host, and one or more host system attachments must be created and attached to the storage unit before the storage unit allows the host to access the data.

Note: Host systems do not need to be created for FICON hosts, since they provide anonymous attachment to the storage unit.

You must have at least one array and one rank defined before creating hosts.

Menu path

**Real-time manager or Simulated manager → Manage hardware → Host systems →
Select Action: Create... → Go**

Fields

Type The host manufacturer, platform, and host type abbreviation (in parentheses). The host type is selected when the host system is created. This is a required field.

Standard Open Systems

IBM pSeries, RS/6000 and RS/6000 SP servers - AIX (pSeries)
IBM pSeries, RS/6000 and RS/6000 SP servers – Linux (Linux on POWER)
IBM zSeries servers - Linux (zLinux)
IBM SAN File System – AIX MDS (SanFsAIX)
IBM SAN File System – Linux MDS (SanFsLinux)
IBM SAN Volume Controller (SVC)
AMD servers – Linux RHEL (AMDLinuxRHEL)
AMD servers – Linux Suse (AMDLinuxSuse)
Apple servers (AppleOSX)
Fujitsu servers – Solaris (Fujitsu)
HP servers - HP-UX (Hp)
HP AlphaServer - OpenVMS (HpVms)
HP AlphaServer - Tru64 UNIX (HpTru64)
Intel-based servers – Linux RHEL (LinuxRHEL)
Intel-based servers – Linux Suse (LinuxSuse)
Intel-based servers – Linux Red Flag (LinuxRF)
Intel-based servers – Linux Desktop (LinuxDT)
Intel-based servers – Microsoft Windows 2000 (Win2000)
Intel-based servers – Microsoft Windows 2003 (Win2003)
Intel-based servers – Novell Netware (Novell)
SGI Origin servers – IRIX (SGI)
Sun servers - Solaris (Sun)
VMWare ESX (VMWare)

iSeries

IBM iSeries and AS/400 Servers - OS/400 (iSeries)
IBM iSeries/pSeries servers - Linux (iLinux)

Anonymous

Anonymous FICON host

Nickname

The nickname for the host. Nicknames are user-specified when the host is created, and they can be used as part of an overall scheme or naming convention for making resources easier to identify and manage. The name is limited to 16 characters. This is a required field.

Description

The host description, limited to 256 characters.

Create host system — Define host ports

Use this page to specify the host ports for this host.

Introduction

This page appears only if you have selected an open systems host. This page does not appear if you have selected an Anonymous FICON host.

You must have at least one array and one rank defined before creating hosts.

Menu path

Real-time manager or Simulated manager → Manage hardware → Host systems → Select Action: Create... → Go

Fields**Quantity**

The quantity of host ports for the open systems host attachment. Valid values are 1 - 32. This is a required field.

Attachment port type

This is a list of supported attachment types. The values are FC arbitrated loop and FC switch fabric (P-P). This is a required field.

Group ports to share a common set of volumes

If checked by the user, the quantity of ports that are identified in the Quantity field becomes grouped together and treated as a single host attachment.

Add > Enabled once you populate the Quantity and Type fields. This button adds the data to the Defined host ports table. Each time the **Add** button is selected, a new row appears in the table. Each new row is given a unique identifier that references the grouping of host attachments that was added to the Defined host ports table.

< Remove

Enabled once you make a selection in the table. This button removes the data from the Defined host ports table.

Defined host ports

Select Select the check box to perform actions on specific table rows of the defined host ports. At least one host port definition must have been added to the Defined host ports table.

Quantity

The quantity of host ports.

Type The type of host ports (FC arbitrated loop or FC switch fabric).

Identifier

The reference for each defined grouping of host attachments. The identifier reflects the following format: nickname, host type, attachment type, and quantity of ports. For example, Fred|pSeries|FcAl(4)_1. This attachment is a RS/6000 host that is nicknamed Fred, with Fibre Channel Arbitrated Loop, and 4 paths that are grouped together for volume sharing. It is the only one to be created with these characteristics and the first to be created with these characteristics.

Create host system — Define host WWPN

Use this page to specify the host port world-wide port names (WWPNs) for open systems hosts.

Introduction

The number of host port WWPN pages reflects the number of host port identifiers that are generated from the Create host system — Define host ports page.

This page appears only if you selected any open systems host.

Menu path

Real-time manager or Simulated manager → Manage hardware → Host systems → Select Action: Create... → Go

Fields

WWPNs for host attachment [Identifier]

Port selections or WWPNs for each host port that is included in the identifier. Each of the defined ports (the number in the parentheses) has a box. For example, if the identifier is Fred|Rs6K|FcAl(4), there are 4 text entries. If there are more ports to define for this identifier than fit on this page, a subsequent page for this identifier enables you to continue with the WWPN definition for this identifier. WWPNs are 16 digits long.

Enter the speed for the port number shown in gigabytes per second. The speed specified is used on the Specify Connection panel when the View Recommended option is selected. Recommendations are made for I/O ports with the best match for host port speed.

Create host system — Specify storage unit parameters

Use this page to specify the storage unit parameters.

Introduction

The number of storage unit parameters pages reflects the number of storage units selected for attachment in the Host Systems page. You can loop through this page for each host attachment identifier by selecting the **Apply assignment** button to commit the current transaction and then starting from the top again by selecting another identifier.

Menu path

Real-time manager or Simulated manager → Manage hardware → Host systems → Select Action: Create... → Go

Fields

storage unit

The storage unit nickname and, sequentially, the storage unit for which you are currently defining parameters.

Select host attachment identifier

The columns are defined as follows:

Select The radio buttons for the ports.

Storage units

The number of storage units to which this host attachment is attached. Once you attach the host attachment to the storage unit and select the **Apply assignment** button, the quantity value in this column increases by one for this identifier.

Identifier

The host attachment identifier. The format: abbreviated nickname, abbreviated host type, abbreviated attachment type (the quantity of ports grouped and order of creation if the prior data is the same).

Select volume group for host attachment

A drop-down list of the available and valid volume groups. You can defer selection of a volume group until later by selecting the **Select volume group later** option in the list.

Note: A host system identifier can contain only one volume group per storage unit; in other words, a single world-wide port note (WWPN) can access only one volume group per storage unit.

Create new group

Creates a new volume group. After you create a new volume group, the table resets to reflect the new volume group, which you can then select for this host attachment.

Any valid storage unit I/O port

Enables the host attachment to log in to any of the available storage unit ports.

The following specific storage unit I/O ports

Enables the View recommended check box and the Available storage unit ports table. This selection is necessary for Anonymous FICON hosts in order to define the following I/O ports as FICON protocol.

Note: If there are no compatible host ports on this storage unit to attach the host to, use the Configure I/O Ports page to modify the I/O port properties. The I/O port properties can be changed only from the Configure I/O Ports page.

View recommended

Becomes enabled when you select the specific storage unit ports radio button. If you select this check box, the recommended storage unit port assignments are selected in the Available storage unit ports table.

Available storage unit I/O ports

Becomes enabled when you select the following specific storage unit ports radio button or if the selected identifier is a zSeries Network identifier. You can select up to all of the storage unit ports for the host attachment. If you select the View recommended check box, the recommended storage unit port assignments are selected in the table.

Note: Selecting the storage unit port for this identifier defines the protocol for this port (FCP or FICON). For example, if you select an identifier that is FcAl and attach it to a storage unit port, then the port is unable to attach to any attachment type other than FcAl.

Column headings:

Select The check boxes for the ports.

Host Attachments

The number of host attachment assigned to this storage unit port. Once you assign the host attachment to the storage unit port and select the **Apply assignment** button, the quantity value in this column increases by one for this storage unit port.

Location

The location that provides the physical link. The value of the location code (R1-I3-C2-T1) is a combination of a rack, I/O enclosure, card, and port, where the format is R[1 - 2]-I[1 - 8]-C[1 - 6]-T[1 - 4].

Type The current type definition for the I/O port (for example, FcAl, FcSf, or FICON).

Configure I/O Ports... button

Configures I/O ports. After you configure I/O ports, the table refreshes and you can select the new I/O port configuration for this storage unit.

Apply assignment button

Applies the current attachment assignment. Use this button to go through this page repeatedly for each host attachment identifier that you want to assign to the storage unit.

Create host system — Verification

Use this page to verify your selections after you create a host system.

Introduction

Use this page to verify properties and basic capacity calculations that represent the new host attachments.

Menu path

Real-time manager or Simulated manager → Manage hardware → Host systems → Select Action: Create... → Go

Fields

Nickname

The nickname for the host. Nicknames are user specified when the host is created, and can be used as part of an overall scheme or naming convention for making resources easier to identify and manage. The name is limited to 16 characters.

Host type

Reflects the user selection.

Identifiers

Format: [nickname|abbreviate host type|abbreviated attachment type (quantity of ports grouped)_order of creation if the prior data is the same], for example, George|Sun|FcSf(3)_2.

Storage units

The quantity of storage units that you have defined for host attachment.

Modify host system — General host information

Use this page to modify general host information.

Introduction

You cannot modify the host type.

Note: Modifying host information can be disruptive to host system I/O operations if the affected host port is logged into the target storage unit. You must ensure that the host port is offline to the host system before you modify host information.

Menu path

Real-time manager or Simulated manager → Manage hardware → Host systems → Select a host → Select Action: Modify... → Go

Fields

Type The user-selected host system type.

Nickname

The user- or system-defined nickname.

Description

An optional description.

Modify host system — Define host ports

Use this page to define host information.

Introduction

If you change anything on this page, the subsequent pages might require modification. The following list describes permissible modifications and the resulting actions:

- You can add another host attachment by entering data in the following fields: Quantity , Attachment Port Type, Group ports to share a common set of volumes. Select the **Add >** button to add them to the Defined host ports table.
- You can select an existing host port from the Defined host ports table and select the **< Remove** button. This action populates the related fields on the left side of the page with the information that was just removed. If you want to modify any of those fields, select the **Add >** button. The new host attachment is then added to the Defined host ports table. If you want to remove the it all together, proceed through the wizard.
- If you remove a host attachment, the volume group that is assigned to that host attachment cannot be accessed by it. In other words, all previously defined storage unit associations (storage unit ports and volume group) with this host attachment are lost. Thus, the links are removed from the subsequent steps and you must continue through the wizard using the **Next >** button. The **Finish** button is disabled until you complete all of the required changes.

Menu path

Real-time manager or Simulated manager → Manage hardware → Host systems → Select a host → Select Action: Modify... → Go

Fields

Quantity

The quantity of host ports for the open systems host attachment (1-32).

Attachment Port Type

A list of supported attachment types [FC arbitrated loop and FC switch fabric (P-P)].

Add > Enabled once you populate the Quantity and Type fields. This button adds the data to the Defined host ports table.

< Remove

Enabled once you make a selection in the table. This button removes the data from the Defined host ports table.

Defined host ports

Select The check boxes for the host ports.

Quantity

The quantity of host ports.

Type The type of host ports (for example, FC arbitrated loop or FC switch fabric).

Identifier

The reference for each defined grouping of host attachments. The identifier reflects the following format: nickname, host type, attachment type, and quantity of ports.

Group ports to share a common set of volumes

If checked, the quantity of ports that are identified in the Quantity field becomes grouped together and treated as a single host attachment.

Modify host system — Define host port WWPN

Use this page to modify the host port world-wide port names (WWPNs) for open systems hosts.

Introduction

The number of host port WWPN pages reflects the number of host port identifiers that are generated from the Host Systems page.

Menu path

Real-time manager or Simulated manager → Manage hardware → Host systems → Select a host → Select Action: Modify... → Go

Fields

Real-time

WWPNs for host attachment [Identifier] (Real-time only)

Port selections or WWPNs for each host port that is included in the identifier. Each of the defined ports (the number in the parenthesis) has a box. For example, if the Identifier is Fred|Rs6K|FcAl(4), there are 4 text

entries. If there are more ports to define for this Identifier than fit on this page, a subsequent page for this Identifier enables you to continue with the WWPN definition for this Identifier. The label in the subsequent page is “WWPNs for host attachment [Identifier] continued”.

Simulated

WWPNs for host attachment [Identifier] (Simulated)

You can optionally enter the 16 digit WWPNs for each host port that is included in the identifier. You must select from the box or enter the 16 digit WWPNs for each host port that is included in the identifier. Each of the defined ports (the number in the parenthesis) has a text field.. For example, if the Identifier is Fred|Rs6K|FcAl(4), there are 4 WTextEntries. If there are more ports to define for this Identifier than fit on this page, a subsequent page for this Identifier enables you to continue with the WWPN definition for this Identifier. The label in the subsequent page is “WWPNs for host attachment [Identifier] continued”.

Modify host system — Specify storage units

Use this page to modify the storage units for host attachment.

Introduction

If you change anything on this page, the subsequent pages might require modification (and new Specify storage unit parameters pages might be generated). The following is a list of permissible modifications and the resulting action:

- You can add or remove any of the Available storage units or the Selected storage units via the Dueling list box.
 - If you add more storage units, you must go through the Specify storage unit parameters page for each newly-added storage unit.
 - If you remove storage units, all of the associations between the host attachment and the storage unit (storage unit ports and volume group) are lost.

Thus, the links are removed from the subsequent steps and you must continue through the wizard using the **Next >** button. The **Finish** button is disabled until you complete all of the required changes.

Menu path

Real-time manager or Simulated manager → Manage hardware → Host systems → Select a host → Select Action: Modify... → Go

Fields

Available storage units

The available and valid storage units.

Selected storage units

The selected storage units.

Create new storage unit button (Simulated)

Creates a new storage unit. After you create the new storage unit, the table refreshes and you can select the new storage unit for this host attachment.

Modify host system — Specify storage unit parameters

Use this page to modify the storage unit parameters.

Introduction

The following is a list of permissible modifications and the resulting actions:

- If you select an existing host attachment Identifier from the Select host attachment identifiers table, you can:
 - Select another volume group for this host attachment by choosing from the Select volume group for host attachment box.
 - Select the **Create new group** button to create a new group for selection.
 - Select the alternate radio button, any storage unit port, any storage unit port up to x ports, or the following specific storage unit ports. If you select the latter for the modification, you must specify the ports in the Available storage unit ports table.
- If you select a new host attachment that was added in the Modify host system - Define host ports page, you must proceed through this page as you would in the Create mode of the wizard.

Menu path

Real-time manager or Simulated manager → Manage hardware → Host systems → Select a host → Select Action: Modify... → Go

Fields

Storage unit

The storage unit nickname and, sequentially, the storage unit for which you are currently defining parameters.

Select host attachment identifier

The columns are defined as follows:

Select The check boxes for the ports.

Storage Units

The number of storage units to which this host attachment is attached. Once you attach the host attachment to the storage unit and select the **Apply assignment** button, the quantity value in this column increases by one for this identifier.

Identifier

The host attachment identifier. The format: abbreviated nickname, abbreviated host type, abbreviated attachment type (the quantity of ports grouped and order of creation if the prior data is the same).

Select volume group for host attachment

A drop-down list of the available and valid volume groups. You can defer selection of a volume group until later by selecting the **Select volume group later** option in the list.

Note: A host system identifier can select only one volume group per storage unit; in other words, a single WWPN can access only one volume group per storage unit.

Create new group

Creates a new volume group. After you create a new volume group, the table resets to reflect the new volume group and you can select it for this host attachment.

Any valid storage unit I/O port

Enables the host attachment to log in to any of the available storage unit ports.

The following specific storage unit I/O ports

Enables the View recommended check box and the Available storage unit ports table. This selection is necessary for Anonymous FICON hosts in order to define the following I/O ports as FICON protocol.

Note: If there are no compatible host ports on this storage unit to attach the host to, use the Configure I/O Ports page to modify the I/O port properties. The I/O port properties can be changed only from the Configure I/O Ports page.

View recommended

Becomes enabled when you select the specific storage unit ports radio button. If you select this check box, the recommended storage unit port assignments are selected in the Available storage unit ports table.

Available storage unit I/O ports

Becomes enabled when you select the following specific storage unit ports radio button or if the selected identifier is a zSeries Network identifier. You can select up to all of the storage unit ports for the host attachment. If you select the View recommended check box, the recommended storage unit port assignments are selected in the table.

Note: Selecting the storage unit port for this identifier defines the protocol for this port (FCP or FICON). For example, if you select an identifier that is FcAl and attach it to a storage unit port, then the port is unable to attach to any attachment type other than FcAl.

Column headings:

Select The check boxes for the ports.

Host attachment

The number of host attachment assigned to this storage unit port. Once you assign the host attachment to the storage unit port and select the **Apply assignment** button, the quantity value in this column increases by one for this storage unit port.

Location

The location that provides the physical link. The value of the location code (R1-I3-C2-T1) is a combination of a rack, I/O enclosure, card, and port, where the format is R[1 - 2]-I[1 - 8]-C[1 - 6]-T[1 - 4].

Type The current type definition for the I/O port (for example, FcAl, FcSf, or FICON).

Configure I/O Ports... button

Configures I/O ports. After you configure I/O ports, the table refreshes and you can select the new I/O port configuration for this storage unit.

Apply assignment button

Applies the current attachment assignment. Use this button to go through this page repeatedly for each host attachment identifier that you want to assign to the storage unit.

Modify host system — Verification

Use this page to verify properties and basic capacity calculations that represent the modified host attachments.

Menu path

Real-time manager or Simulated manager → Manage hardware → Host systems → Select a host → Select Action: Modify... → Go

Fields

Nickname

The user- or system-defined nickname.

Host type

Reflects the user selection.

Identifiers

Format: abbreviated nickname | abbreviated host type | abbreviated attachment type [the quantity of ports grouped) and the _order of creation if the prior data is the same] (for example, George|Sun|FcSf(3)_2).

Storage units

The quantity of storage units that you defined for host attachment.

Host system — Properties

Use this page to review or modify host system properties.

Introduction

This page is available in the **Select Action** drop-down list only after you select one of the objects in the table. The page contains a list of properties that represent the selected host system. Each storage unit to which this identifier is attached is listed, followed by its associated volume group (if specified) and the specific ports on the storage unit to which this identifier is attached (if specified).

Menu path

Real-time manager or Simulated manager → Manage hardware → Host systems → Select a host system → Select Action: Properties... → Go

Fields

Host description

The host description (optional).

Volume Groups

The quantity of volume groups assigned to this host for all storage units to which it is attached.

Total GB

The total amount of storage accessible by this host.

WWPNs

The 16-digit worldwide port name (WWPN) for the open systems host.

Note: This column is only displayed for open systems hosts.

Storage Unit

The storage unit nickname, limited to 16 characters.

Volume Group

The volume group nickname and a link to an Open systems volumes main page that has content that is filtered by this volume group.

Storage Unit Ports

The storage unit ports that are selected by the user.

Long running task properties

This page displays when you invoke a long running task.

Introduction

The long running task indicator is displayed after you invoke a long running task. This indicator will contain the name of the task, and when available, the percent complete for the task. When the percent complete is not available, an indication that the task is in progress is displayed.

You can start another long running task for a different task than the current one. You can not invoke a long running task that is the same as the current long running task in progress. To initiate a long running task that is the same as the current long running task in progress, you must first close the long running task panel that is in progress.

Metro Mirror

The Metro Mirror function guarantees data consistency by ensuring that a write complete operation is only received by the host application after a remote copy has been committed to the target storage unit and acknowledged by both the source and target storage units.

The Metro Mirror feature is accessible only from the Real-time Manager; the Metro Mirror feature is not accessible from the Simulated Manager.

Metro Mirror — Main page

Use this page to set up Metro Mirror relationships between source (primary) volumes and target (secondary) volumes to allow for application data recovery, failover to remote sites for disaster recovery, and remote migration of data and offsite backups.

Introduction

This page is the starting point for creating new volume pairs for Metro Mirror relationships. You can select the storage complex (storage unit and LSS, for example) from which to create volume pairs between source (primary) and target (secondary) volumes. For new volume pairs, this operation starts the transition of two simplex volumes into a volume pair in the duplex pending or duplex state.

Note: Before you can create volume pairs, you must create paths between a source LSS in a specified storage unit and a target LSS in a specified storage unit.

This page also displays existing established volume pairs that are assigned to the storage complex (storage unit and LSS, for example) that you selected. It displays

the type of relationship for which the specified volume pair is participating, and the current state of that volume pair. If your storage enterprise includes an ESS 2105 and you have configured a Copy Services domain to use ESS volumes, the source ESS and target ESS serial numbers from which those volumes are assigned are displayed. If the table is empty, no volume pairs have been defined for the selected storage complex.

You can select the volume pair that you want to manage by selecting the check box that is associated with the volume pair. The Select Actions options are changed based on the attributes of the selected volume pair, which determine the possible actions that can be performed on the volume pair. The following are actions that can be display for the selected volume pair.

Delete The relationship between the selected volume pair is deleted.

Suspend

Application I/O to the source volume is stopped and data is not copied to the target volume of the selected volume pair during the suspension. You can select to suspend the volume pair at either the source or target volume. Data is allowed to continue when you select the Resume action.

Convert to synchronous

The selected volume pair converts to Metro Mirror mode and allows the volume pair to be synchronized.

Resume

The data is allowed to be copied to the source volume of the volume pair.

Recover failover

A failover operation turns its secondary volume into a primary volume and suspends the volumes for the selected volume pair. A failover operation is always followed by a failback operation.

Recover failback

A failback operation copies all required data from its target volume to the source volume in order to resume mirroring for the selected volume pair.

Properties

The status of the selected volume pair is displayed. For example, you can view how many tracks of data need to be copied from the source to the target volume of the selected volume pair.

The Metro Mirror feature is accessible only from the Real-time Manager; the Metro Mirror feature is not accessible from the Simulated Manager.

Menu path

Real-time manager → Copy services → Metro Mirror → Go

Fields

Storage complex

The nicknames of storage complexes that are available for selection. When you create new volume pairs, the storage complex (and storage unit and LSS, for example) that you select through filtering determines where the selection of volumes are accessed. Nicknames are created by the user when resources are created and can be used as part of an overall scheme or naming convention for making resources easier to identify and manage.

A storage complex describes a group of storage units such as the DS6000s that is managed by a single management console. If you have only one DS6000 storage unit, then your storage complex consist of one storage unit.

Storage unit

The nickname of storage units that are available for selection. This list can include any nickname that is associated with any 2107, 1750, and 2105 Model 800 that is currently displayed in the Storage units main page. A storage unit consists of a single DS6000.

Resource type

The type of resource (LSS, Host, Volume group, Show All Volumes) from which to select volumes for remote mirror and copy functions. The value of the selection in this field determines the field that is displayed to the right of this field. The default value for Resource type is LSS. The following resource type values and the respective field names are displayed:

For LSS

Specify LSS

For Host

Specify Host attachment

For Volume Group

Specify Volume group

For Show All Volumes

Specify Storage type

Specify LSS

The list of LSS identifiers that are available for selection. An LSS is a group of up to 256 logical volumes that have the same disk format, either count key data (CKD) for zSeries environments or fixed block (FB) for open-system environments.

Specify Host attachment

The list of host attachment identifiers that are available for selection. A host attachment identifies the type of interface, such as Fibre Channel Arbitrated Loop (FC-AL), that is used to connect open-systems and zSeries hosts to invoke and manage remote mirror and copy functions.

Specify Volume group

The list of volume groups that are available for selection. A volume group, specified as a nickname, is a collection of logical volumes.

Show All volumes

"All FB Volumes" or "All CKD Volumes" that are available for selection. If "None selected" is selected, the table is empty.

For the zSeries environments, the data that is stored in a storage unit is arranged in a count-key-data (CKD) format. For the open system environments, the data that is stored in the storage unit is arranged in a fixed-block (FB) format.

Select the Metro Mirror relationship that you want to work with from the table.

Select

Check the select box to perform actions on specific table rows.

Source ESS serial

The serial number of a particular ESS from which specific source volumes

that are participating in the Metro Mirror relationship are included. For example, an ESS is designated as 2105:14727, where 2105 is the device type and 14727 is the ESS serial number.

Source nickname

The nickname that identifies the source volume that is part of a Metro Mirror relationship.

If you click on a link for a particular relationship in the table, the Metro Mirror properties page is displayed. If no relationship exists, the table is empty.

Source Number

The volume number (or name, such as 1E2C) of the source volume, where the number is a four-hexadecimal value that consists of the LSS number and the volume number. For example, LLVV, where LL is the LSS number and VV is the volume number.

Target ESS serial

The serial number of a particular ESS from which specific target volumes that are in a Metro Mirror relationship are included. If you click on a link for a particular relationship in the table, the Metro Mirror properties page is displayed. If no relationship exists, the table is empty.

Target nickname

The nickname that identifies the target volume.

Target Number

The volume number (or name, such as 1E2C) that identifies the target volume, where the number is a four-hexadecimal value that consists of the LSS number and the volume number. For example, LLVV, where LL is the LSS number and VV is the volume number.

Type The type of relationship to create:

Metro Mirror

Provides real-time mirroring of logical volumes between two storage units that can be located up to 300 km from each other. It is a synchronous copy solution where write operations are completed on both copies (local and remote site) before they are considered to be complete.

Global Copy

Provides real-time mirroring of logical volumes between storage units in a nonsynchronous manner, where the order of updates is not strictly maintained. This means that I/O write completions are returned to the application after they have been committed to the primary storage unit.

State The state of a relationship, which can include the following states:

Full duplex

The state of a volume pair after Metro Mirror has completed the copy operation of the source volume to the target volume. At this time, the volume pair is synchronized, and all writes have been applied from the source to target volume.

Copy pending

The initial state of a defined volume pair. Metro Mirror is in the process of copying data from the source volume to the target volume. During the pending period, the volume pair is not synchronized.

Suspended

The state of the volume pair when the source storage unit cannot complete a write operation to the target storage unit or when the volume pair has been suspended manually.

Create Metro Mirror relationship — Volume pairing method

Use this page to determine the method (automated or manual) of selecting volume pairs for Metro Mirror relationships.

Introduction

This page allows you to select the method for selecting volume pairs (source and target volumes) for Metro Mirror relationships.

Menu path

Real-time manager → **Copy services** → **Metro Mirror** → **Select Action: Create...** → **Go**

Fields

Automated volume pair assignment

The volume pairing method means that the storage unit selects volumes of the same size as the source volumes for assigning to the target LSS.

If you select this option, the **Select target volumes (Auto pairing)** page displays for selecting target volumes.

Manual volume pair assignment

The volume pairing method is determined by you. If you select Manual volume pair assignment you have to assign to each source volume a target volume, one after the other. For example, you must assign to each source volume a target volume, one after the other. If you select this option, the **Select target volumes (Manual pairing)** page displays for selecting target volumes.

Create Metro Mirror relationship — Select source volumes

Use this page to select source volumes to participate in a Metro Mirror relationship. The source volumes that you select at your production (or local) site are mirrored to target volumes at your recovery (or remote) site.

Introduction

This page lists the available source volumes that are available to participate in Metro Mirror relationships determined by your selection of resource type and associated value on the main page. You have the option of changing the resource type from this page. The source volumes are selected from the storage complex (and storage unit and LSS, for example) that you have selected on the main page.

When volume pairs are established, the remote mirror and copy function copies data from the source volumes to the associated target volumes that you selected to participate in Metro Mirror relationships.

Menu path

Real-time manager → **Copy services** → **Metro Mirror** → **Select Action: Create...** → **Go**

Fields

Resource type

The type of resource (LSS, Host, Volume group, Show All Volumes) from which to select volumes for remote mirror and copy functions. The value of the selection in this field will determine the field that is displayed to the right of this field. The default value for Resource type is LSS. The following resource type values and the respective field names that are displayed to its right:

- For LSS: Specify LSS
- For Host: Specify Host attachment
- For Volume Group: Specify Volume group
- For Show All Volumes: Specify Storage type

Specify LSS

The list of LSS identifiers that are available for selection. An LSS is a group of up to 256 logical volumes that have the same disk format, either count key data (CKD) for zSeries environments, or fixed block (FB) for open-system environments.

Specify Host attachment

The list of host attachment identifiers that are available for selection. A host attachment identifies the type of interface, such as Fibre Channel Arbitrated Loop (FC-AL), that is used to connect open-systems and zSeries hosts to invoke and manage remote mirror and copy functions.

Specify Volume group

The list of volume groups that are available for selection. A volume group, specified as a nickname, is a collection of logical volumes.

Show All volumes

"All FB Volumes" or "All CKD Volumes" that are available for selection. If "None selected" is selected, the table is empty.

For the zSeries servers, the data that is stored in a storage unit is arranged in a count-key-data (CKD) format. For the open system servers, the data that is stored in the storage unit is arranged in a fixed-block (FB) format.

Select Check the select box to perform actions on specific table rows.

Nickname

The nickname of the source volumes that are part of the Metro Mirror relationship.

Volume Number

The volume number of the source volume, where the number is a 4-hexadecimal value that consists of the LSS number and the volume number. For example, LLVV, where LL is the LSS number and VV is the volume device number.

Volume Type

The type of data format for the source volumes: count-key-data or fixed block.

Binary (GB)

The capacity of DS volumes that are configured in binary format, where 1 GB (2^{30}) = 1 073 741 824 bytes.

Note: You must consider the gigabyte definitions. In many applications, the source and target volumes of a remote mirror and copy

relationship must be exactly the same size. For example, if you plan to use DS6000 and ESS 2105 volumes for remote mirror and copy functions, the volumes on the DS6000 must be created in decimal format to be compatible with ESS volumes.

Decimal (GB)

The capacity of ESS volumes that are configured in decimal format, where 1 GB (10^9) = 1 000 000 000 bytes

Extent Pool

The nickname of the extent pool to which the volume is assigned.

Note: An extent is a contiguous range of storage on a physical storage unit, such as a rank or array that can be allocated to a logical volume. An extent pool is a logical collection of storage extents from one or more ranks that is used to create logical volumes. The extent pool number is a four-decimal digit number. Even numbered extent pools are associated with rank group 0. Odd numbered extent pools are associated with rank group 1.

Create paths

If you have not already created the path for the selected volume pair and you select this button, the **Create paths** wizard displays to allow you to create the path.

Create Metro Mirror relationship — Select target volumes (auto pairing)

Use this page to select target volumes to participate in Metro Mirror relationships. The target volumes at your recovery (or remote) site receive updates that are written to the source volumes at the production (or local) site.

Introduction

This page displays only if you selected the **Automated volume pair assignment** option. From the list of available target volumes, the system will later automatically select target volumes of the same size as the source volume. The volume pairs display in sequential numbering fashion. For example, the lowest source volume number is paired with the lowest target volume ID, and so on.

Menu path

Real-time manager → Copy services → Metro Mirror → Select Action: Create... → Go

Fields

Storage complex

The nicknames of storage complexes that are available for selection. If you want to use target volumes from another storage complex, you can specify a different storage complex (and storage unit and LSS, for example) from which to select target volumes.

A storage complex describes a group of storage units such as the DS6000 that is managed by a single management console.

Note: Nicknames are user-specified when resources are created and can be used as part of an overall scheme or naming convention for making resources easier to identify and manage.

Storage unit

The nicknames of storage units that are available for selection. This list can include any nickname that is associated with any 2107, 1750, and 2105 Model 800 currently displayed in the Storage units main page. A storage unit consists of a single DS6000.

Resource type

The type of resource (LSS, Host, Volume group, Show All Volumes) from which to select volumes for remote mirror and copy functions. The value of the selection in this field determines the field that is displayed to the right of this field. The default value for Resource type is LSS. The following resource type values and the respective field names display to its right when selected:

- For LSS: Specify LSS
- For Host: Specify Host attachment
- For Volume Group: Specify Volume group
- For Show All Volumes: Specify Storage type

Specify LSS

The list of LSS identifiers that are available for selection. An LSS is a group of up to 256 logical volumes that have the same disk format, either count key data (CKD) for zSeries environments, or fixed block (FB) for open-system environments.

Specify Host attachment

The list of host attachment identifiers that are available for selection. A host attachment identifies the type of interface, such as Fibre Channel Arbitrated Loop (FC-AL), that is used to connect open-systems and zSeries hosts to invoke and manage remote mirror and copy functions.

Specify Volume group

The list of volume groups that are available for selection. A volume group, specified as a nickname, is a collection of logical volumes.

Show All volumes

"All FB Volumes" or "All CKD Volumes" that are available for selection. If "None selected" is selected, the table is empty.

For the zSeries environments, the data that is stored in a storage unit is arranged in a count-key-data (CKD) format. For the open system environments, the data that is stored in the storage unit is arranged in a fixed-block (FB) format.

Select the target volumes that you select to participate in Metro Mirror relationships.

Select Check the select box to perform actions on specific table rows.

Nickname

The nickname that identifies the target volume.

Volume Number

The volume number (or name, such as 1E2C) that identifies the target volume, where the number is a four-hexadecimal value that consists of the LSS number and the volume number. For example, LLVV, where LL is the LSS number and VV is the volume number.

Binary (GB)

The size, in gigabytes, of the DS target volumes that are available for selection. DS volumes are configured in binary format, where 1 GB (2^{30}) = 1 073 741 824 bytes.

Note: You must consider the gigabyte definitions. In many applications, the source and target volumes of a remote mirror and copy relationship must be exactly the same size. For example, if you plan to use DS6000 and ESS 2105 volumes for remote mirror and copy functions, the volumes on the DS6000 must be created in decimal format to be compatible with ESS volumes.

Decimal (GB)

The size, in gigabytes, of the ESS target volumes that are available for selection. ESS volumes are configured in decimal format, where 1 GB (10^9) = 1 000 000 000 bytes

Extent Pool

The nickname of the extent pool to which the volume is assigned.

Note: An extent is a contiguous range of storage on a physical storage unit, such as a rank or array that can be allocated to a logical volume. An extent pool is a logical collection of storage extents from one or more ranks that is used to create logical volumes. The extent pool number is a four decimal digit number. Even numbered extent pools are associated with rank group 0. Odd numbered extent pools are associated with rank group 1.

Host Attachments

The quantity of host attachments that are associated with the selected target volumes.

Create Metro Mirror relationship — Select target volumes (manual pairing)

Use this page to select target volumes to participate in Metro Mirror relationships. The target volumes at your recovery (or remote) site receive updates that are written to the source volumes at the production (or local) site.

Introduction

This page displays only if you selected the **Manual volume pair assignment** option when you selected the method for selecting volume pairs. You have to assign to each source volume a target volume, one after the other. You have to repeat the process for each selected source volume.

Menu path

Real-time manager → Copy services → Metro Mirror → Select Action: Create... → Go

Fields**Storage complex**

The nicknames of storage complexes that are available for selection. If you want to use target volumes from another storage complex, you can specify a different storage complex (and storage unit and LSS, for example) from which to select target volumes.

A storage complex describes a group of storage units such as the DS6000 that is managed by a single management console.

Note: Nicknames are user-specified when resources are created and can be used as part of an overall scheme or naming convention for making resources easier to identify and manage.

Storage unit

The nicknames of storage units that are available for selection. This list can include any nickname that is associated with any 2107, 1750, and 2105 Model 800 currently displayed in the Storage units main page. A storage unit consists of a single DS6000.

Resource type

The type of resource (LSS, Host, Volume group, Show All Volumes) from which to select volumes for remote mirror and copy functions. The value of the selection in this field determines the field that is displayed to the right of this field. The default value for Resource type is LSS. The following resource type values and the respective field names are displayed:

For LSS

Specify LSS

For Host

Specify Host attachment

For Volume Group

Specify Volume group

For Show All Volumes

Specify Storage type

Specify LSS

The list of LSS identifiers that are available for selection. An LSS is a group of up to 256 logical volumes that have the same disk format, either count key data (CKD) for zSeries environments, or fixed block (FB) for open-system environments.

Specify Host attachment

The list of host attachment identifiers that are available for selection. A host attachment identifies the type of interface, such as Fibre Channel Arbitrated Loop (FC-AL), that is used to connect open-systems and zSeries hosts to invoke and manage remote mirror and copy functions.

Specify Volume group

The list of volume groups that are available for selection. A volume group, specified as a nickname, is a collection of logical volumes.

Show All volumes

"All FB Volumes" or "All CKD Volumes" that are available for selection. If "None selected" is selected, the table is empty.

For the zSeries environments, the data that is stored in a storage unit is arranged in a count-key-data (CKD) format. For the open system environments, the data that is stored in the storage unit is arranged in a fixed-block (FB) format.

Create Metro Mirror relationship — Select copy options

Use this page to select one or more copy options that determine the type of operations to be performed on the volume pairs that are participating in Metro Mirror relationships

Introduction

After you select source and target volumes for Metro Mirror relationships, select one or more copy options for the volume pairs.

Menu path

Real-time manager → Copy services → Metro Mirror → Select Action: Create... → Go

Fields

Select relationship type

The type of relationship that you want to create:

Metro Mirror

The storage unit synchronously mirrors the updates to the target volume in a consistent manner. This means that I/O write completion status is updated after updates are committed to the target storage unit.

Global Copy

The storage unit mirrors data in a nonsynchronous manner, at extended distances, with minimum impact on application performance. This means that I/O completion status is updated after updates are committed to the source storage unit. Updates to the target volume are performed at a later point in time. The original order of the updates is not strictly maintained.

Perform initial copy

The copy process that copies the entire source volume to the target volume. Select this option the first time that you create a Metro Mirror relationship because guarantees that the source and target volume contain the same data. If you do not select this option, data cannot be copied from the source volume to the target volume until the first writes are written to the host system when a Metro Mirror relationship is created.

Permit read access from target

Allows host systems to read from the Metro Mirror target volume. The status of the volume pair must be full-duplex for the host system to read the volume pair.

Note: This option is valid only for open-system environments.

Create relationship even if target is online to a host

Allows a Metro Mirror volume relationship to be created even if the target volume is online to host systems.

Note: This option is enabled only for zSeries volumes; otherwise, it is disabled.

Suspend Metro Mirror relationship after initial copy

Suspends the volume pair that was created as a Metro Mirror relationship after the source and target volumes are synchronized.

Note: This option is only valid if you select the **Perform initial copy** when you create the Metro Mirror relationship.

Enable critical volume mode

Determines how write operations are managed when an error occurs to a volume pair. If a volume pair, with the critical volume mode option enabled, suspends because of a communication failure, write I/O to the source volume is rejected. This allows the source to become write protected. In this way, dependent writes cannot process and cannot be sent to the remote site. The volume pair remains suspended until you correct the problem and either resynchronize the volume pair or delete the volume pair.

Note: The **Critical volume mode** option is disabled if source and target volume selection are fixed block (FB) volumes or if you selected count key data (CKD) volumes using Global Copy mode with the **Perform initial copy** option enabled.

Create Metro Mirror relationship — Verification

Use this page to verify the characteristics of the volume pairs for the Metro Mirror relationships that you want to create.

Introduction

After you create Metro Mirror relationships and select copy options for the volume pairs that are participating in these relationships, the information that is displayed on this page allows you to verify your selections. After you click the **Finish** button, a relationship is created between the source and target volume and the copy options are enabled for the volumes that you have selected.

Menu path

Real-time manager → **Copy services** → **Metro Mirror** → **Select Action: Create...** → **Go**

Fields

Source Nickname

The nickname of the source volume that is used when the volume pair is created.

Source Number

The volume number of the source volume that is used when the volume pair is created.

Source Storage Complex

The nickname of the storage complex from which the source volumes for this relationship are selected.

Source Binary GB

The size, in gigabytes, of the selected DS source volume for the specified relationship. The DS volumes are configured in binary format, where 1 GB (2^{30}) = 1 073 741 824 bytes.

Source Decimal GB

The size, in gigabytes, of the selected ESS source volume for the specified relationship. The ESS volumes are configured in decimal format, where 1 GB (10^9) = 1 000 000 000 bytes.

Target Nickname

The nickname of the target volume that will be used when the volume pair is created. If the target volume is a 2105 volume, Not applicable displays in place of the nickname.

Target Number

The volume number of the target volume that is used when the volume pair is selected. This is the storage unit serial number that is combined with the volume ID (for example, FA123:1E3B).

Target Storage Complex

The nickname of the storage complex from which the target volumes for this relationship will be selected.

Target Binary GB

The size, in gigabytes, of the selected DS target volume for the specified relationship. The DS volumes are configured in binary format, where 1 GB (2^{30}) = 1 073 741 824 bytes.

Target Decimal GB

The size, in gigabytes, of the selected ESS target volume for the specified relationship. The ESS volumes are configured in decimal format, where 1 GB (10^9) = 1 000 000 000 bytes

Size Inconsistency

This option indicates whether there are size inconsistencies with the volumes that you selected for the Metro Mirror relationships. The volume size that you select must be the same size and type for the operation to process successfully. The capacity of the target volume must be greater than or equal to the capacity of the source volume.

Note: If you proceed by selecting the **Finish** button and there are volumes in relationships with an inconsistent size, an error is generated that indicates that the relationship cannot be created because of the volume size inconsistency.

If the volume pairs are created successfully, you can view the main page to see status of the volume pairs.

Delete Metro Mirror relationship

Use this page to select either a source volume or target volume on which a specific Metro Mirror relationship is deleted against.

Introduction

The deletion is applied to the volume that you selected. For example, if you select a target volume, the deletion only affects the relationship for which it is a target volume.

Note: You must have created a Metro Mirror relationship and it must be listed in the table before you can delete it.

Before you issue this request, you should verify whether there are some active paths between the respective source and target LSSs that are associated with the specific relationship. When you delete a Metro Mirror relationship, the relationship between the source and target volume ends, if all the paths are available to the target volume.

Menu path

Real-time manager → Copy services → Metro Mirror → Select a volume pair →
Select Action: Delete → Go

Fields

Terminate on source

Upon your confirmation, the specific relationship is deleted on the source volume. As a result, the selected source and the target volume go to a simplex state.

Terminate on target

Upon your confirmation, the specific relationship is deleted on the target volume. As a result, the source volume is in suspended state and the target volume in a simplex state. This option is useful in a disaster situation when the local site has gone down.

Suspend — Select volumes

Use this page to select either a source or target volume on which to suspend. During the suspension, the storage unit does not copy data to the target volume of the volume pair.

Introduction

When a volume pair is suspended, Metro Mirror stops transferring data to the target volume, which results in the target volume becoming out of synchronization. During this time, the storage unit keeps a bitmap of the changed tracks on source target. Later, you can resynchronize the volume pair to allow only the changed tracks to be copied to the target volume.

Menu path

Real-time manager → Copy services → Metro Mirror → Select a volume pair →
Select Action: Suspend... → Go

Fields

Select which volumes to suspend, based on the following criteria:

Suspend at source

The suspension is issued to the source volume in a Metro Mirror relationship. As a result, the target volume will become suspended immediately afterwards

Suspend at target

The suspension is issued to the target volume in a Metro Mirror relationship. As a result, the target volume becomes suspended, but the source might not. You should use this option only in a disaster situation when the source LSS is not available anymore.

Use this page to confirm which volumes that you want to convert to a Metro Mirror relationship.

Introduction

Use this page to confirm which volumes to convert to a Metro Mirror (synchronous) relationship.

Menu path

Real-time manager → Copy services → Metro Mirror → Select a volume pair → Go

Fields

Pairs to be converted to Metro Mirror

The list of volume pairs to convert to Metro Mirror, based on the following criteria:

Source Nickname

The nickname of the source volume that will be converted to Metro Mirror.

Source ID

The ID (or name) of the source volume that will be converted to Metro Mirror.

Target Nickname

The nickname of the target volume that will be converted to Metro Mirror.

Target ID

The ID (or name) of the target volume that will be converted to Metro Mirror.

The type of relationship to convert:

Resume — Confirm

Use this page to confirm the volume pairs in which Metro Mirror will start a background copy and copy out-of-synchronous tracks.

Introduction

This process copies data, that was updated on the source volume of the volume pair, to the associated target volume, since the specific copy pair was last suspended. Click **OK** to resume processing of the volume pair associated with the out-of-synchronization tracks. The volume pairs that you resumed will move back to Full duplex mode when out-of-synchronization tracks equal zero and the copy is complete.

Menu path

Real-time manager → Copy services → Metro Mirror → Select a volume pair that is suspended → Select Action: Resume... → Go

Fields

Pairs on which out-of-synch tracks will copy

The list of copy pairs in which out-of-synchronization tracks will be copied, based on the following criteria:

Source Nickname

The nickname of the source volume.

Source ID

The ID (or name) of the source volume.

Target Nickname

The nickname of the target volume that will be updated with out-of-sync tracks from the source volume of the volume pair.

Target ID

The ID (or name) of the target volume that will be updated with out-of-sync tracks from the source volume of the volume pair.

Recovery failover — Confirm

Use this page to confirm which volume pairs to use during a failover operation to your recovery site. This process allows the volumes from your recovery site to be used to restart your production environment during a planned or unplanned outage.

Introduction

A failover operation is used to restart a production environment using the volumes from the recovery site. A failover operation is followed by a failback operation after a path from your recovery site to the production site is created. The failover and failback operations are designed to help reduce the time that is required to synchronize volumes after switching between the source and the target sites.

Use this page to confirm the volume pair in which the target volume at the recovery site will become a source volume and the source volume of the volume pair as the target volume for the new failover operation. A path must be active and the volumes available, otherwise this process fails. The recovery failover is done on the tracks that is associated with the specified storage unit when you click **OK**.

Note: Volume sizes for operations that use failover and failback must be the same; otherwise, the failback operation fails.

Menu path

Real-time manager → Copy services → Metro Mirror → Select a volume pair → Select Action: Recovery failover → Go

Fields

Pairs to be failed over

The categories by which to select volume pairs to run the recovery failover operation:

Source Nickname

The nickname of the source volume of the selected volume pair.

Source ID

The volume ID of the source volume of the selected volume pair.

Target Nickname

The nickname of the target volume of the selected volume pair.

Target ID

The volume ID of the target volume of the selected volume pair.

Recovery failback — Confirm

Use this page to confirm the volume pairs on which to run the recovery failback operation to allow changed data to be sent back to your production site to synchronize the volume pairs.

Introduction

When you perform a failback operation, only changed data is sent to your production site to synchronize the volumes, thereby helping to reduce the time required to complete the failback operation. A failover operation is followed by a failback operation after a path from the recovery site to the production site is created.

During the failback process, your current source volume at your production site becomes a target volume of your new failback operation at your recovery site. After the process runs, the volume pairs at the recovery site are resynchronize with their peer volumes at the production site. The storage unit ensures that the volumes that are resynchronized are the volumes that were originally established. The recovery failback is done on the tracks that is associated with the specified storage unit when you click **OK**.

Note: Volumes sizes for operations that use failover and failback must be the same; otherwise, the failback operation fails.

Menu path

Real-time manager → **Copy services** → **Metro Mirror** → **Select a volume pair** → **Select Action: Recovery failback** → **Go**

Fields

Suspend after create

The selected volume pairs are suspended after they are created. After the selected volume pairs are suspended, only updated data is copied to the source (local) site when the pairs are synchronized again.

Pairs to be failed back

The categories by which to select volume pairs to run the recovery failback operation:

Source Nickname

The nickname of the source volume of the selected volume pair.

Source ID

The volume ID (or name) of the source volume of the selected volume pair.

Target Nickname

The nickname of the target volume of the selected volume pair.

Target ID

The volume ID (or name) of the target volume of the selected volume pair.

Metro Mirror Properties — General

Use this page to view and monitor selected Metro Mirror relationships after the source and target relationships are created.

Introduction

Use this page to view information about source and target volumes in Metro Mirror relationships.

Menu path

Real-time manager → Copy services → Metro Mirror → Select a volume pair →
Select Action: Properties → Go

Fields

Attribute

The category that displays about the volume pair.

Value Displays status information about volumes that are participating in Metro Mirror relationships.

Source nickname

The nickname of the source volumes. If you click on the volumes link, open systems or zSeries volume properties page is displayed.

Source number

The volume numbers of the source volumes.

Target nickname

The nickname of the target volumes. If you click on the volumes link, open systems or zSeries volume properties page is displayed.

Target number

The volume numbers of the target volumes.

Created

The date and time that the relationship was created.

Last refresh

The date and time that the target volume in the specific relationship was refreshed.

Properties

The copy states of the volume pairs is displayed based on the following criteria:

Last suspended

The date and time that the specified relationship was suspended.

Status

The status of the volume pair in the Metro Mirror relationship:

Full duplex

The state of the volume pair whose source and target volumes are in sync; that is, both source and target volumes contain exactly the same data. This state is also referred to as full copy mode.

Copy pending

The state of the volume pair after the Metro Mirror relationship is created, but the source and target volume are out of sync. In that case, data still must be copied from the source to the target volume of a Metro Mirror pair.

Suspended

The state of the volume pair when the source and target storage units cannot communicate anymore, or when the pair is suspended manually. In this state, write operations to the source volume are not mirrored onto the target volume and the target volume becomes out of sync. During this time, a bitmap record of the

changed tracks is kept in the source volume. Later, when the volumes are re-synchronized, only the tracks that were updated are copied.

No new status

The state of the volume pair is not available.

Full duplex and copy pending status apply only to Metro Mirror relationships.

Suspend Reason

The reason for the volume pair suspension.

Read access to the target

Displays whether read access to the target volume is allowed while the target volume of the selected relationship is active.

Refresh interval

Specifies a refresh interval that determines how often this page is refreshed, based on the following categories:

- Refresh now
- Disable
- 1 minute
- 2 minutes
- 5 minutes
- 15 minutes

Out-of-sync tracks

Displays the out-of-sync tracks for the specified volume pairs.

Metro Mirror Properties — Out-of-sync tracks

Use this page to view the out-of-sync tracks on the Metro Mirror source and target volume pairs.

Introduction

This page displays information about out-of-sync tracks on the selected source and target volume pair.

Menu path

Real-time manager → Copy services → Metro Mirror → Select a volume pair → Select Action: Properties → Go

Fields

Selected Source: Target

The source and target volume pair.

Refresh interval

Specifies a refresh interval that determines how often this page is refreshed, based on the following categories:

- Refresh now
- Disable
- 1 minute
- 2 minutes
- 5 minutes

- 15 minutes

Submit

The button for submitting input to the selected source and target volume pair and refresh interval values.

Out-of-sync tracks

Displays the out-of-sync tracks for the specified volume pairs.

Monitor system

The topics in this section present information that is related to using the Monitor System pages. If the pages are displayed in a notebook, they are listed in the sequence that they are displayed.

The following information is available within the Monitor system section:

- Systems summary
- Physical summary
- Long Running task summary
- Properties
 - Attributes
 - Status
 - Maintenance
- Logs and details
- Contacting IBM

Systems summary

Use this page to view high-level systems status, identify failing physical components, or identify problematic logical objects.

Introduction

This page initially displays the status for all resources of the storage complex that you are currently logged into. A 'normal' status message is displayed when all resources of the storage complex are operating normally. The summary table is displayed only if a problem exists. You must select a resource in the summary table before you can view logs, status information, or physical summary information about the problem.

Menu path

Real-time manager → Monitor systems → Systems summary

Fields

Resource type

The type of resource summarized in the summary table. The choices are Physical, Logical, and Show all.

Storage complex

The storage complex summarized in the summary table. You can select to view all storage complexes or choose from one of the storage complexes that is recognized by the console.

Refresh button

Refreshes the information in the summary table. The last refresh date and time are also updated.

Last refresh

The most recent date and time of the information that is displayed in the summary table.

Select Allows you to select a resource to perform additional actions.

Status The current condition of the resource. Values are Attention, Failed, or Powered off. Click on the link to view a detailed status of either a physical or logical resource.

Resource

The name of the resource. Click the link to view detailed properties for the resource. Values are Storage Unit, Array, Rank, Volume (FB), Volume (CKD), Battery Backup Unit, Disk Drive Module, Front Display Panel, Enclosure, Power Supply/Fan, Processor Controller Card, or Rear Display Panel.

Type The type of the resource. Values are Logical or Physical.

Nickname

The user-assigned name for the resource. If no user-assigned name is available, the system-generated ID is displayed. The user-assigned name is limited to 16 characters.

Storage unit

The user-assigned name of the storage unit that the resource belongs to. Click on the link to view the properties for the storage unit.

Storage complex

The user-assigned name of the storage complex that contains the resource.

Actions**Physical summary**

Displays a summary of the physical status of the selected resource. This option is not available if you select a logical resource.

Status: Physical resource

Displays the status information for the selected physical resource. This option is not available if you select a logical resource.

Status: Logical resource

Displays the status information for the selected logical resource. This option is not available if you select a physical resource.

Logs Displays the main logs page.

Physical summary

Use this page to view a summary of the physical resources for the selected storage unit.

Introduction

This page displays a comprehensive summary of all physical resources within a selected storage unit. You can use this page to navigate to the properties for a particular storage unit. You must choose a storage complex and a storage unit before the table adds the summary data. You must select a row in the table before

you can view the properties for the selected resource.

Menu path

Real-time manager → **Monitor system** → **Physical summary**

Fields

Storage complex

The user-assigned name of the storage complex that contains the resources that are summarized.

Storage unit

The user-assigned name of the storage unit that contains the resources that are summarized.

Refresh button

Refreshes the information in the summary table. The last refresh date and time are also updated.

Last refresh

The most recent date and time of the information that is displayed in the summary table.

Select Allows you to select a resource to perform additional actions.

Component

The enclosure number that applies to the resources that are listed in the row of the summary table.

Battery Backup Unit

The status of the battery backup unit within the specified enclosure. Click on the link to view additional information for the component. Values are Normal, Attention, or Alert. This value is only shown for server enclosures. The value for storage enclosures is None.

Disk Drive Module

The status of the disk drive module within the specified enclosure. Click on the link to view additional information for the component. Values are Normal, Attention, or Alert.

Front Display Panel

The status of the front display panel within the specified enclosure. Click on the link to view additional information for the component. Values are Normal, Attention, or Alert.

Power Supply/Fan

The status of the power supply and fan within the specified enclosure. Click on the link to view additional information for the component. Values are Normal, Attention, or Alert.

Processor Controller Card

The status of the processor controller card within the specified enclosure. Click on the link to view additional information for the component. Values are Normal, Attention, or Alert.

Rear Operator Panel

The status of the rear operator panel within the specified enclosure. Click on the link to view additional information for the component. Values are Normal, Attention, or Alert.

Actions

Logs Displays the main logs page.

Properties

Displays the general properties for the selected resource.

Long running task summary

Use this page to view high-level long running task information.

Introduction

You must select a long running task in the summary table before you can view summary information.

Menu path

Real-time manager or Simulated manager → **Monitor system** → **Long running task summary**

Fields

Storage complex

The Storage complexes available to view.

Set Auto Refresh Rate

The refresh frequency. Valid values are 10 seconds, 20 seconds, or Off.

Refresh button

Updates the information in the summary table. The last refresh date and time are also updated.

Last Refresh

The most recent refresh date and time.

Select The check boxes for the long running tasks.

Task The long running tasks for which you can view summary information.

Start The date and time that the selected long running task started.

Finish The date and time that the selected long running task finished. If the task is still in progress, N/A is displayed.

Resource

The nickname of the storage unit on which the long running task is being performed.

State The progress state of the task. Values include: in progress, terminating, terminated, finished, or error.

Status The status of the selected long running task. If the task fails, you can click the status to display the Long running task error page for more information.

Note: The **Print Report** and **Download Spreadsheet** buttons are enabled on this page only when the Auto Refresh rate is set to off.

Actions

Close and View Summary

Displays the Long running task indicator page.

Terminate

Forces a termination of the selected task. This action is enabled only when there are one or more steps remaining that have not been initiated.

Return to main page

Returns you to the page you were working on before you came to the Long running task summary page. This action is enabled for tasks that were launched from one of the main pages.

Properties

Use this page to select resources to view properties and status information for available system resources and maintenance information for Customer Replaceable Units.

Introduction

This page contains filter fields to request attribute, maintenance, and status information for the selected resources. The storage complex value defaults to the storage complex that is associated with the DS Storage Manager that you are logged in to. You must select a storage unit before you can select an enclosure or access the attributes or status of a storage unit. You must select an enclosure before you can select a resource or view attributes for the enclosure. You must select a resource to view the attributes or status of the resource or to perform maintenance on the resource.

Menu path

Real-time manager → Monitor system → Properties

Fields

Storage complex

The user-assigned name of the storage complex that contains the resources that are summarized.

Storage unit

The user-assigned name of the storage unit that contains the resources that are summarized.

Enclosure

The number of the enclosure that contains the resources that are summarized. Values can be 00 through 06 and 10 through 16, depending on the number of enclosures that are available on the selected storage unit.

Resource

The name of the resource that is summarized in the work area.

Status tab

Displays the status of the selected storage unit or resource.

Attributes tab

Displays the attributes of the selected storage unit, enclosure, or resource.

Maintenance tab

Displays the maintenance page for the selected resource.

Properties — Attributes

Use this page to view general resource attributes and values based on the selection criteria that you chose in the Properties page.

Introduction

This page displays the general properties for the storage unit, enclosure, and resource selections from the Properties page. Only the table fields that are applicable to the selection are displayed in the table.

Menu path

Real-time manager or Simulated manager → Monitor system → Properties → Attributes

Menu path

Real-time manager or Simulated manager → Manage hardware → Storage units → Select a storage unit → Select Action: Properties → Go

Fields

Not all of these fields are always available. Some of these fields are only available when you view general properties for storage complexes or storage units.

This page is available in both real-time and simulated modes.

Storage complex

The user-assigned name of the storage complex that contains the resources that are summarized.

Storage unit

The user-assigned name of the storage unit that contains the resources that are summarized.

Enclosure

The number of the enclosure that contains the resources that are summarized. Values can be 00 through 06 and 10 through 16, depending on the number of enclosures that are available on the selected storage unit.

Resource

The name of the resource that is summarized in the work area.

Management Console 1 Nickname

The user-assigned nickname for Management Console 1.

Management Console 2 Nickname

The user-assigned nickname for Management Console 2.

DDMs

The number of DDMs that are contained within the selected storage unit.

Device adapter pairs

The number of device adapter pairs that are contained within the selected storage unit.

I/O adapters

The number of I/O adapters that are contained within the selected storage unit.

MTMS

The model type, model number, and serial number of the selected storage unit.

Firmware level

The level of the most recently applied firmware update for the storage unit. This field only displays when the server enclosure and processor card are selected.

Processor card 1 IP address

The user-defined, dotted decimal IP address for processor card 0.

Processor card 2 IP address

The user-defined, dotted decimal IP address for processor card 1.

WWNN

The worldwide node name of the selected storage unit.

Machine signature

A 12-digit hexadecimal number that uniquely identifies the selected storage unit.

Nickname

The user-assigned name of the selected storage unit.

Identifier

The identification number of the enclosure. This field displays when an you select an enclosure.

Model type

The type of model of the storage unit that contains the specified enclosure. This field only displays when an you select an enclosure.

Enclosure type

The type of the selected enclosure. Values are Server or Storage.

Location

The physical location of the specified resource. This table field displays when you select a resource.

Manufacturer of part

The name of the manufacturer of the selected component.

Part order number

The order number for the selected component. This is the number to use when you order the component.

Serial number

The serial number of the selected component.

Hardware Engineering Change (EC) level

The hardware EC level for the selected component.

Capacity (GB)

The total capacity, in gigabytes, of the storage that is contained within the selected resource.

RPM The speed of the disk, in revolutions per minute.

DDM Usage

The way that the DDM is currently being used. The DDM is set to one of the following values:

Unassigned

The DDM is not assigned to an array site.

Unconfigured

The DDM is assigned to an array site, but the array site is not configured and the DDM is not a required spare.

Spare - Required

The DDM is assigned to an array site and is a required spare.

Spare - Not Required

The DDM is assigned to an array site that is configured with an array and a spare, but the spare is not a required spare. The array site can be configured from a narrow array to a wide array.

Array Member

The DDM is assigned to an array site that is configured and the array site position of the DDM makes it part of the array.

DDM type

The name of the manufacturer of the selected component.

Properties — Status (real-time only)

Use this page to quiesce and to resume hardware resources and to view the status of hardware resources that you have selected in the main Properties page.

Introduction

This page allows you to view and modify the status and state of the selected hardware resource. You must select a hardware resource before you can select an action to perform on the resource. The Service effect action opens the service effect for the selected hardware resource. The Take offline action quiesces a hardware resource in preparation for a repair or replace procedure. The Bring online action resumes a hardware resource after you complete a repair or replace procedure.

This page is only available when you are operating in real-time mode. It is not available in simulated mode.

Menu path

Real-time manager → Monitor system → Properties → Status

Real-time manager → Manage hardware → Storage units → Select a storage unit → Select Action: Status → Go

Fields**Storage complex**

The user-assigned name of the storage complex that contains the resources that are summarized.

Storage unit

The user-assigned name of the storage unit that contains the resources that are summarized.

Enclosure

The number of the enclosure that contains the resources that are summarized. Values can be 00 through 06 and 10 through 16, depending on the number of enclosures that are available on the selected storage unit.

Resource

The name of the resource that is summarized in the work area. Click the link to view detailed properties for the resource. Values are Storage Unit, Array, Rank, Volume (FB), Volume (CKD), Battery Backup Unit, Disk Drive Module, Front Display Panel, Enclosure, Power Supply/Fan, Processor Controller Card, or Rear Display Panel.

| **Set auto refresh rate (storage unit status only)**

| Determines how frequently the page automatically refreshes.

| **Refresh button**

| Refreshes the information in the summary table. The last refresh date and time are also updated.

| **Last refresh**

| The most recent date and time of the information that is displayed in the summary table.

| **Select** Select a hardware resource from one of the enclosure images.

| **Class (DDM only)**

| The disk class, either enterprise or near-line. Enterprise is a high end disk drive and has the highest reliability. Near-line is a lower end disk drive, and has lower reliability than enterprise disk drives. Near-line storage is a compromise between online storage (constant, very rapid access to data) and offline storage (infrequent access for backup purposes or long-term storage). Near-line storage is for applications that require quicker random access compared to offline storage, but do not require the continuous, instantaneous access provided by online storage.

| **Status and States**

| Status is the current condition of the resource. The values are Normal, Attention, Alert, or Discovery. Click on the link to view a detailed status of a physical resource or the detailed properties of a logical resource.

| **Normal Status**

| A normal status indicates that the hardware resource is functioning properly. The following states indicate that the hardware resource has a normal status:

| **Normal**

| The resource is operational and functional.

| **Installing**

| A new resource has been recognized. It is either a replacement resource for a failed resource or it is additional capacity that you are adding.

| **Verifying**

| The resource is made accessible to the device adapter, its characteristics are determined, cabling is checked, and diagnostics are run.

| **Formatting**

| A verified resource requires low-level formatting and the formatting operation is in progress.

| **Initializing**

| The resource is being initialized with all zero sectors. This is required so that the resource can be added to an array without regenerating parity.

| **Certifying**

| The resource is being read accessed to determine that all sectors can be read. If a bad sector is detected, an alternate sector is used to replace the bad sector.

Rebuilding

Sparing has occurred and this formerly spare resource is being rebuilt with data from the other resources in the array to which it now belongs.

Migration target

DDM migration is migrating another array member resource to this spare resource.

Migration source

DDM migration is migrating this array member resource to another spare resource.

New The resource is new. Integration of the resource into the system has not begun.

Attention Status

An Attention status indicates that the hardware resource may be missing from its slot, has been taken offline, or is faulty but still functioning. User intervention is required for this status. The following states indicate that the hardware resource has an Attention status:

Missing

The resource is missing. The resource has been pulled out of the system and removal has not been managed.

Missing, failed

The resource is missing and the previous state of the device was Failed before it was pulled from the enclosure.

Removed

The resource is removed. The resource is not in the system and its removal has been managed.

Removed, failed

The resource is removed from the system and removal has been managed. The previous state was Missing, failed.

Inappropriate

The resource is inappropriate for the system. For example, a DDM that is of the wrong capacity or rpm, or a hardware resource that cannot be integrated in that slot. However, the resource is not failed and might be valid for other systems and locations.

Interfailed

The resource is operational, but faulty. The resource will fail soon and should be replaced as soon as possible.

Alert Status

Alert status indicates that the hardware resource has failed and needs to be replaced, or that there is a problem that is associated with the hardware resource. The hardware resource returns to normal state when the problem is resolved. (For example, a power supply with a missing ac cable connection). The following states indicate that the hardware resource has an Alert status:

Failed The resource has failed and an immediate repair action is required. If spares are available, sparing has been initiated if this resource is an array member.

Failed, deferred service

The resource has failed and a repair action is not immediately required. If this resource is an array member, sparing has been initiated, and there are sufficient spares at the time of this failure to allow the service action to be deferred.

Discovery Status (storage unit status only)

Discovery status indicates that the storage unit is in the progress of being identified. The percent complete is displayed, along with a short description of the discovery status.

0-4% - DA Logical Name Discovery

Discovery of the device adapter logical name.

5-14% - Upgrading firmware utilities

Upgrading firmware.

15-19% - Enclosures

Physical discovery of enclosures.

20-21% - Storage Unit

Discovery of the machine type, machine serial number and storage facility objects.

22-23% - Storage Complex

Discovery of storage complex attributes.

26-27% - Device and Host adapters

Discovery of device adapters and host adapters.

28-29% - Network Ports

Discovery of network adapters.

30-31% - Processor Controller Cards

Discovery of processor controller cards.

32-33% - Expansion Cards

Discovery of expansion cards.

34-35% - Power Supply and Fan units

Discovery of power supply and fan units.

36-39% - Battery Units

Discovery of battery units.

40-89% - DDM Integration

Discovering disk drive modules and integrating new ones.

90-99% - Finishing

Finishing storage unit discovery.

100% - Complete

Completed discovery.

Actions

Logs Displays the log information for the selected resource.

Take offline

Opens a confirmation dialog that asks if you are sure that you want to take the selected resource offline. If you confirm, the selected resource is brought to a state in which its removal does not have adverse effects on

the system. A progress indicator is displayed if this is a long-running task. If you cancel, the confirmation dialog closes and no action is performed.

Bring online

Opens a confirmation dialog asking if you are sure that you want to bring the selected resource online. If you cancel, the dialog closes and no action is performed. If you confirm, the selected resource is resumed. A progress indicator is displayed if this is a long-running task. If the resource resumes successfully, you receive a dialog that shows that the state of the resource has changed from offline to online. If the resource does not resume successfully, you receive a dialog that reflects the error and provides further instructions.

This option is not available for the battery backup unit, front display panel, or rear display panel. You cannot resume components that are in a quiescing, resuming, or online state.

Properties — Maintenance

Use this page to view maintenance information and procedures for the resource that you selected in the main Properties page.

Introduction

This page displays resource images, removal procedures and installation procedures. You can access service effect descriptions and animated examples of resource removal and installation procedures through the **View** buttons.

This page is only available when you are operating in real-time mode. It is not available in simulated mode.

Menu path

Real-time manager → Monitor system → Properties → Maintenance

Real-time manager or Simulated manager → Manage hardware → Select a storage unit → Storage units → Properties → Go

Fields

Storage complex

The user-assigned name of the storage complex that contains the resources that are summarized.

Storage unit

The user-assigned name of the storage unit that contains the resources that are summarized.

Enclosure

The number of the enclosure that contains the resources that are summarized. Values can be 00 through 06 and 10 through 16, depending on the number of enclosures that are available on the selected storage unit.

Resource

The name of the resource that is summarized in the work area.

Battery backup unit

Displays the remove and replace procedures for the battery backup unit.

Disk drive modules

Displays the remove and replace procedures for the disk drive modules.

Front display panel

Displays the remove and replace procedures for the front display panel

Power supplies/fans

Displays the remove and replace procedures for the power supplies/fans.

Processor controller cards

Displays the remove and replace procedures for the processor controller cards.

Rear display panel

Displays the remove and replace procedures for the rear display panel.

View Service Effect button

Opens the user assistance to the service effect for the specified resource.

View animated remove and replace procedure button

Opens an animated example of the remove and replace procedures for the specified resource. The **Replay** button on the page will start the animation from the beginning.

Request a replacement part button

Launches a new browser window that opens a service request page where you can order the required part.

Logs

Use the page as a starting point to view problem or informational logs.

Introduction

If you enter this page through the user interface navigation, you can view the user-entered log entries that were generated during the preceding 25 hours. If you enter this page through an action selection from a previous page, the log entries are filtered according to the selections on the previous page. You can also select a set of filtering criteria and can refresh the logs from this page. If no log entries exist, an empty log entry table is displayed.

Menu path

Real-time manager → Monitor system → Logs

Fields

Storage complex

The user-assigned name of the storage complex that contains the resources that are summarized.

Storage unit

The user-assigned name of the storage unit that contains the resources that are summarized.

Severity

The importance of the log entry. Values are All, Problem, Attention, Event, or Heartbeat.

Status The current situation of the log entry. Values are All, Open or Closed.

All log entries

This selection shows all existing log entries.

Range of log entries

Select this to specify chronological log filtering criteria.

From this date

The date of the earliest log entry that you want displayed.

time The time of the earliest log entry that you want displayed.

To this date

The date of the most recent log entry that you want displayed.

time The time of the most recent log entry that you want displayed.

Refresh button

Refreshes the information in the summary table. The last refresh date and time are also updated.

Last refresh

The most recent date and time of the information that is displayed in the summary table.

Select Allows you to select a resource to perform additional actions.

Message ID

The identification number of the problem or information record. Click on the message ID to view the log entry details for that specific log entry.

Date The date and time of the first occurrence of this problem.

Type The purpose of the log entry. Values are Hardware, Software, Information, Test, or Data Loss.

Severity

The importance of the log entry. Values are Problem, Attention, Event, or Heartbeat.

Status The current situation of the log entry. Values are Open or Closed. Open entries have not been closed either automatically or manually. Closed log entries have either been closed automatically or manually by the user. You cannot reopen closed log entries, but you can still view log entry details for the closed entry.

Error code

The error code that is associated with the problem log entry.

Storage unit

The user-assigned name of the storage unit on which the error occurred. Click the link to view the properties for that storage unit.

Message

The first 50 characters of the problem code for the problem log entry.

Actions

View details

Displays detailed information for the problem or informational log entry that you selected.

Close Displays a warning message that indicates that the selected entry will be closed and cannot be reopened. The warning message also displays any additional required information. If you select **Continue**, a confirmation dialog appears. After confirmation, the selected log entry is closed. If you select **Cancel**, the dialog closes and no action is taken.

Create test

Allows you to manually generate a problem to test connectivity or communications with the Call Home support. This triggers a test message and creates an informational test log entry. An information test log entry is created for the storage unit that is selected in the Storage unit field. If All is selected, an informational test log entry is created for each managed storage unit.

Logs — Log entry details

Use this page to view details about a specific log entry from the main Logs page.

Introduction

This page provides additional information about the log entry that you selected in the main Logs. You must select an entry in the table to perform an action on that entry. If the selected log entry is a test log, an empty table will appear.

Menu path

Real-time manager → Monitor system → Logs → Log entry details

Fields

Message ID

The identification number of the problem or informational log entry.

Message

The full text of the message that is associated with the problem or informational log entry.

Type The purpose of the log entry. Values are Hardware, Software, Information, Test, or Data Loss.

Severity

The level of importance of the problem or informational log entry. Values are Alert, Attention, Information, or Test.

First occurrence

The date and time of the first occurrence of this problem or informational log entry.

Last occurrence

The date and time of the most recent occurrence of this problem or informational log entry.

Machine type–Model

The machine type and model number of the machine for which this log entry occurred.

Error code

The error code that is associated with the problem log entry.

Status The current situation of the log entry. Values are Open or Closed.

Number of occurrences

The number of times the problem has occurred while the log entry has been open.

Storage unit

The user-assigned name of the storage unit where the log entries occurred.

Storage complex

The user-assigned name of the storage complex where the log entries occurred.

Select Allows you to select a resource to perform additional actions.

Component

The name of the resource that is associated with the problem or informational log entry. Click on the link to view the status and properties for the specific component.

Serial number

The serial number of the selected component.

Part number

The identification number of the customer replaceable unit that is associated with the problem or informational log entry.

Enclosure

The identification number of the enclosure that contains the resource that is associated with the problem or informational log entry.

Location code

The location code for the resource that is causing the log entry.

State The current mode of the resource. The state column can contain the following values:

Normal

The resource is operational and functional in its current disk usage. If it is configured as a spare or array member, there are no unusual operations in progress.

Installing

A new storage facility has been discovered. It is either a replacement resource for a failed resource or it is additional capacity that you are adding.

Verifying

The resource is made accessible to the device adapter, its characteristics are determined, cabling is checked and diagnostics, are run.

Formatting

A verified resource requires low-level formatting and the formatting operation is in progress.

Initializing

The resource is being initialized with all zero sectors. This is required so that the resource can be added to an array without regenerating parity.

Certifying

The resource is being read accessed to determine that all sectors can be read. If a bad sector is detected, an alternate sector is used to replace the bad sector.

Migration target

DDM migration is migrating another array member resource to this spare resource.

Migration source

DDM migration is migrating this array member resource to another spare resource.

New The resource is new. Integration of the resource into the system has not begun.

Missing

The resource is missing. The resource has been pulled out of the system and removal has not been managed.

Rebuilding

Sparing has occurred and this formerly spare resource is being rebuilt with data from the other resources in the array to which it now belongs.

Removed

The resource is removed. The resource is not in the system and its removal has been managed.

Prepared for service

The resource is prepared for service, going offline, or quiescing. You can safely pull the resource without causing any adverse effects.

Failed The resource has failed and an immediate repair action is required. If spares are available, sparing has been initiated if this resource was an array member.

Failed, deferred service

The resource has failed and a repair action is not immediately required. If this resource was an array member, sparing has been initiated and there are sufficient spares at the time of this failure to allow the service action to be deferred.

Missing, failed

The resource is missing and the previous state of the device was Failed before it was pulled from the enclosure.

Removed, failed

The resource is removed from the system and removal has been handled. The previous state was Missing, failed.

Inappropriate

The resource is inappropriate for the system. For example, a DDM that is of the wrong capacity or RPM. The resource is not failed and might be valid for other systems and locations.

Interfailed

The resource is operational, but faulty. The resource will fail soon and should be replaced as soon as possible.

Actions

Request a replacement part

Displays the Order hardware page from the Properties section of the user interface.

Maintenance instructions

Displays the resource-specific removal and installation procedures for the selected resource in a separate window.

Take offline

Opens a confirmation dialog that asks if you are sure that you want to take the selected resource offline. If you confirm, the selected resource is brought to a state in which its removal does not have adverse effects on the system. A progress indicator is displayed if this is a long-running task. If you cancel, the confirmation dialog closes and no action is performed.

Bring online

Opens a confirmation dialog asking if you are sure that you want to bring the selected resource online. If you cancel, the dialog closes and no action is performed. If you confirm, the selected resource is resumed. A progress indicator is displayed if this is a long-running task. If the resource resumes successfully, you receive a dialog that shows that the state of the resource has changed from offline to online. If the resource does not resume successfully, you receive a dialog that reflects the error and provides further instructions.

This option is not available for the battery backup unit, front display panel, or rear display panel. You cannot resume components that are in a quiescing, resuming, or online state.

Logs — Activity Logs (real-time only)

Use the page as a starting point to view audit logs.

Menu path

Real-time Manager → Monitor System → Logs → Activity Logs

Fields

Refresh button

Updates the information in the summary table. The last refresh date and time are also updated.

Last Refresh

The most recent refresh date and time.

Storage complex

The user-assigned name of the storage complex that contains the resources that are summarized.

Export button

Downloads the activity logs for the selected storage complex.

Contact IBM

Use this page to find information and methods for contacting IBM's Technical Service Support center.

Introduction

This page contains contact information for IBM Technical Support Services. If you need to contact IBM online, choose the Web site for your geography.

Menu path

Real-time manager → Monitor system → Contact IBM

Fields

Contact IBM

Click the link to open a new browser window that will take you to the IBM eService Web site. You might need to select the appropriate country from the dropdown list before visiting the main page.

Cancel button

Closes the page and cancels all pending transactions.

Open systems volumes

The topics in this category provide information that is related to using the open systems volumes pages. If the pages are displayed in a wizard, they are listed in the sequence that they are displayed.

Add a volume to a volume group

Use this page to select the volume groups that you want to assign to a volume.

Introduction

The Add volume to volume group page allows you to associate multiple volume groups with a volume. The volumes must be the same type and have the same capacity attributes. Up to 255 volumes can be assigned to a volume group.

After you select the volume group or groups that you want to assign to your volume, you have two processing choices. If you click the **OK** button, the volume group page closes and you are returned to the volume table list. View the Volume Groups column in the table to confirm that the volume has been assigned to a volume group. If you click the **Apply** button, the volume group assignment is processed but the Add volume to volume group page does not close. To verify that the volume group assignment has processed, you must look at the volume table list.

Note: When you assign a volume to just one volume group, the name of the volume group is displayed in the Volume Groups column of the table. If you assign a volume to multiple volume groups, the Volume Groups column displays the number of volume groups that have been assigned to the volume.

Menu path

Real-time manager or Simulated manager → Configure storage → Open systems → Volumes – Open systems → Select one or more volumes → Select Action: Add to volume group → Go

Fields

Select Provides the selection method (a check box) to specify the volume group that you want to assign to a volume or volumes. You can select multiple volume groups.

Nickname

Specifies the user- or system-defined nickname of the volume group. This name is unique within the scope of the storage unit.

Number

Specifies the volume group identifier, which is a four-digit decimal number, with no leading zeros, prefixed by the letter V.

Volumes

Specifies the number of volumes that are currently assigned to the volume group.

Host attachments

Specifies the number of host attachments that are currently assigned to the volume group.

Open systems volumes — Main page

Use this page to manage open system storage tasks.

Introduction

It is possible that when you first open this page, no information is displayed. Use the selection drop-down lists across the top of the page to provide information about the type of object you want to modify. You must make the following selections:

- Select the storage unit where you want to create or modify volumes, modify host attachment information, or modify volume groups.
- Select LSS, host, volume group, or all as your secondary filter. When you make this selection, the system refreshes and provides you with one of the following options in the third drop-down list:

Individual LSS

The individual LSSs that are associated with the storage unit are displayed. When you click an LSS, the system refreshes and provides a list of the volumes that can be modified.

Individual host attachments

The individual host attachments that are associated with the storage unit are displayed. When you click a host attachment, the system refreshes and provides a list of the host attachments that can be modified.

Individual volume groups

The individual volume groups that are associated with the storage unit are displayed. When you click a volume group, the system refreshes and provides a list of the volume groups that can be modified.

All

This selection causes the system to refresh and a list of all the volumes that are associated with the storage unit that can be modified is displayed.

Use the **Refresh** button to obtain current information.

Menu path

Real-time manager or Simulated manager → Configure storage → Open systems → Volumes – Open systems

Fields

Select storage unit

Provides a list of the storage unit that can be configured. This field acts as a primary filter for the information that is displayed on this page.

Select secondary filter

Provides a list of the type of objects that can be modified: LSSs, Hosts, Volume groups or all volumes associated with the storage unit.

Select LSS

Provides a list of individual LSSs that are associated with the storage unit. Select an LSS to provide a list of its associated volumes that can be modified.

Select host attachment

Provides a list of individual host attachments that are associated with the storage unit. Select a host attachment to provide a list of its associated volumes that can be modified.

Select volume group

Provides a list of individual volume groups that are associated with the storage unit. Select a volume group to provide a list of the associated volumes that can be modified.

Select All

Provides a list of all the volumes that are associated with the storage unit that can be modified.

Select Provides the selection method (a check box) for specifying the volume you want to modify. When you click a check box, the Select Action drop down list is refreshed with a list of modifying actions that you can enact on each volume that you select.

Nickname

Specifies the user- or system-designated nickname. The link takes you to a properties page for the selected value.

Number

Specifies a logical subsystem number and a logical device number (for example, 1E3B). The volume number is four hexadecimal characters (0 - 9 or uppercase A - F).

Status (Real-time only)

Specifies the operational status. The link takes you to a volume status page.

Normal

The volume is in the following state:

- Access state
 - Online
- Data state
 - Normal
 - Read only
- Configuration state

- Normal
- Configuring
- Deconfiguring

Attention

The volume is in the following state:

- Data state
 - Pinned
 - Rank failed
 - Rank repairing
 - Rank repaired
 - Unknown

Failed

The storage unit is in the following state:

- Access state
 - Fenced
- Configuration state
 - Configuration error

Note: The configuration error state indicates that the initial configuration of the volume did not complete successfully. If one or more of the configured volumes displays the configuration error state, you must delete each one. You can recreate them later.

Inaccessible

The storage unit is in the following state:

- Access state
 - Fenced
- Data state
 - Inaccessible

Type Specifies the type of the capacity unit at the time of volume creation. One of the following volume types is displayed:

- DS** Supported DS logical volume sizes range from 1 to 2048 binary gigabytes (1GB = 2^{30} bytes). This allocation uses the storage capacity of DS systems most efficiently.
- ES** Supported Enterprise Storage System (ESS) logical volume sizes range from 0.1 to 982.2 decimal gigabytes (1GB = 10^9 bytes). You can calculate the exact number of 512 byte blocks as $\text{INT}((\text{INT}(\text{GB} \times 10^9 / 512) + 63) / 64) \times 64$. The size of the volume that is created on the ESS is identical to the size of the volume that is created on the DS. However, the last extent on the volume might not be fully used because these sizes are not an integral multiple of the extent size.

Blocks

Supported block logical volume sizes range from 1 to 4 binary gigablocks (1 gigablock = 2^{30} 512-byte blocks). If a specified size matches a supported DS or ESS logical volume size, the volume is identified as a DS or ESS logical volume, even though it is created by specifying the blocks volume type.

iSeries

Indicates that this volume uses a capacity algorithm that is specific to iSeries volumes.

I-protected

Indicates that this volume uses a capacity algorithm specific to iSeries volumes and that the volume is in the protected state.

I-unprotected

Indicates that this volume uses a capacity algorithm that is specific to iSeries volumes and that the volume is in the unprotected state.

GB (2³⁰)

Specifies the volume capacity in binary gigabytes.

Decimal GB (10⁹)

Specifies the volume capacity in decimal gigabytes.

RAID Specifies the type of RAID array (for example, 5 or 10). A mixed RAID type is displayed when you modify the RAID type of the ranks in the extent pool. The label remains mixed if you chose not to convert the existing ranks to the newly selected RAID type. Even when you initiate the conversion, the processing time can take some time to complete. The RAID type remains mixed until the conversion is complete.

Extent Pool

Specifies the user- or system-designated extent pool nickname.

Volume Groups

Specifies the volume group nickname. If the quantity of volume groups exceeds 1, the value is the quantity of volume groups with which this volume is associated. The link takes you to [Volume Groups — Main page](#).

Host Attachments

Specifies the quantity of host attachments to which the designated volume is attached using volume groups. This is a function of the number of host attachments that are associated with the volume groups to which this volume belongs. The link takes you to [Host Systems — Main page](#).

Actions

The following actions are available from the Select Action drop-down list after you have selected your LSS, host, or volume group. To initiate one of these actions, click it and then click GO.

Create When Create is selected, the Create open systems volumes Wizard page is displayed. This action can be selected before you select a specific LSS, host, or volume group.

Delete When Delete is selected, a confirmation dialog is invoked and if confirmed, the selected open system volumes are deleted.

Note: If all volumes on a particular LSS are deleted, the LSS is deleted if the storage type is fixed block but not if the storage type is CKD.

Add to volume group

When this action is selected, the Add to Volume Group page is displayed.

Note: This action is only available when at least one volume group already exists and you have specifically selected one or more volume groups from the list.

Status When Status is selected, the status page for open systems volumes with detailed information for the selected volumes is displayed.

Advanced operations

When Advanced operations is selected, the advance operations page for open systems volumes is displayed. You select advanced operations when a volume is reported with an unfenced status.

Properties

When Properties is selected, the Volume Properties page where you can change the nickname that is associated with the volume is displayed.

Note: This action is not available when you select more than one volume.

Create volume — Select extent pool

Use this page to select an existing extent pool or to create an extent pool for the volume.

Introduction

Selecting an extent pool is required when you are creating a volume. If the list of extent pools do not meet your needs you can create an extent pool. After the extent pool has been created, the system refreshes and the new extent pool is displayed in the extent pool list.

Use the **Refresh** button to obtain current information.

Menu path

Real-time manager or Simulated manager → Configure storage → Open Systems → Volumes – Open systems → Select Action: Create... → Go

Fields

Select extent pool

The columns are defined as follows:

Select Provides the selection method (a radio button) to specify the extent pool that you want to assign to the volume. You can only select one extent pool at a time.

Nickname

Specifies the nickname that you assigned to the extent pool or the system-defined extent pool nickname.

Number

Specifies the extent pool number. The extent pool number is a four-digit decimal number with no leading zeros that is normally prefixed with a *P* (for example, P5 which is actually P0005). Even-numbered extent pools are associated with rank group 0. Odd-numbered extent pools are associated with rank group 1.

RAID The supported or available RAID types (for example, RAID 5 and RAID 10).

Primary Server

Specifies the primary server that is associated with the extent pool.

Available GB

Specifies the available storage in gigabytes.

Note: You cannot create volumes if the selected extent pool has a size smaller than the smallest size of a single volume. If this happens, a validation message is displayed that indicates that the volume cannot be created.

Create new extent pool button

Clicking this button displays the Create extent pool page that is the first page of the create extent pool wizard. The wizard directs you through the steps needed to create a new extent pool. After you create a new extent pool, the select extent pool table refreshes and you can select the extent pool that you created.

Create volume — Define volume characteristics

Use this page to define the properties for the specified volumes.

Introduction

The most efficient method of allocating storage is in exact multiples of 1 GB binary (one extent) or in increments of 2 million blocks.

Note: If you plan on working with remote mirror and copy functions associated with an Enterprise Storage System (ESS), ensure that you select Standard Open Systems - ESS Sizes as your volume type.

Menu path

Real-time manager or Simulated manager → Configure storage → Open Systems → Volumes – Open systems → Select Action: Create... → Go

Fields

RAID type

The supported or available RAID types (for example, RAID 5 and RAID 10).

Physical capacity for the DS6000 series can be configured as RAID 5, RAID 10, or a combination of both. RAID 5 can offer excellent performance for most applications, while RAID 10 can offer better performance for selected applications, in particular, high random write content applications in the open systems environment.

Volume type

The type of volume.

Standard Open Systems - DS Sizes

Supported DS logical volume sizes range from 1 to 2048 binary gigabytes (1GB = 2^{30} bytes). This allocation uses the storage capacity of DS systems most efficiently.

Standard Open Systems - ESS Sizes

Supported Enterprise Storage System (ESS) logical volume sizes range from 0.1 to 982.2 decimal gigabytes (1GB = 10^9 bytes). You can calculate the exact number of 512 byte blocks as

$\text{INT}((\text{INT}(\text{GB} \times 10^9 / 512) + 63) / 64) \times 64$. The size of the volume that is created on the ESS is identical to the size of the volume that is created on the DS.

Standard Open Systems - Blocks

Supported block logical volume sizes range from 1 to 4 binary gigablocks (1 gigablock = 2^{30} 512-byte blocks). If a specified size matches a supported DS or ESS logical volume size, the volume is identified as a DS or ESS logical volume, even though it is created by specifying the blocks volume type.

iSeries - Protected

Supported iSeries logical volume sizes are expressed in decimal gigabytes (1GB = 10^9 bytes):

- A0 (8.6 GB)
- A02 (17.5 GB)
- A04 (70.5 GB)
- A05 (35.1 GB)
- A06 (141.12 GB)
- A07 (282.25 GB)

iSeries - Unprotected

Supported iSeries logical volume sizes are expressed in decimal gigabytes (1GB = 10^9 bytes):

- A81 (8.6 GB)
- A82 (17.5 GB)
- A84 (70.5 GB)
- A85 (35.1 GB)
- A86 (141.12 GB)
- A87 (282.25 GB)

Enable write cache with mirroring

The option to create mirrored open systems volumes. Not selecting this option increases throughput, but at the risk of data loss. You cannot modify this selection after you have created the volume.

Select volume groups

The volume groups that you want to associate with these volumes. The default volume groups that are applicable to the selected volume type are displayed. A check in the check box activates the volume groups for your selection.

Create new group button

Clicking this button opens the first panel of the Create volume group wizard. The wizard directs you through the steps to provide the information that you need to create a new volume group. After you create a new volume group, the system refreshes and the volume group that you created is added to the list of volume groups that you can select for the volume.

Create volume — Define volume properties

Use this page to designate the volume properties (number of volumes and volume size per one or more LSSs) for the specified volumes.

Introduction

The system automatically calculates the number and size of your volumes based on the designations that you made in the Define volume characteristics panel. These values are displayed in the quantity and size fields of the Define volume properties panel when you initially display this panel.

You can change these numbers to meet your needs such as either the number of volumes that you want or the size of your volumes. The calculation buttons supply the missing component. For instance if you want 20 volumes, you insert this number in the quantity field, click the calculation button, and the size of those 20 volumes is automatically supplied in the size field. Or, you can designate the size that you want for your volumes, click the calculation button, and the quantity field is automatically filled in with the number of volumes.

You can designate up to 255 LSSs in a storage unit. LSSs are either CKD or fixed block. Even numbered LSSs have an association with storage unit server 0. Odd numbered LSSs have an association with storage unit server 1. LSS number FF is reserved for internal system usage.

Menu path

Real-time manager or Simulated manager → Configure storage → Open Systems → Volumes – Open systems → Select Action: Create... → Go

Fields

Quantity

Specifies the number of volumes that can be contained within the available storage for the particular RAID type in the selected extent pool and the volume size. If no value is displayed when you initially open this panel, you can select the **Calculate max quantity** button and this field is automatically populated with a value based from the values that you designated in the define volume characteristics panel. The volume size field is also automatically populated when you select the **Calculate max quantity** button.

You can change the value that is displayed in this field. You can enter a lesser quantity or a quantity up to the allowed maximum. If you enter an invalid quantity, an error message is displayed when you click the **Next** button.

Calculate max size

If you change the quantity from what is originally supplied, clicking this button provides a calculation that is based on the available storage for the particular RAID type in the selected extent pool and the volume quantity. The resulting value is displayed in the volume **Size** field. For volumes that are created in decimal gigabytes (D), the maximum allowed size is 982.2 decimal gigabytes.

Size (unit)

Specifies the size of your volumes. The initial value that is viewed in this field is based on values that you supplied in the define volume characteristics panel. You can, however, enter a smaller size or a size that is up to the allowed maximum. The maximum volume size is based on the available storage for the particular RAID type in the selected extent pool. If you enter an invalid size, an error message is displayed when you click the **Next** button.

Note: You can enter a decimal value to one tenth in size (for example, 8.4) for both Binary and Decimal units. For Binary capacities, however, the entered value is always updated to a supported value (for example, if you enter 68.5 GB, it is updated to 72 GB). If you selected one of the iSeries volume types on the Define volume characteristics page, and selected Decimal GB (10^9 bytes) for the Capacity units, the values here include 8.56, 17.54, 35.16, 36.00, 70.56, 141.12, and 282.25. If you selected one of the iSeries volume types on the Define volume characteristics page, and selected Binary GB (2^{30} bytes) for the Capacity units, the values here include 8.00, 16.34, 32.75, 33.53, 65.72, 131.44, and 243.80.

Calculate max quantity

Click this button when you specify a different value for the size of your volumes. A calculation is made to determine the number of volumes that can be accommodated by the size value and this value is automatically entered in the **Quantity** field.

Select LSSs for volumes

Select this check box to be allowed to select LSSs from the **Select n LSSs for volumes** list of available LSSs for these open systems volumes. The LSSs that are displayed are the odd or even numbered LSSs that correspond to the extent pool where the volumes are created.

Select n LSSs

Specifies the list of LSSs that are available for selection. You can select only the n (appropriate number) of LSSs. The number n of LSSs that you must select, is the quantity of volumes that are divided by 256 and rounded up to the nearest integer.

Create volume — Create volume nicknames

Use this page to define volume nicknames for the specified volumes.

Introduction

The Create volume nicknames page is generally displayed with two check marks in the checkboxes. This allows you to specify a nickname for the volumes you are creating by providing a prefix and suffix, which makes your names unique. You can choose not to generate nicknames (not recommended) for your volumes by removing the check mark from the first check box and clicking **NEXT**.

Menu path

Real-time manager or Simulated manager → Configure storage → Open Systems → Volumes – Open systems → Select Action: Create... → Go

Fields

Quantity of volumes

The amount of volumes that is specified on the previous Define volume properties page. This is an informational field and acts as a reminder of the number of nicknames that must be created.

Generate a sequence of nicknames based on the following

Check this box to specify, in the following fields, a sequence of volume names for the amount of volumes that you created that is based on input in the prefix and suffix fields. Either a prefix or a suffix is required if this check box is selected. You can enter a value in one or both of the fields.

The **Prefix** and **Suffix** fields can contain any characters except blank spaces and the **Prefix** and **Suffix** fields are stored in strings of up to 16 characters. The values can either be hexadecimal (you must check the Use hexadecimal sequence check box) or decimal (if the Use hexadecimal sequence is not checked).

Note: Prefix and suffix combinations that result in volume nicknames that are greater than 16 characters will return the numbering sequence to 00000000. For example, if the nickname **myVolume99999999** is created, the next volume returns the numbering to **myVolume00000000** (16 characters) instead of the next number in the sequence, **myVolume100000001** (exceeding 16 characters).

The following fields are disabled if you do not click the Generate a sequence of nicknames selection.

Use hexadecimal sequence

This check box is automatically marked when you mark the Generate a sequence of nicknames based on the following check box. The hexadecimal sequence designation creates a hexadecimal sequence of volume nicknames. The nickname suffix automatically increments in a hexadecimal sequence of volume names for the quantity that you create. For example, if you create 400 volumes with the nickname prefix Vol and with the suffix beginning with 0000, the range of volume nicknames that includes **Vol0000 - Vol018F**.

Prefix Specifies the prefix that you want to add to the volume nicknames. (The prefix is counted as part of the 16 character limitation that is allowed for a nickname). A value in both the **Prefix** and **Suffix** fields avoids the problem of volumes being named with the same nickname.

This field is limited to alphabetic characters (A - Z, a - z). If you enter a numeric value for the prefix, the values increase sequentially to reflect the amount of volumes that you want to create. If you enter an alphabetic value, it precedes and joins the suffix.

For example, in the process of creating 400 volumes, if you put "myVol" in the **Prefix** field and "0000" in the **Suffix** field. These volumes are named **myVol0000 - myVol018F** for hexadecimal sequences. If you did not check the hexadecimal sequence box, your volumes are named **myVol0000 - myVol0399**.

Notes:

1. If you enter only an alphabetic prefix and no suffix, a warning is displayed that states that the volumes to be created will contain the same nickname.
2. For OpenVMS and Tru64 Unix hosts, logical volume nicknames are reported to the operating system as the volume user-defined identifier (UDID). Be certain that this value conforms to the appropriate rules for UDIDs. Review the HP OpenVMS documentation for the UDID rules.

Suffix Specifies the suffix that you want to add to the volume nickname. (The prefix is counted as part of the 16 character limitation that is allowed for a nickname). A value in both the **Prefix** and **Suffix** fields avoids the problem of volumes being named with the same nickname.

Note: For OpenVMS and Tru64 Unix hosts, logical volume nicknames are reported to the operating system as the volume user-defined identifier (UDID). Be certain that this value conforms to the appropriate rules for UDIDs. Review the HP OpenVMS documentation for the UDID rules.

Create volume — Verification

Use this page to review the list of properties and basic capacity calculations for the new volumes.

Introduction

After you have specified all the values that are associated with the volume that you want to create, you can view those specifications in a summary format and decide if those specifications meet your needs. If they do not, click the **Back** button and navigate to the specific wizard panel where you can make a change. If the specifications are correct, you can click the **Finish** button and the volume is created.

Menu path

Real-time manager or Simulated manager → Configure storage → Open Systems → Volumes – Open systems → Select Action: Create... → Go

Fields

Extent pool

Specifies the extent pool ID that you have assigned the volume to.

LSSs Specifies the LSSs that are either the even or odd numbered LSSs corresponding to the extent pool in which the volume will be created.

RAID type

Specifies the RAID type (for example, RAID 5 or RAID 10) you have designated for the volume.

Volume groups

Specifies the volume groups to which the volume is assigned.

Nicknames

Specifies the nickname that you or the system assigned to the volume.

Quantity

Specifies the user-designated quantity of volumes.

Volume type

Specifies the volume type (for example, standard open systems volume) you have assigned to the volume.

Write cache with mirroring

Specifies whether you have enabled this option which allows the creation of mirrored open systems volumes.

Volume properties (real-time only)

Use this page to view the device type information where the volume resides or to modify or supply a nickname that is associated with the designated volume.

Introduction

This page is accessed from the **Select Action** drop-down list after you select a volume in the table or when you click **nickname** on the Volumes main page.

Menu path

Real-time manager → Configure storage → Open systems → Volumes – Open systems → Select a volume → Select Action: Properties... → Go

Fields

Nickname

Specifies the nickname that you or the system has assigned to the volume. You can modify or define a nickname for the volume. The nickname cannot be more than 16 characters.

Device MTM

Specifies the machine type and model number that is reported for the logical volume on the interface type that is associated with its data type. Set to one of the following values:

- 1750.500
- 1750.A01
- 1750.A81
- 1750.A02
- 1750.A82
- 1750.A04
- 1750.A84
- 1750.A05
- 1750.A85
- 1750.A06
- 1750.A86
- 1750.A07
- 1750.A87

Volume status (real-time only)

Use this page to view details regarding the status of the open systems volumes.

Introduction

This page is available in the **Select Action** drop-down list when you select a volume in the table or when you click the status hyperlink on the Volumes main page. Use the **Refresh** button to update the displayed status.

Menu path

Real-time manager → Configure storage → Open systems → Volumes – Open systems → Select a volume → Select Action: Status... → Go

Fields

Access state

Specifies the current access state. One of the following values is displayed:

- Online — The logical volume is accessible to a host.
- Fenced — The logical volume is in the volume fenced state and is not accessible to the host.

Data state

Specifies the current data state. One of the following values is displayed:

- Normal — Indicates that the access state is Online.
- Pinned — Indicates that logical tracks are present or at least identified in NVS or cache and cannot be destaged for one reason or another.
- Read Only — Indicates that the logical volume has read-only status because one or more extents on the logical volume are on a rank in the read-only data state. The access state is Online.
- Inaccessible — Indicates that one or more extents that are associated with the logical volume are on a rank that is in the inaccessible data state. The access state is Fenced.
- Rank Failed — Indicates that one or more extents that are associated with the logical volume are on a rank that is in the Failed data state. The access state is Fenced. This data state transitions to Rank repairing if the rank changes through use of the repair array function.
- Rank Repairing — Indicates that one or more extents that are associated with the logical volume are on ranks in the repairing data state. The access state is Fenced.
- Rank Repaired — Indicates that one or more extents that are associated with the logical volume are on ranks that were in the repairing state, but are not now in the repairing state. The access state is Fenced. You can correct this condition using the Restore access (Unfence volume) function.

Configuration state

Specifies the current configuration state. One of the following values is displayed:

- Normal — Indicates that there are no logical volume configuration operations in progress.
- Configuring — Indicates that the logical volume is in the process of being configured for the first time.
- Deconfiguring — Indicates that the logical volume is in the process of being deleted.
- Configuration Error — Indicates that the initial configuration of the volume has not completed successfully.

Note: If one or more of the configured volumes displays the configuration error state, you must delete each one. You can recreate them later.

Volumes — Advanced operations — General (real-time only)

Use this page to clear or unfence volumes or to resume configuration.

Menu path

Real-time manager → Configure storage → Open systems → Volumes – Open systems → Select a volume → Select Action: Advanced operations → Go

Fields

Restore access button

The value reflects the state of the volume.

- **Unfence Volume** — If the logical volume is in the Rank repaired data state, the Unfence volume function causes any indications associated with these conditions to be reset. This reset might cause a loss of data on the logical volume. The data state changes to reflect the current condition of the logical volume after resetting these conditions. If the operation is accepted repeatedly, but does not result in an Online access state, the logical volume should be deleted and reconfigured if it is still required.

Note: A confirmation message indicates the selected operation and consequence. You must choose whether to proceed.

View status button

Opens volume status information.

Open systems — volume groups

The topics in the section provide information that is related to using the open systems volume groups pages. If the pages are displayed in a wizard, they are listed in the sequence that they are displayed.

Volume groups — Main page

Use this page to work with open systems volumes groups.

Introduction

It is possible that when you first open this page, no information is displayed. Use the select storage unit pull-down list at the top of the page to select the storage unit that contains the volume groups that you want to modify.

Use the **Refresh** button to obtain current information.

Menu path

Real-time manager or Simulated manager → **Configure storage** → **Open systems** → **Volume Groups**

Fields

Select storage unit

Specifies the storage unit that is being configured.

Select Provides the selection method (a check box) for specifying the volume group you want to work with. When you click a check box, the Select Action drop down list is refreshed with a list of actions that you can perform on each volume group that you select.

Nickname

Specifies the user- or system-designated nickname. The clicking the link displays the Volume group properties page.

Number

Identifies the volume group ID. The ID is a four-digit decimal number with no leading zeroes.

Volumes

Specifies the quantity of volumes that are in the volume group. The link displays the Volumes - open systems main page that provides a list of volumes that are filtered by the specified volume group.

Host Attachments

Specifies the quantity of host attachments that are assigned to the volume group. The link displays a page of host attachments that are filtered by associations with the specified volume group.

Actions

The following actions are available from the Select Action drop-down list after you have selected your LSS, host, or volume group. To initiate one of these actions, click it and then click Go.

Create When Create is selected, the Create volume group page is displayed. This is the first page of a wizard that directs you through the steps and information to create a new volume group. The Create action can be selected before selecting a specific volume group.

Delete When Delete is selected, a confirmation dialog is invoked and if confirmed, the selected open system volume group is deleted.

Notes:

1. If the number of volumes in the specified volume group is nonzero, the volumes that are assigned to the volume group are designated as unassigned. Because they are unassigned, the volumes become eligible for assignment to other volume groups.
2. If you delete a volume group, any host attachments to which the volume group was mapped will no longer be able to access volumes that were in the group.

Modify

When Modify is selected, the Modify volume group page is displayed. This is the first page of a wizard that directs you through the steps and information to modify the selected volume group.

Properties

When Properties is selected, the Volume group properties page is displayed. On this page, you can change the nickname associated with the volume group and view the valid host types for the selected volume group.

Create volume group — Define volume group properties

Use this page to change the nickname that you or the system has assigned to the volume group and or define properties for the volume group.

Introduction

The Define volume group properties page is the first page of the Create volume group wizard. This page allows you to create or change the nickname that is associated with the volume group. This page also allows you to designate the host types that can access the volume group.

There are 2 host type choices that are based on the address discovery method that the system uses to determine the types of volumes that are associated with the volume group.

Map 256

Specifies a set of logical volume numbers as a list of 2-byte logical volume numbers. The configured logical volumes have consecutive locations in the list starting from the beginning. You can specify a maximum of 256 logical volumes (512 bytes).

Mask Specifies a set of logical volume numbers as a bitmap with one bit per logical volume number. A maximum of 65 280 (63.75 KB) logical volumes can be specified (8 KB).

Note: The changes and selections made on this page are not committed until you go through the entire wizard process. However, before you can move to the next page of the wizard, you must ensure that you have a valid volume group nickname and that you have selected a host type.

Menu path

Real-time manager or Simulated manager → Configure storage → Open systems → Volume groups → Select Action: Create... → Go

Fields

Nickname

Specifies the unique nickname that you or the system assign to the volume group. It is limited to 16 characters.

Accessed by host types

When you make the first selection in the table, the table updates to show all compatible host types as selected with regard to block size and addressing method. (For example, when you select a host type that has an addressing method of Map 256, all the host types with Map 256 are automatically selected.)

Select Provides the selection method (a check box) for specifying the host types that you want to allow access to the volume group. When you select a host type with an addressing method of Map 256, all the host types that use a Map 256 addressing method are automatically selected. When you select a host type with an addressing method of Mask, all the host types that use a Mask addressing method are automatically selected.

Host Type

Specifies the host type abbreviation.

Block Size

Specifies the block size, 512 or 520.

Addressing Method

Specifies the addressing method, Mask or Map 256 that the system uses to identify the LUNs that are accessible by the host port.

Create volume group — Select host attachments

Use this page to select the host attachments for these volumes.

Introduction

The Select host attachments page is the second page of the Create volume group wizard. This page allows you to select a host attachment or initiate the process for creating a new host attachment. After you create the new host attachment, the host attachment table refreshes to reflect it and you can select it for use with the designated volume group. You must select a host attachment before you can continue with the create volume group wizard.

Note: The changes and selections made on this page are not committed until you go through the entire wizard.

Menu path

Real-time manager or Simulated manager → Configure storage → Open systems → Volume groups → Select Action: Create... → Go

Fields

Select host attachments

The columns are defined as follows:

Select Provides the selection method (a check box) for specifying the host attachment that you want to allow access to the volume group.

Host Attachment ID

Specifies the unique identifier that you or the system have designated for the host attachment.

Host Type

Specifies the abbreviation for the host type as defined in the Create host attachment wizard.

Create new host attachment button

Initiates the process that creates a new host attachment. After you create the new host attachment, the host attachment table refreshes and you can now select the host attachment for use with the designated volume group.

Create volume group — Select volumes for group

Use this page either to select the volumes that you want to associate with the volume group or to initiate the process that creates new volumes for use with the volume group.

Introduction

The Select volumes for group page allows you to select the volumes that you want to associate with the volume group or to initiate the process that creates new volumes that you can associate with the volume group. After you create the new volume, the Select volumes table refreshes and you can now select the volumes for use with the designated volume group.

Menu path

Real-time manager or Simulated manager → Configure storage → Open systems → Volume groups → Select Action: Create... → Go

Fields

Select volumes

The selected volumes must be compatible with the host types that were selected in the previous two wizard pages. The columns are defined as follows:

Select Provides the selection method (a check box) for specifying the volumes that you want to allow access to the volume group.

Nickname

Specifies the unique nickname that you have assigned to the volume when you designated the prefix and suffix values on the volume nicknames page.

Volume Number

Specifies the volume ID that the system assigns (for example, 1A00).

GB(2³⁰)

Specifies the size of the volume that is available for host system access in 2³⁰B (binary GB) units.

GB(10⁹)

Specifies the size of the volume that is available for host system access in 10⁹B (decimal GB) units.

RAID Type

The supported or available RAID types (for example, RAID 5 and RAID 10).

Extent Pool

The user-defined or default nickname of the extent pool to which the volume is assigned.

Volume Groups

Specifies the volume groups (excluding default volume groups) that a volume belongs to.

Create new open systems volume button

Initiates the process that creates new volumes. After you create a new volume, the Select volume table refreshes, and you can now select the volume for use with the designated volume group.

Create volume group — Verification

Use this page to view properties and basic capacity calculations of the new volume group.

Introduction

The Verification page is the last page of the Create volume group wizard. This page allows you to view the main attributes of the volume group that you have created. If you are not satisfied with the information that is presented, you can use the **Back** button to navigate to the place where the information must be changed. If you are satisfied with the information, click the **Finish** button to commit the new volume group to the system.

Menu path

Real-time manager or Simulated manager → Configure storage → Open systems → Volume groups → Select Action: Create... → Go

Fields

Nickname

Specifies the unique nickname that you or the system has assigned to the volume group.

Accessed by host types

Specifies the abbreviation for the host types that have access to the volume group.

Number of Host Attachments

Specifies the number of host attachments that are associated with the volume group.

Volume quantity

Specifies the volume quantity for the specified volume group.

Modify volume group — Define volume group properties

Use this page to change the nickname that you or the system has assigned to the volume group and to view the properties for the volume group.

Introduction

The Define volume group properties page is the first page of the Modify volume group wizard. This page allows you to change the nickname that is associated with the volume group. This page also provides a current view of the properties that are associated with the volume group. Click **Next** to proceed to the next wizard step.

Notes:

1. The nickname field is a required field. You cannot proceed with the wizard if this field is blank.
2. A change to the nickname is not committed to the system until you complete the entire wizard.

Menu path

Real-time manager or Simulated manager → Configure storage → Open systems → Volume groups → Select a volume group → Select Action: Modify... → Go

Fields

Nickname

Specifies the unique nickname that you or the system assign to the volume group. It is limited to 16 characters.

Accessed by host types

Specifies the host types that have been assigned to the volume group.

Host Type

Specifies the host type abbreviation.

Block Size

Specifies the block size (512 or 520).

Addressing Method

Specifies the addressing method (Mask or Map 256) that the system uses to identify the LUNs that are accessible by the host port.

Modify volume group — Select host attachments

Use this page to modify a volume group by adding a new host attachment that can access the volume group.

Introduction

The Select host attachments page is the second page of the Modify volume group wizard. This page allows you to modify a volume group by creating and adding a new host attachment that can access the volume group. After you create the new host attachment, the host attachment table refreshes to reflect the new host attachment and you can select it for use with the designated volume group. There are no other possible modifications that can be initiated from this page.

Click the **Next** button to continue the wizard.

Notes:

1. The new host attachment parameters must match the parameters of the existing host attachments. You cannot mix sizes or addressing methods.
2. The changes and selections made on this page are not committed until you complete the wizard.

Note:

Menu path

Real-time manager or Simulated manager → Configure storage → Open systems → Volume groups → Select a volume group → Select Action: Modify... → Go

Fields

Select host attachments

The columns are defined as follows:

Select Provides the selection method (a check box) for specifying the host types that you want to allow access to the volume group.

Host Attachment ID

Specifies the unique identifier that you or the system have designated for the host attachment.

Host Type

Specifies the abbreviation for the host type as defined in the modify host attachment wizard.

Create new host attachment button

Initiates the process that creates a new host attachment. After you create the new host attachment, the host attachment table refreshes and you can now select the host attachment for use with the designated volume group.

Modify volume group — Select volumes for group

Use this page to modify the volume group by creating and adding new volumes to the volume group.

Introduction

The Select volumes for group page is the third page of the Modify volume group wizard. This page allows you to modify a volume group by creating and adding a new volume to the volume group. After you create the new volume, the volume table refreshes to reflect the new volume and you can select it for use with the designated volume group. There are no other possible modifications that can be initiated from this page.

Click the **Next** button to continue the wizard.

Note:

Menu path

Real-time manager or Simulated manager → Configure storage → Open systems → Volume groups → Select a volume group → Select Action: Modify... → Go

Fields

Select volumes

The volumes selected must be compatible with the selected host types in the previous two wizard pages. The columns are defined as follows:

Select Provides the selection method (a check box) for specifying the volumes that you want to allow access to the volume group.

Nickname

Specifies the unique nickname that you have assigned to the volume when you designated the prefix and suffix values on the volume nicknames page.

Volume Number

Specifies the volume ID that the system assigns (for example, 1A00).

GB(2³⁰)

Specifies the size of the volume that is available for host system access in 2³⁰B (binary GB) units.

GB(10⁹)

Specifies the size of the volume that is available for host system access in 10⁹B (decimal GB) units.

RAID type

The supported or available RAID types (for example, RAID 5 and RAID 10).

Extent pool

The user- or system-defined pool.

Volume Groups

Specifies the volume groups (excluding default volume groups) that a volume belongs to.

Create new open systems volume button

Initiates the process that creates new volumes. After you create a new volume, the Select volume table refreshes, and you can now select the volume for use with the designated volume group.

Modify volume group — Verification

Use this page to view properties and basic capacity calculations representing the modified volume group.

Introduction

The Verification page is the last page of the Modify volume group wizard. This page allows you to view the main attributes of the volume group that you have modified. If you are not satisfied with the information that is presented, you can use the **Back** button to navigate to the place where the information must be changed. If you are satisfied with the information, click the **Finish** button to commit the modified volume group to the system.

Menu path

Real-time manager or Simulated manager → Configure storage → Open systems → Volume groups → Select a volume group → Select Action: Modify... → Go

Fields

Nickname

Specifies the unique nickname that you or the system has assigned to the volume group.

Accessed by host types

Specifies the abbreviation for the host types that have access to the volume group.

Number Host Attachments

Specifies the number of host attachments that are associated with the volume group.

Volume quantity (Binary/Decimal GB)

Specifies the volume quantity for the specified volume group. The value is displayed in both binary and decimal gigabytes (for example, 262.8/282.2).

Volume group properties

Use this page to change the volume group nickname and view the valid host types for the volume group.

Introduction

This page is accessed from the **Select Action** drop-down menu after you select a volume group in the volume group table or when you click **nickname** for the volume group that you have selected.

Menu path

Real-time manager or Simulated manager → Configure storage → Open systems → Volume groups → Select a volume group → Select Action: Properties... → Go

Fields

Nickname

Specifies the unique name that you or the system have assigned to the

volume group as an identifier. You can change the nickname, limited to 16 characters, as needed. This field must have an entry before you can proceed with any processing.

Accessed by host types

Host Type

Specifies the host type with the operating system. Because a volume group can be assigned to multiple volumes, it is probable that many host types will be displayed. This can occur because the volumes that are assigned to the volume group are all the same block size and capacity.

Block Size

Specifies the volume block size.

Addressing Method

Specifies the behavior of the host port relative to how it identifies the LUNs that are accessible by the host port, Map 256 or Mask.

Paths

Before you can create Metro Mirror and Global Mirror volume paths, you must create paths. Paths are needed to communicate between the volume pairs and to copy data from the source volume to target volume.

The Paths feature is accessible only from the Real-time Manager; the Paths feature is not accessible from the Simulated Manager.

Paths — Main page

Use this page to work with paths for remote mirror and copy relationships. The paths are needed to communicate between a source LSS in a storage unit and a target LSS in another storage unit and to copy data from the source to the target volumes.

Introduction

A path logically connects the source logical subsystem (LSS) in a storage unit and target LSS in another storage unit. The physical path consists of the Fibre Channel Protocol (FCP) connection between two storage units, while a logical path describes the connection of the source and target volumes.

Note: Before you can create paths, you must have configured the fibre-channel I/O ports. For paths to create successfully, verify the physical connection between the storage units. In addition, you want to ensure that the ports that are used for remote mirror and copy operations are not the same ones that are used for host I/O activity.

This page is the starting point for creating paths for remote mirror and copy relationships. It allows you to select the storage complex, storage unit, and LSS from where you want to establish new paths. Paths are created from a source LSS (on a storage unit that contains the source volumes) to a target LSS (on a remote storage unit that contains the target volumes) If you create new volumes for relationships, paths for those volumes must exist before the volumes are added. If there are no listed paths on this page, then no paths have been defined. To create a path, select Create... from Select Actions.

Note: The ESS 2105 supports an intermixed configuration of ESCON[®] and FCP adapters for remote mirror and copy operations. However, the DS6000 storage units only support FCP adapters. Therefore, if you want to create a remote mirror and copy operation between a DS6000 and an ESS 2105, you must use FCP adapters.

You can add additional paths to an LSS volume pair by creating more paths. To select paths that you want to manage by selecting the check box that is associated with the path. The action that you select from Select Actions options determine the operation that is performed on the path. The following are actions that can be display:

Delete The path that you select is deleted from a selected source LSS to target LSS. If you delete all paths, you lose the communication path between your remote mirror and copy volume pairs.

LSS Copy Options

You can modify the values for the following options:

- Concurrent copy timeout
- z/OS Global Mirror timeout
- Critical mode
- Consistency group timeout enabled
- Consistency group timeout

The Paths feature is accessible only from the Real-time Manager; the Paths feature is not accessible from the Simulated Manager.

Note: You can configure I/O port properties on the Storage Units page only.

Menu path

Real-time manager → Copy services → Paths

Fields

Storage complex

The nicknames of storage complexes that are available for selection. A storage complex describes a group of storage units such as the DS6000 that is managed by a single management console.

Note: Nicknames are user-specified when resources are created and can be used as part of an overall scheme or naming convention for making resources easier to identify and manage.

Storage unit

The nickname of storage units that are available for selection. This list can include any nickname associated with any 2107, 1750, and 2105 Model 800 currently that is displayed in the Storage units main page. A storage unit consists of a single DS6000.

Specify LSS

The list of LSS identifiers that are available for selection. An LSS is a group of up to 256 logical volumes that have the same disk format, either count key data (CKD) for zSeries environments, or fixed block (FB) for open-system environments.

Select Check the select box to perform actions on specific table rows.

Source LSS

The source LSS from where to create a path.

Each LSS is specified by a serial number of the storage unit it belongs to and its 2-digit LSS number within the storage unit. For example, FA123:00, where FA123 is the storage unit and 00 is the LSS number. All even numbered LSSs (X'00', X'02', X'04', up to X'FE') belong to server 0 and all odd numbered LSSs (X'01', X'03', X'05', up to X'FD') belong to server 1.

Source port

The I/O port identifier of the interface, such as the Fibre Channel Arbitrated Loop (FC-AL), and the location that provides the physical link for all paths that are defined by the source LSS. The identifier is a four-digit hexadecimal character (0-9 or uppercase A-F). The location of the port uses this format: R(1-2)-E(1-8)-C(1-6)-P(1-4), where:

- R is the rack location
- E is the I/O enclosure
- C is the card
- P is the port of the adapter

Note: R1-E3-C2-P1 is an example of this format.

Target LSS

The target LSS from which a logical path will be created to the source LSS. For each I/O port, you can separately select your target I/O port.

Each LSS is specified by a serial number of the storage unit it belongs to and its 2-digit LSS number within the storage unit. For example, FA123:1A, where FA123 is the storage unit and 1A is the LSS number.

Target port

The I/O port identifier and location that provides the physical link for all paths defined by the target LSS. The identifier is a four-digit hexadecimal character (0-9 or uppercase A-F). The address uses this format: R(1-2)-E(1-8)-C(1-6)-P(1-4), where:

- R is the rack location
- E is the I/O enclosure
- C is the card
- P is the port of the adapter

Note: R1-E3-C2-P1 is an example of this format.

State The current state of the path based on the following categories:

Configuration error

A path has failed.

Establish fibre channel

The FCP path is successfully established.

FCP down

A FCP path has failed because of a communication or hardware failure.

FCP source login exceeded

The maximum number of logins for each source FCP path has been exceeded.

FCP retry exceeded

The maximum number of times that the storage unit tried to reestablish FCP paths has been exceeded.

FCP target login exceeded

The maximum number of logins for each FCP path to the target LSS has been exceeded.

FCP target unavailable

A FCP path to the target LSS is unavailable.

None The path has no state.

Source no resources

The path failed to establish because the maximum paths have been established from the source LSS. Resources are not available at the source site for the logical paths to be established.

Retry The attempt to reestablish path connection.

Target mismatch

Target (remote) site system adapter ID (SAID) mismatch.

Target no resources

The path failed to establish because the maximum paths have been established from the target LSS. Resources are not available at the target (remote) site for the logical paths to be established.

Target LSS mismatch

The sequence number of the storage unit at the target site does not match the number of the target LSS.

STK This state is reserved for use by StorageTek (STK).

Timeout

A timeout has occurred. No reason available.

Unknown

The state of the path is unknown.

Path Degraded Due to High Failure Rate

Indicates that a fibre channel path is established; however, because of a high failure rate the path is degraded.

Path Removed Due to High Failure Rate

Indicates that the fibre channel path link has been removed because the path has experienced a high failure rate.

Create paths — Select source LSS

Use this page to select a source logical subsystem (LSS) to which to create a logical path between the source LSS that you select and a target LSS.

Introduction

Creating logical paths between a source LSS and target LSS allows remote mirror and copy operations to be performed on volume pairs.

Menu path

Real-time manager → Copy services → Paths → Select Action: Create... → Go

Fields

Storage complex

The list of storage complexes that are available for selection.

Storage unit

The nicknames of storage units that are available for selection.

Select LSS

The unique number of the source LSS within the storage unit. Select only one source LSS.

You can remove paths that are already established from this source LSS by using the Delete path page.

Create paths — Select target LSS

Use this page to select a target logical subsystem (LSS) to which a logical path will be created between the target LSS that you selected and the source LSS.

Introduction

Creating logical paths between a source LSS and target LSS allows remote mirror and copy operations to be performed on volume pairs.

Menu path

Real-time manager → Copy services → Paths → Select Action: Create... → Go

Fields

Storage complex

The list of storage complexes that are available for selection.

Storage unit

The nicknames of storage units that are available for selection.

Select LSS

The unique number of the source LSS within the storage unit. Select only one target LSS.

Create paths — Select source I/O ports

Use this page to select I/O port properties for the source LSS. You can use one or more port properties.

Introduction

The source I/O port that you select provides a physical link for all paths that are defined by the source LSS and target LSSs.

Menu path

Real-time manager → Copy services → Paths → Select Action: Create... → Go

Fields

Select I/O ports

The ports are selected by the interface identifier and location code, based on the following criteria:

Select

The check boxes that are associated with one or more ports.

Interface identifier

The value of the System Adapter ID (SAID) interface identifier on the source system that uniquely identifies the physical location of the associated storage unit. The interface identifier is a four-digit character: 0 - 9 or uppercase A - F. Value FFFF is reserved.

Location

The location that provides the physical link for all paths defined by the source LSS. The value of the location uses this format:

R(1-2)-E(1-8)-C(1-6)-P(1-4), where:

- R is the rack location
- E is the I/O enclosure
- C is the card
- P is the port of the adapter

Note: R1-E3-C2-P1 is an example of this format.

Configure I/O Ports

The option that allows you to configure I/O ports that are connected to selected host attachments. If you select this option, the Configure I/O ports page is displayed to allow you to select new I/O ports.

Create paths — Select target I/O ports

Use this page to select I/O port properties for the target LSS.

Introduction

The target I/O port that you select provides a physical link for all paths that are defined by the source LSS and target LSS. For each source I/O port, you can separately select a target I/O port on this page.

Menu path

Real-time manager → Copy services → Paths → Select Action: Create... → Go

Fields

Select a target port for each source port

These ports are selected by the interface identifier and location. You must select a target port for each selected source port.

Port ID (Selected source I/O port location)

The combined value of the port identifier that determines the target LSS for the path and the location of the port. The interface identifier is a four-digit character (0 - 9 or uppercase A - F). Value FFFF is reserved. The value of the location uses this format: R(1-2)-I(1-8)-C(1-6)-P(1-4), where:

- R is the rack location
- E is the I/O enclosure
- C is the card
- P is the port of the adapter

Note: R1-E3-C2-P1 is an example of this format.

Create paths — Select path option

Use this page to define a consistency group for all volume pairs using this path. Consistency groups are used for controlling error situation and for maintaining data consistency across volume pairs sharing this path.

Introduction

Use this page to define a consistency group for volume pairs. Volumes that have the same source LSS and target LSS are part of a consistency group when the consistency group option is defined. Grouping volumes into a consistency group ensures data consistency across volumes at a target (remote) site.

Menu path

Real-time manager → Copy services → Paths → Select Action: Create... → Go

Fields

Define as a consistency group

Defines a consistency group for all volume pairs in a relationship. All volume pairs in relationships from the source LSS to target LSS (sharing the same paths) belong to this consistency group. Other volumes pairs are not affected.

Create paths — Verification

Use this page to verify the options that you selected for the paths that will be created.

Introduction

After you create paths and select the options for the paths, use the information that is displayed on this page to verify your selections. When you click the **Finish** button, the selected paths are created with the options that you selected.

Menu path

Real-time manager → Copy services → Paths → Select Action: Create... → Go

Fields

Source LSS

The source LSSs that you selected are displayed.

Target LSS

The target LSSs that you selected are displayed.

Source I/O ports

The list of selected I/O ports for the source LSS are displayed.

Target I/O ports

The list of selected I/O ports for the target LSS are displayed.

Consistency group

Indicates whether the consistency group that is associated with the volume pairs is displayed. That is, if the value is Yes, all volume pairs in a Metro Mirror relationship from the source to target LSS (sharing the same paths) belong to the consistency group. Other volumes pairs are not affected.

LSS copy options

Use this page to define copy options for logical subsystems (LSSs). The LSS copy options that you select here are applied to all the volumes of an LSS when Remote Mirror and Copy requests are processed.

Introduction

Use this page to define copy options for LSSs. An LSS is a group of up to 256 logical volumes that the same disk format (CKD or fixed block) and is identified with a unique ID. You can select copy options for in one LSS or all LSSs in the storage unit. The copy options are applied to all volumes in the LSSs that you selected.

Menu path

Real-time manager → Copy services → Paths → Select Action: LSS copy options → Go

Fields

Storage complex

The list of storage complexes that are available for selection.

Storage unit

The list of storage units that are available for selection.

Select LSS

A list of valid LSSs from which to select. Values include: LSS IDs and All LSSs. If you select All LSSs, the options that you select on this page apply to the LSSs in the selected storage unit.

Concurrent copy timeout

The time, in seconds, that any logical volume in this LSS, in a concurrent copy session stays in a long-busy state (the volume is not available during this time) before suspending the concurrent copy session. The default value is 300 seconds.

Note: This option does not apply to open-system environments.

z/OS Global Mirror timeout

The time, in seconds, that any logical volume in an z/OS Global Mirror session stays in a long-busy state before the session is suspended. The long-busy state occurs because the data mover has not copied data when the logical volume (or z/OS Global Mirror session) is no longer able to accept additional data. The default value is 300 seconds.

Note: This option does not apply to open-system environments.

Critical mode enabled

The mode that controls the behavior of the remote mirror and copy pairs that have a source volume in this LSS that is part of a consistency group. With this option enabled, write operations to the source remote mirror and copy volume are prohibited if data cannot be copied to the target volume of the volume pair.

Consistency group timeout enabled

When enabled, a source volume in this LSS in a consistency group that goes into a long-busy state after reporting an error condition. The error condition causes a remote mirror and copy suspension until either a

consistency group created operation is performed or until the extended long-busy timeout has elapsed. If the timeout is not enabled, a logical volume on this LSS does not go into a long-busy state after reporting an error that causes remote mirror and copy to be suspended.

Consistency group timeout

The amount of time that data is withheld from updating a source volume of a consistency group when an error occurs. You can optionally change the default time (in seconds) by highlighting and typing over the default. The default value is 120 seconds.

Ranks

The topics in this section provide information that is related to using the ranks pages. If the pages are displayed in a wizard, they are listed in the sequence that they are displayed.

Ranks — Main page

Use this page to view information for each rank in the selected storage unit.

Introduction

One or more arrays are combined to create a logically contiguous storage space called a rank.

Use the **Refresh** button to obtain current information. If no data is displayed, no ranks exist. You must create ranks before using this page.

Each rank number is linked to the associated rank properties information. Likewise, each data state entry is linked to the associated rank status information.

Note: If you are building a configuration in simulated mode or importing a real-time configuration into the simulated configurator, extent allocation per rank in an extent pool might not be the same. This means that the rank extent allocations that have been created in simulated mode or imported as part of a real-time configuration might not match the allocation as compared with applied and imported configurations and real-time configurations at the rank level, although the extent usage is equivalent. The real-time configuration extent allocation at the rank level will be configured appropriately.

Menu path

Real-time manager or Simulated manager → Configure storage → Ranks

Fields

Select storage unit

Specifies the storage unit that is being configured. You must have a storage unit that is configured to perform storage configuration tasks. This field is required.

Refresh button

Refreshes the information in the summary table. The last refresh date and time are also updated.

Last refresh

The most recent date and time of the information that is displayed in the summary table.

Select Allows you to select a rank to perform additional actions.

Number

A unique identifier that consists of a storage unit identifier and a rank number (for example, R67).

Status (Real-time only)

The status indicates the current operational status of the rank. The links take you to the status page.

- Normal — When the rank is in the following state:
 - Data state: Normal
 - Configuration state: Normal, Configuring, Unassigned, Reserved, or Deconfiguring
- Attention — When the rank is in the following state:
 - Data state: Degraded, Read only, or Repairing
 - Degraded — An array that is associated with this rank is in the Degraded state when one or more array members must be rebuilt. This occurs when a storage device has an array that is rebuilding or when a storage device has failed and would be rebuilding if there was an available spare.
 - Read-only — An array that is associated with this rank is in the Read-only state if one or more storage devices have failed, if there are insufficient spares to support all rebuild operations, and if continued write operations without redundancy might result in data loss.
 - Repairing — An array associated with this rank is in the Repairing state if the array was previously in the failed state and if initialization of the storage devices in the array is now in progress. The data state changes to Normal after the array initialization completes successfully. The data state changes to Failed if the action completes unsuccessfully and if there are no other available storage devices to replace those that could not be initialized.
 - Configuration state: Configuration error
- Failed — The rank is in the Failed state when an array that is associated with this rank is also in the Failed state.
- Inaccessible — The rank is in the Inaccessible state when an array that is associated with this rank is also in the Inaccessible state.

Storage Type

The type of extent for which the rank is configured. Set to one of the following values:

- Fixed block (FB) extents 1 GB. In fixed block architecture, the data (the logical volumes) are mapped over fixed-size blocks or sectors.
- Count key data (CKD) extents CKD Mod 1. In count-key-data architecture, the data field stores the user data.

RAID The supported or available RAID types (for example, RAID 5 and RAID 10).

Array A unique identifier that consists of a storage unit identifier and an array number (for example, A44).

Extent Pool

The user specified nickname of the extent pool.

Total GB

The total amount of available usable storage in gigabytes (GB).

Used GB

The amount of allocated storage in this rank (for example, the extents used).

Actions

Create Allows you to create a rank.

Delete Allows you to delete the selected ranks. You cannot delete ranks that are in the Configuring or Deconfiguring states. If the selected ranks currently have volumes using storage on the rank, these volumes are deleted when you delete the ranks.

Modify

Allows you to modify the properties of the selected ranks. You cannot modify ranks that are in the Configuring or Deconfiguring states or ranks that have used extents.

Status Displays the status of the selected ranks.

Operations

Allows you to reserve or release ranks.

Add to Extent Pool

Allows you to add the selected rank to an extent pool.

Remove from Extent Pool

Allows you to remove the selected rank from an extent pool.

Ranks — Add to extent pool

Use this page to add ranks to extent pools.

Menu path

Real-time manager or Simulated manager → Configure storage → Ranks → Select one or more unassigned ranks → Select Action: Add to Extent Pool → Go

Fields**Select extent pool**

The four columns are defined as follows:

Select The radio buttons for the extent pools.

Nickname

The user- or system-defined extent pool nickname.

Number

The extent pool number. The extent pool number is a four-digit decimal number with no leading zeroes, normally prefixed with a P (for example, P5). Even-numbered extent pools are associated with rank group 0. Odd-numbered extent pools are associated with rank group 1.

RAID The supported or available RAID types (for example, RAID 5 and RAID 10).

Primary Server

The primary server that is associated with the extent pool.

Available GB

The available storage in gigabytes.

Create new extent pool button

Creates a new extent pool. Once you create the extent pool, the table refreshes and you can then select the new extent pool for this rank.

Create rank — Select array for rank

Use this page to select the array for a rank.

Menu path

Real-time manager or Simulated manager → Configure storage → Ranks → Select
Action: Create... → Go

Fields**Available arrays**

One array must be selected. The columns are defined as follows:

Select The radio buttons corresponding to the arrays.

Number

The array number (for example, A44).

RAID The supported or available RAID types (for example, RAID 5 and RAID 10).

Total GB

The total storage in gigabytes.

Create new array button

Creates a new array. After you create the array, the table refreshes and you can select the new array for this rank.

Create rank — Define rank properties

Use this page to define the properties for the rank.

Menu path

Real-time manager or Simulated manager → Configure storage → Ranks → Select
Action: Create... → Go

Fields**Rank number**

The rank number (for example, R67).

Storage

The type of extent for which the rank is to be configured. Set to one of the following values:

- Fixed block (FB) extents, 1 GB
- Count key data (CKD) extents, CKD Mod 1

Create rank — Select extent pool

Menu path

Real-time manager or Simulated manager → Configure storage → Ranks → Select
Action: Create... → Go

Fields

Select extent pool

One array must be selected. The columns are defined as follows:

Select The radio buttons that correspond to the arrays.

Nickname

The user- or system-defined nickname, limited to 16 characters.

Number

The extent pool number. The extent pool number is a four-digit decimal number with no leading zeroes, normally prefixed with a P (for example, P5). Even-numbered extent pools are associated with rank group 0. Odd-numbered extent pools are associated with rank group 1.

RAID The supported or available RAID types (for example, RAID 5 and RAID 10).

Primary Server

The primary server that is associated with the extent pool.

Available GB

The available storage in gigabytes.

Create rank — Verification

Use this page to verify the properties and basic capacity calculations representing the new rank.

Menu path

Real-time manager or Simulated manager → Configure storage → Ranks → Select
Action: Create... → Go

Fields

Rank number

The rank number (for example, R67).

Array number

A unique identifier that consists of a storage unit identifier and an array number (for example, A44).

RAID type

The user-defined type from the Select array for rank page.

Extent pool assignment

The user-defined assignment from the Select extent pool page.

Storage type

The user-defined type from the Define rank properties page.

Total GB

The total amount of usable or effective storage in the array as specified in the Select array for rank page.

Modify rank — Select array for rank

Use this page to modify the array for a rank.

Introduction

The **Modify** option is available in the **Select Action** drop-down list only if the number of extents used on the rank is 0.

A modification is valid only when you make modifications for a new or fully deconfigured storage unit.

Menu path

Real-time manager or Simulated manager → Configure storage → Ranks → Select a rank → Select Action: Modify... → Go

Fields

Available arrays

One array must be selected. The columns are defined as follows:

Select The radio buttons for the arrays.

Number

A unique identifier that consists of a storage unit identifier and an array number (for example, A44).

RAID The supported or available RAID types (for example, RAID 5 and RAID 10).

Total GB

The total storage in gigabytes.

Create new array button

Creates a new array. After you create the new array, the table refreshes and you can then select the new array for this rank.

Modify rank — Define rank properties

Use this page to modify the properties for the rank.

Introduction

The **Modify** option is available in the **Select Action** drop-down list only if the number of extents used on the rank is 0.

Menu path

Real-time manager or Simulated manager → Configure storage → Ranks → Select a rank → Select Action: Modify... → Go

Fields

Rank number

The rank number (for example, R67).

Storage type

The type of extent for which the rank will be configured. Set to one of the following values:

- Fixed block (FB) extents, 1 GB
- Count key data (CKD) extents, CKD Mod 1

Modify rank — Select extent pool

Use this page to modify an extent pool for the rank.

Introduction

The Modify option is available in the **Select Action** drop-down list only if the number of extents used on the rank is 0.

You can add a rank to an extent pool at any time if the status of the rank is unassigned. In a simulated reconfiguration mode or in a real-time configuration, you can remove a rank from an extent pool only if no extents are used on that rank; otherwise, the rank can be removed from the extent pool in a configuration for a new or fully deconfigured storage unit. You can change extent pools for this rank only if the modification is done on a new or fully deconfigured storage unit.

Menu path

Real-time manager or Simulated manager → Configure storage → Ranks → Select a rank → Select Action: Modify... → Go

Fields

Select extent pool

One array must be selected. The columns are defined as follows:

Select The radio buttons for the extent pools.

Nickname

The user- or system-defined extent pool nickname.

RAID The supported or available RAID types (for example, RAID 5 and RAID 10).

Available Storage (GB)

The available storage in gigabytes.

Create new extent pool

Creates a new extent pool. The table refreshes to reflect the new extent pool, which you can then select for this rank.

Modify rank — Verification

Use this page to verify the properties and basic capacity calculations representing the new rank.

Menu path

Real-time manager or Simulated manager → Configure storage → Ranks → Select a rank → Select Action: Modify... → Go

Fields

Rank number

The rank number (for example, R67).

Array number

A unique identifier that consists of a storage unit identifier and an array number (for example, A44).

RAID type

The RAID type that was defined in the Select array for rank page.

Extent pool assignment

The assignment that was defined in the Select extent pool page.

Storage type

The storage type that was defined in the Define rank properties page.

Total Storage (GB)

The total amount of usable/effective storage in the array specified in the Select array for rank page.

Rank operations (real-time only)

Use this page to reserve or release a rank.

Menu path

Real-time manager → Configure storage → Ranks → Select one or more ranks → Select Action: Operations... → Go

Fields

Reserve rank

Enabled if some of the ranks that you selected are in a reserved state and some are in a normal state. The configuration state must be Normal or Reserved. If the rank is in the Normal configuration state, the configuration state is changed to Reserved.

Release rank

Enabled if some of the ranks that you selected are in a reserved state and some are in a normal state. The configuration state must be Normal or Reserved. If the rank is in the Reserved configuration state, the configuration state is changed to Normal.

Rank status (real-time only)

Use this page to view details regarding the status of the rank.

Introduction

Use the **Refresh** button to obtain current information.

Menu path

Real-time manager → Configure storage → Ranks → Select one or more ranks → Select Action: Status... → Go

Fields

Data state

The current state of the data that is contained on the ranks. Set to one of the following values:

- Normal — The rank is in the Normal data state if no other data states apply. This state is applicable when the configuration state is Unassigned, Configuring, or Configuration error.
- Degraded — The rank is in the Degraded data state if one or more arrays in the rank are in the Degraded data state and none are in the Read Only, Failed, Repairing, or Inaccessible data states.
- Read Only — The rank is in the Read Only data state if one or more arrays in the rank are in the Read Only data state and none are in the Failed, Repairing, or Inaccessible data states.
- Failed — The rank is in the Failed data state if one or more arrays in the rank are in the Failed data state.
- Repairing — The rank is in the Repairing data state if one or more arrays in the rank are in the Repairing data state and none are in the Failed data state.
- Inaccessible — The rank is in the Inaccessible data state if one or more arrays in the rank are in the Inaccessible data state and none are in the Failed or Repairing data states.

Configuration state

The current configuration state of the extent pools on the ranks. Set to one of the following values:

- Normal — The rank is in the Normal configuration state when any unallocated extents on the rank are assigned to an extent pool and are eligible for allocation to a logical volume.
- Configuring — The rank is in the process of being initially configured.
- Unassigned — The extent pool is unassigned.
- Reserved — When the extents on a rank are not eligible for allocation to a logical volume, but existing allocations are to remain in effect, the rank is in the Reserved configuration state.
- Deconfiguring — The rank is in the process of being deleted.
- Configuration Error — The configuration or certification process did not complete successfully. The rank should be deleted.

Repair button

This button is available only for a failed or inaccessible rank.

Storage complexes

The topics in this section provide information that is related to using the storage complex pages. If the pages are displayed in a wizard, they are listed in the sequence that they are displayed.

Storage complexes — Main page

Use this page to work with and view information about storage complexes.

Introduction

If no storage complexes exist, no data is displayed. You must first create a storage complex in order to use this page by following the steps in the Creating a storage complex task. The values that display here are created while completing that task.

Use the **Refresh** button to obtain current information.

Adding a storage complex to your view enables you to manage multiple storage complexes from a single console. You do not need to sign on separately to multiple consoles. Also, working with Copy Services is easier when you have both source and target storage complexes in your view.

If you get a login error while performing an "Attempt Connection" action, open another window and go to the target storage complex. Set the user ID and password to match the ones for this storage complex and return to this window and perform the Attempt Connection action again.

Menu path

Real-time manager or Simulated manager → Manage hardware → Storage complexes

Fields

Select The check boxes for the storage complexes. Select the storage complexes that you want to work with for the Select Action options or for which you want to print a report or download a spreadsheet.

Existing Storage Complex (Simulated)

An icon indicates that you imported this storage complex from an existing storage complex. In other words, a connection has been made before with this storage complex.

Nickname

The unique, system-defined storage complex host name, limited to 16 characters. The nickname identifies this storage complex throughout the system.

Storage Units

The number of units that are assigned to this storage complex. The link takes you to a storage unit page that is filtered by storage complex.

Management console 1

A unique, user-defined IP address for the management console.

Note: Define a second management console to create redundancy. If the status for one console is not "Connected," then you are down to one management path. Fixing the other path restores you to full redundancy.

Status

- Connected — Indicates successful connections
- Unavailable — Indicates connections that fail
- Login error — Indicates incorrect username/password

Note: The user ID and password that you used to sign on must be used here.

Management console 2

A unique user-defined IP address for this management console that must be different from the IP address for management console 1. This field is empty if there is no IP address that is specified for the second management console.

Note: Define a second management console to create redundancy. If the status for one console is not "Connected," then you are down to one management path. Fixing the other path restores you to full redundancy.

Status

- Connected — Indicates successful connections
- Unavailable — Indicates connections that fail
- Login error — Indicates incorrect username/password

Note: The user ID and password that you used to sign on must be used here.

Add storage complex (real-time only)

Use this page to add a storage complex by defining management console properties when the machines are connected to a network.

Introduction

The IP addresses ensure communication between management consoles. Any IP addresses that are listed here must be available for access on the network.

When adding a storage complex, you must use the user ID and password that was used to sign on. Each storage complex that is added must have the same sign-on information.

Menu path

Real-time manager → Manage hardware → Storage complexes → Select Action: Add Storage Complex → Go

Fields

Define Management console 1

Management console 1 IP address

The IP address to one of two possible Management consoles in the storage complex.

Define a second Management console

If this box is checked, you must enter the IP address of the second management console. **Note:** If you have only one address defined, then you have only one communication path to the storage complex. If that single path fails, you cannot manage the storage complex. Defining a second address provides you with a redundant management path to the storage complex.

Management console 2 IP address

Required field if the Define a second Management console box is selected. The IP address to one of two possible Management consoles in the storage complex.

Add 2105 Copy Services Domain (real-time only)

Use this page to set up a Copy Services 2105 domain.

Introduction

Configuring a Copy Services domain on the DS Storage Manager allows you to perform Copy Services functions between machine type 2105 and machine type 1750. The 1750 must authenticate with the 2105 before you can perform Copy Services functions. Because of the single login process used by the 1750 to access the 2105, the user names and passwords must be the same on the 1750 and 2105.

Menu path

Real-time manager → **Manage hardware** → **Storage complexes** → **Select Action: Add 2105 Copy Services Domain** → **Go**

Fields

Server 1 IP address

This is a required field. Specify the 2105 Copy Services domain IP address.

Define a 2nd Copy Services Server (checkbox)

Click this checkbox if you want to specify the IP address of a second 2105 Copy Services domain address. When this checkbox is selected, the Server 2 IP address field becomes a required field before you can complete the processing.

Server 2 IP address

Specify the 2105 Copy Services domain IP address of the second server.

Identify Copy Services domain (real-time only)

Use this page to add a Copy Services domain for a 2105.

Menu path

Real-time manager → **Manage hardware** → **Storage complexes** → **Select Action: Add 2105 Copy Services Domain** → **Go**

Fields

Define Copy Services server

Server 1 IP address

The IP address to one of two possible servers in the Copy Services domain.

User ID

Required to access information (like the physical or logical configuration from the box) from the storage complex. This value is the same for both Copy Services servers.

Password

Required to access information (like the physical or logical configuration from the box) from the storage complex. This value is the same for both Copy Services servers.

Define a second Copy Services server

If this box is checked, you must enter the IP address of the second Copy Services server.

Server 2 IP address

Required field if the Define a second Copy Services server check box is selected. This IP address belongs to one of two possible Copy Services servers in the Copy Services domain. This IP address should be different from the IP address entered for Server 1.

Configure modem remote support: (real-time only)

Use this page to specify a priority list of phone numbers that create a VPN connection over the modem.

Menu path

Real-time Manager → Manage hardware → Storage complexes → Select Action: Configure Modem Remote Support → Go

Fields

Country

The country from which you are dialing the modem.

State The state from which you are dialing the modem, if applicable.

Phone A modem phone number from the list of numbers that are available for the country and state combination that you chose.

Prefix The prefix that the modem must dial to reach an external phone line, if necessary.

Phone#1

The first phone number that the modem can dial to initiate a VPN connection.

Phone#2

The second phone number that the modem can dial to initiate a VPN connection.

Phone#3

The third phone number that the modem can dial to initiate a VPN connection.

Phone#4

The fourth phone number that the modem can dial to initiate a VPN connection.

Populate button

Click this button to place the phone number that you selected from the Phone field into the Phone# field that is next to this button.

Test button

Click this button to initiate a test VPN connection using the phone number in the Phone# field that is next to this button.

Test connection status

The ongoing status for the test VPN connection.

Cancel test button

Click this button to end the VPN connection.

Create storage complex — Define properties (simulated only)

Use this page to specify the simulated storage complex.

Menu path

Simulated manager → Manage hardware → Storage complexes → Select Action: Create... → Go

Fields

Nickname

The storage complex host name.

Available storage units

The available and valid storage units and other list has the selected storage units. Select from the list of available storage units and use the **Add>** button to move them to the **Selected storage units** list.

Note: This field is not required at the time that you create the storage complex. You can enter this value now or modify the storage complex properties later. Additionally, you can select this storage complex when you create a storage unit. You must create an association between a storage complex and a storage unit at some point before downloading or uploading configurations to or from the storage unit.

Add > Adds valid storage units to the list of selected storage units.

< Remove

Removes valid storage units from the list of selected storage units.

Selected storage units

The units that you move from the **Available storage units** list.

Create new storage units button

Allows you to create a new storage unit. After you complete the process to create a new storage unit, the table refreshes and you can select the new unit for this complex.

Create storage complex — Verification (simulated only)

Use this page to review and verify a list of properties and basic capacity calculations that represent the new storage complex.

Introduction

The values on this page reflect those that were chosen during the previous step. If the values are incorrect, go back and correct them before you finish with this page. After you complete this step, you can begin to define the logical configuration.

Menu path

Simulated manager → Manage hardware → Storage complexes → Select Action: Create... → Go

Fields

Nickname

Reflects the storage complex host name chosen in the previous step. This unique value identifies this element throughout the system.

Selected Storage units

Reflects user input in the previous step.

Import storage complex — Define management consoles (simulated only)

Use this page to connect directly to a storage complex by defining management console properties — if the machines are network connected.

Menu path

Simulated manager → Manage hardware → Storage complexes → Select Action: Import... → Go

Fields

Define Management console 1

Management console 1 IP address

The IP address to one of two possible Management consoles in the storage complex.

User ID

Required to access information (like the physical or logical configuration from the box) from the storage complex. This value is the same for both Management consoles.

Password

Required to access information (like the physical or logical configuration from the box) from the storage complex. This value is the same for both Management consoles.

Define a second Management console

If this box is checked, you must enter the IP address of the second Management console.

Management console 2 IP address

Required field if the Define a second Management console box is selected. The IP address to one of two possible Management consoles in the storage complex.

Import storage complex — Import data (simulated only)

Use this page to import data from a storage complex.

Menu path

Simulated manager → Manage hardware → Storage complexes → Select Action: Import... → Go

Fields

Amount of data to import

You must select at least one of the following choices:

General storage complex settings

If selected, only the general settings for the storage complex are imported to the application.

All storage unit physical configurations

If selected, only the physical characteristics of each storage unit are imported to the application.

All storage unit logical configurations

If selected, the physical and logical configuration characteristics of

each storage unit are imported to the application. If you select this check box but had not selected the **All storage unit physical configurations** check box, then it becomes checked.

All host attachments for Storage Units

If selected, the physical and logical configuration characteristics of the storage unit plus all the host attachment characteristics are imported to the application. If you had not checked the previous two check boxes, they become checked once you select this check box.

Import storage complex — General (simulated only)

Use this page to define general storage complex information.

Menu path

Simulated manager → **Manage hardware** → **Storage complexes** → **Select Action: Import...** → **Go**

Fields

Nickname

The storage complex nickname, limited to 16 characters.

Description

The storage complex description, limited to 256 characters.

Import storage complex — Verification (simulated only)

Use this page to review and verify a list of properties and basic capacity calculations that represent the new storage unit.

Menu path

Simulated manager → **Manage hardware** → **Storage complexes** → **Select Action: Import...** → **Go**

Fields

Management console 1 IP address

Reflects user input.

Management console 2 IP address

Reflects user input. If you entered a second Management console, its IP address appears here.

Amount of data to import

Reflects user input.

Storage complex nickname

Reflects user input.

Define peer management console (real-time only)

Use this page to identify and establish a connection with a secondary management console (peer) for the storage complex associated with the primary management console (MC).

Introduction

You can define a new storage complex if you are connected to a network. The userIDs and passwords for the primary and secondary management consoles must be the same. You must be an administrator to view this page.

Note: When using peer MCs, if either of the consoles fails, no changes can be made to user accounts until the peer-to-peer relationship is restored.

Menu path

Real-time manager → Manage hardware → Storage complexes → Select a storage complex → Select Action: Define Peer... → Go

Fields

Storage complex

The name of selected storage complex .

Management Console 1

Information for the primary MC of the selected storage complex.

Note: You must enter either the server Host name or the Server IP address, but not both.

Host name

The host system name of the server for the selected storage complex.

Server IP address

The user-selected dotted decimal IP address of the server for the selected storage complex.

Define Management Console 2

The user-selected information for the secondary MC.

Note: You must enter either the server Host name or the Server IP address, but not both.

Host name

The user-selected host system name of the server for the secondary MC.

Server IP address

The user-selected dotted decimal IP address of the server for the secondary MC.

Note: User account information must be synchronized after you add a secondary MC.

Assign storage unit — Storage unit properties (real-time only)

Use this page to initiate the process of configuring network settings and of establishing a communications connection.

Menu path

Real-time manager → Manage hardware → Storage complexes → Select Action: Assign Storage unit... → Go

Fields

IP address of processor card 1

The user-selected IP address for the first processor card.

IP address of processor card 2

The user-selected IP address for the second processor card.

Storage unit machine type, model number, serial number (MTS)

Storage unit information.

Machine type

The system-defined machine type.

Serial number

The user-selected serial number of the storage unit being that is being assigned.

Assign storage unit — Network settings (real-time only)

Use this page to define network settings.

Introduction

Network settings are required for both processor cards.

Menu path

Real-time manager → Manage hardware → Storage complexes → Select Action:
Assign Storage Unit... → Go

Fields

Processor controller card 1 IP Address

The user-selected IP address for processor card 1. The same IP address can be used for both processor card 1 and processor card 2.

Gateway

The user-selected gateway address. To assign a storage unit without a gateway, enter the address 0.0.0.0.

Primary domain name server (DNS)

The user-selected primary domain name server information. You can enter either the IP address or the name of the DNS.

IP address

The user-selected primary domain name server IP address. This is available only if you do not enter a DNS name below.

Maximum transmission unit (bytes) (1 to 9000)

The user-selected maximum rate for transmission. This can be any number from 1 to 9000.

Processor controller card 2 IP Address

The user-selected IP address for processor card 2. The same IP address can be used for both processor card 1 and processor card 2.

Subnet mask

The user-selected IP address for the network mask.

Alternate domain name server (DNS)

The user-selected secondary domain name server information. You can enter either the IP address or the name of the DNS.

IP address

The user-selected secondary domain name server IP address. This is available only if you do not enter a DNS name below.

Assign storage unit — Verification (real-time only)

Use this page to verify the attributes and values entered for the newly configured Storage unit.

Menu path

Real-time manager → **Manage hardware** → **Storage complexes** → **Select Action: Assign Storage Unit...** → **Go**

Fields

Nickname

The user-selected Storage unit nickname. If you did not enter a nickname, the default nickname appears.

Description

The user-selected description of the Storage unit being configured.

IP Address of processor card 1

The user-selected IP address of processor card 0. If you did not enter and IP address, Undefined appears.

IP Address of processor card 2

The user-selected IP address of processor card 1. If you did not enter and IP address, Undefined appears.

Gateway

The user-selected gateway address of processor card 0. To assign a storage unit without a gateway, enter the address 0.0.0.0. If you did not enter a gateway address, Undefined appears.

Subnet mask

The user-selected network mask address of processor card 0. If you did not enter a gateway address, Undefined appears.

Primary domain name server IP address

The user-selected primary domain name server (either the IP address or the name of the DNS). If you did not enter a primary domain name server, Undefined appears.

Alternate domain name server IP address

The user-selected secondary domain name server (either the IP address or the name of the DNS). If you did not enter a secondary domain name server, Undefined appears.

Maximum transmission unit

The user-selected maximum rate for transmission (from 1 to 9000).

Remove peer (real-time only)

Use this page to remove a peer (secondary) management console (MC).

Introduction

This will end all operations in progress between the peer management console and the selected storage complex. This causes all pending operations to fail. The

storage complex and peer management console being removed by this action will also display.

Menu path

Real-time manager → **Manage hardware** → **Storage complexes** → **Select a storage complex** → **Select Action: Remove Peer...** → **Go**

Fields

Storage complex

The nickname of the storage complex that was selected on the main page, which will display the peer management console removed.

Peer Management console

Information for the peer management console of the selected storage complex.

Host name

The host system name of the peer management console for the selected storage complex.

Server IP address

The dotted decimal IP address of the peer management console for the selected storage complex.

Remove From List (Real-time only)

Use this page to remove a storage complex.

Introduction

You must first make a selection in the table. When you select Remove from list in the **Select Action** drop-down list, a confirmation page is displayed. You can select the **OK** button to complete the removal process.

Menu path

Real-time manager → **Manage hardware** → **Storage complexes** → **Select one or more storage complexes** → **Select Action: Remove from list** → **Go**

Modify storage complex — Define properties (simulated only)

Use this page to modify the simulated storage complex.

Menu path

Simulated manager → **Manage hardware** → **Storage complexes** → **Select a storage complex** → **Select Action: Modify...** → **Go**

Fields

Nickname

The storage complex host name.

Available storage units

The available and valid storage units and other list has the selected storage units. Select from the list of available storage units and use the **Add>** button to move them to the **Selected storage units** list.

Note: This field is not required at the time that you modify the storage complex. You can enter this value now or modify the storage complex properties later. Additionally, you can select this storage complex when you create a storage unit. You must create an association between a storage complex and a storage unit at some point before downloading or uploading configurations to or from the storage unit.

Add > Adds valid storage units to the list of selected storage units.

< Remove

Removes valid storage units from the list of selected storage units.

Selected storage units

The units that you move from the **Available storage units** list.

Create new storage unit button

Allows you to create a new storage unit. After you complete the process to create a new storage unit, the table refreshes and you can select the new unit for this complex.

Modify storage complex — Verification (simulated only)

Use this page to review and verify a list of properties and basic capacity calculations representing the new storage complex.

Menu path

Simulated manager → Manage hardware → Storage complexes → Select a storage complex → Select Action: Modify... → Go

Fields

Nickname

Reflects the storage complex host name.

Selected Storage units

Reflects user input.

Storage Complex Properties

Use this page to view the properties for the storage complex.

Menu path

Real-time manager or Simulated manager → Manage hardware → Storage complexes → Select a storage complex → Select Action: Properties... → Go

Fields

Management console 1 nickname

The currently defined host nickname or a default nickname, limited to 16 characters.

Management console 2 nickname

The currently defined peer management console nickname or a default nickname, limited to 16 characters.

Storage units

The topics in this category provide information that is related to using the storage unit pages. If the pages are displayed in a wizard, they are listed in the sequence that they are displayed.

Real-time

The topics in this section provide information that is related to using the real-time storage unit pages. If the pages are displayed in a wizard, they are listed in the sequence that they are displayed.

Storage units — Main page

Use this page to review information related to the displayed storage units.

Introduction

Use the **Refresh** button to obtain current information.

Menu path

Real-time manager or Simulated manager → Manage hardware → Storage units

Fields

Select The check boxes for the storage units.

Nickname

The user- or system-defined nickname.

Serial Number

In the simulated mode, this value is displayed only if the physical and logical characteristics of the storage unit have been downloaded.

Type-Model

The machine type and model number.

Status (Real-time only)

For 1750 — The label indicates the operational status.

- Normal — The storage unit is in both the connected state and the powered on state, both processor cards are operational, and all hardware resources are operational.
- Attention — The storage unit is powering on, powering off, powered off, one of the processor cards is not operational, there is an SMC failure, a hardware resource is not operational, or a communication failure on the SMC, or an ethernet failure.
- Unavailable — The returned value for the storage agent is out of range or not connected.

For 2105 — The label indicates the operational status.

- Normal — The storage unit is in both the connected state and the powered-on state.

Storage Complex

The user-defined nickname.

Storage Units (Real-time only)

The number of storage units.

Total Raw GB

The amount of raw disk capacity in this storage unit.

Total Available GB

The amount of storage that is available for configuration on this storage unit.

I-Series Serial Number

The serial number of the iSeries volume in this storage unit.

Storage unit status (real-time only)

Use this page to view details about the status of the storage unit.

Introduction

This page is available in the **Select Action** drop-down list only when you select one of the units in the table.

Use the **Refresh** button to obtain current information.

Menu path

Real-time manager → Manage hardware → Storage units → Select a storage unit → Select Action: Status → Go

Fields**storage unit state**

The value reflects the current storage unit state.

- Online — The storage unit is capable of processing all functions including running storage units.
- Offline — All storage units are offline.
- Coming online — The storage unit is in the process of coming online.
- Going offline — The storage unit is in the process of going offline.
- Going offline with exceptions — One or more storage units are in the quiesce exception state.
- Forcing offline — The storage unit is performing a force offline operation.
- Failed — The storage unit has failed and is offline.

Configure storage unit — Storage unit properties (real-time only)

Use this page to view current storage unit properties and modify the storage unit user ID and password.

Menu path

Real-time manager → Manage hardware → Storage units → Select Action: Configure... → Go

Fields**Nickname**

The current storage unit nickname. This can be modified, but is limited to 16 characters.

Description

The current storage unit description. This can be modified, but is limited to 256 characters.

IP address of processor card 1

The current IP address for processor card 0.

IP address of processor card 2

The current IP address for processor card 1.

Storage unit model, machine type, serial number

The MTMS of the selected storage unit.

Configure storage unit — Activation codes (real-time only)

Use this page to review or to apply activation keys.

Introduction

Activation keys must be applied to activate capacity so that it can be used and configured. You must enter the activation codes before you can configure any of the storage on the storage image. If you open this page after you import the activation codes from a file, all the codes are displayed in the associated boxes. Otherwise, the boxes are empty.

To obtain activation keys, write down the machine information as displayed. You will need the serial number and machine signature to obtain activation keys from the DFSA site. If you cannot reach the DFSA site from this management console, you can use the Export machine information button to save the machine information to a file, and then use that file on the machine that you use to access the DFSA site. Go to the Disk Storage Feature Activation (DFSA) Web site and follow the instructions to obtain the activation keys and to download a key file. Use the Import key file button to import the activation keys from the file that you just downloaded from the DFSA site. Select OK or Apply to apply the activation keys.

Note: You cannot have both the Apply activation codes and the Import activation codes pages open at the same time.

Menu path

Real-time manager → Manage hardware → Storage units → Select Action: Configure... → Go

Fields

Operating Environment code

Enabled with data from the file, or empty.

Point in time copy

Enabled with data from the file, or empty.

Remote Mirror and Copy

Enabled with data from the file, or empty.

Parallel Access Volumes (PAVs)

Enabled with data from the file, or empty.

Capacity

The capacity for this image.

Storage type

The storage type (for example, fixed block [FB], count-key-data [CKD], or ALL). Parallel Access Volumes contain only CKD or ALL.

Import key file (optional)

Imports the LMC activation codes file that you previously downloaded from the Activation codes Web site. This code file is in .xml format. Once you have imported the file, the table is populated with the data from the file. If you previously entered any of the codes manually, an error message asks you whether you want the code from the file to overwrite the information that is currently in the fields.

Configure storage unit — Date and time zone (real-time only)

Use this page to specify the time and date for the storage unit.

Menu path

Real-time manager → Manage hardware → Storage units → Select Action: Configure... → Go

Fields

Date The user-selected date for the current day in the location of the storage unit that you are configuring.

Time The user-selected time for the current day in the location of the storage unit that you are configuring.

Time zone

The user-selected time zone for the location of the storage unit that is being configured.

Configure storage unit — Network settings (real-time only)

Use this page to specify or change network settings for the storage unit.

Menu path

Real-time manager → Manage hardware → Storage units → Select Action: Configure... → Go

Fields**Processor card 1 IP address**

The user-defined IP address for processor card 0.

Gateway

The user-defined decimal address of Gateway 1.

Subnet mask

The user-defined decimal address of Subnet mask 1.

Primary domain name server (DNS) IP address

The user-defined IP address of the primary DNS.

Maximum transmission unit (1 to 9000)

The user-defined number for maximum transmission units that are allowed. Enter any number from 1 to 9000.

Processor card 2 IP address

The user-defined IP address for processor card 1.

Alternate domain name server (DNS) IP address

The user-defined IP address of the alternate DNS.

Apply firmware update (real-time only)

Use this page to view current firmware data for the selected storage unit and to select a load method to activate the firmware bundle load onto the storage unit.

Note: Before you begin this task, you must resolve any current system problems by checking the light path and problem logs. If you need additional assistance to resolve these problems, contact IBM support.

Menu path

Real-time manager → Manage hardware → Storage units → Select a storage unit → Select Action: Apply Firmware Update... → Go

Fields

Current firmware level for selected Storage unit

A list of attributes and values for the storage unit that you are configuring.

Storage unit nickname

Nickname of the selected storage unit.

Storage unit Machine-Type-Model-Serial Number

MTMS of the selected Storage unit.

Current firmware level

Unique identifier (VRMF) for the level of firmware that is currently installed.

Uploaded firmware level from the selected file

The firmware level recently uploaded on the management console.

Firmware level transferred to the processor cards

The firmware level recently transferred onto the storage unit.

Check for firmware update

Click to view available firmware updates.

Select a firmware application method

The user-selected application method (concurrent or nonconcurrent) for the storage unit.

Selected file

The user-selected firmware file to transfer for the storage unit that you are configuring.

Select a file

Click to select a file from your local workstation or CD-ROM.

Transfer file

Select to initiate the transfer of the specified file. This button is not available until you specify a firmware file to transfer.

Activate

Click to activate the codeload after a successful file transfer has occurred.

Reset

Click to cancel all operations, clear all user-selected settings, and return the original settings to this page once a successful file transfer has occurred.

Apply firmware update — Check for firmware update

Use this page to link to an IBM site where you can view current firmware levels and download available firmware updates.

Note: Before you begin this task, you must resolve any current system problems. Refer to the IBM System Storage DS6000 troubleshooting information. If you need additional assistance to resolve these problems, contact IBM support.

Menu path

Real-time manager → Manage hardware → Storage units → Select a storage unit → Select Action: Apply Firmware Update... → Go

Fields

For access to current firmware level updates

Click the link to view current firmware levels and to download available firmware updates.

Apply firmware update — Upload a file

Use this page to browse for and select the file to upload.

Menu path

Real-time manager → Manage hardware → Storage units → Select a storage unit → Select Action: Apply Firmware Update... → Go

Fields

Browse

Click to open the browse box and select a file from your local workstation or CD-ROM.

Transfer file

After selecting a file, click to initiate a compatibility check to determine if the file can be applied using the selected application method and if it is compatible for the selected hardware. If the compatibility check is successful, the file is transferred to the storage unit and you receive a Transfer successful message. You can then apply the new code. If the compatibility check is unsuccessful, the file is not transferred to the storage unit and you receive a Transfer unsuccessful message.

Apply firmware update — Prepare for non-concurrent firmware update (real-time only)

Use this page to select a code load method for an immediate concurrent or non-concurrent code load or a scheduled concurrent code load.

Note: Before you begin this task, you must resolve any current system problems. Refer to the IBM System Storage DS6000 troubleshooting information. If you need additional assistance to resolve these problems, contact IBM support.

Menu path

Real-time manager → Manage hardware → Storage units → Select a storage unit → Select Action: Apply Firmware Update... → Go

Fields

Proceed

Activates the specified nonconcurrent code load.

Configure notifications — Call Home

Use this page to enable or disable Call Home and send a Call Home test.

Menu path

Real-time manager or Simulated manager → Manage hardware → Storage units →
Select one or more storage units → Select Action: Configure Notifications → Go

Fields

If you select both the **Enable Call Home** and **Enable Modem Call Home** boxes, Call Home notifications are first sent through the modem connection and then through the SMTP connection if the modem connection is unsuccessful.

Note: You must use the DS Storage Manager to configure the modem call home feature. The DS CLI cannot be used to configure this feature.

Enable Modem Call Home

The user-selected option to enable Call Home using a modem.

Modem Configuration

Allows you to configure Modem Call Home. This field is available when you enable Modem Call Home.

Enable Call Home

The user-selected option to enable Call Home.

SMTP server

Enter either and SMTP server host name or IP address.

Host name

Enter an SMTP host name.

IP address

Enter an SMTP IP address.

Server port

Optionally change the default server port. The server must already be configured for the port.

Test Call Home connection button

Click to test the Call Home connection. A confirmation message is displayed.

Configure notifications — SNMP

Use this page to define the SNMP connection properties for the selected storage unit.

Menu path

Real-time manager or Simulated manager → Manage hardware → Storage units →
Select one or more storage units → Select Action: Configure Notifications → Go

Fields

Enable SNMP notification

Required field. SNMP notification for the selected storage unit.

SNMP trap destination

The user-selected IP address or host name to be used as the SNMP trap destination. You can enter either an IP address or a host name, but not both.

IP address

The IP address of the SNMP trap destination.

Host name

The host name of the SNMP trap destination.

SNMP community name

Required field. The user-selected name for the SNMP community.

SNMP system contact

The user-selected SNMP system contact name. You can enter up to 32 characters.

Destination port

The user-selected port for SNMP communications.

Configure notifications — zSeries

Use this page to define the Service Information Messages (SIMs) for zSeries for the selected Storage units.

Menu path

Real-time manager or Simulated manager → Manage hardware → Storage units → Select one or more storage units → Select Action: Configure Notifications → Go

Fields

Severity reporting level for DASD Service Information Messages

The user-selected severity level to be reported for DASD Service Information Messages. The options are Service, Serious, Moderate, Acute, and None.

Severity reporting level for Media Service Information Messages

The user-selected severity level to be reported for Media Service Information Messages. The options are Service, Serious, Moderate, Acute, and None.

Severity reporting level for Storage unit Service Information Messages

The user-selected severity level to be reported for Storage unit Service Information Messages. The options are Service, Serious, Moderate, Acute, and None.

Maximum number of additional times a DASD Service Information Message is to be sent (0-5)

The user-selected maximum number of DASD Service Information Messages that are sent after the first message.

Maximum number of additional times a Media Service Information Message is to be sent (0-5)

The user-selected maximum number of Media Service Information Messages that are sent after the first message.

Maximum number of additional times a Storage unit Service Information Message is to be sent (0-5)

The user-selected maximum number of Storage unit Service Information Messages that are sent after the first message.

Customer contact — Customer account information

Use this page to create or modify general customer account information.

Menu path

Real-time manager or Simulated manager → Manage hardware → Storage units → Select one or more storage units → Select Action: Customer Contact... → Go

Fields

Business/company name (Required)

Enter up to 64 characters for the customer name.

Service account number

Enter up to 32 characters for the customer service account number.

Note: To continue entering customer contact information, you must enter information in the required fields, and then click the Shipping information tab.

Customer contact — Shipping information

Use this page to create or modify parts shipping information.

Menu path

Real-time manager or Simulated manager → Manage hardware → Storage units → Select one or more storage units → Select Action: Customer Contact... → Go

Fields

Country (Required)

The user-selected country name of the parts shipping location. Enter up to 64 characters.

Telephone number (Required)

Enter the customer parts shipping location telephone number, including the country code, area code, and city code if applicable. Enter up to 22 characters. Use only spaces or hyphens to separate the characters.

Extension

Enter the customer parts shipping location telephone extension. Enter up to 6 characters.

Mailing address line 1

Enter the customer parts shipping location address (first line). Enter up to 64 characters.

Mailing address line 2

Enter the customer parts shipping location address (second line). Enter up to 64 characters.

Building, floor, room location (Required)

Enter the customer parts shipping location building, floor, and room. Enter up to 128 characters.

City Enter the customer parts shipping location city name. Enter up to 32 characters.

State/Province
Enter the customer parts shipping location state or province name. Enter up to 32 characters.

Zip/Postal code
Enter the customer parts shipping location zip code or postal code. Enter up to 10 characters.

Note: To continue entering customer contact information, you must enter information in the required fields, and then click the Contact information tab.

Customer contact — Contact information

Use this page to create or modify customer contact information.

Menu path

Real-time manager or Simulated manager → Manage hardware → Storage units → Select one or more storage units → Select Action: Customer Contact... → Go

Fields

Contact name
The user-selected customer contact name. Enter up to 64 characters. This is an optional field.

Contact telephone information
The customer contact’s primary and alternate country code, area or city code, telephone number, and extension.

Primary telephone number (Required)
The user-selected primary telephone number of the customer contact, including the country code, area code, and city code if applicable. Enter up to 22 characters. Use only spaces or hyphens to separate the characters.

Primary extension
The user-selected primary telephone extension of the customer contact. Enter up to 6 characters.

Alternate telephone number
The user-selected alternate telephone number of the customer contact, including the country code and area code. Enter up to 22 characters.

Alternate extension
The user-selected alternate telephone extension of the customer contact. Enter up to 6 characters.

Contact e-mail address
The user-selected e-mail address of the customer contact. Enter up to 128 characters.

Table 5. Country and Area or City Codes

Country Code	Country or Region Name	Area or City Code (State)
US	Alaska	AK
US	Alabama	AL

Table 5. Country and Area or City Codes (continued)

Country Code	Country or Region Name	Area or City Code (State)
US	Arkansas	AR
US	Arizona	AZ
US	California	CA
US	Colorado	CO
US	Connecticut	CT
US	District of Columbia	DC
US	Delaware	DE
US	Florida	FL
US	Georgia	GA
US	Hawaii	HI
US	Iowa	IA
US	Idaho	ID
US	Illinois	IL
US	Indiana	IN
US	Kansas	KS
US	Kentucky	KY
US	Louisiana	LA
US	Massachusetts	MA
US	Maryland	MD
US	Maine	ME
US	Michigan	MI
US	Minnesota	MN
US	Missouri	MO
US	Mississippi	MS
US	Montana	MT
US	North Carolina	NC
US	North Dakota	ND
US	Nebraska	NE
US	New Hampshire	NH
US	New Jersey	NJ
US	New Mexico	NM
US	Nevada	NV
US	New York	NY
US	Ohio	OH
US	Oklahoma	OK
US	Oregon	OR
US	Pennsylvania	PA
US	Puerto Rico	PR
US	Rhode Island	RI
US	South Carolina	SC

Table 5. Country and Area or City Codes (continued)

Country Code	Country or Region Name	Area or City Code (State)
US	South Dakota	SD
US	Tennessee	TN
US	Texas	TX
US	Utah	UT
US	Virginia	VA
US	Vermont	VT
US	Washington	WA
US	Wisconsin	WI
US	West Virginia	WV
US	Wyoming	WY
AF	Afghanistan	
AL	Albania	
DZ	Algeria	
AS	American Samoa	
AD	Andorra	
AO	Angola	
AI	Anguilla	
AQ	Antarctica	
AG	Antigua and Barbuda	
AR	Argentina	
AM	Armenia	
AW	Aruba	
AU	Australia	
AT	Austria	
AZ	Azerbaijan	
BS	Bahamas	
BH	Bahrain	
BD	Bangladesh	
BB	Barbados	
BY	Belarus	
BE	Belgium	
BZ	Belize	
BJ	Benin	
BM	Bermuda	
BT	Bhutan	
BO	Bolivia	
BA	Bosnia and Herzegovina	
BW	Botswana	
BV	Bouvet Island	
BR	Brazil	

Table 5. Country and Area or City Codes (continued)

Country Code	Country or Region Name	Area or City Code (State)
IO	British Indian Ocean	
BN	Brunei Darussalam	
BG	Bulgaria	
BF	Burkina Faso	
BI	Burundi	
KH	Cambodia	
CM	Cameroon	
CA	Alberta	AB
CA	British Columbia	BC
CA	Manitoba	MB
CA	New Brunswick	NB
CA	Newfoundland	NL
CA	Nova Scotia	NS
CA	Northwest Territorie	NT
CA	Nunavut	NU
CA	Ontario	ON
CA	Prince Edward Island	PE
CA	Quebec	QC
CA	Saskatchewan	SK
CA	Yukon	YT
CV	Cape Verde	
KY	Cayman Islands	
CF	Central African Republic	
TD	Chad	
CL	Chile	
CN	China/Hong Kong	
CX	Christmas Islands	
CC	Cocos (Keeling) Island	
CO	Colombia	
KM	Comoros	
CD	Congo Democratic Republic	
CG	Congo Peoples Republic	
CK	Cook Islands	
CR	Costa Rica	
CI	Cote d'Ivoire (Ivory)	
HR	Croatia	
CU	Cuba	
CY	Cyprus	
CZ	Czech Republic	
DK	Denmark	

Table 5. Country and Area or City Codes (continued)

Country Code	Country or Region Name	Area or City Code (State)
DJ	Djibouti	
DM	Dominica	
DO	Dominican Republic	
EC	Ecuador	
EG	Egypt	
SV	El Salvador	
GQ	Equatorial Guinea	
ER	Eritrea	
EE	Estonia	
ET	Ethiopia	
FK	Falkland Islands (Malvinas)	
FO	Faroe Islands	
FJ	Fiji	
FI	Finland	
FR	France	
GF	French Guiana	
PF	French Polynesia	
TF	French Southern Territories	
GA	Gabon	
GM	Gambia	
GE	Georgia	
DE	Germany	
GH	Ghana	
GI	Gibraltar	
GR	Greece	
GL	Greenland	
GD	Grenada	
GP	Guadeloupe	
GU	Guam	
GT	Guatemala	
GN	Guinea	
GW	Guinea-Bissau	
GY	Guyana	
HT	Haiti	
HM	Heard Island and McDonald Islands	
VA	Holy See (Vatican City State)	
HN	Honduras	
HK	Hong Kong	
HU	Hungary	
IS	Iceland	

Table 5. Country and Area or City Codes (continued)

Country Code	Country or Region Name	Area or City Code (State)
IN	India	
ID	Indonesia	
IR	Iran (Islamic Republic of)	
IQ	Iraq	
IE	Ireland	
IL	Israel	
IT	Italy	
JM	Jamaica	
JP	Japan	
JO	Jordan	
KZ	Kazakhstan	
KE	Kenya	
KI	Kiribati	
KP	Korea (Democratic People's Republic of)	
KR	Korea (Republic of)	
KW	Kuwait	
KG	Kyrgyzstan	
LA	Lao People's Democratic Republic	
LV	Latvia	
LB	Lebanon	
LS	Lesotho	
LR	Liberia	
LY	Libyan Arab Jamahiriya	
LI	Liechtenstein	
LT	Lithuania	
LU	Luxembourg	
MO	Macau	
MK	Macedonia (Former Yugoslav Republic of)	
MG	Madagascar	
MW	Malawi	
MY	Malaysia	
MV	Maldives	
ML	Mali	
MT	Malta	
MH	Marshall Islands	
MQ	Martinique	
MR	Mauritania	
MU	Mauritius	
YT	Mayotte	
MX	Mexico	

Table 5. Country and Area or City Codes (continued)

Country Code	Country or Region Name	Area or City Code (State)
FM	Micronesia (Federated States of)	
MD	Moldava (Republic of)	
MC	Monaco	
MN	Mongolia	
MS	Montserrat	
MA	Morocco	
MZ	Mozambique	
MM	Myanmar	
NA	Namibia	
NR	Nauru	
NP	Nepal	
NL	Netherlands	
AN	Netherlands Antilles	
NC	New Caledonia	
NZ	New Zealand	
NI	Nicaragua	
NE	Niger	
NG	Nigeria	
NU	Niue	
NF	Norfolk Island	
MP	Northern Mariana Island	
NO	Norway	
OM	Oman	
PK	Pakistan	
PW	Palau	
PS	Palestinian Territory	
PA	Panama	
PG	Papua New Guinea	
PY	Paraguay	
PE	Peru	
PH	Philippines	
PN	Pitcairn	
PL	Poland	
PT	Portugal	
PR	Puerto Rico	
QA	Qatar	
RE	Reunion	
RO	Romania	
RU	Russian Federation	
RW	Rwanda	

Table 5. Country and Area or City Codes (continued)

Country Code	Country or Region Name	Area or City Code (State)
SH	Saint Helena	
KN	Saint Kitts and Nevis	
LC	Saint Lucia	
PM	Staint Pierre and Miquelon	
VC	Saint Vincent and the Grenadines	
WS	Samoa	
SM	San Marino	
ST	Sao Tome and Principle (Democratic Republic of)	
SA	Saudi Arabia	
SN	Senegal	
CS	Serbia and Nontenegro	
SC	Seychelles	
SL	Sierra Leone	
SG	Singapore	
SK	Slovakia	
SI	Slovenia	
SB	Solomon Islands	
SO	Somalia	
ZA	South Africa	
GS	South Georgia and the South Sandwich Islands	
ES	Spain	
LK	Sri Lanka	
SD	Sudan	
SR	Suriname	
SJ	Svalbard and Jan Mayen Islands	
SZ	Swaziland	
SE	Sweden	
CH	Switzerland	
SY	Syrian Arab Republic	
TW	Taiwan (Province of)	
TJ	Tajikistan	
TZ	Tanzania (United Republic of)	
TH	Thailand	
TL	Timor-Leste (East Timor)	
TG	Togo	
TK	Tokelau	
TO	Tonga	
TT	Trinidad and Tobago (Republic of)	
TN	Tunisia	
TR	Turkey	

Table 5. Country and Area or City Codes (continued)

Country Code	Country or Region Name	Area or City Code (State)
TM	Turkmenistan	
TC	Turks and Caicos Island	
TV	Tuvalu	
UG	Uganda	
UA	Ukraine	
AE	United Arab Emirates	
GB	United Kingdom	
UM	United States Minor	
UY	Uruguay	
UZ	Uzbekistan	
VU	Vanuatu	
VE	Venezuela	
VN	Viet Nam	
VG	Virgin Islands (British)	
VI	Virgin Islands (U.S.)	
WF	Wallis and Futuna Island	
EH	Western Sahara	
YE	Yemen	
ZM	Zambia	
ZW	Zimbabwe	

Apply activation codes (real-time only)

Use this page to view, enter, or modify the activation codes.

Introduction

You must enter the activation codes before you can configure any of the storage on the storage unit. If you open this page after you import the activation codes from a file, all the codes are displayed in the associated boxes. Otherwise, the boxes are empty.

Note: Before you begin this task, you must resolve any current system problems. Refer to the IBM System Storage DS6000 Troubleshooting information. If you need additional assistance to resolve these problems, contact IBM Support.

Menu path

Real-time manager → Manage hardware → Storage units → Select a storage unit → Select Action: Configure... → Go

Fields

Machine signature

The storage unit serial number.

Operating environment

Enabled with data from file, or is empty.

Point in time copy

Enabled with data from file, or is empty.

Remote mirror and copy

Enabled with data from file, or is empty.

Metro mirror

Enabled with data from file, or is empty.

Global mirror

Enabled with data from file, or is empty.

Metro/Global

Enabled with data from file, or is empty.

Remote mirror for z/OS

Enabled with data from file, or is empty.

Capacity

The capacity for this image.

Storage type

The storage type (for example, fixed block [FB], count-key-data [CKD], or ALL). Parallel access volumes (PAVs) and Remote Mirror for z/OS contain only CKD.

Parallel access volumes

Enabled with data from file, or is empty.

Import key file button

Imports the LMC activation codes file that you previously downloaded from the Activation codes web site. This code file is in .xml format. Once you have imported the file, the table is populated with the data from the file. If you manually entered any of the codes, an error message asks you whether you want the code from the file to overwrite the information that is currently in the fields.

Import activation codes (real-time only):

Use this page to import a file containing License Machine Code (LMC) for the storage unit.

Introduction

Use the **Browse** button as necessary to navigate to the target file.

Note: Before you begin this task, you must resolve any current system problems. Refer to the IBM System Storage DS6000 Troubleshooting information. If you need additional assistance to resolve these problems, contact IBM Support.

Menu path

Real-time manager → **Manage hardware** → **Storage units** → **Select a storage unit** → **Select Action: Configure...** → **Go**

Fields**Select file to import**

The activation code .xml file that is to be uploaded to the GUI server.

Collect new problem determination files (real-time only)

Use this page to collect new problem determination (PD) data files from the storage unit, document a brief description of the problem, and create a copy, which will later be sent to IBM Technical Support.

Introduction

From this page, you can collect traces and dumps of problem determination data files from the DS6000 and copy them to the management console. You must also provide a description of the problem for future reference. This information is saved and can be edited in the Manage/Send Existing PD Files page.

Use the **Refresh** button to obtain current information.

Menu path

Real-time manager → Manage hardware → Storage units → Select a storage unit → Select Action: Copy and Send Problem Determination Data → Go

Real-time manager → Monitor system → Problem Determination Data

Fields

Select a Data type

Choose at least one of the following data types.

Storage Unit

The storage unit that you want to collect new problem determination data files from.

Customer name

Customer contact information. Required only when no storage unit is selected.

Select a data type

Choose from the following data types.

Storage manager console logs

These logs are obtained from the storage manager, and are available even when the storage unit is not available. These logs are useful in understanding communication issues between the storage manager console and the storage units.

Storage unit traces

An accumulation of the actions that have been taken on the storage controllers over a given period of time. When collecting new data, trace files (PE packages) are copied from the DS6000 to the DS Storage Manager server and placed in the default directory. Traces are usually collected after problem messages appear that instruct the user to do so.

Storage unit dumps

Also known as statesaves. A dump of the memory of the storage controller at a given point in time. When collecting new data, dump files are copied from the DS6000 to the DS Storage Manager server and placed in the default directory. This option is primarily used if you are instructed to collect dump files by IBM technical support.

Problem description

An explanation of the problem. Provide a description before you click the **Copy** button. If you do not provide a description, a message appears instructing you to enter a description before you click the **Copy** button again. You can edit this information later.

Collect button

Begins the collection operation.

Manage/send existing problem determination files (real-time only)

Use this page to manage and send problem determination (PD) data files to IBM technical support.

Introduction

From this page, you can determine which data files have been copied from the storage unit and whether they have been sent to IBM Technical Support. These files can be downloaded to a local machine, sent to IBM Technical support, or deleted. Click on the hyperlink file name to display additional information about the file.

Use the **Refresh** button to obtain current information.

Menu path

Real-time manager → **Manage hardware** → **Storage units** → **Select a storage unit** → **Select Action: Copy and Send Problem Determination Data** → **Go**

Fields

Refresh button

Refreshes the information in the summary table. The last refresh date and time are also updated.

Storage Unit

The storage unit that you want to send problem determination data files from.

Select Allows you to select a problem determination data file set to perform additional actions.

File name

The name that is generated for the problem determination data file set. This name contains the machine type and machine serial number, as well as a time stamp. Click on the file name to populate the attribute section with the values for that file set.

Size The size of the file set in kilobytes (KB).

Sent Indicates whether the selected file has been sent to IBM technical support. A Ready status indicates that the file set is ready to be sent to IBM technical support. A Sending value indicates that the file set is currently being sent to IBM technical support. A Sent value indicates that the file set has previously been sent to IBM technical support.

Send to IBM Support button

Sends the selected problem determination data files to IBM technical support.

Save to Local Disk button

Saves the selected problem determination data files to the local workstation.

Delete button

Deletes the selected problem determination data files. These files might contain the only information about an incident, and deleting them can hinder any further problem determination efforts.

Attribute/Values

Displays the values for the file names in the list. Details only will display if you click on a file name hyperlink.

File Name

The name of the problem determination data file set.

Storage unit serial number

The serial number of the storage unit where the problem determination data originated.

Server The DS server that generated the problem determination data.

Created timestamp

The timestamp of the data contained in the PD file.

Status The status of the file transmission to IBM Support.

Problem description

The description information that you provided during the previous collect new PD files operation.

Edit description button

Allows you to edit the problem description information that you submitted on the previous collect new PD Files page.

Apply configuration

The topics in this section provide page help related to using the Apply configuration wizard. The pages are listed in the sequence that they are displayed.

Apply configuration — Select application method (simulated only):

Use this page to select the method by which you will apply the configuration.

Introduction

A configuration must be applied to a new or completely deconfigured machine. This page allows you to choose between creating a new storage complex or selecting an existing storage complex in your real-time environment.

There are a few things to consider before applying a configuration:

1. Ensure that the configuration file does not only contain arrays. The application of the configuration will fail because it will expect to create ranks.
2. Ensure there is a sufficient Operating Environment License (OEL) on the real machine to support all the ranks you wish to create. The application of the configuration will fail if the OEL key activation code has not been applied on the real machine.

After checking the configuration file and ensuring there is a sufficient OEL on the real machine, select an application method.

Menu path

Simulated manager → **Manage hardware** → **Storage units** → **Select a storage unit** → **Select Action: Apply Configuration...** → **Go**

Fields

Select storage unit application method

This set of two radio buttons allows you to select the application method you prefer. You can either apply a simulated configuration to an existing storage complex in your real-time environment or to a new storage complex.

Select from a list of real-time storage complexes

Select this option if there is already a real-time storage complex on which you wish to apply the configuration. After selecting this option, you will be taken to the Select storage complex page of this wizard. The page is populated with a selectable list of storage complexes in your real-time environment.

Connect to a new storage complex

Select this option if the configuration needs to be applied to a new storage complex. After selecting this option, you will be taken to the Authenticate page of this wizard, where you will be prompted to enter in the management console IP address to connect to the new storage complex.

Apply configuration — Authenticate (simulated only):

Use this page to connect and authenticate a storage complex, prior to applying a simulated configuration.

Introduction

The purpose of this page is to connect and authenticate a new storage complex, in order to apply a pre-created configuration. In order to connect to a storage complex, you must be network connected to the target consoles of the storage complexes.

Menu path

Simulated manager → **Manage hardware** → **Storage units** → **Select a storage unit** → **Select Action: Apply Configuration...** → **Go**

Fields

Define Management console 1 properties

Management console 1 IP address

The IP address to one of two possible Management consoles in the storage complex. The IP address is four numbers separated by periods. To obtain the management console IP address on a Windows 2000 or XP management console, go to the command line and type ipconfig.

Identify a second Management console

You may choose to identify a second Management console, for redundancy. If checked, you must enter the IP address of the second Management console.

Management console 2 IP address

Required if the Define a second Management console check box is selected.

This decimal IP address is the address to one of two possible Management consoles in the storage complex. It should be different from the IP address entered for Management console 1. The IP address is four numbers separated by periods. To obtain the management console IP address on a Windows 2000 or XP management console, go to the command line and type ipconfig.

Apply Configuration — Select storage unit (Simulated only):

Use this page to select the storage unit on which you wish to apply a simulated configuration.

Introduction

To apply a configuration, first select the storage unit you want to work with. You must be network connected to the storage unit.

Note: You can only apply a configuration to an unconfigured storage unit. In the table, use the Total raw GB and Total available GB columns to see which storage units are unconfigured. If the Total raw GB and the Total available GB column values are the same, it is likely that the storage unit is unconfigured.

Menu path

Simulated manager → **Manage hardware** → **Storage units** → **Select a storage unit** → **Select Action: Apply Configuration...** → **Go**

Fields

Select storage unit

Select The radio buttons for the storage units. Select one to specify the storage unit on which you wish to apply the simulated configuration.

Nickname

The user defined or default nickname of the storage unit.

Serial number

The serial number (for example, 75-FA120).

Type-Model:

The machine type and model number (for example, 1750-511).

Storage units: [1-2]

The number of storage units, 1 or 2.

Total raw GB

The total amount of raw disk capacity on this storage unit.

Total available GB

The available amount of disk capacity on this storage unit.

iSeries serial number

The serial number of the attached iSeries server.

Apply Configuration — Verification (Simulated only):

Use this page to review attributes specified in the Apply Configuration wizard, prior to applying the configuration.

Menu path

Simulated manager → **Manage hardware** → **Storage units** → **Select a storage unit** → **Select Action: Apply Configuration...** → **Go**

Fields

Storage complex

Based on user selection, the storage complex nickname.

Storage unit

Based on user selection, the storage unit nickname or serial number.

Machine type/model

Based on user selection.

Storage unit

Based on user selection, the storage unit nickname or serial number.

Configure I/O Ports

Use this page to configure I/O ports that are connected to selected host attachments.

Introduction

You can change I/O ports to one of the following options: FcAl, FcSf, or FICON. Changes to the configuration of any I/O ports that already have host attachments that are assigned might prevent those hosts from accessing data using those ports.

Note: ESCON is not supported for the DS6000.

Menu path

Real-time manager or Simulated manager → **Manage hardware** → **Storage units** → **Select a storage unit** → **Select Action: Configure I/O Ports...** → **Go**

Fields

Select The check boxes for the host attachments.

Interface Identifier

The interface identifier made up of four hex characters (0 - 9 or uppercase A - F). The value FFFF is reserved.

Type The current interface for the I/O port:

FICON

Select this if you plan to connect one or more S/390 hosts using a FICON S/390 channel to the DS6000 either directly or through a FICON switch.

FcSf

Select this if you plan to connect one or more open systems hosts to the DS6000 through a fabric switch, or if you plan to connect one or more S/390 hosts running LINUX on an FCP S/390 channel.

FcAl

Select this if you plan to connect an open systems host directly to the DS6000 without going through a fabric switch.

Unknown

Select this if the type is unknown.

|
|

of Host Attachments

The number of host attachments that are assigned to this storage unit port.

I/O Port Location

The location that provides the physical link. The value of the location code (R1-I3-C2-T1) is a combination of a rack, enclosure, processor card, and port, where the format is R[1 - 2]-I[1 - 8]-C[1 - 6]-T[0 - 3].

Configure Network Ports

Use this page to configure network ports that are connected to selected host attachments.

Introduction

This page is available only when you select a storage unit that is in the Normal state.

Menu path

Real-time manager or Simulated manager → Manage hardware → Storage units → Select a storage unit → Select Action: Configure Network Ports... → Go

Fields

Location

The location code for the selected ethernet port.

State The state of the selected ethernet port (Online or Offline).

Enable port

Controls whether or not the port is enabled. You must check this field to enable the IP address, Network settings, Gateway, Subnet mask, Primary DNS, and Alternate DNS fields for input.

IP address

The port IP address. This field is required.

Network settings

The network settings selection determines how the remaining fields are populated. You can specify unique network settings or copy network information that you entered for another port. This field is required.

Specify network settings

You must enter the gateway, subnet mask, primary DNS, and alternate DNS.

Same as server x port y

The gateway, subnet mask, primary DNS, and alternate DNS will be populated based on the network setting of the server/port that you select.

Subnet mask

The subnet mask. This field is required.

Primary DNS

The primary DNS. This field is required.

Alternate DNS

The alternate DNS. This field is required.

Change iSeries Serial Number

Use this page to view, enter, or modify an iSeries serial number.

Introduction

Use this page to change the default serial number on an iSeries logical volume that is assigned to a storage unit.

Menu path

Real-time manager or Simulated manager → Manage hardware → Storage units → Select a storage unit → Select Action: Change iSeries Serial Number → Go

Fields

Nickname

The nickname of the storage unit.

Current iSeries Serial Number

The serial number that is assigned to this iSeries volume. This field might be empty, or it might have a three-digit serial number that was assigned by default.

New iSeries Serial Number

Enter the new serial number that you want to assign to this iSeries volume. You must enter a unique serial number that is not already assigned to an existing volume. This 3 character value must be made up of numbers 0-9 or uppercase letters A-F. The value '000' is not allowed.

Restricted Service Actions (real-time only)

Use this page to perform restricted service actions on the storage unit after being instructed by IBM Support to do so.

Introduction

This page is available in the **Select Action** drop-down list only when you select one of the units in the table. You must part of the Administrator user group to perform restricted service actions.

Menu path

Real-time manager → Manage hardware → Storage units → Select a storage unit → Select Action: Restricted Service Actions → Go

Fields

Select action

Select from the available storage units. The storage unit is identified by storage unit nickname.

Warmstart

The warmstart selection allows you capture data for the selected storage unit into one dump file. The file is used for debugging.

Storage unit guest password

Guest password used for Reboot and CST selections only.

Username

Enter your user name. You must have an Administrator account to perform restricted service actions.

Password

Enter your password.

Simulated

The topics in this section provide information that is related to using the simulated storage unit pages. If the pages are displayed in a wizard, they are listed in the sequence that they are displayed.

Create storage unit — General storage unit information (simulated only)

Use this page to define general storage unit information.

Introduction

Menu path

Simulated manager → Manage hardware → Storage units → Select Action: Create... → Go

Fields

Machine Type-Model

User selected from a list of supported machine types and models.

Nickname

The storage unit nickname, limited to 16 characters.

Description

A description of the storage unit, limited to 256 characters.

Storage complex

Not required at the time that you create the storage unit. You can enter this value now or modify the storage unit properties later. Additionally, you can select this storage unit when you create the storage complex itself. You must create an association between a storage complex and an storage unit at some point before downloading or uploading configurations to or from the storage unit.

Create New Storage Complex button

Creates a new storage complex. After you create a new storage complex, the table refreshes and you can then select the new storage complex.

Create storage unit — Specify DDM packs (simulated only)

Use this page to specify the DDM pack configuration.

Menu path

Simulated manager → Manage hardware → Storage units → Select Action: Create... → Go

Fields

Quantity of DDM packs

User selected from a list of valid quantities for DDM packs.

DDM type

User selected from a list of supported DDM types (for example, 73 GB, 15K RPM; 146 GB, 10K RPM; 300 GB, 10K RPM or 500 GB, 7.2K RPM).

Add > Adds data to the **Selected DDM packs** table. You enable this button when you populate the **Quantity** and **DDM type** fields. Each time that you select this button, a new row appears in the table with the data from those fields.

< Remove

Removes data from the **Selected DDM packs** table. You enable this button when you make a selection in the table.

Selected DDM packs

At least two DDM packs must have been added to the **Selected DDM packs** table. The values reflect the choices made in the above fields.

Select The check boxes for the packs.

Quantity

The quantity selected, from 2 to 24.

DDM type

The type selected (for example, 146 GB, 15K RPM).

Create storage unit — Define licensed function (simulated only)

Use this page to specify licensed functions of the storage unit.

Introduction

You can select the features that you purchased for parallel access volumes, point in time copies (FlashCopy), remote mirrors, and a number of storage units.

Menu path

Simulated manager → Manage hardware → Storage units → Select Action: Create...
→ Go

Fields

Operating environment license (TB)

The total amount of capacity in the box.

FlashCopy (TB)

If left blank, the application assigns 0 TB.

Remote mirror for z/OS (TB)

If left blank, the application assigns 0 TB.

Parallel access volumes (TB)

If left blank, the application assigns 0 TB.

Create storage unit — Licensed function details (simulated only)

Use this page to define the scope of the licensed function.

Menu path

Simulated manager → Manage hardware → Storage units → Select Action: Create...
→ Go

Fields

FlashCopy

The user-selected definition for the scope of the FlashCopy license.

Remote Mirror and Copy

The user-selected definition for the scope of the Remote Mirror and Copy license.

Create storage unit — Verification (simulated only)

Use this page to review and verify a list of properties and basic capacity calculations that represent the new storage unit.

Menu path

Simulated manager → Manage hardware → Storage units → Select Action: Create...
→ Go

Fields

Nickname

The user- or system-specified nickname, based on user input in the General storage unit information page.

Machine type-model

The user-specified machine type and model.

Description

A description of the storage unit, limited to 256 characters.

Total Capacity (GB)

User specified in the Specify DDM packs page.

Licensed function

"Yes," if you selected any licensed function. Otherwise, "No."

Modify storage unit — General storage unit information (simulated only)

Use this page to modify general storage unit information.

Introduction

You can modify only the nickname, description, and storage complex without affecting any logical configuration for the specified unit. If you modify the machine type, any and all logical configuration is deleted.

Menu path

Simulated manager → Manage hardware → Storage units → Select a storage unit → Select Action: Modify... → Go

Fields

Machine Type-Model

User selected from a list of supported machine types and models.

Nickname

The storage unit nickname, limited to 16 characters.

Description

A description of the storage unit, limited to 256 characters.

Storage complex

Not required at the time that you created the storage unit. You can enter this value now or modify the storage unit properties later. You must create an association between a storage complex and a storage unit at some point before downloading or uploading configurations to or from the storage unit.

Create New Storage Complex button

Creates a new storage complex. After you create a new storage complex, the table refreshes and you can then select the new storage complex.

Modify storage unit — Specify DDM packs (simulated only)

Use this page to modify the DDM pack configuration.

Introduction

Note: If you make any modification on this page, any and all logical configuration is deleted.

Menu path

Simulated manager → Manage hardware → Storage units → Select a storage unit → Select Action: Modify... → Go

Fields

Quantity of DDM packs

User selected from a list of valid quantities for DDM packs.

DDM type

User selected from a list of supported DDM types (for example, 73 GB, 15K RPM; 146 GB, 10K RPM; 300 GB, 10K RPM or 500 GB, 7.2K RPM).

Add > Adds data to the **Selected DDM packs** table. You enable this button when you populate the **Quantity** and **DDM type** fields. Each time that you select this button, a new row appears in the table with the data from those fields.

< Remove

Removes data from the **Selected DDM packs** table. You enable this button when you make a selection in the table.

Selected DDM packs

At least two DDM packs must have been added to the **Selected DDM packs** table. The values reflect the choices made in the above fields.

Select The check boxes for the packs.

Quantity

The quantity selected, from 2 to 24.

DDM type

The type selected (for example, 146 GB, 15K RPM).

Modify storage unit — Define licensed function (simulated only)

Use this page to modify licensed functions of the storage unit.

Introduction

If you make any modification on this page, any and all logical configuration is deleted.

Menu path

Simulated manager → Manage hardware → Storage units → Select a storage unit → Select Action: Modify... → Go

Fields

Operating environment license (TB)

The total amount of capacity in the box.

FlashCopy (TB)

If left blank, the application assigns 0 TB.

Remote mirror and copy (TB)

If left blank, the application assigns 0 TB.

Remote mirror for z/OS (TB)

If left blank, the application assigns 0 TB.

Parallel access volumes (TB)

If left blank, the application assigns 0 TB.

Modify storage unit — Licensed function details (simulated only)

Use this page to modify the scope of the licensed function.

Menu path

Simulated manager → Manage hardware → Storage units → Select a storage unit →
Select Action: Modify... → Go

Fields

FlashCopy

The user-selected definition for the scope of the FlashCopy license.

Remote Mirror and Copy

The user-selected definition for the scope of the Remote Mirror and Copy license.

Modify storage unit — Verification (simulated only)

Use this page to review and verify a list of properties and basic capacity calculations that represent the new storage unit.

Menu path

Simulated manager → Manage hardware → Storage units → Select a storage unit →
Select Action: Modify... → Go

Fields

Nickname

The user- or system-specified nickname, based on user input in the General storage unit information page.

Machine type-model

The user-specified machine type and model.

Description

A description of the storage unit, limited to 256 characters.

Total Capacity (GB)

User specified in the Specify DDM packs page.

Licensed function

"Yes," if you selected any licensed function. Otherwise, "No."

Import storage unit — Identify storage complex (simulated only)

Use this page to connect directly to a storage complex to collect the physical configuration of the desired storage unit.

Introduction

You must be connected to the network before you can use this page. Also, in order to proceed, you must select either **Select a previously defined storage complex** or **Enter Management console IP address**.

Menu path

Simulated manager → **Manage hardware** → **Storage units** → **Select Action: Import...**
→ **Go**

Fields

Select a previously defined storage complex

Lets you select a storage complex from the selection box or just enter the information for the Management console.

Enter Management console IP address

Lets you select a storage complex from the selection box or just enter the information for the Management console.

Import storage unit — Select storage unit to import (simulated only)

Use this page to select the specific storage unit to import.

Introduction

You must be connected to the network before you can use this page.

Menu path

Simulated manager → **Manage hardware** → **Storage units** → **Select Action: Import...**
→ **Go**

Fields

Select storage units

A list of the storage units, by serial number, attached to this storage complex. You must select one or more of the storage units in the list.

Amount of data to import

You must select one of the following radio buttons:

Physical configuration only

Only the physical characteristics of the storage unit are imported to the application.

Physical and logical configuration

The physical and logical configuration characteristics of the storage unit are imported to the application.

Physical and logical configuration plus host attachments

The physical and logical configuration characteristics of the storage unit plus all the host attachment characteristics are imported to the application.

Import storage unit — General storage unit information (simulated only)

Use this page to define general storage unit information.

Menu path

Simulated manager → Manage hardware → Storage units → Select Action: Import...
→ Go

Fields

Machine type

One of the supported machine types and models.

Nickname

The storage unit nickname, limited to 16 characters.

Description

The description of the storage unit, limited to 256 characters.

Import storage unit — Verification (simulated only)

Use this page to review and verify the list of properties and basic capacity calculations representing the new storage unit.

Menu path

Simulated manager → Manage hardware → Storage units → Select Action: Import...
→ Go

Fields

Nickname

The user- or system-defined nickname.

Machine type

The machine type, based on data from the import mechanism.

Advanced function

"Yes" for an imported machine having advanced function. Otherwise, "No."
Based on data from the import mechanism.

Total GB

The total capacity of the storage unit. Based on data from the import mechanism.

Import from eConfig file (simulated only)

Use this page to import a file from an ordering application that contains physical configuration data regarding the specified storage unit.

Menu path

Simulated manager → Manage hardware → Storage units → Select Action: Import from eConfig file... → Go

Fields

Select file to import

The file name associated with the file that is to be imported.

Browse button

When selected, the Browse dialogue box is displayed. You can select a file from your local workstation to upload to the GUI server.

User administration

The topics in the category provide information that is related to using the user administration pages. If the pages are displayed in a wizard, they are listed in the sequence that they are displayed.

User administration — Main page

Use this page to manage the users that are assigned to an individual storage complex.

Introduction

You can view, add, modify, and delete users or user properties. If you plan to utilize a single management console to manage multiple storage complexes, ensure that all the storage complexes have the same user ID and password.

Menu path

Real-time manager or Simulated manager → Monitor system → User administration

Fields

Storage complex

Select the storage complex for which you want to view user information.

Refresh

Select to update the information on this page.

Select Select the user that you want to work with.

User Name

The users with access to the selected storage complex.

User Groups

The user groups that are assigned to the user name.

Failed logins

The number of all client login failures for the user.

Account Status

The current status of the user account. If the user has exceeded the maximum number of failed logins, the status is locked. Otherwise, the status is unlocked.

Actions

Add User

Select to create a new user account.

Modify User

Select to modify the properties for the selected user.

Unlock User

Select to unlock the selected user account.

Delete User

Select to delete the selected user account.

Password Settings

Select to unlock the selected user account. This selection is only available for a user with Administrator access.

User administration — Add user

Use this page to create a new user account.

Menu path

Real-time manager or Simulated manager → Monitor system → User administration → Select Action: Add user... → Go

Fields**User Name**

Enter up to 16 characters to identify the user that you are creating.

Password

Enter a password for the user account that you are creating. The password must contain at least 5 alphabetic characters and at least one numeric character, with an alphabetic character in the first and last positions. Passwords are limited to a total of 16 characters. The user name cannot be part of the password. The minimum number of unique new passwords that must be used before an old password can be reused is four. This entry appears as asterisks.

Confirm password

Retype the password to confirm it. This entry must match the previous password entry. Characters in this field appear as asterisks.

Group assignment

Select to make assignments for the user account that you are creating. The user must be assigned to at least one group. Users can be assigned to multiple groups or combinations of groups. However, when a group with the label (only) is selected, any other selections are automatically unchecked.

Administrator (only)

Must be the only group assignment that is checked. This group has access to all service functions and DS6000 resources.

Physical operator (only)

Must be the only group assignment that is checked. This group has access to all but Storage complex function. This group has access to service functions and resources relating to physical configuration, including storage complex, storage facility, storage facility image, arrays, ranks, and extent pools. This user group inherits the same authority as the logical operator group, Copy Services operator group, service group, and the monitor group. The physical operator group does not have access to security related functions.

Logical operator

Can be checked in combination with the Copy Services operator group, but not in combination with any other group. This group has access to service functions and resources relating to logical volumes, hosts, host ports, logical subsystems, logical volumes, and

volume groups, excluding security functions. This user group inherits the same authority as the monitor group.

Copy Services operator

Can be checked in combination with the logical operator group, but not in combination with any other group. This group has access to all Copy Services service functions and resources, excluding security functions. This user group inherits all authority of the monitor group.

Monitor (only)

Must be the only group assignment that is checked. This group has access to all read-only, nonsecurity service functions and all DS6000 resources.

Service Operator

This group has access to all service related DS6000 service functions and resources (for example, performing a code load or retrieving problem logs). This user group inherits all authority of the monitor group.

No access (only)

The default selection. Must be the only group assignment that is checked. This group has no access to any service functions or DS6000 resources. This is the user group that is assigned to a user account that is not associated with any other user group.

User administration — Modify user

Use this page to modify user account settings.

Introduction

If you have administrator-level privileges, you can modify a user's password and group. If you do not have administrator-level privileges, you can only modify your password.

Menu path

Real-time manager or Simulated manager → Monitor system → User administration → Select a user name → Select Action: Modify user → Go

Fields

User name

The user name for the selected user account. User names cannot be changed.

Change password

Select to change the password of the selected user.

Password

The user-defined password. To change the password, highlight it, and then enter the new password. Passwords must contain at least 5 alphabetic characters, and at least one numeric character, with an alphabetic character in the first and last positions. Passwords are limited to a total of 16 characters. The user name cannot be part of the password. The minimum number of unique new passwords that must be used before an old password can be reused is four. This entry appears as asterisks.

Confirm password

Retype the new password to confirm it. This entry must match the previous password entry. Characters in this field appear as asterisks.

Group assignment

User group assignments can only be changed by an administrator. The user must be assigned to at least one group. Users can be assigned to multiple groups or combinations of groups. However, when a group with the label (only) is selected, any other selections are automatically unchecked.

Administrator (only)

Must be the only group assignment that is checked. This group has access to all service functions and DS6000 resources.

Physical operator (only)

Must be the only group assignment that is checked. This group has access to all but Storage complex function. This group has access to service functions and resources relating to physical configuration, including storage complex, storage facility, storage facility image, arrays, ranks, and extent pools. This user group inherits the same authority as the logical operator group, Copy Services operator group, service group, and the monitor group. The physical operator group does not have access to security functions.

Logical operator

Can be checked in combination with the Copy Services operator group, but not in combination with any other group. This group has access to service functions and resources relating to logical volumes, hosts, host ports, logical subsystems, logical volumes, and volume groups, excluding security functions. This user group inherits the same authority as the monitor group.

Copy Services operator

Can be checked in combination with the logical operator group, but not in combination with any other group. This group has access to all Copy Services service functions and resources, excluding security functions. This user group inherits all authority of the monitor group.

Monitor (only)

Must be the only group assignment that is checked. This group has access to all read-only, nonsecurity service functions and all DS6000 Resources.

Service Operator

This group has access to all DS6000 service functions and resources (for example, performing a code load and retrieving problem logs). This user group inherits all authority of the Monitor group.

No access (only)

The default selection. Must be the only group assignment that is checked. This group has no access to any service functions or DS6000 resources. This is the User Group that is assigned to a user account that is not associated with any other user group.

User administration — Unlock user

Use this page to unlock a user account.

Introduction

If you have administrator-level privileges, you can unlock a user account. You must select a user to unlock from the table. When you select **Unlock user** in the **Select Action** drop-down list. Once the account is unlocked, the Account Status column updates accordingly.

Menu path

Real-time manager or Simulated manager → Monitor system → User administration → Select a user name → Select Action: **Unlock user** → Go

User administration — Delete user

Use this page to delete a user account.

Introduction

You can delete a user account if you have Administrator level privileges. You must first select a user to delete from the table. When you select **Delete user** from the **Select Action** drop-down list, a confirmation page is displayed. You can select the **OK** button to complete the deletion of the selected user account.

Menu path

Real-time manager or Simulated manager → Monitor system → User administration → Select a user name → Select Action: **Delete user** → Go

User administration — Password settings

Use this page to set the length of time that passwords are valid and the maximum failed logins that are allowed before the user account is locked.

Introduction

This option is displayed only if you have administrator-level privileges.

Menu path

Real-time manager or Simulated manager → Monitor system → User administration → Select Action: **Password settings...** → Go

Fields

Password expires (days)

Enter the number of days after which the password expires. An entry of 0 results in passwords that never expire. The maximum number that is allowed in this field is 9999.

Failed logins allowed

Enter the number of failed logins after which the user account is locked and no more login attempts are allowed. An entry of 0 allows an unlimited number of attempts. The maximum number that is allowed in this field is 9.

zSeries logical control units

The topics in this section provide page help related to using the various zSeries® logical control unit (LCU) pages. If the pages are displayed in a wizard, they are listed in the sequence that they are displayed.

zSeries LCUs — Main page

Use this page to review information for each zSeries logical control unit (LCU) in a storage unit. You can create, delete, or modify LCUs, or view properties for LCUs.

Introduction

Use the **Refresh** button to obtain current data.

Menu path

Real-time manager or Simulated manager → Configure Storage → zSeries → LCUs

Fields

Select storage unit

Select the storage unit for which you want to view LCU information.

Select Select the check boxes for the LCUs you want to work with.

LCU ID

The identifier of the LCU (for example, 1E). The link opens the LCU properties page.

SSID The unique identifier on the set of disk control units attached to a given FICON (fibre-channel connection) host image. This identifier is also used by PPRC (peer-to-peer remote copy) functions to verify the identity of a secondary LSS. This value is either the default SSID or a user-defined SSID.

LCU Type

The model type of the specified LCU. The possible values are 3990 Model 3, 3990 Model 3 for TPF, 3990 Model 6. The default is the 3990 Model 6.

Volumes

The number of defined base volumes in the specified LCU. The link opens a list of zSeries volumes that are filtered by this LCU.

Addresses Used

The number of addresses used in the LCU.

Actions

Create Select to create a new LCU for the selected storage unit.

Delete Select to delete selected LCUs.

Modify

Select to modify selected LCUs.

Properties

Select to display properties for selected LCUs.

Create zSeries LCU — Select from available LCUs

Use this page to select one or more logical control units to create a new LCU.

Menu path

Real-time manager or Simulated manager → Configure storage → zSeries → LCUs → Select Action: Create... → Go

Fields

Available LCUs

Select Select one or more available LCU IDs for the new LCUs that you are creating. You must select at least one LCU. There is a one-to-one relationship between an LCU and a CKD LSS.

LCU ID

The identifier for the LCU.

Create zSeries LCU — Define LCU properties

Use this page to define the parameters for the specified LCUs.

Menu path

Real-time manager or Simulated manager → Configure storage → zSeries → LCUs → Select Action: Create... → Go

Fields

SSID The subsystem identifier for the set of units that are attached to the FICON host image. This is the next ID that is available in the order of creation. You can change the default SSID by highlighting it and entering a new ID. If you create multiple LCUs at the same time, the SSIDs are incremented.

LCU type

Select one of the supported count-key-data base control unit types:

- 3990 Mod 3
- 3990 Mod 3 for TPF
- 3390 Mod 6

Concurrent copy session timeout

Enter the time (in seconds) that a logical device on the LCU is allowed to remain in a concurrent copy session with a "long busy" status. After the indicated time, the concurrent copy session is suspended. This entry is important if you are utilizing DS Copy Services.

Critical mode enabled

Check this box to control the behavior of the PPRC pairs that have a primary logical device on this logical subsystem in an LSS consistency group. If you select this option, write operations to the source remote mirror and copy volume are prohibited if data cannot be copied to the target volume of the volume pair.

Create zSeries LCU — Verification

Use this page to review a list of properties and basic capacity calculations that represent new logical control units (LCUs).

Menu path

Real-time manager or Simulated manager → Configure storage → zSeries → LCUs → Select Action: Create... → Go

Fields

Selected LCU(s)

The quantity of LCUs that you have selected.

SSID The subsystem identifier for the set of units that are attached to the FICON host image.

LCU type

The supported count-key-data base control unit type (3990 Mod 3, 3990 Mod 3 for TPF, or 3990 Mod 6).

Concurrent copy session timeout

The time (in seconds) that a logical device on the LCU is allowed to remain in a concurrent copy session with a "long busy" status. After the indicated time, the concurrent copy session is suspended.

z/OS Global Mirror Session timeout

The time (in seconds) that any logical device on the LCU is allowed to remain in an z/OS Global Mirror session with a "long busy" status. After the indicated time, the z/OS Global Mirror session is suspended.

Critical mode enabled

Indicates whether the critical mode option is enabled for the LCU. Critical mode controls the behavior of the remote mirror and copy pairs that have a primary logical device on this logical subsystem (LSS) in an LSS consistency group. If enabled, write operations to the source remote mirror and copy volume are prohibited if data cannot be copied to the target volume of the volume pair.

Modify zSeries LCU

Use this page to modify the parameters for the specified LCUs.

Menu path

Real-time manager or Simulated manager → **Configure Storage** → **zSeries** → **LCUs** → **Select an LCU** → **Select Action: Modify...** → **Go**

Fields

LCU ID

The LSS ID of the LCU being modified.

SSID The next ID available in the order of creation. If you selected more than one LCU in the Select from available LCUs page, the SSIDs are sequentially incremented by 1 starting from this entry as the first SSID. You can change the default SSID by highlighting it and entering a new ID.

LCU type

The supported count-key-data base control unit types.

Concurrent copy session timeout

The time in seconds that any logical device on this LCU in a concurrent copy session stays "long busy" before suspending a concurrent copy session.

Create new zSeries volume button

Creates new zSeries volumes in this LCU. If you select this button, the Create zSeries volume wizard page is displayed.

Note: If you create new zSeries volumes while in this Modify LCU page, this LCU is the only entry in the applicable Create new zSeries volumes wizard pages.

Paste zSeries LCU — Select from available LCUs

Use this page to select multiple logical control units (LCUs) from a list of those available.

Introduction

You must select at least one LCU in the table.

Menu path

Real-time manager or Simulated manager → Configure storage → zSeries → LCUs → Select Action: Paste... → Go

Fields

Available LCUs

Select The check boxes for the available LCUs.

LCU ID

The identifier for the LCU (for example, 1E).

Paste zSeries LCU — Define LCU properties

Use this page to define the parameters for the logical control units (LCUs).

Menu path

Real-time manager or Simulated manager → Configure storage → zSeries → LCUs → Select Action: Paste... → Go

Fields

LCU type

The value of the selected LCU. It is one of the supported count-key-data (CKD) base control unit types.

Increase SSID by one for all selected LCUs starting with the following value

If checked, this Define LCU properties page is the only that is required for completion. Based on the entry in the following SSID field, the SSIDs are incremented by one. If you uncheck this box, you must enter an SSID for all of the selected LCUs in the previous Select from available LCUs wizard page. One page is displayed for each LCU where you enter the SSID for each LCU. Also, this box and label do not appear on the subsequent pages.

SSID The next available in order of creation (for example, 0100). You can change the default SSID by highlighting and typing over it. If you select more than one LCU from the previous page and select the Increase SSID by one for all selected LCUs starting with the following value check box, the SSIDs are sequentially incremented by 1 starting from this entry as the first SSID.

Paste zSeries LCU — Verification

Use this page to review and verify the list of properties that represent the new LCUs.

Menu path

Real-time manager or Simulated manager → Configure storage → zSeries → LCUs → Select Action: Paste... → Go

Fields

Selected LCUs

The quantity of selected LCUs, based on user input.

SSIDs Reflects user input.

LCU type

The value of the selected LCU, based on user input. It is one of the supported count-key-data (CKD) base control unit types.

zSeries LCU properties (real-time only)

Use this page to view the parameters for the selected LCU.

Menu path

Real-time manager → Configure storage → zSeries → LCUs → Select an LCU → Select Action: Properties → Go

Fields

SSID The next subsystem identifier (SSID) that is available in the order of creation. If you have selected more than one LCU in the Select from available LCUs page, the SSIDs are sequentially incremented by 1 starting from this entry.

LCU type

The supported count-key-data base control unit type:

- 3990 Mod 3
- 3990 Mod 3 for TPF
- 3390 Mod 6

Concurrent copy session timeout

The time (in seconds) that a logical device on the LCU is allowed to remain in a concurrent copy session with a "long busy" status. After the indicated time, the concurrent copy session is suspended.

Critical mode enabled

Indicates whether the critical mode option is enabled for the LCU. Critical mode controls the behavior of the remote mirror and copy pairs that have a primary logical device on this logical subsystem (LSS) in an LSS consistency group. If enabled, write operations to the source remote mirror and copy volume are prohibited if data cannot be copied to the target volume of the volume pair.

zSeries volumes

The topics in this section provide page help related to using the various zSeries® volumes pages. If the pages are displayed in a wizard, they are listed in the sequence that they are displayed.

zSeries volumes — Main page

Use this page to work with and view information about zSeries volumes.

Introduction

If no rows of data are displayed on this page, you must first create volumes by following the steps in the Creating zSeries volumes task. When you complete that task, the new volumes and their related values will be displayed here.

Use the **Refresh** button to obtain current information.

Menu path

Real-time manager or Simulated manager → Configure storage → zSeries → Volumes – zSeries

Fields

Select The check boxes for the volumes. Select the volumes that you want to work with for the Select Action options or for which you want to print a report or download a spreadsheet.

Nickname

The unique, user- or system-defined nickname that identifies the volume throughout the system. The link takes you to the zSeries volume properties page, which displays the volume attributes and values.

Number

The unique volume number that identifies this volume throughout the system (for example, 1E3B).

Status (Real-time only)

The label indicates the operational status. The link takes you to the zSeries volume status page, which displays values for the access, data, and configuration states.

Normal

The volume is in the following state:

- Access state
 - Online
- Data state
 - Normal
 - Read only
- Configuration state
 - Normal
 - Configuring
 - Deconfiguring

Attention

The volume is in the following state:

- Data state
 - Pinned
 - Rank failed
 - Rank repairing
 - Rank repaired
 - Unknown

Failed The storage unit is in the following state:

- Access state
 - Fenced
- Configuration state
 - Configuration error

Note: The configuration error state indicates that the initial configuration of the volume did not complete successfully. If one or more of the configured volumes displays the configuration error state, you must delete each one. You can recreate them later.

Inaccessible

The storage unit is in the following state:

- Access state
 - Fenced
- Data state
 - Inaccessible

Base/Alias

The type of logical volume or logical device:

- CKD (count key data) Base describes a logical volume with a host accessible logical device that has an associated logical volume.
- CKD Alias describes a logical device that is an alias for a CKD logical volume.

Volume Type

3380 Mod 2, 3380 Mod 3, 3390 Standard Mod 3, 3390 Standard Mod 9, or 3390 Custom. This is primarily a capacity attribute. For a 3380 cylinder, the logical volume is a CKD device with a 3380 track format and 16-bit cylinder addressing. For a 3390 cylinder, the logical volume is a CKD device with a 3390 track format and 16-bit cylinder addressing.

Binary GB

The volume capacity in binary gigabytes.

Decimal GB

The volume capacity in decimal gigabytes.

RAID The RAID type of the rank from which this volume is allocated. Mixed appears only if you modified the RAID type of the ranks in the extent pool. The label remains Mixed if you chose not to convert the existing ranks to the newly-selected RAID type; however, since rank RAID type can take some time (Offline, Reconfigure mode), the RAID type remains Mixed until the conversion is complete.

Extent Pool

The unique, user-defined extent pool nickname that identifies the extent pool throughout the system.

Create zSeries volume — Select extent pool

Use this page to select an extent pool for the specified volumes.

Menu path

Real-time manager or Simulated manager → Configure storage → zSeries → Volumes – zSeries → Select Action: Create... → Go

Fields

Select extent pool

Select The radio buttons associated with the extent pools.

Nickname

The user-defined name of the pool.

Number

The extent pool number. The extent pool number is a four-digit decimal number with no leading zeroes, normally prefixed with a P (for example, P5). Even-numbered extent pools are associated with rank group 0. Odd-numbered extent pools are associated with rank group 1.

Storage Type

Count key data (CKD).

RAID The supported or available RAID types (for example, RAID 5 and RAID 10).

Primary Server

The primary server that is associated with the extent pool.

Available GB

The available storage in gigabytes.

Create new extent pool button

Creates a new extent pool. After you create the extent pool, the table refreshes to reflect the new extent pool and you can select it for this volume.

Create zSeries volume — Define volume characteristics

Use this page to define the properties for the specified volumes.

Menu path

Real-time manager or Simulated manager → Configure storage → zSeries → Volumes – zSeries → Select Action: Create... → Go

Fields

RAID type

The supported or available RAID types (for example, RAID 5 and RAID 10).

Volume type

3380 Mod 2, 3380 Mod 3, 3390 Standard Mod 3, 3390 Standard Mod 9, or 3390 Custom. The default value is 3390 Standard Mod 9.

LCU The first available LCU from the list of addresses that are available for the volumes.

Note: If you initiated this wizard by using the Create new LCU wizard, the LCUs that you selected there are selected by default in this page.

Create zSeries volume — Define base volume properties

Use this page to select the volume properties for the specified volumes.

Introduction

The fields that are displayed in this page depend on your selections in the Define volume characteristics page. Review the options below to find the correct field listings for your selections.

Menu path

Real-time manager or Simulated manager → Configure storage → zSeries → Volumes – zSeries → Select Action: Create... → Go

Fields

If you selected 3380 Mod 2, 3380 Mod 3, 3390 Standard Mod 3, or 3390 Standard Mod 9 Volume type and a single specified LCU, the following fields are displayed:

Quantity

Indicates the base volume quantity. You cannot enter a value great than the quantity of available [Volume type] volumes. The maximum volume quantity is calculated as a function of the volume type, the available storage given the particular RAID types in the selected extent pool and the volume size, or it can be limited by the number of available addresses in the LCU.

Base start address

A valid value, from 0 to 255.

Ascending/ Descending

Ascending or Descending.

Available storage

- Available storage in the extent pool in cylinders and gigabytes.
- Available extents in extent pool in number of extents.
- Available addresses in the LCU, using 00-FF and 0-256.
- Quantity of available volumes (3380 Mod 2, 3380 Mod 3, 3390 Standard Mod 3, or 3390 Standard Mod 9).

If you selected 3390 Custom Volume type and a single specified LCU, the following fields are displayed:

Quantity

The quantity of volumes to create. If you enter the volume size in the **Size (Cylinders)** field and then select the **Calculate max quantity** button, the **Quantity** field is populated with the calculated value. You can overwrite this value and enter a lesser quantity up to the maximum. The maximum volume quantity is calculated as a function of the volume size and the available storage for the particular RAID type in the selected extent pool.

Calculate max size

Enabled when you enter a value in the **Volume quantity** field. When you select this button, a calculation is made that is based on the volume quantity and the available storage given the particular RAID types in the selected extent pool. This value is entered in the **Size (Cylinders)** field and as the **Largest custom 3390 volume in the Available storage** field.

Size (Cylinders)

The size of the volumes to create. If you enter the volume quantity in the **Quantity** field and select the **Calculate max size** button, the **Size**

(**Cylinders**) field is populated with this calculated value. You can overwrite this value with a new value up to the maximum size. The maximum volume size is calculated as a function of the available storage given the volume quantity and the particular RAID types in the selected extent pool.

Calculate max quantity button

Enabled after you enter a volume size. When you select this button, a calculation is made based on the volume size and the available storage given the particular RAID types in the selected extent pool. This value is displayed in the **Quantity** field.

Base start address

A valid value from 0 to 255. Any value defined for this in the "Define address allocation policy" page is displayed here as the default base start address.

Ascending/ Descending

The value defined for this in the "Define address allocation policy" page.

Available storage

- Available storage in the extent pool in cylinders and gigabytes.
- Available extents in extent pool in number of extents.
- Available addresses in the LCU, using 00-FF and 0-256.
- The largest Custom 3390 volume in number of cylinders.

Regardless of Volume type selection, if you selected more than one LCU from the LCU Selection Box or the "Work with all available" from the LCU Selection Box, the following fields are displayed:

Addressing policy

Spread volumes equally across LCUs (for example, 1000 volumes/10 LCUs = 100/LCU)

When this option is selected, the quantity of base volumes created in the specified number of LCUs is spread equally across the LCUs. For example, if you create 1000 base volumes in 10 LCUs, there would be an equal distribution of the volumes in all 10 LCUs, so each of the 10 LCUs would have 100 base volumes.

Note: If you entered this page already having selected specific LCUs, the quantity of LCUs is limited to the quantity previously chosen.

Utilize all addresses in each LCU (e.g., 1000 volumes/256 addresses = 4 LCUs)

When this option is selected, the quantity of base volumes created utilizes all of the addresses in the specified number of LCUs. For example, if you create 1000 base volumes, a minimum of 4 LCUs would be required to contain all the volumes. When you select this option, the minimum quantity of LCUs required is populated in the **Quantity of LCUs** field.

Note: If you entered this page already having selected specific LCUs, the quantity of volumes is limited to the quantity of LCUs previously chosen. For example, if you chose 5 LCUs, then the quantity of volumes needs to be in the range of 1025-1280 (because each LCU has up to 256 addresses available for use).

Spread volumes across LCUs up to a maximum address

The maximum addresses value indicates the highest address value (up to 256) for volumes in these LCUs. For example, you specify 1000 volumes spread across 7 LCUs, and three of them already have 100 volumes each taking up addresses and the other four have no addresses used. If you specify up to a maximum address of 200, the first three LCUs with 100 addresses used each get 100 more volumes, with each taking up to 200 addresses (for a total of 300 volumes). The next 3 LCUs each get 200 volumes (subtotal = 600, total = 900). The last LCU gets 100 volumes (for a total of 7 LCUs and 1000 volumes).

Note: If you entered this page already having selected specific LCUs, the quantity of LCUs is limited to the quantity previously chosen. If you selected LCUs that already had addresses allocated, these are the first LCUs used when laying out the new volumes up to the maximum address indicated in the field.

Quantity of base volumes

The quantity of volumes to create.

Size (Cylinders)

Enabled when you select the Custom 3390 for the volume type. Enter a value in this field to indicate volume size for the custom volumes. If you select the **Calculate max size** button, the **Size** field is populated with this calculated value. You can overwrite this value with a new value up to the maximum size. The maximum volume size is calculated as a function of the volume quantity and the available storage for the given RAID types in the selected extent pool.

Calculate max size button

Enabled when you select Custom 3390 for the volume type. After you first enter the quantity of volumes, you can select the **Calculate max size** button and the largest size 3390 volume for the specified quantity is displayed in the **Size (Cylinders)** field and for the **Largest custom 3390 volume in the Available storage** field. The Max volume size is calculated as a function of the volume size and the available storage for the particular RAID type in the selected extent pool.

Quantity of LCUs

The minimum value required in this field is a function of

1. The quantity of volumes defined,
2. Whether you came into this page already having selected specific LCUs, whereupon the quantity of LCUs in the field is limited to the quantity chosen from the pages, and
3. The selected Addressing policy.

Base start address

A valid value from 0 to 366. Any value defined for this in the "Define address allocation policy" page is displayed here as the default.

Ascending/ Descending

Any value defined for this in the "Define address allocation policy" page is displayed here as the default.

Available storage

- The available storage in the extent pools by cylinder and number of gigabytes (GB).
- The number of available extents in an extent pool.
- The quantity of available volumes (3380 Mod 2, 3380 Mod 3, 3390 Standard Mod 3, or 3390 Standard Mod 9).

Note: This field is grayed out if you selected the Custom 3390 volume type.

- The largest 3390 Custom volume in number of cylinders.

Note: This field is grayed out if you selected the 3380 Mod 2, 3380 Mod 3, 3390 Standard Mod 3, or 3390 Standard Mod 9 Volume type.

Create zSeries volume — Create volume nicknames

Use this page to create zSeries volume nicknames.

Introduction

Nicknames enable you to create values that have meaning to you and that are easy to remember. The nicknames that you specify here are unique and they identify specific volumes throughout the system.

Menu path

Real-time manager or Simulated manager → **Configure storage** → **zSeries** → **Volumes – zSeries** → **Select Action: Create...** → **Go**

Fields

Quantity of volumes

The number of volumes that is specified on the previous Define volume properties page.

Generate a sequence of nicknames based on the following

Check this box to specify, in the following fields, a sequence of volume names for the number of volumes that you created that is based on input in the prefix and suffix fields. Either a prefix or a suffix is required if this is selected. You can enter a value in one or both of the fields. The **Prefix** and **Suffix** fields can contain any characters except blank spaces and the **Prefix** and **Suffix** fields are stored (concatenated) in strings of up to 16 characters.

Note: Prefix and suffix combinations that result in volume nicknames that are greater than 16 characters returns the numbering sequence to 00000000. For example, if the nickname myVolume99999999 is created, the next volume regresses in numbering to myVolume00000000 (16 characters) instead of the next number in the sequence, myVolume100000001 (exceeding 16 characters).

The following fields are disabled if you do not make this selection.

Use hexadecimal sequence

Check this box to create a hexadecimal sequence of volume nicknames. The nickname suffix will be automatically incremented in a hexadecimal sequence of volume names for the quantity that you created. For example, if you create 400 volumes with the nickname prefix Vol and with the suffix beginning with 0000, the range of volume nicknames includes Vol0000 to Vol018F.

Note: You can only check this box if you checked **Generate a sequence of nicknames based on the following**.

Prefix A prefix to the volume names. Either a prefix or a suffix is required if you checked **Generate a sequence of nicknames based on the following**. To disable this field, clear the box for **Generate a sequence of nicknames based on the following**. You can put a value in one or both of the **Prefix** and **Suffix** fields to establish a prefix or suffix to the volume nicknames. If you enter a numeric value for the prefix, the values increase sequentially to reflect the quantity of volumes that you want to create. If you enter an alphabetic value, it precedes and concatenates the suffix. For example, in the process of creating 400 volumes, if you put "myVol" in the **Prefix** field and "0000" in the **Suffix** field. These volumes are then nicknamed myVol0000 to myVol0399 for decimal sequences, or myVol0000 to myVol018F for hexadecimal sequences. If you enter only an alphabetic prefix and no suffix, a warning states that the volumes to be created will contain the same nickname.

Note: For OpenVMS and Tru64 Unix hosts, logical volume nicknames are reported to the operating system as the volume user-defined identifier (UDID). Be certain that this value conforms to the appropriate rules for UDIDs. See the topic OpenVMS UDID Support for more information.

Suffix A suffix to the volume names. Either a prefix or a suffix is required if you checked the **Generate a sequence of nicknames based on the following** is checked. To disable this field, clear the box for **Generate a sequence of nicknames based on the following**. You can put a value in one or both the **Prefix** and **Suffix** fields to establish a prefix or suffix to the volume nicknames. If you enter a numeric value for the suffix, the values increase sequentially to reflect the quantity of volumes being created. If you enter an alphabetic value, the suffix follows and concatenates the prefix string. For example, in the process of creating 400 volumes, if you put the alphabetic characters "Disk" in the **Prefix** field and "0000" in the **Suffix** field, these volumes are then nicknamed Disk0000 to Disk0399 for decimal sequences, or Disk0000 to Disk018F for hexadecimal sequences. If you enter only an alphabetic suffix and no prefix, a warning states that the volumes to be created will contain the same nickname.

Note: For OpenVMS and Tru64 Unix hosts, logical volume nicknames are reported to the operating system as the volume user defined identifier (UDID). Be certain that this value conforms to the appropriate rules for UDIDs. See the topic OpenVMS UDID Support for more information.

Create zSeries volume — Define alias assignments

Use this page to define alias assignments for the specified volumes.

Introduction

The information contained here is presented for both of the ways that the Define alias assignments page can be displayed. First, the fields are listed for the page when an LCU has been specified. Second, the fields are listed for the page when the LCUs are either multiple or non-specified.

Menu path

Real-time manager or Simulated manager → Configure storage → zSeries → Volumes – zSeries → Select Action: Create... → Go

Fields

For volumes created in a specified LCU

LCU The logical control unit, based on user selection (00 to FF).

Available addresses

The quantity of available addresses in the LCU (0 to 256).

Select Select the appropriate check boxes.

Volume Number

The volume number (for example, 1E3B).

Nickname

The user-defined nickname.

Volume Type

The volume type (3380 Mod 2, 3380 Mod 3, 3390 Mod 3, 3390 Mod 9, or Custom 3390).

Capacity

The capacity in cylinders.

Aliases: Bases

The quantity of aliases for this base volume.

Starting address

The first available address in the list. This value reflects a choice made when defining the alias address allocation policy.

Ascending/ Descending

If you defined a default in the address allocation policy, that value is displayed here as the default.

Aliases

The quantity of aliases per selected volumes. This value is a function the available addresses for the selected LCU. You can enter a decimal value here to represent fractions of the number of aliases per volume. For example:

- A value of 0.25 indicates 1 alias to every 4 base volumes
- A value of 1 indicates 1 alias to every 1 base volume

Per Volumes

The quantity of aliases per volume. A valid value is a function of the available addresses for the selected LCU.

Add aliases

Required if the value in the **Aliases Per Volumes** fields is greater than zero. For all of the aliases created, you must select the **Add Aliases** button in order to proceed in the wizard. When you have added the alias, you can add more aliases by inputting another value in the **Aliases Per Volumes** fields and selecting more volumes, or by keeping the same value and just selecting the button again. You can repeat this task until you are satisfied with the alias assignments.

Note: If you want to add aliases, the number of base volumes must be greater than 0.

Remove aliases

Enabled when you select any volumes with aliases. This button removes the assigned aliases from the designated volumes.

For volumes created in non-specified LCUs

Quantity of LCUs

The user-defined quantity of LCUs for the volumes being created.

Select The check boxes associated with the LCUs.

LCU Number

The logical control unit number (00 to FF).

Volume Quantity

The quantity of volumes to be created in this LCU

Available Addresses

The quantity of available addresses in the LCU (0 to 254).

Starting address

A starting address that is common to all the LCUs selected from the table. If no starting address is common to all the selected LCUs, the starting address is determined by the application for each LCU.

Ascending/ Descending

The default is a value defined in the address allocation policy.

Aliases

The quantity of aliases per selected volumes. This value is a function the available addresses for the selected LCU. You can enter a decimal value here to represent fractions of the number of aliases per volume. For example:

- A value of 0.25 indicates 1 alias to every 4 base volumes
- A value of 1 indicates 1 alias to every 1 base volume

Per Volumes

The quantity of aliases per volume. A valid value is a function of the available addresses for the selected LCU.

Add aliases

Required if the value in the **Aliases Per Volumes** fields is greater than zero. For all of the aliases created, you must select the **Add Aliases** button in order to proceed in the wizard. When you have added the alias, you can add more aliases by inputting another value in the **Aliases Per Volumes** fields and selecting more volumes, or by keeping the same value and just selecting the button again. You can repeat this task until you are satisfied with the alias assignments.

Note: If you want to add aliases, the number of base volumes must be greater than 0.

Remove aliases

Enabled when you select any volumes with aliases. This button removes the assigned aliases from the designated volumes.

Create zSeries volume — Verification

Use this page to review the properties and the basic capacity calculations for the new volumes. New volumes are formatted immediately after they are created. Wait until the format operation for the new volumes completes successfully before you attempt to configure the new volumes in Copy Services relationships.

Menu path

Real-time manager or Simulated manager → Configure storage → zSeries → Volumes – zSeries → Select Action: Create... → Go

Fields

Extent pool assignment

The user-defined extent pool nickname.

RAID type

The supported or available RAID types (for example, RAID 5 and RAID 10).

Quantity

The quantity of volumes created. This field is displayed only if more than one volume has been defined.

Volume type

The user-defined volume type (3380 Mod 2, 3380 Mod 3, 3390 Mod 3, 3390 Mod 9, or Custom 3390).

Aliases

The user-defined quantity of aliases.

Modify zSeries volume — Select extent pool

Use this page to view the selected extent pool for the specified volumes.

Menu path

Real-time manager or Simulated manager → Configure storage → zSeries → Volumes – zSeries → Select a volume → Select Action: Modify... → Go

Fields

Select extent pool

Select The radio buttons that are associated with the extent pools.

Nickname

The user-defined name of the pool.

Storage Type

The supported or available storage types [for example, count key data (CKD) or fixed block (FB)].

RAID type

The supported or available RAID types (for example, RAID 5 and RAID 10).

Available storage (GB)

The available storage in gigabytes.

Create new extent pool button

Creates a new extent pool. You cannot perform this function here.

Modify zSeries volume — Define base volume characteristics

Use this page to view the properties for the specified volumes.

Menu path

Real-time manager or Simulated manager → Configure storage → zSeries → Volumes – zSeries → Select a volume → Select Action: Modify... → Go

Fields

RAID type

The supported or available RAID types (for example, RAID 5 and RAID 10).

Volume type

3380 Mod 2, 3380 Mod 3, 3390 Standard Mod 3, 3390 Standard Mod 9, or 3390 Custom. The default value is 3390 Standard Mod 9.

LCU The first available LCU from the list of addresses that are available for the volumes.

Note: If you initiated this wizard using the Create new LCU wizard, the LCUs that you selected in there are selected by default in this page.

Modify zSeries volume — Define base volume properties

Use this page to view the volume properties for the specified volumes.

Introduction

The fields that are displayed in this page depend on your selections in the "Define volume characteristics" page.

Menu path

Real-time manager or Simulated manager → Configure storage → zSeries → Volumes – zSeries → Select a volume → Select Action: Modify... → Go

Fields

If you selected 3380 Mod 2, 3380 Mod 3, 3390 Standard Mod 3, 3390 Standard Mod 9, or a 3390 Custom Volume type and a single specified LCU, the following fields are displayed:

Quantity

The base volume quantity.

Base address

A value from 0 to 255.

Ascending/ Descending

Ascending or Descending.

Available storage

- Available storage in the extent pool in cylinders and gigabytes.
- Available extents in extent pool in number of extents.
- Available addresses in the LCU, using 00-FF and 0-256.
- Quantity of available volumes (3380 Mod 2, 3380 Mod 3, 3390 Standard Mod 3, or 3390 Standard Mod 9).

Modify zSeries volume — Create volume nicknames

Use this page to modify zSeries volume nicknames.

Menu path

Real-time manager or Simulated manager → Configure storage → zSeries → Volumes – zSeries → Select a volume → Select Action: Modify... → Go

Fields

Quantity of volumes

The user-defined volume quantity (specified in the Define volumes properties page).

Generate a sequence of nicknames based on the following:

Prefix A prefix for the volume nicknames.

Suffix A suffix for the volume nicknames.

Modify zSeries volume — Define alias assignments

Use this page to modify alias assignments for the specified volumes.

Introduction

This page is displayed when you specify an LCU that results in a volume creation.

Menu path

Real-time manager or Simulated manager → Configure storage → zSeries → Volumes – zSeries → Select a volume → Select Action: Modify... → Go

Fields

For volumes created in a specified LCU

LCU The logical control unit, based on user selection (00 to FF).

Available addresses

The quantity of available addresses in the LCU (0 to 256).

Select Select the appropriate check boxes.

Volume Number

The volume number (for example, 1E3B).

Nickname

The user-defined nickname.

Volume Type

The volume type (3380 Mod 2, 3380 Mod 3, 3390 Mod 3, 3390 Mod 9, or Custom 3390).

Capacity

The capacity in cylinders.

Aliases: Bases

The quantity of aliases for this base volume.

Starting address

The starting address is the first available number that is assigned to an alias volume by the system as part of the allocation policy. You can request any address between 0 and 255. The number of aliases that you request determines the number of generated addresses. You can also specify whether you want the selection of available addresses to occur in ascending or descending order. Only unique and available addresses are assigned, and the numbers wrap in the specified order to generate the closest series of numbers that are based on the requested starting address and the first available number.

For example, if you enter the starting address of 250, specify ascending order, and request 6 aliases, the addresses that you receive will be 250, 251, 252, 253, 254, and 255, if they are available. If address 255 were not available, the numbering sequence wraps to zero and assigns the next available address in an ascending order. If address 255 were available, the address becomes 0. If you enter the starting address of 5, specify descending order, and request 6 aliases, the addresses that you receive will be 5, 4, 3, 2, 1, and 0, if they are available. If address 0 were not available, the numbering sequence wraps to 255 and assigns the next available address in a descending order. If address 0 were available, the address becomes 255.

Ascending/ Descending (optional)

If you defined a default in the address allocation policy, that value is displayed here as the default.

Aliases

The quantity of Aliases per selected volumes. This value is a function of the available addresses for the selected LCU. You can enter a decimal value here to represent fractions of the number of aliases per volume. For example:

- A value of 0.25 indicates 1 alias to every 4 base volumes
- A value of 1 indicates 1 alias to every 1 base volume

Per Volumes

The quantity of aliases per volume. A valid value is a function of the available addresses for the selected LCU.

Add aliases

Required if the value in the **Aliases Per Volumes** fields is greater than zero. For all of the aliases created, you must select the **Add Aliases** button in order to proceed in the wizard. When you have added the alias, you can add more aliases by inputting another value in the **Aliases Per Volumes** fields and selecting more volumes, or by keeping the same value and just selecting the button again. You can repeat this task until you are satisfied with the alias assignments.

Note: If you want to add aliases, the number of base volumes must be greater than 0.

For volumes created in non-specified LCUs

Quantity of LCUs

The user-defined quantity of LCUs for the volumes being created.

Select The check boxes that are associated with the LCUs.

LCU Number

The logical control unit number (00 to FF).

Volume Quantity

The quantity of volumes to be created in this LCU

Available Addresses

The quantity of available addresses in the LCU (0 to 254).

Starting address

A starting address that is common to all the LCUs selected from the table. If no starting address is common to all the selected LCUs, the starting address is determined by the application for each LCU.

Ascending/ Descending

A value defined in the address allocation policy is the default here.

Aliases

The quantity of aliases per selected volumes. This value is a function the available addresses for the selected LCU. You can enter a decimal value here to represent fractions of the number of aliases per volume. For example:

- A value of 0.25 indicates 1 alias to every 4 base volumes
- A value of 1 indicates 1 alias to every 1 base volume

Per Volumes

The quantity of aliases per volume. A valid value is a function of the available addresses for the selected LCU.

Add aliases

Required if the value in the **Aliases Per Volumes** fields is greater than zero. For all of the aliases created, you must select the **Add Aliases** button in order to proceed in the wizard. When you have added the alias, you can add more aliases by inputting another value in the **Aliases Per Volumes** fields and selecting more volumes, or by keeping the same value and just selecting the button again. You can repeat this task until you are satisfied with the alias assignments.

Note: If you want to add aliases, the number of base volumes must be greater than 0.

Modify zSeries volume — Verification

Use this page to review the properties and basic capacity calculations for the modified volumes.

Menu path

Real-time manager or Simulated manager → Configure storage → zSeries → Volumes – zSeries → Select a volume → Select Action: Modify... → Go

Fields**Extent pool assignment**

The user-defined extent pool nickname.

LCUs A list of LSSs in which these volumes will be modified.

Nicknames

The user-defined nickname, or default character strings. Example: Vol0000-Vol0399

RAID type

The user-defined RAID type (RAID 5 or, RAID 10).

Quantity

The quantity of volumes. This field is displayed only if more than one volume has been defined.

Volume type

The user-defined volume type (3380 Mod 2, 3380 Mod 3, 3390 Mod 3, 3390 Mod 9, or Custom 3390).

Aliases

The user-defined quantity of aliases.

zSeries volumes — Add aliases

Use this page to add alias assignments for the specified volumes.

Introduction

Use this page to define alias assignments for the selected volumes when you have selected two or more volumes.

Note: You must meet the following requirements before you can add aliases.

- The number of base volumes must be greater than 0.
- The base volume number you enter must be equal to the number of selections in the table.
- The entered base volume number and the entered alias volume number must be multiples of each other.

Menu path

Real-time manager or Simulated manager → Configure storage → zSeries → Volumes – zSeries → Select two or more volumes → Select Action: Add Aliases → Go

Fields

LCU The logical control unit, based on user selection (00 to FF).

Available addresses

The quantity of available addresses in the LCU (0 to 256).

Select Select the appropriate check boxes.

Volume Number

The volume number (for example, 1E3B).

Nickname

The user-defined nickname for the volume.

Volume Type

The volume type (3380 Mod 2, 3380 Mod 3, 3390 Mod 3, 3390 Mod 9, or Custom 3390).

Capacity

The capacity in cylinders.

Aliases: Bases

The quantity of aliases per base volume. If you defined more than one base for this alias, this quantity can be a fraction.

Starting address

The first available address in the list. This value reflects a choice made when defining the alias address allocation policy.

Ascending/ Descending

If you defined a default in the address allocation policy, that value is displayed here as the default.

Aliases

The quantity of aliases per volume. A valid value is a function of the available addresses for the selected LCU.

Per Volumes

You can change the quantity of aliases per volume. A valid value is a function of the available addresses for the selected LCU.

zSeries volumes — General

Use this page to work with general advanced operations for zSeries volumes.

Note: The Advanced operation selection is not available for alias volumes.

Menu path

Real-time manager → Configure storage → zSeries → Volumes – zSeries → Select a volume → Select Action: Advanced Operations → Go

Fields**Restore access**

The default value reflects the state of the volume.

- **Unfence Volume** — If the logical volume is in the segment fault or rank repaired data state, the unfence volume function is accepted and causes any indications associated with these conditions to be reset. Data on the logical volume may have been lost. The data state is updated to reflect the current condition of the logical volume after resetting these conditions. Normally, the data state should change to normal, pinned, or read-only. If the operation is accepted repeatedly, but does not result in an online access state, the logical volume should be deleted and reconfigured if still required.

Note: A confirmation message indicates the selected operation and consequence.

View status button

When this button is selected, the status table is displayed.

zSeries volumes — Define address allocation policy

Use this page to define a default addressing allocation policy for zSeries volumes created in the Define base volume properties page.

Menu path

Real-time manager or Simulated manager → Configure storage → zSeries → Volumes – zSeries → Select Action: Define Address Allocation Policy → Go

Fields

Base start address

The default is enabled at 0. This value is user defined and can be from 0 to 255.

Ascending / Descending

The default is enabled, ascending.

zSeries volumes — Properties (real-time only)

Use this page to view and work with zSeries volume properties.

Menu path

Real-time manager → Configure storage → zSeries → Volumes – zSeries → Select a volume → Select Action: Properties → Go

Fields

Nickname

The nickname defined in the associated Create or Modify wizard.

Device MTM

The machine type and model number reported for the logical volume on the interface type associated with its data type. Set to one of the following values:

- 3380.002
- 3380.003
- 3390.003
- 3390.009
- 3390.100

Volume serial number

The count-key-data volume serial number. This number reflects the contents of the first six

zSeries volumes — Status (real-time only)

Use this page to view details regarding the state or status of the zSeries volumes.

Note: Status is not available for alias volumes.

Menu path

Real-time manager → Configure storage → zSeries → Volumes – zSeries → Select a volume → Select Action: Status → Go

Fields

Access state

The current state:

- Online — The logical volume is accessible to a host.
- Fenced — The logical volume is in the volume fenced state and is not accessible to the host.

Data state

The current state:

- Normal — None of the other data states apply. The access state is online.
- Pinned — The read-only, inaccessible, rank failed, rank repairing, and rank repaired data states do not apply and the logical volume has one or more pinned non-retryable tracks. The access state is Online. The track identifiers of any data logical tracks that are pinned non-retryable on the logical volume are available through the Query Pinned Tracks function of the logical volume object. Pinned tracks may be discarded using the Discard Pinned Tracks function.
- Read Only — The inaccessible, rank failed, rank repairing, and rank repaired data states do not apply and the logical volume is read only because one or more extents on the logical volume are on a rank in the read only data state. The access state is Online.
- Inaccessible — The rank failed, rank repairing, and rank repaired data states do not apply and one or more extents associated with the logical volume are on a rank that is in the inaccessible data state. The access state is Fenced.
- Rank Failed — The access state is Fenced. The data state transitions to rank repairing if the rank transitions to the rank repairing state through use of the repair array function.
- Rank Repairing — The rank failed data state does not apply and one or more extents associated with the logical volume are on ranks in the repairing data state. The access state is Fenced.
- Rank Repaired — The rank failed and rank repairing data states do not apply and one or more extents associated with the logical volume are on ranks that were in the repairing state, but are not in the repairing state now. The access state is Fenced. The condition may be cleared through Restore access (Unfence volume) function.

Configuration state

The current state:

- Normal — There are no logical volume configuration operations in progress.
- Configuring — The logical volume is in the process of being configured for the first time.
- Reconfiguring — The logical volume is in the process of allocating or deallocating extents due to a modification of the requested capacity attribute after object creation.
- Deconfiguring — The logical volume is in the process of being deleted.
- Configuration Error — The initial configuration did not complete successfully.

Note: The configuration error state indicates that the initial configuration of the volume did not complete successfully. If one or more of the configured volumes displays the configuration error state, you must delete each one. You can recreate them later.

Chapter 9. Planning reference

These topics provide reference information for the various aspects of planning for the DS6000 storage unit.

Delivery requirements

This topic provides reference for the delivery requirements of your storage units.

Physical location requirements

These topics provide the physical space requirements for the site where you install your storage unit.

Service clearance requirements

The service clearance area is the area around the storage unit that IBM service representatives need to service the unit.

For DS6000 models, IBM services representatives must open the front and rear covers to service the unit. Use the following minimum service clearances. (These dimensions are also shown on Figure 2 on page 258.)

- For the front of the unit, allow a minimum of 121.9 cm (48 in.) for the service clearance.
- For the rear of the unit, allow a minimum of 76.2 cm (30 in.) for the service clearance.
- For the sides of the unit, allow a minimum of 5.1 cm (2 in.) for the service clearance.

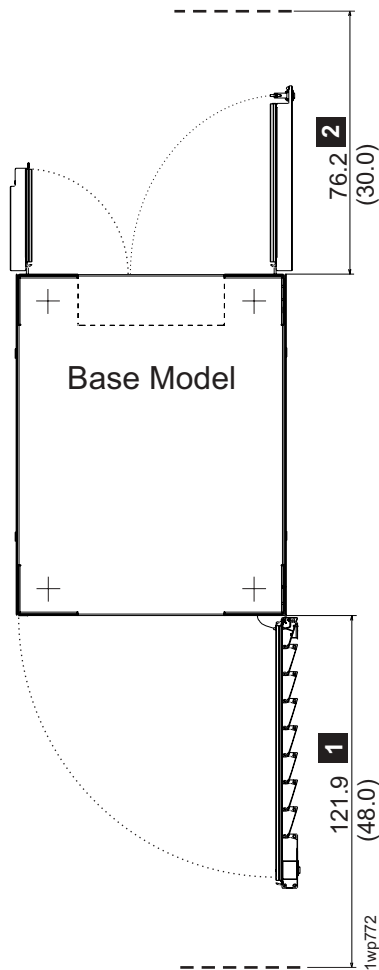


Figure 2. Service clearance requirements

Unlike weight distribution areas that are required to handle floor loading, keep in mind that service clearances of adjacent unrelated storage units can overlap.

Note: The terms *service clearance* and *weight distribution area* are often confused with each other. The service clearance is the area that is required to open the service covers and to pull out components for servicing. The weight distribution area is the area that is required to distribute the weight of the storage unit.

Power requirements

These topics provide information about the power requirements at the site where your storage unit is installed.

Power outlet requirements

Plan for the required power outlets when planning for the installation of your storage units.

The following power outlets are required:

- Two independent power outlets for the two DS6000 power line cords needed by each base model and expansion model.

Important: To eliminate a single point of failure, the outlets must be independent. This means that each outlet must use a separate power source and each power source must have its own wall circuit breaker.

- Two outlets that are within 3.1 m (10 ft.) of the external management console. Typically, these outlets will be in a rack that you provide.

Input voltage requirements

When you plan for the power requirements of the DS6000, consider the input voltage requirements.

Table 6 provides the input voltages and frequencies that the DS6000 storage units support. Inputs are balanced three phase.

Note: The DS6000 storage unit can support voltages that range from 200 V ac to 480 V ac nominal (180 V ac to 508 V ac).

Table 6. DS6000 input voltages and frequencies

Characteristic	Low Voltage (Feature 9090)	High voltage feature (Feature 9091)
Nominal input voltages	200, 208, 220, or 240 RMS V ac	380, 400, 415, or 480 RMS V ac
Minimum input voltage	180 RMS V ac	333 RMS V ac
Maximum input voltage	264 RMS V ac	508 RMS V ac
Nominal input current (3-ph)	30 Amps	15 Amps
Customer wall breaker rating (3-ph)	50 - 60 Amps	30 Amps
Steady-state input frequencies	50 \pm 3 or 60 \pm 3.0 Hz	50 \pm 3 or 60 \pm 3.0 Hz
PLD input frequencies (<10 seconds)	50 \pm 3 or 60 \pm 3.0 Hz	50 \pm 3 or 60 \pm 3.0 Hz

Fans and air intake areas

The DS6000 models provide air circulation through various fans throughout the frame. You must maintain the correct operating environment requirements for your models at each air intake location.

Operating environment requirements

You must meet specific operating environment requirements at all the air intake locations of your models.

The operating points vary depending on the state of the model. The models can be in the following states:

- Powered on
- Powered off
- In storage

Powered on

Plan for the DS6000 operating ranges and recommended operating points when the storage unit is on.

Table 7 provides the operating ranges for your storage unit when the power is on.

Table 7. Operating extremes with the power on

Altitude	0 - 2133 m (0 - 7000 ft)
Dry bulb temperature	16 - 32°C (60 - 90°F)
Relative humidity	20 - 80%
Wet bulb temperature (maximum)	23°C (73°F)

Table 8 provides the operating points that IBM recommends for your storage unit with the power on.

Table 8. Recommended operating points with the power on

Temperature	22°C (72°F)
Relative humidity	45%

Table 9 provides the operating ranges that IBM recommends for a storage unit with the power on.

Table 9. Recommended operating ranges with the power on

Temperature	20 - 25°C (68 - 77°F)
Relative humidity	40 - 50%

Powered off

Plan for the required DS6000 temperature and humidity ranges when the storage unit is off.

Table 10 provides the temperatures and humidity requirements for your storage unit when the power is off.

Table 10. Temperatures and humidity with the power off

Temperature	10 - 43°C (50 - 110°F)
Relative humidity	8 - 80%
Wet bulb temperature (maximum)	27°C (80°F)

In storage

Plan for the required DS6000 temperature and humidity ranges when the storage unit is in storage.

Table 11 provides the temperatures and humidity requirements for storing your storage unit.

Table 11. Temperatures and humidity while in storage

Temperature	1 - 60°C (34 - 140°F)
Relative humidity	5 - 80%

Table 11. Temperatures and humidity while in storage (continued)

Wet bulb temperature (maximum)	29°C (84°F)
--------------------------------	-------------

IBM-provided DS6000 equipment and documents

These topics list the main equipment and documents that IBM ships with your DS6000 models.

The equipment that you receive can be grouped as follows:

- Components that must stay with the shipment because they are needed for installation
- Components that are for customer use
- Components that must stay with the storage unit after installation because they are needed by service representatives

Note: These lists are not intended to be a comprehensive lists. They describe only the main shipped components.

Customer components

IBM ships DS6000 media and documents that are intended for you to keep.

You can keep the following items at your desk or any other convenient location. They do not need to be located near the storage unit.

- **IBM Agreement for Licensed Machine Code (LMC)**
Read this LMC agreement to understand IBM DS6000 licensing policies.
- **Warranty forms**
IBM ships the following warranty forms. Keep these warranties in a safe place.
 - Statement of Limited Warranty
 - Machine Specific Warranty Information
 - Other important warranty information
- **DS6000 customer publications CD**
This CD includes a softcopy of the DS6000 customer publications.

Service components

IBM ships service-related media and documents with your DS6000 shipment.

Keep the following components with your storage unit so that IBM service representatives can use them when they service your storage unit.

-
- **Service media**
Your delivery includes the following media for IBM service representatives to use:
 - **Operating system media**
 - **Management console media:**
 - Management console critical backup CDs
 - Dump, trace, statesave CDs, which IBM service representatives use for extracting statesave information during service
 - DS6000 customer publications CD

- A program temporary fix (PTF) CD for the operating system
- Service documents CD, which includes the following documentation: DS6000 service guides, DS6000 parts catalog, and the DS6000 customer publications

Chapter 10. Parallel access volumes

Parallel access volume requirements, guidelines, and definitions.

The following topics provide information about parallel access volume requirements for control unit image and device naming, and input/output configuration.

Overview of the input/output configuration program for the DS6000

The input/output configuration program provides the information needed for the DS6000 when handling PAVs.

The output that the input/output configuration program (IOCP) generates, contains the I/O definition for the channel subsystem of an S/390 or zSeries host. It is not used as input to the I/O definition for the OS/390®, z/OS®, VM, z/VM, or VSE operating system. Therefore, you do not need to distinguish between bases and alias devices in the input to IOCP. However, doing so provides an accurate representation of the I/O configuration.

The OS/390 and z/OS operating systems require that the input/output definition file (IODF) that the hardware configuration definition (HCD) creates, specifies base and alias devices. The OS/390 and z/OS operating system dynamically discover which base and alias devices are associated with each other. HCD invokes IOCP to build an IOCDS that identifies the I/O definition for the host processor.

The VM, z/VM, and VSE operating systems dynamically discover which devices are bases and aliases and which are associated with each other. The VM and z/VM operating systems support PAVs for guest usage.

An IOCP example

The following is an IOCP example that defines FICON channel path IDs that you have attached to a FICON director. This example uses the storage unit machine number, 1750. HCD users can use the information in the following IOCP example to determine how to define a storage unit to HCD.

```

*****
*
*   DEFINE FICON FCPIDS
*
*****
      CHPID PATH=(70),PARTITION=(HOST1),SWITCH=50,TYPE=FC
      CHPID PATH=(71),PARTITION=(HOST1),SWITCH=50,TYPE=FC
      CHPID PATH=(72),PARTITION=(HOST1),SWITCH=51,TYPE=FC
      CHPID PATH=(73),PARTITION=(HOST1),SWITCH=51,TYPE=FC
*****
*   DEFINE 1750-511 LOGICAL CONTROL UNIT 0
*
*****
      CNTLUNIT CUNUMBR=7000,PATH=(70,71,72,73),UNITADD=((00,256)), *
      LINK=(24,2D,34,3D),CUADD=0,UNIT=1750
*****
*   DEFINE 3390-9 BASE AND ALIASES ADDRESS ON LOGICAL CONTROL UNIT 0
*
*   16 BASE ADDRESS, 3 ALIASES PER BASE
*****
      IODEVICE ADDRESS=(9000,016),CUNUMBR=(7000),STADET=Y,UNIT=3390B
      IODEVICE ADDRESS=(90D0,048),CUNUMBR=(7000),STADET=Y,UNIT=3390A
*****

```

```

*   DEFINE 1750-511 LOGICAL CONTROL UNIT 1
*
*****
      CNTLUNIT CUNUMBR=7001,PATH=(70,71,72,73),UNITADD=((00,128)), *
      LINK=(24,2D,34,3D),CUADD=1,UNIT=1750
*****
*   DEFINE 3390-9 BASE AND ALIASES ADDRESS ON LOGICAL CONTROL UNIT 1
*
*   16 BASE ADDRESS, 3 ALIASES PER BASE
*****
      IODEVICE ADDRESS=(9100,016),CUNUMBR=(7001),STADET=Y,UNIT=3390B
      IODEVICE ADDRESS=(9150,048),CUNUMBR=(7001),STADET=Y,UNIT=3390A
*****

```

```

*****
*   DEFINE 1750-511 LOGICAL CONTROL UNIT 2
*
*****
      CNTLUNIT CUNUMBR=7002,PATH=(70,71,72,73),UNITADD=((00,256)), *
      LINK=(24,2D,34,3D),CUADD=2,UNIT=1750
*****
*   DEFINE 3390-3 BASE AND ALIASES ADDRESS ON LOGICAL CONTROL UNIT 2
*
*   64 BASE ADDRESS, 3 ALIASES PER BASE
*****
      IODEVICE ADDRESS=(9200,064),CUNUMBR=(7002),STADET=Y,UNIT=3390B
      IODEVICE ADDRESS=(9240,192),CUNUMBR=(7002),STADET=Y,UNIT=3390A
*****

```

```

*   DEFINE 1750-511 LOGICAL CONTROL UNIT 3
*
*****
      CNTLUNIT CUNUMBR=7003,PATH=(70,71,72,73),UNITADD=((00,256)), *
      LINK=(24,2D,34,3D),CUADD=3,UNIT=1750
*****
*   DEFINE 3390-3 BASE AND ALIASES ADDRESS ON LOGICAL CONTROL UNIT 3
*
*   64 BASE ADDRESS, 3 ALIASES PER BASE
*****
      IODEVICE ADDRESS=(9300,064),CUNUMBR=(7003),STADET=Y,UNIT=3390B
      IODEVICE ADDRESS=(9340,192),CUNUMBR=(7003),STADET=Y,UNIT=3390A
*****

```

```

* DEFINE 1750-511 LOGICAL CONTROL UNIT 4
*
*****
CNTLUNIT CUNUMBR=7004,PATH=(70,71,72,73),UNITADD=((00,256)),
LINK=(24,2D,34,3D),CUADD=4,UNIT=1750
*****
* DEFINE 3390-3 BASE AND ALIASES ADDRESS ON LOGICAL CONTROL UNIT 4
* 32 BASE ADDRESS, 7 ALIASES PER BASE
*
*****
IODEVICE ADDRESS=(9400,032),CUNUMBR=(7004),STADET=Y,UNIT=3390B
IODEVICE ADDRESS=(9420,224),CUNUMBR=(7004),STADET=Y,UNIT=3390A
*****

```

```

* DEFINE 1750-511 LOGICAL CONTROL UNIT 5
*
*****
CNTLUNIT CUNUMBR=7005,PATH=(70,71,72,73),UNITADD=((00,256)),
LINK=(24,2D,34,3D),CUADD=5,UNIT=2107
*****
* DEFINE 3390-3 BASE AND ALIASES ADDRESS ON LOGICAL CONTROL UNIT 5
* 32 BASE ADDRESS, 3 ALIASES PER BASE
*
*****
IODEVICE ADDRESS=(9500,032),CUNUMBR=(7005),STADET=Y,UNIT=3390B
IODEVICE ADDRESS=(95A0,096),CUNUMBR=(7005),STADET=Y,UNIT=3390A
*****

```

Guidelines for defining the logical control unit for the DS6000

You can use these guidelines to define the logical control unit for the DS6000.

You need the following information in order to define the logical control unit (LCU):

- Which devices (arrays) are 3380 format, and which are 3390 format
- Which devices have PAVs, and which do not
- How many devices you define to a given LCU

Notes:

1. An LCU is equivalent to a logical subsystem (LSS). Like an LSS, an LCU can have a maximum of 256 logical devices or volumes.
2. Every device has a single unit address (in range 00 - FF).
3. An LCU can manage a maximum of 256 devices and identifies a device based on the unit address.

Update the I/O configuration with the appropriate devices, using the following guidelines:

- Three device types are possible for 3380: 3380, 3380B, and 3380A.
- Three device types are possible for 3390: 3390, 3390B, and 3390A.
- Any non-PAV 3380 is a 3380, regardless of model.
- Any non-PAV 3390 is a 3390, regardless of model.
- Any 3380 PAV base is a 3380B.
- Any 3390 PAV base is a 3390B.
- Any alias of a 3380B, regardless of model, is a 3380A.
- Any alias of a 3390B, regardless of model, is a 3390A.

- Only define the actual base and alias devices to IOCP or HCD to avoid unnecessary definition of processor subchannels.
- Only define the unit address range to IOCP or HCD as necessary for the installed devices in an LCU (64, 128, or 256). Defining the unit address range enables you to put more LCUs and devices on a channel path.

IBM recommends that you document the configuration you define for the DS6000. With the exception of the 3380 and 3390 models, the DS6000 configuration and the IOCP input must match.

Note: The CU device is a 1750 for any DS6000 device type. In HCD you can use 3990 as a control-unit type for 3380 and 3390 devices. However, you must use 1750 as the control-unit type for 3380B, 3380A, 3390B, and 3390A devices.

PAV requirements for the DS6000

Parallel access volumes (PAVs) can provide significant performance enhancements in S/390 and zSeries environments by enabling simultaneous processing for multiple I/O operations to the same logical volume.

The following list identifies the requirements for using PAVs on the DS6000:

- The configuration that you create on the DS6000 must match the configuration that you create using IOCP or HCD.
- The CU image numbers that exist on the DS6000 depend on what logical subsystems (LSSs) you configured:
 - The CU image addresses are 0 - 254. For IOCP and HCD, the CU addresses are hex 00 - FE.
 - Logical subsystem (LSS) addresses are 0 - 254.

The configuration might only have a subset of these addresses, and the subset might not be contiguous.

You need to know what CU images you created before you can update the I/O configuration. Your host system uses the updated I/O information in order to know what CU images are on the DS6000.

Chapter 11. DS6000 parts catalog

The information contained in this parts catalog helps you to identify the resources that you need to order and provides additional information that is required to order those resources.

Figure 3 provides a graphical representation of a DS6000 storage unit. Table 12 provides a part number, unit type, and description for each of the resources that are shown in Figure 3. The numbers that identify the resources in Figure 3 are reflected in the first column of the table.

Notes:

1. Optional part numbers might be provided when you order parts from this table.
2. Version 2 part numbers indicate parts that are eligible for use in European Union member states.

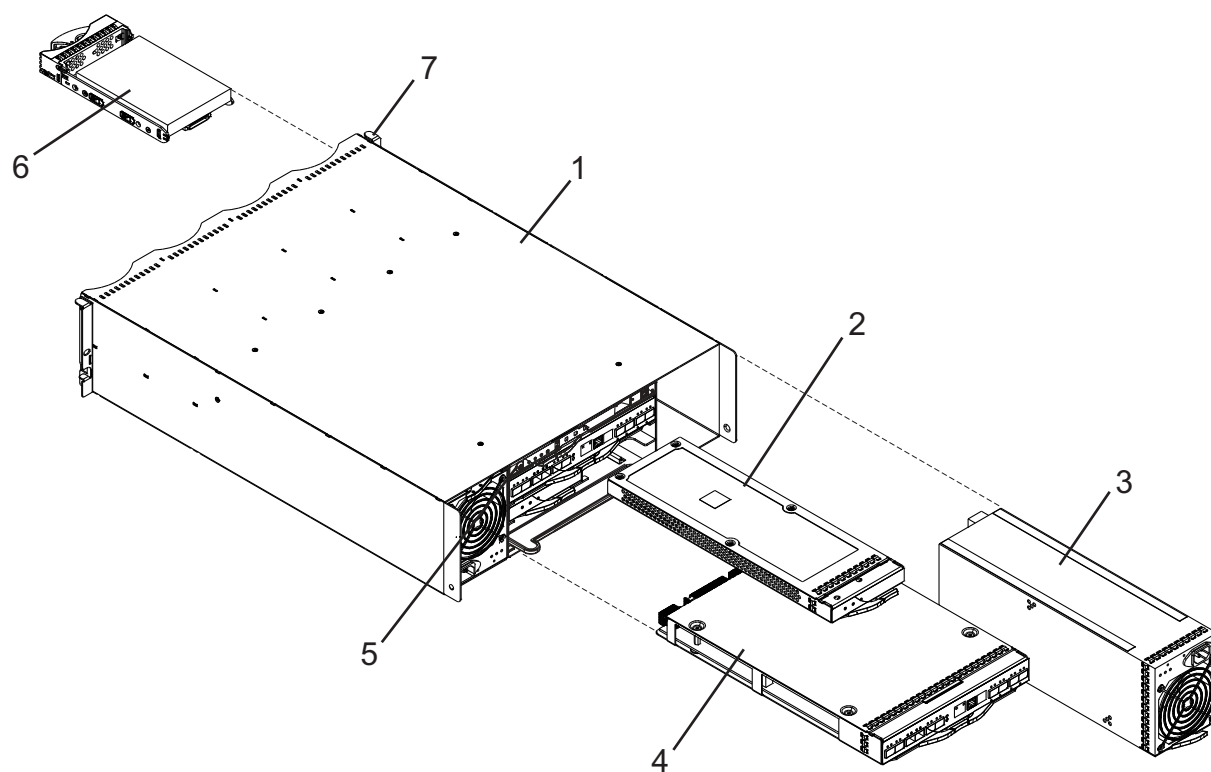


Figure 3. DS6000 assembly

Table 12. Part numbers and descriptions

Graphic index	Version 1 part number	Version 2 part number	Units	Description
1	N/A	23R0739	AR	Enclosure (This includes only the rear operator panel.)
2	23R0651	23R0247	AR	Battery Backup Unit

Table 12. Part numbers and descriptions (continued)

Graphic index	Version 1 part number	Version 2 part number	Units	Description
3	22R5341	23R1033	AR	Power Supply
4	23R0470	23R0471	AR	Server Enclosure Processor Card
4	23R0472	23R0473	AR	Expansion Enclosure Processor Card,
5	23R0164	22R6305	AR	Rear Operator Panel
6	22R5489	23R0829	AR	Disk Drive Module, 146 GB 10K FC
6	22R5492	23R0830	AR	Disk Drive Module, 146 GB 15K FC
6	22R5491	23R0831	AR	Disk Drive Module, 300 GB 10K FC
6	22R5488	23R0828	AR	Disk Drive Module, 73 GB 15K FC
6	N/A	22R6341	AR	Disk Drive Module, 500 GB 7.2K FATA
7	24R1050	22R6470	AR	Front Display Panel
	N/A	23R1097	AR	Right Front Bezel
	77P0418	77P6599	AR	SFP, Shortwave
	77P0498	77P4558	AR	SFP, Longwave
2	N/A	22R5847	AR	Battery Backup Unit blank
6	N/A	22R2811	AR	Disk Drive Module blank
	N/A	22R6469	AR	System Service Card
	11P3878	12R9557	AR	Cable, Host Attachment or Interenclosure - 2 meters, 50 micron, LC-LC
	11P3879	12R9558	AR	Cable, Host Attachment or Interenclosure - 7 meters, 50 micron, LC-LC
	11P3882	12R9561	AR	Cable, Host Attachment or Interenclosure - 31 meters, 50 micron, LC-LC
	11P1983	12R9544	AR	Cable, Host Attachment - 2 meters, 9 micron, LC-LC
	11P1984	12R9545	AR	Cable, Host Attachment - 7 meters, 9 micron, LC-LC
	11P1987	12R9548	AR	Cable, Host Attachment - 31 meters, 9 micron, LC-LC
	11P1373	12R9321	AR	Cable, Host Attachment Interposer - 2 meters 50 microns, LC-SC
	05N4808	12R9320	AR	Cable, Host Attachment Interposer - 2 meters 9 microns, LC-SC
	18P5056	23R0357	AR	Cable, Ethernet - 13 meters
	38P7913	23R0356	AR	Cable, Ethernet Crossover - 3 meters
	22R1337	23R0354	AR	Cable, Serial Conversion - 3.6 meters

Table 12. Part numbers and descriptions (continued)

Graphic index	Version 1 part number	Version 2 part number	Units	Description
	6952300	39M5081	AR	Cable, Power Cord - 2.8 meters, 10 amperes, 125 volts, standard outlet one end, IEC connector one end - United States, Canada, Antigua, St. Lucia, St. Vincent, Dominica, Grenadines, Grenada, Aruba, Bahamas, Barbados, Belize, Bermuda, Bolivia, Cayman Islands, Columbia, Costa Rica, Dominican Republic, El Salvador, Ecuador, Guatemala, Guyana, Haiti, Honduras, Jamaica, Mexico, Panama, Peru, Suriname, Trinidad, Venezuela, Brazil, Japan, Korea, Nicaragua, Philippines, Vietnam, Albania, Eritrea, Saudi Arabia
	N/A	39M5247	AR	Cable, Power Cord - 2.8 meters, 10 amperes, 125 volts - Taiwan
	13F9979	39M5123	AR	Cable, Power Cord - 2.8 meters, 10 amperes, 250 volts - France, Afghanistan, Netherlands Antilles, French Polynesia Guinea, Indonesia, Armenia, Latvia, Angola, Austria, Belgium, Luxembourg, Belarus, Bosnia, Botswana, Bulgaria, Cameroon, Central Africa Republic, Czech Republic, Congo, Egypt, Finland, Germany, Greece, Hungary, Iceland, Kazakhstan, Kyrgyzstan, Lebanon, Liberia, Macedonia, Mali, Mauritania, Moldova, Morocco, Mozambique, Netherlands, Norway, Poland, Portugal, Romania, Rwanda, Sao Tome and Principe, Senegal, Serbia, Slovenia, Slovakia, Spain, Sudan, Swaziland, Sweden, Syria, Arab Republic, Tunisia, Turkey, Ukraine, Russia, Uzbekistan, Zaire, Zimbabwe, Burundi, Cape Verde Islands, Estonia, Lesotho, Liechtenstein, Republic of Djibouti
	13F9997	39M5130	AR	Cable, Power Cord - 2.8 meters, 10 amperes, 250 volts - Denmark
	14F0033	39M5151	AR	Cable, Power Cord - 2.8 meters, 10 amperes, 250 volts - United Kingdom, Abu Dhabi, Brunei, Fiji, Hong Kong S.A.R. of the PRC, Macao S.A.R. of the PRC, Malaysia, Singapore, Bahrain, Cyprus, Gambia, Ghana, Iraq, Ireland, Jordan, Kenya, Kuwait, Malawi, Nepal, North Yemen, Nigeria, Oman, Qatar, Sierra Leone, Tanzania, Uganda, United Arab Emirates, Zambia
	14F0087	39M5172	AR	Cable, Power Cord - 2.8 meters, 10 amperes, 250 volts - Israel

Table 12. Part numbers and descriptions (continued)

Graphic index	Version 1 part number	Version 2 part number	Units	Description
	14F0051	39M5158	AR	Cable, Power Cord - 2.8 meters, 10 amperes, 250 volts - Switzerland
	14F0015	39M5144	AR	Cable, Power Cord - 2.8 meters, 10 amperes, 250 volts - South Africa, Bangladesh, Myanmar, Sri Lanka, Pakistan, India
	14F0069	39M5165	AR	Cable, Power Cord - 2.8 meters, 10 amperes, 250 volts - Italy, Chile, Ethiopia, Libya, Malta, Somalia
	N/A	39M5102	AR	Cable, Power Cord - 2.8 meters, 10 amperes, 250 volts - Australia, New Zealand
	1838574	39M5095	AR	Cable, Power Cord - 2.8 meters, 10 amperes, 250 volts - Thailand
	36L8880	39M5068	AR	Cable, Power Cord - 2.8 meters, 10 amperes, 250 volts - Uruguay, Argentina, Paraguay
	02K0546	39M5206	AR	Cable, Power Cord - 2.8 meters, 10 amperes, 250 volts - People's Republic of China
	6952301	39M5080	AR	Cable, Power Cord - 1.8 meters, 10 amperes, 125 volts - United States (Chicago)
	N/A	22R2939	AR	Rack Mounting Rail Kit
	2759370	23R0899	AR	ESD Wrist Strap Assembly - ESD wrist strap, cord, alligator clip
	N/A	39M5233	AR	Cable, Power Cord - 2.8 meters, 15 amperes, 100-127 volts - Brazil
	N/A	39M5226	AR	Cable, Power Cord - 2.8 meters, 16 amperes, 250 volts -India
	N/A	39M5199	AR	Cable, Power Cord - 2.8 meters, 15 amperes, 125 volts -Japan
	N/A	39M5219	AR	Cable, Power Cord - 2.8 meters, 15 amperes, 250 volts - Korea
	80P5336	03N7035	AR	Modem - 100/115 volts - United States
	03N5994	03N7036	AR	Modem - 250 volts - Australia
	80P3788	03N7037	AR	Modem - 250 volts - Europe
	80P3790	03N7038	AR	Modem - 230 volts - United Kingdom
	80P5337	03N7039	AR	Modem - 230 volts - China
	22R5198	23R0355	AR	USB to Serial Cable for Modem
	05H3299	23R3164	AR	RS232 interface cable for Modem

Chapter 12. Reviewing the effects of a service action

This section contains potential impacts of performing removal and replacement procedures on the resources contained within your storage unit.

Review the effects of a service action before you perform service on any of the following resources:

- Disk drive module
- Front display panel
- Rear operator panel
- Power supply
- Processor card
- Battery backup unit
- Fiber optic cables and SFPs
- Power cable

Service effect for the battery backup unit

Before you remove a battery backup unit, review the possible effects that a battery backup unit service action can have on your storage unit.

Removing and replacing a battery backup unit might result in the following effects:

- While a battery backup unit is out of the enclosure slot, the enclosure is more susceptible to single point of failure errors.
- Removing a battery backup unit that does not have a lit error indicator results in a processor card failover.
- Removing the battery backup unit might result in loss of access to improperly configured host systems.
- Removing a battery backup unit without immediate replacement by either another battery backup unit or a battery backup unit blank might result in the overheating of the enclosure.
- The storage unit might experience performance degradation while a battery backup unit is missing from its slot.

Service effect for a DDM

Before you remove a disk drive module, review the possible effects that a DDM service action can have on your storage unit.

Removing and replacing a disk drive module (DDM) might result in the following effects:

- Removing a DDM that does not have the error indicator lit might cause a lengthy rebuild operation. The risk of losing data is increased during this rebuild operation.
- You might need to rebuild your array.
- If more than one disk drive module is faulty or missing, you will lose the data on that array.

Service effect for the power supply

Before you remove a power supply, review the possible effects that a power supply service action can have on your storage unit.

Removing and replacing a power supply might result in the following effects:

- Overheating has the potential to shut down the storage unit.
- Access to data is lost if both power supplies are faulty or missing.
- If the second power supply fails and the first power supply is not present in the enclosure, the enclosure loses power and you will lose access to all data.
- If you are replacing the power supply in the server enclosure and the second power supply fails, the server enclosure and all attached expansion enclosures lose power and you will lose access to all data within those enclosures.

Service effects for the processor card

Before you remove a processor card, review the possible effects that a processor card service action can have on your storage unit.

Removing and replacing a processor card might result in the following effects:

- Removing a processor card that does not have a solid amber error indicator lit causes performance degradation and loss of access to data.

Note: Removing a processor card that has a solid amber error indicator does not have any effect on the operation of the storage unit.

- If, while the first processor card is removed, the second processor card fails, the enclosure will lose configuration settings and access to the data. Data loss might occur if certain processes were occurring at the point of failure.
- Removing a processor card will cause loss of access to host systems if multiple paths from the storage unit to the hosts are not configured.

Service effect for the front display panel

Before you remove a front display panel, review the possible effects that a front display panel service action can have on your storage unit.

System alerts and LED indicators cannot display properly while the front display panel is removed or nonfunctional.

Service effects for the rear operator panel

Before you remove a rear operator panel, review the possible effects that a rear operator panel service action can have on your storage unit.

Removing and replacing a rear operator panel might result in the following effects:

- System alerts and LED indicators cannot display properly while the rear operator panel is removed or nonfunctional.
- Power-cycling without the rear operator panel will cause an enclosure to have a default serial number that no longer applies to the enclosure.

Service effects for cables and SFPs

Before removing a cable or SFP, review the possible effects that a cable or SFP service action can have on your storage unit.

Removing and replacing cables and SFPs might result in the following effects:

- Disconnecting a host cable might result in loss of access to data if multiple paths from the host to the storage unit have not been configured.
- Disconnecting an Ethernet cable might result in loss of the ability to query and configure the storage unit.
- Disconnecting a cable between enclosures might result in loss of access to the data in all of the subsequently attached storage enclosures.

Service effects for the power cable

Before removing a power cable, review the possible effects that a power cable service action can have on your storage unit.

Removing and replacing an ac power cable might result in the following effects:

- If you disconnect the ac power cable, it can cause a fault to be reported by the power supply.
- If the second power supply fails while the first power supply is not receiving power, the enclosure loses power and you can lose access to all data.

Chapter 13. Related information

The tables in this section list and describe the following publications:

- The publications that make up the IBM® System Storage™ DS6000 series library
- Other IBM publications that relate to the DS6000 series
- Non-IBM publications that relate to the DS6000 series

See “Ordering IBM publications” on page 280 for information about how to order publications in the IBM System Storage DS6000 series publication library. See “How to send your comments” on page xi for information about how to send comments about the publications.

DS6000 series library

These customer publications make up the DS6000 series library.

Unless otherwise noted, these publications are available in Adobe portable document format (PDF) on a compact disc (CD) that comes with the storage unit. If you need additional copies of this CD, the order number is SK2T-8825. These publications are also available as PDF files by clicking on the **Documentation link** on the following Web site:

<http://www-1.ibm.com/servers/storage/support/disk>

See “Ordering IBM publications” on page 280 for information about ordering these and other IBM publications.

Title	Description	Order Number
<i>IBM System Storage DS: Command-Line Interface User's Guide</i>	This guide describes the commands that you can use from the command-line interface (CLI) for managing your DS6000 configuration and Copy Services relationships. The CLI application provides a set of commands that you can use to write customized scripts for a host system. The scripts initiate predefined tasks in a Copy Services server application. You can use the CLI commands to indirectly control Remote Mirror and Copy and FlashCopy configuration tasks within a Copy Services server group.	GC26-7681 (See Note.)
<i>IBM System Storage DS6000: Host Systems Attachment Guide</i>	This guide provides guidelines for attaching the DS6000 to your host system and for migrating to fibre-channel attachment from a small computer system interface.	GC26-7680 (See Note.)
<i>IBM System Storage DS6000: Introduction and Planning Guide</i>	This guide introduces the DS6000 product and lists the features you can order. It also provides guidelines for planning the installation and configuration of the storage unit.	GC26-7679
<i>IBM System Storage Multipath Subsystem Device Driver User's Guide</i>	This publication describes how to use the IBM Subsystem Device Driver (SDD) on open-systems hosts to enhance performance and availability on the DS6000. SDD creates single devices (vpaths) that consolidate redundant paths for logical unit numbers. SDD permits applications to run without interruption when path errors occur. It balances the workload across paths, and it transparently integrates with applications.	SC30-4096

Title	Description	Order Number
<i>IBM System Storage DS Application Programming Interface Reference</i>	This publication provides reference information for the IBM System Storage DS application programming interface (API) and provides instructions for installing the Common Information Model Agent, which implements the API.	GC35-0493
<i>IBM System Storage DS6000 Messages Reference</i>	This publication provides explanations of error, information, and warning messages that are issued from the DS6000 user interfaces.	GC26-7682
<i>IBM System Storage DS6000 Installation, Troubleshooting, and Recovery Guide</i>	This publication provides reference information for installing and troubleshooting the DS6000. It also discusses disaster recovery using Copy Services.	GC26-7678
<i>IBM System Storage DS6000 Quick Start Card</i>	This is a quick start guide for use in installing and configuring the DS6000 series.	GC26-7685
Note: No hardcopy book is produced for this publication. However, a PDF file is available from the following Web site: http://www-1.ibm.com/servers/storage/support/disk		

Other IBM publications

Other IBM publications contain additional information that is related to the DS product library.

The following list is divided into categories to help you find publications that are related to specific topics. Some of the publications are listed under more than one category. See “Ordering IBM publications” on page 280 for information about ordering these and other IBM publications.

Title	Description	Order Number
Data-copy services		
<i>z/OS DFSMS Advanced Copy Services</i>	This publication helps you understand and use IBM Advanced Copy Services functions. It describes three dynamic copy functions and several point-in-time copy functions. These functions provide backup and recovery of data if a disaster occurs to your data center. The dynamic copy functions are peer-to-peer remote copy, extended remote copy, and coupled extended remote copy. Collectively, these functions are known as remote copy. FlashCopy, SnapShot, and concurrent copy are the point-in-time copy functions.	SC35-0428
<i>IBM Enterprise Storage Server</i>	This publication, from the IBM International Technical Support Organization, introduces the Enterprise Storage Server and provides an understanding of its benefits. It also describes in detail the architecture, hardware, and functions, including the advanced copy functions, of the Enterprise Storage Server.	SG24-5465
<i>Implementing Copy Services On S/390</i>	This publication, from the IBM International Technical Support Organization, tells you how to install, customize, and configure Copy Services on an Enterprise Storage Server that is attached to an S/390 or zSeries host system. Copy Services functions include peer-to-peer remote copy (PPRC), extended remote copy (XRC), FlashCopy®, and concurrent copy. This publication describes the functions, prerequisites, and corequisites and describes how to implement each function into your environment.	SG24-5680

Title	Description	Order Number
<i>IBM TotalStorage ESS Implementing Copy Services in an Open Environment</i>	This publication, from the IBM International Technical Support Organization, tells you how to install, customize, and configure Copy Services on UNIX, Windows NT®, Windows 2000, Sun Solaris, HP-UX, Tru64, OpenVMS, and iSeries host systems. The Copy Services functions that are described include peer-to-peer remote copy (PPRC) and FlashCopy. This publication describes the functions and shows you how to implement them into your environment. It also shows you how to implement these functions in a high-availability cluster multiprocessing environment.	SG24-5757
Fibre channel		
<i>Fibre Channel Connection (FICON) I/O Interface: Physical Layer</i>	This publication provides information about the fibre-channel I/O interface. This book is also available as a PDF file from the following Web site: http://www.ibm.com/servers/resourcelink/	SA24-7172
<i>Fibre Transport Services (FTS): Physical and Configuration Planning Guide</i>	This publication provides information about fibre-optic and ESCON-trunking systems.	GA22-7234
<i>IBM SAN Fibre Channel Switch: 2109 Model S08 Installation and Service Guide</i>	This guide describes how to install and maintain the IBM SAN Fibre Channel Switch 2109 Model S08.	SC26-7350
<i>IBM SAN Fibre Channel Switch: 2109 Model S08 User's Guide</i>	This guide describes the IBM SAN Fibre Channel Switch and the IBM TotalStorage ESS Specialist. It provides information about the commands and how to manage the switch with Telnet and the Simple Network Management Protocol.	SC26-7349
<i>IBM SAN Fibre Channel Switch: 2109 Model S16 Installation and Service Guide</i>	This publication describes how to install and maintain the IBM SAN Fibre Channel Switch 2109 Model S16. It is intended for trained service representatives and service providers.	SC26-7352
<i>IBM SAN Fibre Channel Switch: 2109 Model S16 User's Guide</i>	This guide introduces the IBM SAN Fibre Channel Switch 2109 Model S16 and tells you how to manage and monitor the switch using zoning and how to manage the switch remotely.	SC26-7351
<i>Implementing Fibre Channel Attachment on the ESS</i>	This publication, from the IBM International Technical Support Organization, helps you install, tailor, and configure fibre-channel attachment of open-systems hosts to the Enterprise Storage Server. It provides you with a broad understanding of the procedures that are involved and describes the prerequisites and requirements. It also shows you how to implement fibre-channel attachment.	SG24-6113
Open-systems hosts		
<i>ESS Solutions for Open Systems Storage: Compaq AlphaServer, HP, and Sun</i>	This publication, from the IBM International Technical Support Organization, helps you install, tailor, and configure the Enterprise Storage Server when you attach Compaq AlphaServer (running Tru64 UNIX), HP, and Sun hosts. This book does not cover Compaq AlphaServer that is running the OpenVMS operating system. This book also focuses on the settings that are required to give optimal performance and on the settings for device driver levels. This book is for the experienced UNIX professional who has a broad understanding of storage concepts.	SG24-6119

Title	Description	Order Number
<i>IBM TotalStorage ESS Implementing Copy Services in an Open Environment</i>	This publication, from the IBM International Technical Support Organization, tells you how to install, customize, and configure Copy Services on UNIX or Windows 2000 host systems. The Copy Services functions that are described include peer-to-peer remote copy and FlashCopy. This publication describes the functions and shows you how to implement them into your environment. It also shows you how to implement these functions in a high-availability cluster multiprocessing environment.	SG24-5757
<i>Implementing Fibre Channel Attachment on the ESS</i>	This publication, from the IBM International Technical Support Organization, helps you install, tailor, and configure fibre-channel attachment of open-systems hosts to the Enterprise Storage Server. It gives you a broad understanding of the procedures that are involved and describes the prerequisites and requirements. It also shows you how to implement fibre-channel attachment.	SG24-6113
S/390 and zSeries hosts		
<i>Device Support Facilities: User's Guide and Reference</i>	This publication describes the IBM Device Support Facilities (ICKDSF) product that are used with IBM direct access storage device (DASD) subsystems. ICKDSF is a program that you can use to perform functions that are needed for the installation, the use, and the maintenance of IBM DASD. You can also use it to perform service functions, error detection, and media maintenance.	GC35-0033
<i>z/OS Advanced Copy Services</i>	This publication helps you understand and use IBM Advanced Copy Services functions. It describes three dynamic copy functions and several point-in-time copy functions. These functions provide backup and recovery of data if a disaster occurs to your data center. The dynamic copy functions are peer-to-peer remote copy, extended remote copy, and coupled extended remote copy. Collectively, these functions are known as remote copy. FlashCopy, SnapShot, and concurrent copy are the point-in-time copy functions.	SC35-0428
<i>DFSMS/MVS V1: Remote Copy Guide and Reference</i>	This publication provides guidelines for using remote copy functions with S/390 and zSeries hosts.	SC35-0169
<i>Fibre Transport Services (FTS): Physical and Configuration Planning Guide</i>	This publication provides information about fibre-optic and ESCON-trunking systems.	GA22-7234
<i>Implementing ESS Copy Services on S/390</i>	This publication, from the IBM International Technical Support Organization, tells you how to install, customize, and configure Copy Services on an Enterprise Storage Server that is attached to an S/390 or zSeries host system. Copy Services functions include peer-to-peer remote copy, extended remote copy, FlashCopy, and concurrent copy. This publication describes the functions, prerequisites, and corequisites and describes how to implement each function into your environment.	SG24-5680
<i>ES/9000, ES/3090: IOCP User Guide Volume A04</i>	This publication describes the Input/Output Configuration Program that supports the Enterprise Systems Connection (ESCON) architecture. It describes how to define, install, and configure the channels or channel paths, control units, and I/O devices on the ES/9000 processors and the IBM ES/3090 Processor Complex.	GC38-0097
<i>IOCP User's Guide, IBM e(logo)server zSeries 800 and 900</i>	This publication describes the Input/Output Configuration Program that supports the zSeries 800 and 900 servers. This publication is available in PDF format by accessing ResourceLink at the following Web site: www.ibm.com/servers/resourceink/	SB10-7029

Title	Description	Order Number
<i>IOCP User's Guide, IBM e(logo)server zSeries</i>	This publication describes the Input/Output Configuration Program that supports the zSeries server. This publication is available in PDF format by accessing ResourceLink at the following Web site: www.ibm.com/servers/resourceLink/	SB10-7037
<i>S/390: Input/Output Configuration Program User's Guide and ESCON Channel-to-Channel Reference</i>	This publication describes the Input/Output Configuration Program that supports ESCON architecture and the ESCON multiple image facility.	GC38-0401
<i>IBM z/OS Hardware Configuration Definition User's Guide</i>	This guide provides conceptual and procedural information to help you use the z/OS Hardware Configuration Definition (HCD) application. It also explains: <ul style="list-style-type: none">• How to migrate existing IOCP/MVSCP definitions• How to use HCD to dynamically activate a new configuration• How to resolve problems in conjunction with MVS/ESA HCD	SC33-7988
<i>OS/390: Hardware Configuration Definition User's Guide</i>	This guide provides detailed information about the input/output definition file and about how to configure parallel access volumes. This guide discusses how to use Hardware Configuration Definition for both OS/390® and z/OS V1R1.	SC28-1848
<i>OS/390 V2R10.0: MVS System Messages Volume 1 (ABA - ASA)</i>	This publication lists OS/390 MVS™ system messages ABA to ASA.	GC28-1784
<i>Using IBM 3390 Direct Access Storage in a VM Environment</i>	This publication provides device-specific information for the various models of the 3390 and describes methods you can use to manage storage efficiently using the VM operating system. It provides guidance on managing system performance, availability, and space through effective use of the direct access storage subsystem.	GG26-4575
<i>Using IBM 3390 Direct Access Storage in a VSE Environment</i>	This publication helps you use the 3390 in a VSE environment. It includes planning information for adding new 3390 units and instructions for installing devices, migrating data, and performing ongoing storage management activities.	GC26-4576
<i>Using IBM 3390 Direct Access Storage in an MVS Environment</i>	This publication helps you use the 3390 in an MVS environment. It includes device-specific information for the various models of the 3390 and illustrates techniques for more efficient storage management. It also offers guidance on managing system performance, availability, and space utilization through effective use of the direct access storage subsystem.	GC26-4574
<i>z/Architecture Principles of Operation</i>	This publication provides a detailed definition of the z/Architecture™. It is written as a reference for use primarily by assembler language programmers and describes each function at the level of detail needed to prepare an assembler language program that relies on a particular function. However, anyone concerned with the functional details of z/Architecture will find this publication useful.	SA22-7832
SAN		

Title	Description	Order Number
<i>IBM OS/390 Hardware Configuration Definition User's Guide</i>	This guide explains how to use the Hardware Configuration Data application to perform the following tasks: <ul style="list-style-type: none"> • Define new hardware configurations • View and modify existing hardware configurations • Activate configurations • Query supported hardware • Maintain input/output definition files (IODFs) • Compare two IODFs or compare an IODF with an actual configuration • Print reports of configurations • Create graphical reports of a configuration • Migrate existing configuration data 	SC28-1848
<i>IBM SAN Fibre Channel Switch: 2109 Model S08 Installation and Service Guide</i>	This guide describes how to install and maintain the IBM SAN Fibre Channel Switch 2109 Model S08.	SC26-7350
<i>IBM SAN Fibre Channel Switch: 2109 Model S08 User's Guide</i>	This guide describes the IBM SAN Fibre Channel Switch and the IBM TotalStorage ESS Specialist. It provides information about the commands and how to manage the switch with Telnet and the Simple Network Management Protocol (SNMP).	SC26-7349
<i>IBM SAN Fibre Channel Switch: 2109 Model S16 Installation and Service Guide</i>	This publication describes how to install and maintain the IBM SAN Fibre Channel Switch 2109 Model S16. It is intended for trained service representatives and service providers.	SC26-7352
<i>IBM SAN Fibre Channel Switch: 2109 Model S16 User's Guide</i>	This guide introduces the IBM SAN Fibre Channel Switch 2109 Model S16 and tells you how to manage and monitor the switch using zoning and how to manage the switch remotely.	SC26-7351
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Storage management		
<i>Device Support Facilities: User's Guide and Reference</i>	This publication describes the IBM Device Support Facilities (ICKDSF) product used with IBM direct access storage device (DASD) subsystems. ICKDSF is a program that you can use to perform functions that are needed for the installation, the use, and the maintenance of IBM DASD. You can also use it to perform service functions, error detection, and media maintenance.	GC35-0033
<i>IBM TotalStorage Solutions Handbook</i>	This handbook, from the IBM International Technical Support Organization, helps you understand what makes up enterprise storage management. The concepts include the key technologies that you must know and the IBM subsystems, software, and solutions that are available today. It also provides guidelines for implementing various enterprise storage administration tasks so that you can establish your own enterprise storage management environment.	SG24-5250

Ordering IBM publications

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<http://www.elink.ibm.link.ibm.com/public/applications/publications/cgibin/pbi.cgi>

Note: Open the Web site in a new browser window by right clicking on the link and selecting "Open in New Window."

Web sites

The following Web sites provide information about the IBM System Storage DS6000 series and other IBM storage products.

Type of Storage Information	Web Site
Concurrent Copy for S/390 and zSeries host systems	http://www.storage.ibm.com/software/sms/sdm/
Copy Services command-line interface (CLI)	http://www-1.ibm.com/servers/storage/support/software/cscli/
DS6000 Information Center	http://publib.boulder.ibm.com/infocenter/ds6000ic/index.jsp
DS6000 series publications	http://www-1.ibm.com/servers/storage/support/disk Click Documentation .
FlashCopy for S/390 and zSeries host systems	http://www.storage.ibm.com/software/sms/sdm/
Host system models, operating systems, and adapters that the storage unit supports	http://www.ibm.com/servers/storage/disk/ds6000/ Click Interoperability matrix .
IBM Disk Storage Feature Activation (DSFA)	http://www.ibm.com/storage/dsfa
IBM storage products	http://www.storage.ibm.com/
IBM System Storage DS6000 series	http://www-1.ibm.com/servers/storage/disk/ds6000
IBM version of the Java (JRE) that is often required for IBM products	http://www-106.ibm.com/developerworks/java/jdk/
Multiple Device Manager (MDM)	http://www.ibm.com/servers/storage/support/ Click Storage Virtualization .
Remote Mirror and Copy (formerly PPRC) for S/390 and zSeries host systems	http://www.storage.ibm.com/software/sms/sdm/
SAN fibre channel switches	http://www.ibm.com/storage/fcswitch/
Storage Area Network Gateway and Router	http://www-1.ibm.com/servers/storage/support/san/
Subsystem Device Driver (SDD)	http://www-03.ibm.com/servers/storage/support/software/sdd
Technical notes and product tips	http://www.ibm.com/servers/storage/support/disk/ds6800/ Click Technical notes on the Troubleshooting tab.

Type of Storage Information	Web Site
z/OS Global Mirror (formerly XRC) for S/390 and zSeries host systems	http://www.storage.ibm.com/software/sms/sdm/

Chapter 14. Support

This section provides you with methods for accessing additional information related to using the DS Storage Manager.

Chapter 15. Trademarks

The following terms are trademarks of the International Business Machines Corporation in the United States, other countries, or both:

- AIX
- DB2
- DFSMS/MVS
- DFSMS/VM
- DS4000
- DS6000
- DS8000
- e (logo)
- Enterprise Storage Server
- ES/9000
- ESCON
- FICON
- FlashCopy
- Graphically Dispersed Parallel Sysplex
- HACMP
- i5/OS
- IBM
- IntelliStation
- MVS/ESA
- Netfinity
- NetVista
- Operating System/400
- OS/400
- RS/6000
- S/390
- Seascape
- SNAP/SHOT
- SP
- System/390
- System p5
- System Storage
- Versatile Storage Server
- Virtualization Engine
- VSE/ESA
- z/Architecture
- z/OS
- z/VM
- zSeries

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Accessibility

Accessibility features provide users who have disabilities with the ability to successfully access information and use technology.

Accessibility features help a user who has a physical disability, such as restricted mobility or limited vision, to use software products successfully.

Features

These are the major accessibility features in the IBM System Storage DS6000 information:

- You can use screen-reader software and a digital speech synthesizer to hear what is displayed on the screen. IBM Home Page Reader version 3.0 has been tested.
- You can operate features using the keyboard instead of the mouse.

Navigating by keyboard

You can use keys or key combinations to perform operations and initiate menu actions that can also be done through mouse actions. You can navigate the IBM System Storage DS6000 information from the keyboard by using the shortcut keys for your browser or Home Page Reader. See your browser Help for a list of shortcut keys that it supports. See the following Web site for a list of shortcut keys supported by Home Page Reader: http://www-306.ibm.com/able/solution_offerings/keyshort.html

Accessing the publications

You can find HTML versions of the IBM System Storage DS6000 information at the following Web site: <http://www.ehone.ibm.com/public/applications/publications/cgi-bin/pbi.cgi>

You can access the information using IBM Home Page Reader 3.0.

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- ES/9000
- ESCON
- FICON
- FlashCopy
- Graphically Dispersed Parallel Sysplex
- HACMP
- i5/OS
- IBM
- IntelliStation
- MVS/ESA
- Netfinity
- NetVista
- Operating System/400
- OS/400
- RS/6000
- S/390
- Seascape
- SNAP/SHOT
- SP
- System/390
- System p5
- System Storage
- Versatile Storage Server
- Virtualization Engine
- VSE/ESA
- z/Architecture
- z/OS
- z/VM
- zSeries

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This section contains the electronic emission notices or statements for the United States and other countries.

Federal Communications Commission (FCC) statement

This equipment has been tested and complies with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, might cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case the user will be required to correct the interference at his own expense.

Properly shielded and grounded cables and connectors must be used to meet FCC emission limits. IBM is not responsible for any radio or television interference caused by using other than recommended cables and connectors, or by unauthorized changes or modifications to this equipment. Unauthorized changes or modifications could void the users authority to operate the equipment.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device might not cause harmful interference, and (2) this device must accept any interference received, including interference that might cause undesired operation.

Industry Canada compliance statement

This Class A digital apparatus complies with Canadian ICES-003.

Cet appareil numérique de la classe A est conform à la norme NMB-003 du Canada.

European community compliance statement

This product is in conformity with the protection requirements of EC Council Directive 89/336/EEC on the approximation of the laws of the Member States relating to electromagnetic compatibility. IBM cannot accept responsibility for any failure to satisfy the protection requirements resulting from a nonrecommended modification of the product, including the fitting of non-IBM option cards.

Germany only

Zulassungsbescheinigung laut Gesetz ueber die elektromagnetische Vertraeglichkeit von Geraeten (EMVG) vom 30. August 1995.

Dieses Geraet ist berechtigt, in Uebereinstimmung mit dem deutschen EMVG das EG-Konformitaetszeichen - CE - zu fuehren.

Der Aussteller der Konformitaetserklaeung ist die IBM Deutschland.

Informationen in Hinsicht EMVG Paragraph 3 Abs. (2) 2:

Das Geraet erfuehlt die Schutzanforderungen nach EN 50082-1 und EN 55022 Klasse A.

EN 55022 Klasse A Geraete beduerfen folgender Hinweise:

Nach dem EMVG:

"Geraete duerfen an Orten, fuer die sie nicht ausreichend entstoert sind, nur mit besonderer Genehmigung des Bundesministeriums fuer Post und Telekommunikation oder des Bundesamtes fuer Post und Telekommunikation

betrieben werden. Die Genehmigung wird erteilt, wenn keine elektromagnetischen Störungen zu erwarten sind." (Auszug aus dem EMVG, Paragraph 3, Abs.4)

Dieses Genehmigungsverfahren ist nach Paragraph 9 EMVG in Verbindung mit der entsprechenden Kostenverordnung (Amtsblatt 14/93) kostenpflichtig.

Nach der EN 55022:

"Dies ist eine Einrichtung der Klasse A. Diese Einrichtung kann im Wohnbereich Funkstörungen verursachen; in diesem Fall kann vom Betreiber verlangt werden, angemessene Massnahmen durchzuführen und dafür aufzukommen."

Anmerkung:

Um die Einhaltung des EMVG sicherzustellen, sind die Geräte wie in den Handbüchern angegeben zu installieren und zu betreiben.

Japanese Voluntary Control Council for Interference (VCCI) class A statement

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Korean Ministry of Information and Communication (MIC) statement

Please note that this device has been certified for business use with regard to electromagnetic interference. If you find this is not suitable for your use, you may exchange it for one of residential use.

Taiwan class A compliance statement

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