

IBM TotalStorage® DS6000



Troubleshooting

IBM TotalStorage® DS6000



Troubleshooting

Note:

Before using this information and the product it supports, read the information in "Notices" on page 53.

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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.

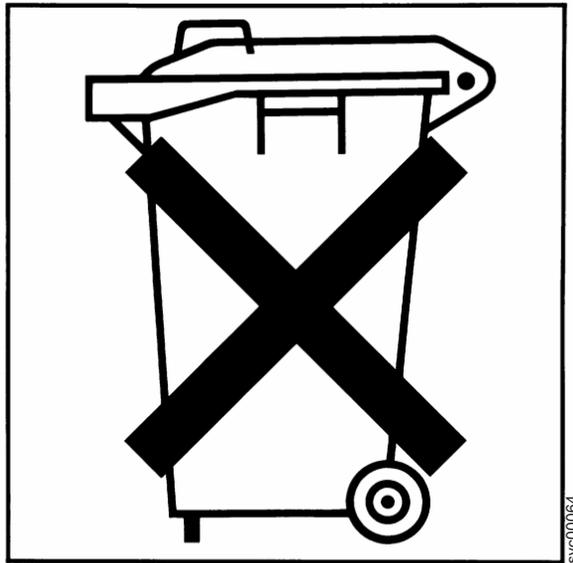
In accordance with the European WEEE Directive, electrical and electronic equipment (EEE) is to be collected separately and to be reused, recycled, or recovered at end of life. Users of EEE with the WEEE marking per Annex IV of the WEEE Directive, as shown above, must not dispose of end of life EEE as 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/index.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 svc00066

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. Troubleshooting

The topics in this section provide troubleshooting information related to your DS6000. Topics covered include analyzing, verifying, understanding, managing, and handling various problems.

Chapter 2. Unlocking an administrative password

There might be times when administrative users forget the password that they use to access the DS Storage Manager. Beyond the set number of allowable attempts with the wrong password, the account is locked. If the administrative account is locked, the administrator must use the security recovery utility tool to reset the password to the default (administrative). You cannot unlock an administrative password using the DS Command-Line Interface. The administrative user is forced to establish a new password. Using the **chuser** command, you can specify a password that expires after the initial use, and then create a new password. See DS CLI documentation for more information.

Notes:

1. This security recovery utility tool only unlocks the administrative account on the DS Storage Manager on which the tool is run.
 2. This task only explains how to use the security recovery utility tool to unlock the administrative account. The topic "Unlocking a user account" describes how to unlock a non-administrative user account.
 3. The security recovery utility tool is a script that is installed in a file directory. You run the script from the directory.
1. Open a command prompt and navigate to the C:\Program Files\IBM\dsniserver\bin\ directory where the recovery tool (script) has been installed.
 2. Type the script name, `securityRecoveryUtility.bat -r`
 3. Press the **Enter** key. The script runs and the administrative account is unlocked. The password is reset to the default (admin).

Chapter 3. Analyzing service information messages for S/390 and zSeries systems

Service information messages (SIMs) are generated by a storage unit for S/390 and zSeries hosts. Before installation, you can use the customization work sheets to record the following service information: the SIM severity level and the maximum number of times the storage unit sends the SIMs (0-5 times) to the console. During installation, either you or the IBM service sales representative must enter this information into the system.

SIM message types

The following SIM message types are generated by the storage unit.

Direct access storage device (DASD) SIM

Tracks DDM failures and problems.

Media SIM

Tracks data check problems on the media.

Storage unit SIM

Tracks storage unit, power control, and other hardware problems.

SIM severity levels

1 acute

An irrecoverable error with possible loss of data. This severity level only applies to DASD SIMs.

2 serious

An irrecoverable error or a data check with loss of access to data.

3 moderate

A system path is not operational and performance might be degraded. This severity level does not apply to media SIMs.

4 service

A recoverable error, equipment checks, or data checks. You can defer repair.

Chapter 4. Understanding problem status designations

Each storage unit problem creates a serviceable event. The serviceable event status is either Open or Closed.

Problem status designations

The designations explain where the problem resides in the resolution process.

Open A problem has occurred that requires service. The status will remain in open prior to and during the repair.

Closed

The repair was completed, and that changed the status to closed.

Chapter 5. Generic and specific alert traps

SNMP alerts can contain a combination of a generic and a specific alert trap. This list outlines the explanations for each of the possible combinations of generic and specific alert traps.

SNMP alert traps provide information about problems that the storage unit detects. Either you or the service provider must perform corrective action for the following problems, as required:

Generic trap 0 - coldstart

Issued whenever the SNMP agent is re-initializing. Configuration data has changed.

Generic trap 1 - warmstart

Issued whenever the SNMP agent is reinitializing. Configuration data might change.

Generic trap 4 - authenticationFailure

Issued whenever an SNMP message was received but could not be authenticated.

Generic trap 6 - Problem notification and Copy Services traps

The storage unit generates the following specific traps in combination with generic trap 6:

Specific trap 3 - Problem log entry created

This trap displays when a problem log entry is generated in the problem log for the storage unit. The following information is provided for specific trap 3:

```
ssSystemNotifyTrap=yyyy/MM/dd hh:mm:ss tzn
Manufacturer=IBM
ReportingMTMS=ttt-mmm*ppzzzzz
ProbNm=nnnnn
LparName=SFaESSbc
FailingEnclosureMTMS=ttt-mmm*ppzzzzz
SRC=sssssssss
EventText=79 char string
Fru1Loc=71 char string
Fru2Loc=71 char string
Fru3Loc=71 char string
```

where *yyyy/MM/dd hh:mm:ss tzn* is the time that the alert was sent (year, month, day, hour, minute, second, and time zone); *ttt-mmm* is the machine type and model number; *ppzzzzz* is the serial number (which is a combination of the plant of manufacture and the sequence number); *nnnnn* is the problem number; *SFaESSbc* is the logical partition name, which can be ignored for DS6000; *sssssssss* is the system reference code (SRC); and *FruNLoc* is the location code of hardware resource *N*, where *n* is 1, 2, and 3.

Specific trap 100 - Remote mirror and copy links degraded

This trap displays when an established remote mirror and copy path between a primary and secondary logical subsystem pair becomes inoperable, but there is at least one operational path remaining between the two logical subsystems. The following information is provided for specific trap 100:

```

ssEventDescr=yyyy/MM/dd hh:mm:ss tzn
-error_description-
UNIT: Mnf Type-Mod SerialNm LS
PRI: xxx tttt-ooo pp-zzzzz ll
SEC: xxx tttt-ooo pp-zzzzz ll
Path: Type PP PLink SP SLink RC
1: aaaaa bbbb cccccc dddd eeeee gg
.
.
.
w: aaaaa bbbb cccccc dddd eeeee gg

```

where *yyyy/MM/dd hh:mm:ss tzn* is the time that the alert was sent (year, month, day, hour, minute, second, and time zone); *-error_description-* is the event description; *xxx* is the manufacturer; *tttt-ooo* is the machine type and model number; *pp-zzzzz* is the serial number (a combination of the plant of manufacture and the sequence number); *ll* is the LSS number in hexadecimal format; *aaaaa* is "ESCON" or "FIBRE"; *bbbb* is the primary I/O port number; *ccccc* is the primary link address in hexadecimal format; *dddd* is the secondary port number for ESCON direct connection or FIBRE (this value is XXXX if you are connected through an ESCON switch); *eeeeee* is the secondary link address in hexadecimal format; *gg* is the reason code in hexadecimal format (see Table 1) if there is a problem (otherwise, *gg* is "OK" if there is no problem); and *w* represents the last of up to 8 path descriptions. Only established paths are listed.

Table 1 lists remote mirror and copy return codes that can appear for *gg*.

Table 1. Remote mirror and copy return codes

Return code	Return code explanation
X'02'	Initialization failed. The ESCON link rejected threshold was exceeded when attempting to send ELP or RID frames.
X'03'	Timeout. No reason is available.
X'04'	There are no resources available in the primary storage unit for establishing logical paths because the maximum number of logical paths have already been established.
X'05'	There are no resources available in the secondary storage unit for establishing logical paths because the maximum number of logical paths have already been established.
X'06'	There is a secondary storage unit sequence number, or logical subsystem number, mismatch.
X'07'	There is a secondary LSS subsystem identifier (SSID) mismatch, or failure of the I/O that collects the secondary information for validation.
X'08'	The ESCON link is offline. This is caused by the lack of light detection coming from a host, peer, or switch.
X'09'	The establish failed. It is retried until the command succeeds or a remove paths command is run for the path. Note: The attempt-to-establish state persists until the establish path operation succeeds or the remove remote mirror and copy paths command is run for the path.

Table 1. Remote mirror and copy return codes (continued)

Return code	Return code explanation
X'0A'	The primary storage unit port or link cannot be converted to channel mode if a logical path is already established on the port or link. The <i>establish paths</i> operation is not retried within the storage unit.
X'10'	Configuration error. The source of the error is one of the following: <ol style="list-style-type: none"> 1. The specification of the secondary adapter ID does not match the installed ESCON adapter in the primary storage unit. 2. For ESCON paths, the secondary storage unit destination address is zero and the ESCON director (switch) was found in the path. 3. For ESCON paths, the secondary storage unit destination address is not zero and an ESCON director does not exist in the path. The path is a direct connection.
X'14'	The fibre-channel path link is down.
X'15'	The maximum number of fibre-channel path retry operations has been exceeded.
X'16'	The fibre-channel path secondary adapter is not remote mirror and copy capable. This could be caused by one of the following conditions: <ul style="list-style-type: none"> • The secondary adapter is not configured properly or does not have the current firmware installed. • The secondary adapter is already a target of 32 different logical subsystems (LSSs).
X'17'	The secondary adapter fibre-channel path is not available.
X'18'	The maximum number of fibre-channel path primary login attempts has been exceeded.
X'19'	The maximum number of fibre-channel path secondary login attempts has been exceeded.
X'1A'	The primary fibre-channel adapter is not configured properly or does not have the correct firmware level installed.
X'1B'	The fibre-channel path established but degraded due to a high failure rate.
X'1C'	The fibre-channel path was removed due to a high failure rate.

Specific trap 101 - Remote mirror and copy links are inoperable

This trap displays when an established remote mirror and copy path between a primary and secondary logical subsystem pair becomes inoperable, and there are no other operational paths between the two logical subsystems. The following information is provided for specific trap 101:

```

ssEventDescr=yyyy/MM/dd hh:mm:ss tzn
-error_description-
UNIT: Mnf Type-Mod SerialNm LS
PRI: xxx tttt-ooo pp-zzzzz ll
SEC: xxx tttt-ooo pp-zzzzz ll
Path: Type PP PLink SP SLink RC
1: aaaaa bbbb cccccc dddd eeeee gg
.
.
.
w: aaaaa bbbb cccccc dddd eeeee gg

```

where *yyyy/MM/dd hh:mm:ss tzn* is the time that the alert was sent (year, month, day, hour, minute, second, and time zone);

-error_description- is the event description; *xxx* is the manufacturer; *ttt-ooo* is the machine type and model number; *pp-zzzzz* is the serial number (a combination of the plant of manufacture and the sequence number); *ll* is the LSS number in hexadecimal format; *aaaaa* is "ESCON" or "FIBRE"; *bbbb* is the primary I/O port number; *ccccc* is the primary link address in hexadecimal format; *dddd* is the secondary port number for ESCON direct connection or FIBRE (this value is XXXX if you are connected through an ESCON switch); *eeeeee* is the secondary link address in hexadecimal format; *gg* is the reason code in hexadecimal format (see Table 1 on page 10) if there is a problem (otherwise, *gg* is "OK" if there is no problem); and *w* represents the last of up to 8 path descriptions. Only established paths are listed.

Specific trap 102 - Remote mirror and copy links are operational

This trap displays when an established remote mirror and copy path between a primary and secondary logical subsystem pair becomes operational after previously being inoperable. All other established paths between the two logical subsystems are operational. The following information is shown for specific trap 102:

```
ssEventDescr=yyyy/MM/dd hh:mm:ss tzn
-error_description-
UNIT: Mnf Type-Mod SerialNm LS
PRI: xxx ttt-ooo pp-zzzzz ll
SEC: xxx ttt-ooo pp-zzzzz ll
Path: Type PP PLink SP SLink RC
1: aaaaa bbbb ccccc dddd eeeee gg
.
.
.
w: aaaaa bbbb ccccc dddd eeeee gg
```

where *yyyy/MM/dd hh:mm:ss tzn* is the time that the alert was sent (year, month, day, hour, minute, second, and time zone); *-error_description-* is the event description; *xxx* is the manufacturer; *ttt-ooo* is the machine type and model number; *pp-zzzzz* is the serial number (a combination of the plant of manufacture and the sequence number); *ll* is the LSS number in hexadecimal format; *aaaaa* is "ESCON" or "FIBRE"; *bbbb* is the primary I/O port number; *ccccc* is the primary link address in hexadecimal format; *dddd* is the secondary port number for ESCON direct connection or FIBRE (this value is XXXX if you are connected through an ESCON switch); *eeeeee* is the secondary link address in hexadecimal format; *gg* is the reason code in hexadecimal format (see Table 1 on page 10) if there is a problem (otherwise, *gg* is "OK" if there is no problem); and *w* represents the last of up to 8 path descriptions. Only established paths are listed.

Specific trap 200 - LSS pair consistency group remote mirror and copy pair error

This trap displays when the first remote mirror and copy pair that is associated with the consistency group enters the suspended state because of an error. This trap is managed by automation code. Reporting for this trap is reenabled when either of the following conditions occurs:

- An extended long busy timeout occurs on the remote mirror and copy pair that is reported in the SNMP trap.

- A consistency group-created operation is directed to the LSS pair that is associated with the consistency group.

The following information is shown for specific trap 200:

```
ssEventDescr=yyyy/MM/dd hh:mm:ss tzn
-error_description-
UNIT: Mnf Type-Mod SerialNm LS LD SR
PRI: xxx tttt-ooo pp-zzzzz ll jj kk
SEC: xxx tttt-ooo pp-zzzzz ll jj
```

where *yyyy/MM/dd hh:mm:ss tzn* is the time that the alert was sent (year, month, day, hour, minute, second, and time zone); *-error_description-* is the event description; *xxx* is the manufacturer; *tttt-ooo* is the machine type and model number; *pp-zzzzz* is the serial number (a combination of the plant of manufacture and the sequence number); *ll* is the LSS number in hexadecimal format; *jj* is the logical volume number in hexadecimal format; and *kk* is the suspension reason code (SRC) in hexadecimal format.

The suspension reason codes explain the cause of the error that suspended the remote mirror and copy group. Table 2 explains the suspension reason codes.

Table 2. Copy Services suspension reason codes

Suspension reason code (SRC)	SRC explanation
X'03'	The host system sent a command to the primary volume of a remote mirror and copy volume pair to suspend copy operations. The host system might have specified either an immediate suspension or a suspension after the copy completed and the volume pair reached a full duplex state.
X'04'	The host system sent a command to suspend the copy operations on the secondary volume. During the suspension, the primary volume of the volume pair can still accept updates but updates are not copied to the secondary volume. The out-of-sync tracks that are created between the volume pair are recorded in the change recording feature of the primary volume.
X'05'	Copy operations between the remote mirror and copy volume pair were suspended by a primary storage unit secondary device status command. This system resource code can only be returned by the secondary volume.
X'06'	Copy operations between the remote mirror and copy volume pair were suspended because of internal conditions in the storage unit. This system resource code can be returned by the control unit of either the primary volume or the secondary volume.
X'07'	Copy operations between the remote mirror and copy volume pair were suspended when the secondary storage unit notified the primary storage unit of a state change transition to simplex state. The specified volume pair between the storage units is no longer in a copy relationship.
X'08'	Copy operations were suspended because the secondary volume became suspended as a result of internal conditions or errors. This system resource code can only be returned by the primary storage unit.

Table 2. Copy Services suspension reason codes (continued)

Suspension reason code (SRC)	SRC explanation
X'09'	The remote mirror and copy volume pair was suspended when the primary or secondary storage unit was rebooted or when the power was restored. Note: The paths to the secondary storage unit might not be disabled if the primary storage unit was turned off. If the secondary storage unit was turned off, the paths between the storage units are restored automatically, if possible. After the paths have been restored, issue the mkpprc command to resynchronize the specified volume pairs. Depending on the state of the volume pairs, you might have to issue the rmpprc command to delete the volume pairs and reissue a mkpprc command to reestablish the volume pairs.
X'0A'	The remote mirror and copy pair was suspended because the host issued a command to freeze the remote mirror and copy group. This system resource code can only be returned if a primary volume was queried.

Specific trap 202 - Primary remote mirror and copy devices on the LSS were suspended because of an error

This trap displays when one or more primary remote mirror and copy devices become suspended because of an error that occurs over a 5-second period. The trap information indicates first pair to suspend as well as all of the primary devices on the primary logical subsystem that were suspended because of the error. The following information is shown for specific trap 202:

```
ssEventDescr=yyyy/MM/dd hh:mm:ss tzn
-error_description-
UNIT: Mnf Type-Mod SerialNm LS LD SR
PRI: xxx tttt-ooo pp-zzzzz ll jj kk
SEC: xxx tttt-ooo pp-zzzzz ll jj
Start: yyyy/mm/dd hh:mm:ss tzn
PRI Dev Flags (1 bit/Dev, 1=Suspended):
ffffffffffff...ffffffffffffffffff
```

where *yyyy/MM/dd hh:mm:ss tzn* is the time that the alert was sent (year, month, day, hour, minute, second, and time zone); *-error_description-* is the event description; *xxx* is the manufacturer; *tttt-ooo* is the machine type and model number; *pp-zzzzz* is the serial number (a combination of the plant of manufacture and the sequence number); *ll* is the LSS number in hexadecimal format; *jj* is the logical volume number in hexadecimal format; *kk* is the suspension reason code in hexadecimal format; and *ffffffffffff...ffffffffffffffffff* represents 256 1-bit flags, one per primary device on the primary LSS that are shown as a 64-character hexadecimal number. The time indicated on the Start line is the beginning of the error condition period. The time that the alert is sent (as shown on the first line of the trap) indicates the end of the error condition period.

The suspension reason codes explain the cause of the error that suspended the primary remote mirror and copy devices. Table 2 on page 13 explains the suspension reason codes.

Specific trap 210 - Global Mirror initial consistency group successfully formed

This trap displays when the first consistency group in a Global

Mirror configuration has formed successfully. The following information is shown for specific trap 210:

```
ssEventDescr=yyyy/MM/dd hh:mm:ss tzn
-error_description-
UNIT: Mnf Type-Mod SerialNm
xxx tttt-ooo pp-zzzzz
Session ID: qqqq
```

where *yyyy/MM/dd hh:mm:ss tzn* is the time that the alert was sent (year, month, day, hour, minute, second, and time zone); *-error_description-* is the event description; *xxx* is the manufacturer; *tttt-ooo* is the machine type and model number; *pp-zzzzz* is the serial number (a combination of the plant of manufacture and the sequence number); and *qqqq* is the session identifier.

Specific trap 211 - Global Mirror session is in a fatal state

This trap displays when an error occurs that prevents the formation of a consistency group and that requires you to correct the problem before you can reform the consistency group. The following information is shown for specific trap 211:

```
ssEventDescr=yyyy/MM/dd hh:mm:ss tzn
-error_description-
UNIT: Mnf Type-Mod SerialNm
xxx tttt-ooo pp-zzzzz
Session ID: qqqq
```

where *yyyy/MM/dd hh:mm:ss tzn* is the time that the alert was sent (year, month, day, hour, minute, second, and time zone); *-error_description-* is the event description; *xxx* is the manufacturer; *tttt-ooo* is the machine type and model number; *pp-zzzzz* is the serial number (a combination of the plant of manufacture and the sequence number); and *qqqq* is the session identifier.

Specific trap 212 - Global Mirror consistency group failure - Retry will be attempted

This trap displays when a consistency group fails to form. The storage unit automatically continues to attempt to form a consistency group. The following information is shown for specific trap 212:

```
ssEventDescr=yyyy/MM/dd hh:mm:ss tzn
-error_description-
UNIT: Mnf Type-Mod SerialNm
xxx tttt-ooo pp-zzzzz
Session ID: qqqq
```

where *yyyy/MM/dd hh:mm:ss tzn* is the time that the alert was sent (year, month, day, hour, minute, second, and time zone); *-error_description-* is the event description; *xxx* is the manufacturer; *tttt-ooo* is the machine type and model number; *pp-zzzzz* is the serial number (a combination of the plant of manufacture and the sequence number); and *qqqq* is the session identifier.

Specific trap 213 - Global Mirror consistency group successful recovery

This trap displays when a consistency group forms successfully after it had previously failed. The following information is shown for specific trap 213:

```
ssEventDescr=yyyy/MM/dd hh:mm:ss tzn  
-error_description-  
UNIT: Mnf Type-Mod SerialNm  
xxx tttt-ooo pp-zzzzz  
Session ID: qqqq
```

where *yyyy/MM/dd hh:mm:ss tzn* is the time that the alert was sent (year, month, day, hour, minute, second, and time zone); *-error_description-* is the event description; *xxx* is the manufacturer; *tttt-ooo* is the machine type and model number; *pp-zzzzz* is the serial number (a combination of the plant of manufacture and the sequence number); and *qqqq* is the session identifier.

Specific trap 214 - Global Mirror master terminated

This trap displays when a Global Mirror master is terminated by a command. The following information is shown for specific trap 214:

```
ssEventDescr=yyyy/MM/dd hh:mm:ss tzn  
-error_description-  
UNIT: Mnf Type-Mod SerialNm  
xxx tttt-ooo pp-zzzzz  
Session ID: qqqq
```

where *yyyy/MM/dd hh:mm:ss tzn* is the time that the alert was sent (year, month, day, hour, minute, second, and time zone); *-error_description-* is the event description; *xxx* is the manufacturer; *tttt-ooo* is the machine type and model number; *pp-zzzzz* is the serial number (a combination of the plant of manufacture and the sequence number); and *qqqq* is the session identifier.

Specific trap 215 - Global Mirror FlashCopy at remote site unsuccessful

This trap displays when the FlashCopy operation at the remote site failed in a Global Mirror configuration. The following information is shown for specific trap 215:

```
ssEventDescr=yyyy/MM/dd hh:mm:ss tzn  
-error_description-  
UNIT: Mnf Type-Mod SerialNm  
Master: xxx tttt-ooo pp-zzzzz  
Slave: xxx tttt-ooo pp-zzzzz  
Session ID: qqqq
```

where *yyyy/MM/dd hh:mm:ss tzn* is the time that the alert was sent (year, month, day, hour, minute, second, and time zone); *-error_description-* is the event description; *xxx* is the manufacturer; *tttt-ooo* is the machine type and model number; *pp-zzzzz* is the serial number (a combination of the plant of manufacture and the sequence number); and *qqqq* is the session identifier.

Specific trap 216 - Global Mirror slave termination unsuccessful

This trap displays when a Global Mirror master receives a Terminate command and is unable to terminate a Global Mirror slave. The following information is shown for specific trap 216:

```
ssEventDescr=yyyy/MM/dd hh:mm:ss tzn  
-error_description-  
UNIT: Mnf Type-Mod SerialNm  
Master: xxx tttt-ooo pp-zzzzz  
Slave: xxx tttt-ooo pp-zzzzz  
Session ID: qqqq
```

where *yyyy/MM/dd hh:mm:ss tzn* is the time that the alert was sent (year, month, day, hour, minute, second, and time zone); *-error_description-* is the event description; *xxx* is the manufacturer; *ttt-ooo* is the machine type and model number; *pp-zzzzz* is the serial number (a combination of the plant of manufacture and the sequence number); and *qqqq* is the session identifier.

Specific trap 217 - Global Mirror paused

This trap displays when Global Mirror is paused because of a command received by the Global Mirror master. The following information is shown for specific trap 217:

```
ssEventDescr=yyyy/MM/dd hh:mm:ss tzn
-error_description-
UNIT: Mnf Type-Mod SerialNm
xxx ttt-ooo pp-zzzzz
Session ID: qqqq
```

where *yyyy/MM/dd hh:mm:ss tzn* is the time that the alert was sent (year, month, day, hour, minute, second, and time zone); *-error_description-* is the event description; *xxx* is the manufacturer; *ttt-ooo* is the machine type and model number; *pp-zzzzz* is the serial number (a combination of the plant of manufacture and the sequence number); and *qqqq* is the session identifier.

Specific trap 218 - Global Mirror number of consistency group failures exceed threshold

This trap displays when Global Mirror has exceeded the allowed threshold for failed consistency group formation attempts. The following information is shown for specific trap 218:

```
ssEventDescr=yyyy/MM/dd hh:mm:ss tzn
-error_description-
UNIT: Mnf Type-Mod SerialNm
xxx ttt-ooo pp-zzzzz
Session ID: qqqq
```

where *yyyy/MM/dd hh:mm:ss tzn* is the time that the alert was sent (year, month, day, hour, minute, second, and time zone); *-error_description-* is the event description; *xxx* is the manufacturer; *ttt-ooo* is the machine type and model number; *pp-zzzzz* is the serial number (a combination of the plant of manufacture and the sequence number); and *qqqq* is the session identifier.

Specific trap 219 - Global Mirror first successful consistency group after prior failures

This trap displays when Global Mirror has successfully formed a consistency group after one or more formation attempts had previously failed. The following information is shown for specific trap 219:

```
ssEventDescr=yyyy/MM/dd hh:mm:ss tzn
-error_description-
UNIT: Mnf Type-Mod SerialNm
xxx ttt-ooo pp-zzzzz
Session ID: qqqq
```

where *yyyy/MM/dd hh:mm:ss tzn* is the time that the alert was sent (year, month, day, hour, minute, second, and time zone); *-error_description-* is the event description; *xxx* is the manufacturer; *ttt-ooo* is the machine type and model number; *pp-zzzzz* is the

serial number (a combination of the plant of manufacture and the sequence number); and *qqqq* is the session identifier.

Specific trap 220 - Global Mirror number of FlashCopy commit failures exceed threshold

This trap displays when Global Mirror has exceeded the allowed threshold of failed FlashCopy commit attempts. The following information is shown for specific trap 220:

```
ssEventDescr=yyyy/MM/dd hh:mm:ss tzn  
-error_description-  
UNIT: Mnf Type-Mod SerialNm  
xxx tttt-ooo pp-zzzzz  
Session ID: qqqq
```

where *yyyy/MM/dd hh:mm:ss tzn* is the time that the alert was sent (year, month, day, hour, minute, second, and time zone); *-error_description-* is the event description; *xxx* is the manufacturer; *tttt-ooo* is the machine type and model number; *pp-zzzzz* is the serial number (a combination of the plant of manufacture and the sequence number); and *qqqq* is the session identifier.

Specific trap 221 - Space Efficient Repository or Over-provisioned Volume has reached a warning watermark

This trap is displayed when the Repository has reached the user defined warning watermark or when physical space is completely exhausted. The following information is shown for specific trap 221:

```
ssEventDescr=yyyy/MM/dd hh:mm:ss tzn  
-error_description-  
UNIT: Mnf Type-Mod SerialNm  
xxx tttt-ooo pp-zzzzz  
Volume Type: v  
Reason Code: r  
Extent Pool ID: ee  
Percentage Full: ff
```

where *yyyy/MM/dd hh:mm:ss tzn* is the time that the alert was sent (year, month, day, hour, minute, second, and time zone); *-error_description-* is the event description; *xxx* is the manufacturer; *tttt-ooo* is the machine type and model number; *pp-zzzzz* is the serial number (a combination of the plant of manufacture and the sequence number); *v* is the volume type, over provisioned or repository; *r* is the reason code, 0 = warning watermark and 1 = space exhausted, 100% full; *ee* is the extent pool session identifier in Hex (for example: F2); and *ff* identifies the percentage full

Chapter 6. Obtaining services for a storage unit

The following are IBM services that you can obtain to benefit the processing associated with your storage unit.

Hardware problems

The storage unit is capable of remote error notification and remote support for those machines that are under warranty or a maintenance agreement. An IBM service support representative (SSR) configures your storage unit for remote service during installation.

Data migration

IBM provides a service through Global Services to help you with your data migration needs. Contact your IBM representative for more details.

Command Line Interface (CLI)

IBM provides a service through Global Services to help you with using the DS6000 CLI in your system environment. Contact your IBM representative for more details.

Chapter 7. Analyzing normal operation problems

Try the following actions to resolve a problem.

When the storage unit encounters a error that requires action, it illuminates one of the message lights on the expansion enclosure. Also informational messages are issued through the storage unit when special events occur.

If your warranty covers the storage unit or you have a service maintenance agreement, you can respond in the following way:

- Contact your authorized service representative.
- Describe the error message, error code, or problem that you have observed.

Note: Your warranty agreement or service maintenance agreement might be affected if you perform your own maintenance.

Use the following topical descriptions of the messages generated by or through the storage unit to help you describe the problem to your service representative.

Managing informational messages from the storage unit

Informational messages are issued through the storage unit as special events occur. Your system administrator determines how these messages should be handled.

Type of informational message

An informational message is issued when your service provider runs the customer-notification diagnostic test. This test verifies that e-mail messages are being received by those who should receive them. You need to attach your LAN to the DS Network to receive e-mail messages from the storage unit.

Managing the storage unit error messages

The storage unit generates error messages when it detects a situation that requires customer action. This section describes the type of information provided so that you can take the necessary steps to resolve the error condition. In most cases you will need to call your IBM service representative. By providing the listed information your IBM service representative will have an idea where to begin to resolve the problem.

Purpose

The error messages from the storage unit typically contain the following fields.

Product manufacturer ID and date

The ID of the storage unit and the date that it was manufactured.

Storage unit location

The installer enters the storage unit location during the initial installation of the product.

Product machine type and model number

Assigned by IBM at time of manufacturing.

Product serial number

Assigned by IBM at time of manufacturing.

Customer voice phone number

The phone number for customer voice contact.

LMC level of local storage server

The level of the licensed machine code (LMC) of your primary storage unit.

LMC level of remote storage server

The level of the LMC of your secondary or backup storage unit.

Report time and date stamp

The time that this report was generated.

Problem ID

The problem ID that is assigned to this problem by the storage unit. The service provider uses this problem ID to access detailed problem information.

SRN/SRC

A detailed error code that the service provider uses.

Problem status

The problem status state.

Description

A description of the problem.

Additional message

Any additional information that is available.

Reporting resource

The coded resource name that the service provider uses during the repair process.

Failure occurred

The date and time when the failure first occurred.

Last occurrence

The date and time the last occurrence was noted.

Failure count

The number of times that this failure occurred.

Presentation interval

The time between successive e-mail copies of this problem.

Remaining presentations

The number of additional times this e-mail notification will be sent.

Isolation procedure

A pointer to a special procedure in the online service information center.

Failure actions

Actions that the service provider can take.

Probable cause

Information for the service provider.

Failure cause

Information for the service provider.

The following fields are the most useful to you in identifying DDM failures:

- Description
- Reporting resource
- Last occurrence

Chapter 8. Logically removing a physical resource after physical removal

Follow these procedures to remove a physical resource from the DS Storage Manager after it has been removed from the server or expansion enclosure.

Problem

Follow these procedures if you have removed a DDM or expansion enclosure that was in use but have received an error message or log entry stating that the DDMs or expansion enclosures can no longer be recognized by the DS Storage Manager.

You are not required to perform these procedures, and you will not receive an error message, if you physically remove a DDM or expansion enclosure that is not in use. The resource will no longer appear in the list of physical resources in the summary tables.

Investigation

Follow these steps to physically replace the DDM and then properly take the DDM offline before physically removing it again:

1. Insert the DDM back into the enclosure.
2. Take the DDM offline through the Status page of the DS Storage Manager.
3. Once the DDM is offline, you can physically remove the DDM.

Follow these steps to remove the logical resources that were contained on the expansion enclosure:

1. Use the Modify Storage Unit -- Specify DDM packs page in the DS Storage Manager to logically remove all DDMs that are associated with the expansion enclosure.
2. Close the associated error log entry on the Logs page of the DS Storage Manager.

If, after you complete all of the steps above, you still receive an error message, call IBM Support.

IBM Support personnel can determine the cause of the problem and find the appropriate resolution.

Chapter 9. Resolving IP address connectivity issues

Follow these procedures to regain connectivity to the server enclosure.

Problem

Follow these procedures to resolve IP address connectivity issues such as communications between the management console and the server enclosure. You might receive a communication error message or a timeout error log entry in the DS Storage Manager when you attempt to perform actions on the server enclosure.

Investigation

Verify lack of connectivity to the server enclosure

Use the **ping** command inside a command prompt or the Attempt connection page in the DS Storage Manager to attempt to retrieve IP address and network configuration information from the server enclosure. If you are able to retrieve the IP address and network information, attempt to perform the action again. If you are unable to retrieve the IP address and network configuration information, continue with the rest of these procedures.

Check the cabling between the management console and the server enclosure

Check that the cabling between the management console and the server enclosure has not become loose or dislodged.

Check that all of the cables are operational

If a cable develops a fault and you had connectivity prior to the error, you might receive an error entry or message stating that the connection to the server enclosure has been lost. Replace the specified cable to regain connectivity to the expansion enclosure.

If the DS Storage Manager still cannot locate the server enclosure

Follow the steps below to reset the IP address on the processor card in the server enclosure to the default IP address. Attempt to reconnect to the server enclosure using the default IP address after you complete these steps.

1. Use the serial conversion cable that was shipped with the enclosure to attach your computer to the serial port on the enclosure.
2. Use a terminal emulator to connect to the server enclosure through the serial port that is located on the processor card (for example, NetTerm or Windows® HyperTerminal). If you are using Windows HyperTerminal, you might need to provide a connection name and icon before you can specify the connection settings. Choose a communications port, such as COM1 or COM3, and connect to the processor card using following settings:

Remote connection setting	Remote connection value
Bits per second	38400
Data bits	8
Parity	None
Stop bits	1

Remote connection setting	Remote connection value
Flow control	Hardware

3. Use the default user ID of guest to access the processor card. The ncnconf script begins automatically.

Note: Use the password that you assigned to the guest user ID when you set the initial IP addresses on the processor cards.

4. After the program has started, select Configure network parameters from the ncnconf Main Menu options.
5. To reset the IP address, perform the following steps:
 - a. Choose Reset to default static IP network configuration from the Network configuration menu options. You will receive a confirmation that the default IP address has been changed to the following defaults:
 - 172.30.143.213 for cluster0
 - 172.30.143.214 for cluster1

Note: The ncnconf program prevents you from setting an IP address and network mask combination that conflict with any of the following IP addresses:

- 172.30.143.213
 - 172.30.143.214
 - 192.0.2.0
 - 192.0.2.1
- b. Select Back to Main Menu to return to the ncnconf Main Menu.
 - c. Select Apply changes and exit from the options in the main menu to save your changes and exit the application.
 6. After you are able to connect to the server enclosure, set the IP addresses on each processor card to meet your network needs.

If, after you complete all of the steps above, the DS Storage Manager cannot communicate with the server enclosure, call IBM Support.

IBM Support personnel can determine the cause of the problem and find a resolution that will regain connectivity to the storage.

Chapter 10. Resolving power-on issues

Follow these procedures if you have problems powering on or off your server or expansion enclosures.

Problem

Follow these procedures if you unsuccessfully attempt to power on or off the server or expansion enclosure.

Investigation

If the enclosure is currently powered off and will not power on:

- Check to ensure that the storage unit is receiving power from the outlet.

Note: You can use the ac LED indicator on the power supply to determine if the power supply is receiving power from the outlet.
- Check the cord to the power supply.
Ensure that the cords are securely inserted into both the source outlet and the power supply.
- Ensure that the cords are not faulty.
Replace the power cord with a cord that you know is in working condition.
- If the problem is with an expansion enclosure, push the power button on the rear operator panel of the expansion enclosure.

If the enclosure is currently powered on and will not power off:

Ensure that all resources contained within the enclosure are offline. Use the Status page of the DS Storage Manager to verify that all resources that are contained within the enclosure are offline. Take online resources offline before reattempting to power off the enclosure.

If, after you complete all of the steps above, you still receive an error message, call IBM Support.

IBM Support personnel must determine the cause of the problem and find the appropriate resolution.

Chapter 11. Stop and start the DS Storage Manager Servers

The IBM System Storage™ DS Storage Manager server and IBM System Storage DS Network server are installed and activated when you installed the DS Storage Manager. These servers remain active until you stop them or there is a system failure.

Each server is accessed by a different method depending on your operating system.

Stopping and starting the DS Storage Manager servers on a Windows operating system

You can stop or start the DS Storage Manager servers by using the Windows Programs list.

Log on to your Windows operating system and use the following steps to work with the DS Storage Manager servers. Perform these steps for each server.

1. Click **Start**.
2. Select **Programs** to display the programs list.
3. Click (IBM System Storage DS Storage Manager and then click Stop Servers or Start Servers depending on your choice of action. Wait for the servers to start up or completely stop before proceeding. The DS Storage Manager server will stop first and then the DS Network Interface server. The servers start in the opposite order. They can be stopped and started separately, but they must follow this order.
4. Click **Stop**, or **Start** for the action that you want to complete.

Chapter 12. Verifying interenclosure connectivity

Follow these procedures to resolve interenclosure connectivity issues.

Problem

Follow these procedures if you receive error messages or log entries that state that the DS Storage Manager cannot recognize drives, arrays, or volumes that are located in an attached server or expansion enclosure. You can also use these procedures if you receive an error message or log entry that the DS Storage Manager cannot recognize a connected expansion enclosure. These procedures apply to both new volumes or enclosures that have been added as well as existing volumes or enclosures that are no longer recognized by the DS Storage Manager.

Investigation

Check interenclosure cabling

Check the cabling between the server enclosure and the expansion enclosure that contains the unrecognized storage. Verify that the cabling between the enclosures matches the cabling that is provided in the appropriate cabling diagram.

Check that all of the cables are operational

If a cable develops a fault, you will receive an error entry or message stating that the connection to that expansion enclosure has been lost. Replace the specified cable, small-form factor pluggable (SFP), or both, to regain connectivity to the expansion enclosure.

If, after you complete all of the steps above, storage resources are still not recognized by the DS Storage Manager, call IBM Support.

IBM Support personnel can determine the cause of the problem and find a resolution that will regain connectivity to the storage.

Chapter 13. Verifying correct operation of the panels

Follow these procedures to determine if the front display panel or rear operator panel must be replaced.

Problem

Follow these steps if the server or expansion enclosure is powered on and operational, but the power-on indicator on either the front display panel or rear operator panel is not lit.

You can also follow these procedures if an error log entry appears in the Logs page of the DS Storage Manager and the system alert indicator on the front display panel or rear operator panel is not lit.

Investigation

If the enclosure is powered on but the power-on indicator is not lit

If the server or expansion enclosure is powered on, but the power-on indicator is not lit on either the front display panel or the rear operator panel, replace the faulty panel.

If an error log entry appears but the system alert indicator is not lit

If Logs page of the DS Storage Manager contains an error entry for a resource that is located within the server or expansion enclosure but the system alert indicator is not lit on either the front display panel or the rear operator panel, replace the faulty panel.

Use the Identify function to test the location LED indicators

Use the **Identify** button on the rear operator panel to locate connected expansion enclosures and to test the location LED indicators on the front display panel and rear operator panel.

If the location indicator on either the front display panel or rear operator panel does not light for a server enclosure, replace the faulty panel. If the location indicator on either the front display panel or rear operator panel does not light for an expansion enclosure that is correctly attached to the server enclosure, replace the faulty panel.

If, after you complete all of the steps above, you still receive an error message, call IBM Support.

IBM Support personnel can determine the cause of the problem and find the appropriate resolution.

Chapter 14. Verifying host connectivity

Follow these procedures to resolve host connectivity issues.

Problem

These procedures apply to a situation where a host cannot connect to a storage unit.

Investigation

Check that the host is correctly configured in the DS Storage Manager

Use the Host systems pages in the DS Storage Manager to ensure that your host systems are configured correctly.

Check that the storage unit, SAN switches, and hosts are powered on.

The server enclosure, the connected expansion enclosures, any SAN switch devices, and the attached host must be powered on before you can send information between the host and the storage unit.

Check that the SAN fabric configuration is correct

Unless directly attached, you must configure the SAN fabric correctly so that the zoning allows for communication between the host system and the storage unit.

Check that the cabling is correct between the hosts and the storage unit.

Miscabling between the storage unit and the host system can cause communication problems.

Check that the fiber optic cables and SFPs are operational.

Sequentially replace individual cables and small-form factor pluggables (SFPs) to determine if there are any cable problems.

If, after you complete all of the steps above, the storage unit still cannot communicate with the host system, call IBM Support.

IBM Support personnel can determine the cause of the problem and find a resolution that will reenale host communication.

Chapter 15. Determining problems

This section contains information for determining problems with your storage unit hardware.

You can attempt the following sets of steps to determine hardware problems without consulting the Storage Manager:

- Performing a light path analysis
- Determining cable problems

Performing light path analysis

Complete this task to use the LED indicators on your storage unit to determine if there is a resource event that can be repaired without using the DS Storage Manager.

Use the LED indicators located on the front display panel and rear display panel as well as the individual resources within your server or expansion enclosure to determine if an event has occurred. Light path indicators provide indications of both fault and informational events.

1. Move to the front of your server enclosure.
2. Look at the front display panel to determine if any of the indicators are lit.
3. If the amber information indicator is lit, view the logs page of the DS Storage Manager to determine any further actions.
4. If the amber system alert light is lit, perform one of the following actions, depending on the other indicators that are lit:
 - If the fault on opposite side indicator is lit, move to the rear of the enclosure.
 - If the fault in external enclosure indicator is lit, move to the attached expansion enclosure that has the system alert indicator lit and repeat this step and the successive steps for that expansion enclosure.
 - If neither fault on opposite side nor the fault in external enclosure indicators are lit, stay at the front of the server enclosure. The fault is located on one of the disk drive modules.
5. Find the resource on the side of the enclosure that contain a fault that have a solid fault/service indicator. This is the resource that needs to be replaced.
6. Follow the removal and replacement procedures to replace the resource. After replacing the resource, the process automatically begins to bring the resource online. If, after the resource is fully online, the system alert indicators are still lit, repeat these steps to find the next resource that requires service.

Determining cable problems

Complete this task to determine if a cable is the cause of a resource fault event.

Before you can begin problem determination, you must have another cable of the same type as the cable that might be causing the fault event.

Note: For cabling information, see Routing the cables.

The following resources use cables to connect to other hosts, enclosures, networks, or power sources:

- Processor card
 - Power supply
1. Use the light path indicators or the DS Storage Manager to find the resource that has experienced a fault.
 2. If necessary, ensure that the external item that is connected to your enclosure, such as a host system or another enclosure, is offline.
 3. Disconnect the cable from the external item.
 4. Disconnect the cable from the server or expansion enclosure.
 5. Reconnect the replacement cable to the server or expansion enclosure.
 6. Reconnect the replacement cable to the external item.
 7. Follow the proper procedure to bring the external item online, if necessary.
 8. Watch the problem logs to see if the fault event occurs again.
 - If the fault event does not occur again, the cable was causing the problem.
 - If the fault event does occur again, the original cable was not the cause of the problem and you must replace the resource.
 9. Find and close the problem log entry for the resource through the DS Storage Manager.
 10. Bring the resource online.

Dispose of the cables that were determined to be the cause of the fault. Keep the cables that were not the cause of the fault for later use.

Sending problem determination data (real-time only)

Complete this task to collect a problem determination data file from the storage unit. You can send it to IBM technical support, save a copy to your local workstation, or delete it.

1. In the navigation, select **Real-time Manager, Manage Hardware**, and then **Storage units**.
2. Select the appropriate storage unit.
3. In the **Select Action** drop-down list, select **Copy and Send Problem Determination Data** and then **Go**. The Collect New PD Files page is displayed.
4. Select the type of information that you want to collect. You can select Traces, Dumps, or both file types. Select traces as the default option. The dumps option is primarily used if you are being instructed to do so by IBM technical support.
5. Type a description for the problem determination data file set that you are creating. This description is saved with the file set and can help distinguish the file set from other file sets. You must provide a description before you can proceed to the next step. You can edit this information in the Manage/Send Existing PD Files page.
6. Click **Copy**. The system collects and copies Traces (PE packages) and Dumps (statesaves) into files and displays them in the form of hyperlinks that can be managed from the Manage/Send Existing PD Files page. Click on the hyperlink to display additional information about the file set.

Note: You can also select file sets and click the **Save to Local disk** button or the **Delete** button.

7. Navigate to the Manage/Send Existing PD Files page. The table at the top of this page lists the problem determination data file sets that you created from the Collect New PD Files page.
8. Select the problem determination data file sets that you want to send to IBM technical support.
9. Click the **Send to IBM support** button to send the selected files to IBM technical support.

Note: To modify the description that you provided earlier, click on the file name hyperlink in the table and click **Edit description**.

Contacting IBM

Complete this task to contact IBM or view the IBM Support Web site.

You must have an Internet connection to contact IBM Support.

If you are contacting IBM Support for problem determination and resolution, you must also collect any information that can assist the support contact in diagnosing the issue. Such information can include, but is not limited to:

- Problem description
 - Machine serial numbers
 - Physical configuration information
 - Logical configuration information
 - Level of code that is installed on the system
 - Attached host types, host code levels, and world wide node names
 - Any applicable error messages
1. In the navigation, select **Real-time manager** → **Monitor System** → **Contact IBM**.
 2. Click the Contact IBM link on the page to open a new browser window for the IBM Support Web site.
 3. If you have not visited this site before, you must select your appropriate country from the drop down menu. If you have completed this step during a previous visit to the site, you do not have to select your country. The page opens automatically.

Chapter 16. Providing PE package and state save information

This section contains information to help you use the DS CLI commands to provide your PE package and state save information to IBM. This information allows IBM to analyze your problem and to assist you directly with maintaining your DS6000 in an optimal state.

Note: The commands you issue for providing PE package and state save information can only be initiated from the DSCLI client installed locally on the management console connected to the target storage unit.

When you are directed by IBM Support personnel, you can use the DS CLI **mkpe**, **offloadss**, **sendpe**, and **sendss** commands to collect and to pass detailed information to IBM. You can use the following modes to provide this information to IBM:

- FTP
- An e-mail with the PE package, statesave file, or both, included as attachments
- CD sent by postal mail
- A manual method that does not use FTP, e-mail, or a CD sent by postal mail

Perform the following steps to send your pe package and statesave files to IBM support personnel:

1. Use the DS CLI **mkpe** and **offloadss** commands to initially collect and send pe package and state save information to IBM support personnel. See “Providing problem determination information using FTP” for additional information.
2. Use the DS CLI **sendpe** command to send the PE package to IBM Support after the initial FTP transfer failed. See “Sending the PE package after the FTP transfer has failed” on page 47 for additional information.
3. Use the DS CLI **sendss** command to send the state save information to IBM Support after the initial FTP transfer has failed. See “Sending the statesave file after the FTP transfer has failed” on page 49 for additional information.
4. Use the DS CLI **mkpe** command to collect and send an SMC only PE package to IBM support personnel. See “Providing a management console only PE package” on page 46
5. Use the alternative methods (e-mail or CD) to send PE package and state save information to IBM support personnel when there is no way you can use FTP. See “Providing problem determination information when FTP is not available” on page 50 for additional information.

Providing problem determination information using FTP

The problem determination information that you collect when you process the **mkpe** and **offloadss** commands is forwarded automatically using FTP to IBM support personnel. Because FTP is not a 100% reliable transport protocol, files that are sent by FTP are also saved on the storage management console. These saved files are automatically managed so that they do not accumulate and take up too much disk space on the storage management console.

To use the FTP feature of the **mkpe** and **offloadss** commands, ensure that you meet the following requirements:

- The **mkpe** and **offloadss** commands can only be initiated from the DSCLI client installed locally on the management console connected to the target storage unit.
- The server enclosures must be powered on and functioning.
- There must be an active IP connection between your storage management console and both processor cards.
- Adequate disk space must exist on your storage management console.
- The storage management console must be connected to the Internet, and its firewall must allow FTP to the IBM support Web address.
- You must have administrator authority to initiate and follow through with this process.

Note: The **mkpe** and **offloadss** commands only work when the DS CLI is installed on the storage management console PC. This is because the programs that gather and send the problem determination information to IBM, only exist on the storage management console PC.

The **mkpe** command collects the PE package data and presents the information in a summary format. The **offloadss** command collects the statesave data, which contains additional detailed information. Generally, when IBM support personnel request the PE package, they also request that you provide the statesave information. There are occasions, however, when only the PE package is needed for analysis.

Notes:

1. On a typical installation, MR1750_SM_HOME is set to C:\Program Files\IBM\DS6000StorageManager\SM.
2. Statesave files and PE packages are copied to the management console in subdirectory %MR1750_SM_HOME%\send2IBM before they are sent to IBM.
3. Statesave files and PE package files that have been sent by FTP to IBM can be found in the management console subdirectory, %MR1750_SM_HOME%\send2IBM\sent\.
4. The examples provided in this task are based on a Windows environment.

Perform the following steps to create PE package and statesave files and to *automatically* provide the requested information to IBM support personnel through the FTP process. The example commands in this task are shown in two formats. The first format shows the type of information that the command requires. The second format provides the command with declared values for the variables.

1. Issue the **mkpe** command to create the PE package file. Enter the **mkpe** command from the dscli prompt with the following parameters and variables:

```
dscli>mkpe -retry count storage_image_ID
```

Example

```
dscli>mkpe -retry 3 IBM.1750-75FA120
```

Note: Use the **-retry** parameter when you want the FTP process to attempt to send the files more than once. You can specify a value of 0 - 3, with 0 being the default value.

A successful process of this example command displays the following message:

```
The following PE package successfully generated and copied
from 1750-68FA120:
c:/Program_Files/IBM/DS6000StorageManager/SM/send2IBM/175051113AB15A.
```

```
IBM.0.NOPMH.20050328223544.c10.pe.zip
c:/Program Files/IBM/DS6000StorageManager/SM/send2IBM/175051113AB15A.
IBM.0.NOPMH.20050328223807.c11.pe.zip
```

```
PE package successfully sent to IBM:
175051113AB15A.IBM.0.NOPMH.20050328223544.c10.pe.zip
```

```
PE package successfully sent to IBM:
175051113AB15A.IBM.0.NOPMH.20050328223807.c11.pe.zip
```

```
mkpe successfully completed.
```

Notes:

- a. The PE package information is collected on the management console subdirectory %MR1750_SM_HOME%\send2IBM and using FTP, is automatically sent to the IBM support Web address.
 - b. Files that are sent by FTP are automatically moved to the management console subdirectory, %MR1750_SM_HOME%\send2IBM\sent\.
2. Issue the **offloadss** command to create the statesave file. Enter the **offloadss** command at the dscli command prompt with the following parameters and variables:

```
dscli>offloadss -retry count storage_image_ID
```

Example

```
dscli>offloadss -retry 3 IBM.1750-68FA120
```

Note: Use the **-retry** parameter when you want the FTP process to attempt sending the files more than once. You can specify a value of 0 - 9, with 0 being the default value.

A successful process of this example command displays the following message:

```
offloadss: The following files offloaded from 1750-68FA120:
/Program Files/IBM/DS6000StorageManager/SM/send2IBM/
175051113AB15A.IBM.0.NOPMH.20050327243603.c10.dumptrace.tgz
```

```
offloadss: statesave FTPed to IBM:
175051113AB15A.IBM.0.NOPMH.20050327243603.c10.dumptrace.tgz
```

```
offloadss: successfully completed.
```

Notes:

- a. The statesave information is collected on the management console subdirectory %MR1750_SM_HOME%\send2IBM and automatically sent to the IBM support Web address.
- b. The files that are sent by FTP are automatically moved to the management console subdirectory %MR1750_SM_HOME%\send2IBM\sent\.

If the automatic process that sends files by FTP is not available, you can use the **sendpe** or **sendss** commands at a later time. Or, contact IBM support personnel. You might be asked to use the following process:

1. Open a DOS window on the management console and change directories (cd) to the location of the files to be sent to IBM. For example, c:\program files\IBM\DS6000\SM\send2IBM

2. Type `ftp testcase.software.ibm.com` at the command prompt and press **Enter**. A prompt for *user* is displayed.
3. Type `ftp` at the user prompt and press **Enter**. The *password* prompt is displayed.
4. Type your e-mail address at the password prompt and press **Enter**. The command prompt is displayed.
5. Type `bin` and press **Enter**. It is important that you type *bin* to avoid the corruption of files.
6. Type `cd /ssd/toibm/sharkdumps` at the command prompt and press **Enter**. The command prompt at the `ssd/toibm/sharkdumps` directory is displayed.
7. Type `mput *.*` at the command prompt and press **Enter**. The file names that can be sent to IBM are displayed one at a time.
8. Answer *y* (yes) or *n* (no) to each file name that is presented to denote whether you want to transfer the file.

Notes:

1. You are not able to do a **dir** or **ls** command to validate that the file have been transferred.
2. You are not able to transfer the same file twice. If a situation arises where this needed, rename the file and then transfer it. Provide an e-mail to IBM support explaining this circumstance.

Providing a management console only PE package

Complete this task to create and send a management console (MC) only PE package to IBM support personnel. An MC only PE package contains the log files and configuration files that are associated only with the management console. It does not contain any files that are associated with the DS6000 nodes.

You must use the DS CLI **mkpe** command to collect and create the MC only PE package. To use this command and to use the automatic FTP feature to transfer the information to IBM support personnel, you must ensure that you meet the following requirements:

- The **mkpe** command can only be initiated from the DSCLI client installed locally on the management console connected to the target storage unit.
- The server enclosures must be turned on and functioning.
- There must be an active IP connection between your storage management console and both processor cards.
- Adequate disk space must exist on your storage management console.
- The storage management console must be connected to the Internet, and its firewall must allow FTP transfer to the IBM support Web address.
- You must have administrator authority to use the **mkpe** command.

Perform the following steps to create and send an MC only PE package file to IBM support personnel using the DS CLI **mkpe** command. The example commands that are displayed in this task are shown in two formats. The first format shows the type of information the command requires. The second format provides the command with declared values for the variables.

1. Call IBM support personnel and determine that a problem exists that affects only the management console. After you determine that you must send an MC only PE package to IBM, ensure that you also agree on a name to attach to the report before you hang up.

Note: The name is critical in identifying the PE package because there is no other way to determine which management console is being referenced by the PE package. If you do not have a name, you can assign one at the time that you initiate the command. Then, you must call the IBM support personnel and inform them of the name that you have attached to the report before you can send it to them.

2. Issue the **mkpe** command to collect and create the MC only PE package. Enter the **mkpe** command at the dscli command prompt with the following parameters and variables:

```
dscli>mkpe -smconly -customer customer_name -retry count storage_image_ID
```

Example

```
dscli>mkpe -smconly -customer mine4results -retry 3 IBM.1750-75FA120
```

The output from this command example produces the following file name:

```
1750511SMC0000.mine4results.000.NOPMH.20051028223544.  
c10.SMCLog.zip
```

This file name is copied to the management console in subdirectory %MR1750_SM_HOME%\send2IBM. The FTP feature of this command automatically initiates and sends the MC only PE package to IBM support personnel. Based on the request that you made in the command (-retry 3), the FTP continues to initiate the transfer up to 3 times if it was not successful on the initial attempt.

When the FTP transfer is successful, the following two results occur:

- You receive a confirmation message that the transfer was successful like the following:
PE package successfully sent to IBM: 1750511SMC0000.mine4results.
000.NOPMH.20051028223544.c10.SMCLog.zip
- The MC only PE package file is moved into the management console subdirectory, %MR1750_SM_HOME%\send2IBM\sent\.

Note: If the FTP transfer was not successful, you can wait until later and attempt to resend the file using the **sendpe** command.

Sending the PE package after the FTP transfer has failed

Complete this task to send PE package files to IBM support personnel after the initial FTP transfer failed when you used the DS CLI **mkpe** command.

You must use the DS CLI **sendpe** command to send a PE package to IBM support personnel after the initial FTP transfer has failed when you used the DS CLI **mkpe** command. To use the **sendpe** command and to use the automatic FTP feature to transfer the information to IBM support personnel, you must ensure that you meet the following requirements:

- The **sendpe** command can only be initiated from the DSCLI client installed locally on the management console connected to the target storage unit.
- The server enclosures must be turned on and functioning.
- There must be an active IP connection between your storage management console and both processor cards.
- Adequate disk space must exist on your storage management console.
- The management console must be connected to the Internet, and its firewall must allow FTP transfer to the IBM support Web address.
- You must have administrator authority to use the **sendpe** command.

It is possible that when you initially created the PE package file and tried to send it using FTP that there was a problem with the connection. Or, it might be a case that your management console is located in a network that does not have direct access to the Internet or to IBM support personnel.

In any case, the time period for using the automatic feature of FTP that is associated with the DS CLI **mkpe** command has expired. However, you must still send the PE package to IBM support personnel. This can be done using the DS CLI **sendpe** command.

Perform the following steps to send a PE package file to IBM support personnel after the time period has expired for using the DS CLI **mkpe** command. The example commands in this task are shown in two formats. The first format shows the type of information that the command requires. The second format provides the command with declared values for the variables.

1. Issue the **lspe** command to locate the PE package files that are ready to be sent to IBM support personnel. Enter the **lspe** command at the dscli prompt with the following parameters and variables:

```
dscli>lspe -l -state ready
```

Example

```
dscli>lspe -l -state ready
```

Notes:

- a. **ready** is the actual value that you must state in the command.
 - b. Your search criteria is narrowed by using the **-state ready** parameter. Only the files that are in a **ready** state can be sent to IBM support personnel.
 - c. Use the **-l** parameter to provide PE package file details such as, file name, state (status), creation date, and size.
 - d. These files reside in the management console subdirectory `%MR1750_SM_HOME%\send2IBM` until they are sent to IBM support personnel.
2. Issue the **sendpe** command when you have determined which PE package file that you must send to the IBM support personnel. Enter the **sendpe** command at the dscli command prompt with the following parameters and variables:

```
dscli>sendpe -retry count pepackage_name
```

Example

```
dscli>sendpe -retry 3 175051113AB15A.IBM.0.NOPMH.20050328223544.  
cl0.pe.zip
```

Notes:

- a. Use the **-retry count** parameter to specify the number of times that you want the command to try to initiate the FTP transfer process. You can specify a value of 0 - 9 attempts.
- b. If there is an FTP transfer problem that does not allow an FTP transfer, you can do one of the following:
 - Wait until a later time, use the **sendpe** command, and once again attempt to send the PE package.
 - Use an e-mail or copy the PE package file onto a CD and mail it to an address that is provided by IBM support personnel.

When the FTP transfer is successful, the following two results occur:

- You receive a confirmation message that the transfer was successful:

PE package successfully sent to IBM:
175051113AB15A.IBM.0.NOPMH.20050328223544.
cl0.pe.zip

- The PE package file is moved into the management console subdirectory, %MR1750_SM_HOME%\send2IBM\sent\.

Sending the statesave file after the FTP transfer has failed

Complete this task to send statesave files to IBM support personnel after the initial FTP transfer has failed when you used the DS CLI **offloadss** command.

You must use the DS CLI **sendss** command to send a statesave file to IBM support personnel after the initial FTP transfer has failed when you used the DS CLI **offloadss** command. To use the **sendss** command and to use the automatic FTP feature to transfer the information to IBM support personnel, you must ensure that you meet the following requirements:

- The **sendss** command can only be initiated from the DSCLI client installed locally on the management console connected to the target storage unit.
- The server enclosures must be turned on and functioning.
- There must be an active IP connection between your storage management console and both processor cards.
- Adequate disk space must exist on your storage management console.
- The management console must be connected to the Internet, and its firewall must allow FTP transfer to the IBM support Web address.
- You must have administrator authority to use the **sendss** command.

It is possible that when you initially created the statesave file and tried to send it using FTP that there was a problem with the connection. Or, it might be a case that your management console is located in a network that does not have direct access to the Internet or to IBM support personnel.

In any case, the time period for using the automatic feature of FTP that is associated with the DS CLI **offloadss** command has expired. However, you must still send the pe package to IBM support personnel. This can be done using the DS CLI **sendss** command.

Perform the following steps to send a statesave file to IBM support personnel after the time period has expired for using the DS CLI **offloadss** command. The example commands in this task are shown in two formats. The first format shows the type of information that the command requires. The second format provides the command with declared values for the variables.

1. Issue the **lsss** command to locate the statesave files that are ready to be sent to IBM support personnel. Enter the **lsss** command at the dscli prompt with the following parameters and variables:

```
dscli>lsss -l -state ready
```

Example

```
dscli>lsss -l -state ready
```

Notes:

- a. **ready** is the actual value you must state in the command.
- b. Narrow your search criteria by using the **-state ready** parameter. These are the only files that can be sent to IBM support personnel.

- c. Use the **-l** parameter to provide the statesave file details such as, file name, state (status), creation date, and size.
 - d. These files reside in the management console subdirectory %MR1750_SM_HOME%\send2IBM until they are sent to IBM support personnel.
2. Issue the **sendss** command when you have determined which PE package file that you must send to the IBM support personnel. Enter the **sendss** command at the dscli command prompt with the following parameters and variables:
- ```
dscli>sendss -retry count statesave_filename
```

**Example**

```
dscli>sendss -retry 3 175051113AB15A.IBM.0.NOPMH.050318180713.c10.dumptrace.tgz
```

**Notes:**

- a. Use the **-retry count** parameter to specify the number of times that you want the command to try to initiate the FTP transfer process. You can specify a value of 0 - 9 attempts.
- b. If there is an FTP transfer problem that does not allow an FTP transfer, you can do one of the following:
  - Wait until a later time, and then try again to send the statesave package with the **sendss** command.
  - Use an e-mail or copy the statesave file onto a CD and mail it to an address that is provided by IBM support personnel.

When the FTP transfer is successful, the following two results occur:

- You receive a confirmation message that the transfer was successful:
 

```
sendss: Statesave sent to IBM:
175051113AB15A.IBM.0.NOPMH.050318180713.c10.dumptrace.tgz
sendss: successfully completed.
```
- The statesave file is moved into the management console subdirectory, %MR1750\_SM\_HOME%\send2IBM\sent\.

---

## Providing problem determination information when FTP is not available

Complete this task to provide problem determination information to IBM if FTP is not available.

There might be times when you must provide problem determination information to IBM support personnel but your FTP connection is not available. You can still make use of the **mkpe** and **offloadss** commands to collect the information, but you must include the **-noftp** parameter. You can send the collected information to IBM support using e-mail or sending a CD that contains the information.

You must ensure that you are logged into the DS CLI application in interactive mode.

The **mkpe** command collects the PE package data and presents the information in a summary format. The **offloadss** command collects the statesave data, which contains additional detailed information. Generally, when IBM support personnel request the PE package, they also request that you provide the statesave information, as well. There are occasions however, when only the PE package is needed for analysis.

Perform the following steps to provide the requested information to IBM support:

| **Note:** Obtain the address information from IBM Support where you can send your  
| e-mail or CD.

- | 1. Issue the **mkpe** command from the dscli prompt as follows: dscli>mkpe -noftp  
| IBM.1750-75FA120. The PE package information is collected on the management  
| console subdirectory %MR1750\_SM\_HOME%\send2IBM.
- | 2. Create and send an e-mail with your attached PE package file, to the address  
| IBM Support has directed that your file be sent. Or, send your CD by mail to  
| the address that IBM Support has given you.

| **Note:** The size of the attachment might exceed the limits that you have set for  
| your e-mail attachments. It is suggested that the e-mail attachments be  
| put into individual e-mails to preclude exceeding your limits. If there is  
| still a problem, you might consider copying the files onto a CD and then  
| mailing the CD to the address that IBM Support has given you.

- | 3. Issue the **offloadss** command from the dscli prompt as follows: dscli>offloadss  
| -noftp IBM.1750-75FA120. The statesave files are collected on the management  
| console subdirectory %MR1750\_SM\_HOME%\send2IBM.
- | 4. Create and send an e-mail with your attached statesave file to the address that  
| IBM Support has directed that your file be sent. Or, send your CD by mail to  
| the address that IBM Support has given you.
- | 5. Wait for confirmation from IBM Support that they have received your e-mail  
| and copy your statesave files and PE package files to a backup directory.

| **Note:** When your problem has been resolved, you can delete the backup copy  
| of your files.

- | 6. Delete the PE package files from your backup directory.
- | 7. Delete the statesave files from your backup directory.



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### 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/cgibin/pbi.cgi>

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VS07171L



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