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PREFACE

As part of an effort to improve its product lines, EMC periodically releases revisions of its software and hardware. Therefore, some functions described in this document might not be supported by all versions of the software or hardware currently in use. The product release notes provide the most up-to-date information on product features.

Contact your EMC representative if a product does not function properly or does not function as described in this document.

Note: This document was accurate at publication time. New versions of this document might be released in EMC Online Support. Check EMC Online Support to ensure that you are using the latest version of this document.

Purpose

This guide shows how to install and operate EMC SRDF Controls for z/TPF.

Audience

This guide is for system programmers and operators who install and use SRDF Controls for z/TPF.

Related documentation

The following EMC publications provide additional information:

- EMC z/TPF Product Suite Release Notes
- EMC TimeFinder Controls for z/TPF Product Guide
- EMC ResourcePak for z/TPF Product Guide
- EMC VMAX3 Family with HYPERMAX OS Product Guide

Conventions used in this document

EMC uses the following conventions for special notices:

Note: A note presents information that is important, but not hazard-related.

IMPORTANT

An important notice contains information essential to software or hardware operation.
Typographical conventions

EMC uses the following type style conventions in this document:

**Normal**
Used in running (nonprocedural) text for:
- Names of interface elements, such as names of windows, dialog boxes, buttons, fields, and menus
- Names of resources, attributes, pools, Boolean expressions, buttons, DQL statements, keywords, clauses, environment variables, functions, and utilities
- URLs, pathnames, filenames, directory names, computer names, links, groups, service keys, file systems, and notifications

**Bold**
Used in procedures for:
- Names of interface elements, such as names of windows, dialog boxes, buttons, fields, and menus
  - What the user specifically selects, clicks, presses, or types

**Italic**
Used in all text (including procedures) for:
- Full titles of publications referenced in text
- Emphasis, for example, a new term
- Variables

**Courier**
Used for:
- System output, such as an error message or script
- URLs, complete paths, filenames, prompts, and syntax when shown outside of running text

**Courier bold**
Used in procedures for specific user input, such as commands

**Courier italic**
Used in procedures for:
- Variables on the command line
- User input variables

<>
Angle brackets enclose parameter or variable values supplied by the user

[]
Square brackets enclose optional values

|
Vertical bar indicates alternate selections — the bar means “or”

{}
Braces enclose content that the user must specify, such as x or y or z

...
Ellipses indicate nonessential information omitted from the example

In addition to the command example conventions described above, the following rules apply to the command syntax descriptions:

- **Captilization** indicates the portions of keywords that must be typed (for example, **ALL** or **GROup**). They must be spelled exactly as shown.

Variables appear in lowercase and italics (for example, **cccccccc**). They represent user-supplied names or values in the syntax.
Where to get help

EMC support, product, and licensing information can be obtained though EMC Online Support as described next.

**Note:** To open a service request through EMC Online Support, you must have a valid support agreement. Contact your EMC sales representative for details about obtaining a valid support agreement or to answer any questions about your account.

**Product information**

For documentation, release notes, software updates, or for information about EMC products, licensing, and service, go to EMC Online Support (registration required) at:

https://support.EMC.com

**Technical support**

EMC offers a variety of support options.

**Support by Product** — EMC offers consolidated, product-specific information on the Web at:

https://support.EMC.com/products

The Support by Product web pages offer quick links to Documentation, White Papers, Advisories (such as frequently used Knowledgebase articles), and Downloads, as well as more dynamic content, such as presentations, discussions, relevant Customer Support Forum entries, and a link to EMC Live Chat.

**EMC Live Chat** — Open a Chat or instant message session with an EMC Support Engineer.

Your comments

Your suggestions will help us continue to improve the accuracy, organization, and overall quality of the user publications. Send your opinions of this document to:

techpubcomments@emc.com
CHAPTER 1
Product Overview

This chapter introduces SRDF Controls for z/TPF and its features.

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Overview

EMC® SRDF® Controls for z/TPF is a software package for z/TPF (Transaction Processing Facility). It monitors SRDF status and controls SRDF processes using commands entered at the z/TPF Prime CRAS (computer room agent set).

Symmetrix® Remote Data Facility (SRDF) maintains a real-time copy of data at the logical volume level in storage systems located in physically separate sites. The supported systems include all storage systems currently supported for mainframe use.

SRDF has the following major features and benefits:

- High data availability
- High performance
- Flexible configurations
- Host and applications software transparency
- Automatic recovery from a component or link failure
- Significantly reduced recovery time after a disaster
- Reduced disaster recovery complexity, planning, testing, and so forth
- Increased integrity of recovery procedures
- Reduced backup and recovery costs

SRDF is transparent to the host operating system and host applications. It does not require additional host software for duplicating data on the storage systems at the geographically-separate sites. The participating storage systems manage all SRDF functions.

IMPORTANT

Before using SRDF Controls for z/TPF, ensure that you understand the basic features and operations of SRDF. The VMAX3 Family with HYPERMAX OS Product Guide includes an operational overview of SRDF.
Product features

Use SRDF Controls for z/TPF to control and monitor data mirroring.

Security feature

SRDF Controls for z/TPF provides the following security features:

- You can enter commands at the Prime CRAS only.
- You can enter SRDF Controls for z/TPF commands from the Prime CRAS of the SYMM utility owner only.

However, you can issue SRDF Controls for z/TPF display commands from the Prime CRAS of any CPU in a loosely-coupled complex.

System level synchronization direction

You can set the direction of synchronization between the co-operating storage systems:

- R1 to R2
- R2 to R2
- NONE
- GLBL

When you initialize the control structures for SRDF Controls for z/TPF, the default synchronization direction is set to GLBL (global) for each storage system or SRDF set. The default global synchronization direction for an SRDF group is set to NONE. This feature enforces procedural standards for recovery scenarios.

Remote VMAX display and configuration

There are facilities to display and configure SRDF on remote storage systems across the SRDF link. This feature lets you control storage systems that may not be accessible directly from the z/TPF instance that owns the SRDF resource.

SRDF remote display and configuration operations also allow for control of recovery testing procedures from a single z/TPF instance. This feature is provided through the REMote parameter on the display and configuration commands.

SRDF Monitor

For all SRDF Controls for z/TPF commands that change the status of a link or device, the SRDF Monitor checks to see that the change of status was successful. If so, the SRDF Monitor terminates normally. Otherwise, the SRDF Monitor periodically checks the status of the link or device until it has successfully changed.

For SRDF commands that initiate synchronization, the SRDF monitor restarts as long as there are still tracks left to be synchronized. You can also enable persistent monitoring for commands that initiate synchronization. Here, the user terminates the monitor through a command. This mode of operation is useful when monitoring migrations and cascaded SRDF solutions.
SRDF group and set name support

You can define any number of SRDF groups. Each SRDF group consists of one or more user-defined sets. In turn, each set identifies a local and remote SRDF pair of storage systems. You can define the same local and remote SRDF pair as a set in one or more SRDF groups.

A local and remote pair of storage systems is uniquely identified by:
- The SRDF group name
- The set name

This enables you to use a single command to initiate an SRDF operation to one or all of the SRDF sets in an SRDF group.

QOS Controls for z/TPF

QOS Controls for z/TPF is a component of EMC ResourcePak for z/TPF. QOS Controls for z/TPF allows you to display and define the Quality of Service value for an SRDF group.

The QOS value determines the priority given to SRDF synchronization tasks:
- RESume
- INValidate
- RFRresume

The valid QOS values are zero (0) through ten (10). The default value is zero (0) and is the highest priority.

If an SRDF group is in the process of being synchronized and the SRDF monitor is active when you define the QOS value for that group, the SRDF monitor initiates QOS Controls for z/TPF. The QOS Controls then set the QOS value for all SRDF pairs in the SRDF group.

If the SRDF monitor is not active, the SRDF scheduler initiates QOS Controls for z/TPF to set the QOS value for all SRDF pairs in the SRDF group the next time an SRDF synchronization command is started for the SRDF group.

The QOS value for SRDF is set on the source volume. The QOS value for a volume reflects the value of the group that last issued a SRDF Restore, Invalidate, or RFRresume operation when the following conditions apply:
- The volume is the source for more than one SRDF group.
- Those groups have a different QOS value defined.

The EMC ResourcePak for z/TPF Product Guide describes QOS Controls for z/TPF.

z/TPF systems and the VM environment

Use VM gatekeeper capabilities to specify the SRDF operations device for each set configured for SRDF Controls for z/TPF. To run SRDF Controls for z/TPF on a system running under VM, SRDF Controls for z/TPF requires that all devices to which EMC SymmAPI I/O operations are issued, are defined as unsupported device types to VM. At Enginuity levels 5874 and above or HYPERMAX OS, the SRDF Controls for z/TPF requirement for unsupported devices under VM no longer applies.
When running z/TPF in native mode, or under VM with all devices defined as unsupported to VM, SRDF Controls for z/TPF issues at least one EMC SymmAPI I/O operation to each online module in the z/TPF complex during SRDF control record Refresh.

All EMC SymmAPI I/O operations following SRDF configuration are directed to the SRDF operations SDA for each set. You use the ZURDF DISplay CTLRCD command (see page 151) to determine the operations SDA for each set.

When running z/TPF in native mode, or under VM with all devices defined as unsupported to VM, VM requires the following patches:

- Add status modifier=yes for channel command x’27’
- Allow IPL of an unsupported device by a secondary CP

You can define a gatekeeper device for each set after SRDF control record configuration using the ZURDF DEFine PROp-GKD|GMS|NOG command (see page 105).

When a gatekeeper is defined for a set, SRDF Controls for z/TPF issues all EMC SymmAPI I/O operations for that set to the gatekeeper device. This gatekeeper device can be an online z/TPF module or mounted as a general file or general dataset.

The same SRDF gatekeeper device can be used for any set in any SRDF group, provided the SDA designates a locally attached storage system, configured with the first RDFGroup specified in the set’s multi-hop list.

Defining a single gatekeeper for multiple sets has one significant consequence. The MDBF SS and SDA are displayed as N/A and 0000, respectively, for devices that are online and not addressable on the same channel path as the gatekeeper device. To avoid this, EMC recommends that you use a STD device in each logical subsystem as the gatekeeper for that logical subsystem, or avoid the use of a gatekeeper altogether by defining all modules as unsupported to VM.

When running SRDF Controls for z/TPF with gatekeeper devices defined as unsupported to VM, VM requires the following patch:

- Add status modifier=yes for channel command x’27’

When running SRDF Controls for z/TPF with gatekeeper devices defined as unsupported to VM and one of the gatekeeper devices is a z/TPF IPL module, VM also requires the following patch:

- Allow IPL of an unsupported device by a secondary CP

To enable all possible modes of operation of SRDF Controls for z/TPF under VM, EMC recommends that both patches be applied to VM. For patch source, consult your EMC representative. If possible, define all z/TPF devices as unsupported to VM, when running SRDF Controls for z/TPF on a z/TPF system running under VM. That configuration is the least complex and the easiest to maintain.

The following CP commands define an address range as unsupported devices to VM:

- **VARY OFF ccud-ccud**
- **SET RDEV ccud-ccud CLEAR**
- **SET RDEV ccud-ccud TY UNSUP DEVCL DASD DPS YES**
- **VARY ON ccud-ccud**
The following CP commands redefine an unsupported address range as supported DASD devices to VM:

- VARY OFF ccud-ccud
- SET RDEV ccud-ccud CLEAR
- SET RDEV ccud-ccud TY DASD
- VARY ON ccud-ccud

**SRDF/A Multi-Session Consistency: z/TPF standalone recovery**

SRDF Controls for z/TPF provides a standalone recovery mechanism to recover a z/TPF Multi-Session Consistency (MSC) group from the secondary side. z/TPF Standalone Recovery functionality can be necessary when MSC operations are halted on the primary side leaving the sessions on the secondary side in an unknown state.

To perform z/TPF Standalone Recovery, a minimal z/TPF database is required on the secondary side. z/TPF Standalone Recovery assumes the z/TPF system being used has no awareness of the z/TPF Group and Set definitions for the SRDF/A MSC group being recovered. The Recovery List resides in memory of the storage system designated by an SDA and RDFGroup on the corresponding storage system. A Recovery List must be built with an available SDA for each set participating in the SRDF/A MSC group along with that set's corresponding RDFGroup number. With this information, z/TPF Standalone Recovery can analyze the state of each session and perform the necessary recovery to ensure a valid point in time copy for the z/TPF MSC group on the secondary side.
CHAPTER 2
Install SRDF Controls for z/TPF

This chapter shows how to install SRDF Controls for z/TPF.

- Overview................................................................................................................. 30
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- Download the SRDF Controls for z/TPF distribution kit ............................................. 33
- Customize the z/TPF source ................................................................................ 35
- Install SRDF Controls for z/TPF ........................................................................... 36
- Specifying functional entries .............................................................................. 37
- Installation considerations .................................................................................. 38
- Migrating from an earlier release of SRDF Controls for z/TPF ............................. 39
Overview

Installing SRDF Controls for z/TPF has the following stages:

1. Preparation.
2. Download the distribution kit.
3. Customize the z/TPF source.
4. Install SRDF Controls for z/TPF.
5. Specify functional entries (first time installations only).

This chapter shows how to complete each stage. In addition, there are instructions on how to migrate from a previous version of SRDF Controls for z/TPF.

Conventions

This chapter use these conventions:

- *prod* represents a product name.
- *vrm* represents the version, revision level, and modification level of a software product.
Preparation

Before installing SRDF Controls for z/TPF:

- Ensure that your storage systems meet the hardware and software requirements
- Check the EMC Online Support website for any product updates or current release notes

Hardware and software requirements

Storage systems

SRDF Controls for z/TPF requires the hardware and software shown in Table 1. Make sure your storage systems meet these requirements.

<table>
<thead>
<tr>
<th>Item</th>
<th>Requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hardware</td>
<td>All currently supported DMX, VMAX, or VMAX 3 storage systems.</td>
</tr>
<tr>
<td>Microcode release</td>
<td>5773 and higher or HYPERMAX OS.</td>
</tr>
<tr>
<td><strong>Note:</strong> Use of SRDF Controls for z/TPF with Enginuity 5773 and higher or HYPERMAX OS supports up to 4096 logical volumes per control unit. If you have any questions about the microcode version in your storage system, as well as the features installed, contact your EMC representative.</td>
<td></td>
</tr>
<tr>
<td>Gatekeeper devices</td>
<td>You can predetermine a gatekeeper device, that all SRDF operations for RDF devices in an SRDF set go through. This gatekeeper device can be a general file or other online device.</td>
</tr>
</tbody>
</table>

a. This minimum supported release level is accurate at the time of publication and is subject to change. Please check the Release and End of Life Service Dates on the EMC Online Support site for the most current information. Contact your EMC Customer Support Engineer to verify that your system meets these requirements. Use of certain features requires higher Enginuity levels. These requirements are noted where appropriate later in this guide.

SRDF links to storage systems

In addition, the SRDF links to remote storage systems must be operational before you configure SRDF Controls for z/TPF control records. This enables SRDF Controls to discover local and remote storage systems correctly.
z/TPF mainframe

SRDF Controls for z/TPF requires the mainframe hardware and software listed in Table 2. Make sure your mainframe system meets these requirements:

Table 2 Mainframe hardware and software requirements

<table>
<thead>
<tr>
<th>Item</th>
<th>Requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hardware</td>
<td>Any system that supports current IBM mainframe operating systems.</td>
</tr>
<tr>
<td>Software</td>
<td>z/TPF version 1.1 or higher operating system environment.</td>
</tr>
</tbody>
</table>

Note: In the past, SRDF Controls for z/TPF required that volumes through which SRDF operations are issued are defined as unsupported devices when SRDF Controls for z/TPF runs under VM. At Enginuity levels 5874 and higher or HYPERMAX OS, that requirement no longer applies. For more information about running EMC software products under VM, contact your EMC representative.

EMC z/TPF software

If you load any combination of SRDF Controls for z/TPF, TimeFinder Controls for z/TPF and the ResourcePak for z/TPF on to the same z/TPF complex, they must all have the same version number. For example, SRDF Controls for z/TPF V8.0 and ResourcePak for z/TPF V8.0.

Download maintenance updates

Note: If there is no current maintenance updates, keep these instructions for future use when you do need to download maintenance.

You can download the latest maintenance updates and current release or service notes from the EMC Online Support website:

https://support.EMC.com

Register as a valid EMC customer so you can access EMC Online Support. Make sure as well that your license for this software is registered. If it is not, you cannot access the download section of the website.

On the page for your product, there are files for different product versions. For your version, you may see the following types of files:

- **ReadMe_prodvm Fixes.txt** - contains information about the release.
- **Service_Notes_prodvm.pdf** (or .txt) - contains information discovered after initial release of the product.
- **prodvm_fixes.zip** - contains the previous two documents as well as a software patch file and instructions on how to apply this maintenance.
To download these files:

1. Log in to:
   
   https://support.EMC.com

2. Choose Support > Support by Product on the Online Support home page. Then search for SRDF Controls for z/TPF.

3. Click Downloads to display a table of .zip files and document files.

4. Do one of the following:

   - To download a copy of a document, click either ReadMe_prodvrm_Fixes.txt or Service_Notes_prodvrm.pdf (or .txt).
   - To download the .zip file, click prodvrm_fixes.zip. Download the .zip file to your home system, unpack the file, and follow the instructions it contains.

---

**Download the SRDF Controls for z/TPF distribution kit**

The SRDF Controls for z/TPF distribution kit consists of a tar file for LINUX® file systems. This tar file may be packaged on a CD or as an electronic download from EMC Online Support.

To extract the SRDF Controls for z/TPF tar file to your LINUX file system:

1. Copy the distribution kit to your LINUX file system:

   - From a CD:
     
     a. Mount the CD on an open system host.
     
     b. Copy the contents of the CD to a working directory.

   - From a EMC Online Support download:
     
     a. Log into a privileged account on an open systems host (root on UNIX or administrator on Windows).
     
     b. Allocate a working directory on the open system for the installation.
     
     c. Log onto the Online Support website.
     
     d. Choose Support > Support by Product from the Online Support home page. Then, search for SRDF Controls for z/TPF.

        **Note:** If you cannot access this location contact EMC Customer Service.

     e. Select the product version you want to download. The product version consists of a tar file and the installation instructions.
     
     f. Download the installation kit into the working directory on the open system.

2. If your host is a Windows system, copy the tar file in the working directory and use FTP to transfer the tar file to LINUX.

```
ftp hostname
(username and password prompts)
cd..
25....is working directory name prefix binary 200 Representation type is image

put ZTRDvrm.tar ZTRDvrm.tar
```
3. From LINUX, list the contents of the tar file:
   
   \texttt{tar -tvf ZTRDvrm.tar}

4. From LINUX, extract the contents of the tar file:
   
   \texttt{tar -xvf ZTRDvrm.tar}

This produces the following files:

<table>
<thead>
<tr>
<th>File name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>RDFReadMe</td>
<td>A ReadMe file</td>
</tr>
<tr>
<td>RDFRelNotes</td>
<td>Release Notes for SRDF Controls for z/TPF 8.0.0</td>
</tr>
<tr>
<td>/TRDvrm_OBJ</td>
<td>SRDF Controls for z/TPF shared object</td>
</tr>
<tr>
<td>/TRDvrm_SRC</td>
<td>SRDF Controls for z/TPF source</td>
</tr>
<tr>
<td>/TRDvrm_SAM</td>
<td>SRDF Controls for z/TPF macros and sample macros</td>
</tr>
</tbody>
</table>
Customize the z/TPF source

Table 3 describes z/TPF source customization required for SRDF Controls for z/TPF. Sample code is in the `TRDvrm_SRC` distribution file.

Table 3 z/TPF source customization

<table>
<thead>
<tr>
<th>Segment</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>umet.asm</td>
<td>Add ZURDF as a BSS ONLY functional entry. Additionally, add ZURCV as a BSS ONLY functional entry to use the SRDF/A MSC Stand-alone Recovery Utility.</td>
</tr>
<tr>
<td>emcqueq.mac</td>
<td>Set global variable &amp;QOS to 1 if QOS Controls for z/TPF are installed or to 0 if QOS Controls for z/TPF are not installed. The default setting is 1. Set global variable &amp;TF to 1 if TimeFinder Controls is installed; 0 if not installed. The default setting is 1. Set global variable &amp;RDF to 1 to indicate SRDF Controls is installed; 0 indicates the product is not installed. The default setting is 1.</td>
</tr>
</tbody>
</table>
| FCTB       | Allocate n 4K fixed file ordinals for record types #EMCRD, #EMCRM, #EMCRB. It is recommended that you allocate enough ordinals to accommodate the possibility of the addition of DASD subsystems or SRDF groups. Use the following formula: 
\[ n = \left[ a \times (c/80) + a \right] b + b + 2 \]  
where: 
a is the number of user defined sets in a group. Use the highest number of sets configured in a group.
b is the number of user defined groups.
c is the number of device pairs per set. Use the highest number of device pairs configured in a set.  
| usr.cntl   | Add entries for E1Rx, E1Vx, and E1Ax program segments, and run the appropriate offline jobs to generate the allocator source (TABLExx) and PAT source (IPATxx). |
| ucnfeq.mac | Add BSS CINFC tag UMMERGST. |
| riata.mac  | Add RIA ID=X’A387’,XCP=YES. |

a. Required for SRDF and QOS Controls for z/TPF integration.  
b. Round up result of (c/80) to the next integer.
Install SRDF Controls for z/TPF

To install SRDF Controls for z/TPF:

1. Unload SRDF Controls for z/TPF into the appropriate source, object, listing, and sample libraries.

2. Update the appropriate general functional message table.

   **Note:** See the sample Functional Message Editor Table Entry in umet.asm, supplied in the TRD\textsuperscript{\textit{vrm\_SAM}} distribution file.

3. Assemble the general functional message table.

4. Update the Basic Subsystem Face Table to allocate the appropriate number of 4K fixed file #EMCRD, #EMCRM, and #EMCRB records. This is the value you calculated in “Customize the z/TPF source” on page 35.

   **Note:** Refer to the sample RAMFIL statements supplied in ramfil.mac in the TRD\textsuperscript{\textit{vrm\_SAM}} distribution file.

5. Generate and link the modified Basic Subsystem Face Table.

6. Update the Basic Subsystem RIAT with record id x'A387' attributes.

   **Note:** Refer to the sample RIATA calls supplied in riata.mac in the TRD\textsuperscript{\textit{vrm\_SAM}} distribution file.

7. Assemble the modified Basic Subsystem RIAT.

8. Update emcueq.mac to indicate whether or not QOS Controls and TimeFinder Controls are installed.

9. Define BSS CINF tag UMMERGST. Refer to the sample ucnfeq.mac.

10. Assemble the SRDF User Exits provided in TRD\textsuperscript{\textit{vrm\_SRC}} distribution file.

11. Update the Basic Subsystem allocator with program allocation input cards for SRDF.

   **Note:** Refer to the sample Program Allocation Input Deck statement usr.cntl in the TRD\textsuperscript{\textit{vrm\_SAM}} distribution file.

12. Generate the Basic Subsystem SAL table (TABLE\textit{xx}) and program allocation table (IPAT\textit{xx}).

13. Assemble the Basic Subsystem IPAT\textit{xx}.

14. Check the EMC Online Support website for the latest object code and release notes.

15. Update image load, general file load, and online load decks with the generated Basic Subsystem allocator version.

16. Create a Basic Subsystem image load with the modified FCTB, RIAT, functional message table, and SRDF E-type segments.

17. Load and activate the image.
Specifying functional entries

If you have installed SRDF Controls for z/TPF for the first time on your z/TPF system, enter the following functional entries before using SRDF Controls for z/TPF:

1. Add resource SYMM for the Basic Subsystem to the processor resource ownership table:

   ZPROT ADD UT SYMM BSS

   **Note:** Substitute *BSS* with the Basic Subsystem name of the z/TPF complex.

2. Assign resource SYMM for the Basic Subsystem to one processor in the z/TPF complex:

   ZPROT ASN UT SYMM BSS

   **Note:** Substitute *BSS* with the Basic Subsystem name of the z/TPF complex.

3. Initialize the SRDF Controls records with record ID x'A387':

   ZIFIL EMCRD/A387/00/0/nnnnnn/NNN/N
   ZIFIL EMCRM/A387/00/0/nnnnnn/NNN/N
   ZIFIL EMCRB/A387/00/0/nnnnnn/NNN/N
Installation considerations

This section explains SRDF Controls for z/TPF considerations for additional functionality:

- QOS Controls for z/TPF
- Abort Processing for z/TPF
- SRDF/A Multi-Session Consistency for z/TPF

Using QOS Controls for z/TPF

QOS Controls for z/TPF is a component of EMC ResourcePak® for z/TPF. Quality of Service (QOS) Controls for z/TPF provides SRDF Controls for z/TPF with a means to change Quality of Service values for all RDF pairs in an SRDF group.

To enable QOS Controls for SRDF Controls for z/TPF: update all user macros and assemble the shipped source as outlined in “Customize the z/TPF source” on page 35 and “Install SRDF Controls for z/TPF” on page 36.

Using Abort Processing for z/TPF

Abort Processing for z/TPF provides SRDF Controls for z/TPF with a means of terminating an SRDF commands at various stages during command processing.

To enable Abort Processing for z/TPF, update all user macros and assemble shipped source as outlined in “Customize the z/TPF source” on page 35 and “Install SRDF Controls for z/TPF” on page 36.

SRDF/A Multi-Session Consistency: z/TPF standalone recovery installation

SRDF Controls for z/TPF version 8.0 provides a standalone recovery mechanism to recover a z/TPF MSC group from the secondary side. This standalone utility provides this functionality with only a few segments and minimal source customization.

The SRDF Controls for z/TPF SRDF/A Multi-Session Consistency Standalone Recovery requires the following source customization:

<table>
<thead>
<tr>
<th>Segment</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>umet.asm</td>
<td>Add ZURCV as a BSS ONLY functional entry to use the SRDF/A MSC Stand-alone Recovery Utility.</td>
</tr>
</tbody>
</table>
Migrating from an earlier release of SRDF Controls for z/TPF

Perform the following steps to migrate a z/TPF system from a version 7.1.0 format to a version 8.0 format.

**Note:** Convert SRDF control records after loading SRDF Controls for z/TPF V8.0 programs. SRDF commands issued after loading V8.0 programs and before SRDF controls migration terminate with the following message:

```
URDF0095E SRDF Version: vvvv  Modification: mmmm  Revision: rrrr
Control record migration required
```

Customize the example entries in the following procedure for your specific environment.

1. Allocate new programs and reassemble all user exit programs (see “Install SRDF Controls for z/TPF” on page 36).
2. Ensure that no SRDF operation is in progress.
3. Display the current version configuration for later comparison. For example:

<table>
<thead>
<tr>
<th>Issue...</th>
<th>To...</th>
</tr>
</thead>
<tbody>
<tr>
<td>ZURDF DIS GRO-cccccc... STA-ALL</td>
<td>Display status of each defined group.</td>
</tr>
<tr>
<td>ZURDF DIS LOC GRO-cccccc... SET-ssssssss</td>
<td>Display local device control records for all defined sets.</td>
</tr>
<tr>
<td>ZURDF DIS LOC GRO-cccccc... SET-ssssssss TYP-LIN</td>
<td>Display link information for all local CUs in all z/TPF SRDF groups.</td>
</tr>
<tr>
<td>ZURDF DIS REM GRO-cccccc... SET-ssssssss</td>
<td>Display remote device control records for all defined sets.</td>
</tr>
<tr>
<td>ZURDF DIS REM GRO-cccccc... SET-ssssssss TYP-LIN</td>
<td>Display link information for all remote CUs in all z/TPF SRDF groups.</td>
</tr>
<tr>
<td>ZURDF DIS CTL-CU</td>
<td>Display CU/Set Control Records Summary.</td>
</tr>
<tr>
<td>ZURDF DIS CTL-MA</td>
<td>Display Master Control Record Summary.</td>
</tr>
</tbody>
</table>

4. Load the new program base.
5. Back up SRDF control records using the command:

```
ZURDF CTLRCD BACKUP
```

6. To migrate from version 7.1.0, migrate the SRDF Controls control records from the previous version format to the configuration control records in the version 8.0 format, using the command:

```
ZURDF MIGRATE
```

**Note:** See “ZURDF MIGRATE” on page 176 for more information about that command.
7. Redisplay the environment and ensure that it is correct. For example:

<table>
<thead>
<tr>
<th>Issue...</th>
<th>To...</th>
</tr>
</thead>
<tbody>
<tr>
<td>ZURDF CON DIS LOC GRO-cccccccc SET-ssssssss</td>
<td>Display local device control records for all defined sets.</td>
</tr>
<tr>
<td>ZURDF CON DIS REM GRO-cccccccc SET-ssssssss</td>
<td>Display remote device control records for all defined sets.</td>
</tr>
<tr>
<td>ZURDF CON DIS CTL-CU</td>
<td>Display CU/Set Control Records Summary.</td>
</tr>
<tr>
<td>ZURDF CON DIS CTL-MA</td>
<td>Display Master Control Record Summary.</td>
</tr>
</tbody>
</table>

8. Accept the migrated configuration storing it in the SRDF Controls V8.0 control records:

   ZURDF CON ACCEPT ALL

   “ZURDF CONFIG ACCEPT|DISCARD” on page 75 provides more information about that command.

9. Resume normal SRDF operations. For example:

<table>
<thead>
<tr>
<th>Issue...</th>
<th>To...</th>
</tr>
</thead>
<tbody>
<tr>
<td>ZURDF RES GROup-cccccccc</td>
<td>Resume SRDF operation for group cccccccc.</td>
</tr>
</tbody>
</table>
CHAPTER 3
SRDF Commands

This chapter describes the SRDF Controls for z/TPF commands.

**Note:** In this chapter, $d$ represents a decimal digit and $h$ represents a hexadecimal digit. For example, $ddd$ represents a three-digit, decimal number.

- ZURDF Help
- ZURDF ABORT
- ZURDF ADMAX|AWMax
- ZURDF ASYNC
- ZURDF CONfig ACCEPT|DISCARD
- ZURDF CONfig ADD|REMove
- ZURDF CONfig CHAnge|DElete
- ZURDF CONfig Display
- ZURDF CONfig Display CTLRCD
- ZURDF CONfig Display PROp
- ZURDF CONfig OPEn|CLOSE
- ZURDF CONfig REName
- ZURDF CONfig VERify
- ZURDF CRTpair
- ZURDF CTLRCD
- ZURDF DEFine PROp-GKD|GMS|NOG
- ZURDF DEFine PROp-INT|DEL
- ZURDF DEFine PROp-GEN
- ZURDF DEFine PROp-TAR|NRD|CRT|SWA|ASY|SUS
- ZURDF DELHALF
- ZURDF DELpair
- ZURDF Display
- ZURDF Display CTLRCD
- ZURDF Display PROp
- ZURDF Display STAtus
- ZURDF GRP Display
- ZURDF GRP ADD
- ZURDF GRP DEL
- ZURDF INITialize CLEar|CONTinue|CANCel
- ZURDF INVALIDate
- ZURDF MIGRATE
- ZURDF MODE
- ZURDF PROceed|HALt
- ZURDF RDY|NRDy
- ZURDF REFresh
- ZURDF RESTART
- ZURDF RFRresume
- ZURDF SUSpend|RESume
- ZURDF SWApair
- ZURDF SYNchd
SRDF Commands

- ZURDF TARGET........................................................................................................ 211
- ZURDF VALIDATE .................................................................................................... 216
- ZURDF WRITEABLE ............................................................................................... 220
- SRDF commands summary .................................................................................... 224
- ZURCV ADD|DELETE............................................................................................. 228
- ZURCV DISPLAY .................................................................................................... 230
- ZURCV HELP......................................................................................................... 232
- ZURCV INITIALIZE ............................................................................................... 233
- ZURCV PROCEED|HALT ......................................................................................... 234
- ZURCV RECOVER ................................................................................................. 236
ZURDF Help

List the available ZURDF commands or display help on any specific command.

Requirements and restrictions

None.

Format

ZURDF Help [command]

Parameters

command The command for which you want help.

Additional information

Individual command syntax is available by specifying the command parameter.

Examples

Example 1

<table>
<thead>
<tr>
<th>Action</th>
<th>Display basic help.</th>
</tr>
</thead>
<tbody>
<tr>
<td>User</td>
<td>ZURDF HELP</td>
</tr>
<tr>
<td>System</td>
<td></td>
</tr>
</tbody>
</table>

CSMP0097I 10.57.26 CPU-A SS-BSS SSU-SSU0 IS-01
URDF0999I Valid SRDF Operations are:
ABort CTRLCD DISplay MIGRATE RDY SYNchd
ADMax CRTpair GRPcnfig MODE REFresh TARget
ASYNC DEFINE HALt NRDy RFRresume Validate
AWMax DELHALF INITIALize PROceed SUSpend WRItenable
CONfig DELpair INVALIDate
For details enter: ZURDF Help OPERATION
For version enter: ZURDF Help VERSION

Example 2

<table>
<thead>
<tr>
<th>Action</th>
<th>Display the SRDF Controls software release version.</th>
</tr>
</thead>
<tbody>
<tr>
<td>User</td>
<td>ZURDF H VER</td>
</tr>
<tr>
<td>System</td>
<td></td>
</tr>
</tbody>
</table>

CSMP0097I 11.01.45 CPU-A SS-BSS SSU-SSU0 IS-01
URDF0977I SRDF Version: 0008 Modification: 0000 Revision: 0000
**Example 3**

<table>
<thead>
<tr>
<th><strong>Action</strong></th>
<th>Display the syntax of the INValidate command.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>User</strong></td>
<td>ZURDF H INV</td>
</tr>
<tr>
<td><strong>System</strong></td>
<td></td>
</tr>
</tbody>
</table>

ZURDF H INV
CSMP0097I 16.12.05 CPU-A SS-BSS SSU-SSU0 IS-01
URDF0982I Invalidate all tracks of SRDF partner device for an SRDF Group, Range, or one device
ZURDF INValidate [LOCal'REMote] GROup-cccccccc [SET-cccccccc]
[SDN-hhhhhhhh] [CNT-dddd]
LOCal      Local Symmetrix of the Set
REMote     Remote Symmetrix of the Set
GROup-     Operate on Symmetrix in SRDF Group cccccccc
SET-       Operate on the Symmetrix designated by Set cccccccc
SDN-hhhhhhhh Starting hex Symmetrix device number
CNT-dddd   Decimal number of devices
ZURDF ABORT

Terminate the execution of the previously entered SRDF command.

Requirements and restrictions

Use the BYPASS option only on the advice of EMC. Your EMC representative verifies that the SRDF Controls for z/TPF scheduler ECB is waiting on a stale event and no other EMC SRDF Controls for z/TPF ECBs exist.

Format

ZURDF ABORT GROup-cccccccc [SET-cccccccc] [BYPASS]

Parameters

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>BYPASS</td>
<td>Abort and POSTC stale event or hung ECB.</td>
</tr>
<tr>
<td>GROup</td>
<td>The one- to eight-alphanumeric character name of the SRDF group.</td>
</tr>
<tr>
<td>SET</td>
<td>The one- to eight-alphanumeric character name of the SRDF set that identifies an SRDF pair.</td>
</tr>
</tbody>
</table>

Additional information

You can terminate most SRDF commands at any time during execution. Terminating a command while the command is in the process of issuing the operation to the SRDF pairs can result in some SRDF pairs in each SRDF set being in the new state and others in the old state. The Abort command does not change the state of an SRDF pair.

Example

This series of actions demonstrates how to terminate a Refresh command:

Action   Issue the Refresh command for SRDF group RAID10.
User    ZURDF REF REM GRO-RAID10
System

CSMP0097I 19.12.16 CPU-B SS-BSS SSU-SSU0 IS-01
URDF0019I SRDF Control record refresh started
CSMP0097I 19.12.16 CPU-B SS-BSS SSU-SSU0 IS-01
URDF1043I Local CU 000000006211 discovered for Group RAID10 set 3AB8
CSMP0097I 19.12.17 CPU-B SS-BSS SSU-SSU0 IS-01
URDF1043I Remote CU 000000006207 discovered for Group RAID10 set 3AB8

Action   Issue the Abort command for SRDF group RAID10.
User    ZURDF ABORT GRO-RAID10
System

CSMP0097I 19.12.20 CPU-B SS-BSS SSU-SSU0 IS-01
URDF0024I SRDF Control record refresh completed
CSMP0097I 19.12.20 CPU-B SS-BSS SSU-SSU0 IS-01
E1V00000I SRDF Operation Verification Started
E1V00001I SRDF Group Properties Verification Started

Options   Permissions
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None

E1V00003I SRDF Device State Verification Started
CSMP0097I 19.12.20 CPU-B SS-BSS SSU-SSU0 IS-01
E1V00004I SRDF Operation Verification Completed
CSMP0097I 19.12.20 CPU-B SS-BSS SSU-SSU0 IS-01
URDF1035T SRDF Group RAID10 Refresh aborted

Action Display the base status for SRDF group RAID10.
User ZURDF DIS GRO-RAID10 STA-ALL
System

CSMP0097I 19.12.35 CPU-B SS-BSS SSU-SSU0 IS-01
URDF1031I SRDF Status Display
SRDF Group: RAID10 Base Operation: Refresh
Status: Aborted in Operation Verification
  Start Time : 19.12.16 Date : 04/13/04
  End Time   : 19.12.20 Date : 04/13/04
End of Display
**ZURDF ADMax|AWMax**

Set the maximum number of invalid or write pending tracks for devices in Adaptive Copy mode.

**Requirements and restrictions**

The devices to which you direct this SRDF operation must be source (R1) devices in one of the adaptive copy modes. When the invalid or write pending tracks for the device reaches this value, the SRDF Controls processor automatically switches the device into the default operational mode until the invalid or write pending tracks falls below this value.

*Note:* Adaptive copy write pending mode (AWMax) is available in Enginuity 5773 to 5876 only.

**Format**

```
ZURDF ADMax|AWMax [LOCal|REMote] GROup-cccccccc [SET-cccccccc]
[SDN-hhhhhhhh] [CNT-dddd] SKew-ddddddd
```

**Parameters**

- `ADMax`: Adaptive copy disk mode maximum.
- `AWMax`: Adaptive copy write pending mode maximum.
- `LOCal`: A host-attached storage system, or the member of an SRDF pair that is the least number of hops away from the host-attached storage system.
- `REMote`: The storage system in an RDF pair furthest from the locally attached storage system.
- `GROup-cccccccc`: The one- to eight-alphanumeric character name of the SRDF group.
- `SET-cccccccc`: The one- to eight-alphanumeric character name of the SRDF set that identifies an SRDF pair.
- `SDN-hhhhhhhh`: Starting SRDF device number.
- `CNT-dddd`: Number of SRDF devices.
- `SKew-ddddddd`: The maximum allowable write pending or invalid tracks.

**Example**

**Action**
Display eight SRDF R1 devices in adaptive copy mode beginning with SRDF device number 134C in the remote storage system of set 3C00IG of SRDF group SRDFA2.

**User**

```
ZURDF DIS REM GRO-SRDFA2 SET-3C00IG SDN-134C CNT-8 TYP-ADC
```

**System**

```
CSMP0097I 14.30.02 CPU-A SS-BSS SSU-SSU0 IS-01
EIRQ0000I RDF Device ADC Display
Group SRDFA2 Set 3C00IG in Remote CU 000195700080
MDF Symb This Othr ADC Current Maximum
SSN Mod SDA Dev Dev Mode Skew Skew
N/A 0000 0000 0000134C 000011B4 AD 0 65535
N/A 0000 0000 0000134D 000011B5 AD 0 65535
```
Action  Alter the maximum invalid tracks allowed for devices x'134C' to x'1353' in the remote storage system of set 3C00IG of SRDF group SRDFA2.

User  ZURDF ADM REM GRO-SRDFA2 SET-3C00IG SDN-134C CNT-3 SKE-256

System  
CSMP0097I 14.30.02 CPU-A SS-SSU SSU-SSU0 IS-01
E1RQ0000I RDF Device ADC Display
Group SRDFA2 Set 3C00IG in Remote CU 000195700080
MDBF Symb This Othr ADC Current Maximum
SSN Mod SDA Dev Dev Mode Skew Skew
N/A 0000 0000 000134C 000011B4 AD 0 265
N/A 0000 0000 000134D 000011B5 AD 0 265
N/A 0000 0000 000134E 000011B6 AD 0 265
N/A 0000 0000 000134F 000011B7 AD 0 65535
N/A 0000 0000 0001350 000011B8 AD 0 65535
N/A 0000 0000 0001351 000011B9 AD 0 65535
N/A 0000 0000 0001352 000011BA AD 0 65535
N/A 0000 0000 0001353 000011BB AD 0 65535
End of Display
ZURDF ASYNC

Start SRDF/A operations.

Requirements and restrictions

ZURDF ASYNC commands are available only for SRDF groups with an orientation of LCLISR1.

The SRDF group must be explicitly defined as an ASYNC SRDF group to initiate SRDF/A operations. The SRDF group must also be defined as a Multi-Session Consistency (MSC) SRDF group in order to initiate SRDF/A MSC operations. See “ZURDF DEFine PROp-GEN” on page 109.

Table 4 lists the requirements of the ZURDF ASYNC's function:

<table>
<thead>
<tr>
<th>Function</th>
<th>Description</th>
<th>Requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACT</td>
<td>Activate the SRDF/A session.</td>
<td>The SRDF/A session must not be active. All primary devices must be ready on the link. SRDF/A may only be active on one hop of a Cascaded SRDF configuration. SRDF/A may only be active on the second leg of a Diskless Cascaded SRDF configuration.</td>
</tr>
<tr>
<td>CMT</td>
<td>Commit held receive cycle.</td>
<td>MSC must be turned off.</td>
</tr>
<tr>
<td>DCD</td>
<td>Discard held receive cycle.</td>
<td>MSC must be turned off.</td>
</tr>
<tr>
<td>DEA</td>
<td>Wait until the end of the SRDF/A cycle, and then deactivate the SRDF/A session, but leave all devices ready on the link. The secondary side cannot be considered consistent.</td>
<td>The SRDF/A session must be active.</td>
</tr>
<tr>
<td>DRO</td>
<td>Drop the SRDF/A session and make all source (R1) devices TNR. The primary side has R2 invalid tracks. The secondary side has R1 invalid tracks. A consistent copy is on the secondary side. Prior to re-activating the SRDF/A session, R1 → R2 partial volume synchronization must be initiated using one of the procedures outlined in Chapter 4.</td>
<td>The SRDF/A session must be active.</td>
</tr>
<tr>
<td>MMR</td>
<td>Perform Multi-Session Consistency Monitor Restart.</td>
<td>All SRDF/A sessions must be active and MSC must be on.</td>
</tr>
<tr>
<td>MSA</td>
<td>Turn on Multi-Session Consistency.</td>
<td>All SRDF/A sessions must be active.</td>
</tr>
<tr>
<td>MSD</td>
<td>Turn off Multi-Session Consistency.</td>
<td>All SRDF/A sessions must be active and MSC must be on. MSC drop policy must be defined as Disable.</td>
</tr>
<tr>
<td>PDR</td>
<td>Wait until the end of the SRDF/A cycle, and then do a DROP. Primary side has R2 Invalid Tracks. Secondary side does not have R1 invalid tracks. A consistent copy is on the secondary side. Prior to re-activating SRDF/A session the source (R1) volumes on the primary storage system must be made ready on the link using &quot;ZURDF RFRresume&quot; on page 193.</td>
<td>The SRDF/A session must be active.</td>
</tr>
</tbody>
</table>
SRDF Commands

Table 4  ZURDF ASYNC requirements (2 of 2)

<table>
<thead>
<tr>
<th>Function</th>
<th>Description</th>
<th>Requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td>RCV</td>
<td>Perform Multi-Session Consistency Recovery</td>
<td>MSC must be turned on.</td>
</tr>
<tr>
<td>TON</td>
<td>Turn Tolerance mode on.[^a]</td>
<td>All primary devices must be ready on the link</td>
</tr>
<tr>
<td>TOF</td>
<td>Turn Tolerance mode off.</td>
<td>All primary devices must be ready on the link</td>
</tr>
</tbody>
</table>

[^a]: Tolerance Mode: When Tolerance mode is on, SRDF/A can be Active and the following events do not make it DROP: R2 made R/W and R1 made TNR.

Note: The RDF pairs in the SRDF group must be configured on an SRDF/A RDFGroup.

Format

ZURDF ASYNC GROup-cccccccc [SET-cccccccc]  
PARm-ACT | DEA | DRO | PDR | TON | TOF | MSA | MSD | CMT | DCD | RCV | MMR

Parameters

GROup-cccccccc: The one- to eight-alphanumeric character name of the SRDF group.

SET-cccccccc: The one- to eight-alphanumeric character name of the SRDF set that identifies an SRDF pair.

PARm-ACT: Activate SRDF/A.

PARm-DEA: Deactivate SRDF/A, pending the next cycle switch.

PARm-DRO: Drop SRDF/A immediately.

PARm-PDR: Drop SRDF/A, pending the next cycle switch.

PARm-TON: Turn SRDF/A Tolerance on.

PARm-TOF: Turn SRDF/A Tolerance off.

PARm-MMR: Restart SRDF/A MSC cycle switch monitor.

PARm-MSA: Activate SRDF/A MSC.

PARm-MSD: Deactivate SRDF/A MSC.

PARm-CMT: Commit receive cycle.

PARm-DCD: Discard receive cycle.

PARm-RCV: Recover SRDF/A MSC.
Examples

Example 1

This example shows how to activate an SRDF/A session for SRDF group SRDFA. The SRDF orientation for the SRDF group is LCLISR1.

<table>
<thead>
<tr>
<th>Action</th>
<th>Display the state of the RDF volumes in the primary storage system.</th>
</tr>
</thead>
<tbody>
<tr>
<td>User</td>
<td><strong>ZURDF DIS GRO-SRDFA SET-46C0 TYP-MAT</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>System</th>
</tr>
</thead>
</table>

**CSMP0097I 14.01.06 CPU-A SS-BSS SSU-SSU0 IS-01**

E1RQ00001I RDF Device MAT Display

Group SRDFA Set 46C0 in Local CU 000196701170

<table>
<thead>
<tr>
<th>MDBF Symb</th>
<th>This</th>
<th>Othr</th>
<th>RDF</th>
</tr>
</thead>
<tbody>
<tr>
<td>SSN</td>
<td>Mod</td>
<td>SDA</td>
<td>Dev</td>
</tr>
<tr>
<td>A64</td>
<td>0110</td>
<td>46C0</td>
<td>000009FD</td>
</tr>
<tr>
<td>A64</td>
<td>0111</td>
<td>46C1</td>
<td>000009FE</td>
</tr>
<tr>
<td>A64</td>
<td>0112</td>
<td>46C2</td>
<td>000009FF</td>
</tr>
<tr>
<td>A64</td>
<td>0113</td>
<td>46C3</td>
<td>0000A000</td>
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<tr>
<td>A64</td>
<td>0114</td>
<td>46C4</td>
<td>0000A000</td>
</tr>
<tr>
<td>A64</td>
<td>0115</td>
<td>46C5</td>
<td>0000A000</td>
</tr>
<tr>
<td>A64</td>
<td>0116</td>
<td>46C6</td>
<td>000009FD</td>
</tr>
<tr>
<td>A64</td>
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<td>46C7</td>
<td>000009FE</td>
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<tr>
<td>A64</td>
<td>0118</td>
<td>46C8</td>
<td>000009FF</td>
</tr>
<tr>
<td>A64</td>
<td>0119</td>
<td>46C9</td>
<td>0000A000</td>
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<td>A64</td>
<td>011A</td>
<td>46CA</td>
<td>00000A07</td>
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<td>A64</td>
<td>011B</td>
<td>46CB</td>
<td>00000A08</td>
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<tr>
<td>A64</td>
<td>011C</td>
<td>46CC</td>
<td>00000A09</td>
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<tr>
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<td>011D</td>
<td>46CD</td>
<td>00000A0A</td>
</tr>
<tr>
<td>A64</td>
<td>011E</td>
<td>46CE</td>
<td>00000A0B</td>
</tr>
<tr>
<td>A64</td>
<td>011F</td>
<td>46CF</td>
<td>00000A0C</td>
</tr>
</tbody>
</table>

End of Display

<table>
<thead>
<tr>
<th>Action</th>
<th>Display the state of the RDF volumes in the secondary storage system.</th>
</tr>
</thead>
<tbody>
<tr>
<td>User</td>
<td><strong>ZURDF DIS REM GRO-SRDFA SET-46C0 TYP-MAT</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>System</th>
</tr>
</thead>
</table>

**CSMP0097I 14.08.07 CPU-A SS-BSS SSU-SSU0 IS-01**

E1RQ00001I RDF Device MAT Display

Group SRDFA Set 46C0 in Remote CU 000196701305

<table>
<thead>
<tr>
<th>MDBF Symb</th>
<th>This</th>
<th>Othr</th>
<th>RDF</th>
</tr>
</thead>
<tbody>
<tr>
<td>SSN</td>
<td>Mod</td>
<td>SDA</td>
<td>Dev</td>
</tr>
<tr>
<td>N/A</td>
<td>0000</td>
<td>0000</td>
<td>0000051C</td>
</tr>
<tr>
<td>N/A</td>
<td>0000</td>
<td>0000</td>
<td>0000051D</td>
</tr>
<tr>
<td>N/A</td>
<td>0000</td>
<td>0000</td>
<td>0000051E</td>
</tr>
</tbody>
</table>
SRDF Commands

N/A 0000 0000 0000051F 00000A00 20 RO DL2 0 12
Disruptive States:

N/A 0000 0000 00000520 00000A01 20 RO DL2 0 22
Disruptive States:

N/A 0000 0000 00000521 00000A02 20 RO DL2 0 4
Disruptive States:

N/A 0000 0000 00000522 00000A03 20 RO DL2 0 3
Disruptive States:

N/A 0000 0000 00000523 00000A04 20 RO DL2 0 26
Disruptive States:

N/A 0000 0000 00000524 00000A05 20 RO DL2 0 5
Disruptive States:

N/A 0000 0000 00000525 00000A06 20 RO DL2 0 14
Disruptive States:

N/A 0000 0000 00000526 00000A07 20 RO DL2 0 23
Disruptive States:

N/A 0000 0000 00000527 00000A08 20 RO DL2 0 10
Disruptive States:

N/A 0000 0000 00000528 00000A09 20 RO DL2 0 19
Disruptive States:

N/A 0000 0000 00000529 00000A0A 20 RO DL2 0 19
Disruptive States:

N/A 0000 0000 0000052A 00000A0B 20 RO DL2 0 4
Disruptive States:

N/A 0000 0000 0000052B 00000A0C 20 RO DL2 0 17
Disruptive States:

End of Display

Action
Activate an SRDF/A session for SRDF group SRDFA.

User
ZURDF ASYNC GRO-SRDFA PAR-ACT

System
CSMP0097I 14.11.01 CPU-A SS-BSS SSU-SSU0 IS-01
URDF0019P SRDF Group SRDFA
URDF0019I SRDF Control record refresh started
CSMP0097I 14.11.01 CPU-A SS-BSS SSU-SSU0 IS-01
URDF1043I Local CU 000196701175 discovered for Group SRDFA Set 56C0
CSMP0097I 14.11.01 CPU-A SS-BSS SSU-SSU0 IS-01
URDF1043I Remote CU 000196701305 discovered for Group SRDFA Set 56C0
CSMP0097I 14.11.02 CPU-A SS-BSS SSU-SSU0 IS-01
URDF1043I Local CU 000196701170 discovered for Group SRDFA Set 46C0
CSMP0097I 14.11.02 CPU-A SS-BSS SSU-SSU0 IS-01
URDF1043I Remote CU 000196701305 discovered for Group SRDFA Set 46C0
CSMP0097I 14.11.04 CPU-A SS-BSS SSU-SSU0 IS-01
URDF0024P SRDF Group SRDFA
URDF0024I SRDF Control record refresh completed
CSMP0097I 14.11.04 CPU-A SS-BSS SSU-SSU0 IS-01
EIV00000P SRDF Group SRDFA
EIV00000I SRDF Operation Verification Started
CSMP0097I 14.11.04 CPU-A SS-BSS SSU-SSU0 IS-01
EIV00001P SRDF Group SRDFA
EIV00001I SRDF Group Properties Verification Started
Options
Permissions
None
EIV00003I SRDF Device State Verification Started
CSMP0097I 14.11.17 CPU-A SS-BSS SSU-SSU0 IS-01
EIV00004P SRDF Group SRDFA
EIV00004I SRDF Operation Verification Completed
CSMP0097I 14.11.17 CPU-A SS-BSS SSU-SSU0 IS-01
URDF1000I SRDF Group SRDFA Set 46C0 started issuing Async
CSMP0097I 14.11.17 CPU-A SS-BSS SSU-SSU0 IS-01
URDF1000I SRDF Group SRDFA Set 56C0 started issuing Async
CSMP0097I 14.11.17 CPU-A SS-BSS SSU-SSU0 IS-01
URDF1001I SRDF Group SRDFA Set 46C0 completed issuing Async
CSMP0097I 14.11.17 CPU-A SS-BSS SSU-SSU0 IS-01
URDF1001I SRDF Group SRDFA Set 56C0 completed issuing Async
SRDF Commands

Example 2

This example shows how to deactivate an SRDF/A session for SRDF group SRDFA, and how to activate the session once it has been deactivated.

The SRDF orientation for the SRDF group is LCLISR1. Since the source (R1) devices remain ready on the link, the SRDF/A session can be activated without any intermediate SRDF synchronization commands.

Action Display the SRDF/A session information for the primary storage system in SRDF group SRDFA.

User ZURDF DIS GRO-SRDFA SET-46C0 TYP-SAS

System

CSMP0097I 14.14.56 CPU-A SS-BSS SSU-SSU0 IS-01
EIVAO0001I SRDF/A Session Display
Group SRDFA Set 46C0 in Primary CU 000196701170
SRDF/A Session RDFGroup 20 Active Cycle Number 15
Capture Cycle Size 3080 Transmit Cycle Size 0
Average Cycle Time 15 Average Cycle Size 5576
Last Cycle Size 7202 Secondary Delay 00:00:00:23
Secondary Consistent Yes Tolerance Off
HA Writes 9 070 683 Repeated HA Writes 5 182 989
HA Duplicate Slots 2 216 700
Transmit Idle On Drop Priority 33
Max Throttle Time 0 Max Cache Percentage 74
Time Since Last Cycle Switch 00:00:08 Duration of Last Cycle 15
Write Pacing Active No Write Pacing Stats On No
End of Display

Example 2

This example shows how to deactivate an SRDF/A session for SRDF group SRDFA, and how to activate the session once it has been deactivated.

The SRDF orientation for the SRDF group is LCLISR1. Since the source (R1) devices remain ready on the link, the SRDF/A session can be activated without any intermediate SRDF synchronization commands.

Action Display the SRDF/A session information for the primary storage system in SRDF group SRDFA.

User ZURDF DIS GRO-SRDFA SET-46C0 TYP-SAS

System

CSMP0097I 14.14.56 CPU-A SS-BSS SSU-SSU0 IS-01
EIVAO0001I SRDF/A Session Display
Group SRDFA Set 46C0 in Primary CU 000196701170
SRDF/A Session RDFGroup 20 Active Cycle Number 15
Capture Cycle Size 3080 Transmit Cycle Size 0
Average Cycle Time 15 Average Cycle Size 5576
Last Cycle Size 7202 Secondary Delay 00:00:00:23
Secondary Consistent Yes Tolerance Off
HA Writes 9 070 683 Repeated HA Writes 5 182 989
HA Duplicate Slots 2 216 700
Transmit Idle On Drop Priority 33
Max Throttle Time 0 Max Cache Percentage 74
Time Since Last Cycle Switch 00:00:08 Duration of Last Cycle 15
Write Pacing Active No Write Pacing Stats On No
End of Display
**SRDF Commands**

**Action**
Deactivate an SRDF/A session for SRDF group SRDFA.

**User**
ZURDF ASYNC GRO-SRDFA PAR-DEA

**System**

ZURDF ASYNC GRO-SRDFA PAR-DEA
CSMP0097I 14.21.36 CPU-A SS-BSS SSU-SSU0 IS-01
URDF0019P SRDF Group SRDFA
URDF0019I SRDF Control record refresh started
CSMP0097I 14.21.36 CPU-A SS-BSS SSU-SSU0 IS-01
URDF1043I Local CU 000196701175 discovered for Group SRDFA Set 56C0
CSMP0097I 14.21.37 CPU-A SS-BSS SSU-SSU0 IS-01
URDF1043I Remote CU 000196701305 discovered for Group SRDFA Set 56C0
CSMP0097I 14.21.37 CPU-A SS-BSS SSU-SSU0 IS-01
URDF1043I Remote CU 000196701305 discovered for Group SRDFA Set 46C0
CSMP0097I 14.21.40 CPU-A SS-BSS SSU-SSU0 IS-01
URDF0024P SRDF Group SRDFA
URDF0024I SRDF Control record refresh completed
CSMP0097I 14.21.40 CPU-A SS-BSS SSU-SSU0 IS-01
E1V00000P SRDF Group SRDFA
E1V00000I SRDF Operation Verification Started
CSMP0097I 14.21.40 CPU-A SS-BSS SSU-SSU0 IS-01
E1V00001P SRDF Group SRDFA
E1V00001I SRDF Group Properties Verification Started
Options  Permissions
None
E1V00003I SRDF Device State Verification Started
CSMP0097I 14.22.28 CPU-A SS-BSS SSU-SSU0 IS-01
E1V00004P SRDF Group SRDFA
E1V00004I SRDF Operation Verification Completed
CSMP0097I 14.22.28 CPU-A SS-BSS SSU-SSU0 IS-01
URDF1000I SRDF Group SRDFA Set 46C0 started issuing Async
CSMP0097I 14.22.28 CPU-A SS-BSS SSU-SSU0 IS-01
URDF1000I SRDF Group SRDFA Set 56C0 started issuing Async
CSMP0097I 14.22.28 CPU-A SS-BSS SSU-SSU0 IS-01
URDF1001I SRDF Group SRDFA Set 46C0 completed issuing Async
CSMP0097I 14.22.34 CPU-A SS-BSS SSU-SSU0 IS-01
URDF1031I SRDF Status Display
SRDF Group: SRDFA Base Operation: Async
Status: Monitor Active
Start Time : 00.21.36 Date : 11/21/15
<table>
<thead>
<tr>
<th>Set Name</th>
<th>CU Serial #</th>
<th>SDA</th>
<th>Complete Progress</th>
<th>Started</th>
<th>Summary</th>
<th>Itrks Pct</th>
</tr>
</thead>
<tbody>
<tr>
<td>46C0</td>
<td>000196701170</td>
<td>44C1</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>00000</td>
</tr>
<tr>
<td>56C0</td>
<td>000196701175</td>
<td>54C0</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>00000</td>
</tr>
</tbody>
</table>
End of Display
URDF1003I SRDF Group SRDFA Async complete

**Action**
Display the SRDF/A session information for the primary storage system in SRDF group SRDFA.

**User**
ZURDF DIS GRO-SRDFA SET-46C0 TYP-SAS

**System**

CSMP0097I 14.24.46 CPU-A SS-BSS SSU-SSU0 IS-01
E1VA0000I SRDF/A Session Display
Group SRDFA Set 46C0 in Primary CU 000196701170
SRDF/A Session RDFGGroup 20 Inactive Cycle Number 45
Capture Cycle Size 0 Transmit Cycle Size 0
Average Cycle Time 15 Average Cycle Size 4890
Last Cycle Size 3370 Secondary Delay 00:00:02:28
### SRDF Commands

<table>
<thead>
<tr>
<th>Action</th>
<th>User</th>
<th>System</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Secondary Consistent</strong></td>
<td>Tolerance</td>
<td>Off</td>
</tr>
<tr>
<td><strong>HA Writes</strong></td>
<td>Repeated HA Writes</td>
<td>5 758 929</td>
</tr>
<tr>
<td><strong>HA Duplicate Slots</strong></td>
<td>Drop Priority</td>
<td>33</td>
</tr>
<tr>
<td><strong>Transmit Idle</strong></td>
<td>Max Cache Percentage</td>
<td>74</td>
</tr>
<tr>
<td><strong>Time Since Last Cycle Switch</strong></td>
<td>Duration of Last Cycle</td>
<td>15</td>
</tr>
<tr>
<td><strong>Write Pacing Active</strong></td>
<td>Write Pacing Stats On</td>
<td>No</td>
</tr>
<tr>
<td><strong>End of Display</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Action**: Activate an SRDF/A session for SRDF group SRDFA.

**User**: ZURDF ASYNC GRO-SRDFA PAR-ACT

**System**

```
CSMP0097I 14.26.40 CPU-A SS-BSS SSU-SSU0 IS-01
URDF0019P SRDF Group SRDFA
URDF0019I SRDF Control record refresh started
CSMP0097I 14.26.40 CPU-A SS-BSS SSU-SSU0 IS-01
URDF1043I Local CU 000196701175 discovered for Group SRDFA Set 56C0
CSMP0097I 14.26.40 CPU-A SS-BSS SSU-SSU0 IS-01
URDF1043I Remote CU 000196701305 discovered for Group SRDFA Set 56C0
CSMP0097I 14.26.40 CPU-A SS-BSS SSU-SSU0 IS-01
URDF1043I Local CU 000196701170 discovered for Group SRDFA Set 46C0
CSMP0097I 14.26.40 CPU-A SS-BSS SSU-SSU0 IS-01
URDF1043I Remote CU 000196701305 discovered for Group SRDFA Set 46C0
CSMP0097I 14.26.44 CPU-A SS-BSS SSU-SSU0 IS-01
URDF0024P SRDF Group SRDFA
URDF0024I SRDF Control record refresh completed
CSMP0097I 14.26.44 CPU-A SS-BSS SSU-SSU0 IS-01
E1V00000P SRDF Group SRDFA
E1V00000I SRDF Operation Verification Started
CSMP0097I 14.26.44 CPU-A SS-BSS SSU-SSU0 IS-01
E1V00001P SRDF Group SRDFA
E1V00001I SRDF Group Properties Verification Started
Options Permissions
None
E1V00003I SRDF Device State Verification Started
CSMP0097I 14.27.10 CPU-A SS-BSS SSU-SSU0 IS-01
E1V00004P SRDF Group SRDFA
E1V00004I SRDF Operation Verification Completed
CSMP0097I 14.27.10 CPU-A SS-BSS SSU-SSU0 IS-01
URDF1000I SRDF Group SRDFA Set 46C0 started issuing Async
CSMP0097I 14.27.10 CPU-A SS-BSS SSU-SSU0 IS-01
URDF1000I SRDF Group SRDFA Set 56C0 started issuing Async
CSMP0097I 14.27.10 CPU-A SS-BSS SSU-SSU0 IS-01
URDF1001I SRDF Group SRDFA Set 46C0 completed issuing Async
CSMP0097I 14.27.21 CPU-A SS-BSS SSU-SSU0 IS-01
URDF1031I SRDF Status Display
SRDF Group: SRDFA Base Operation: Async
Status: Monitor Active
Start Time : 00.26.40 Date : 11/21/15
<table>
<thead>
<tr>
<th>Opr</th>
<th>In</th>
<th>Not</th>
<th>Opr RC</th>
<th>Itrks Pct</th>
</tr>
</thead>
<tbody>
<tr>
<td>46C0</td>
<td>000196701170</td>
<td>44C1</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>56C0</td>
<td>000196701175</td>
<td>54C0</td>
<td>0</td>
<td>1</td>
</tr>
</tbody>
</table>
End of Display
```

**SRDF Group: SRDFA Base Operation: Async**

**Status**: Monitor Active

Start Time : 00.26.40 Date : 11/21/15

---

**CSMP0097I 14.41.01 CPU-A SS-BSS SSU-SSU0 IS-01**

**URDF1031I SRDF Status Display**

**SRDF Group: SRDFA Base Operation: Async**

**Status**: Monitor Active

Start Time : 00.26.40 Date : 11/21/15

### Operation Status Table

<table>
<thead>
<tr>
<th>Set Name</th>
<th>CU Serial #</th>
<th>SDA</th>
<th>Complete Progress</th>
<th>Started</th>
<th>Summary</th>
<th>Itrks Pct</th>
</tr>
</thead>
<tbody>
<tr>
<td>46C0</td>
<td>000196701170</td>
<td>44C1</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>00000</td>
</tr>
<tr>
<td>56C0</td>
<td>000196701175</td>
<td>54C0</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>00000</td>
</tr>
</tbody>
</table>
SRDF Commands

<table>
<thead>
<tr>
<th>Opr</th>
<th>In</th>
<th>Not</th>
<th>Opr</th>
<th>RC</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>46C0</td>
<td>000196701170</td>
<td>44C1</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>56C0</td>
<td>000196701175</td>
<td>54C0</td>
<td>1</td>
<td>0</td>
</tr>
</tbody>
</table>

End of Display

URDF1003I SRDF Group SRDFA Async complete

Example 3

This example shows how to drop an SRDF/A session for SRDF group SRDFA, and how to activate the session after it has been dropped. The SRDF orientation for the SRDF group is LCLISR1. Because the drop results in the primary side having R2 invalid tracks, and the secondary side having R1 invalid tracks, use one of the synchronization procedures outlined in Chapter 3, “SRDF Operations,” before activating the SRDF/A session.

**Action**
Display the SRDF/A session information for the primary storage system in SRDF group SRDFA.

**User**
ZURDF DIS GRO-SRDFA SET-46C0 TYP-SAS

**System**

<table>
<thead>
<tr>
<th>CSMP0097I</th>
<th>14.14.56</th>
<th>CPU-A SS-BSS SSU-SSU0 IS-01</th>
</tr>
</thead>
</table>
| ELVA0000I SRDF/A Session Display Group SRDFA Set 46C0 in Primary CU 000196701170 SRDF/A Session RDFSGroup 20 Active Cycle Number 15 Capture Cycle Size 3080 Transmit Cycle Size 0 Average Cycle Time 15 Average Cycle Size 5576 Last Cycle Size 7202 Secondary Delay 00:00:00:23 Secondary Consistent Yes Tolerance Off HA Writes 9 070 683 Repeated HA Writes 5 182 989 HA Duplicate Slots 2 216 700 Transmit Idle On Drop Priority 33 Max Throttle Time 0 Max Cache Percentage 74 Time Since Last Cycle Switch 00:00:08 Duration of Last Cycle 15 Write Pacing Active No Write Pacing Stats On No

<table>
<thead>
<tr>
<th>CSMP0097I</th>
<th>14.49.56</th>
<th>CPU-A SS-BSS SSU-SSU0 IS-01</th>
</tr>
</thead>
</table>
| URDF0019P SRDF Group SRDFA URDF0019I SRDF Control record refresh started CSMP0097I 14.49.35 CPU-A SS-BSS SSU-SSU0 IS-01 URDF01043I Local CU 000196701175 discovered for Group SRDFA Set 66C0 CSMP0097I 14.49.35 CPU-A SS-BSS SSU-SSU0 IS-01 URDF01043I Remote CU 000196701305 discovered for Group SRDFA Set 66C0 CSMP0097I 14.49.36 CPU-A SS-BSS SSU-SSU0 IS-01 URDF01043I Local CU 000196701170 discovered for Group SRDFA Set 66C0 CSMP0097I 14.49.36 CPU-A SS-BSS SSU-SSU0 IS-01 URDF01043I Remote CU 000196701305 discovered for Group SRDFA Set 66C0 CSMP0097I 14.49.39 CPU-A SS-BSS SSU-SSU0 IS-01 URDF0024P SRDF Group SRDFA E1V00000P SRDF Operation Verification Started CSMP0097I 14.49.39 CPU-A SS-BSS SSU-SSU0 IS-01 E1V00000P SRDF Group SRDFA E1V00001P SRDF Group SRDFA E1V00001I SRDF Group Properties Verification Started Options Permissions None E1V00003I SRDF Device State Verification Started CSMP0097I 14.49.56 CPU-A SS-BSS SSU-SSU0 IS-01 E1V00004P SRDF Group SRDFA
SRDF Commands

E1V00004I SRDF Operation Verification Completed
CSMP0097I 14.49.55 CPU-A SS-BSS SSU-SSU0 IS-01
URDF1001I SRDF Group SRDFA Set 46C0 started issuing Async
CSMP0097I 14.49.56 CPU-A SS-BSS SSU-SSU0 IS-01
URDF1001I SRDF Group SRDFA Set 56C0 started issuing Async
CSMP0097I 14.49.56 CPU-A SS-BSS SSU-SSU0 IS-01
URDF1001I SRDF Group SRDFA Set 46C0 completed issuing Async
CSMP0097I 14.49.59 CPU-A SS-BSS SSU-SSU0 IS-01
URDF1031I SRDF Status Display
SRDF Group: SRDFA Base Operation: Async
Status: Monitor Active
Start Time: 00.49.35 Date : 11/21/15

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End of Display
URDF1003I SRDF Group SRDFA Async complete

CSMP0097I 14.53.01 CPU-A SS-BSS SSU-SSU0 IS-01
E1V00000I SRDF/A Session Display
Group SRDFA Set 46C0 in Primary CU 000196701170
SRDF/A Session RDF Group 20 Inactive Cycle Number 90
Capture Cycle Size 0 Transmit Cycle Size 0
Average Cycle Time 15 Average Cycle Size 5153
Last Cycle Size 3197 Secondary Delay 00:00:03:30
Secondary Consistent ? Tolerance Off
HA Writes 11 725 493 Repeated HA Writes 7 154 293
HA Duplicate Slots 2 217 283
Transmit Idle On Drop Priority 33
Max Throttle Time 0 Max Cache Percentage 74
Time Since Last Cycle Switch 00:03:15 Duration of Last Cycle 15
Write Pacing Active No Write Pacing Stats On No

End of Display

Action Display the SRDF/A session information for the primary storage system in SRDF group SRDFA.

User ZURDF DIS GRO-SRDFA SET-46C0 TYP-SAS

System
CSMP0097I 14.53.01 CPU-A SS-BSS SSU-SSU0 IS-01

E1R00000I RDF Device MAT Display
Group SRDFA Set 46C0 in Local CU 000196701170
MDFB Symb This Othr RDF
SSN Mod SDA Dev Dev GRP HS MO AC IT MR R1-Itrak R2-Itrak
A64 0110 46C0 000009FD 0000051C 20 RW SY DL1 0 2876
Disruptive States: TNR
A64 0111 46C1 000009FE 0000051D 20 RW SY DL1 0 2891
Disruptive States: TNR
A64 0112 46C2 000009FF 0000051E 20 RW SY DL1 0 2878
Disruptive States: TNR
A64 0113 46C3 00000A00 0000051F 20 RW SY DL1 0 2880
Disruptive States: TNR
A64 0114 46C4 00000A01 00000520 20 RW SY DL1 0 2881
Disruptive States: TNR
A64 0115 46C5 00000A02 00000521 20 RW SY DL1 0 2880
Disruptive States: TNR
A64 0116 46C6 00000A03 00000522 20 RW SY DL1 0 2888

Disruptive States: TNR

Action Display the state of the RDF volumes in the primary storage system.

User ZURDF DIS GRO-SRDFA SET-46C0 TYP-MAT

System
SRDF Commands

Disruptive States: TNR
A64  0117 46C7 00000A04 00000523  20 RW SY       DL1       0    2905
Disruptive States: TNR
A64  0118 46C8 00000A05 00000524  20 RW SY       DL1       0    2867
Disruptive States: TNR
A64  0119 46C9 00000A06 00000525  20 RW SY       DL1       0    2914
Disruptive States: TNR
A64  011A 46CA 00000A07 00000526  20 RW SY       DL1       0    2897
Disruptive States: TNR
A64  011B 46CB 00000A08 00000527  20 RW SY       DL1       0    2910
Disruptive States: TNR
A64  011C 46CC 00000A09 00000528  20 RW SY       DL1       0    2888
Disruptive States: TNR
A64  011D 46CD 00000A0A 00000529  20 RW SY       DL1       0    2888
Disruptive States: TNR
A64  011E 46CE 00000A0B 0000052A  20 RW SY       DL1       0    2905
Disruptive States: TNR
A64  011F 46CF 00000A0C 0000052B  20 RW SY       DL1       0    2908
Disruptive States: TNR

End of Display

Action  Display the state of the RDF volumes in the secondary storage system.
User    ZURDF DIS REM GRO-SRDFA SET-46C0 TYP-MAT
System  
CSMP0097I 14.58.44 CPU-A SS-BSS SSU-SSU0 IS-01
E1RQ0000I RDF Device MAT Display
Group SRDFA  Set 46C0 in Remote CU 000196701305
MDBF Symb  This Othr RDF
SSN Mod SDA Dev Dev GRP HS MO AC IT MR R1-Itrk R2-Itrk
N/A 0000 0000 0000051C 000009FD  20 RO       DL2   1006   1851
Disruptive States:
N/A 0000 0000 0000051D 000009FE  20 RO       DL2   995    1833
Disruptive States:
N/A 0000 0000 0000051E 000009FF  20 RO       DL2  1007   1849
Disruptive States:
N/A 0000 0000 0000051F 00000A00  20 RO       DL2   987    1811
Disruptive States:
N/A 0000 0000 00000520 00000A01  20 RO       DL2   991    1831
Disruptive States:
N/A 0000 0000 00000521 00000A02  20 RO       DL2  1002   1864
Disruptive States:
N/A 0000 0000 00000522 00000A03  20 RO       DL2  1017   1848
Disruptive States:
N/A 0000 0000 00000523 00000A04  20 RO       DL2   990    1800
Disruptive States:
N/A 0000 0000 00000524 00000A05  20 RO       DL2  1001   1829
Disruptive States:
N/A 0000 0000 00000525 00000A06  20 RO       DL2   982    1839
Disruptive States:
N/A 0000 0000 00000526 00000A07  20 RO       DL2   979    1817
Disruptive States:
N/A 0000 0000 00000527 00000A08  20 RO       DL2  1010   1806
Disruptive States:
N/A 0000 0000 00000528 00000A09  20 RO       DL2   998    1873
Disruptive States:
N/A 0000 0000 00000529 00000A0A  20 RO       DL2   993    1812
Disruptive States:
N/A 0000 0000 0000052A 00000A0B  20 RO       DL2   996    1815
Disruptive States:
N/A 0000 0000 0000052B 00000A0C  20 RO       DL2  1021   1844
Disruptive States:

End of Display
Action: Set Synchronization direction to R1 → R2 for the primary storage system of SRDF group SRDFA.

User: ZURDF SYN GRO-SRDFA PAR-R1R2

System:
CSMP0097I 15.06.52 CPU-A SS-BSS SSU-SSU0 IS-01
URDF0019P SRDF Group SRDFA
URDF0019I SRDF Control record refresh started
CSMP0097I 15.06.53 CPU-A SS-BSS SSU-SSU0 IS-01
URDF1043I Local CU 000196701175 discovered for Group SRDFA Set 56C0
CSMP0097I 15.06.53 CPU-A SS-BSS SSU-SSU0 IS-01
URDF1043I Remote CU 000196701305 discovered for Group SRDFA Set 56C0
URDF1043I Local CU 000196701170 discovered for Group SRDFA Set 46C0
CSMP0097I 15.06.55 CPU-A SS-BSS SSU-SSU0 IS-01
URDF1043I Remote CU 000196701305 discovered for Group SRDFA Set 46C0
CSMP0097I 15.06.55 CPU-A SS-BSS SSU-SSU0 IS-01
URDF0024P SRDF Group SRDFA
URDF0024I SRDF Control record refresh completed
CSMP0097I 15.06.55 CPU-A SS-BSS SSU-SSU0 IS-01
EIV00000P SRDF Group SRDFA
EIV00000I SRDF Operation Verification Started
CSMP0097I 15.06.55 CPU-A SS-BSS SSU-SSU0 IS-01
EIV00001P SRDF Group SRDFA
EIV00001I SRDF Group Properties Verification Started
Options: None
Permissions: None
EIV00003I SRDF Device State Verification Started
CSMP0097I 15.07.09 CPU-A SS-BSS SSU-SSU0 IS-01
EIV00004P SRDF Group SRDFA
EIV00004I SRDF Operation Verification Completed
CSMP0097I 15.07.09 CPU-A SS-BSS SSU-SSU0 IS-01
URDF1000I SRDF Group SRDFA Set 46C0 started issuing Synchdirection
CSMP0097I 15.07.09 CPU-A SS-BSS SSU-SSU0 IS-01
URDF1000I SRDF Group SRDFA Set 46C0 completed issuing Synchdirection
CSMP0097I 15.07.09 CPU-A SS-BSS SSU-SSU0 IS-01
URDF1000I SRDF Group SRDFA Set 56C0 started issuing Synchdirection
CSMP0097I 15.07.09 CPU-A SS-BSS SSU-SSU0 IS-01
URDF1000I SRDF Group SRDFA Set 56C0 completed issuing Synchdirection
CSMP0097I 15.07.09 CPU-A SS-BSS SSU-SSU0 IS-01
EIR00001I CU Control Record Summary
Local Group Name - SRDFA
Set Name - 46C0 MHL- 20
Serial #  Model GP Ucod SDA MOD SSN GKD Sync Orient.
000196701170 VMAX200K 20 5977 46C0 0114 BSS 44C1 R1R2 LCLISR1
000196701305 VMAX200K 20 5977 46C0 0114 BSS 44C1 Glbl
Set Name - 56C0 MHL- 21
Serial #  Model GP Ucod SDA MOD SSN GKD Sync Orient.
000196701175 VMAX200K 21 5977 56E0 0116 BSS 54C0 R1R2 LCLISR1
000196701305 VMAX200K 21 5977 56E0 0116 BSS 54C0 Glbl
End of Display

Action: Set Synchronization direction to R1 → R2 for the secondary storage system of SRDF group SRDFA.

User: ZURDF SYN REM GRO-SRDFA PAR-R1R2

System:
CSMP0097I 15.10.18 CPU-A SS-BSS SSU-SSU0 IS-01
URDF0019P SRDF Group SRDFA
URDF0019I SRDF Control record refresh started
CSMP0097I 15.10.19 CPU-A SS-BSS SSU-SSU0 IS-01
URDF1043I Local CU 000196701175 discovered for Group SRDFA Set 56C0
CSMP0097I 15.10.19 CPU-A SS-BSS SSU-SSU0 IS-01
URDF1043I Remote CU 000196701305 discovered for Group SRDFA Set 56C0
SRDF Commands

CSMP0097I 15.10.19 CPU-A SS-BSS SSU-SSUO IS-01
URDF1043I Local CU 000196701170 discovered for Group SRDFA Set 46C0
CSMP0097I 15.10.19 CPU-A SS-BSS SSU-SSUO IS-01
URDF1043I Remote CU 000196701305 discovered for Group SRDFA Set 46C0
CSMP0097I 15.10.21 CPU-A SS-BSS SSU-SSUO IS-01
URDF0024P SRDF Group SRDFA
URDF0024I SRDF Control record refresh completed
CSMP0097I 15.10.21 CPU-A SS-BSS SSU-SSUO IS-01
EIV00000P SRDF Group SRDFA
EIV00000I SRDF Operation Verification Started
CSMP0097I 15.10.21 CPU-A SS-BSS SSU-SSUO IS-01
EIV00001P SRDF Group SRDFA
EIV00001I SRDF Group Properties Verification Started

Options
None

EIV00003I SRDF Device State Verification Started
CSMP0097I 15.10.35 CPU-A SS-BSS SSU-SSUO IS-01
EIV00004P SRDF Group SRDFA
EIV00004I SRDF Operation Verification Completed
CSMP0097I 15.10.35 CPU-A SS-BSS SSU-SSUO IS-01
URDF1000I SRDF Group SRDFA Set 46C0 started issuing Synchdirection
CSMP0097I 15.10.35 CPU-A SS-BSS SSU-SSUO IS-01
URDF1001I SRDF Group SRDFA Set 46C0 completed issuing Synchdirection
CSMP0097I 15.10.35 CPU-A SS-BSS SSU-SSUO IS-01
URDF1000I SRDF Group SRDFA Set 56C0 started issuing Synchdirection
CSMP0097I 15.10.35 CPU-A SS-BSS SSU-SSUO IS-01
URDF1001I SRDF Group SRDFA Set 56C0 completed issuing Synchdirection
CSMP0097I 15.10.35 CPU-A SS-BSS SSU-SSUO IS-01
E1RR0000I CU Control Record Summary
Local  Group Name - SRDFA
Set Name - 46C0  MHL- 20
Serial #  Model  GP Ucod SDA  MOD  SSN  GKD  Sync Orient.
000196701170 VMAX200K 20 5977 46C0 0114 BSS 44C1 R1R2 LCLISR1
000196701305 VMAX200K 20 5977 46C0 0114 BSS 44C1 R1R2
Set Name - 56C0  MHL- 21
Serial #  Model  GP Ucod SDA  MOD  SSN  GKD  Sync Orient.
000196701175 VMAX200K 21 5977 56E0 0116 BSS 54C0 R1R2 LCLISR1
000196701305 VMAX200K 21 5977 56E0 0116 BSS 54C0 R1R2
End of Display

Action  Cause invalid track information to be refreshed between the primary and secondary storage systems in SRDF/A group SRDFA.

User  ZURDF REF REM GRO~SRDFA

System
CSMP0097I 15.14.02 CPU-A SS-BSS SSU-SSUO IS-01
URDF0019P SRDF Group SRDFA
URDF0019I SRDF Control record refresh started
CSMP0097I 15.14.02 CPU-A SS-BSS SSU-SSUO IS-01
URDF1043I Local CU 000196701175 discovered for Group SRDFA Set 56C0
CSMP0097I 15.14.02 CPU-A SS-BSS SSU-SSUO IS-01
URDF1043I Remote CU 000196701305 discovered for Group SRDFA Set 56C0
CSMP0097I 15.14.02 CPU-A SS-BSS SSU-SSUO IS-01
URDF1043I Local CU 000196701170 discovered for Group SRDFA Set 46C0
CSMP0097I 15.14.02 CPU-A SS-BSS SSU-SSUO IS-01
URDF1043I Remote CU 000196701305 discovered for Group SRDFA Set 46C0
CSMP0097I 15.14.05 CPU-A SS-BSS SSU-SSUO IS-01
URDF0024P SRDF Group SRDFA
URDF0024I SRDF Control record refresh completed
CSMP0097I 15.14.05 CPU-A SS-BSS SSU-SSUO IS-01
EIV00000P SRDF Group SRDFA
EIV00000I SRDF Operation Verification Started
CSMP0097I 15.14.05 CPU-A SS-BSS SSU-SSUO IS-01
EIV00001P SRDF Group SRDFA
EIV00001I SRDF Group Properties Verification Started
**SRDF Commands**

Options | Permissions
--- | ---
None

---

**SRDF Group: SRDFA Base Operation: Refresh**

**Status:** Monitor Active

- **Start Time:** 01.14.02
- **Date:** 11/21/15

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</tbody>
</table>

End of Display

**Action**

Commence synchronization of updated tracks only in SRDF/A group SRDFA.

**User**

ZURDF RFR GRO-SRDFA

---

**System**

- CSMP0097I 15.18.26 CPU-A SS-BSS SSU-SSU0 IS-01
- URDF0019P SRDF Group SRDFA
- URDF0019I SRDF Control record refresh started
- CSMP0097I 15.18.27 CPU-A SS-BSS SSU-SSU0 IS-01
- URDF1043I Local CU 000196701175 discovered for Group SRDFA Set 56C0
- CSMP0097I 15.18.27 CPU-A SS-BSS SSU-SSU0 IS-01
- URDF1043I Remote CU 000196701305 discovered for Group SRDFA Set 56C0
- CSMP0097I 15.18.27 CPU-A SS-BSS SSU-SSU0 IS-01
- URDF1043I Local CU 000196701170 discovered for Group SRDFA Set 46C0
- CSMP0097I 15.18.27 CPU-A SS-BSS SSU-SSU0 IS-01
- URDF0024P SRDF Group SRDFA
- URDF0024I SRDF Control record refresh completed
- CSMP0097I 15.18.29 CPU-A SS-BSS SSU-SSU0 IS-01
- E1V00000P SRDF Group SRDFA
- E1V00000I SRDF Operation Verification Started
- CSMP0097I 15.18.29 CPU-A SS-BSS SSU-SSU0 IS-01
- E1V00001P SRDF Group SRDFA
- E1V00001I SRDF Group Properties Verification Started

**Options | Permissions**

None

---

**SRDF Group: SRDFA Device State Verification Started**

- CSMP0097I 15.18.42 CPU-A SS-BSS SSU-SSU0 IS-01
- E1V000004P SRDF Group SRDFA
- E1V000004I SRDF Operation Verification Completed
- CSMP0097I 15.18.42 CPU-A SS-BSS SSU-SSU0 IS-01
- URDF0213P SRDF Group SRDFA
- URDF0213I QOS Controls started
- CSMP0097I 15.18.42 CPU-A SS-BSS SSU-SSU0 IS-01
- URDF0214P SRDF Group SRDFA
- URDF0214I QOS Controls completed
- CSMP0097I 15.18.42 CPU-A SS-BSS SSU-SSU0 IS-01
SRDF Commands

URDF1000I SRDF Group SRDFA Set 46C0 started issuing RfrrResume
CSMPO097I 15.18.42 CPU-A SS-BSS SSU-SSU0 IS-01
URDF1000I SRDF Group SRDFA Set 56C0 started issuing RfrrResume
CSMPO097I 15.18.45 CPU-A SS-BSS SSU-SSU0 IS-01
URDF1001I SRDF Group SRDFA Set 46C0 completed issuing RfrrResume
CSMPO097I 15.18.48 CPU-A SS-BSS SSU-SSU0 IS-01
URDF1001I SRDF Group SRDFA Set 56C0 completed issuing RfrrResume
CSMPO097I 15.18.48 CPU-A SS-BSS SSU-SSU0 IS-01
URDF1031I SRDF Status Display
SRDF Group: SRDFA Base Operation: RfrrResume
Status: Monitor Active
Start Time: 01.18.26 Date: 11/21/15

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<th>Set Name</th>
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End of Display

CSMPO097I 15.22.52 CPU-A SS-BSS SSU-SSU0 IS-01
URDF1031I SRDF Status Display
SRDF Group: SRDFA Base Operation: RfrrResume
Status: Monitor Active
Start Time: 01.18.26 Date: 11/21/15

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<tr>
<th>Set Name</th>
<th>CU Serial #</th>
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<td>0</td>
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</table>

End of Display

URDF1003I SRDF Group SRDFA RfrrResume complete

Action Activate an SRDF/A session for SRDF group SRDFA.
User ZURDF ASYNC GRO--SRDFA PAR--ACT

System

SMP0097I 15.29.10 CPU-A SS-BSS SSU-SSU0 IS-01
URDF0019P SRDF Group SRDFA
URDF0019I SRDF Control record refresh started
CSMPO097I 15.29.10 CPU-A SS-BSS SSU-SSU0 IS-01
URDF1031I Local CU 000196701175 discovered for Group SRDFA Set 56C0
CSMPO097I 15.29.11 CPU-A SS-BSS SSU-SSU0 IS-01
URDF1031I Remote CU 000196701305 discovered for Group SRDFA Set 56C0
CSMPO097I 15.29.11 CPU-A SS-BSS SSU-SSU0 IS-01
URDF1031I Local CU 000196701170 discovered for Group SRDFA Set 46C0
CSMPO097I 15.29.11 CPU-A SS-BSS SSU-SSU0 IS-01
URDF1031I Remote CU 000196701305 discovered for Group SRDFA Set 46C0
CSMPO097I 15.29.11 CPU-A SS-BSS SSU-SSU0 IS-01
URDF0024P SRDF Group SRDFA
URDF0024I SRDF Control record refresh completed
CSMPO097I 15.29.13 CPU-A SS-BSS SSU-SSU0 IS-01
E1V000000P SRDF Group SRDFA
E1V000000I SRDF Operation Verification Started
CSMPO097I 15.29.13 CPU-A SS-BSS SSU-SSU0 IS-01
E1V000001P SRDF Group SRDFA
E1V000001I SRDF Group Properties Verification Started
Options Permissions
None
E1V000003I SRDF Device State Verification Started
CSMPO097I 15.29.28 CPU-A SS-BSS SSU-SSU0 IS-01
E1V000004P SRDF Group SRDFA
E1V000004I SRDF Operation Verification Completed
CSMPO097I 15.29.28 CPU-A SS-BSS SSU-SSU0 IS-01
URDF1000I SRDF Group SRDFA Set 46C0 started issuing Async
CSMPO097I 15.29.28 CPU-A SS-BSS SSU-SSU0 IS-01
URDF1000I SRDF Group SRDFA Set 56C0 started issuing Async
CSMP0097I 15.29.28 CPU-A SS-BSS SSU-SSU0 IS-01
URDF1001I SRDF Group SRDFA Set 46C0 completed issuing Async
CSMP0097I 15.29.28 CPU-A SS-BSS SSU-SSU0 IS-01
URDF1001I SRDF Group SRDFA Set 56C0 completed issuing Async
CSMP0097I 15.29.31 CPU-A SS-BSS SSU-SSU0 IS-01
URDF1031I SRDF Status Display
SRDF Group: SRDFA Base Operation: Async
Status: Monitor Active
Start Time: 01.29.10 Date: 11/21/15

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End of Display

CSMP0097I 15.32.01 CPU-A SS-BSS SSU-SSU0 IS-01
URDF1031I SRDF Status Display
SRDF Group: SRDFA Base Operation: Async
Status: Monitor Active
Start Time: 01.29.10 Date: 11/21/15

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<td>56C0</td>
<td>000196701175</td>
<td>54C0</td>
<td>1</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

End of Display

URDF1003I SRDF Group SRDFA Async complete

Action
Display the SRDF/A session information for the primary storage system in SRDF group SRDFA.

User
ZURDF DIS GRO-SRDFA SET-46C0 TYP-SAS

System

CCSMP0097I 15.34.32 CPU-A SS-BSS SSU-SSU0 IS-01
EIVA0000I SRDF/A Session Display
Group SRDFA Set 46C0 in Primary CU 000196701170
SRDF/A Session RDFGRoup 20 Active Cycle Number 21
Capture Cycle Size 717 Transmit Cycle Size 5155
Average Cycle Time 15 Average Cycle Size 4766
Last Cycle Size 4503 Secondary Delay 00:00:00:18
Secondary Consistent Yes Tolerance Off
HA Writes 12 225 777 Repeated HA Writes 7 529 529
HA Duplicate Slots 2 217 366
Transmit Idle On Drop Priority 33
Max Throttle Time 0 Max Cache Percentage 74
Time Since Last Cycle Switch 00:00:03 Duration of Last Cycle 15
Write Pacing Active No Write Pacing Stats On No
End of Display
Example 4

This example shows how to Pend Drop an SRDF/A session for SRDF group SRDFA, and how to activate the SRDF/A session once it has been dropped at the next SRDF/A cycle switch. The SRDF orientation for the SRDF group is LCLISR1.

Because the Pend Drop results in the primary side having R2 invalid tracks, use the ZURDF RESume command to resume synchronization prior to activating the SRDF/A session.

**Action**
Display the SRDF/A session information for the primary storage system in SRDF group SRDFA.

**User**
ZURDF DIS GRO-SRDFA SET-46C0 TYP-SAS

**System**

```
CSMP0097I 15.34.32 CPU-A SS-BSS SSU-SSU0 IS-01
E1V00001I SRDF/A Session Display
Group SRDFA Set 46C0 in Primary CU 000196701170
SRDF/A Session RDFGroup 20 Active Cycle Number 21
Capture Cycle Size 717 Transmit Cycle Size 5155
Average Cycle Time 15 Average Cycle Size 4766
Last Cycle Size 4503 Secondary Delay 00:00:00:18
Secondary Consistent Yes Tolerance Off
HA Writes 12 225 777 Repeated HA Writes 7 529 529
HA Duplicate Slots 2 217 366
Transmit Idle On Drop Priority 33
Max Throttle Time 0 Max Cache Percentage 74
Time Since Last Cycle Switch 00:00:03 Duration of Last Cycle 15
Write Pacing Active No Write Pacing Stats On No
End of Display
```

**Action**
Pend Drop an SRDF/A session for SRDF group SRDFA.

**User**
ZURDF ASYNC GRO-SRDFA PAR-PDR

**System**

```
CSMP0097I 15.41.07 CPU-A SS-BSS SSU-SSU0 IS-01
URDF0019P SRDF Group SRDFA
URDF0019I SRDF Control record refresh started
CSMP0097I 15.41.07 CPU-A SS-BSS SSU-SSU0 IS-01
URDF1043I Local CU 000196701175 discovered for Group SRDFA Set 56C0
CSMP0097I 15.41.07 CPU-A SS-BSS SSU-SSU0 IS-01
URDF1043I Remote CU 000196701305 discovered for Group SRDFA Set 56C0
CSMP0097I 15.41.07 CPU-A SS-BSS SSU-SSU0 IS-01
URDF1043I Local CU 000196701170 discovered for Group SRDFA Set 46C0
CSMP0097I 15.41.07 CPU-A SS-BSS SSU-SSU0 IS-01
URDF1043I Remote CU 000196701305 discovered for Group SRDFA Set 46C0
CSMP0097I 15.41.10 CPU-A SS-BSS SSU-SSU0 IS-01
URDF0024P SRDF Group SRDFA
URDF0024I SRDF Control record refresh completed
CSMP0097I 15.41.10 CPU-A SS-BSS SSU-SSU0 IS-01
E1V00000P SRDF Group SRDFA
E1V00001I SRDF Operation Verification Started
CSMP0097I 15.41.10 CPU-A SS-BSS SSU-SSU0 IS-01
E1V00001P SRDF Group SRDFA
E1V00001I SRDF Group Properties Verification Started
Options Permissions
None
E1V00003I SRDF Device State Verification Started
CSMP0097I 15.41.24 CPU-A SS-BSS SSU-SSU0 IS-01
E1V00004P SRDF Group SRDFA
E1V00004I SRDF Operation Verification Completed
CSMP0097I 15.41.24 CPU-A SS-BSS SSU-SSU0 IS-01
URDF1000I SRDF Group SRDFA Set 46C0 started issuing Async
CSMP0097I 15.41.24 CPU-A SS-BSS SSU-SSU0 IS-01
URDF1000I SRDF Group SRDFA Set 56C0 started issuing Async
```
CSMP0097I 15.41.24 CPU-A SS-BSS SSU-SSU0 IS-01
URDF1001I SRDF Group SRDFA Set 46C0 completed issuing Async
CSMP0097I 15.41.24 CPU-A SS-BSS SSU-SSU0 IS-01
URDF1001I SRDF Group SRDFA Set 56C0 completed issuing Async
CSMP0097I 15.41.27 CPU-A SS-BSS SSU-SSU0 IS-01
URDF1031I SRDF Status Display
SRDF Group: SRDFA Base Operation: Async
Status: Monitor Active
Start Time: 01.41.07 Date: 11/21/15

____Operation Status____

<table>
<thead>
<tr>
<th>Opr</th>
<th>In</th>
<th>Not</th>
<th>Opr</th>
<th>RC</th>
<th>Set Name</th>
<th>CU Serial #</th>
<th>SDA</th>
<th>Complete</th>
<th>Progress</th>
<th>Started</th>
<th>Summary</th>
<th>Itrks</th>
<th>Pct</th>
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<tr>
<td></td>
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<td></td>
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<td></td>
<td>46C0</td>
<td>000196701170</td>
<td>44C1</td>
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<td>0</td>
<td>00000</td>
<td>0</td>
<td>0</td>
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<td></td>
<td></td>
<td></td>
<td>56C0</td>
<td>000196701175</td>
<td>54C0</td>
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<td>1</td>
<td>0</td>
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<td>0</td>
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</table>

End of Display

CSMP0097I 15.41.51 CPU-A SS-BSS SSU-SSU0 IS-01
URDF1031I SRDF Status Display
SRDF Group: SRDFA Base Operation: Async
Status: Monitor Active
Start Time: 01.41.07 Date: 11/21/15

____Operation Status____

<table>
<thead>
<tr>
<th>Opr</th>
<th>In</th>
<th>Not</th>
<th>Opr</th>
<th>RC</th>
<th>Set Name</th>
<th>CU Serial #</th>
<th>SDA</th>
<th>Complete</th>
<th>Progress</th>
<th>Started</th>
<th>Summary</th>
<th>Itrks</th>
<th>Pct</th>
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<tr>
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<td></td>
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<td>46C0</td>
<td>000196701170</td>
<td>44C1</td>
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<td>0</td>
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<td>1</td>
<td>0</td>
<td>0</td>
<td>00000</td>
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</table>

End of Display

URDF1003I SRDF Group SRDFA Async complete

CSMP0097I 15.46.42 CPU-A SS-BSS SSU-SSU0 IS-01
EIVA0000I SRDF/A Session Display
Group SRDFA Set 46C0 in Primary CU 000196701170
SRDF/A Session RDFGroup 20 Inactive Cycle Number 48
Capture Cycle Size 0 Transmit Cycle Size 0
Average Cycle Time 15 Average Cycle Size 5139
Last Cycle Size 5157 Secondary Delay 00:00:05:26
Secondary Consistent Off
HA Writes 12 958 742 Repeated HA Writes 8 079 462
HA Duplicate Slots 2 217 497
Transmit Idle On Drop Priority 33
Max Throttle Time 0 Max Cache Percentage 74
Time Since Last Cycle Switch 00:05:11 Duration of Last Cycle 15
Write Pacing Active No Write Pacing Stats On No
End of Display

CSMP0097I 15.49.07 CPU-A SS-BSS SSU-SSU0 IS-01
E1RQ0000I RDF Device MAT Display
Group SRDFA Set 46C0 in Local CU 000196701170
MDF Symb This Othr RDF
SSN Mod SDA Dev GRP HS MO AC IT MR R1-Itrk R2-Itrk
A64 0110 46C0 000009FD 0000051C 20 RW SY DL1 0 2881
Disruptive States: TNR
A64 0111 46C1 000009FE 0000051D 20 RW SY DL1 0 2902
Disruptive States: TNR
A64 0112 46C2 000009FF 0000051E 20 RW SY DL1 0 2891
Disruptive States: TNR
SRDF Commands

A64  0113 46C3  00000A00 0000051F  20 RW SY       DL1       0    2892
Disruptive States:         TNR

A64  0114 46C4  00000A01 00000520  20 RW SY       DL1       0    2895
Disruptive States:         TNR

A64  0115 46C5  00000A02 00000521  20 RW SY       DL1       0    2890
Disruptive States:         TNR

A64  0116 46C6  00000A03 00000522  20 RW SY       DL1       0    2886
Disruptive States:         TNR

A64  0117 46C7  00000A04 00000523  20 RW SY       DL1       0    2888
Disruptive States:         TNR

A64  0118 46C8  00000A05 00000524  20 RW SY       DL1       0    2882
Disruptive States:         TNR

A64  0119 46C9  00000A06 00000525  20 RW SY       DL1       0    2902
Disruptive States:         TNR

A64  011A 46CA  00000A07 00000526  20 RW SY       DL1       0    2884
Disruptive States:         TNR

A64  011B 46CB  00000A08 00000527  20 RW SY       DL1       0    2882
Disruptive States:         TNR

A64  011C 46CC  00000A09 00000528  20 RW SY       DL1       0    2887
Disruptive States:         TNR

A64  011D 46CD  00000A0A 00000529  20 RW SY       DL1       0    2894
Disruptive States:         TNR

A64  011E 46CE  00000A0B 0000052A  20 RW SY       DL1       0    2874
Disruptive States:         TNR

A64  011F 46CF  00000A0C 0000052B  20 RW SY       DL1       0    2921
Disruptive States:         TNR

End of Display

**Action**  Display the state of the RDF volumes in the secondary storage system.

**User**  ZURDF DIS REM GRO~SRDFA SET~46C0 TYP~MAT

**System**

CSMP0097I 15.52.40 CPU-A SS-BSS SSU-SSU0 IS-01
E1RQ000001 RDF Device MAT Display
Group SRDFA    Set 46C0     in Remote CU 000196701305
MDBF Symb    This     Othr     RDF
SSN          Mod    SDA    Dev    Dev    GRP HS MO AC IT MR R1-Itrk R2-Itrk
N/A  0000 0000 0000051C 000009FD  20 RO       DL2       0    1913
Disruptive States:

N/A  0000 0000 0000051D 000009FE  20 RO       DL2       0    1936
Disruptive States:

N/A  0000 0000 0000051E 000009FF  20 RO       DL2       0    1908
Disruptive States:

N/A  0000 0000 0000051F 00000A00  20 RO       DL2       0    1938
Disruptive States:

N/A  0000 0000 00000520 00000A01  20 RO       DL2       0    1909
Disruptive States:

N/A  0000 0000 00000521 00000A02  20 RO       DL2       0    1920
Disruptive States:

N/A  0000 0000 00000522 00000A03  20 RO       DL2       0    1944
Disruptive States:

N/A  0000 0000 00000523 00000A04  20 RO       DL2       0    1967
Disruptive States:

N/A  0000 0000 00000524 00000A05  20 RO       DL2       0    1959
Disruptive States:

N/A  0000 0000 00000525 00000A06  20 RO       DL2       0    1961
Disruptive States:

N/A  0000 0000 00000526 00000A07  20 RO       DL2       0    1974
Disruptive States:

N/A  0000 0000 00000527 00000A08  20 RO       DL2       0    1955
Disruptive States:

N/A  0000 0000 00000528 00000A09  20 RO       DL2       0    1940
Disruptive States:

N/A  0000 0000 00000529 00000A0A  20 RO       DL2       0    1967
Disruptive States:
SRDF Commands

Disruptive States:

End of Display

Action  Resume SRDF synchronization for SRDF/A group SRDFA.
User    ZURDF RES GRO-SRDFA
System

CSMPOO97I 15.55.32 CPU-A SS-BSS SSU-SSU0 IS-01
URDF0019P SRDF Group SRDFA
URDF0019I SRDF Control record refresh started
CSPMPO097I 15.55.32 CPU-A SS-BSS SSU-SSU0 IS-01
URDF1043I Local CU 000196701175 discovered for Group SRDFA Set 56C0
CSPMPO097I 15.55.32 CPU-A SS-BSS SSU-SSU0 IS-01
URDF1043I Remote CU 000196701305 discovered for Group SRDFA Set 56C0
CSPMPO097I 15.55.32 CPU-A SS-BSS SSU-SSU0 IS-01
URDF1043I Local CU 000196701170 discovered for Group SRDFA Set 46C0
CSPMPO097I 15.55.32 CPU-A SS-BSS SSU-SSU0 IS-01
URDF1043I Remote CU 000196701305 discovered for Group SRDFA Set 46C0
CSPMPO097I 15.55.32 CPU-A SS-BSS SSU-SSU0 IS-01
URDF0024P SRDF Group SRDFA
URDF0024I SRDF Control record refresh completed
CSPMPO097I 15.55.36 CPU-A SS-BSS SSU-SSU0 IS-01
EIV00000P SRDF Group SRDFA
EIV00000I SRDF Operation Verification Started
CSPMPO097I 15.55.36 CPU-A SS-BSS SSU-SSU0 IS-01
EIV00001P SRDF Group SRDFA
EIV00001I SRDF Group Properties Verification Started
Options  Permissions
None
EIV00003I SRDF Device State Verification Started
CSPMPO097I 15.55.57 CPU-A SS-BSS SSU-SSU0 IS-01
EIV00004P SRDF Group SRDFA
EIV00004I SRDF Operation Verification Completed
CSPMPO097I 15.55.57 CPU-A SS-BSS SSU-SSU0 IS-01
URDF0213P SRDF Group SRDFA
URDF0213I QOS Controls started
CSPMPO097I 15.55.58 CPU-A SS-BSS SSU-SSU0 IS-01
URDF0214P SRDF Group SRDFA
URDF0214I QOS Controls completed
CSPMPO097I 15.55.58 CPU-A SS-BSS SSU-SSU0 IS-01
URDF1000I SRDF Group SRDFA Set 46C0 started issuing Resume
CSPMPO097I 15.55.58 CPU-A SS-BSS SSU-SSU0 IS-01
URDF1000I SRDF Group SRDFA Set 56C0 started issuing Resume
CSPMPO097I 15.55.58 CPU-A SS-BSS SSU-SSU0 IS-01
URDF1001I SRDF Group SRDFA Set 46C0 completed issuing Resume
CSPMPO097I 15.55.58 CPU-A SS-BSS SSU-SSU0 IS-01
URDF1001I SRDF Group SRDFA Set 56C0 completed issuing Resume
CSPMPO097I 15.56.02 CPU-A SS-BSS SSU-SSU0 IS-01
URDF1031I SRDF Status Display
SRDF Group: SRDFA Base Operation: Resume
Status:    Monitor Active
Start Time : 01.55.32 Date : 11/21/15

<table>
<thead>
<tr>
<th>Set Name</th>
<th>CU Serial #</th>
<th>SDA</th>
<th>Complete</th>
<th>Progress</th>
<th>Started</th>
<th>Summary</th>
<th>Itrks</th>
<th>Pct</th>
</tr>
</thead>
<tbody>
<tr>
<td>46C0</td>
<td>000196701170</td>
<td>44C1</td>
<td>0</td>
<td>16</td>
<td>0</td>
<td>00000</td>
<td>43</td>
<td>783</td>
</tr>
<tr>
<td>56C0</td>
<td>000196701175</td>
<td>54C0</td>
<td>0</td>
<td>16</td>
<td>0</td>
<td>00000</td>
<td>42</td>
<td>214</td>
</tr>
</tbody>
</table>

End of Display

CSMPO097I 15.57.11 CPU-A SS-BSS SSU-SSU0 IS-01
URDF1031I SRDF Status Display
SRDF Group: SRDFA Base Operation: Resume
Status:    Monitor Active
### Action
Activate an SRDF/A session for SRDF group SRDFA.

### User
ZURDF ASYNC GRO-SRDFA PAR-ACT

### System

| CSMP0097I | 16.01.13 | CPU-A SS-BSS | SSU-SSU0 IS-01 |
| UD RDF0019P | SRDF Group SRDFA |
| UD RDF0019I | SRDF Control record refresh started |
| CSMP0097I | 16.01.13 | CPU-A SS-BSS | SSU-SSU0 IS-01 |
| UD RDF0143I | Local CU 000196701175 discovered for Group SRDFA Set 56C0 |
| CSMP0097I | 16.01.13 | CPU-A SS-BSS | SSU-SSU0 IS-01 |
| UD RDF0143I | Remote CU 000196701305 discovered for Group SRDFA Set 56C0 |
| CSMP0097I | 16.01.13 | CPU-A SS-BSS | SSU-SSU0 IS-01 |
| UD RDF0143I | Local CU 000196701170 discovered for Group SRDFA Set 46C0 |
| CSMP0097I | 16.01.13 | CPU-A SS-BSS | SSU-SSU0 IS-01 |
| UD RDF0143I | Remote CU 000196701305 discovered for Group SRDFA Set 46C0 |
| CSMP0097I | 16.01.14 | CPU-A SS-BSS | SSU-SSU0 IS-01 |
| UD RDF0024P | SRDF Group SRDFA |
| UD RDF0024I | SRDF Control record refresh completed |
| CSMP0097I | 16.01.14 | CPU-A SS-BSS | SSU-SSU0 IS-01 |
| E1V00000P | SRDF Group SRDFA |
| E1V00000I | SRDF Operation Verification Started |
| CSMP0097I | 16.01.14 | CPU-A SS-BSS | SSU-SSU0 IS-01 |
| E1V00000I | SRDF Group Properties Verification Started |
| E1V00000I | SRDF Device State Verification Started |
| CSMP0097I | 16.01.19 | CPU-A SS-BSS | SSU-SSU0 IS-01 |
| E1V00004P | SRDF Group SRDFA |
| E1V00004I | SRDF Operation Verification Completed |
| CSMP0097I | 16.01.19 | CPU-A SS-BSS | SSU-SSU0 IS-01 |
| UD RDF1000I | SRDF Group SRDFA Set 46C0 started issuing Async |
| CSMP0097I | 16.01.19 | CPU-A SS-BSS | SSU-SSU0 IS-01 |
| UD RDF1000I | SRDF Group SRDFA Set 56C0 started issuing Async |
| CSMP0097I | 16.01.19 | CPU-A SS-BSS | SSU-SSU0 IS-01 |
| UD RDF1001I | SRDF Group SRDFA Set 46C0 completed issuing Async |
| CSMP0097I | 16.01.19 | CPU-A SS-BSS | SSU-SSU0 IS-01 |
| UD RDF1001I | SRDF Group SRDFA Set 56C0 completed issuing Async |
| CSMP0097I | 16.01.22 | CPU-A SS-BSS | SSU-SSU0 IS-01 |
| UD RDF1031I | SRDF Status Display |
| SRDF Group: SRDFA Base Operation: Async |

Status: Monitor Active

Start Time: 02.01.13 Date: 11/21/15
SRDF Commands

Set Name CU Serial #  SDA  Complete Progress Started Summary       Itrks Pct
46C0  000196701170  44C1  1  0  0  00000  0  100
56C0  000196701175  54C0  1  0  0  00000  0  100
End of Display
URDF1003I SRDF Group SRDFA Refresh complete

Example 5

This example shows how to set Tolerance On for SRDF group SRDFA.

Action Display the SRDF/A session information for the primary storage system in SRDF group SRDFA.

User ZURDF DIS GRO-SRDFA SET-46C0 TYP-SAS

System

CSMP0097I 16.05.41 CPU-A SS-BSS SSU-SSU0 IS-01
E1VA0001I SRDF/A Session Display
Group SRDFA Set 46C0 in Primary CU 000196701170
SRDF/A Session RDFGRoup  20  Active  Cycle Number  18
  Capture Cycle Size  1276  Transmit Cycle Size  968
  Average Cycle Time  15  Average Cycle Size  2443
  Last Cycle Size  3978  Secondary Delay  00:00:00:21
  Secondary Consistent  Yes  Tolerance  Off
  HA Writes  13 162 840  Repeated HA Writes  8 225 913
  HA Duplicate Slots  2 217 591
  Transmit Idle  On  Drop Priority  33
  Max Throttle Time  0  Max Cache Percentage  74
  Time Since Last Cycle Switch  00:00:06  Duration of Last Cycle  15
  Write Pacing Active  No  Write Pacing Stats On  No
End of Display
### SRDF Commands

<table>
<thead>
<tr>
<th>Command</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>URDF1043I</td>
<td>Local CU discovered for Group SRDFA Set 46C0</td>
</tr>
<tr>
<td>CSMP0097I</td>
<td>16.12.11 CPU-A SS-BSS SSU-SSU0 IS-01</td>
</tr>
<tr>
<td>URDF1043I</td>
<td>Remote CU discovered for Group SRDFA Set 46C0</td>
</tr>
<tr>
<td>CSMP0097I</td>
<td>16.12.14 CPU-A SS-BSS SSU-SSU0 IS-01</td>
</tr>
<tr>
<td>URDF0024P</td>
<td>SRDF Group SRDFA</td>
</tr>
<tr>
<td>URDF0024I</td>
<td>Control record refresh completed</td>
</tr>
<tr>
<td>CSMP0097I</td>
<td>16.12.14 CPU-A SS-BSS SSU-SSU0 IS-01</td>
</tr>
<tr>
<td>EIV00000P</td>
<td>SRDF Group SRDFA</td>
</tr>
<tr>
<td>EIV00000I</td>
<td>SRDF Operation Verification Started</td>
</tr>
<tr>
<td>CSMP0097I</td>
<td>16.12.14 CPU-A SS-BSS SSU-SSU0 IS-01</td>
</tr>
<tr>
<td>EIV00001P</td>
<td>SRDF Group SRDFA</td>
</tr>
<tr>
<td>EIV00001I</td>
<td>SRDF Group Properties Verification Started</td>
</tr>
</tbody>
</table>

#### Options
- None

<table>
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<tr>
<th>Command</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>URDF1000I</td>
<td>SRDF Group SRDFA Set 46C0 started issuing Async</td>
</tr>
<tr>
<td>CSMP0097I</td>
<td>16.12.31 CPU-A SS-BSS SSU-SSU0 IS-01</td>
</tr>
<tr>
<td>URDF1000I</td>
<td>SRDF Group SRDFA Set 56C0 started issuing Async</td>
</tr>
<tr>
<td>CSMP0097I</td>
<td>16.12.31 CPU-A SS-BSS SSU-SSU0 IS-01</td>
</tr>
<tr>
<td>URDF1001I</td>
<td>SRDF Group SRDFA Set 46C0 completed issuing Async</td>
</tr>
<tr>
<td>CSMP0097I</td>
<td>16.12.31 CPU-A SS-BSS SSU-SSU0 IS-01</td>
</tr>
<tr>
<td>URDF1001I</td>
<td>SRDF Group SRDFA Set 56C0 completed issuing Async</td>
</tr>
<tr>
<td>CSMP0097I</td>
<td>16.12.34 CPU-A SS-BSS SSU-SSU0 IS-01</td>
</tr>
<tr>
<td>URDF1031I</td>
<td>SRDF Status Display</td>
</tr>
</tbody>
</table>

#### SRDF Group: SRDFA Base Operation: Async

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<thead>
<tr>
<th>Set Name</th>
<th>CU Serial #</th>
<th>SDA</th>
<th>Complete</th>
<th>Progress</th>
<th>Started</th>
<th>Summary</th>
<th>Itrks</th>
<th>Pct</th>
</tr>
</thead>
<tbody>
<tr>
<td>46C0</td>
<td>000196701170</td>
<td>44C1</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>00000</td>
<td>0</td>
<td>100</td>
</tr>
<tr>
<td>56C0</td>
<td>000196701175</td>
<td>54C0</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>00000</td>
<td>0</td>
<td>100</td>
</tr>
</tbody>
</table>

End of Display

### Action
- Display the SRDF/A session information for the primary storage system in SRDF group SRDFA.

### User
- ZURDF DIS GRO-SRDFA SET-46C0 TYP-SAS

### System

<table>
<thead>
<tr>
<th>Command</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>CSMP0097I</td>
<td>16.14.07 CPU-A SS-BSS SSU-SSU0 IS-01</td>
</tr>
<tr>
<td>EIVA0001I</td>
<td>SRDF/A Session Display</td>
</tr>
</tbody>
</table>

#### Group SRDFA Set 46C0 in Primary CU 000196701170

<table>
<thead>
<tr>
<th>SRDF/A Session RDFGGroup</th>
<th>20</th>
<th>Active</th>
<th>Cycle Number</th>
<th>52</th>
</tr>
</thead>
<tbody>
<tr>
<td>Capture Cycle Size</td>
<td>0</td>
<td>Transmit Cycle Size</td>
<td>5277</td>
<td></td>
</tr>
<tr>
<td>Average Cycle Time</td>
<td>15</td>
<td>Average Cycle Size</td>
<td>4774</td>
<td></td>
</tr>
<tr>
<td>Last Cycle Size</td>
<td>5277</td>
<td>Secondary Delay</td>
<td>00:00:00:16</td>
<td></td>
</tr>
<tr>
<td>Secondary Consistent</td>
<td>Yes</td>
<td>Tolerance</td>
<td>On</td>
<td></td>
</tr>
<tr>
<td>HA Writes</td>
<td>13 929 842</td>
<td>Repeated HA Writes</td>
<td>8 794 901</td>
<td></td>
</tr>
<tr>
<td>HA Duplicate Slots</td>
<td>2 217 861</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Transmit Idle</td>
<td>On</td>
<td>Drop Priority</td>
<td>33</td>
<td></td>
</tr>
<tr>
<td>Max Throttle Time</td>
<td>0</td>
<td>Max Cache Percentage</td>
<td>74</td>
<td></td>
</tr>
<tr>
<td>Time Since Last Cycle Switch</td>
<td>00:00:01</td>
<td>Duration of Last Cycle</td>
<td>15</td>
<td></td>
</tr>
<tr>
<td>Write Pacing Active</td>
<td>No</td>
<td>Write Pacing Stats On</td>
<td>No</td>
<td></td>
</tr>
</tbody>
</table>

End of Display
Example 6

This example shows how to set Tolerance Off for SRDF group SRDFA.

**Action**
Display the SRDF/A session information for the primary storage system in SRDF group SRDFA.

**User**
ZURDF DIS GRO-SRDFA SET-46C0 TYP-SAS

**System**
CSMP0097I 16.14.07 CPU-A SS-BSS SSU-SSU0 IS-01
EIVA0000I SRDF/A Session Display
Group SRDFA Set 46C0 in Primary CU 000196701170
SRDF/A Session RDFGRoup 20 Active Cycle Number 52
Capture Cycle Size 0 Transmit Cycle Size 5277
Average Cycle Time 15 Average Cycle Size 4774
Last Cycle Size 5277 Secondary Delay 00:00:00:16
Secondary Consistent Yes Tolerance On
HA Writes 13 929 842 Repeated HA Writes 8 794 901
HA Duplicate Slots 2 217 861
Transmit Idle On Drop Priority 33
Max Throttle Time 0 Max Cache Percentage 74
Time Since Last Cycle Switch 00:00:01 Duration of Last Cycle 15
Write Pacing Active No Write Pacing Stats On No
End of Display

**Action**
Set Tolerance Off for the SRDF/A group SRDFA.

**User**
ZURDF ASYNC GRO-SRDFA PAR-TOF

**System**
CSMP0097I 16.12.10 CPU-A SS-BSS SSU-SSU0 IS-01
URDF0019P SRDF Group SRDFA
URDF0019I SRDF Control record refresh started
CSMP0097I 16.12.10 CPU-A SS-BSS SSU-SSU0 IS-01
URDF1043I Local CU 000196701175 discovered for Group SRDFA Set 56C0
CSMP0097I 16.12.11 CPU-A SS-BSS SSU-SSU0 IS-01
URDF1043I Remote CU 000196701305 discovered for Group SRDFA Set 56C0
CSMP0097I 16.12.11 CPU-A SS-BSS SSU-SSU0 IS-01
URDF1043I Local CU 000196701170 discovered for Group SRDFA Set 46C0
CSMP0097I 16.12.11 CPU-A SS-BSS SSU-SSU0 IS-01
URDF1043I Remote CU 000196701305 discovered for Group SRDFA Set 46C0
CSMP0097I 16.12.14 CPU-A SS-BSS SSU-SSU0 IS-01
URDF0024P SRDF Group SRDFA
URDF0024I SRDF Control record refresh completed
CSMP0097I 16.12.14 CPU-A SS-BSS SSU-SSU0 IS-01
EIV000000I SRDF Operation Verification Started
CSMP0097I 16.12.14 CPU-A SS-BSS SSU-SSU0 IS-01
EIV000001P SRDF Group SRDFA
EIV000001I SRDF Group Properties Verification Started
Options Permissions
None
EIV000003I SRDF Device State Verification Started
CSMP0097I 16.12.31 CPU-A SS-BSS SSU-SSU0 IS-01
EIV000004P SRDF Group SRDFA
EIV000004I SRDF Operation Verification Completed
CSMP0097I 16.12.31 CPU-A SS-BSS SSU-SSU0 IS-01
URDF1000I SRDF Group SRDFA Set 46C0 started issuing Async
CSMP0097I 16.12.31 CPU-A SS-BSS SSU-SSU0 IS-01
URDF1000I SRDF Group SRDFA Set 56C0 started issuing Async
CSMP0097I 16.12.31 CPU-A SS-BSS SSU-SSU0 IS-01
URDF1001I SRDF Group SRDFA Set 46C0 completed issuing Async
CSMP0097I 16.12.31 CPU-A SS-BSS SSU-SSU0 IS-01
URDF1001I SRDF Group SRDFA Set 56C0 completed issuing Async
CSMP0097I 16.12.34 CPU-A SS-BSS SSU-SSU0 IS-01
URDF1031I SRDF Status Display
SRDF Commands

SRDF Group: SRDFA Base Operation: Async
Status: Monitor Active
Start Time: 02.12.10 Date: 11/21/15

____Operation Status____

<table>
<thead>
<tr>
<th>Opr</th>
<th>In</th>
<th>Not</th>
<th>Opr RC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Set Name CU Serial #</td>
<td>SDA</td>
<td>Complete Progress</td>
<td>Started Summary</td>
</tr>
<tr>
<td>46C0</td>
<td>000196701170</td>
<td>44C1</td>
<td>1</td>
</tr>
<tr>
<td>56C0</td>
<td>000196701175</td>
<td>54C0</td>
<td>1</td>
</tr>
</tbody>
</table>

End of Display

URDF1003I SRDF Group SRDFA Async complete

Action Display the SRDF/A session information for the primary storage system in SRDF group SRDFA.

User ZURDF DIS GRO-SRDFA SET-46C0 TYP-SAS

System

CSMP0097I 16.05.41 CPU-A SS-BSS SSU-SSU0 IS-01
E1VA0000I SRDF/A Session Display
Group SRDFA Set 46C0 in Primary CU 000196701170
SRDF/A Session RDFGroup 20 Active Cycle Number 18
Capture Cycle Size 1276 Transmit Cycle Size 968
Average Cycle Time 15 Average Cycle Size 2443
Last Cycle Size 3978 Secondary Delay 00:00:00:21
Secondary Consistent Yes Tolerance Off
HA Writes 13 162 840 Repeated HA Writes 8 225 913
HA Duplicate Slots 2 217 591
Transmit Idle On Drop Priority 33
Max Throttle Time 0 Max Cache Percentage 74
Time Since Last Cycle Switch 00:00:06 Duration of Last Cycle 15
Write Pacing Active No Write Pacing Stats On No
End of Display

Example 7

This example shows how to recover an SRDF/A MSC group.

Action Recover SRDF/A MSC group U6DSRDF.

User ZURDF ASYNC GRO-U6DSRDF PAR-RCV

System

CSMP0097I 17.57.07 CPU-B SS-BSS SSU-SSU0 IS-01
URDF0019I SRDF Control record refresh started
CSMP0097I 17.57.07 CPU-B SS-BSS SSU-SSU0 IS-01
URDF1043I Local CU 000190300063 discovered for Group U6DSRDF Set 3B60
CSMP0097I 17.57.07 CPU-B SS-BSS SSU-SSU0 IS-01
URDF1043I Remote CU 000000006211 discovered for Group U6DSRDF Set 3B60
CSMP0097I 17.57.07 CPU-B SS-BSS SSU-SSU0 IS-01
URDF1043I Local CU 000000006211 discovered for Group U6DSRDF Set 6100
CSMP0097I 17.57.07 CPU-B SS-BSS SSU-SSU0 IS-01
URDF1043I Remote CU 000190300063 discovered for Group U6DSRDF Set 6100
CSMP0097I 17.57.07 CPU-B SS-BSS SSU-SSU0 IS-01
URDF0024I SRDF Control record refresh completed
CSMP0097I 17.57.07 CPU-B SS-BSS SSU-SSU0 IS-01
E1V00000I SRDF Operation Verification Started
E1V00001I SRDF Group Properties Verification Started
Options Permissions
None
E1V00003I SRDF Device State Verification Started
CSMP0097I 17.57.07 CPU-B SS-BSS SSU-SSU0 IS-01
E1V00004I SRDF Operation Verification Completed
CSMP0097I 17.57.07 CPU-B SS-BSS SSU-SSU0 IS-01
URDF1000I SRDF Group U6DSRDF Set 6100 started issuing Async
CSMP0097I 17.57.07 CPU-B SS-BSS SSU-SSU0 IS-01
E1VF0000I SRDF/A Multi-Session Recovery Analysis started for Group U6DSRDF
SRDF Commands

000000006211/20 - 000190300063/00 SET-6100
MSC is Active
Transmit Cycle is Complete
Apply Cycle is Complete
Host Intervention Required
Receive Tag = 000000000000014A Apply Tag = 0000000000000149

000190300063/01 - 000000006211/21 SET-3B60
MSC is Active
Transmit Cycle is Complete
Apply Cycle is Complete
Host Intervention Required
Receive Tag = 000000000000014A Apply Tag = 000000000000014A

Commit All Cycles
SRDFA Session = 000190300063/00 Commit Receive Cycle
SRDFA Session = 000000006211/21 Commit Receive Cycle
E1VF0001I SRDF/A Multi-Session Recovery started for Group U6DSRDF

000000006211/20 - 000190300063/00 SET-6100
MSC is Active
Transmit Cycle is Complete
Apply Cycle is Complete
Receive Tag = 000000000000014A Apply Tag = 0000000000000149

000190300063/01 - 000000006211/21 SET-3B60
MSC is Active
Transmit Cycle is Incomplete
Receive Tag = 000000000000014A Apply Tag = 000000000000014A

Recovery Complete
CSMP0097I 17.57.07 CPU-B SS-BSS SSU-SSU0 IS-01
URDF1001I SRDF Group U6DSRDF Set 6100 completed issuing Async
CSMP0097I 17.57.07 CPU-B SS-BSS SSU-SSU0 IS-01
URDF1031I SRDF Status Display
SRDF Group: U6DSRDF Base Operation: Async
Status: Monitor Active
Start Time : 20.17.47 Date : 09/30/05

<table>
<thead>
<tr>
<th>Set Name</th>
<th>CU Serial #</th>
<th>SDA</th>
<th>Complete Progress Started Summary</th>
<th>Itrks</th>
<th>Pct</th>
</tr>
</thead>
<tbody>
<tr>
<td>6100</td>
<td>000000006211 6300</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

End of Display
URDF1003I SRDF Group U6DSRDF Async complete
Example 8

This example shows how to restart the SRDF/A MSC Monitor for cycle switching.

**Action**  
Restart SRDF/A MSC Monitor for cycle switching for group UEDUSA.

**User**  
ZURDF ASYNC GRO-U6DSRDF PAR-MMR

**System**

ZURDF ASYNC GRO-U6DSA PAR-MSA

CSMP0097I 03.03.28 CPU-A SS-BSS SSU-SSU0 IS-01  
URDF0019I SRDF Control record refresh started  
CSMP0097I 03.03.28 CPU-A SS-BSS SSU-SSU0 IS-01  
URDF0024I SRDF Control record refresh completed  
CSMP0097I 03.03.28 CPU-A SS-BSS SSU-SSU0 IS-01  
E1V00001I SRDF Operation Verification Started  
E1V00001I SRDF Group Properties Verification Started  
Options Permissions  
None  
E1V00003I SRDF Device State Verification Started  
CSMP0097I 03.03.28 CPU-A SS-BSS SSU-SSU0 IS-01  
E1V00004I SRDF Operation Verification Completed  
CSMP0097I 03.03.28 CPU-A SS-BSS SSU-SSU0 IS-01  
URDF1000I SRDF Group UEDUSA Set 6700 started issuing Async  
CSMP0097I 03.03.28 CPU-A SS-BSS SSU-SSU0 IS-01  
URDF1000I SRDF Group UEDUSA Set 3C20 started issuing Async  
CSMP0097I 03.03.28 CPU-A SS-BSS SSU-SSU0 IS-01  
URDF1001I SRDF Group UEDUSA Set 6700 completed issuing Async  
CSMP0097I 03.03.28 CPU-A SS-BSS SSU-SSU0 IS-01  
URDF1001I SRDF Group UEDUSA Set 3C20 completed issuing Async  
CSMP0097I 03.03.28 CPU-A SS-BSS SSU-SSU0 IS-01  
URDF1031I SRDF Status Display  
SRDF Group: UEDUSA Base Operation: Async  
Status: Monitor Active  
Start Time : 19.09.09 Date : 02/06/07  
____________Operation Status ______  
Opr In Not Opr RC  
Set Name CU Serial # SDA Complete Progress Started Summary Itrks Pct  
6700 000187430936 6700 1 0 0 00000 0 100  
3C20 000190300063 3C20 1 0 0 00000 0 100  
End of Display  
URDF1003I SRDF Group UEDUSA Async complete  
CSMP0097I 03.03.28 CPU-A SS-BSS SSU-SSU0 IS-01  
URDF1059I SRDF/A MSC Group UEDUSA Cycle Switch Controls Started
ZURDF CONfig ACCEPT|DISCARD

Accept or discard all configuration changes made during the current configuration session.

Requirements and restrictions

- The CONfig ACCEPT command is accepted only if all configuration sessions for all SRDF groups are closed.
- To enable fallback to the previous SRDF configuration, back up the SRDF control records before ACCEPTing the new SRDF configuration.
- The CONfig DISCARD command deletes all configuration changes you made during the current configuration session for all SRDF groups.
- The CONfig DISCARD command is accepted whether configuration sessions for SRDF groups are open or closed.

Format

ZURDF CONfig ACCEPT|DISCARD All

Parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACCEPT</td>
<td>Accept all configuration changes made during the configuration session.</td>
</tr>
<tr>
<td>DISCARD</td>
<td>Discard all configuration changes made during the configuration session.</td>
</tr>
</tbody>
</table>

Additional information

- The CONfig DISCARD command resets all indicators in the SRDF Master Control Record to indicate that there is no configuration session in existence.
- The CONfig ACCEPT command verifies that all configuration sessions are closed; modifies RDF pair and SRDF group status, as necessary; removes inactive sets and inactive SRDF groups, if necessary; calculates SRDF group counts; and replaces existing SRDF control records with SRDF configuration control records.

Examples

Example 1

<table>
<thead>
<tr>
<th>Action</th>
<th>Discard all configuration changes made during the current configuration session.</th>
</tr>
</thead>
<tbody>
<tr>
<td>User</td>
<td>ZURDF CON DISCARD ALL</td>
</tr>
<tr>
<td>System</td>
<td>CSMP0097I 00.22.12 CPU-A SS-BSS SSU-SSU0 IS-01 URDF1006I SRDF Configuration Discard command complete</td>
</tr>
</tbody>
</table>
SRDF Commands

**Example 2**

**Action**
Accept all configuration changes made during the current configuration session, with one or more configuration sessions open.

**System**

```
CSMP0097I 00.49.56 CPU-A SS-BSS SSU-SSU0 IS-01
URDF0089I SRDF configuration verifying sessions not open
CSMP0097I 00.49.56 CPU-A SS-BSS SSU-SSU0 IS-01
URDF1049I SRDF Group TEST is Open
URDF1007I SRDF Configuration Accept command aborted
```

**Example 3**

**Action**
Accept all configuration changes made during the current configuration session. Duplicate RDF devices are configured in group 2.

**System**

```
ZURDF CON ACCEPT ALL
CSMP0097I 10.35.41 CPU-A SS-BSS SSU-SSU0 IS-01
URDF0089I SRDF configuration verifying sessions not open
CSMP0097I 10.35.41 CPU-A SS-BSS SSU-SSU0 IS-01
URDF0113I SRDF configuration verifying RDF pairs unique
CSMP0097I 10.35.42 CPU-A SS-BSS SSU-SSU0 IS-01
URDF1007I SRDF Configuration Accept aborted
URDF0094I SRDF control records updated
Duplicate SRDF devices detected. These conflicts must be corrected.
Acceptable?
SRDF Group 1 : Yes
SRDF Group 2 : No
SRDF Group 3 : Yes
SRDF Group 4 : Yes
Use "ZURDF CON VER GRO-gggggggg" to see details for each group
End of Report
```

**Example 4**

**Action**
Accept all configuration changes made during the current configuration session.

**System**

```
CSMP0097I 20.44.28 CPU-A SS-BSS SSU-SSU0 IS-01
URDF0089I SRDF configuration verifying sessions not open
CSMP0097I 20.44.28 CPU-A SS-BSS SSU-SSU0 IS-01
URDF0113I SRDF configuration verifying RDF pairs unique
CSMP0097I 20.44.28 CPU-A SS-BSS SSU-SSU0 IS-01
URDF0105I SRDF configuration finalizing RDF pairs
CSMP0097I 20.44.28 CPU-A SS-BSS SSU-SSU0 IS-01
URDF0101I SRDF configuration inactive sets removed
CSMP0097I 20.44.28 CPU-A SS-BSS SSU-SSU0 IS-01
URDF0102I SRDF configuration inactive groups removed
CSMP0097I 20.44.28 CPU-A SS-BSS SSU-SSU0 IS-01
URDF0118I SRDF Group count calculated
CSMP0097I 20.44.28 CPU-A SS-BSS SSU-SSU0 IS-01
URDF0094I SRDF control records updated
CSMP0097I 20.44.28 CPU-A SS-BSS SSU-SSU0 IS-01
URDF1006I SRDF Configuration Accept command complete
```
ZURDF CONfig ADD|REMove

Add or remove a set designating a local and remote RDF pair to/from the specified SRDF group.

Requirements and restrictions

- The CONfig ADD and REMove commands are available only for an open configuration session.
- SRDF/A Multi-Session Consistency allows multiple sets in an SRDF/A group for storage systems running Enginuity level 5773 and higher or HYPERMAX OS.
- The ASYNC general property can not be validated during ZURDF CONfig ADD processing. The general ASYNC property must be explicitly defined using the ZURDF DEF PRO-GEN ASYNC command. The set count is validated during ZURDF DEF PRO-GEN ASYNC processing.

Format

ZURDF CONfig ADD|REMove GROup-cccccccc SET-cccccccc [SDA-ccud]
MHL1-dd.dd [MHL2-dd.dd]

Parameters

ADD
ADD
Remove a set from the SRDF group.
GROup-ccccc
The one- to eight-alphanumeric character name of the SRDF group.
SET-cccccc
The one- to eight-alphanumeric character name of the SRDF set that identifies an SRDF pair.
SDA-ccud
SDA designating the host attached operations device to which I/O can be issued to discover the RDF pair in the user-defined set.
Do not use this parameter with the REMove parameter.
MHL1-dd.dd
Hops one and two of the multi-hop list designating the RDFGroup path to the remote storage system. At least one hop must be specified.
Do not use this parameter with the REMove parameter.
MHL2-dd.dd
Hops three and four of the multi-hop list designating the RDFGroup path to the remote storage system. Optional.
Do not use this parameter with the REMove parameter.
Additional information

- Ensure that the multi-hop list specified on an ADD command identifies the expected local and remote SRDF pair. Consult with your EMC Representative for SRDF configuration information.

If you specify an invalid multi-hop list with an ADD command, the command is terminated. Remove the set which could not be added successfully using the REMove command. Then you can then ADD the set, specifying the valid multi-hop list.

- The operations device specified on the input SDA must be a supported SRDF volume to enable SRDF Controls for z/TPF to discover the SRDF pairs using the EMC SymmAPI for z/TPF.

  Note: “VM gatekeeper support” on page 88 provides additional information.

- The multi-hop list describes the RDFGroup path to the storage system furthest from the locally attached storage system designated by the input SDA. You specify the multi-hop list using the parameters MLH1 and MLH2.

Each parameter accepts up to two RDFGroup variables. The multi-hop list can contain one to eight RDFGroups/hops. A single hop must be specified by a single RDFGroup/hop in parameter MHL1.

A two hop multi-hop list must be specified with the two RDFGroups/hops separated by a period in parameter MHL1. A three hop multi-hop list must be specified with the first two RDFGroups/hops separated by a period in parameter MHL1, and the third RDFGroup/hop specified in parameter MHL2.

A four hop multi-hop list must be specified with the first two RDFGroups/hops separated by a period in parameter MHL1, and the third and fourth RDFGroups/hops separated by a period specified in parameter MHL2.

Examples

Example 1

Action       Add set 3232 to SRDF group MH. Set 3232 designates a remote storage system 4 hops from the originating storage system designated by SDA 3340, and a local storage system 3 hops from the originating storage system designated by SDA 3340. All I/O issued to discover the SRDF pair will be issued to SDA 3340. The path to the remote storage system is described by the 4 hop multihop list MHL1-03.02 MHL2-03.02.

User         ZURDF CON ADD GRO-MH SET-3232 SDA-3340 MHL1-03.02 MHL2-03.02

System

CSMP0097I 20.22.11 CPU-A SS-BSS SSU-SSU0 IS-01
URDF1043I Local CU 000185400212 discovered for Group MH Set 3232
URDF1045I Remote CU 000184505047 discovered for Group MH Set 3232
URDF1054I SRDF Group MH Set 3232 Added
URDF1006I SRDF Configuration Add command complete
Example 2

**Action**
Add set RAG0 to SRDF group R1BCV. Set RAG0 designates a remote storage system 1 hop from the originating storage system designated by SDA 33C0, and its partner storage system, locally attached and designated by SDA 33C0. All I/O issued to discover the SRDF pair are issued to SDA 33C0. The path to the remote storage system is described by the 1 hop multihop list MHL1-00.

**User**
ZURDF CON REM GRO-MH SET-3232 MHL1-00

**System**
CSMP0097I 20.28.18 CPU-A SS-BSS SSU-SSU0 IS-01
URDF1043I Local CU 000184505047 discovered for Group R1BCV Set RAG0
URDF1045I Remote CU 000185400212 discovered for Group R1BCV Set RAG0
URDF1054I SRDF Group R1BCV Set RAG0 Added
URDF1006I SRDF Configuration Add command complete

Example 3

**Action**
Add set RAG3 to SRDF group UVAS1. A configuration session for SRDF group UVAS1 is not open.

**User**
ZURDF CON ADD GRO-UVAS1 SET-RAG3 SDA-33C0 MHL1-03

**System**
CSMP0097I 20.31.48 CPU-A SS-BSS SSU-SSU0 IS-01
URDF1049I SRDF Group UVAS1 is Closed
URDF0097I SRDF configuration command disallowed
CSMP0097I 20.31.48 CPU-A SS-BSS SSU-SSU0 IS-01
URDF1007I SRDF Configuration Add command aborted
SRDF Commands

ZURDF CONfig CHAnge|DELete

Change or delete an SRDF pair for the specified SRDF set and group.

Requirements and restrictions

You may enter the CONfig CHAnge and DELete commands only for an SRDF group with an open configuration session.

Format

ZURDF CONfig CHAnge|DELete GROup-cccccccc SET-cccccccc TYP-ccc SDN-hhhhhhhh OTYP-ccc OSDN-hhhhhhhh CNT-dddd

Parameters

CHAnge       Change the RDF pair(s).
DELete       Delete the RDF pair(s).
GROup        The one- to eight-alphanumeric character name of the SRDF group name.
SET          The one- to eight-alphanumeric character name of the SRDF set that identifies an SRDF pair.
TYP          The Local RDF Device Type:
             R1 = Traditional source device or an asynchronous source device
             R2 = Traditional target device or an asynchronous target device
             DR1 = Dynamic source device
             DR2 = Dynamic target device
             DRX = Dynamic source or target device
SDN-hhhhhhhh Hexadecimal start local SRDF device number of RDF pair(s) to configure.
OTYP          Remote RDF Device Type:
             R1 = Traditional source device or an asynchronous source device
             R2 = Traditional target device or an asynchronous target device
             DR1 = Dynamic source device
             DR2 = Dynamic target device
             DRX = Dynamic source or target device
OSDN-hhhhhhhh Hexadecimal start remote SRDF device number of RDF pair(s) to configure.
CNT-dddd      Decimal count of RDF pair(s) being configured.
Additional information

- The SDN and OSDN specified are verified to be the RDF device type (TYP or OTYP, respectively) specified. If the SRDF device type is not as specified, the command is terminated.

- Any dynamic RDF pairs specified by a CONfig CHAnge or DELete command must not be currently paired. If a dynamic RDF device is paired, the command is terminated.

- To change an existing RDF pair, first delete the RDF pair. An attempt to change an existing or changed RDF pair is terminated.

Examples

Example 1

Action Display 3 RDF pairs in SRDF group DYNRDF01 set 1 beginning with RDF device 9FD.
User ZURDF CON DIS GRO-DYNRDF01 SET-1 SDN-9FD CNT-3
System

Example 2

Action Attempt to change 1 RDF pair in SRDF group DYNRDF01 set 1 beginning with local RDF device 9FD, type DRX, and remote RDF device 53D, type DRX.
User ZURDF CON CHA GRO-DYNRDF01 SET-1 TYP-DRX SDN-9FD OTYP-DRX OSDN-53D CNT-1
System

Example 3

Action Attempt to delete 1 RDF pair in SRDF group DYNRDF01 set 1 beginning with local RDF device 9FD, type DRX, and remote RDF device 53D, type DRX.
User ZURDF CON DEL GRO-DYNRDF01 SET-1 TYP-DRX SDN-9FD OTYP-DRX OSDN-53D CNT-1
System
Example 4

**Action**
Delete 1 RDF pair in SRDF group DYNRDF01 set 1 beginning with local RDF device 9FD, type DRX, and remote RDF device 53C, type DRX.

**User**
ZURDF CON DEL GRO-DYNRDF01 SET-1 TYP-DRX SDN-9FD OTYP-DRX OSDN-53C CNT-1

**System**

CSMP0097I 11.46.54 CPU-A SS-BSS SSU-SSU0 IS-01
URDF1051I SRDF Group DYNRDF01 Set 1 Delete request processed
URDF1006I SRDF Configuration Delete complete

**Action**
Display RDF pairs in SRDF group DYNRDF01 set 1.

**User**
ZURDF CON DIS GRO-DYNRDF01 SET-1

**System**

CSMP0097I 11.29.11 CPU-A SS-BSS SSU-SSU0 IS-01
E1R60003I RDF Device Configuration Display
Group DYNRDF01 Set 1 in Local CU 000196701170
MDBF Symb This Othr RDF Device Opr
SSN Mod SDA Dev Dev GRP Status MR R1 Itrak R2 Itrak RC
N/A 0000 0000 000009FD 0000053D 0 R/W DLX 0 0 0000
N/A 0000 0000 000009FF 0000053E 0 R/W DLX 0 0 0000
End of Display

Example 5

**Action**
Change 1 RDF pair in SRDF group DYNRDF01 set 1 beginning with local RDF device 9FD, type DRX, and remote RDF device 53C, type DRX.

**User**
ZURDF CON CHA GRO-DYNRDF01 SET-1 TYP-DRX SDN-9FD OTYP-DRX OSDN-53C CNT-1

**System**

CSMP0097I 19.40.53 CPU-A SS-BSS SSU-SSU0 IS-01
URDF1051I SRDF Group DYNRDF01 Set 1 Change request processed
URDF1006I SRDF Configuration Change command complete

Example 6

**Action**
Display three RDF pairs in SRDF group DYNRDF01 set 1 beginning with RDF device 9FD.

**User**
ZURDF CON DIS GRO-DYNRDF01 SET-1 SDN-9FD CNT-3

**System**

CSMP0097I 11.29.11 CPU-A SS-BSS SSU-SSU0 IS-01
E1R60003I RDF Device Configuration Display
Group DYNRDF01 Set 1 in Local CU 000196701170
MDBF Symb This Othr RDF Device Opr
SSN Mod SDA Dev Dev GRP Status MR R1 Itrak R2 Itrak RC
N/A 0000 0000 000009FD 0000053C 0 R/W DLX 0 0 0000
N/A 0000 0000 000009FD 0000053D 0 R/W DLX 0 0 0000
N/A 0000 0000 000009FF 0000053E 0 R/W DLX 0 0 0000
End of Display
ZURDF CONfig DISplay

Display the SRDF information a single SRDF device pair, a range of SRDF pairs, or all SRDF pairs in the specified SRDF group and set.

Requirements and restrictions

Use the CONfig DISplay command only after SRDF configuration control records have been refreshed using the ZURDF CON OPEN GRO-ccccccccc command.

Format

ZURDF CONfig DISplay [LOCal|REMote] GROup-ccccccccc SET-ccccccccc [SDN-hhhhhhhhh] [CNT-ddddddd] [TYPe-CON]

Parameters

- **LOCal**: A host-attached storage system, or the member of an SRDF pair that is the least number of hops away from the host-attached storage system.
- **REMote**: The storage system furthest from the locally attached storage system in the specified set and SRDF group.
- **GROup-ccccccccc**: The one- to eight-alphanumeric character name of the SRDF group.
- **SET-ccccccccc**: The one- to eight-alphanumeric character name of the SRDF set that identifies an SRDF pair.
- **SDN-hhhhhhhhh**: Starting SRDF device number.
- **CNT-ddddddd**: Number of SRDF devices.
- **TYPe-CON**: SRDF configuration information.

Examples

Example explanation

The following information appears in these examples:

- **CU**: Serial number of the storage system.
- **MEM**: Cache size in megabytes.
- **TYPE**: Controller emulation type.
- **MODEL**: Contains the model number of the storage system.
- **MICROCODE LEVEL**: Enginuity or HYPERMAX OS level of the storage system.
- **SSID(S)**: SSID(s) (in hex).
- **BUILD DATE**: Enginuity or HYPERMAX OS build date.
- **SRDF Group**: The SRDF group.
- **SRDF Set Name**: The SRDF set in which this storage system is configured.
- **Multi-hop List**: The RDFGroup path to the remote storage system of the set.
- **Multi-hop Count**: The number of hops through the multi-hop list to get to this storage system in the set.
- **DARE ENABLED**: Data At Rest Encryption (ON|OFF).
SRDF Commands

| MAID ENABLED | Disk Power Saving (ON/OFF). |
| Sync         | RDF Director CPU cycle percentage used for synchronous SRDF. |
| Async        | RDF Director CPU cycle percentage used for asynchronous SRDF. |
| Copy         | RDF Director CPU cycle percentage used for adaptive copy SRDF. |

D01 - 128 Storage system director types.

Mainframe host director types are:
- CA - Parallel channel host adapter
- EA - ESCON channel host adapter
- EF - FICON channel host adapter

Open systems host director types are:
- SA - SCSI host adapter
- FA - Fibre SA host adapter
- FE - Fiber Channel over Ethernet adapter
- F2 - Four-port fibre SA host adapter
- SE - GigE SA host adapter

Disk director types are:
- DA - Disk director
- DF - Disk fibre director
- DS - Disk director
- DX - External disk director

RDF director types are:
- R1 - ESCON RDF director (RA1 mode)
- R2 - ESCON RDF director (RA2 mode)
- RE - GigE RDF director
- RF - Fibre RDF director

Example 1

**Action**
Display configuration information for the remote storage system in set 1 in group YFYH.

**User**
ZURDF CON DIS REMOTE GRO-YFYH SET-1 TYP-CON

**System**
CSMP0097I 09.47.30 CPU-A SS-BSS SSU-SSU0 IS-01
URDF0000I CU 000196701170 Configuration Display
SRDF S Group: YFYH Set Name : 1
Multi-Hop List : 20 Multi-Hop Count: 00
Type: 3990 Model: VMAX200K Mem: 704512 MB
Microcode Level: 5977v740 Build Date: 11/10/2015
DARE Enabled: NO MAID Enabled : NO
Workload Distribution: ON Sync: 70 Async: 20 Copy: 10
Disk Directors (DS):
  01C / 12 13 16 17
  02C / 12 13 16 17
  03C / 12 13 16 17
  04C / 12 13 16 17
  05C / 12 13 16 17
  06C / 12 13 16 17
FICON Directors (EF):
  01F / 24 25
  02F / 24 25
  03F / 24 25
  04F / 24 25
  05F / 24 25
06F / 24 25
FC RDF Directors (RF):
01E / 06 07
02E / 07 07
04E / 10 11
06E / 08 11
GIGE RDF Directors (RE):
03G / 05 06
05G / 04 06
FC Adapter Directors (FA):
01D / 04 05 08 09 10 11
02D / 04 05 06 08 09 10 11
03D / 08 09 10 11 32 10 11
04D / 08 09 10 11 32 10 11
05D / 08 09 10 11 32 10 11
06D / 09 10 32 11 32 10 11
GIGE Adapter Directors (SE):
04G /
06G /

Subsystem IDs
AA00 AB00 AC00 AC01 AC02 AC03 AC04 AC05
AC06 AC07 AC08 AC09 AC0A AC0B

Example 2

**Action**
Display all SRDF devices configured in the local storage system in set 3232 in SRDF group MH. The SRDF configuration control records have not been refreshed.

**User**
ZURDF CON DIS GRO-MH SET-3232

**System**
CSMP0097I 20.06.01 CPU-A SS-BSS SSU-SSU0 IS-01
URDF0084I SRDF configuration ctl rcds not refreshed

Example 3

This example displays the following information:

<table>
<thead>
<tr>
<th>MDBF SSN</th>
<th>The name of the MDBF subsystem that the z/TPF module is part of.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Symb Mod</td>
<td>The symbolic model number of the device.</td>
</tr>
<tr>
<td>SDA</td>
<td>The symbolic device address of the device.</td>
</tr>
<tr>
<td>This Dev</td>
<td>The storage system’s device number.</td>
</tr>
<tr>
<td>Othr Dev</td>
<td>The remotely mirrored storage system’s device number.</td>
</tr>
<tr>
<td>RDF GRP</td>
<td>RDFGroup.</td>
</tr>
<tr>
<td>Device Status</td>
<td>The device status. Format is xxx-yy-z, where:</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Format</th>
<th>Possible Values</th>
</tr>
</thead>
<tbody>
<tr>
<td>xxx</td>
<td>R/W = read/write mode</td>
</tr>
<tr>
<td></td>
<td>R/O = read only mode</td>
</tr>
<tr>
<td></td>
<td>N/R = not ready mode</td>
</tr>
<tr>
<td></td>
<td>RNR = RDF devices globally not ready 1, 2</td>
</tr>
<tr>
<td></td>
<td>TNR = target (R2) not ready 2, 3</td>
</tr>
<tr>
<td></td>
<td>RWD = RDF write-disabled 2, 4</td>
</tr>
<tr>
<td></td>
<td>LNR = link not ready 5</td>
</tr>
</tbody>
</table>
SRDF Commands

yy
SY = Synchronous mode
AW = Adaptive Copy - Write Pending mode
AD = Adaptive Copy - Disk mode
AP = Adaptive Copy - Write Pending mode

z
I = Invalid Track Attribute = a target (R2) volume to go not ready if the source (R1) volume (its mirrored device) has invalid tracks on target (R2) volume and a state of change has been requested on the target (R2) volume
D = Domino Attribute = source (R1) volume to go not ready if target (R2) volume is not ready or links are down

1. This status indicates a status of RDF-NOT-READY (RNR). When a device is in this state, any attempt to perform I/O to the device from the host will result in an INTERVENTION-REQUIRED status. The RNR status can occur as a result of the Domino Attribute, Invalid Tracks Attribute, or as a result of a ZURDF NRDY LRG|RRG d ALL|SDA cuu hhhhhhhh dd) command.

2. For more information on this field, refer to Appendix B.

3. This status indicates that communication between the SRDF pair is currently inactive because the SRDF pair is RDF-Suspended.

4. If the source (R1) and target (R2) volumes are write-enabled and links are not suspended, any writes to the source (R1) volume suspends the link between that pair. These writes accumulate as R2 invalid tracks on the source (R1) volume until the target (R2) volume is write-enabled. Synchronization can then occur by issuing the ZURDF WRI LRG|RRG dd ALL|SDA cuu hhhhhhhh dd) command.

5. This status indicates that communication between the SRDF pair is currently inactive because the link is offline or the link path is physically unavailable.

MR
Type of SRDF device:
R1 = Source (R1) volume
R2 = Target (R2) volume
ML = Local mirror volume
RS = Raid-S volume
L1 = Source (R1) volume that is also mirrored locally
L2 = Target (R2) volume that is also mirrored locally
AR1 = SRDF/A source (R1) volume
AR2 = SRDF/A target (R2) volume
AL1 = SRDF/A locally mirrored RDF source (R1)
AL2 = SRDF/A locally mirrored RDF target (R2)
BC = Business continuance volume
B1 = Business continuance volume source (R1)
DR = Dynamic reallocation volume (used by Symmetrix Optimizer)
DRX = Dynamic RDF device, to be used as either source (R1) or target (R2)
DR1 = Dynamic RDF source (R1)
DR2 = Dynamic RDF target (R2)
DLX = Dynamic locally mirrored RDF device
DL1 = Dynamic locally mirrored RDF source (R1)
DL2 = Dynamic locally mirrored RDF target (R2)
D1 = Diskless R1 (transient state)
D2 = Diskless R2 (transient state)
D21 = Diskless cascaded device
DL = Diskless device that has not been paired with remote partner

R1 ITRK
Source (R1) volume invalid track count. The storage systems maintain their own invalid track tables which identify the invalid tracks on both the source (R1) and the target (R2) volumes.
R2 ITRK  Target (R2) volume invalid track count. The storage systems maintain their own invalid track tables which identify the invalid tracks on both the source (R1) and the target (R2) volumes. The number of R2 invalid tracks on the R2 side reflects the number of invalid tracks as viewed from the R1 side.

Action  Display device information for the storage system in set 1 in SRDF group DYNRDF01.

User    ZURDF CON DIS GRO-DYNRDF01 SET-1

System

<table>
<thead>
<tr>
<th>SSN</th>
<th>Mod</th>
<th>SDA</th>
<th>Dev</th>
<th>Dev</th>
<th>GRP Status</th>
<th>MR</th>
<th>R1 Itrak</th>
<th>R2 Itrak</th>
<th>RC</th>
</tr>
</thead>
<tbody>
<tr>
<td>A64</td>
<td>0110</td>
<td>5040</td>
<td>000009FD</td>
<td>0000053C</td>
<td>20 R/W-SY</td>
<td>DL1</td>
<td>0</td>
<td>0</td>
<td>0000</td>
</tr>
<tr>
<td>A64</td>
<td>0111</td>
<td>5041</td>
<td>000009FE</td>
<td>0000053D</td>
<td>20 R/W-SY</td>
<td>DL1</td>
<td>0</td>
<td>0</td>
<td>0000</td>
</tr>
<tr>
<td>A64</td>
<td>0112</td>
<td>5042</td>
<td>000009FF</td>
<td>0000053E</td>
<td>20 R/W-SY</td>
<td>DL1</td>
<td>0</td>
<td>0</td>
<td>0000</td>
</tr>
<tr>
<td>A64</td>
<td>0113</td>
<td>5043</td>
<td>00000A00</td>
<td>0000053F</td>
<td>20 R/W-SY</td>
<td>DL1</td>
<td>0</td>
<td>0</td>
<td>0000</td>
</tr>
<tr>
<td>A64</td>
<td>0114</td>
<td>5044</td>
<td>00000A01</td>
<td>00000540</td>
<td>20 R/W-SY</td>
<td>DL1</td>
<td>0</td>
<td>0</td>
<td>0000</td>
</tr>
<tr>
<td>A64</td>
<td>0115</td>
<td>5045</td>
<td>00000A02</td>
<td>00000541</td>
<td>20 R/W-SY</td>
<td>DL1</td>
<td>0</td>
<td>0</td>
<td>0000</td>
</tr>
<tr>
<td>A64</td>
<td>0116</td>
<td>5046</td>
<td>00000A03</td>
<td>00000542</td>
<td>20 R/W-SY</td>
<td>DL1</td>
<td>0</td>
<td>0</td>
<td>0000</td>
</tr>
<tr>
<td>A64</td>
<td>0117</td>
<td>5047</td>
<td>00000A04</td>
<td>00000543</td>
<td>20 R/W-SY</td>
<td>DL1</td>
<td>0</td>
<td>0</td>
<td>0000</td>
</tr>
<tr>
<td>A64</td>
<td>0118</td>
<td>5048</td>
<td>00000A05</td>
<td>00000544</td>
<td>20 R/W-SY</td>
<td>DL1</td>
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<td>0</td>
<td>0000</td>
</tr>
<tr>
<td>A64</td>
<td>0119</td>
<td>5049</td>
<td>00000A06</td>
<td>00000545</td>
<td>20 R/W-SY</td>
<td>DL1</td>
<td>0</td>
<td>0</td>
<td>0000</td>
</tr>
<tr>
<td>A64</td>
<td>011A</td>
<td>504A</td>
<td>00000A07</td>
<td>00000546</td>
<td>20 R/W-SY</td>
<td>DL1</td>
<td>0</td>
<td>0</td>
<td>0000</td>
</tr>
<tr>
<td>A64</td>
<td>011B</td>
<td>504B</td>
<td>00000A08</td>
<td>00000547</td>
<td>20 R/W-SY</td>
<td>DL1</td>
<td>0</td>
<td>0</td>
<td>0000</td>
</tr>
<tr>
<td>A64</td>
<td>011C</td>
<td>504C</td>
<td>00000A09</td>
<td>00000548</td>
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<td>DL1</td>
<td>0</td>
<td>0</td>
<td>0000</td>
</tr>
<tr>
<td>A64</td>
<td>011D</td>
<td>504D</td>
<td>00000A0A</td>
<td>00000549</td>
<td>20 R/W-SY</td>
<td>DL1</td>
<td>0</td>
<td>0</td>
<td>0000</td>
</tr>
<tr>
<td>A64</td>
<td>011E</td>
<td>504E</td>
<td>00000A0B</td>
<td>00000550</td>
<td>20 R/W-SY</td>
<td>DL1</td>
<td>0</td>
<td>0</td>
<td>0000</td>
</tr>
<tr>
<td>A64</td>
<td>011F</td>
<td>504F</td>
<td>00000A0C</td>
<td>0000054B</td>
<td>20 R/W-SY</td>
<td>DL1</td>
<td>0</td>
<td>0</td>
<td>0000</td>
</tr>
</tbody>
</table>

End of Display
SRDF Commands

ZURDF CONfig DISplay CTLRCD

Display summaries of the SRDF configuration control records.

Requirements and restrictions

To display accurate summaries, a configuration session must be open for at least one SRDF group. SRDF configuration control records are refreshed when you use the ZURDF CON OPEN GRO-cccccccc command.

Format

ZURDF CONfig DISplay [LOCal|REMote] CTLRCD-MA|CU

Parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>LOCal</td>
<td>A host-attached storage system, or the member of an SRDF pair that is the</td>
</tr>
<tr>
<td>REMote</td>
<td>least number of hops away from the host-attached storage system.</td>
</tr>
<tr>
<td>CTLRCD-MA</td>
<td>Display master control record summary.</td>
</tr>
<tr>
<td>CTLRCD-CU</td>
<td>Display control unit summary for all sets in all SRDF groups.</td>
</tr>
</tbody>
</table>

Examples

Example 1

This example displays the following information:

- **SRDF version**: The SRDF control software version.
- **Modification**: The SRDF control software modification number.
- **Revision**: The SRDF control software revision number.
- **SRDF groups**: The number of SRDF groups configured.

**Action**

Display the SRDF configuration master control record summary.

**User**

ZURDF DIS CTLRCD-MA

**System**

CSMP0097I 21.16.47 CPU-B SS-BSS SSU-SSU0 IS-01
E1RA0000I Configuration Master Control Record Summary
SRDF Version: 0005 Modification: 0003 Revision: 0000
SRDF Groups: 4
End of Display
Example 2

This example displays the following information:

Local/Remote Identifies the position of the first storage system displayed for all sets for the specified SRDF group.

Group Name The SRDF group.

Serial # The serial number of the storage system.

Set Name The set in which the storage system is configured.

MHL The RDF group path to the remote storage system of the set.

Model The storage system's model.

Ucode The version of Enginuity or HYPERMAX OS on the storage system.

GP The RDFGroup in this storage system used to communicate with the other storage system member in the Set

SDA The SDA to which all SymmAPI I/O operations are sent. If a GKD is defined all SymmAPI I/O operations are sent to the gatekeeper.

MOD The z/TPF symbolic module of the SDA. If a GKD is defined, this is the symbolic module of the GKD.

SSN The name of the MDBF subsystem of the SDA. If a GKD is defined, this is the name of the MDBF subsystem of the GKD.

GKD SDA defined as a z/TPF gakekeeper - Yes or No.

Synchd Synchronization direction defined for the storage system.

Status Set to be added or removed at configuration accept time.

Action Display the SRDF Configuration Control Unit Summary for all sets in all SRDF groups.

User ZURDF CON DIS CTLRCD-CU

System

CSMP0097I 12.35.41 CPU-A SS-BSS SSU-SSU0 IS-01
E1RA0000I Configuration CU Control Record Summary
Local Group Name - SRDFA Config Status - Closed
Set Name - 46C0 MHL- 20
  Serial # Model GP Ucod SDA MOD SSN GKD Sync Status
000196701170 VMAX200K 20 5977 46C0 0114 BSS 44C1 R1R2 Added
000196701305 VMAX200K 20 5977 46C0 0114 BSS 44C1 R1R2 Removed
Set Name - 56C0 MHL- 21
  Serial # Model GP Ucod SDA MOD SSN GKD Sync Status
000196701175 VMAX200K 21 5977 56E0 0116 BSS 54C0 R1R2 Added
000196701305 VMAX200K 21 5977 56E0 0116 BSS 54C0 R1R2 Removed
Local Group Name - DYNRDF01 Config Status - Open
Set Name - 1 MHL- 20
  Serial # Model GP Ucod SDA MOD SSN GKD Sync Status
000196701170 VMAX200K 20 5977 46C0 0110 A64 No Glbl Added
000196701305 VMAX200K 20 5977 46C0 0110 A64 No Glbl
End of Display
ZURDF CONfig DSplay PROp

Display the property characteristics of an SRDF group when an SRDF configuration session is open.

Requirements and restrictions

You can use the CONfig DSplay command only after SRDF configuration control records have been refreshed. SRDF configuration control records are refreshed when you use the ZURDF CON OPEN GRO-cccccccc command.

Format

ZURDF CONfig DSplay GROup-cccccccc PROp-GEN|TAR|NRD|CRT|SWA|ASY

Parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>GROup</td>
<td>The one- to eight-alphanumeric character name of the SRDF group.</td>
</tr>
<tr>
<td>PROp-GEN</td>
<td>Display GENeral properties.</td>
</tr>
<tr>
<td>PROp-TAR</td>
<td>Display TARget properties.</td>
</tr>
<tr>
<td>PROp-NRD</td>
<td>Display NRDy properties.</td>
</tr>
<tr>
<td>PROp-CRT</td>
<td>Display CRTpair properties.</td>
</tr>
<tr>
<td>PROp-SWA</td>
<td>Display SWApair properties.</td>
</tr>
<tr>
<td>PROp-ASY</td>
<td>Display ASYnc properties.</td>
</tr>
</tbody>
</table>

Examples

Example 1

Action Display Target properties for SRDF group U6C2UDC.
User ZURDF CON DS GRO-U6C2UDC PRO-TAR
System
CSMP0097I 21.35.07 CPU-B SS-BSS SSU-SSU0 IS-01
E1V30000I SRDF Target Properties Display
Remote SRDF Group - U6C2UDC
Options
ONLDEV: ON
Permissions
ONLDEV: ON
End of Display
### Example 2

**Action**
Display General properties for SRDF group SRDFA.

**User**
ZURDF CON DIS GRO-SRDFA PRO-GEN

**System**

```plaintext
CSMP0097I 12.44.08 CPU-A SS-BSS SSU-SSU0 IS-01
E1V30000I SRDF General Properties Display
Local SRDF Group - SRDFA

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Processing Delay Timer</td>
<td>3</td>
</tr>
<tr>
<td>Scheduler Timeout</td>
<td>1</td>
</tr>
<tr>
<td>Persistent Monitor</td>
<td>OFF</td>
</tr>
<tr>
<td>Monitor Interval Timer</td>
<td>3</td>
</tr>
<tr>
<td>CTRLCD Refresh</td>
<td>ON</td>
</tr>
<tr>
<td>Ops Verification</td>
<td>ON</td>
</tr>
<tr>
<td>Mode check</td>
<td>NONE</td>
</tr>
<tr>
<td>R1 To Larger R2</td>
<td>OFF</td>
</tr>
<tr>
<td>Sync Direction</td>
<td>NONE</td>
</tr>
<tr>
<td>QOS</td>
<td>0 is set</td>
</tr>
</tbody>
</table>

SRDF/A Mode: MSC  Drop Policy: Disable  Heartbeat Interval: 5
Window Open Threshold: 0  Cycle Switch Timeout: 12
Cycle Time: User Defined - 15
Drop Priority: System Default
Transmit Idle: System Default
Cache Percentage: System Default
```

End of Display
ZURDF CONfig OPEn|CLOse

Open or close a configuration session for a SRDF group.

Requirements and restrictions

- You can use the CONfig OPEn command in the following circumstances:
  - After a ZURDF INI CLEar command
  - If the SRDF control records were migrated from SRDF Controls for z/TPF Version 7.1.0
  - If the SRDF control records were previously configured using SRDF Controls for z/TPF Version 8.0.0
- You can use the CONfig CLOse command only for an SRDF group with an open configuration session.

Format

ZURDF CONfig OPEn|CLOse GROup-cccccccc

Parameters

OPEn
   Open a configuration session.

CLOse
   Close a configuration session.

GROup-cccccccc
   The one- to eight-alphanumeric character name of the SRDF group.

Additional information

- The first CONfig OPEn command of a new configuration session causes the SRDF Configuration control records to be refreshed from the SRDF control records.
- The CONfig OPEn command is not allowed while SRDF/A MSC Cycle Switching is active.

Examples

Example 1

Action
   Open a configuration session for SRDF group R1BCV. In this example, this is the first configuration session to be opened since a previous initialization or configuration process.

User
   ZURDF CON OPEN GRO-R1BCV

System
   CSMP0097I 18.03.12 CPU-A SS-BSS SSU-SSU0 IS-01
   URDF0100I SRDF configuration ctl rcd refresh initiated
   CSMP0097I 18.03.25 CPU-A SS-BSS SSU-SSU0 IS-01
   URDF1049I SRDF Group R1BCV is Open
   URDF1006I SRDF Configuration Open command complete
Example 2

**Action**  
Open a configuration session for SRDF group MH.

**User**  
ZURDF CON OPEN GRO-MH

**System**

CSMP0097I 18.10.50 CPU-A SS-BSS SSU-SSU0 IS-01  
URDF1049I SRDF Group MH is Open  
URDF1006I SRDF Configuration Open command complete

Example 3

**Action**  
Close a configuration session for SRDF group MH.

**User**  
ZURDF CON CLOS GRO-MH

**System**

CSMP0097I 18.13.16 CPU-A SS-BSS SSU-SSU0 IS-01  
URDF1049I SRDF Group MH is Closed  
URDF1006I SRDF Configuration Close command complete

Example 4

**Action**  
Close a configuration session for non-existent SRDF group UVAS3.

**User**  
ZURDF CON CLOS GRO-UVAS3

**System**

CSMP0097I 18.15.35 CPU-A SS-BSS SSU-SSU0 IS-01  
URDF1052I SRDF Group UVAS3 does not exist  
URDF1007I SRDF Configuration Close command aborted
**SRDF Commands**

**ZURDF CONfig RENAME**

Rename an SRDF group or set.

**Requirements and restrictions**

You can use the CONfig RENAME command only after SRDF configuration control records have been refreshed. SRDF configuration control records are refreshed when you enter a ZURDF CON OPEN GRO-cccccccc command.

**Format**

```
ZURDF CONfig RENAME GROup-cccccccc [SET-cccccccc] NAMe-cccccccc
```

**Parameters**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>GROup</td>
<td>The one- to eight-alphanumeric character name of the SRDF group.</td>
</tr>
<tr>
<td>SET</td>
<td>The one- to eight-alphanumeric character name of the SRDF set that identifies an SRDF pair.</td>
</tr>
<tr>
<td>NAMe</td>
<td>The new SRDF group name or SRDF set name.</td>
</tr>
</tbody>
</table>

**Additional information**

If you specify the SRDF set, the set is renamed as specified on the NAM parameter. If you do not specify the SRDF set, the group is renamed as specified on the NAM parameter.

The new name is filed in the SRDF control records by the CON ACCEPT ALL command (see page 75).

**Examples**

**Example 1**

**Action**  
Rename SRDF group UVA_UDC to UVA2UDC.

**User**  
ZURDF CON REN GRO-UVA_UDC NAM-UVA2UDC

**System**

```
CSMP0097I 20.51.00 CPU-A SS-BSS  SSU-SSU0 IS-01
URDF1006I SRDF Configuration Rename complete
```

**Example 2**

**Action**  
Rename SRDF set UVA2UDC in SRDF group UVA2UDC to D8TOE9.

**User**  
ZURDF CON REN GRO-UVA2UDC SET-UVA2UDC NAM-D8TOE9

**System**

```
CSMP0097I 20.53.06 CPU-A SS-BSS  SSU-SSU0 IS-01
URDF1006I SRDF configuration Rename complete
```
ZURDF CONfig VERify

Verify that configured RDF devices are unique within the specified SRDF group and generate a report for that group.

Requirements and restrictions

◆ Use the CONfig VERify command only if Configuration Control Records have been refreshed. SRDF configuration control records are refreshed when you use the ZURDF CON OPEN GRO-cccccccc command. Enter CONfig VERify before entering the CONfig ACCEPT command (see page 75).

◆ Configuration verification is done for both this side RDF devices and the partner or other side RDF devices.

Format

ZURDF CONfig VERify GROup-gggggggg

Parameters

VERify Verify that configured RDF devices are unique within the specified group.

GROup- gggggggg The 1-8 character SRDF group number to be verified.

Additional information

◆ The CONfig VERify command provides a report for all duplicate use of RDF devices in the same group. The CONfig ACCEPT command detects only the first occurrence of duplicate use of an RDF device within the same SRDF group.

◆ It is possible to invalidly configure a device as an "other side" device in one set and as "this side" device in a different set. The display notifies the user of this condition by displaying "Yes" in the column "Other Side Dev Config'd This Side", as shown in Example 1.

◆ It may be valid to configure a device in more than one group. ZURDF CONfig VERify does not detect if a device is configured in more than one group.
### Example 1

**Action**
Verify that each RDF device is configured no more than once in group 1.

**User**
ZURDF CON VERIFY GRO-1

**System**

CSMP0097I 12.55.11 CPU-A SS-BSS SSU-SSU0 IS-01
URDF1024I SRDF Configuration Verification:
Duplicate SRDF devices detected. These conflicts must be corrected.
SRDF Group 1:
LOCAL Serial # 000190100840

<table>
<thead>
<tr>
<th>This Side</th>
<th>Other Side</th>
<th>Other Side</th>
<th>Symm</th>
<th>Set</th>
<th>Symm</th>
<th>Dev Config'd</th>
<th>Dev #</th>
<th>Name</th>
<th>Dev #</th>
<th>Serial #</th>
<th>This Side?</th>
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</thead>
<tbody>
<tr>
<td>0000041C</td>
<td>A</td>
<td>00000FB1</td>
<td>000192604124</td>
<td></td>
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<td></td>
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<tr>
<td></td>
<td>C</td>
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<td>000194901159</td>
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<td></td>
<td></td>
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<td></td>
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<td></td>
</tr>
<tr>
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<tr>
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<td>C</td>
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<td></td>
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</tr>
<tr>
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<td>000190100840</td>
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</table>

LOCAL Serial # 000192604124

<table>
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<th>Other Side</th>
<th>Symm</th>
<th>Set</th>
<th>Symm</th>
<th>Dev Config'd</th>
<th>Dev #</th>
<th>Name</th>
<th>Dev #</th>
<th>Serial #</th>
<th>This Side?</th>
</tr>
</thead>
<tbody>
<tr>
<td>00000FB1</td>
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<td>0000041C</td>
<td>000190100840</td>
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<td></td>
<td></td>
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</tr>
<tr>
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<td>0000041C</td>
<td>000192604124</td>
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</tr>
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</tr>
<tr>
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</table>

REMOTE Serial # 000192604124

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<th>Other Side</th>
<th>Symm</th>
<th>Set</th>
<th>Symm</th>
<th>Dev Config'd</th>
<th>Dev #</th>
<th>Name</th>
<th>Dev #</th>
<th>Serial #</th>
<th>This Side?</th>
</tr>
</thead>
<tbody>
<tr>
<td>00000FB1</td>
<td>A</td>
<td>0000041C</td>
<td>000190100840</td>
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<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B</td>
<td>00000FB1</td>
<td>000192604124</td>
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<td></td>
<td></td>
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<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>00000FB2</td>
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<td>0000041D</td>
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<td></td>
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</tr>
<tr>
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<td>000192604124</td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

REMOTE Serial # 000190100840

End of Report
Example 2

**Action**
Verify that each RDF device is configured no more than once in group 2.

**User**
ZURDF CON VERIFY GRO-2

**System**
URDF1024I SRDF Configuration Verification:
*** No duplicate RDF devices configured within Group 2 ***

Example 3

**Action**
Verify that each RDF device is unique for group 1. SRDF Configuration control records have not been refreshed.

**User**
ZURDF CON VERIFY GRO-1

**System**
CSMP0097I 12.32.10 CPU-A SS-BSS SSU-SSU0 IS-01
URDF0084I SRDF configuration ctl rcds not refreshed
CSMP0097I 12.32.10 CPU-A SS-BSS SSU-SSU0 IS-01
End of Report
**ZURDF CRTpair**

Establish the SRDF relationship for configured dynamic RDF pair(s).

**Requirements and restrictions**

You must have previously configured the SRDF relationship using the ZURDF CONfig commands. The CRTpair command is always issued to the local storage system.

**Format**

```
ZURDF CRTpair GROup-cccccccc [SET-cccccccc] [SDN-hhhhhhh] [CNT-dddd]
[R1Mode-SYNC] [R1Adc-NADC|ADCD|ADCW] [R2Rdy-RDY|NRD] [LCLis-R1|R2]
```

**Parameters**

- **GROup-cccccccc** The one- to eight-alphanumeric character name of the SRDF group.
- **SET-cccccccc** The one- to eight-alphanumeric character name of the SRDF set that identifies an SRDF pair.
- **SDN-hhhhhhh** Starting SRDF device number.
- **CNT-dddd** Number of SRDF devices.
- **R1Mode** SRDF mode of operation for the source (R1):
  - **SYNC** = Synchronous mode (default)
- **R1Adc** Adaptive Copy Mode of Operation for the source (R1):
  - **NADC** = No adaptive copy mode (default)
  - **ADCD** = Adaptive copy disk mode
  - **ADCW** = Adaptive copy write pending mode
- **R2Rdy** Ready State of the target (R2):
  - **RDY** = Target (R2) is made ready to the host (default)
  - **NRD** = Target (R2) is made not ready to the host
- **LCLis** Intended RDF type for the local storage system:
  - **R1** = Local storage system is the source (R1) (default)
  - **R2** = Local storage system is the target (R2)

**Additional information**

- The R2 in all CRTpair operations defaults to RO and RDY on the channel. If you require a different state, use either or both of the ZURDF TARget (see page 211) and ZURDF RDY|NRDy (see page 182) commands.
- The R21 device in a Cascaded SRDF configuration defaults to RO, similar to an R2 device.
- The second leg of a Cascaded SRDF relationship must be placed in Adaptive Copy disk mode by specifying R1Adc-ADCD.
- The D21 device in a Diskless Cascaded SRDF configuration defaults to RO, similar to an R2 device. Diskless devices are available in Enginuity levels 5874 to 5876 only.
The second leg of a Diskless Cascaded SRDF relationship must be placed in Adaptive Copy Write Pending mode by specifying R1Adc-ADCW. Adaptive Copy Write Pending mode is available in Enginuity 5876 and lower.

If you specify an adaptive copy mode, the maximum skew value defaults to the maximum value of 65535. Use ZURDF ASMax|AWMax (see page 47) to alter the maximum skew value.

The SRDF state of the source (R1) defaults to Target Not Ready (TNR). Synchronization from the R1 to the R2 or from the R2 to the R1 is accomplished using the available SRDF commands.

Example

```
Action Display configured RDF pairs in SRDF group DYNRDF01 set 00TO11.
User ZURDF DIS GRO-DYNRDF01 SET-00TO11
System

CSMP0097I 19.45.18 CPU-A SS-BSS SSU-SSU0 IS-01
E1RQ0003I RDF Device ITRK Display
Group DYNRDF01 Set 00TO11 in Local CU 000184505047
MDBF Symb This Othr RDF Device Opr
SSN Mod SDA Dev Dev GRP Status MR R1 Itrk R2 Itrk rc
N/A 0000 0000 00000000 00000000 000000BB 0 R/W DLX 0 0 0000
N/A 0000 0000 00000001 00000000 000000BC 0 R/W DLX 0 0 0000
N/A 0000 0000 00000002 00000000 000000BD 0 R/W DLX 0 0 0000
N/A 0000 0000 00000003 00000000 000000BE 0 R/W DLX 0 0 0000
N/A 0000 0000 00000004 00000000 000000BF 0 R/W DLX 0 0 0000
N/A 0000 0000 00000005 00000000 000000BC 0 R/W DLX 0 0 0000
N/A 0000 0000 00000006 00000000 000000BD 0 R/W DLX 0 0 0000
N/A 0000 0000 00000007 00000000 000000BE 0 R/W DLX 0 0 0000
N/A 0000 0000 00000008 00000000 000000BF 0 R/W DLX 0 0 0000
N/A 0000 0000 00000009 00000000 000000BC 0 R/W DLX 0 0 0000
N/A 0000 0000 0000000A 00000000 000000BD 0 R/W DLX 0 0 0000
N/A 0000 0000 0000000B 00000000 000000BE 0 R/W DLX 0 0 0000
N/A 0000 0000 0000000C 00000000 000000BF 0 R/W DLX 0 0 0000
N/A 0000 0000 0000000D 00000000 000000BC 0 R/W DLX 0 0 0000
N/A 0000 0000 0000000E 00000000 000000BD 0 R/W DLX 0 0 0000
N/A 0000 0000 0000000F 00000000 000000BE 0 R/W DLX 0 0 0000
N/A 0000 0000 00000010 00000000 000000BC 0 R/W DLX 0 0 0000
N/A 0000 0000 00000011 00000000 000000BD 0 R/W DLX 0 0 0000
End of Display
```

Action Display remote configured RDF pairs in SRDF group DYNRDF01 set 00TO11.
User ZURDF DIS REM GRO-DYNRDF01 SET-00TO11
System

CSMP0097I 19.45.34 CPU-A SS-BSS SSU-SSU0 IS-01
E1RQ0003I RDF Device ITRK Display
Group DYNRDF01 Set 00TO11 in Remote CU 000185400212
MDBF Symb This Othr RDF Device Opr
SSN Mod SDA Dev Dev GRP Status MR R1 Itrk R2 Itrk rc
N/A 0000 0000 00000000 000000BB 0 R/W DLX 0 0 0000
N/A 0000 0000 00000001 00000000 000000BC 0 R/W DLX 0 0 0000
N/A 0000 0000 00000002 00000000 000000BD 0 R/W DLX 0 0 0000
N/A 0000 0000 00000003 00000000 000000BE 0 R/W DLX 0 0 0000
N/A 0000 0000 00000004 00000000 000000BF 0 R/W DLX 0 0 0000
N/A 0000 0000 00000005 00000000 000000BC 0 R/W DLX 0 0 0000
N/A 0000 0000 00000006 00000000 000000BD 0 R/W DLX 0 0 0000
N/A 0000 0000 00000007 00000000 000000BE 0 R/W DLX 0 0 0000
N/A 0000 0000 00000008 00000000 000000BF 0 R/W DLX 0 0 0000
N/A 0000 0000 00000009 00000000 000000BC 0 R/W DLX 0 0 0000
N/A 0000 0000 0000000A 00000000 000000BD 0 R/W DLX 0 0 0000
N/A 0000 0000 0000000B 00000000 000000BE 0 R/W DLX 0 0 0000
N/A 0000 0000 0000000C 00000000 000000BF 0 R/W DLX 0 0 0000
N/A 0000 0000 0000000D 00000000 000000BC 0 R/W DLX 0 0 0000
N/A 0000 0000 0000000E 00000000 000000BD 0 R/W DLX 0 0 0000
N/A 0000 0000 0000000F 00000000 000000BE 0 R/W DLX 0 0 0000
N/A 0000 0000 00000010 00000000 000000BC 0 R/W DLX 0 0 0000
N/A 0000 0000 00000011 00000000 000000BD 0 R/W DLX 0 0 0000
SRDF Commands

Action
Create dynrdf pairs in SRDF group DYNRDF01. Set source (R1) to synchronous mode and adaptive copy disk mode. Set target (R2) not ready on the channel. Dynamic RDF devices in the local storage system are to be target (R2).

User
ZURDF CRTPAIR GRO-DYNRDF01 R1MOD-SYNC R1ADC-ADCD R2RDY-NRD LCLIS-R2

System
CSMP0097I 19.47.08 CPU-A SS-BSS SSU-SSU0 IS-01
URDF0019I SRDF Control record refresh started
URDF1043I Local CU 000184505047 discovered for Group DYNRDF01 Set 00TO11
CSMP0097I 19.47.20 CPU-A SS-BSS SSU-SSU0 IS-01
URDF1043I Remote CU 000185400212 discovered for Group DYNRDF01 Set 00TO11
CSMP0097I 19.47.20 CPU-A SS-BSS SSU-SSU0 IS-01
URDF1043I Local CU 000184505047 discovered for Group DYNRDF01 Set 12TO23
CSMP0097I 19.47.32 CPU-A SS-BSS SSU-SSU0 IS-01
URDF1043I Remote CU 000185400212 discovered for Group DYNRDF01 Set 12TO23
CSMP0097I 19.47.35 CPU-A SS-BSS SSU-SSU0 IS-01
URDF0024I SRDF Control record refresh completed
CSMP0097I 19.47.35 CPU-A SS-BSS SSU-SSU0 IS-01
URDF1000I SRDF Control started issuing Crtpair for Set 00TO11
CSMP0097I 19.47.35 CPU-A SS-BSS SSU-SSU0 IS-01
URDF1000I SRDF Control started issuing Crtpair for Set 12TO23
CSMP0097I 19.47.36 CPU-A SS-BSS SSU-SSU0 IS-01
URDF1001I SRDF Control completed issuing Crtpair for Set 00TO11
CSMP0097I 19.47.36 CPU-A SS-BSS SSU-SSU0 IS-01
URDF1001I SRDF Control completed issuing Crtpair for Set 12TO23
CSMP0097I 19.47.40 CPU-A SS-BSS SSU-SSU0 IS-01
URDF1031I SRDF Status Display
SRDF Group DYNRDF01 Crtpair active
Status: Monitor Active
Start Time : 19.47.35 Date : 12/20/04

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<th>Opr</th>
<th>Operation Status</th>
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</tr>
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<tr>
<td></td>
<td>Summary</td>
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</tbody>
</table>

End of Display
URDF1003I SRDF Crtpair completed

Action
Display remote rdf pairs in SRDF group DYNRDF01 set 00TO11. Volumes are now DL1, in synchronous mode, adaptive copy disk mode, TNR, and established in RDF group 7 with the Other Dev.

User
ZURDF DIS REM GRO-DYNRDF01 SET-00TO11 TYP-MAT

System
CSMP0097I 19.45.18 CPU-A SS-BSS SSU-SSU0 IS-01
E1RQ0000I RDF Device MAT Display
Group DYNRDF01 Set 00TO11 in Remote CU 000184505047
<table>
<thead>
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<th>MDBF Symb</th>
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<th>MO</th>
<th>AC</th>
<th>IT</th>
<th>MR</th>
<th>R1-Itrak</th>
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<tbody>
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<td>RW</td>
<td>SY</td>
<td>AD</td>
<td>DL1</td>
<td>0</td>
<td>0</td>
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</tr>
<tr>
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<td>00000C4</td>
<td>00000009</td>
<td>7</td>
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<td>SY</td>
<td>AD</td>
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<td>00000C6</td>
<td>0000000B</td>
<td>7</td>
<td>RW</td>
<td>SY</td>
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</tr>
<tr>
<td>N/A</td>
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<td>00000C7</td>
<td>0000000C</td>
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<td>RW</td>
<td>SY</td>
<td>AD</td>
<td>DL1</td>
<td>0</td>
<td>0</td>
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</tr>
<tr>
<td>N/A</td>
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<td>00000C8</td>
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<td>RW</td>
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<td>AD</td>
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<td>0</td>
<td></td>
</tr>
<tr>
<td>N/A</td>
<td>0000</td>
<td>00000C9</td>
<td>0000000E</td>
<td>7</td>
<td>RW</td>
<td>SY</td>
<td>AD</td>
<td>DL1</td>
<td>0</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>N/A</td>
<td>0000</td>
<td>00000CA</td>
<td>0000000F</td>
<td>7</td>
<td>RW</td>
<td>SY</td>
<td>AD</td>
<td>DL1</td>
<td>0</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>N/A</td>
<td>0000</td>
<td>00000CB</td>
<td>00000010</td>
<td>7</td>
<td>RW</td>
<td>SY</td>
<td>AD</td>
<td>DL1</td>
<td>0</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>N/A</td>
<td>0000</td>
<td>00000CC</td>
<td>00000011</td>
<td>7</td>
<td>RW</td>
<td>SY</td>
<td>AD</td>
<td>DL1</td>
<td>0</td>
<td>0</td>
<td></td>
</tr>
</tbody>
</table>

End of Display
### Action

Display local rdf pairs in SRDF group DYNRDF01 set 00TO11. Volumes are now DL2, N/R to the host and established with the Other Dev.

#### User

ZURDF DIS GRO-DYNRDF01 SET-00TO11 TYP-MAT

#### System

<table>
<thead>
<tr>
<th>CSMP0097I</th>
<th>19.45.18 CPU-A SS-BSS SSU-SSU0 IS-01</th>
</tr>
</thead>
<tbody>
<tr>
<td>E1RQ0000I</td>
<td>RDF Device MAT Display</td>
</tr>
<tr>
<td>Group</td>
<td>DYNRDF01 Set 00TO11 in Local</td>
</tr>
<tr>
<td>CU</td>
<td>000184505047</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>MDBF Symb</th>
<th>This</th>
<th>Othr</th>
<th>RDF</th>
</tr>
</thead>
<tbody>
<tr>
<td>SSN</td>
<td>Mod</td>
<td>SDA</td>
<td>Dev</td>
</tr>
<tr>
<td>N/A</td>
<td>0000</td>
<td>0000</td>
<td>00000000</td>
</tr>
<tr>
<td>N/A</td>
<td>0000</td>
<td>0000</td>
<td>00000001</td>
</tr>
<tr>
<td>N/A</td>
<td>0000</td>
<td>0000</td>
<td>00000002</td>
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<td>N/A</td>
<td>0000</td>
<td>0000</td>
<td>00000003</td>
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<td>00000004</td>
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<tr>
<td>N/A</td>
<td>0000</td>
<td>0000</td>
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<td>N/A</td>
<td>0000</td>
<td>0000</td>
<td>0000000A</td>
</tr>
<tr>
<td>N/A</td>
<td>0000</td>
<td>0000</td>
<td>0000000B</td>
</tr>
<tr>
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</tr>
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</tr>
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</tr>
<tr>
<td>N/A</td>
<td>0000</td>
<td>0000</td>
<td>00000011</td>
</tr>
</tbody>
</table>

End of Display
ZURDF CTLRCD

Back up or restore SRDF control records to and from SRDF backup control records. This command also refreshes the SRDF control records by discovering all configured sets in all SRDF groups.

Requirements and restrictions

- You can use the CTLRCD BACKUP command only for configured SRDF control records, and only when no SRDF operation is active or in the process of being issued.
- You can use the CTLRCD RESTORE command following a ZURDF INI CLEAR, or for configured SRDF control records. No SRDF operation may be active or in the process of being issued.

Format

ZURDF CTLRCD BACKUP|RESTORE|REFRESH

Parameters

- BACKUP Backup EMC SRDF control records.
- RESTORE Restore EMC SRDF control records.
- REFRESH Refresh EMC SRDF control records.

Additional information

- Integrate the CTLRCD BACKUP|RESTORE commands into any SRDF configuration or migration scripts. Carry out the control record backup before the first Configuration OPEN command to carry the control record backup timestamp over to the new configuration.

  **Note:** “Migrating from an earlier release of SRDF Controls for z/TPF” on page 39 provides additional information.

- The CTLRCD REFRESH command updates the operations device, and the SDA, symbolic module and DBI of any host attached devices for any SRDF group to which no SRDF command has been issued.

Examples

Example 1

<table>
<thead>
<tr>
<th>Action</th>
<th>Backup SRDF control records.</th>
</tr>
</thead>
<tbody>
<tr>
<td>User</td>
<td>ZURDF CTLRCD BACKUP</td>
</tr>
<tr>
<td>System</td>
<td></td>
</tr>
<tr>
<td>CSMP0097I 23.45.07 CPU-A SS-SU SSU-SSU0 IS-01</td>
<td>SRDF control record backup started</td>
</tr>
<tr>
<td>CSMP0097I 23.45.11 CPU-A SS-SU SSU-SSU0 IS-01</td>
<td>SRDF control record backup complete</td>
</tr>
</tbody>
</table>
Example 2

**Action**
Reste SRDF control records.

**User**
ZURDF CTRCND RESTORE

**System**

CSMP0097I 23.45.47 CPU-A SS-BSS SSU-SSU0 IS-01
URDF0098I SRDF control record restore started
CSMP0097I 23.45.50 CPU-A SS-BSS SSU-SSU0 IS-01
URDF0000I SRDF control record restore complete

Example 3

**Action**
Refresh SRDF control records following initial configuration and prior to issuing any other operation to any SRDF group.

**User**
ZURDF CTRCND REFRESH

**System**

CSMP0097I 23.48.18 CPU-A SS-BSS SSU-SSU0 IS-01
URDF0019I SRDF Control record refresh started
CSMP0097I 23.50.23 CPU-A SS-BSS SSU-SSU0 IS-01
URDF1043I Local CU 000184505047 discovered for Group R1SNAP Set RAG0
URDF1045I Remote CU 000185400212 discovered for Group R1SNAP Set RAG0
URDF1043I Local CU 000184505047 discovered for Group R1SNAP Set RAG1
URDF1045I Remote CU 000185400212 discovered for Group R1SNAP Set RAG1
URDF1043I Local CU 000184505047 discovered for Group UVAS1 Set RAG2
URDF1045I Remote CU 000185400212 discovered for Group UVAS1 Set RAG2
URDF1043I Local CU 000184505047 discovered for Group UVAS1 Set RAG3
URDF1045I Remote CU 000185400212 discovered for Group UVAS1 Set RAG3
URDF1043I Local CU 000184505047 discovered for Group MH Set 2323
URDF1045I Remote CU 000184505047 discovered for Group MH Set 2323
URDF1043I Local CU 000184505047 discovered for Group UVAS2 Set RAG4
URDF1045I Remote CU 000184505047 discovered for Group UVAS2 Set RAG4
URDF1043I Local CU 000184505047 discovered for Group UVAS2 Set RAG5
URDF1045I Remote CU 000184505047 discovered for Group UVAS2 Set RAG5
URDF0024I SRDF Control record refresh completed
ZURDF DEFine PROp-GKD|GMS|NOG

Define a z/TPF gatekeeper device for a set in a SRDF group.

Requirements and restrictions

◆ Configure the SRDF control records before defining a z/TPF gatekeeper for an SRDF set.
◆ You cannot define a z/TPF gatekeeper if another SRDF operation is in progress.

Note: “ZURDF CONfig ADD|REMove” on page 77 has information on configuring SRDF
control records.

Format

ZURDF DEFINE GROUP-cccccccc SET-cccccccc PROp-GKD|GMS|NOG [SDA-ccud]

Parameters

GROUP-cccccccc The one- to eight-alphanumeric character name of the SRDF group.
SET-cccccccc The one- to eight-alphanumeric character name of the SRDF set that identifies an SRDF pair.
PROp-GKD Define a traditional gatekeeper.
PROp-GMS Define a SRDF/A MSC gatekeeper.
PROp-NOG Do not define a z/TPF gatekeeper.
SDA-ccud The SDA of the z/TPF gatekeeper device for the local and remote storage systems in the specified set.

Additional information

◆ The z/TPF gatekeeper device defined for a set is the locally attached device through which all SRDF operations are issued for the local and remote storage systems of the specified set and group.
◆ An SRDF/A MSC gatekeeper may not be an SRDF device of any sort nor a BCV. It is recommended that you use a general dataset as your SRDF/A MSC gatekeeper.

Examples

Example 1

Action Define z/TPF SDA 3623 as the general file gatekeeper for set UDC3 in SRDF group UDC2U6C.
User ZURDF DEF GROUP-UDC2U6C SET-UDC3 PROp-GKD SDA-3623
System CSMP0097I 00.50.52 CPU-B SS-BSS SSU-SSU0 IS-01
URDF0027I Define complete
SRDF Commands

Example 2

Action Display all sets in all SRDF groups.
User ZURDF DIS GRO=UDC2U6C STA=CTL
System

CSMP0097I 15.08.27 CPU-A SS=BSS SSU=SSU0 IS=01
E1RR00001 CU Control Record Summary
Local Group Name - UDC2U6C
Set Name - UDC3 MHL- 24- 80
Serial # Model GP Ucod SDA MOD SSN GKD Sync Orient.
000196701170 VMAX200K 80 5977 3340 0100 BSS 3623 R1R2 LCLISR1
000196701305 VMAX200K 80 5977 3340 0100 BSS 3623 R1R2
Set Name - UDC4 MHL- 24- 80
Serial # Model GP Ucod SDA MOD SSN GKD Sync Orient.
000196701175 VMAX200K 21 5977 56E0 0113 BSS No GLBL LCLISR1
000196701305 VMAX200K 21 5977 56E0 0116 BSS No GLBL
End of Display

Example 3

Action Do not use a z/TPF gatekeeper for set UDC3 in SRDF group UDC2U6C.
User ZURDF DEF GRO=UDC2U6C SET=UDC3 PRO=NOG
System

CSMP0097I 00.50.52 CPU-B SS=BSS SSU=SSU0 IS=01
URDFP0027I Define complete

Action Display all sets in all SRDF groups.
User ZURDF DIS GRO=UDC2U6C STA=CTL
System

CSMP0097I 15.08.27 CPU-A SS=BSS SSU=SSU0 IS=01
E1RR00001 CU Control Record Summary
Local Group Name - UDC2U6C
Set Name - UDC3 MHL- 24- 80
Serial # Model GP Ucod SDA MOD SSN GKD Sync Orient.
000196701170 VMAX200K 80 5977 3340 0100 BSS No R1R2 LCLISR1
000196701305 VMAX200K 80 5977 3340 0100 BSS No R1R2
Set Name - UDC4 MHL- 24- 80
Serial # Model GP Ucod SDA MOD SSN GKD Sync Orient.
000196701175 VMAX200K 21 5977 56E0 0113 BSS No GLBL LCLISR1
000196701305 VMAX200K 21 5977 56E0 0116 BSS No GLBL
End of Display

Example 3

Action Define z/TPF SDA 6200 as the SRDF/A MSC gatekeeper for set 6200 in SRDF/A MSC group U6D2UMUS. z/TPF SDA 6200 is a dynamic RDF source (R1) device.
User ZURDF DEF GRO=U6D2UMUS SET=6200 PRO=GMS SDA=6200
System

CSMP0097I 02.07.52 CPU-C SS=BSS SSU=SSU0 IS=01
URDFP0125E Invalid Multi-session gatekeeper device specified
ZURDF DEFine PROp-INT|DEL

Define the SRDF Monitor interval timer and RDF pair processing delay for an SRDF group.

The SRDF Monitor displays ongoing activity on the z/TPF Prime CRAS console at intervals you specify. The SRDF processor issues SRDF operations to subsequent RDF pairs using the specified RDF pair processing delay.

Requirements and restrictions

Configure the SRDF control records before defining the interval or delay timers.

Format

ZURDF DEFine GROup-ccccccccc PROp-INT|DEL TIME-dddddddd

Parameters

- **GROup-ccccccccc**: The one- to eight-alphanumeric character name of a SRDF group.
- **PROp-INT**: The interval in minutes between SRDF Monitor status displays. The default value is 3.
- **PROp-DEL**: Delay in seconds between issuing an operation to the next device in an SRDF set. The default value is 3.
- **TIMe-dddddddd**: The interval or delay in minutes and seconds respectively.

Additional information

- When configuring a new SRDF group, SRDF control record configuration sets the monitor interval and processing delay to a value of 3 minutes and 3 seconds, respectively.
- The SRDF monitor interval or processing delay can be changed while an SRDF operation is in progress. When the SRDF Monitor interval is changed, and the SRDF monitor is active, the monitor is immediately initiated with the new interval timer value.
Example

**Action**  
Set the SRDF Monitor interval for SRDF group UDC2U6C to 4 minutes.

**User**  
ZURDF DEF GRO-UDC2U6C PRO-INT TIME-4

**System**

CSMP0097I 15.33.29 CPU-A SS-BSS SSU-SSU0 IS-01
URDF0027P SRDF Group UDC2U6C
URDF0027I Define complete
CSMP0097I 15.33.29 CPU-A SS-BSS SSU-SSU0 IS-01
EIV30000I SRDF General Properties Display
Local SRDF Group - UDC2U6C

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Processing Delay Timer</td>
<td>3</td>
</tr>
<tr>
<td>Scheduler Timeout</td>
<td>1</td>
</tr>
<tr>
<td>Persistent Monitor</td>
<td>OFF</td>
</tr>
<tr>
<td>Monitor Interval Timer</td>
<td>4</td>
</tr>
<tr>
<td>CTLRCD Refresh</td>
<td>ON</td>
</tr>
<tr>
<td>Ops Verification</td>
<td>ON</td>
</tr>
<tr>
<td>Mode check</td>
<td>NONE</td>
</tr>
<tr>
<td>R1 To Larger R2</td>
<td>OFF</td>
</tr>
<tr>
<td>Sync Direction</td>
<td>NONE</td>
</tr>
<tr>
<td>QOS</td>
<td>0 is set</td>
</tr>
<tr>
<td>SRDF/A Mode</td>
<td>MSC</td>
</tr>
<tr>
<td>Drop Policy</td>
<td>Disable</td>
</tr>
<tr>
<td>Heartbeat Interval</td>
<td>5</td>
</tr>
<tr>
<td>Window Open Threshold</td>
<td>0</td>
</tr>
<tr>
<td>Cycle Switch Timeout</td>
<td>12</td>
</tr>
<tr>
<td>Cycle Time</td>
<td>User Defined - 15</td>
</tr>
<tr>
<td>Drop Priority</td>
<td>System Default</td>
</tr>
<tr>
<td>Transmit Idle</td>
<td>System Default</td>
</tr>
<tr>
<td>Cache Percentage</td>
<td>System Default</td>
</tr>
</tbody>
</table>

End of Display
ZURDF DEFINE PROp-GEN

Define general, operational properties for an SRDF group. Use this command to set the synchronization direction for the group.

Requirements and restrictions

General properties may only be defined one at a time.

The defined QOS value is only set if you have:

◆ Loaded ResourcePak for z/TPF
◆ Activated the QOS controls for z/TPF user exit for SRDF

The MSC property is not compatible with multi-hop sets.

SRDF/A Dynamic Parameters Cache Percentage (CAP), Minimum Cycle Time (MCT), Drop Priority (GDP), and Transmit Idle (TRA) can be defined for SRDF/A or SRDF/A MSC SRDF groups and apply only to the primary storage system in the SRDF group.

The system default setting for Transmit Idle is ON. SRDF groups with SRDF/A MSC defined should also set Transmit Idle OFF.

SRDF/A Dynamic Parameters, CAP, MCT, and GDP may be reset to the default system setting by specifying a value of 0 (zero); for example, CAP-0.

R1TLR2 must be defined when the SRDF group contains target (R2) devices larger than the source (R1) devices. When R1TLR2 is defined, general property DIR-R2R1 cannot be defined.

When an SRDF Group is initially configured or if the SRDF Group configuration is changed, the value of the CTRLrd general property is over-ridden to force CTRLCD Refresh on the first operation on the SRDF Group after the configuration change has been accepted. CTRLCD Refresh must be manually enabled following any Engineuity, HYPERMAX OS or hardware upgrade so that the SRDF control records are refreshed with any changed information.

Format

ZURDF DEFINE GROUP-cccccccccc PROp-GEN [DIR-R1R2|R2R1|NONE] [QOS-dd] [[NO]ASYNc] [[NO]CTRLrd] [[NO]MSC] [CYC-ddd] [MDP-RMA|RMF|DIS] [MSH-ddd] [[NO]R1TLR2] [[NO]MHA] [MODE-SYNC|ADCD|ADCW|NONE] [STO-dd] [CAP-ddd] [MCT-ddd] [GDP-ddd] [TRA-0] [MWO-ddd] [CTO-ddd] [[NO]PMONitor] [[NO]OPSV]
## Parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>GROUP</strong></td>
<td>The one- to eight-alphanumeric character name of an SRDF group.</td>
</tr>
<tr>
<td><strong>PROP-GEN</strong></td>
<td>General SRDF group properties.</td>
</tr>
<tr>
<td><strong>DIR-R1R2</strong></td>
<td>The global synch direction is from source to target.</td>
</tr>
<tr>
<td><strong>DIR-R2R1</strong></td>
<td>The global synch direction is from target to source.</td>
</tr>
<tr>
<td><strong>DIR-NONE</strong></td>
<td>The global synch direction is NONE. This precludes any attempt at synchronization for any SRDF set whose synch direction is defined as GLBL.</td>
</tr>
<tr>
<td><strong>QOS-dd</strong></td>
<td>The SRDF Quality of Service level to use for all RDF pairs in the SRDF group.</td>
</tr>
<tr>
<td><strong>ASYNC</strong></td>
<td>Enable the ZURDF ASYNC command for use with this SRDF group.</td>
</tr>
<tr>
<td><strong>NOASYNC</strong></td>
<td>Disable the ZURDF ASYNC command for use with this SRDF group.</td>
</tr>
<tr>
<td><strong>CTLRcd</strong></td>
<td>Enable CTRLCD refresh.</td>
</tr>
<tr>
<td><strong>NOCTLRcd</strong></td>
<td>Bypass CTRLCD refresh.</td>
</tr>
<tr>
<td><strong>MSC</strong></td>
<td>Indicates this is an SRDF/A Multi-Session Consistency group.</td>
</tr>
<tr>
<td><strong>NOMSC</strong></td>
<td>Indicates this is <em>not</em> an SRDF/A Multi-Session Consistency group.</td>
</tr>
<tr>
<td><strong>CYC-ddd</strong></td>
<td>SRDF/A MSC cycle switch interval in seconds (default 15).</td>
</tr>
<tr>
<td><strong>MDP-RMA</strong></td>
<td>MSC drop policy is drop all (default).</td>
</tr>
<tr>
<td><strong>MDP-RMF</strong></td>
<td>MSC drop policy is drop failing.</td>
</tr>
<tr>
<td><strong>MDP-DIS</strong></td>
<td>MSC drop policy is disable.</td>
</tr>
<tr>
<td><strong>MSH-ddd</strong></td>
<td>SRDF/A MSC heartbeat interval in minutes 1-255 (default is 30).</td>
</tr>
<tr>
<td><strong>R1TLR2</strong></td>
<td>Indicates R1 to larger R2.</td>
</tr>
<tr>
<td><strong>NOR1TLR2</strong></td>
<td>Indicates R1 to same size R2.</td>
</tr>
<tr>
<td><strong>MHA</strong></td>
<td>Indicates this is an SRDF/A Multi-Session Consistency for High Availability group for a loosely coupled z/TPF complex.</td>
</tr>
<tr>
<td><strong>NOMHA</strong></td>
<td>Indicates this is <em>not</em> an SRDF/A Multi-Session Consistency High Availability group to force cycle switching to one z/TPF processor.</td>
</tr>
<tr>
<td><strong>MODE-SYNC</strong></td>
<td>Indicates whether the running mode should be verified prior execution of active commands. If the device is not in synchronous mode, the application stops in operation verification prior to command execution.</td>
</tr>
<tr>
<td><strong>MODE-ADCD</strong></td>
<td>If the device is not in adaptive copy disk mode, the application stops in operation verification prior to command execution.</td>
</tr>
<tr>
<td><strong>MODE-ADCW</strong></td>
<td>If the device is not in adaptive copy write pending mode, the application stops in operation verification prior to command execution. ADCW is available in Enginuity 5876 and lower.</td>
</tr>
<tr>
<td><strong>MODE-NONE</strong></td>
<td>No verification of mode is performed prior to active commands.</td>
</tr>
<tr>
<td><strong>STO-dd</strong></td>
<td>Scheduler timeout. Values are 1 to 99, in hours.</td>
</tr>
</tbody>
</table>
SRDF Commands

**CAP-dd**
Sets the cache percentage. The cache limit is a setting on the storage system that applies to all RDFGroups on the primary storage system. The value is the percentage of write pending space that SRDF/A can use before the storage system starts dropping SRDF/A RDFGroups.

Valid values are 0 to 93. A value of 0 resets cache percentage to the system default.

**MCT-dd**
Sets the minimum SRDF/A cycle time for the single session SRDF/A SRDF group. Setting this value does not impact Multi-Session Consistency (MSC). MSC uses the cycle time specified by the CYC parameter.

Valid values are 5 to 59 seconds. A value of 0 resets the system default minimum cycle time.

**GDP-dd**
Sets the drop priority for all RDFGroups in the primary storage system of the SRDF group.

Valid values are 1 to 64. The lower the value, the higher the priority. The lower the priority, the sooner SRDF/A drops for the RDFGroups of the primary storage system in the SRDF group.

**TRA-0**
Sets Transmit Idle Off. Transmit Idle may only be set Off. Only a value of 0 may be specified.

**MWO-dd**
Sets the SRDF/A MSC Window Open Threshold. Valid values are decimal 0 to 99.

SRDF/A MSC cycle switch logs MSC Window Open statistics in the GST entry for this SRDF/A MSC group if the MSC window is open longer than the value specified. The duration of the open window in an SRDF/A MSC cycle switch is measured as the time between the open window/switch cycle and close window. This is the period in which host I/O is disconnected to maintain dependent write consistency.

Setting any value resets the MSC Window Open statistics in the GST entry for the SRDF group.

**CTO-dd**
SRDF/A MSC Cycle timeout. Values are 1 to 4, used as a multiplier of cycle time to determine a timeout to MSC window open/switch for all sets.

**PMON**
Enable SRDF Persistent Monitor. The persistent monitor is only initiated for the RESume, RFResume, and INValidate commands.

**NOPMON**
Disable SRDF Persistent Monitor.

**OPSV**
Enable Operation Verification.

**NOOPSV**
Disable Operation Verification.
SRDF Commands

Additional information

- When the global synchronization direction is defined as NONE, SRDF sets with synchronization direction set to GLBL may not use the VALidate|INValidate or REFresh|RFRresume operations. In this case, operations verification stops the operation with an appropriate message.

- You can define QOS while an SRDF synchronization operation is being monitored. If an SRDF group is in the process of being synchronized and the Monitor is active at the time you define the QOS value for that SRDF group, the Monitor initiates QOS Controls for z/TPF to set the QOS value for all RDF pairs in the SRDF group. Otherwise, the Scheduler initiates QOS Controls for z/TPF to set the QOS value for all RDF pairs in the SRDF group the next time you issue an SRDF operation to the SRDF sets that describe the source (R1) devices.

The operations you can issue to source (R1) devices include:

- Admax
- Awmax
- Suspend
- Resume
- Rdy
- Nrty
- Invalidate
- Validate
- Refresh
- Rfr-resume
- Mode
- Write-enable

If the SRDF orientation indicates that the local storage system contains the source (R1s), issuing dynamic RDF commands Crtpair, Delpair, and Swapair also result in initiating of QOS Controls.

If the SRDF orientation indicates that the sets contain the source (R1) devices, a synchronization direction change results in initiation of QOS Controls. Defining MSC causes default values for CYC, MDP, and MSH to be set. CYC, MDP, and MSH properties are accepted but not set when MSC is not defined.

- The MODE general property, when set, validates the mode for each device in the SRDF group during Operation Verification for active commands REFresh, RFRresume, VALidate, INValidate, and RESume. If the mode is not correct for R1 devices in the group, verification stops and the active command is not issued. Use the ZURDF MODE command to correct the device states before reissuing the initial command.
Examples

Example 1

**Action**
Set the global synchronization direction for SRDF group UAF2USG to R1 to R2.

**User**
ZURDF DEF GRO-UAF2USG PRO-GEN DIR-R1R2

**System**
CSMP0097I 15.52.27 CPU-A SS-BSS SSU-SSU0 IS-01
URDF0027P SRDF Group UAF2USG
URDF0027I Define complete
CSMP0097I 15.52.27 CPU-A SS-BSS SSU-SSU0 IS-01
E1V30000I SRDF General Properties Display
Local SRDF Group - UAF2USG

<table>
<thead>
<tr>
<th>Processing Delay Timer:</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scheduler Timeout:</td>
<td>1</td>
</tr>
<tr>
<td>Persistent Monitor:</td>
<td>OFF</td>
</tr>
<tr>
<td>Monitor Interval Timer:</td>
<td>3</td>
</tr>
<tr>
<td>CTRLCD Refresh:</td>
<td>ON</td>
</tr>
<tr>
<td>Ops Verification:</td>
<td>ON</td>
</tr>
<tr>
<td>Mode check:</td>
<td>NONE</td>
</tr>
<tr>
<td>R1 To Larger R2:</td>
<td>OFF</td>
</tr>
<tr>
<td>Sync Direction:</td>
<td>R1R2</td>
</tr>
</tbody>
</table>

QOS: 0 is set

SRDF/A Mode: OFF

End of Display

Example 2

**Action**
Define a QOS value of 2 (two) for all RDF pairs in SRDF group UAF2USG. SRDF group UAF2USG is not in the process of being synchronized and the SRDF monitor is not active.

**User**
ZURDF DEF GRO-UAF2USG PRO-GEN QOS-2

**System**
CSMP0097I 15.52.27 CPU-A SS-BSS SSU-SSU0 IS-01
URDF0027P SRDF Group UAF2USG
URDF0027I Define complete
CSMP0097I 15.52.27 CPU-A SS-BSS SSU-SSU0 IS-01
E1V30000I SRDF General Properties Display
Local SRDF Group - UAF2USG

<table>
<thead>
<tr>
<th>Processing Delay Timer:</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scheduler Timeout:</td>
<td>1</td>
</tr>
<tr>
<td>Persistent Monitor:</td>
<td>OFF</td>
</tr>
<tr>
<td>Monitor Interval Timer:</td>
<td>3</td>
</tr>
<tr>
<td>CTRLCD Refresh:</td>
<td>ON</td>
</tr>
<tr>
<td>Ops Verification:</td>
<td>ON</td>
</tr>
<tr>
<td>Mode check:</td>
<td>NONE</td>
</tr>
<tr>
<td>R1 To Larger R2:</td>
<td>OFF</td>
</tr>
<tr>
<td>Sync Direction:</td>
<td>R1R2</td>
</tr>
</tbody>
</table>

QOS: 2 is set

SRDF/A Mode: OFF

End of Display
**Example 3**

**Action**

Enable the ZURDF ASYNC command for SRDF group UAF2USG.

**User**

ZURDF DEF GRO-UAF2USG PRO-GEN ASYNC

**System**

CSMP0097I 15.52.27 CPU-A SS-BSS SSU-SSU0 IS-01
URDF0027P SRDF Group UAF2USG
URDF0027I Define complete
CSMP0097I 15.52.27 CPU-A SS-BSS SSU-SSU0 IS-01
E1V30000I SRDF General Properties Display
Local SRDF Group - UAF2USG

---

Processing Delay Timer: 3
Scheduler Timeout: 1
Persistent Monitor: OFF

Monitor Interval Timer: 3
CTRLCD Refresh: ON
Ops Verification: ON

Mode check: NONE
R1 To Larger R2: OFF
Sync Direction: R1R2

QOS: 0 is set

---

SRDF/A Mode: ON
Cycle Time: System Default
Drop Priority: System Default
Transmit Idle: System Default
Cache Percentage: System Default

---

End of Display

---

**Example 4**

**Action**

Define SRDF group SRDFA as an SRDF/A Multi-Session Consistency Group.

**User**

ZURDF DEF GRO-SRDFA PRO-GEN MSC

**System**

CSMP0097I 10.49.09 CPU-A SS-BSS SSU-SSU0 IS-01
MSC List for SRDF/A MSC Group SRDFA

---

Primary GP Secondary GP
000196701170 14 000196701305 14
000196701175 15 000196701305 15

End of Display

CSMP0097I 10.49.09 CPU-A SS-BSS SSU-SSU0 IS-01
URDF0027P SRDF Group SRDFA
URDF0027I Define complete
CSMP0097I 10.49.09 CPU-A SS-BSS SSU-SSU0 IS-01
E1V30000I SRDF General Properties Display
Local SRDF Group - SRDFA

---

Processing Delay Timer: 3
Scheduler Timeout: 1
Persistent Monitor: OFF

Monitor Interval Timer: 3
CTRLCD Refresh: ON
Ops Verification: ON

Mode check: NONE
R1 To Larger R2: OFF
Sync Direction: NONE

QOS: 0 is set

---

SRDF/A Mode: MSC
Drop Policy: Drop All
Heartbeat Interval: 30
Window Open Threshold: 0
Cycle Switch Timeout: 12

Cycle Time: User Defined - 15
Drop Priority: System Default
Transmit Idle: System Default
Cache Percentage: System Default

---

End of Display
Example 5

Action  Attempt to disable the ZURDF ASYNC command for SRDF group UAF2USG. SRDF group UAF2USG is defined as an SRDF/A MSC group.

User  ZURDF DEF GRO-UAF2USG PRO-GEN NOASYNC

System  
CSMP0097I 02.45.15 CPU-B SS-BSS SSU-SSU0 IS-01
URDF0015P SRDF Group UAF2USG
URDF0015E Invalid Group property definition requested

Example 6

Action  Define MSC heartbeat of 5 minutes for SRDF/A MSC group SRDFA.

User  ZURDF DEF GRO-SRDFA PRO-GEN MSH-5

System  
CSMP0097I 10.54.29 CPU-A SS-BSS SSU-SSU0 IS-01
URDF0027P SRDF Group SRDFA
URDF0027I Define complete
CSMP0097I 10.54.29 CPU-A SS-BSS SSU-SSU0 IS-01
EIV30000I SRDF General Properties Display
Local SRDF Group - SRDFA
-------------------------------------------------------------------------
Processing Delay Timer: 3 Scheduler Timeout: 1 Persistent Monitor: OFF
Monitor Interval Timer: 3 CTRLCD Refresh: ON Ops Verification: ON
Mode check: NONE R1 To Larger R2: OFF Sync Direction: NONE
QOS: 0 is set
-------------------------------------------------------------------------
SRDF/A Mode: MSC Drop Policy: Drop All Heartbeat Interval: 5
Window Open Threshold: 0 Cycle Switch Timeout: 12
Cycle Time: User Defined - 15
Drop Priority: System Default
Transmit Idle: System Default
Cache Percentage: System Default
-------------------------------------------------------------------------
End of Display
Example 7

**Action**
Define MSC Cycle Switch Interval of 30 seconds for SRDF/A MSC group UAF2USG.

**User**
ZURDF DEF GRO-UAF2USG PRO-GEN CYC-30

**System**

```
Example 8

**Action**
Change MSC Drop Policy to Disable from Drop All for SRDF/A MSC group UAF2USG.

**User**
ZURDF DEF GRO-UAF2USG PRO-GEN MDP-DIS

**System**

```
Example 9

**Action**
Display general properties for SRDF group USG1. Note Mode check set to NONE.

**User**
ZURDF DISP GRO-USG1 PROP-GEN

**System**
CSMP0097I 15.52.27 CPU-A SS-BSS SSU-SSU0 IS-01
EIV300001 SRDF General Properties Display
Local SRDF Group – USG1
-------------------------------------------------------------------------
Processing Delay Timer: 3 Scheduler Timeout: 1 Persistent Monitor: OFF
Monitor Interval Timer: 3 CTRLCD Refresh: ON Ops Verification: ON
Mode check: NONE R1 To Larger R2: OFF Sync Direction: R1R2
QOS: 0 is set
-------------------------------------------------------------------------
SRDF/A Mode: OFF
-------------------------------------------------------------------------
End of Display

**Action**
Define Mode Check to ADCD to initiate check for Adaptive Copy Disk Mode in Operations Verification.

**User**
ZURDF DEF GRO-USG1 PROP-GEN MOD-ADCD

**System**
CSMP0097I 15.52.27 CPU-A SS-BSS SSU-SSU0 IS-01
EIV100001 SRDF General Properties Display
Local SRDF Group – USG1
-------------------------------------------------------------------------
Processing Delay Timer: 3 Scheduler Timeout: 1 Persistent Monitor: OFF
Monitor Interval Timer: 3 CTRLCD Refresh: ON Ops Verification: ON
Mode check: NONE R1 To Larger R2: OFF Sync Direction: R1R2
QOS: 0 is set
-------------------------------------------------------------------------
SRDF/A Mode: OFF
-------------------------------------------------------------------------
End of Display

**Action**
Attempt to resume SRDF synchronization for SRDF group USG1. Note that one device pair is not in Adaptive Copy Disk Mode.

**User**
ZURDF RES GRO-USG1

**System**
CSMP0097I 21.30.43 CPU-G SS-BSS SSU-SSU0 IS-01
URDF4899P 21.30.43 SRDF Group USG1
URDF4899I SRDF Control record refresh started
CSMP0097I 21.30.43 CPU-G SS-BSS SSU-SSU0 IS-01
URDF1043I Local CU 000190300346 discovered for Group USG1 Set R1SNAP
CSMP0097I 21.30.43 CPU-G SS-BSS SSU-SSU0 IS-01
URDF1043I Remote CU 000190100840 discovered for Group USG1 Set R1SNAP
CSMP0097I 21.30.43 CPU-G SS-BSS SSU-SSU0 IS-01
URDF6181P 21.30.43 SRDF Group USG1
URDF6181T SRDF Control record refresh completed
CSMP0097I 21.30.43 CPU-G SS-BSS SSU-SSU0 IS-01
EIV00000I SRDF Operation Verification Started
EIV00001I SRDF Group Properties Verification Started
Options Permissions
None
EIV00003I SRDF Device State Verification Started
CSMP0097I 21.30.43 CPU-G SS-BSS SSU-SSU0 IS-01
SRDF Exception - Group USG1 Set R1SNAP: Dev MODE not as expected: 1 of 1
CSMP0097I 21.30.43 CPU-G SS-BSS SSU-SSU0 IS-01
URDF8725P 21.30.43 SRDF Group USG1
URDF8725T Operation Verification Failed - Operation not started
Example 10

**Action**  Define SRDF/A dynamic parameter cache percentage to 80 for SRDF group SRDFA.

**User**  

**System**  

```
CSMP0097I 11.08.26 CPU-A SS-BSS SSU-SSU0 IS-01
URDF0027P SRDF Group SRDFA
URDF0027I Define complete
CSMP0097I 11.08.26 CPU-A SS-BSS SSU-SSU0 IS-01
EIV30000I SRDF General Properties Display
Local SRDF Group - SRDFA
-------------------------------------------------------------------------
Processing Delay Timer:   3 Scheduler Timeout:  1 Persistent Monitor: OFF
Monitor Interval Timer:   4 CTRLCD Refresh: ON   Ops Verification: ON
Mode check: NONE           R1 To Larger R2: OFF  Sync Direction: NONE
QOS:  0 is set
-------------------------------------------------------------------------
SRDF/A Mode: MSC    Drop Policy: Drop All        Heartbeat Interval:   5
Window Open Threshold:   1   Cycle Switch Timeout:  12
Cycle Time:       User Defined -  15   Cycle Switch Timeout:   15
Drop Priority:    System Default
Transmit Idle:    System Default
Cache Percentage: User Defined -  80
-------------------------------------------------------------------------
End of Display
```

**Action**  Display SRDF/A Session Information for SRDF group SRDFA Set 46C0. Note the Cache Percentage displayed.

**User**  

**System**  

```
CSMP0097I 11.09.07 CPU-A SS-BSS SSU-SSU0 IS-01
EIVA0000I SRDF/A Session Display
Group SRDFA Set 46C0 in Primary CU 000196701170
SRDF/A Session RDFGroup 20 Inactive Cycle Number 35
Capture Cycle Size 0 Transmit Cycle Size 0
Average Cycle Time 15 Average Cycle Size 4
Last Cycle Size 7 Secondary Delay 00:03:05:04
Secondary Consistent ? Tolerance Off
HA Writes 459 Repeated HA Writes 241
HA Duplicate Slots 0
Transmit Idle On Drop Priority 33
Max Throttle Time 0 Max Cache Percentage 80
Time Since Last Cycle Switch 03:04:49 Duration of Last Cycle 15
Write Pacing Active No Write Pacing Stats On No
End of Display
```

Example 11

**Action**  Define SRDF/A dynamic parameter cache percentage to the system default for SRDF group SRDFA.

**User**  

**System**  

```
CSMP0097I 11.19.11 CPU-A SS-BSS SSU-SSU0 IS-01
URDF0027P SRDF Group SRDFA
URDF0027I Define complete
CSMP0097I 11.19.11 CPU-A SS-BSS SSU-SSU0 IS-01
EIV30000I SRDF General Properties Display
Local SRDF Group - SRDFA
-------------------------------------------------------------------------
Processing Delay Timer:   3 Scheduler Timeout:  1 Persistent Monitor: OFF
```
Monitor Interval Timer: 4  CTLRCD Refresh: ON  Ops Verification: ON
Mode check: NONE  R1 To Larger R2: OFF  Sync Direction: NONE
QOS: 0 is set
SRDF/A Mode: MSC  Drop Policy: Drop All  Heartbeat Interval: 5
Window Open Threshold: 1  Cycle Switch Timeout: 12
Cycle Time: User Defined - 15
Drop Priority: System Default
Transmit Idle: System Default
Cache Percentage: System Default
End of Display

Action  Display SRDF/A session information for SRDF group SRDFA Set 46C0. Note the Cache Percentage displayed.
User  ZURDF DIS GRO-SRDFA SET-46C0 TYP-SAS
System

CSMP0097I 11.19.11 CPU-A SS-BSS SSU-SSU0 IS-01
URDF0027P SRDF Group SRDFA
URDF0027I Define complete
CSMP0097I 11.19.11 CPU-A SS-BSS SSU-SSU0 IS-01
E1V30000I SRDF General Properties Display
Local SRDF Group - SRDFA

Processing Delay Timer: 3  Scheduler Timeout: 1  Persistent Monitor: OFF
Monitor Interval Timer: 4  CTLRCD Refresh: ON  Ops Verification: ON
Mode check: NONE  R1 To Larger R2: OFF  Sync Direction: NONE
QOS: 0 is set
SRDF/A Mode: MSC  Drop Policy: Drop All  Heartbeat Interval: 5
Window Open Threshold: 1  Cycle Switch Timeout: 12
Cycle Time: User Defined - 15
Drop Priority: System Default
Transmit Idle: System Default
Cache Percentage: System Default
End of Display

Example 12

Action  Define SRDF/A dynamic parameter group priority to 64 for SRDF group SRDFA. This is the lowest priority and causes this SRDF group to drop SRDF/A first in the event that was necessary.
User  ZURDF DEF GRO-SRDFA PROP-GEN GDP-64
System

CSMP0097I 11.26.06 CPU-A SS-BSS SSU-SSU0 IS-01
URDF0027P SRDF Group SRDFA
URDF0027I Define complete
CSMP0097I 11.26.06 CPU-A SS-BSS SSU-SSU0 IS-01
E1V30000I SRDF General Properties Display
Local SRDF Group - SRDFA

Processing Delay Timer: 3  Scheduler Timeout: 1  Persistent Monitor: OFF
Monitor Interval Timer: 4  CTLRCD Refresh: ON  Ops Verification: ON
Mode check: NONE  R1 To Larger R2: OFF  Sync Direction: NONE
QOS: 0 is set
SRDF/A Mode: MSC  Drop Policy: Drop All  Heartbeat Interval: 5
Window Open Threshold: 1  Cycle Switch Timeout: 12
Cycle Time: User Defined - 15
Drop Priority: User Defined - 64
Transmit Idle: System Default
SRDF Commands

Cache Percentage: System Default

End of Display

Action
Display SRDF/A session information for SRDF group SRDFA Set 46C0. Note that the Group Priority displayed.

User
ZURDF DIS GRO-SRDFA SET-46C0 TYP-SAS

System

Example 13

Action
Define SRDF/A dynamic parameter Transmit Idle OFF for SRDF group SRDFA.

User
ZURDF DEF GRO-SRDFA PROP-GEN TRA-0

System

CSMP0097I 11.30.14 CPU-A SS-BSS SSU-SSU0 IS-01
URDF0027P SRDF Group SRDFA
URDF0027I Define complete
CSMP0097I 11.33.36 CPU-A SS-BSS SSU-SSU0 IS-01
E1V30000I SRDF General Properties Display
Local SRDF Group - SRDFA

Action
Display SRDF/A session information for SRDF group SRDFA Set 46C0. Note that Transmit Idle is Off.

User
ZURDF DIS GRO-SRDFA SET-46C0 TYP-SAS

System
Example 14

Action Define SRDF/A MSC Window Open Threshold to 1 second for SRDF group SRDFA.

User ZURDF DEF GRO-SRDFA PROP-GEN MWO-1

System

Example 15

Action Disable Operations Verification for SRDF group SRDFA.

User ZURDF DEF GRO-SRDFA PROP-GEN NOOPSV

System
SRDF Commands

Drop Priority: System Default
Transmit Idle: System Default
Cache Percentage: System Default

End of Display

Example 16

<table>
<thead>
<tr>
<th>Action</th>
<th>Enable Operations Verification for SRDF group SRDFA.</th>
</tr>
</thead>
<tbody>
<tr>
<td>User</td>
<td>ZURDF DEF GRO-SRDFA PROP-GEN OPSV</td>
</tr>
<tr>
<td>System</td>
<td></td>
</tr>
</tbody>
</table>

CSMP0097I 16.38.28 CPU-A SS-BSS SSU-SSU0 IS-01
URDF0027P SRDF Group SRDFA
URDF0027I Define complete
CSMP0097I 16.38.28 CPU-A SS-BSS SSU-SSU0 IS-01
E1V30000I SRDF General Properties Display
Local SRDF Group - SRDFA

<table>
<thead>
<tr>
<th>Processing Delay Timer: 3</th>
<th>Scheduler Timeout: 1</th>
<th>Persistent Monitor: OFF</th>
</tr>
</thead>
<tbody>
<tr>
<td>Monitor Interval Timer: 4</td>
<td>CTLRCD Refresh: ON</td>
<td>Ops Verification: ON</td>
</tr>
<tr>
<td>Mode check: NONE</td>
<td>R1 To Larger R2: OFF</td>
<td>Sync Direction: NONE</td>
</tr>
<tr>
<td>QOS: 0 is set</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

SRDF/A Mode: MSC
Drop Policy: Drop All
Heartbeat Interval: 5
Window Open Threshold: 1
Cycle Switch Timeout: 12
Cycle Time: User Defined - 15
Drop Priority: System Default
Transmit Idle: System Default
Cache Percentage: System Default

End of Display
ZURDF DEFine PROp-TAR|NRD|CRT|SWA|ASY|SUS

Define the operational properties for an SRDF group. The command changes options and permissions associated with the specified operation and SRDF group. The command also sets default options of the SRDF commands TARget, NRDy, CRTpair, SWApair, and ASYNc for the specified group.

Requirements and restrictions

- To enter an SRDF command option in the functional entry, set the property permission (TYP-PER) to ON for that option.
- You cannot define the ONLDEV property permission (TYP-PER) for the SRDF commands TARget, NRDy, CRTpair, and SWApair.
- You cannot define the ITRK property permission for the SRDF SUSpend command.

Format

```
ZURDF DEFine GROup-ccccccccc PROp-TAR|NRD|CRT|SWA|ASY|SUS TYPe-OPT|PER 
property list
```

Parameters

- **GROup-ccccccccc**: The one- to eight-alphanumeric character name of an SRDF group.
- **PROp-TAR**: Target properties.
- **PROp-NRD**: NRDy properties.
- **PROp-CRT**: CRTpair properties.
- **PROp-SWA**: SWApair properties.
- **PROp-ASY**: ASync properties.
- **PROp-SUS**: SUSpend properties.
- **TYPe-OPT**: Options for the specified operation.
- **TYPe-PER**: Permissions for the specified operation.
- **property list**: Property list that identifies operations and permissions.

TAR:[NO]ONLDev
NRD:[NO]ONLDev
CRT:[NO]ONLDev
SWA:[NO]ONLDev
ASY:[NO]AMSA, [NO]MSRP
SUS:[NO]ITRK
Additional information

- Defining one or more property options (TYP OPT) ON or OFF automatically sets the permission for the property ON or OFF as requested. Defining a property option ON for a specific SRDF operation and SRDF group makes the option the default. Defining a property permission ON for a specific SRDF operation and SRDF group enables entering the option in the functional entry where applicable.

- Defining ONLDev for TAR, NRDY, CRT, SWA commands allows you to issue these commands when the devices you are operating on are online to a host. Issuing these commands leaves the devices being operated on offline to the host.

- Defining AMSA for the ASYNC command allows you to start Multi-Session Consistency (MSC) before all secondaries are consistent.

- Defining MSRP for the ASYNC command ensures that the operator is prompted before proceeding with recovery action in the event that SRDF/A MSC becomes inactive. Leaving MSRP off results in automatic recovery when SRDF/A MSC becomes inactive and the SRDF links are online.

Examples

Example 1

Action: Set the ONLDev option ON for SRDF operation SWApair and SRDF group SRDFA.

User: ZURDF DEF GRO-SRDFA PRO-SWA TYP-OPT ONLDEV

System:

CSMP0097I 13.01.35 CPU-A SS-BSS SSU-SSU0 IS-01
URDF0027P SRDF Group SRDFA
URDF0027I Define complete
CSMP0097I 13.01.35 CPU-A SS-BSS SSU-SSU0 IS-01
EIV30000I SRDF Swapair Properties Display
Local SRDF Group - SRDFA
-----------------------------------------------------------------------------------------------------
Options
ONLDEV: ON
Permissions
ONLDEV: ON
-----------------------------------------------------------------------------------------------------
End of Display

Example 2

Action: Attempt to set the ONLDev permission OFF for SRDF operation SWApair and SRDF group UDC2U6C.

User: ZURDF DEF GRO-UDC2U6C PRO-SWA TYP-PER NOONLDEV

System:

CSMP0097I 00.50.52 CPU-B SS-BSS SSU-SSU0 IS-01
URDF0015E Invalid Group property definition requested
Example 3

**Action**  
Set the ONLDev option OFF for SRDF operation SWApair and SRDF group SRDFA.

**User**  
ZURDF DEF GRO-SRDFA PRO-SWA TYP-OPT NOONLDEV

**System**

CSMP0097I 13.06.28 CPU-A SS-BSS SSU-SSU0 IS-01  
URDF0027P SRDF Group SRDFA  
URDF0027I Define complete  
CSMP0097I 13.06.28 CPU-A SS-BSS SSU-SSU0 IS-01  
E1V30000I SRDF Swapair Properties Display  
Local SRDF Group - SRDFA

----------------------------------------
Options  
ONLDEV: OFF  
Permissions  
ONLDEV: OFF  
----------------------------------------

End of Display

Example 4

**Action**  
Define the AMSA option for SRDF group SRDFA to allow MSC activation when one or more secondary storage systems are inconsistent.

**User**  
ZURDF DEF GRO-SRDFA PRO-ASY TYP-OPT AMSA

**System**

CCSM0097I 13.10.22 CPU-A SS-BSS SSU-SSU0 IS-01  
URDF0027P SRDF Group SRDFA  
URDF0027I Define complete  
CSMP0097I 13.10.22 CPU-A SS-BSS SSU-SSU0 IS-01  
E1V30000I SRDF Async Properties Display  
Local SRDF Group - SRDFA

----------------------------------------
Options  
MSRP: OFF  
AMSA: ON  
Permissions  
MSRP: OFF  
AMSA: ON  
----------------------------------------

End of Display

Example 5

**Action**  
Attempt to disallow permission for SRDF group U6D2UMUS to activate MSC when one or more secondary storage systems are inconsistent.

**User**  
ZURDF DEF GRO-U6D2UMUS PRO-ASY TYP-PER NOAMSA

**System**

CSMP0097I 21.59.20 CPU-C SS-BSS SSU-SSU0 IS-01  
URDF0015E Invalid Group property definition requested
Example 6

**Action**
Define automatic recovery (NO MSc Recovery Prompt) in the event that MSC becomes inactive for SRDF group SRDFA. SRDF Controls for z/TPF can initiate recovery only if the links to all secondary storage systems are online.

**User**
ZURDF DEF GRO-SRDFA PRO-ASY TYP-OPT NOMSRP

**System**

CSMP0097I 13.14.01 CPU-A SS-BSS SSU-SSU0 IS-01
URDF0027P SRDF Group SRDFA
URDF0027I Define complete
CSMP0097I 13.14.01 CPU-A SS-BSS SSU-SSU0 IS-01
E1V30000I SRDF Async Properties Display
Local SRDF Group - SRDFA

Options
MSRP: OFF  AMSA: ON
Permissions
MSRP: OFF  AMSA: ON

End of Display

Example 7

**Action**
Set the ITRK option ON for SRDF operation SUSpend and SRDF group SRDFA.

**User**
ZURDF DEF GRO-SRDFA PRO-SUS TYP-OPT ITRK

**System**

CCSM0097I 13.16.28 CPU-A SS-BSS SSU-SSU0 IS-01
URDF0027P SRDF Group SRDFA
URDF0027I Define complete
CCSM0097I 13.16.28 CPU-A SS-BSS SSU-SSU0 IS-01
E1V30000I SRDF Suspend Properties Display
Local SRDF Group - SRDFA

Options
ITRK: ON
Permissions
ITRK: ON

End of Display
ZURDF DELHALF

Remove the SRDF relationship from one side of dynamic SRDF pair(s).

Requirements and restrictions

Ensure that the intended SRDF relationship is established, using the ZURDF CRTpair command (see page 98). The source (R1) devices must be TNR. If SRDF orientation is LCLISNP for the primary storage system, the orientation must be specified in the command.

Format

ZURDF DELHALF [LOCal|REMoTe] GROup-cccccccc [SET-cccccccc] [SDN-hhhhhhhh] [CNT-dddd] [LCLis-R1|R2]

Parameters

GROup-cccccccc The one- to eight-alphanumeric character name of the SRDF group.

SET-cccccccc The one- to eight-alphanumeric character name of an SRDF set that identifies an SRDF pair.

SDN-hhhhhhhh Starting SRDF device number.

CNT-dddd Number of SRDF devices.

LCLis RDF orientation of the local storage system:

R1 = Local storage system contains source (R1) (default)

R2 = Local storage system contains target (R2)

Additional information

- Ensure that each target (R2) or source (R1) device is in the desired state before using the DELHALF command. Once the SRDF relationship is removed, SRDF Controls for z/TPF commands can not be used on dynamic SRDF pairs.

- Use the DELHALF command to clean up the dynamic SRDF relationship on one side of the SRDF pair in the event that the relationship becomes lost on the other side of the SRDF pair.
Examples

Example 1

Action Try to delete the SRDF relationship defined for the secondary (remote) storage system of SRDF group U6D2UMC. The SRDF orientation specified in the command is LCLISR2, but the SRDF orientation indicated in the primary storage system is LCLISR1. The dynamic RDF device pairs as seen from the primary are attached.

User ZURDF DELHALF REM GRO-U6D2UMC LCLISR-R2

System

CSMP0097I 04.23.58 CPU-B SS-BSS SSU-SSU0 IS-01
URDF0019I SRDF Control record refresh started
CSMP0097I 04.23.58 CPU-B SS-BSS SSU-SSU0 IS-01
URDF1043I Local CU 0000000006211 discovered for Group U6D2UMC Set 6200
CSMP0097I 04.23.58 CPU-B SS-BSS SSU-SSU0 IS-01
URDF1043I Remote CU 000187990132 discovered for Group U6D2UMC Set 6200
CSMP0097I 04.23.58 CPU-B SS-BSS SSU-SSU0 IS-01
URDF1043I Local CU 0000000006211 discovered for Group U6D2UMC Set 6240
CSMP0097I 04.23.58 CPU-B SS-BSS SSU-SSU0 IS-01
URDF1043I Remote CU 000187990132 discovered for Group U6D2UMC Set 6240
CSMP0097I 04.23.58 CPU-B SS-BSS SSU-SSU0 IS-01
URDF0024I SRDF Control record refresh completed
CSMP0097I 04.23.58 CPU-B SS-BSS SSU-SSU0 IS-01
E1V000001I SRDF Operation Verification Started
E1V000001I SRDF Group Properties Verification Started
Options None
Permissions

E1V000001I SRDF Device State Verification Started
CSMP0097I 04.23.58 CPU-B SS-BSS SSU-SSU0 IS-01
SRDF Exception - Group U6D2UMC Set 6240: Other side drdf attached: 16 of 16
CSMP0097I 04.23.58 CPU-B SS-BSS SSU-SSU0 IS-01
SRDF Exception - Group U6D2UMC Set 6240: RDF device not an R1: 16 of 16
CSMP0097I 04.23.58 CPU-B SS-BSS SSU-SSU0 IS-01
SRDF Exception - Group U6D2UMC Set 6200: Other side drdf attached: 16 of 16
CSMP0097I 04.23.58 CPU-B SS-BSS SSU-SSU0 IS-01
SRDF Exception - Group U6D2UMC Set 6200: RDF device not an R1: 16 of 16
CSMP0097I 04.23.58 CPU-B SS-BSS SSU-SSU0 IS-01
E1V200001I Review SRDF exceptions above for Group U6D2UMC DELHALF:
To proceed, enter: ZURDF PROceed GROup-U6D2UMC
To halt, enter: ZURDF HALt GROup-U6D2UMC

ZURDF HAL GRO-U6D2UMC
CSMP0097I 04.23.58 CPU-B SS-BSS SSU-SSU0 IS-01
URDF0112T Operation Verification Failed - Operation not started
Example 2

**Action**
Try to delete the SRDF relationship defined for the primary storage system of SRDF group U6D2UMC set 6240.

**User**
ZURDF DELHALF GRO-U6D2UMC SET-6240

**System**

<table>
<thead>
<tr>
<th>CSMP0097I</th>
<th>04.23.58 CPU-B SS-BSS SSU-SSU0 IS-01</th>
</tr>
</thead>
<tbody>
<tr>
<td>URDF0019I</td>
<td>SRDF Control record refresh started</td>
</tr>
<tr>
<td>CSMP0097I</td>
<td>04.23.58 CPU-B SS-BSS SSU-SSU0 IS-01</td>
</tr>
<tr>
<td>URDF1043I</td>
<td>Local CU 000000006211 discovered for Group U6D2UMC Set 6240</td>
</tr>
<tr>
<td>CSMP0097I</td>
<td>04.23.58 CPU-B SS-BSS SSU-SSU0 IS-01</td>
</tr>
<tr>
<td>URDF1043I</td>
<td>Remote CU 00187990132 discovered for Group U6D2UMC Set 6240</td>
</tr>
<tr>
<td>CSMP0097I</td>
<td>04.23.58 CPU-B SS-BSS SSU-SSU0 IS-01</td>
</tr>
<tr>
<td>E1V000001I</td>
<td>SRDF Operation Verification Started</td>
</tr>
<tr>
<td>E1V00001I</td>
<td>SRDF Group Properties Verification Started</td>
</tr>
<tr>
<td>CSMP0097I</td>
<td>04.23.58 CPU-B SS-BSS SSU-SSU0 IS-01</td>
</tr>
<tr>
<td>E1V00003I</td>
<td>SRDF Device State Verification Started</td>
</tr>
<tr>
<td>CSMP0097I</td>
<td>04.23.58 CPU-B SS-BSS SSU-SSU0 IS-01</td>
</tr>
<tr>
<td>URDF Exception - Group U6D2UMC Set 6240: RDF device not an R2: 16 of 16</td>
<td></td>
</tr>
<tr>
<td>CSMP0097I</td>
<td>04.23.58 CPU-B SS-BSS SSU-SSU0 IS-01</td>
</tr>
<tr>
<td>E1V20001I</td>
<td>Review SRDF exceptions above for Group U6D2UMC DELHALF:</td>
</tr>
<tr>
<td>To proceed, enter: ZURDF PROceed GROup-U6D2UMC</td>
<td></td>
</tr>
<tr>
<td>To halt, enter: ZURDF HALt GROup-U6D2UMC</td>
<td></td>
</tr>
</tbody>
</table>

ZURDF PRO GRO-U6D2UMC SET-6240

| CSMP0097I | 04.23.58 CPU-B SS-BSS SSU-SSU0 IS-01 |
| E1V00004I | SRDF Operation Verification Completed |
| CSMP0097I | 04.23.58 CPU-B SS-BSS SSU-SSU0 IS-01 |
| URDF1000I | SRDF Group U6D2UMC Set 6240 started issuing Delhalf |
| CSMP0097I | 04.23.58 CPU-B SS-BSS SSU-SSU0 IS-01 |
| URDF1001I | SRDF Group U6D2UMC Set 6240 completed issuing Delhalf |
| CSMP0097I | 04.23.58 CPU-B SS-BSS SSU-SSU0 IS-01 |
| URDF1009I | SRDF Status Display |
| SRDF Group: U6D2UMC Set: 6240 Range Operation: Delhalf |
| Status: Monitor Active |
| Start Time : 21.42.45 Date : 11/15/04 |
| Opr | Operation Status | Opr RC |
| Set Name | CU Serial # | SDA | Complete | In Progress | Not Started | Summary |
| 6240 | 000000006211 | 6200 | 16 | 0 | 0 | 0000 |
| End of Display |

URDF1003I SRDF Group U6D2UMC Set 6200 Delhalf complete
ZURDF DELpair

Remove the SRDF relationship for established dynamic RDF pair(s).

Requirements and restrictions

- Ensure the intended SRDF relationship is established, using the ZURDF CRTpair command. The source (R1) devices must be TNR.
- The DELpair command is always issued to the local storage system.

Format

ZURDF DELpair GROup-cccccccc [SET-cccccccc] [SDN-hhhhhhh] [CNT-dddd] [LCLis-R1|R2]

Parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>GROup-cccccccc</td>
<td>The one- to eight-alphanumeric charactername of an SRDF group.</td>
</tr>
<tr>
<td>SET-cccccccc</td>
<td>The one- to eight-alphanumeric charactername of an SRDF set that identifies an SRDF pair.</td>
</tr>
<tr>
<td>SDN-hhhhhhh</td>
<td>Starting SRDF device number.</td>
</tr>
<tr>
<td>CNT-dddd</td>
<td>Number of SRDF devices.</td>
</tr>
<tr>
<td>LCLis-R1</td>
<td>R2</td>
</tr>
<tr>
<td></td>
<td>R1 = Local storage system contains source (R1) (default)</td>
</tr>
<tr>
<td></td>
<td>R2 = Local storage system contains target (R2)</td>
</tr>
</tbody>
</table>

Additional information

Ensure that the target (R2) devices are in the desired state before using the DELpair command. Once the SRDF relationship is removed, SRDF Controls for z/TPF commands cannot be issued against dynamic SRDF pairs.

Examples

Example 1

Action: Try to delete the SRDF relationship defined for SRDF group U6C2UDC. The target (R2) devices in the remote storage system are in R/W state.

User: ZURDF DEL GRO-U6C2UDC

System

CSMP0097I 18.58.41 CPU-B SS-BSS SSU-SSU0 IS-01
URDF0019I SRDF Control record refresh started
CSMP0097I 18.58.41 CPU-B SS-BSS SSU-SSU0 IS-01
URDF1043I Local CU 000000006207 discovered for Group U6C2UDC Set 3040
CSMP0097I 18.58.42 CPU-B SS-BSS SSU-SSU0 IS-01
URDF1043I Remote CU 000185400212 discovered for Group U6C2UDC Set 3040
CSMP0097I 18.58.42 CPU-B SS-BSS SSU-SSU0 IS-01
URDF0024I SRDF Control record refresh completed
CSMP0097I 18.58.42 CPU-B SS-BSS SSU-SSU0 IS-01
SRDF Commands

**Example 2**

<table>
<thead>
<tr>
<th>Action</th>
<th>Delete the SRDF relationship defined for SRDF group U6C2UDC. The source (R1) devices are TNR and the target (R2) devices are R/O.</th>
</tr>
</thead>
<tbody>
<tr>
<td>User</td>
<td>ZURDF DEL GRO-U6C2UDC</td>
</tr>
<tr>
<td>System</td>
<td></td>
</tr>
</tbody>
</table>

CSMP0097I 01.48.11 CPU-B SS-BSS SSU-SSU0 IS-01
URDF0019I SRDF Control record refresh started
CSMP0097I 01.48.11 CPU-B SS-BSS SSU-SSU0 IS-01
URDF1043I Local CU 000000006207 discovered for Group U6C2UDC Set 3040
CSMP0097I 01.48.11 CPU-B SS-BSS SSU-SSU0 IS-01
URDF1043I Remote CU 000185400212 discovered for Group U6C2UDC Set 3040
CSMP0097I 01.48.13 CPU-B SS-BSS SSU-SSU0 IS-01
URDF0024I SRDF Control record refresh completed
CSMP0097I 01.48.13 CPU-B SS-BSS SSU-SSU0 IS-01
E1V0000I SRDF Operation Verification Started
E1V0000I SRDF Group Properties Verification Started
Options Permissions
None
E1V0000I SRDF Device State Verification Started
CSMP0097I 18.58.43 CPU-B SS-BSS SSU-SSU0 IS-01
SRDF Exception - Group U6C2UDC Set 3040: Target (R2) not R/O: 36 of 36
CSMP0097I 18.58.43 CPU-B SS-BSS SSU-SSU0 IS-01
URDF0112T Operation Verification Failed - Operation not started

Example 2

<table>
<thead>
<tr>
<th>Action</th>
<th>Delete the SRDF relationship defined for SRDF group U6C2UDC. The source (R1) devices are TNR and the target (R2) devices are R/O.</th>
</tr>
</thead>
<tbody>
<tr>
<td>User</td>
<td>ZURDF DEL GRO-U6C2UDC</td>
</tr>
<tr>
<td>System</td>
<td></td>
</tr>
</tbody>
</table>

CSMP0097I 01.48.11 CPU-B SS-BSS SSU-SSU0 IS-01
URDF0019I SRDF Control record refresh started
CSMP0097I 01.48.11 CPU-B SS-BSS SSU-SSU0 IS-01
URDF1043I Local CU 000000006207 discovered for Group U6C2UDC Set 3040
CSMP0097I 01.48.11 CPU-B SS-BSS SSU-SSU0 IS-01
URDF1043I Remote CU 000185400212 discovered for Group U6C2UDC Set 3040
CSMP0097I 01.48.13 CPU-B SS-BSS SSU-SSU0 IS-01
URDF0024I SRDF Control record refresh completed
CSMP0097I 01.48.13 CPU-B SS-BSS SSU-SSU0 IS-01
E1V0000I SRDF Operation Verification Started
E1V0000I SRDF Group Properties Verification Started
Options Permissions
None
E1V0000I SRDF Device State Verification Started
CSMP0097I 01.48.14 CPU-B SS-BSS SSU-SSU0 IS-01
EIV00004I SRDF Operation Verification Completed
CSMP0097I 01.48.14 CPU-B SS-BSS SSU-SSU0 IS-01
URDF1000I SRDF Group U6C2UDC Set 3040 started issuing Delpair
CSMP0097I 01.48.14 CPU-B SS-BSS SSU-SSU0 IS-01
URDF1001I SRDF Group U6C2UDC Set 3040 completed issuing Delpair
CSMP0097I 01.48.19 CPU-B SS-BSS SSU-SSU0 IS-01
URDF1031I SRDF Status Display
SRDF Group: U6C2UDC Base Operation: Delpair
Status: Monitor Active
Start Time : 01.48.11 Date : 04/14/04
Opr ________Operation Status ________  Opr RC
Set Name  CU Serial #   SDA  Complete  In Progress Not Started  Summary
3040  000000006207 30400 36 0 0 0000
End of Display
URDF1003I SRDF Group U6C2UDC Delpair complete
SRDF Commands

ZURDF DISPLAY

Display RDF device pair information, storage system configuration information, and RDF link status information for the specified SRDF set and group.

Requirements and restrictions

- Configure SRDF control records to ensure that the display is accurate.
- You can display Quality of Service Values only if QOS Controls for z/TPF is installed.

Note: “Customize the z/TPF source” on page 35 and “Install SRDF Controls for z/TPF” on page 36 provide additional information.

Format

ZURDF DISPLAY [LOCal|REMoTe] GROup-cccccccc SET-cccccccc [SDN- hhhhhhhh] [CNT-dddd] TYPe-ADC|CON|LIN|ITR|MAT|ONL|QOS|SAS|MSC |SRP|DGP|SGP|SLO]

Parameters

LOCal A host-attached storage system, or the member of an SRDF pair that is the least number of hops away from the host-attached storage system.
REMoTe The storage system furthest from the locally attached storage system in the specified set and SRDF group.
GROup-cccccccc The one- to eight-alphanumeric character name of an SRDF group.
SET-cccccccc The one- to eight-alphanumeric character name of an SRDF set that identifies an SRDF pair.
SDN- hhhhhhhh Starting SRDF device number.
CNT-dddd Number of SRDF devices.
TYPe-ADC Only devices in Adaptive copy disk or write pending mode.
TYPe-CON Storage system configuration information.
TYPe-LIN SRDF link information.
TYPe-ITR Only SRDF devices with invalid tracks.
TYPe-MAT SRDF device state matrix.
TYPe-ONL Online SRDF target information.
TYPe-QOS SRDF device Quality of Service values.
TYPe-SAS SRDF/A session information.
TYPe-MSC SRDF/A MSC recovery status.
TYPe-SRP Storage Resource Pool information.
TYPe-DGP Disk Group information.
TYPe-SGP Storage Group information
TYPe-SLO Service Level Objective
Examples

Example 1

This example displays the following information:

**DR** Director number of the Remote Link Director.

**GP** RDFGroup of the Remote Link Director.

**Partner S/N** Serial number of the partner storage system.

**OD** Director number of the Remote Link Director on the partner storage system or SW if switched fibre.

**OG** RDFGroup of the Remote Link Director on the partner storage system.

**RCS** Where:
- **R** = Remote Link Director type. Valid values are:
  - M Source Remote Link Director
  - S Target Remote Link Director
  - F Fibre Remote Link Director
- **C** = Port connection status. Valid values are:
  - Y link path established
  - N no link path established
- **S** = Link status. Valid values are:
  - Y link is online
  - N link is not online

**PS** Percent busy over short interval. Displays as ... if switched fibre.

**MM:SS** Short interval duration during which the average number of start I/O commands are calculated. This timer resets approximately every 10 minutes or when a storage system IML occurs or utility reset command is issued.

**RATE** Average I/Os per second over the short time interval.

**PL** Percent busy over long interval. Displays as ... if switched fibre.

**DD:HH:MM:SS** Time since last storage system IML or last utility RESET command issued from the service processor.

**TOTAL-I/O** Total Start I/O commands since last storage system IML or last utility.

**Action** Display Link information for local storage system in set 3240 in SRDF group UAF2USG.

**User** ZURDF DIS GRO-UAF2USG SET-3240 TYP-LIN

**System**

CSMP0097I 03.34.31 CPU-C SS-BSS SSU-SSU0 IS-01
E1R70001I SRDF Link Display for CU 000190300346 Set Name: 3240

<table>
<thead>
<tr>
<th>DR</th>
<th>GP</th>
<th>Partner S/N</th>
<th>OD</th>
<th>OG</th>
<th>RCS</th>
<th>PS</th>
<th>Rate</th>
<th>PL</th>
<th>DD:HH:MM:SS</th>
<th>TOTAL I/O</th>
</tr>
</thead>
<tbody>
<tr>
<td>49</td>
<td>7</td>
<td>000190100840</td>
<td>SW</td>
<td>7</td>
<td>FYY</td>
<td>00:28</td>
<td>82</td>
<td>139:02:28:41</td>
<td>1 690 309 798</td>
<td></td>
</tr>
<tr>
<td>64</td>
<td>7</td>
<td>000190100840</td>
<td>SW</td>
<td>7</td>
<td>FYY</td>
<td>00:30</td>
<td>74</td>
<td>139:02:29:18</td>
<td>1 715 549 338</td>
<td></td>
</tr>
</tbody>
</table>

End of Display
Example 2

This example displays the following information:

- **CU**: Serial number of the storage system.
- **MEM**: Cache size in megabytes.
- **TYPE**: Controller emulation type.
- **MODEL**: Contains the model number of the storage system.
- **MICROCODE LEVEL**: Enginuity or HYPERMAX OS level of the storage system.
- **SSID(S)**: SSID(s) (in hex).
- **BUILD DATE**: Enginuity or HYPERMAX OS build date.
- **SRDF Group**: The SRDF group.
- **SRDF Set Name**: The SRDF set in which this storage system is configured.
- **Multi-hop List**: The RDF group path to the remote storage system of the set.
- **Multihop Count**: The number of hops through the multi-hop list to get to this storage system in the set.
- **DARE Enabled**: Data At Rest Encryption (ON|OFF).
- **MAID Enabled**: Disk Power Saving (ON|OFF).
- **Workload Distribution**: SRDF Mixed Mode Workload Policy (ON|OFF).
- **Sync**: RDF Director CPU cycle percentage used for synchronous SRDF.
- **Async**: RDF Director CPU cycle percentage used for asynchronous SRDF.
- **Copy**: RDF Director CPU cycle percentage used for adaptive copy SRDF.
- **D01 - 168**: Storage system director types:
  - **CA**: Parallel Channel Director
  - **DA**: Disk Director
  - **DF**: Fibre Disk Director
  - **DS**: Disk Director
  - **EA**: Enterprise Systems Connection (ESCON)
  - **EF**: Fibre Connection (FICON)
  - **FA**: Fibre Channel Director
  - **SA**: Fast-Wide SCSI Channel Director
  - **SE**: GigE
  - **R1**: Remote Link Director (source)
  - **R2**: Remote Link Director (target)
  - **RE**: GigE
  - **RF**: Remote Link Director (fibre)

**Action**

Display configuration information for the storage system designated by SRDF group YFYH set 1.

**User**

ZURDF DIS GRO-YFYH SET-1 TYP-CON

**System**

CSMP0097I 09.47.30 CPU-A SS-BSS SSU-SSU0 IS-01
URDF0000I CU 000196701170 Configuration Display
SRDF S Group: YFYH Set Name : 1
Multi-Hop List :  20 Multi-Hop Count:  00
Type: 3990 Model: VMAX200K Mem: 704512 MB
Microcode Level: 5977v740 Build Date: 11/10/2015
DARE Enabled: NO MAID Enabled : NO
Workload Distribution: ON Sync:  70 Async:  20 Copy:  10
Disk Directors (DS):
  01C / 12 13 16 17
02C / 12 13 16 17
03C / 12 13 16 17
04C / 12 13 16 17
05C / 12 13 16 17
06C / 12 13 16 17

FICON Directors (EF):
01F / 24 25
02F / 24 25
03F / 24 25
04F / 24 25
05F / 24 25
06F / 24 25

FC RDF Directors (RF):
01E / 06 07
02E / 07 07
04E / 10 11
06E / 08 11

GIGE RDF Directors (RE):
03G / 05 06
05G / 04 06

FC Adapter Directors (FA):
01D / 04 05 08 09 10 11
02D / 04 05 06 08 09 10 11
03D / 08 09 10 11 32 10 11
04D / 08 09 10 11 32 10 11
05D / 08 09 10 11 32 10 11
06D / 09 10 32 11 32 10 11

GIGE Adapter Directors (SE):
04G /
06G /

Subsystem IDs
AA00 AB00 AC00 AC01 AC02 AC03 AC04 AC05
AC06 AC07 AC08 AC09 AC0A AC0B

End of Display

Example 3

This example displays the following information:

| MDBF SSN | The name of the MDBF subsystem that the z/TPF module belongs to. |
| Symb Mod | The symbolic model number of the device. |
| SDA      | The symbolic device address of the device. |
| This Dev | The SRDF device number. |
| Othr Dev | The remotely mirrored SRDF device number. |
| RDF GRP  | RDFGroup. |
| Device Status | The device status. Format is xxx-yy-z, where: |

xxx  
R/W = read/write mode.
R/O = read only mode.
N/R = not ready mode.
RNR = RDF devices not ready for all locally and remotely attached host I/Os. \(^1,2\)
TNR = target (R2) not ready. \(^2,3\)
RWD = RDF write-disabled. \(^2,4\)
LNR = link not ready. \(^5\)

yy  
SY = Synchronous mode.
AW = Adaptive Copy - Write Pending mode.
AD = Adaptive Copy - Disk mode.
AP = Adaptive Copy - Write Pending mode transition to no adaptive copy.
SRDF Commands

z

I = Invalid Track Attribute = a target (R2) volume to go not ready if the source (R1) volume (its mirrored device) has invalid tracks on target (R2) volume and a state of change has been requested on the target (R2) volume.

D = Domino Attribute = source (R1) volume to go not ready if target (R2) volume is not ready or links are down.

1. Indicates a status of RDF-NOT-READY (RNR). When a device is in this state, any attempt to perform I/O to the device from the host will result in an INTERVENTION-REQUIRED status. The RNR status can occur as a result of the Domino Attribute, Invalid Tracks Attribute, or as a result of a ZURDF RDY|NRDY [Loca|REMote] GROup-cccccccc [SET-cccccccc] [SDN-hhhhhhhhhh] [CNT-dddd] command.

2. For more information on this field, refer to Appendix B.

3. This status indicates that communication between the SRDF pair is currently inactive because the SRDF pair is RDF-Suspended.

4. If the source (R1) and target (R2) volumes are write-enabled and links are not suspended, any writes to the source (R1) volume suspends the link between that pair. These writes accumulate as R2 invalid tracks on the source (R1) volume until the target (R2) volume is write-enabled. Synchronization can then occur by issuing the ZURDF WRITEenable [Loca|REMote] GROup-cccccccc [SET-cccccccc] [SDN-hhhhhhhhhh] [CNT-dddd] command.

5. This status indicates that communication between the SRDF pair is currently inactive because the link is offline or the link path is physically unavailable.

MR Type of SRDF device. Valid values are:
- R1 = Source (R1) volume
- R2 = Target (R2) volume
- ML = Local mirror volume
- RS = Raid-S volume
- L1 = Source (R1) volume that is also mirrored locally
- L2 = Target (R2) volume that is also mirrored locally
- AR1 = SRDF/A source (R1) volume
- AR2 = SRDF/A target (R2) volume
- AL1 = SRDF/A locally mirrored RDF source (R1)
- AL2 = SRDF/A locally mirrored RDF target (R2)
- DR = Dynamic Reallocation Volume (used by Symmetrix Optimizer)
- DRX = Dynamic RDF device, to be used as either source (R1) or target (R2)
- DR1 = Dynamic RDF source (R1)
- DR2 = Dynamic RDF target (R2)
- DLX = Dynamic locally mirrored RDF device
- DL1 = Dynamic locally mirrored RDF source (R1)
- DL2 = Dynamic locally mirrored RDF target (R2)
- D1 = Diskless R1 (transient state)
- D2 = Diskless R2 (transient state)
- D21 = Diskless cascaded device
- DL = Diskless device that has not been paired with remote partner

R1 ITRK Source (R1) volume invalid track count. The storage systems maintain their own invalid track tables which identify the invalid tracks on both the source (R1) and the target (R2) volumes.

R2 ITRK Target (R2) volume invalid track count. The storage systems maintain their own invalid track tables which identify the invalid tracks on both the source (R1) and the target (R2) volumes. The number of R2 invalid tracks on the R2 side reflects the number of invalid tracks as viewed from the R1 side.
<table>
<thead>
<tr>
<th>Action</th>
<th>Display device information for the local storage system in set UYG2UYH in SRDF group SA64KUP.</th>
</tr>
</thead>
<tbody>
<tr>
<td>User</td>
<td>ZURDF DIS GRO-SA64BKUP SET-UYG2UYH</td>
</tr>
<tr>
<td>System</td>
<td>MDBF Symb The name of the MDBF subsystem that the z/TPF module belongs to.</td>
</tr>
<tr>
<td></td>
<td>Symb Mod The symbolic model number of the device.</td>
</tr>
<tr>
<td></td>
<td>SDA The symbolic device address of the device.</td>
</tr>
<tr>
<td></td>
<td>This Dev The SRDF device number.</td>
</tr>
<tr>
<td></td>
<td>Othrs Dev The remotely mirrored SRDF device number.</td>
</tr>
<tr>
<td></td>
<td>ADC Mode Adaptive Copy mode in effect:</td>
</tr>
<tr>
<td></td>
<td>AW = Adaptive Copy - Write Pending mode</td>
</tr>
<tr>
<td></td>
<td>AD = Adaptive Copy - Disk mode</td>
</tr>
<tr>
<td></td>
<td>AP = Adaptive Copy - Write Pending Offline mode</td>
</tr>
<tr>
<td></td>
<td>Curnt Skew Current skew value. For Adaptive Copy - Write Pending mode, this is the number of write pendings for the target (R2) volume. For the Adaptive Copy - Disk mode, this is the number of tracks marked as out-of-synchronization between the source (R1) and the target (R2) volumes.</td>
</tr>
<tr>
<td></td>
<td>Max Skew Adaptive Copy maximum skew value for device(s). Range: 1 to 65,535 (decimal).</td>
</tr>
</tbody>
</table>

Example 4

This example displays the following information:

<table>
<thead>
<tr>
<th>MDBF SSN</th>
<th>The name of the MDBF subsystem that the z/TPF module belongs to.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Symb Mod</td>
<td>The symbolic model number of the device.</td>
</tr>
<tr>
<td>SDA</td>
<td>The symbolic device address of the device.</td>
</tr>
<tr>
<td>This Dev</td>
<td>The SRDF device number.</td>
</tr>
<tr>
<td>Othrs Dev</td>
<td>The remotely mirrored SRDF device number.</td>
</tr>
<tr>
<td>ADC Mode</td>
<td>Adaptive Copy mode in effect:</td>
</tr>
<tr>
<td></td>
<td>AW = Adaptive Copy - Write Pending mode</td>
</tr>
<tr>
<td></td>
<td>AD = Adaptive Copy - Disk mode</td>
</tr>
<tr>
<td></td>
<td>AP = Adaptive Copy - Write Pending Offline mode</td>
</tr>
<tr>
<td>Curnt Skew</td>
<td>Current skew value. For Adaptive Copy - Write Pending mode, this is the number of write pendings for the target (R2) volume. For the Adaptive Copy - Disk mode, this is the number of tracks marked as out-of-synchronization between the source (R1) and the target (R2) volumes.</td>
</tr>
<tr>
<td>Max Skew</td>
<td>Adaptive Copy maximum skew value for device(s). Range: 1 to 65,535 (decimal).</td>
</tr>
</tbody>
</table>

Action | Display Adaptive Copy information for local storage system of set 3C00IG of SRDF group SRDFA2. |
User    | ZURDF DIS GRO-SRDFA2 SET-3C00IG TYP-ADC |
System  | CSMP0097I 14.30.02 CPU-A SS-BSS SSU-SSU0 IS-01 E1RQ00001I RDF Device ADC Display |
### SRDF Commands

<table>
<thead>
<tr>
<th>Group</th>
<th>SRDFA2</th>
<th>Set 3C00IG</th>
<th>in Local CU 000195700080</th>
</tr>
</thead>
<tbody>
<tr>
<td>MDBF Symb</td>
<td>This</td>
<td>Othr</td>
<td>ADC</td>
</tr>
<tr>
<td>SSN Mod SDA Dev Dev Mode Skew Skew</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A64 0100 3C00 0000134C 000011B4 AD 0 256</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A64 0101 3C01 0000134D 000011B5 AD 0 256</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A64 0102 3C02 0000134E 000011B6 AD 0 256</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A64 0103 3C03 0000134F 000011B7 AD 0 65535</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A64 0104 3C04 00001350 000011B8 AD 0 65535</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A64 0105 3C05 00001351 000011B9 AD 0 65535</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A64 0106 3C06 00001352 000011BA AD 0 65535</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A64 0107 3C07 00001353 000011BB AD 0 65535</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A64 0108 3C08 00001354 000011BC AD 0 65535</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A64 0109 3C09 00001355 000011BD AD 0 65535</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A64 010A 3C0A 00001356 000011BE AD 0 65535</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A64 010B 3C0B 00001357 000011BF AD 0 65535</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A64 010C 3C0C 00001358 000011C0 AD 0 65535</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A64 010D 3C0D 00001359 000011C1 AD 0 65535</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A64 010E 3C0E 0000135A 000011C2 AD 0 65535</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A64 010F 3C0F 0000135B 000011C3 AD 0 65535</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

End of Display
Example 5

This example displays the following information:

SSN  The name of the MDBF subsystem name that the z/TPF module belongs to.
MOD  The symbolic model number of the device.
SDA  The symbolic device address of the device.
DEV  The device number of the storage system.
RDEV The remotely mirrored SRDF device number.
RDF GRP RDFGroup.
HS   Host State:
     RW = read/write mode
     RO = read only mode
     SS = not ready mode
MO   Primary Mode of Operation:
     SY = Synchronous mode
AC   Adaptive Copy Mode of Operation:
     AW = Adaptive Copy - Write Pending mode
     AD = Composite Copy - Disk mode
IT   Invalid Track Attribute:
     I = Invalid Track Attribute Set
MR   Type of SRDF device:
     R1 = Source (R1) volume
     R2 = Target (R2) volume
     ML = Local mirror volume
     RS = Raid-S volume
     L1 = Source (R1) volume that is also mirrored locally.
     L2 = Target (R2) volume that is also mirrored locally.
     DR = Dynamic Reallocation Volume (used by VMAX Optimizer)
     DRX = Dynamic RDF device, to be used as either source (R1) or target (R2)
     DR1 = Dynamic RDF source (R1)
     DR2 = Dynamic RDF target (R2)
     DLX = Dynamic locally mirrored RDF device
     DL1 = Dynamic locally mirrored RDF source (R1)
     DL2 = Dynamic locally mirrored RDF target (R2)
     D1 = Diskless R1 (transient state)
     D2 = Diskless R2 (transient state)
     D21 = Diskless cascaded device
     DL = Diskless device that has not been paired with remote partner
R1 ITRK Source (R1) volume invalid track count. The storage systems maintain their own invalid track tables which identify the invalid tracks on both the source (R1) and the target (R2) volumes.
R2 ITRK Target (R2) volume invalid track count. The storage systems maintain their own invalid track tables which identify the invalid tracks on both the source (R1) and the target (R2) volumes. The number of R2 invalid tracks on the R2 side reflects the number of invalid tracks as viewed from the R1 side.
Disruptive States SRDF states affecting mode of operation:
     RNR = RDF devices globally not ready
     TNR = Target (R2) not ready
     RWD = RDF write-disabled
     LNR = Link not ready
1. This status indicates a status of RDF-NOT-READY (RNR). When a device is in this state, any attempt to perform I/O to the device from the host will result in an INTERVENTION-REQUIRED status. The RNR status can occur as a result of the Domino Attribute, Invalid Tracks Attribute, or as a result of a ZURDF NRDY LRG|RRG d ALL|(SDA cuu hhhhhhhh <dd>) command.

2. For more information on this field, refer to Appendix B.

3. This status indicates that communication between the SRDF pair is currently inactive because the SRDF pair is RDF-Suspended.

4. If the source (R1) and target (R2) volumes are write-enabled and links are not suspended, any writes to the source volume suspends the link between that pair. These writes accumulate as R2 invalid tracks on the source volume until the target volume is write-enabled. Synchronization can then occur by issuing the ZURDF WRI LRG|RRG dd ALL|(SDA cuu hhhhhhhh dd) command.

5. This status indicates that communication between the SRDF pair is currently inactive because the link is offline or the link path is physically unavailable.

6. The target (R2) volume will go not ready if the source (R1) volume (its mirrored device) has invalid tracks on target volume and a state of change has been requested on the target volume.

### Action Display Device Status Matrix for the storage system in set 3240 of SRDF group YFYH.

### System

| Device Status Matrix for the storage system in set 3240 of SRDF group YFYH. |
|------------------------------|--------------------------|
| User                        | ZURDF DIS GRO-YFYH SET-3240 TYP-MAT |
| System                      | CSMP0097I 10.20.39 CPU-A SS-BSS SSU-SSU0 IS-01 |
| E1RQ00000I RDF Device MAT Display | E1RQ00000I RDF Device MAT Display |
| Group YFYH                  | Set 1 in Local CU 000196701170 |
| MDBF Symb                   | This OthR RDF |
| SSN  | Mod  | SDA Dev  | Dev  | GRP  | HS  | MO  | AC  | IT  | MR  | R1-Itk  | R2-Itk  |
| A64  | 0110 | 46C0  | 000009FD | 0000051C | 20 | RW | SY | DL1 | 0 | 0 |
| Disruptive States:         | TNR |
| A64  | 0111 | 46C1  | 000009FE | 0000051D | 20 | RW | SY | DL1 | 0 | 0 |
| Disruptive States:         | TNR |
| A64  | 0112 | 46C2  | 000009FF | 0000051E | 20 | RW | SY | DL1 | 0 | 1 |
| Disruptive States:         | TNR |
| A64  | 0113 | 46C3  | 00000A00 | 0000051F | 20 | RW | SY | DL1 | 0 | 0 |
| Disruptive States:         | TNR |
| A64  | 0114 | 46C4  | 00000A01 | 00000520 | 20 | RW | SY | DL1 | 0 | 0 |
| Disruptive States:         | TNR |
| A64  | 0115 | 46C5  | 00000A02 | 00000521 | 20 | RW | SY | DL1 | 0 | 1 |
| Disruptive States:         | TNR |
| A64  | 0116 | 46C6  | 00000A03 | 00000522 | 20 | RW | SY | DL1 | 0 | 1 |
| Disruptive States:         | TNR |
| A64  | 0117 | 46C7  | 00000A04 | 00000523 | 20 | RW | SY | DL1 | 0 | 1 |
| Disruptive States:         | TNR |
| A64  | 0118 | 46C8  | 00000A05 | 00000524 | 20 | RW | SY | DL1 | 0 | 0 |
| Disruptive States:         | TNR |
| A64  | 0119 | 46C9  | 00000A06 | 00000525 | 20 | RW | SY | DL1 | 0 | 0 |
| Disruptive States:         | TNR |
| A64  | 0120 | 46CA  | 00000A07 | 00000526 | 20 | RW | SY | DL1 | 0 | 1 |
| Disruptive States:         | TNR |
| A64  | 0121 | 46CB  | 00000A08 | 00000527 | 20 | RW | SY | DL1 | 0 | 0 |
| Disruptive States:         | TNR |
| A64  | 0122 | 46CC  | 00000A09 | 00000528 | 20 | RW | SY | DL1 | 0 | 0 |
| Disruptive States:         | TNR |
| A64  | 0123 | 46CD  | 00000A0A | 00000529 | 20 | RW | SY | DL1 | 0 | 1 |
| Disruptive States:         | TNR |
| A64  | 0124 | 46CE  | 00000A0B | 0000052A | 20 | RW | SY | DL1 | 0 | 1 |
| Disruptive States:         | TNR |
| A64  | 0125 | 46CF  | 00000A0C | 0000052B | 20 | RW | SY | DL1 | 0 | 2 |
| Disruptive States:         | TNR |

End of Display
**SRDF Commands**

**Example 6**

This example displays the following information:

- **Group**: The name of the SRDF group.
- **Set**: The name of the SRDF set.
- **Primary CU**: The serial number of the storage system containing the source (R1) devices.
- **SRDF/A Session RDF group**: The RDFGroup of this SRDF/A session and whether it is active or inactive.
- **Cycle Number**: A number representing the current SRDF/A session cycle.
- **Capture Cycle Size**: The number of cache slots currently in the capture cycle.
- **Transmit Cycle Size**: The number of cache slots left in the cycle being sent to the secondary side.
- **Average Cycle Time**: The average time each cycle is taking over the last sixteen cycles.
- **Average Cycle Size**: The average number of cache slots in the past sixteen cycles.
- **Last Cycle Size**: The number of cache slots in the last complete cycle.
- **Secondary Delay**: The approximate time the data on the secondary side is behind the primary side.
Secondary Consistent

A flag that indicates whether the secondary side is consistent:
- Y - SRDF/A is consistent
- N - SRDF/A is not consistent
- ? - SRDF/A is not active, and the data on the secondary side may or may not be consistent. When SRDF/A is not active, the consistency cannot be determined by SRDF/A.

Tolerance

A flag that signals whether Tolerance mode is on or off:
- On - Tolerance mode is on for the SRDF/A sessions
- Off - Tolerance mode is not on for the SRDF/A sessions

HA Writes

The number of tracks written by the host adapters.

Repeated HA Writes

The total number of tracks written multiple times in a cycle by the host adapters.

HA Duplicate Slots

The number of times a slot had to be duplicated because it was written to in multiple cycles.

Drop Priority

Displays the relative priority of this SRDF/A session. If the percent of cache SRDF/A can use is exceeded, the Drop Priority determines the order, high to low priority, in which SRDF/A sessions are dropped in this storage system to relieve the condition. The highest priority is 1; the lowest is 64.

Note: The Drop Priority set in the remote side of this RDF group has no affect on the Drop Priority in this RDF group.

Max Throttle Time

Indicates how long SRDF/A slows the host adapters once cache limits are reached. If the value is 0, SRDF/A is dropped once cache limits are reached. If the value is 65535, the host adapters work at write pending limits speed indefinitely. Any other value indicates the number of seconds the host adapters work at write pending limits speed before SRDF/A is dropped.

Max Cache Percentage

The percentage of cache that SRDF/A can use.

Time Since Last Cycle Switch

The number of seconds since the last time SRDF/A has cycle switched.

Duration Of Cycle Switch

The number of seconds the last cycle lasted.

Multi-Session Consistency

Indicates whether SRDF/A MSC is active.

Active Since

The date and time that the SRDF/A MSC session was activated.

Clean Up Running

A flag:
- Yes - The secondary side will reject non-SRDF/A for a small window of time (approximately 30 seconds). Cleanup only runs immediately after SRDF/A goes from the Active to the Inactive state. Cleanup prevents RESume, REFresh, RFRresume, VALidate, or INValidate from being run on the SRDF/A devices. After the cleanup is finished the RESume, REFresh, RFRresume, VALidate, or INValidate commands may be run.
- No - Cleanup is not running.
### MSC Window is Open

The SRDF/A Multi-Session Consistency (MSC) window is a small window in time in which the cycle switch is run when MSC is active. When the MSC window is open, all write I/Os to SRDF/A primary devices are disconnected. Read I/Os continue to run.

- **Yes** - The MSC window is open.
- **No** - The MSC window is not open.

### Capture Tag

The tag for the data in the capture cycle. The Capture Tag verifies the multiple SRDF/A sessions in the MSC group are coordinated. When MSC is active, the Capture Tag functions like the cycle number when SRDF/A is active and MSC is not active.

### Transmit Tag

The Transmit Tag is the tag for the data in the transmit cycle. The Transmit Tag verifies that the multiple SRDF/A sessions in the MSC group are coordinated. When MSC is active, the Transmit Tag functions like the cycle number when SRDF/A is active and MSC is not active.

### Write Pacing Enabled

Indicates the status of Write Pacing functionality:

- **Yes** - Write Pacing is enabled for this RDF group. If the threshold criteria are met, then Write Pacing will occur.
- **No** - Write Pacing is disabled for this RDF group and will not occur even if the criteria are met.

**Note:** Write Pacing functionality is designed to slow host I/O to allow SRDF/A to stay active. This is _not_ recommended in a z/TPF environment. For this reason, there are no controls for this functionality in the z/TPF SRDF Host Component. If Write Pacing Enabled is showing Yes, discuss this with your EMC z/TPF technical resources.

### Write Pacing Stats On

Indicates if Write Pacing statistics collection is enabled:

- **Yes** - Statistics collection is enabled.
- **No** - Statistics collection is not enabled. This is the default setting.

## System Information

- **Action**
  - Display the SRDF/A session information for the primary storage system in SRDF group UAF2USG Set 3240.

- **User**
  - ZURDF DIS GRO-UAF2USG SET-3240 TYP-SAS

- **System**

<table>
<thead>
<tr>
<th>CSMP0097I 23.41.07 CPU-B SS-BSS SSU-SSUO IS-01</th>
</tr>
</thead>
<tbody>
<tr>
<td>E1VA00001 SRDF/A Session Display</td>
</tr>
<tr>
<td>Group UAF2USG Set 3240 in Primary CU 000190300346</td>
</tr>
<tr>
<td>SRDF/A Session RDFGroup 07 Active Cycle Number 8986</td>
</tr>
<tr>
<td>Capture Cycle Size 1524 Transmit Cycle Size 0</td>
</tr>
<tr>
<td>Average Cycle Time 17 Average Cycle Size 3154</td>
</tr>
<tr>
<td>Last Cycle Size 3185 Secondary Delay 00:00:00:25</td>
</tr>
<tr>
<td>Secondary Consistent Yes Tolerance OFF</td>
</tr>
<tr>
<td>HA Writes 3 033 097 449 Repeated HA Writes 2 332 733 551</td>
</tr>
<tr>
<td>HA Duplicate Slots 10 001 028</td>
</tr>
<tr>
<td>Transmit Idle Off Drop Priority 44</td>
</tr>
<tr>
<td>Max Throttle Time 0 Max Cache Percentage 93</td>
</tr>
<tr>
<td>Time Since Last Cycle Switch 00:00:08 Duration of Last Cycle 17</td>
</tr>
<tr>
<td>Multi-Session Consistency Active Since 09/10/08 02.13.03</td>
</tr>
<tr>
<td>Clean-up Running No MSC Window is Open No</td>
</tr>
<tr>
<td>Capture Cycle Tag 000000000000022F8 Transmit Cycle Tag 000000000000022F7</td>
</tr>
<tr>
<td>Write Pacing Active No Write Pacing Stats On No</td>
</tr>
<tr>
<td>End of Display</td>
</tr>
</tbody>
</table>
### Example 7

This example displays the following information:

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group</td>
<td>The name of the SRDF group.</td>
</tr>
<tr>
<td>Set</td>
<td>The name of the SRDF set.</td>
</tr>
<tr>
<td>Secondary CU</td>
<td>The serial number of the storage system containing the target (R2) devices.</td>
</tr>
<tr>
<td>SRDF/A Session RDF group</td>
<td>The RDF group of this SRDF/A session and whether it is active or inactive.</td>
</tr>
<tr>
<td>Cycle Number</td>
<td>A number representing the current SRDF/A session cycle.</td>
</tr>
<tr>
<td>Receive Cycle Size</td>
<td>The number of cache slots currently in the cycle actively being written to from the primary side.</td>
</tr>
<tr>
<td>Apply Cycle Size</td>
<td>The number of slots currently in the cycle actively being restored to the secondary devices.</td>
</tr>
<tr>
<td>Average Cycle Time</td>
<td>The average time each cycle is taking over the last sixteen cycles.</td>
</tr>
<tr>
<td>Average Cycle Size</td>
<td>The average number of cache slots in the past sixteen cycles.</td>
</tr>
<tr>
<td>Last Cycle Size</td>
<td>The number of cache slots in the last complete cycle.</td>
</tr>
<tr>
<td>Secondary Delay</td>
<td>The approximate time the data on the secondary side is behind the primary side.</td>
</tr>
<tr>
<td>Cycle Suspended</td>
<td>A flag: Yes - The cycle switching is delayed by software to perform a consistent operation (for example, Time Finder Remote Consistent Split). No - SRDF/A operates in the normal cycle switching mechanism.</td>
</tr>
<tr>
<td>Restore Done</td>
<td>A flag: Yes - The apply cycle is completely restored. No - The apply cycle is not completely restored.</td>
</tr>
<tr>
<td>Total Restores</td>
<td>The total number of cache slots restored from all of the apply cycles to the current time.</td>
</tr>
<tr>
<td>Total Merges</td>
<td>The total number of slots merged in cache during the restore of all of the apply cycles to the current time.</td>
</tr>
<tr>
<td>Average Restore Time</td>
<td>The average duration of the restore, in seconds.</td>
</tr>
<tr>
<td>Duration of Last Restore</td>
<td>The duration of the last restore, in seconds.</td>
</tr>
<tr>
<td>Time Since Last Cycle Switch</td>
<td>The number of seconds since the last time SRDF/A has cycle switched.</td>
</tr>
<tr>
<td>Duration of Cycle Switch</td>
<td>The number of seconds the last cycle lasted.</td>
</tr>
<tr>
<td>Multi-Session Consistency</td>
<td>Indicates whether SRDF/A MSC is active.</td>
</tr>
<tr>
<td>Active Since</td>
<td>The date and time that the SRDF/A MSC session was activated.</td>
</tr>
</tbody>
</table>
Clean Up Running  A flag:
Yes - The secondary side will reject non-SRDF/A for a small window of time (approximately 30 seconds). Cleanup only runs immediately after SRDF/A goes from the active to the inactive state. Cleanup prevents RESume, REFresh, RFResume, VALidate, or INValidate from being run on the SRDF/A devices. After the cleanup is finished the RESume, REFresh, RFResume, VALidate, or INValidate commands may be run.
No - Cleanup is not running.

MSC Window is Open  The SRDF/A MSC window is a small window in time in which the cycle switch is run when MSC is active. When the MSC window is open, all write I/Os to SRDF/A primary devices are disconnected. Read I/Os continue to run.
Yes - The MSC window is open.
No - The MSC window is not open.

Apply Cycle Tag  The tag for the data in the apply cycle. The Apply Cycle Tag verifies the multiple SRDF/A sessions in the MSC group are coordinated. When MSC is active, the Apply Cycle Tag functions like the cycle number when SRDF/A is active and MSC is not active.

Receive Cycle Tag  The tag for the data in the receive cycle. The Receive Cycle Tag verifies that the multiple SRDF/A sessions in the MSC group are coordinated. When MSC is active, the Receive Cycle Tag functions like the cycle number when SRDF/A is active and MSC is not active.

Host Intervention Required  A flag:
Yes - When Cleanup Running is also Yes, MSC must tell SRDF/A what to do with the complete receive cycle.
No - Host intervention is not required.

Write Pacing Enabled  Indicates the status of Write Pacing functionality:
Yes - Write Pacing is enabled for this RDF group. If the threshold criteria are met, then Write Pacing occurs.
No - Write Pacing is disabled for this RDF group and does not occur even if the criteria are met.

Note: Write Pacing functionality is designed to slow host I/O to allow SRDF/A to stay active. This is not recommended in a z/TPF environment. For this reason, there are no controls for this functionality in the z/TPF SRDF Host Component. If Write Pacing Enabled is showing Yes, discuss this with your EMC z/TPF technical resources.

Write Pacing Stats On  Indicates whether Write Pacing statistics collection is enabled:
Yes - Statistics collection is enabled.
No - Statistics collection is not enabled. This is the default setting.

Action  Display the SRDF/A session information for the secondary storage system in SRDF group UAF2USG set 3240.

User  ZURDF DIS REM GRO-UAF2USG SET-3240 TYP-SAS

System  CSMP0097I 21.46.51 CPU-B SS-BSS SSU-SSU0 IS-01
E1VA0000I SRDF/A Session Display
Group UAF2USG Set 3240 in Secondary CU 000190100840
SRDF/A Session RDFGroup 07 Active Cycle Number 8600
### Example 8

This example displays the following information.

<table>
<thead>
<tr>
<th>R1/R2 Group</th>
<th>The serial number and RDF group of each side of an SRDF/A MSC set.</th>
</tr>
</thead>
<tbody>
<tr>
<td>MSC Status</td>
<td>Indicates SRDF/A MSC is active.</td>
</tr>
<tr>
<td>Transmit status</td>
<td>Indicates the delta set represented by the Receive tag has completed its transfer to the R2 for this MSC set.</td>
</tr>
<tr>
<td>Apply status</td>
<td>Indicates the delta set represented by the Apply tag has been on the R2 for this set.</td>
</tr>
<tr>
<td>Host Intervention Required</td>
<td>Indicates when Cleanup Running MSC must tell SRDF/A what to do with the complete receive cycle.</td>
</tr>
<tr>
<td>Receive Tag</td>
<td>The tag for the data in the Receive cycle. The Receive Cycle Tag verifies that the multiple SRDF/A sessions in the MSC group are coordinated. When MSC is active, the Receive Cycle Tag functions like the cycle number when SRDF/A is active and MSC is not active.</td>
</tr>
<tr>
<td>Apply Tag</td>
<td>The tag for the data in the apply cycle. The Apply Cycle Tag verifies the multiple SRDF/A sessions in the MSC group are coordinated. When MSC is active, the Apply Cycle Tag functions like the cycle number when SRDF/A is active and MSC is not active.</td>
</tr>
<tr>
<td>Recovery Analysis</td>
<td>When Host Intervention is required for a set, analysis is performed. The display indicates whether clean up should apply or discard the Receive cycle for a given set to achieve data consistency for the SRDF/A MSC group.</td>
</tr>
</tbody>
</table>

**Action**

Display the SRDF/A MSC session information for the primary storage system in SRDF group UAF2USG set 5040.

**User**

ZURDF DIS GRO-UAF2USG SET-5040 TYP-MSC

**System**

```
CSMP0097I  03.34.31 CPU-C SS-BSS SSU-SSU0 IS-01
E1VF0000I SRDF/A Multi-Session Display for Group UAF2USG

00190300346/5 - 00190300346/5 SET-5040
MSC is Active
Transmit Cycle is Complete
Apply Cycle is Complete
Host Intervention Required
Receive Tag = 00000000000000B7 Apply Tag = 00000000000000B6

00190300346/7 - 00190300346/7 SET-3240
MSC is Active
Transmit Cycle is Complete
Apply Cycle is Complete
Host Intervention Required
```
Example 9

**Action**
Display online SRDF target information for SRDF Remote group UTLUHCON Set UTL.

**User**
ZURDF DIS REM GRO-UTLUHCON SET-UTL TYP-ONL

**System**
ZURDF DIS REM GRO-UTLUHCON SET-UTL TYP-ONL
CSMP0097I 18.44.25 CPU-A SS-BSS SSU-SSU0 IS-01
ELAX0001I 18.44.25 SRDF Online Remote Report
Remote Group: UTLUHCON Set: UTL
Target TGT Dir/
Device # NR Path Path Group ID
000000CC 6700 880007354E2096C9043DC1
6800 880007354E2096C9043DC1
000000CD 6700 880007354E2096C9043DC1
6800 880007354E2096C9043DC1

End of Display

Example 10

This example displays the following Storage Resource Pool (SRP) information for storage system that runs HYPERMAX OS 5977 or higher on which the specified set resides:

**SRP Name**
The name of the storage system SRP that contains the thin devices in the specified set.

**Description**
The description of the specified SRP.

**ID**
The ID of the specified SRP.

**CKD/FBA Default**
Specifies whether the pool is the default SRP for CKD or FBA devices.

**Resv Cap**
The maximum percentage limit of Capacity permitted to be allocated as Snap tracks.

**DSE Max Cap**
The maximum percentage limit of Capacity permitted to be allocated as DSE tracks.

**Capacity**
The CKD and FBA raw data device capacity within the SRP specified in tracks.

**Free**
The unallocated raw capacity within the SRP specified in tracks and the percentage of capacity. These tracks have not yet been formatted.

**Allocated**
The allocated raw capacity within the SRP specified in tracks and the percentage of capacity. These are tracks that have been formatted.

**Snap**
The number of updated SnapVX session tracks and the percentage of capacity.

**DSE**
The number of SRDF spillover tracks and the percentage of capacity.

**Subscribed**
The number of thin device tracks and the percentage of capacity.
SRDF Commands

**Action**  Display Storage Pool Resource (SRP) information for the SRP associated with SRDF Group YFYH, Set 1.

**User**  ZURDF DIS GRO-YFYH SET-1 TYP-SRP

**System**

CSMP0097I 11.23.39 CPU-A SS-BSS SSU-SU0 IS-01
USRP0012I SRP ID Display for Local CU 000196701170

SRP Name: SRP_1
Description: (None)
ID: 0001  CKD Default: Y  FBA Default: Y  Resv Cap: 11 pct
DSE Max Cap: 0(GB)

<table>
<thead>
<tr>
<th></th>
<th>CKD</th>
<th>PCT</th>
<th>FBA</th>
<th>PCT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Capacity</td>
<td>136 669 680</td>
<td></td>
<td>13 295 520</td>
<td></td>
</tr>
<tr>
<td>Free</td>
<td>104 638 441</td>
<td>76</td>
<td>9 875 087</td>
<td>74</td>
</tr>
<tr>
<td>Allocated</td>
<td>32 031 239</td>
<td>23</td>
<td>3 420 433</td>
<td>25</td>
</tr>
<tr>
<td>Snap</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>DSE</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Subscribed</td>
<td>90 309 240</td>
<td>66</td>
<td>4 570 095</td>
<td>34</td>
</tr>
</tbody>
</table>

End of Display

**Example 11**

This example displays the following Disk Group (DGP) information for storage system, that runs HYPERMAX OS 5977 or higher, on which the specified set resides:

- **Disk Group**: The name of the storage system DGP that contains the thin devices in the specified set.
- **SRP**: The name of the storage system SRP associated with the Disk Group.
- **ID**: The ID of the specified DGP.
- **Class**: Specifies the device type of the DGP: Flash, Fibre, SAS.
- **Speed**: Specifies the device speed of the DGP: Flash, 15K, 10K, 7200.
- **Prot**: Raid protection of the specified DGP: 1, 5, 6, 7.
- **Unformatted Capacity**: Total for the DGP in GB.
- **Capacity**: The CKD and FBA raw data device capacity within the DGP specified in tracks.
- **Free**: The unallocated raw capacity within the DGP specified in tracks and the percentage of capacity. These tracks have not yet been formatted.
- **Allocated**: The allocated raw capacity within the DGP specified in tracks and the percentage of capacity. These are tracks that have been formatted.
- **Snap**: The number of updated SnapVX session tracks and the percentage of capacity.
- **DSE**: The number of SRDF spillover tracks and the percentage of capacity.

**Action**  Display Disk Group (DGP) information for the DGP associated with SRDF Group YFYH, Set 1.

**User**  ZURDF DIS GRO-YFYH SET-1 TYP-DGP

**System**
Example 12

This example displays the following Storage Group (SGP) information for storage system, that runs HYPERMAX OS 5977 or higher, on which the specified set resides:

**SGP**
- The name of the storage system SGP associated with the Disk Group.

**ID**
- The ID of the specified SGP.

**Device Count**
- The number of thin devices assigned to the SGP.

**SRP**
- The name of the Symmetrix system SRP on associated with the Storage Group.

**FAST**
- Specifies whether the SGP is FAST managed.

**RDFC**
- SRDF coordination state enabled for FAST.

**SLO**
- Service Level Objective level assigned to the SGP:
  - Diamond = Emulates EFD performance.
  - Platinum = Emulates performance between 15K drive and EFD.
  - Gold = Emulates 15K drive performance.
  - Silver = Emulates 15K drive performance.
  - Bronze = Emulates 15K drive performance.
  - Optimized = The system achieves optimal performance with available resources.

**SLO ID**
- The ID of the specified SLO.

**Devs**
- Starting and ending device numbers of all ranges of thin devices assigned to the SGP.

**Action**
- Display Storage Group (SGP) information for the SGP associated with SRDF Group YFYH, Set 1.

**User**
- ZURDF DIS GRO-YFYH SET-1 TYP-SGP

**System**

CSMP0097I 14.44.14 CPU-A SS-BSS SSU-SSU0 IS-01
USR0001I SGP ALL Display for Remote CU 000196701305

------

**SGP: GUEST_INTERNAL_SG**

<table>
<thead>
<tr>
<th>ID</th>
<th>0001</th>
<th>Device Count: 117</th>
</tr>
</thead>
<tbody>
<tr>
<td>SRP</td>
<td>SRP_1</td>
<td>FAST: N RDFC: Y</td>
</tr>
<tr>
<td>SLO</td>
<td>Optimized</td>
<td>WORKLOAD: (None)</td>
</tr>
<tr>
<td>SLO ID</td>
<td>0001</td>
<td></td>
</tr>
</tbody>
</table>

**End of Display**
SRDF Commands

Devs: START    END        START    END        START    END
-----------------------------------------------------------------
00000002 00000012 | 00000102 00000112 | 00000202 00000212
00000302 00000312 | 00000402 00000412 | 00000002 00000412
-----------------------------------------------------------------
End of Display

Example 13

This example displays the following Service Level Objectives (SLO) information for the storage system, that runs HYPERMAX OS 5977 or higher, on which the specified set resides:

SLO          The SLO category, and is one of:
Diamond = Emulates EFD performance.
Platinum = Emulates performance between 15K drives and EFD.
Gold = Emulates 15K drive performance.
Silver = Emulates 15K drive performance.
Optimized = The system achieves optimal performance with the available resources.

Workload     Work load type intended for specified SLO.

ID           The ID of the specified SLO.

Approx Average The average response time, in microseconds. This is a weighted average of the I/O time for all devices in the SGP.
Response Time

Description   Free-form description assigned to the SLO.

Action        Display all SLO information for the storage system associated with SRDF Group YFYH, Set 1.

User          ZURDF DIS GRO-YFYH SET-1 TYP-SLO

System

CSMP0097I 15.38.14 CPU-A SS-BSS SSU-SSU0 IS-01
USRPO040I SLO ALL Display for Remote CU 000196701305

SLO: Optimized WORKLOAD: (None)
ID : 0000 Approx Average Response Time (usec): 65535
Description: System w

SLO: Diamond WORKLOAD: OLTP
ID : 0001 Approx Average Response Time (usec): 850
Description: Emulatin

SLO: Platinum WORKLOAD: OLTP
ID : 0002 Approx Average Response Time (usec): 3000
Description: Emulatin

SLO: Gold WORKLOAD: OLTP
ID : 0003 Approx Average Response Time (usec): 5050
Description: Emulatin

SLO: Silver WORKLOAD: OLTP
ID : 0004 Approx Average Response Time (usec): 8050
Description: Emulatin

SLO: Bronze WORKLOAD: OLTP
ID : 0005 Approx Average Response Time (usec): 14050
Description: Emulatin

End of Display
ZURDF DISPLAY CTLRCD

Display summary information for the SRDF Master control record, or the SRDF Control Unit control record.

Requirements and restrictions

Configure SRDF control records to ensure that the display is accurate.

Format

ZURDF DISPLAY [LOCAL|REMOTE] CTLRCD-MA|CU

Parameters

LOCAL A host-attached storage system, or the member of an SRDF pair that is the least number of hops away from the host-attached storage system.

REMOTE Control record summary for the storage system in the set(s) furthest from the locally attached storage system.

CTLRCD-MA Display Master Control Record summary.

CTLRCD-CU Display Control Unit Summary for all sets in all SRDF groups.

Examples

Example 1

This example displays the following information:

- **SRDF Version**: The SRDF Control software version.
- **Modification**: The SRDF Control software modification number.
- **Revision**: The SRDF Control software revision number.
- **Ctlrcd Backup/Restore**: The time and date the SRDF control records were last backed up or restored.
- **Config Accept**: The time and date the SRDF control records were last modified and accepted.
- **SRDF Groups**: The number of SRDF groups configured.

**Action** Display the SRDF Master Control record.

**User** ZURDF DIS CTLRCD-MA

**System**

CSMP0097I 11.54.14 CPU-A SS-BSS SSU-SSU0 IS-01

EIRR00001 Master Control Record Summary

- **SRDF Version**: 0008 **Modification**: 0000 **Revision**: 0000
- **Ctlrcd backup time**: 21.54.00 **Date**: 01/16/16
- **Config accept time**: 00.45.07 **Date**: 12/11/15
- **SRDF Groups**: 5

End of Display
### Example 2

This example displays the following information:

<table>
<thead>
<tr>
<th>Group Name</th>
<th>The SRDF group.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Local/Remote</td>
<td>Identifies the position of the first storage system displayed for all sets for the specified SRDF group.</td>
</tr>
<tr>
<td>Serial #</td>
<td>The storage system serial number.</td>
</tr>
<tr>
<td>Set Name</td>
<td>The set in which the storage system is configured.</td>
</tr>
<tr>
<td>MHL</td>
<td>The RDF group path to the remote storage system of the set.</td>
</tr>
<tr>
<td>Model</td>
<td>The model of the storage system.</td>
</tr>
<tr>
<td>Ucode</td>
<td>The Enginuity or HYPERMAX OS version number.</td>
</tr>
<tr>
<td>GP</td>
<td>The RDFGroup in this storage system used to communicate with the other storage system member in the Set.</td>
</tr>
<tr>
<td>SDA</td>
<td>The SDA through which all SRDF operations are issued.</td>
</tr>
<tr>
<td>MOD</td>
<td>The symbolic module number of the SDA.</td>
</tr>
<tr>
<td>SSN</td>
<td>The name of the MDBF subsystem of the SDA.</td>
</tr>
<tr>
<td>GKD</td>
<td>SDA defined as a z/TPF gatekeeper - Yes or No.</td>
</tr>
<tr>
<td>Synchd</td>
<td>Synch direction defined for the storage system.</td>
</tr>
<tr>
<td>Orient.</td>
<td>SRDF orientation:</td>
</tr>
<tr>
<td></td>
<td>LCLISR1 - Local storage system contains R1s.</td>
</tr>
<tr>
<td></td>
<td>LCLISR2 - Local storage system contains R2s.</td>
</tr>
</tbody>
</table>

**Action**

Display the SRDF Control Unit Summary for all sets in all SRDF groups.

**User**

`ZURDF DIS CTLRCD-CU`

**System**

```plaintext
CSMP0097I 19.16.44 CPU-A SS-BSS SSU-SSU0 IS-01
E1RR0000I CU Control Record Summary
Local  Group Name - R1BCV
Set Name - RAG0  MHL-100
  Serial #  Model  GP  Ucod  SDA  MOD  SSN  GKD  Sync  Orient.
  000184505047  8430  100  5568  3340  0100  BSS  No   R1R2
  000185400212  8230  100  5568  3340  0100  BSS  No   R1R2
Set Name - RAG1  MHL-100
  Serial #  Model  GP  Ucod  SDA  MOD  SSN  GKD  Sync  Orient.
  000184505047  8430  100  5568  3340  0100  BSS  No   R1R2
  000185400212  8230  100  5568  3340  0100  BSS  No   R1R2
Local  Group Name - UVAS1
Set Name - RAG2  MHL-  24-  80
  Serial #  Model  GP  Ucod  SDA  MOD  SSN  GKD  Sync  Orient.
  000184505047  8430  80   5568  3340  0100  BSS  3346  R1R2
  000185400212  8230  80   5568  3340  0100  BSS  3346  R1R2
Set Name - RAG3  MHL- 24-  80
  Serial #  Model  GP  Ucod  SDA  MOD  SSN  GKD  Sync  Orient.
  000184505047  8430  80   5568  3340  0100  BSS  No   R1R2
  000185400212  8230  80   5568  3340  0100  BSS  No   R1R2
Local  Group Name - MH
Set Name - 2323  MHL- 1- 12-  40
  Serial #  Model  GP  Ucod  SDA  MOD  SSN  GKD  Sync  Orient.
  000185400212  8230  40  5568  3640  00F4  BSS  No   Glbl LCLISR1
  000184505047  8430  40  5568  3640  00F4  BSS  No   Glbl
Set Name - 3232  MHL- 1- 12-  40
  Serial #  Model  GP  Ucod  SDA  MOD  SSN  GKD  Sync  Orient.
  000184505047  8430  40  5568  3640  00F4  BSS  No   Glbl LCLISR1
  000185400212  8230  40  5568  3640  00F4  BSS  No   Glbl LCLISR1
Local  Group Name - UVAS2
```
<table>
<thead>
<tr>
<th>Set Name</th>
<th>Serial #</th>
<th>Model</th>
<th>GP</th>
<th>Ucod</th>
<th>SDA</th>
<th>MOD</th>
<th>SSN</th>
<th>GKD</th>
<th>Sync Orient</th>
</tr>
</thead>
<tbody>
<tr>
<td>RAG4</td>
<td>000185400212</td>
<td>8430</td>
<td>14</td>
<td>5568</td>
<td>3640</td>
<td>00F4</td>
<td>BSS</td>
<td>No</td>
<td>Glbl LCLISR2</td>
</tr>
<tr>
<td>RAG5</td>
<td>000184505047</td>
<td>8230</td>
<td>14</td>
<td>5568</td>
<td>3640</td>
<td>00F4</td>
<td>BSS</td>
<td>No</td>
<td>Glbl</td>
</tr>
</tbody>
</table>
SRDF Commands

ZURDF DISplay PROp

Display the properties of an SRDF group.

Requirements and restrictions

Configure SRDF control records to ensure the display is accurate.

Format

ZURDF DISplay GROup-cccccccc PROp-GEN|TAR|NRD|CRT|SWA|ASY|SUS

Parameters

GROup
PROp-GEN
PROp-TAR
PROp-NRD
PROp-CRT
PROp-SWA
PROp-ASY
PROp-SUS

The one- to eight-alphanumeric character name of an SRDF group
Display GENeral properties
Display TARget properties
Display NRDy properties
Display CRTpair properties
Display SWApair properties
Display ASYnc properties
Display SUSpend properties

Examples

Example 1

Action
Display target properties for SRDF group SRDFA.

User
ZURDF DIS GRO-SRDFA PRO-TAR

System

CSMP0097I 13.30.19 CPU-A SS-BSS SSU-SSU0 IS-01
E1V30000I SRDF Target Properties Display
Local SRDF Group - SRDFA
--------------------------------------------------------------------------------
Options
ONLDEV: ON
Permissions
ONLDEV: ON
--------------------------------------------------------------------------------
End of Display
Example 2

**Action**
Display general properties for SRDF/A group SRDFA.

**User**
ZURDF DIS GRO-SRDFA PRO-GEN

**System**

CSMP0097I 13.33.03 CPU-A SS-BSS SSU-SSU0 IS-01
E1V300000I SRDF General Properties Display

Local SRDF Group - SRDFA

----
Processing Delay Timer: 3
Scheduler Timeout: 1
Persistent Monitor: OFF

Monitor Interval Timer: 4
CTRLCD Refresh: ON
Ops Verification: ON

Mode check: NONE
R1 To Larger R2: OFF
Sync Direction: NONE

QOS: 0 is set

----
SRDF/A Mode: MSC
Drop Policy: Drop All
Heartbeat Interval: 5

Window Open Threshold: 1
Cycle Switch Timeout: 12

Cycle Time: User Defined - 15

Drop Priority: System Default

Transmit Idle: System Default

Cache Percentage: System Default

End of Display
SRDF Commands

ZURDF DISPLAY STAtus

Display any of the following:

- The status of current or previous SRDF base or range operation for the specified SRDF group
- The SRDF Group Status
- The invalid track summary of the SRDF Group

Requirements and restrictions

Status is maintained for the last operation for all sets in the SRDF group and the last operation for any one set in the SRDF group. This may be the status for an operation to the local or remote storage system in the set(s). SRDF Controls for z/TPF software does not differentiate between local and remote for the Status display.

Format

ZURDF DISPLAY GROUP-cccccccc STAtus-ALL|RAN|GST|ITR|CTL

Parameters

GROUP-cccccccc The one- to eight- alphanumeric character name of an SRDF group.
STAtus-ALL Status of the last operation on all sets in the SRDF group.
STAtus-RAN Status of last range operation on a single set in the SRDF group.
STAtus-GST Group status item summary.
STAtus-ITR Group invalid track summary.
STAtus-CTL Display Control Unit Summary for all sets in specified group.

Example explanation

The examples in this section display the following information:

Start Time The time the SRDF operation was issued.
End Time The time the SRDF operation completed.
Date The date the SRDF operation was issued and/or completed.
CU Serial # The physical control unit serial number.
Opr SDA The SRDF operation symbolic device address.
Complete The number of SRDF volumes (or RLDs) for which the SRDF operation is complete.
In Progress The number of SRDF volumes (or RLDs) for which the SRDF operation is active.
Not started The number of SRDF volumes (or RLDs) for which the SRDF operation was not initiated.
Opr RC Summary The last non-zero return code returned for the issued operation, if applicable.
Examples

Example 1

Action
Display the status of the last completed operation for all sets in SRDF group SRDFA.

User  ZURDF DIS GRO-SRDFA STA-ALL

System
CSMP0097I 13.36.10 CPU-A SS-BSS SSU-SSU0 IS-01
URDF1031I SRDF Status Display
SRDF Group: SRDFA Base Operation: Delpair
Status: Successfully Completed
Start Time : 02.58.13 Date : 11/21/15
End Time   : 02.58.22 Date : 11/21/15
End of Display

Example 2

Action
Display the status of the last completed operation on a single set in SRDF group SRDFA.

User  ZURDF DIS GRO-SRDFA STA-RAN

System
CSMP0097I 13.38.37 CPU-A SS-BSS SSU-SSU0 IS-01
URDF1009I SRDF Status Display
SRDF Group: SRDFA Set:46C0 Range Operation: Target
Status: Successfully Completed
Start Time : 05.00.00 Date : 11/21/15
End of Display

Example 3

Action
Display the status of the SRDF operation for all sets in SRDF group R1BCV prior to monitor completion.

User  ZURDF DIS GRO-R1BCV STA-ALL

System
CSMP0097I 01.19.21 CPU-G SS-BSS SSU-SSU0 IS-01
URDF1031I SRDF Status Display
SRDF Group: R1BCV Base Operation: Resume
Status: Monitor Active
Start Time : 01.18.39 Date : 03/24/10

<table>
<thead>
<tr>
<th>Opr</th>
<th>In</th>
<th>Not</th>
<th>Opr</th>
<th>RC</th>
<th>Itrks</th>
<th>Pct</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operation Status</td>
<td>______</td>
<td>____</td>
<td>____</td>
<td>____</td>
<td>____</td>
<td>____</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Set Name</th>
<th>CU Serial #</th>
<th>SDA Complete</th>
<th>Progress</th>
<th>Started</th>
<th>Summary</th>
<th>Itrks</th>
<th>Pct</th>
</tr>
</thead>
<tbody>
<tr>
<td>RAG0</td>
<td>000190100840 50C1</td>
<td>0</td>
<td>36</td>
<td>0</td>
<td>0000</td>
<td>8 109</td>
<td>97</td>
</tr>
<tr>
<td>RAG1</td>
<td>000190100840 50C0</td>
<td>0</td>
<td>36</td>
<td>0</td>
<td>0000</td>
<td>10 147</td>
<td>96</td>
</tr>
</tbody>
</table>

End of Display
Example 4

This example displays the following information:

- **SRDF Group**: The name of the SRDF group.
- **Base Operation**: The last SRDF operation issued for the SRDF group.
- **GST Item at**: The core address of the GST Item for the SRDF group.
- **Operation **...**: The status of the SRDF operation.
- **Start Time**: The time the SRDF operation was started.
- **End Time**: The time the SRDF operation completed.
- **Ops Event Name**: The event name used to control the SRDF operation.
- **MSC Cycle Switch**: Active | Inactive: The status of Multi-Session Consistency (MSC) cycle switch controls.
- **MSC Inactive Sets**: A full word bitmap indicating which sets in the SRDF group are currently not cycle switching. For example, 0000000F indicates that the first four sets in the SRDF group are not cycle switching.
- **MSC Event Name**: The event name used to control MSC cycle switching for the SRDF group.
- **MSC Cycle Tag**: The MSC cycle tag to be used for the next SRDF/A MSC cycle switch. This may be out of date data if the display is performed on a processor which is not actively cycle switching.
- **CPUs Available to Cycle Switch**: Processors in the z/TPF complex that are active.
- **CPUs Cycle Switch Monitoring**: Processors which have the cycle switch monitor running.
- **MSC Window Open Statistics**: Timestamp of last MSC Window open logging event.
- **MSC Window Open**: MSC Window open duration on last logged cycle switch.
- **Longest Time Open**: Longest MSC Window open duration since threshold last set.

**Action**: Display the Group Status Item Summary for SRDF group UED2USA.

**User**

ZURDF DIS GRO-UED2USA STA-GST

**System**

CSMP0097I 11.00.49 CPU-A SS-BSS SSU-SSU0 IS-01
URDF1031I SRDF Status Display
SRDF Group: UED2USA Base Operation: Async

---

**GST Item at** 11B47100  **Grp ctl rcd ord** 00000171

**Operation Successfully Completed**

**Start Time** : 03.24.32  **Date** : 10/16/09
**End Time** : 03.25.19  **Date** : 10/16/09

**MSC Cycle Switch Active**

**MSC Inactive Sets** 00000000

**MSC Window Open Statistics** last logged at 21.00.39 on 10/16/09

**MSC Window open** 6 msec

**Longest Time Open** 8 msec

---

**CPUs Available to Cycle Switch** ABC
**CPUs Cycle Switch Monitoring** ABC

End of Display
Example 5

This example displays the following information:

- **SRDF Group**: The name of the SRDF group.
- **Base Operation**: The last SRDF operation issued for the SRDF group.
- **Status**: The status of the SRDF base operation.
- **Set Name**: The Set name in the SRDF Group.
- **CU Serial #**: The Control Unit Serial number designated by the Set name.
- **Pairs**: The number of SRDF device pairs in the Set.
- **Total Tracks**: The total number of tracks allocated on the device pairs in the Set.
- **Trks to Sync**: The number of tracks still to synchronize in the Set. This count equals Total Tracks when the status of the targets is RW.
- **Pct**: The percentage of tracks in the Set still to synchronize.
- **Group Totals**: Group values for total tracks, tracks still to synchronize, and percentage of tracks to synchronize.

**Action**: Display the Group invalid track summary for SRDF Group UTL2UIH

**User**: ZURDF DIS GRO-UTL2UIH STA-ITR

**System**

ZURDF1031I SRDF Status Display
SRDF Group: UTL2UIH Base Operation: Suspend
Status: Successfully Completed

<table>
<thead>
<tr>
<th>Set Name</th>
<th>CU Serial #</th>
<th>Pairs</th>
<th>Total Tracks</th>
<th>Trks to Sync</th>
<th>Pct</th>
</tr>
</thead>
<tbody>
<tr>
<td>4C004E40</td>
<td>000192604124</td>
<td>16</td>
<td>801 360</td>
<td>4 716</td>
<td>1</td>
</tr>
<tr>
<td>4C104E50</td>
<td>000192604124</td>
<td>16</td>
<td>801 360</td>
<td>4 668</td>
<td>1</td>
</tr>
</tbody>
</table>

Group Totals:

|                  | 1 602 720 | 9 384 | 1 |

End of Display

Example 6

This example displays the following information:

- **Group Name**: The name of the SRDF group.
- **Local/Remote**: Identifies the position of the first storage system displayed for all sets for the specified SRDF group.
- **Serial #**: The storage system serial number.
- **Set Name**: The set in which the storage system is configured.
- **MHL**: The RDF group path to the remote storage system of the set.
- **Model**: The model of the storage system.
- **Ucode**: The level of Enginuity or HYPERMAX OS.
- **GP**: The RDFGroup in this storage system used to communicate with the other member in the Set.
- **SDA**: The SDA through which all SRDF operations are issued.
- **MOD**: The symbolic module number of the SDA.
- **SSN**: The name of the MDBF subsystem of the SDA.
SRDF Commands

GKD        SDA defined as a z/TPF gatekeeper or No.
Syncd      Synchronization direction defined for the storage system.
Orient     SRDF orientation:
           LCLISR1 - Local storage system contains R1s.
           LCLISR2 - Local storage system contains R2s.

Action     Display the CU control record summary for SRDF Group GRO-1.
User       ZURDF DIS GRO-1 STA-CTL
System

E1RR00001I CU Control Record Summary
Local Group Name - 1
Set Name - 4CC0      MHL- 52
Serial #   Model   GP   Ucod   SDA   MOD   SSN   GKD   Sync Orient.
000192604124   VMAX200K   52   5977   4CE0   0102   BSS   No   Glbl   LCLISNP
000190100840   VMAX40K   52   5876   30C0   0100   BSS   No   Glbl
Set Name - 30C0      MHL- 52
Serial #   Model   GP   Ucod   SDA   MOD   SSN   GKD   Sync Orient.
000190100840   VMAX40K   52   5876   30C0   0100   BSS   No   Glbl   LCLISNP
000192604124   VMAX40K   52   5876   30C0   0100   BSS   No   Glbl
End of Display
ZURDF GRP DISplay

Display information on one or more RDFGroups in a storage system identified by an SDA and a multi-hop list.

Requirements and restrictions

This command is available for storage systems that run Enginuity 5773 and higher, or HYPERMAX OS.

Format

ZUGRP Display SDA-ccud [PRG-ddd] [MHL1-dd. dd MHL2-dd.dd]

Parameters

DIS Display the specified RDFGroups in the storage system identified by the SDA.
SDA-ccud The TPF SDA of the storage system.
PRG-ddd The identifier of the primary RDFGroup. Use a value between 0 and 250 (decimal).
MHL1 RDFGroups that define the path to the primary storage system. You can use up to four hops each of one to three decimal digits.
MHL2

Examples

The examples in this section display the following information:

DIR The number of the director on the primary storage system, in decimal.
PT The number of the port on the primary or secondary storage system, in decimal.
GRP The number of the RDFGroup on the primary storage system, in decimal.
Partner S/N The serial number of the secondary storage system CU.
ODR The director number on the secondary storage system, in decimal.
OGP The number of the RDF Group on the secondary storage system, in decimal.
RCS Where:
R is the Remote Link Director type:
M identifies a source Remote Link Director
S identifies a target Remote Link Director
F identifies a fibre Remote Link Director
C is the status of the port connection:
Y means that the link path is established
N means that there is no established link path
S is the status of the link:
Y means that the link is on line
N means that the link is not online
GRP Label The label of the RDFGroup.
Type The type of the RDFGroup:
Dynamic
Static
Example 1

**Action**
Display RDFGroup information for all RDFGroups in the storage system identified by the SDA 4E60.

**User**
ZURDF GRP DIS SDA-4E60

**System**

CSMP0097I 09.23.54 CPU-A SS-BSS SSU-SSU0 IS-01

E1W00001I Dynamic RDFGroup display for CU 000195700079 Microcode 5876

<table>
<thead>
<tr>
<th>DIR</th>
<th>GRP</th>
<th>Partner S/N</th>
<th>ODR</th>
<th>OGP</th>
<th>RCS</th>
<th>GRP Label</th>
<th>Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>86</td>
<td>249</td>
<td>000195700080</td>
<td>86</td>
<td>248</td>
<td>FYY</td>
<td>MFIG2IHF8</td>
<td>Dynamic</td>
</tr>
<tr>
<td>89</td>
<td>248</td>
<td>000195700086</td>
<td>89</td>
<td>248</td>
<td>FYY</td>
<td>MFIG2IHF8</td>
<td>Dynamic</td>
</tr>
<tr>
<td>86</td>
<td>247</td>
<td>000195700086</td>
<td>86</td>
<td>247</td>
<td>FYY</td>
<td>MFIG2IHF7</td>
<td>Dynamic</td>
</tr>
<tr>
<td>89</td>
<td>247</td>
<td>000195700086</td>
<td>89</td>
<td>247</td>
<td>FYY</td>
<td>MFIG2IHF7</td>
<td>Dynamic</td>
</tr>
<tr>
<td>86</td>
<td>247</td>
<td>000195700086</td>
<td>86</td>
<td>247</td>
<td>FYY</td>
<td>MFIG2IHF7</td>
<td>Dynamic</td>
</tr>
<tr>
<td>86</td>
<td>65</td>
<td>000197100061</td>
<td>65</td>
<td>65</td>
<td>FYY</td>
<td>061:41:079</td>
<td>Dynamic</td>
</tr>
<tr>
<td>89</td>
<td>65</td>
<td>000197100061</td>
<td>65</td>
<td>65</td>
<td>FYY</td>
<td>061:41:079</td>
<td>Dynamic</td>
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<td>89</td>
<td>65</td>
<td>000197100061</td>
<td>65</td>
<td>65</td>
<td>FYY</td>
<td>061:41:079</td>
<td>Dynamic</td>
</tr>
<tr>
<td>86</td>
<td>9</td>
<td>000195700080</td>
<td>86</td>
<td>8</td>
<td>FYY</td>
<td>CGAUTO</td>
<td>Dynamic</td>
</tr>
<tr>
<td>86</td>
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<td>000195700080</td>
<td>89</td>
<td>9</td>
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<td>FYY</td>
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<td>5</td>
<td>000195700086</td>
<td>86</td>
<td>5</td>
<td>FYY</td>
<td>MFIG2IH05</td>
<td>Dynamic</td>
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<tr>
<td>86</td>
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<td>86</td>
<td>4</td>
<td>FYY</td>
<td>BRONSON2</td>
<td>Dynamic</td>
</tr>
<tr>
<td>86</td>
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<td>000190300353</td>
<td>49</td>
<td>18</td>
<td>FYY</td>
<td>CGTESTR2</td>
<td>Dynamic</td>
</tr>
<tr>
<td>89</td>
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<td>000195700080</td>
<td>86</td>
<td>2</td>
<td>FYY</td>
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<td>000195700080</td>
<td>86</td>
<td>0</td>
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<td>Dynamic</td>
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<tr>
<td>86</td>
<td>6</td>
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<td>6</td>
<td>FYY</td>
<td>CKDGRP</td>
<td>Static</td>
</tr>
<tr>
<td>86</td>
<td>6</td>
<td>000195700080</td>
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<td>6</td>
<td>FYY</td>
<td>CKDGRP</td>
<td>Static</td>
</tr>
<tr>
<td>89</td>
<td>6</td>
<td>000195700080</td>
<td>89</td>
<td>6</td>
<td>FYY</td>
<td>CKDGRP</td>
<td>Static</td>
</tr>
<tr>
<td>89</td>
<td>6</td>
<td>000195700080</td>
<td>89</td>
<td>6</td>
<td>FYY</td>
<td>CKDGRP</td>
<td>Static</td>
</tr>
<tr>
<td>86</td>
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<td>89</td>
<td>1</td>
<td>FYY</td>
<td>RDFGRP520</td>
<td>Static</td>
</tr>
<tr>
<td>86</td>
<td>1</td>
<td>000195700080</td>
<td>86</td>
<td>1</td>
<td>FYY</td>
<td>RDFGRP520</td>
<td>Static</td>
</tr>
<tr>
<td>89</td>
<td>1</td>
<td>000195700080</td>
<td>89</td>
<td>1</td>
<td>FYY</td>
<td>RDFGRP520</td>
<td>Static</td>
</tr>
<tr>
<td>89</td>
<td>1</td>
<td>000195700080</td>
<td>89</td>
<td>1</td>
<td>FYY</td>
<td>RDFGRP520</td>
<td>Static</td>
</tr>
</tbody>
</table>

End of Display

Example 2

**Action**
Display RDFGroup information for all RDFGroups in the storage system identified by the SDA 4700.

**User**
ZURDF GRP DIS SDA-4700

**System**

CSMP0097I 09.30.13 CPU-A SS-BSS SSU-SSU0 IS-01

E1VU00001I Dynamic RDFGroup display for CU 000197100061 Microcode 5977

<table>
<thead>
<tr>
<th>DIR</th>
<th>PT</th>
<th>GRP</th>
<th>Partner S/N</th>
<th>ODR</th>
<th>PT</th>
<th>OGP</th>
<th>RCS</th>
<th>GRP Label</th>
</tr>
</thead>
<tbody>
<tr>
<td>65</td>
<td>11</td>
<td>65</td>
<td>000195700079</td>
<td>86</td>
<td>0</td>
<td>FYY</td>
<td>061:41:079</td>
<td></td>
</tr>
<tr>
<td>65</td>
<td>11</td>
<td>65</td>
<td>000195700079</td>
<td>89</td>
<td>0</td>
<td>FYY</td>
<td>061:41:079</td>
<td></td>
</tr>
<tr>
<td>65</td>
<td>11</td>
<td>71</td>
<td>000196700257</td>
<td>70</td>
<td>8</td>
<td>71</td>
<td>FYY</td>
<td>257:47:061</td>
</tr>
<tr>
<td>66</td>
<td>11</td>
<td>71</td>
<td>000196700257</td>
<td>70</td>
<td>8</td>
<td>71</td>
<td>FYY</td>
<td>257:47:061</td>
</tr>
</tbody>
</table>

End of Display
ZURDF GRP ADD

Create RDFGroups between storage systems connected through a fibre channel or GigE.

Requirements and restrictions

- This command is available on storage systems that run Enginuity 5773 and higher, or HYPERMAX OS.
- To add RDFGroups to a storage system that runs Enginuity 5874 and earlier, configure the system with one or more RDFGroups in a switched SRDF environment.
  - This restriction does not apply for Enginuity 5875 and higher or HYPERMAX OS.
- Static RDFGroups are not available in HYPERMAX OS 5977 and higher.

Format

ZUGRP ADD SDA-ccud PRG-ddd SRG-ddd SCU-cccccccccc PD1-ddd.ddd
[PD2-ddd.ddd PD3-ddd.ddd PD4-ddd.ddd]SD1-ddd.ddd
[SD2-ddd.ddd SD3-ddd.ddd] [LABel-cccccccccc]
[MHL1-ddd.ddd MHL2-ddd.ddd] [NOVERIFY] [FIBRE|GIGE]

Parameters

ADD Add the specified RDFGroups to the specified primary and secondary RDF directors and the specified RDFGroup label.
SDA-ccud The TPF SDA of the storage system.
PRG-ddd The identifier of the primary RDFGroup. Use a value between 0 and 250 (decimal).
SRG The identifier of the secondary RDFGroup. use a value between 0 and 250 (decimal). If you omit this parameter the default value is the same value as the PRG parameter.
SCU The serial number of the secondary VMX CU.
PD1 The primary director-port pairs. There can be up to four director-port pairs or eight directors, each identified by one to three decimal digits. For systems that run Enginuity 5773 use numbers between 1 and 64. For systems that run Enginuity 5874 and higher or HYPERMAX OS, use numbers between 1 and 128.
PD2
PD3
PD4
SD1 The secondary director-port pairs, there can be up to four director-port pairs or eight directors, each identified by one to three decimal digits. For systems that run Enginuity 5773 use numbers between 1 and 64. For systems that run Enginuity 5874 and higher or HYPERMAX OS, use numbers between 1 and 128.
The RDF director numbers specified in parameters PD1 to PD4 and SD1 to SD4 identify the directors that the specified RDFGroup is added on. For systems running Enginuity 5876 and earlier to add an existing, dynamic RDFGroup to one or more directors on the primary system only, always specify the directors on the secondary side that are already part of the RDFGroup using the SD1 to SD4 parameters. To add an existing, dynamic RDFGroup to one or more directors on the secondary side only, always specify the directors on the primary side that are already part of the RDFGroup using the PD1 to PD4 parameters.

**Examples**

**Example 1**

<table>
<thead>
<tr>
<th>Action</th>
<th>Add RDFGroup 65 to the primary storage system identified by SDA 4E60 and the secondary storage system with a CU serial number of 000197100061. The RDFGroup is added to the primary storage system directors 86 and 89 and the secondary director-port pairs of 65.11 and 66.11.</th>
</tr>
</thead>
<tbody>
<tr>
<td>User</td>
<td>ZURDF GRP ADD SDA-4E60 SCU-000197100061 PRG-65 PD1-86.89 SD1-65.11 SD2-66.11 NOVER FIBR</td>
</tr>
<tr>
<td>System</td>
<td>CSMP0097I 14.04.42 CPU-A SS-BSS SSU-SSU0 IS-01 URDF0229E Dynamic RDFGroup Controls operation complete</td>
</tr>
</tbody>
</table>
Example 2

**Action**
Add RDFGroup 71 to the primary VMX identified by SDA 4700 and the secondary storage system with a CU serial number of 000196700257. The RDFGroup is added to the primary storage system director-port pair of 66.11 and the secondary storage system director-port pair of 70.8. This is the first RDFGroup added to this pair of storage systems and so NOVERIFY and the link type parameters are mandatory.

**User**
ZURDF GRP ADD SDA-4700 SCU-000196700257 PRG-71
PD1-66.11 SD1-70.8 NOVE FIBR

**System**
CSMP0097I 09.48.34 CPU-A SS-BSS SSU-SSU0 IS-01
URDF0229E Dynamic RDFGroup Controls operation complete

**Action**
Display RDFGroup 71 for the primary storage system identified by SDA 4700.

**User**
ZURDF GRP DIS SDA-4700 PRG-71

**System**
CSMP0097I 09.48.50 CPU-A SS-BSS SSU-SSU0 IS-01
E1VU00001I Dynamic RDFGroup display for CU 000197100061 Microcode 5977
DIR PT GRP Partner S/N ODR PT OGP RCS GRP Label
66 11 71 000196700257 70 8 71 FYY 061:47:257
End of Display

**Action**
Add RDFGroup 71 to the primary storage system identified by SDA 4700 and the secondary storage system with a CU serial number of 000196700257. The RDFGroup is added to the secondary VMAX director-port pair of 70.9.

**User**
ZURDF GRP ADD SDA-4700 SCU-000196700257 PRG-71
SD1-70.9

**System**
CSMP0097I 09.49.02 CPU-A SS-BSS SSU-SSU0 IS-01
URDF0229E Dynamic RDFGroup Controls operation complete

**Action**
Display RDFGroup 71 for the primary storage system identified by SDA 4700.

**User**
ZURDF GRP DIS SDA-4700 PRG-71

**System**
CSMP0097I 09.49.04 CPU-A SS-BSS SSU-SSU0 IS-01
E1VU00001I Dynamic RDFGroup display for CU 000197100061 Microcode 5977
DIR PT GRP Partner S/N ODR PT OGP RCS GRP Label
66 11 71 000196700257 70 8 71 FYY 061:47:257
66 11 71 000196700257 70 9 71 FYY 061:47:257
End of Display

**Action**
Add RDFGroup 71 to the primary storage system identified by SDA 4700 and the secondary storage system with a CU serial number of 000196700257. The RDFGroup is added to the primary storage system director-port pair of 65.11 and the secondary storage system director-port pair of 68.8.

**User**
ZURDF GRP ADD SDA-4700 SCU-000196700257 PRG-71
PD1-65.11 SD1-68.8

**System**
CSMP0097I 09.49.26 CPU-A SS-BSS SSU-SSU0 IS-01
URDF0229E Dynamic RDFGroup Controls operation complete
Action
Display RDFGroup 71 for the primary storage system identified by SDA 4700.

User
ZURDF GRP DIS SDA-4700 PRG-71

System
CSMP0097I 09.49.27 CPU-A SS-BSS SSU-SSU0 IS-01
E1VU0001I Dynamic RDFGroup display for CU 000197100061 Microcode 5977
DIR PT GRP Partner S/N ODR PT OGP RCS GRP Label
65 11 71 000196700257 68 8 71 FYY 061:47:257
65 11 71 000196700257 70 8 71 FYY 061:47:257
65 11 71 000196700257 70 9 71 FYY 061:47:257
66 11 71 000196700257 68 8 71 FYY 061:47:257
66 11 71 000196700257 70 8 71 FYY 061:47:257
66 11 71 000196700257 70 9 71 FYY 061:47:257
End of Display
ZURDF GRP DEL

Delete RDFGroups between pairs of storage systems connected through Fibre channel or GigE.

Requirements and restrictions

This command is available for storage systems that run Enginuity 5773 and higher or HYPERMAX OS.

Format

ZUGRP DEL SDA-ccud PRG-ddd SRG-ddd SCU-cccccccccccc
[ PD1-ddd.ddd PD2 ddd.ddd PD3-ddd.ddd PD4-ddd.ddd ]
[ SD1-ddd.ddd SD2-ddd.ddd SD3-ddd.ddd SD4-ddd.ddd ]
[ LABel-cccccccc [MHL1-ddd.ddd MHL2-ddd.ddd] ]

Parameters

DELETE Delete the specified RDFGroups to the specified primary and secondary RDF directors and the specified RDFGroup label.

SDA-ccud The TPF SDA of the storage system.

PRG-ddd The identifier of the primary RDFGroup. Use a value between 0 and 250 (decimal).

SRG The identifier of the secondary RDFGroup. use a value between 0 and 250 (decimal). If you omit this parameter the default value is the same value as the PRG parameter.

SCU The serial number of the secondary storage system CU.

PD1 The primary director-port pairs. There can be up to four director-port pairs or eight directors, each identified by one to three decimal digits. For systems that run Enginuity 5773 use numbers between 1 and 64. For systems that run Enginuity 5874 and higher or HYPERMAX OS, use numbers between 1 and 128.

SD1 The secondary director-port pairs. there can be up to four director-port pairs or eight directors, each identified by one to three decimal digits. For systems that run Enginuity 5773 use numbers between 1 and 64. For systems that run Enginuity 5874 and higher or HYPERMAX OS, use numbers between 1 and 128.
SRDF Commands

Additional information

- The RDF director numbers specified in parameters PD1 to PD4 and SD1 to SD4 identify the directors that the specified RDFGroup is removed from.
- To keep the RDFGroup on all RDF directors on the primary side, omit parameters PD1 to PD4.
- To keep the RDFGroup on all directors on the secondary side, omit the parameters SD1 to SD4.
- To delete the RDFGroup from all directors on both the primary and secondary storage systems omit the parameters PD1 to PD4 and SD1 to SD4.
- Deleting an RDFGroup from a director removes all paths for that RDFGroup from that director to all directors in its partner storage system.

Examples

Example 1

| Action | Delete RDFGroup 15 on the primary storage system identified by SDA 4E60 and RDFGroup 14 on the secondary storage system with the CU serial number 000195700080 from primary director 89 and secondary director 89. The primary storage system runs Enginuity 5876 and you cannot specify a primary or secondary director on the DEL command. |
| User | ZURDF GRP DEL SDA-4E60 SCU-000195700080 PRG-15 SRG-14 LAB-UIGUIHSM |
| System | CSMP0097I 09.38.27 CPU-A SS-BSS SSU-SSU0 IS-01 URDF0231E Invalid RDF director |
Example 2

**Action**
Delete RDFGroup 15 on the primary storage system identified by SDA 4E60 and RDFGroup 14 on the secondary storage system with the CU serial number of 000195700080 from primary director 89. The primary storage system runs Enginuity 5876 so you cannot delete primary or secondary director.

**User**
ZURDF GRP DEL SDA-4E60 SCU-000195700080 PRG-15 SRG-16 LAB-UIGUIHSM

**System**
CSMP0097I 09.38.27 CPU-A SS-BSS SSU-SSU0 IS-01
URDF0229E Dynamic RDFGroup Controls operation complete

Example 3

**Action**
Delete RDFGroup 71 on the primary storage system identified by SDA 4700 and the secondary storage system with the CU serial number of 000196700257. The RDFGroup is to be deleted from the secondary director-port pair of 68.8.

**User**
ZURDF GRP DEL SDA-4700 SCU-000196700257 PRG-71 SD1-68.8

**System**
CSMP0097I 10.01.43 CPU-A SS-BSS SSU-SSU0 IS-01
URDF0229E Dynamic RDFGroup Controls operation complete

**Action**
Display RDFGroup 71 on the primary storage system identified by SDA 4700.

**User**
ZURDF GRP DIS SDA-4700 PRG-71

**System**
CSMP0097I 10.01.48 CPU-A SS-BSS SSU-SSU0 IS-01
E1VU0000I Dynamic RDFGroup display for CU 000197100061 Microcode 5977
DIR PT GRP Partner S/N ODR PT OGP RCS GRP Label
65 11 71 000196700257 70 8 71 FYY 061:47:257
65 11 71 000196700257 70 9 71 FYY 061:47:257
66 11 71 000196700257 70 8 71 FYY 061:47:257
66 11 71 000196700257 70 9 71 FYY 061:47:257
End of Display
ZURDF INITialize CLEar|CONtinue|CANcel

Initialize the SRDF control records with zeros and return the GST to the system heap.

Requirements and restrictions

Ensure that the SRDF control records are configured. After entering ZURDF INI CLEar, enter ZURDF INI CONtinue within two minutes to complete initialization of the SRDF control records. Otherwise the initialization times out.

Format

ZURDF INITialize CLEar|CONtinue|CANcel

Parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>CLEar</td>
<td>Causes SRDF to prepare for initialization of the SRDF control records.</td>
</tr>
<tr>
<td>CONtinue</td>
<td>Causes the SRDF control records to be initialized with hexadecimal zeros and the GST to be returned to system heap.</td>
</tr>
<tr>
<td>CANcel</td>
<td>Causes SRDF to cancel the initialization of the SRDF control records.</td>
</tr>
</tbody>
</table>

Additional information

- Specify ZURDF INI CLEar|CONtinue only if you want to replace the previous SRDF control record configuration. EMC recommends that you back up the SRDF control records (using the ZURDF CTRLRCD command) before using ZURDF INI CLEar.
- Ensure that all BCV or clone groups are split and all SRDF or clone sessions for all groups have been terminated prior to initializing SRDF control records.

Example

<table>
<thead>
<tr>
<th>Action</th>
<th>Prepare to initialize the SRDF control records.</th>
</tr>
</thead>
<tbody>
<tr>
<td>User</td>
<td>ZURDF INI CLEAR</td>
</tr>
</tbody>
</table>

System

CSMP0097I 01.01.06 CPU-C SS-BSS SSU-SSU0 IS-01
E1RH0001W SRDF Control Record Initialization Requested.
*------------------------------------------------------------*
* Ensure all SRDF activity is complete and control records *
* have been backed up, or group and device pair            *
* information recorded, in case re-configuration is required.*
*------------------------------------------------------------*

To continue, enter: ZURDF INI CONTINUE
To cancel, enter: ZURDF INI CANCEL

<table>
<thead>
<tr>
<th>Action</th>
<th>Continue the initialization of the SRDF control records.</th>
</tr>
</thead>
<tbody>
<tr>
<td>User</td>
<td>ZURDF INI CONTINUE</td>
</tr>
</tbody>
</table>

System

CSMP0097I 01.01.22 CPU-C SS-BSS SSU-SSU0 IS-01
URDF0225I INITialize CLEar CONtinueing
CSMP0097I 01.01.45 CPU-C SS-BSS SSU-SSU0 IS-01
URDF0038I SRDF INITialize CLEar complete
Action  
Cancel the initialization of the SRDF control records.

User  
ZURDF INI CANCEL

System  
CSMP0097I  01.04.21 CPU-C SS-BSS  SSU-SSU0 IS-01
URDF0224I INITIALIZE CLEAr timeout or CAnceled
ZURDF INValidate

Perform full volume synchronization in the direction specified by the storage system synchronization direction.

Requirements and restrictions

You can use the command on source (R1) or target (R2) volumes. Ensure synchronization direction is set at the storage system level before using this operation.

When you set the synchronization direction to R1 to R2, use ZURDF INValidate on the source (R1) volume after the successful completion of a ZURDF VALIDate command on the partner target (R2).

When you set the synch direction to R2 to R1, use ZURDF INValidate to the target (R2) volume. Then use the ZURDF VALIDate command to the source (R1).

If you issue ZURDF INValidate to the wrong SRDF device type; for example, to the target (R2) when the synch direction is set to R1 to R2 or when the synch direction is set to NONE, SRDF Operations Verification halts the command.

Format

ZURDF INValidate [LOCal|REMote] GROup-cccccccc [SET-cccccccc] [SDN-hhhhhhhh] [CNT-dddd]

Parameters

INValidate  Set the partner device invalid tracks to the maximum.
LOCal       A host-attached storage system, or the member of an SRDF pair that is the least number of hops away from the host-attached storage system.
REMote      The storage system furthest from the locally attached storage system in the specified set and SRDF group.
GROup-cccccccc A one- to eight-alphanumeric character name of an SRDF group.
SET-cccccccc  A one- to eight-alphanumeric character name for the SRDF set that identifies an SRDF pair.
SDN-hhhhhhhh Starting SRDF device number.
CNT-dddd     Number of SRDF devices.

Additional information

Use the ZURDF INValidate command when all tracks on the SRDF partner volume are considered to be invalid from the perspective of the volume on which the command was issued. Keep in mind that in an SRDF configuration, both storage systems maintain their own tables of invalid tracks for both the source (R1) and target (R2) volumes.
Example

Action | Display all target (R2) devices in the remote storage system in set 46C0 in SRDF group SRDFA.

User | ZURDF DIS REM GRO-SRDFA SET-46C0

System

CSMP0097I 11.38.39 CPU-A SS-BSS SSU-SSU0 IS-01
EIRQ00001 RDF Device ITR Display
Group SRDFA Set 46C0 in Remote CU 000196701305

Action | Display all source (R1) devices in the local storage system in set 46C0 in SRDF group SRDFA.

User | ZURDF DIS GRO-SRDFA SET-46C0

System

CSMP0097I 11.39.08 CPU-A SS-BSS SSU-SSU0 IS-01
EIRQ00001 RDF Device ITR Display
Group SRDFA Set 46C0 in Local CU 000196701170
Action

With the synchronization direction set to R1 → R2, set source (R1) partner device invalid tracks to the maximum for all sets in SRDF group SRDFA.

User

ZURDF INV GRO-SRDFA

System

CSMP0097I 11.41.52 CPU-A SS-BSS SSU-SSU0 IS-01
URDF0019P SRDF Group SRDFA
URDF0019I SRDF Control record refresh started
CSMP0097I 11.41.52 CPU-A SS-BSS SSU-SSU0 IS-01
URDF1043I Local CU 000196701175 discovered for Group SRDFA Set 56C0
CSMP0097I 11.41.52 CPU-A SS-BSS SSU-SSU0 IS-01
URDF1043I Remote CU 000196701305 discovered for Group SRDFA Set 56C0
CSMP0097I 11.41.52 CPU-A SS-BSS SSU-SSU0 IS-01
URDF1043I Local CU 000196701170 discovered for Group SRDFA Set 46C0
CSMP0097I 11.41.52 CPU-A SS-BSS SSU-SSU0 IS-01
URDF1043I Remote CU 000196701305 discovered for Group SRDFA Set 46C0
CSMP0097I 11.41.53 CPU-A SS-BSS SSU-SSU0 IS-01
URDF0024P SRDF Group SRDFA
URDF0024I SRDF Control record refresh completed
CSMP0097I 11.41.53 CPU-A SS-BSS SSU-SSU0 IS-01
E1V00000P SRDF Group SRDFA
E1V00000I SRDF Operation Verification Started
CSMP0097I 11.41.53 CPU-A SS-BSS SSU-SSU0 IS-01
E1V00001P SRDF Group SRDFA
E1V00001I SRDF Group Properties Verification Started
Options Permissions
None
E1V00003I SRDF Device State Verification Started
CSMP0097I 11.41.58 CPU-A SS-BSS SSU-SSU0 IS-01
E1V00004P SRDF Group SRDFA
E1V00004I SRDF Operation Verification Completed
CSMP0097I 11.41.58 CPU-A SS-BSS SSU-SSU0 IS-01
URDF0213P SRDF Group SRDFA
URDF0213I QOS Controls started
CSMP0097I 11.41.58 CPU-A SS-BSS SSU-SSU0 IS-01
URDF0214P SRDF Group SRDFA
URDF0214I QOS Controls completed
CSMP0097I 11.41.58 CPU-A SS-BSS SSU-SSU0 IS-01
URDF1000I SRDF Group SRDFA Set 46C0 started issuing Invalidate
CSMP0097I 11.41.58 CPU-A SS-BSS SSU-SSU0 IS-01
URDF1000I SRDF Group SRDFA Set 56C0 started issuing Invalidate
CSMP0097I 11.41.59 CPU-A SS-BSS SSU-SSU0 IS-01
URDF1001I SRDF Group SRDFA Set 46C0 completed issuing Invalidate
CSMP0097I 11.41.59 CPU-A SS-BSS SSU-SSU0 IS-01
URDF1001I SRDF Group SRDFA Set 56C0 completed issuing Invalidate
CSMP0097I 11.42.02 CPU-A SS-BSS SSU-SSU0 IS-01
URDF1031I SRDF Status Display
SRDF Group: SRDFA Base Operation: Invalidate
Status: Monitor Active
Start Time: 21.41.52 Date: 12/14/15

Operation Status Summary

<table>
<thead>
<tr>
<th>Opr</th>
<th>In</th>
<th>Not</th>
<th>SDA</th>
<th>Complete Progress Started</th>
<th>Summary</th>
<th>Itrks Pct</th>
</tr>
</thead>
<tbody>
<tr>
<td>Opr RC</td>
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<tr>
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<td>Summary</td>
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</table>
End of Display

Action

Display all source (R1) devices in the local storage system in set 46C0 in SRDF group SRDFA.

User

ZURDF DIS GRO-SRDFA SET-46C0

System

CSMP0097I 11.42.24 CPU-A SS-BSS SSU-SSU0 IS-01
## SRDF Commands

**E1RQ00001** RDF Device ITR Display  
**Group SRDFA** Set 46C0 in Local CU 000196701170

<table>
<thead>
<tr>
<th>MDBF Symb</th>
<th>This</th>
<th>Other</th>
<th>RDF Device</th>
<th>Opr</th>
</tr>
</thead>
<tbody>
<tr>
<td>SSN</td>
<td>Mod</td>
<td>SDA</td>
<td>Dev</td>
<td>Dev</td>
</tr>
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<td>46C0</td>
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<td>0121</td>
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<td>0000052B</td>
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</tbody>
</table>

**Action**  
Display all target (R2) devices in the remote storage system in set 46C0 in SRDF group SRDFA.

**User**  
ZURDF DIS REM GRO-SRDFA SET-46C0

**System**  
CSMP0097I 11.42.37 CPU-A SS-BSS SSU-SSU0 IS-01  
E1RQ00001 RDF Device ITR Display  
**Group SRDFA** Set 46C0 in Remote CU 000196701305

<table>
<thead>
<tr>
<th>MDBF Symb</th>
<th>This</th>
<th>Other</th>
<th>RDF Device</th>
<th>Opr</th>
</tr>
</thead>
<tbody>
<tr>
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<td>Mod</td>
<td>SDA</td>
<td>Dev</td>
<td>Dev</td>
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<td>0000052B</td>
<td>00000A0C</td>
</tr>
</tbody>
</table>

End of Display
SRDF Controls for z/TPF Version 8.0.0 Product Guide

SRDF MIGRATE

Migrate SRDF control records from a version 7.1.0 format to a version 8.0.0 format.

Requirements and restrictions

Use MIGRATE after the software program load of SRDF Controls for z/TPF version 8.0.0, and before using any other SRDF Controls for z/TPF commands.

Format

ZURDF MIGRATE

Parameters

None.

Additional information

SRDF Controls for z/TPF version 8.0.0 rejects active commands issued prior to SRDF control record migration. SRDF control record migration converts SRDF Controls for z/TPF version 7.1.0 control records into a format compatible with version 8.0.0.

Migrated control records are reformatted into the configuration control records. Migration is achieved by entering the ZURDF CON ACCEPT ALL command subsequent to the ZURDF MIGRATE command. No other configuration changes may be made between the MIGRATE and the CON ACCEPT commands.

Example

<table>
<thead>
<tr>
<th>Action</th>
<th>Migrate SRDF control records from a version 7.1.0 format to a version 8.0.0 format.</th>
</tr>
</thead>
<tbody>
<tr>
<td>User</td>
<td>ZURDF MIGRATE</td>
</tr>
<tr>
<td>System</td>
<td></td>
</tr>
<tr>
<td>CSMP0097I</td>
<td>20.47.24 CPU-A SS-BSS  SSU-SSU0 IS-01</td>
</tr>
<tr>
<td>URDF0116I</td>
<td>SRDF control record migration started</td>
</tr>
<tr>
<td>CSMP0097I</td>
<td>20.47.26 CPU-A SS-BSS  SSU-SSU0 IS-01</td>
</tr>
<tr>
<td>URDF0100I</td>
<td>SRDF configuration ctl rcd refresh initiated</td>
</tr>
<tr>
<td>CSMP0097I</td>
<td>20.47.32 CPU-A SS-BSS  SSU-SSU0 IS-01</td>
</tr>
<tr>
<td>URDF0117I</td>
<td>SRDF control record migration completed</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Action</th>
<th>Accept the migrated configuration and file down to the SRDF control records.</th>
</tr>
</thead>
<tbody>
<tr>
<td>User</td>
<td>ZURDF CON ACCEPT ALL</td>
</tr>
<tr>
<td>System</td>
<td></td>
</tr>
<tr>
<td>CSMP0097I</td>
<td>20.44.28 CPU-A SS-BSS  SSU-SSU0 IS-01</td>
</tr>
<tr>
<td>URDF0089I</td>
<td>SRDF configuration verifying sessions not open</td>
</tr>
<tr>
<td>CSMP0097I</td>
<td>20.44.28 CPU-A SS-BSS  SSU-SSU0 IS-01</td>
</tr>
<tr>
<td>URDF0105I</td>
<td>SRDF configuration finalizing RDF pairs</td>
</tr>
<tr>
<td>CSMP0097I</td>
<td>20.44.28 CPU-A SS-BSS  SSU-SSU0 IS-01</td>
</tr>
<tr>
<td>URDF0090I</td>
<td>SRDF configuration finalizing RDF Groups</td>
</tr>
<tr>
<td>CSMP0097I</td>
<td>20.44.28 CPU-A SS-BSS  SSU-SSU0 IS-01</td>
</tr>
</tbody>
</table>
URDF0102I SRDF configuration inactive sets removed
CSMP0097I 20.44.28 CPU-A SS-BSS SSU-SSU0 IS-01
URDF0101I SRDF configuration inactive groups removed
CSMP0097I 20.44.28 CPU-A SS-BSS SSU-SSU0 IS-01
URDF0094I SRDF control records updated
CSMP0097I 20.44.28 CPU-A SS-BSS SSU-SSU0 IS-01
URDF1006I SRDF Configuration Accept command complete
SRDF Commands

ZURDF MODe

Set the operational mode of source (R1) devices.

Requirements and restrictions

This command operated on source (R1) devices only.

Format

ZURDF MODe [LOCal|REMote] GROup-cccccccc [SET-cccccccc] [SDN-hhhhhhh] [CNT-dddd] PARm-SYNC|ADCW|ADCD|NADC

Parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>LOCal</td>
<td>A host-attached storage system, or the member of an SRDF pair that is the least number of hops away from the host-attached storage system.</td>
</tr>
<tr>
<td>REMote</td>
<td>The storage system furthest from the locally attached storage system in the specified set and SRDF group.</td>
</tr>
<tr>
<td>GROup-cccccccc</td>
<td>A one- to eight-alphanumeric character name of an SRDF group.</td>
</tr>
<tr>
<td>SET-cccccccc</td>
<td>A one- to eight-alphanumeric character name for an SRDF set that identifies an SRDF pair.</td>
</tr>
<tr>
<td>SDN-hhhhhhh</td>
<td>Starting SRDF device number.</td>
</tr>
<tr>
<td>CNT-dddd</td>
<td>Number of SRDF devices.</td>
</tr>
<tr>
<td>PARm-SYNC</td>
<td>Synchronous mode.</td>
</tr>
<tr>
<td>PARm-ADCW</td>
<td>Adaptive copy write pending mode (Enginuity 5773 to 5876 only).</td>
</tr>
<tr>
<td>PARm-ADCD</td>
<td>Adaptive copy disk mode.</td>
</tr>
<tr>
<td>PARm-NADC</td>
<td>Disable adaptive copy mode.</td>
</tr>
</tbody>
</table>

Additional information

When using the NADC parameter, the change in state takes effect asynchronously after all write pending tracks for the source (R1) have been destaged to the source (R1) and target (R2). This is irrespective of whether the default mode is synchronous or asynchronous. SRDF displays represent the intermediate state as c’AP’ to denote Adaptive Copy Write Pending state pending offline.

Example

<table>
<thead>
<tr>
<th>Action</th>
<th>Change the status of all source (R1) devices in remote storage systems in all sets in SRDF group MH to adaptive copy write pending mode.</th>
</tr>
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<td>URDP1043I Local CU 000185400212 discovered for Group MH Set 2323</td>
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URDF1045I Remote CU 000184505047 discovered for Group MH Set 2323
URDF1043I Local CU 000185400212 discovered for Group MH Set 3232
URDF1045I Remote CU 000184505047 discovered for Group MH Set 3232
URDF0024I SRDF Control record refresh completed
CSMP0097I 02.19.05 CPU-A SS-BSS SSU-SSU0 IS-01
URDF1000I SRDF Control started issuing Mode for Set 2323
CSMP0097I 02.19.05 CPU-A SS-BSS SSU-SSU0 IS-01
URDF1000I SRDF Control started issuing Mode for Set 3232
CSMP0097I 02.19.09 CPU-A SS-BSS SSU-SSU0 IS-01
URDF1001I SRDF Control completed issuing Mode for Set 3232
CSMP0097I 02.19.10 CPU-A SS-BSS SSU-SSU0 IS-01
URDF1001I SRDF Control completed issuing Mode for Set 2323
CSMP0097I 02.19.14 CPU-A SS-BSS SSU-SSU0 IS-01
URDF1031I SRDF Status Display
SRDF Group MH Mode active
Status: Monitor Active
Start Time : 02.19.05 Date : 06/12/04
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</table>
End of Display
URDF1003I SRDF Mode completed
SRDF Commands

ZURDF PROceed|HALt

Proceed with or halt the previous SRDF command issued to the SRDF group. It is issued in response to a warning or informational message from SRDF operation verification. The system checks whether each SRDF command can be successfully completed as entered.

Requirements and restrictions

The verification prompt for the SRDF operation times out after five minutes.

Format

ZURDF PROceed|HALt GROup-cccccccc [SET-cccccccc]

Parameters

GROup-cccccccc  A one- to eight-alphanumeric character name for an SRDF group.
SET-cccccccc    A one- to eight-alphanumeric character name for an SRDF set that identifies an SRDF pair.

Note: This parameter is only valid when the Group STatus Control area is installed.

Example

Action  Change the state of target (R2) devices in the remote storage system of SRDF group U6C2UDC to Read Only. Operation verification indicates that the target (R2) devices are currently online to some system to ensure that the operator understands that there is a consequence to changing the state of the target (R2) devices. The ONLDEV property option is ON for the TARget operation and this SRDF group.

User  ZURDF TAR REM GRO-U6C2UDC PAR-RO

System

19.00.42 CPU-B SS-BSS  SSU-SSU0 IS-01
SRDF Control record refresh started
19.00.42 CPU-B SS-BSS  SSU-SSU0 IS-01
URDF1043I Local CU 000000006207 discovered for Group U6C2UDC Set 3040
CSMP0097I 19.00.42 CPU-B SS-BSS  SSU-SSU0 IS-01
URDF1043I Remote CU 000185400212 discovered for Group U6C2UDC Set 3040
CSMP0097I 19.00.43 CPU-B SS-BSS  SSU-SSU0 IS-01
URDF0024I SRDF Device State Verification Started
CSMP0097I 19.00.43 CPU-B SS-BSS  SSU-SSU0 IS-01
E1V00000I SRDF Operation Verification Started
E1V00000I SRDF Group Properties Verification Started
  Options  Permissions
  ONLDEV  ON
E1V00003I SRDF Device State Verification Started
CSMP0097I 19.00.43 CPU-B SS-BSS  SSU-SSU0 IS-01
SRDF Exception - Group U6C2UDC Set 3040: This side onl RDF devs: 36 of 36
CSMP0097I 19.00.45 CPU-B SS-BSS  SSU-SSU0 IS-01
E1V20001I Review SRDF exceptions above for Group U6C2UDC TARget:
  To proceed, enter: ZURDF PROceed GROup-U6C2UDC
  To halt, enter: ZURDF HALt GROup-U6C2UDC
Action  Proceed with the Target operation.

User  ZURDF PRO GRO-U6C2UDC

System

CSMP0097I 19.00.53 CPU-B SS-BSS SSU-SSU0 IS-01
E1V00004I SRDF Operation Verification Completed
CSMP0097I 19.00.53 CPU-B SS-BSS SSU-SSU0 IS-01
URDF1000I SRDF Group U6C2UDC Set 3040 started issuing Target
CSMP0097I 19.01.02 CPU-B SS-BSS SSU-SSU0 IS-01
URDF1001I SRDF Group U6C2UDC Set 3040 completed issuing Target
CSMP0097I 19.01.06 CPU-B SS-BSS SSU-SSU0 IS-01
URDF1031I SRDF Status Display
SRDF Group: U6C2UDC Base Operation: Target
Status: Monitor Active
Start Time : 19.00.41 Date : 04/13/04
Opr _______Operation Status _______Opr RC
Set Name  CU Serial #   SDA Complete In Progress Not Started Summary
3040  000185400212 3040  36 0 0 0000
End of Display
URDF1003I SRDF Group U6C2UDC Target complete
**ZURDF RDY|NRDy**

Set the SRDF device host state of source (R1) or target (R2) devices.

**Requirements and restrictions**

You can direct the NRDy command to the (R2) devices only. However, you can direct the RDY command to source (R1) or target (R2) devices.

⚠️ **CAUTION**

Setting a z/TPF online device to ‘SRDF not ready’ makes it unavailable to the host.

**Format**

```
ZURDF RDY | NRDy [LOCal|REMo te] GROup-cccccccc [SET-cccccccc]
[SDN-hhhhhhhh] [CNT-dddd]
```

**Parameters**

- **RDY**  
  SRDF ready state.
- **NRDy**  
  SRDF not ready state.
- **LOCa l**  
  A host-attached storage system, or the member of an SRDF pair that is the least number of hops away from the host-attached storage system.
- **REMo te**  
  The storage system furthest from the locally attached storage system in the specified set and SRDF group.
- **GROup-cccccccc**  
  A one- to eight-alphanumeric character name for an SRDF group.
- **SET-cccccccc**  
  A one- to eight-alphanumeric character name for an SRDF set that identifies an SRDF pair.
- **SDN-hhhhhhhh**  
  Starting SRDF device number.
- **CNT-dddd**  
  Number of SRDF devices.

**Examples**

**Example 1**

**Action**  
Set the SRDF device state in the local storage system of set 2323 in SRDF group MH to SRDF not ready.

**User**  
ZURDF NRDy GRO-MH SET-2323

**System**

CSMP0097I 02.24.16 CPU-A SS-BSS SSU-SSU0 IS-01
URDF0019I SRDF Control record refresh started
CSMP0097I 02.24.30 CPU-A SS-BSS SSU-SSU0 IS-01
URDF1043I Local CU 000185400212 discovered for Group MH Set 2323
URDF1043I Remote CU 000184505047 discovered for Group MH Set 2323
URDF0024I SRDF Control record refresh completed
CSMP0097I 02.24.30 CPU-A SS-BSS SSU-SSU0 IS-01
URDF1000I SRDF Control started issuing Nrdy for Set 2323
CSMP0097I 02.24.33 CPU-A SS-BSS SSU-SSU0 IS-01
URDF1001I SRDF Control completed issuing Nrdy for Set 2323
SRDF Commands

Example 2

Action Display devices in RDF group 2323 of SRDF group MH on the remote storage system.
User ZURDF DIS GRO-MH SET-2323
System
Action | Set the SRDF device state in the local storage system of set 2323 in SRDF group MH to SRDF ready.

User | ZURDF RDY GRO-MH SET-2323

System

CSMP0097I 02.28.32 CPU-A SS-BSS SSU-SSU0 IS-01
URDF0019I SRDF Control record refresh started
CSMP0097I 02.28.45 CPU-A SS-BSS SSU-SSU0 IS-01
URDF1043I Local CU 000185400212 discovered for Group MH Set 2323
URDF1045I Remote CU 000184505047 discovered for Group MH Set 2323
URDF0024I SRDF Control record refresh completed
CSMP0097I 02.28.45 CPU-A SS-BSS SSU-SSU0 IS-01
URDF1000I SRDF Control started issuing Rdy for Set 2323
CSMP0097I 02.28.48 CPU-A SS-BSS SSU-SSU0 IS-01
URDF1001I SRDF Control completed issuing Rdy for Set 2323
CSMP0097I 02.28.52 CPU-A SS-BSS SSU-SSU0 IS-01
URDF1033I SRDF Range Status Display
SRDF Group MH Rdy active
Status: Monitor Active
Start Time : 02.28.45 Date : 06/12/04

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End of Display
URDF1003I SRDF Rdy completed

Action | Display devices in RDF group MH of SRDF set 2323 on the remote storage system.

User | ZURDF DIS GRO-MH SET-2323

System

CSMP0097I 02.26.04 CPU-A SS-BSS SSU-SSU0 IS-01
E1R00001I RDF Device ITR Display
Group MH Set 2323 in Remote CU 000196701305

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End of Display
SRDF Commands

ZURDF REFresh

Partially synchronize volumes in the direction specified by the SRDF synchronization direction.

Requirements and restrictions

- You can use this command on source (R1) or target (R2) volumes.
- Ensure that the synchronization direction is set at the storage system level before using this command.

When the synchronization direction is R1 → R2, invalid tracks are refreshed from the source (R1) volume to the target (R2) volume. Enter the REFresh command for the storage system that contains the target (R2) volume. You initiate R1 → R2 synchronization by issuing a subsequent RFRresume command to the storage system that contains the source (R1) volume.

When the synch direction is R1 ← R2, invalid tracks are refreshed from the target (R2) volume to the source (R1) volume. Enter the REFresh command for the storage system that contains the source (R1) volume. You initiate R1 ← R2 synchronization by issuing a subsequent RFRresume command for the storage system that contains the source (R1) volume.

The system makes sure that you do not use the command on the incorrect device type. For example, issuing the command to the R1 device when the synchronization direction is set to R1 → R2 or NONE.

Format

ZURDF REFresh [LOCal|REMote] GROup-cccccccc [SET-cccccccc] [SDN-hhhhhhhhh] [CNT-dddd]

Parameters

REFresh Cause only updated tracks to be refreshed.
LOCal A host-attached storage system, or the member of an SRDF pair that is the least number of hops away from the host-attached storage system.
REMote The storage system furthest from the locally attached storage system in the specified set and SRDF group.
GROup-cccccccc A one- to eight-alphanumeric character name for an SRDF group.
SET-cccccccc A one- to eight-alphanumeric character name for an SRDF set that identifies an SRDF pair.
SDN-hhhhhhhhh Starting SRDF device number.
CNT-dddd Number of SRDF devices.

Additional information

This operation is the first step of a process to refresh only the updated tracks from the SRDF partner volume.
Example

**Action**  
Display all target (R2) devices in the remote storage system in set 46C0 in SRDF group SRDFA.

**User**  
ZURDF DIS REM GRO-SRDFA SET-46C0

**System**

CSMP0097I 12.39.13 CPU-A SS-BSS SSU-SSU0 IS-01
E1RQ0000I RDF Device ITR Display

Group SRDFA  Set 46C0  in Remote CU 000196701170

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</table>

**Action**  
Display all source (R1) devices in the local storage system in set 46C0 in SRDF group SRDFA.

**User**  
ZURDF DIS GRO-SRDF A SET-46C0

**System**

CSMP0097I 12.39.09 CPU-A SS-BSS SSU-SSU0 IS-01
E1RQ0000I RDF Device ITR Display

Group SRDFA  Set 46C0  in Local CU 000196701170

<table>
<thead>
<tr>
<th>MDBF Symb</th>
<th>This</th>
<th>Othr</th>
<th>RDF Device</th>
<th>Group</th>
<th>Status</th>
<th>MR</th>
<th>R1 Itrk</th>
<th>R2 Itrk</th>
<th>RC</th>
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<tbody>
<tr>
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<td>0123</td>
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<td>TNR-SY</td>
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<td>TNR-SY</td>
<td>DL1</td>
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</table>

End of Display
With synchronization direction set to R1 → R2, cause invalid track information to be refreshed between the local and remote storage systems in all sets in SRDF group SRDFA.

**User**

ZURDF REF REM GRO-SRDFA

**System**

SRDF Group SRDFA

SRDF Device State Verification Started

SRDF Group SRDFA

SRDF Operation Verification Completed

SRDF Group SRDFA

SRDF Group Properties Verification Started

Options

Permissions

None

SRDF Device ITR Display

Group SRDFA

Set 46C0

In Remote CU 000196701305

MDBF Symb

This

Othr

RDF Device

GRP Status

MR

R1

Itrk R2

Itrk RC

Action

Display all target (R2) devices in the remote storage system in set 46C0 in SRDF group SRDFA.

**User**

ZURDF DIS REM GRO-SRDFA SET-46C0

**System**

SRDF Group SRDFA

SRDF Device ITR Display

Group SRDFA

Set 46C0

in Remote CU 000196701305

MDBF Symb

This

Othr

RDF Device

GRP Status

MR

R1

Itrk R2

Itrk RC

SSN

Mod

SDA

Dev

Dev

N/A

0000

0000051C

000009FD

20

R/O

DL2

0

3

0000
### SRDF Commands

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<tr>
<th>Action</th>
<th>Display all source (R1) devices on the local storage system in set 46C0 in SRDF group SRDFA.</th>
</tr>
</thead>
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<td><strong>User</strong></td>
<td>ZURDF DIS GRO-SRDFA SET-46C0</td>
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<tr>
<td><strong>System</strong></td>
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</table>

**CSMP0097I 12.41.14 CPU-A SS-BSS SSU-SSU0 IS-01**

**E1RQ00001 RDF Device ITR Display**

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<th>Set 46C0 in Local CU 000196701170</th>
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</thead>
<tbody>
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<td><strong>Symb</strong></td>
<td><strong>This</strong></td>
</tr>
<tr>
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<td>Mod</td>
<td>SDA</td>
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<td>46CF</td>
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</table>

End of Display
ZURDF RESTART

Restart an SRDF operation which was in progress when a system outage occurred.

Requirements and restrictions

- Use RESTART only after a system outage occurred while an SRDF operation was in progress.
- If the Group Status control area (GST) is not installed, RESTART applies only to the most recent base command. If an outage occurs while a range operation is in progress, the range command must be issued.
- The GROup and SET parameters are available only if the GST is installed.
- If you initiate the restarted operation and a pair is already in the required state, no action is performed. The monitor is re-initiated.

Format

ZURDF RESTART GROup-ccecccccc [SET-ccecccccc]

Parameters

GROup-ccecccccc  A one to eight alphanumeric character, user-defined SRDF group name.

SET-ccecccccc   A one to eight alphanumeric character, user-defined SRDF set name that identifies an SRDF pair.
Examples

Example 1

**Action**  Resume the SRDF operational state of the source (R1) devices in the local storage system in all sets in SRDF group R1BCV.

**User**  ZURDF RES GRO-R1BCV

**System**

- ZURDF RES GRO-R1BCV
- CSMP0097I 20.55.03 CPU-A SS-BSS SSU-SSU0 IS-01
- URDF0019I SRDF Control record refresh started
- URDF1043I Local CU 000184505047 discovered for Group R1BCV Set RAG0
- URDF1045I Remote CU 0001854000212 discovered for Group R1BCV Set RAG0
- URDF1043I Local CU 000184505047 discovered for Group R1BCV Set RAG1
- URDF1045I Remote CU 0001854000212 discovered for Group R1BCV Set RAG1
- URDF0024I SRDF Control record refresh completed
- CSMP0097I 20.55.10 CPU-A SS-BSS SSU-SSU0 IS-01
- URDF1000I SRDF Control started issuing Resume for Set RAG0
- URDF1000I SRDF Control started issuing Resume for Set RAG1
- URDF1001I SRDF Control completed issuing Resume for Set RAG0
- URDF1001I SRDF Control completed issuing Resume for Set RAG1
- URDF0031I SRDF Status Display
- SRDF Group R1BCV Resume active
- Status: Monitor Active
- Start Time: 20.55.10 Date: 06/12/04

<table>
<thead>
<tr>
<th>Set Name</th>
<th>CU Serial #</th>
<th>SDA</th>
<th>Complete</th>
<th>In Progress</th>
<th>Not Started</th>
<th>Summary</th>
</tr>
</thead>
<tbody>
<tr>
<td>RAG0</td>
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<td>3340</td>
<td>0</td>
<td>36</td>
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<tr>
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<td>3340</td>
<td>0</td>
<td>36</td>
<td>0</td>
<td>0000</td>
</tr>
</tbody>
</table>

End of Display
SRDF Commands

Example 2

**Action**  
A catastrophic error occurs and z/TPF system IPL is initiated before RESume command completed.

**User**  
ZACOR 64 64

**System**

ZACOR 64 64
CSMP0097I 20.56.04 CPU-A SS-BSS SSU-SSU0 IS-01+
CPSE0051T 20.56.04 IS-0001 SS-BSS SSU-SSU0 SE-000119 CTL-I000001 CATASTROPHI
01000A CVAX40 ????????? +
PSW 050C0000 6401C078
R0-R7 00000000 07B5D048 00A19C50 8506B5C8 00A19C1A 00000001 0000006
R8-R15 0506B000 00A00000 00009B20 00001000 00002000 00237F10 00206000 8506B00
PREVIOUS ERRORS ENCOUNTERED
0119 CTL-I000001+

**Action**  
Once the IPL is complete and z/TPF is stable, restart the RESume.

**User**  
ZURDF RESTART GRO-R1BCV

**System**

CSMP0097I 20.57.32 CPU-A SS-BSS SSU-SSU0 IS-01
URDF0019I SRDF Control record refresh started
CSMP0097I 20.57.39 CPU-A SS-BSS SSU-SSU0 IS-01
URDF1043I Local CU 000184505047 discovered for Group R1BCV Set RAG0
URDF1045I Remote CU 000185400212 discovered for Group R1BCV Set RAG0
URDF1043I Local CU 000184505047 discovered for Group R1BCV Set RAG1
URDF1045I Remote CU 000185400212 discovered for Group R1BCV Set RAG1
URDF0024I SRDF Control record refresh completed
CSMP0097I 20.57.39 CPU-A SS-BSS SSU-SSU0 IS-01
URDF1000I SRDF Control started issuing Resume for Set RAG0
CSMP0097I 20.57.39 CPU-A SS-BSS SSU-SSU0 IS-01
URDF1000I SRDF Control started issuing Resume for Set RAG1
CSMP0097I 20.57.39 CPU-A SS-BSS SSU-SSU0 IS-01
URDF1000I SRDF Control completed issuing Resume for Set RAG0
CSMP0097I 20.57.39 CPU-A SS-BSS SSU-SSU0 IS-01
URDF1000I SRDF Control completed issuing Resume for Set RAG1
CSMP0097I 20.57.43 CPU-A SS-BSS SSU-SSU0 IS-01
URDF1031I SRDF Status Display
SRDF Group R1BCV Resume active
Status: Monitor Active
Start Time : 20.55.10 Date : 06/12/04

<table>
<thead>
<tr>
<th>Set Name</th>
<th>CU Serial #</th>
<th>SDA</th>
<th>Complete</th>
<th>In Progress</th>
<th>Not Started</th>
<th>Summary</th>
</tr>
</thead>
<tbody>
<tr>
<td>RAG0</td>
<td>000184505047 3340</td>
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<td>36</td>
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<tr>
<td>RAG1</td>
<td>000184505047 3340</td>
<td>0</td>
<td>36</td>
<td>0</td>
<td>0000</td>
<td></td>
</tr>
</tbody>
</table>

End of Display
ZURDF RFRresume

Partially synchronize a volume in the direction specified by the SRDF synchronization direction.

Requirements and restrictions

- Use the REFresh command to exchange invalid track information before using RFRresume.
- The devices specified for a RFRresume command must be source (R1) devices. Ensure synchronization direction is set at the storage system level before using this command.

When the synchronization direction is R1 → R2, invalid tracks are refreshed from the source (R1) volume to the target (R2) volume. Enter the RFRresume command for the storage system that contains the source (R1) volume.

When the synchronization direction is R2 → R1, invalid tracks are refreshed from the target (R2) volume to the source (R1) volume. Enter the RFRresume command for the storage system that contains the source (R1) volume.

The system checks the command to prevent you using the command on the incorrect device type. For example, you issue the command to the R1 device when the synchronization direction is set to R1 → R2 or NONE.

- The source (R1) must be in the Target Not Ready (TNR) state. The target (R2) must be in the R/O state.

Format

ZURDF RFRresume [LOCal|REModern] GROup-cccccccc [SET-ccccc] [SDN-hhhhhhhh] [CNT-dddd]

Parameters

- **RFRresume**: Commence synchronization of updated tracks.
- **LOCal**: A host-attached storage system, or the member of an SRDF pair that is the least number of hops away from the host-attached storage system.
- **REModern**: The storage system furthest from the locally attached storage system in the specified set and SRDF group.
- **GROup-cccccccc**: A one- to eight-alphanumeric character name for an SRDF group.
- **SET-ccccc**: A one- to eight-alphanumeric character name for an SRDF set that identifies an SRDF pair.
- **SDN-hhhhhhhh**: Starting SRDF device number.
- **CNT-dddd**: Number of SRDF devices.

Additional information

This operation is the second and final step of a process to refresh only the updated tracks from the SRDF partner volume.
### Example

**Action**
Display all target (R2) devices in the remote storage system in set 46C0 in SRDF group SRDFA.

**User**
ZURDF DIS REM GRO-SRDFA SET-46C0

**System**

---

<table>
<thead>
<tr>
<th>CSMP0097I 12.41.01 CPU-A SS-BSS SSU-SSU0 IS-01</th>
</tr>
</thead>
<tbody>
<tr>
<td>E1RQ0000I RDF Device ITR Display</td>
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<tr>
<td>Group SRDFA Set 46C0 in Remote CU 000196701305</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Symb</th>
<th>This</th>
<th>Othr</th>
<th>RDF Device</th>
<th>Opr</th>
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</tbody>
</table>

**Action**
Display all source (R1) devices in the local storage system in set 46C0 in SRDF group SRDFA.

**User**
ZURDF DIS GRO-SRDFA SET-46C0

**System**

---

<table>
<thead>
<tr>
<th>CSMP0097I 12.41.14 CPU-A SS-BSS SSU-SSU0 IS-01</th>
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<tbody>
<tr>
<td>E1RQ0000I RDF Device ITR Display</td>
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<tr>
<td>Group SRDFA Set 46C0 in Local CU 000196701170</td>
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</table>

<table>
<thead>
<tr>
<th>Symb</th>
<th>This</th>
<th>Othr</th>
<th>RDF Device</th>
<th>Opr</th>
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</thead>
<tbody>
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<td>SSN</td>
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</table>

End of Display
With synchronization direction set to R1 → R2, synchronize updated tracks only for all sets in SRDF group SRDFA.

**User**

SRDF RFR GRO-SRDFA

**System**

<table>
<thead>
<tr>
<th>CSMP0097I</th>
<th>12.41.50 CPU-A SS-BSS SSU-SSU0 IS-01</th>
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<tbody>
<tr>
<td>URDF0019P</td>
<td>SRDF Group SRDFA</td>
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<td>URDF0019I</td>
<td>SRDF Control record refresh started</td>
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<td>CSMP0097I</td>
<td>12.41.56 CPU-A SS-BSS SSU-SSU0 IS-01</td>
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<td>URDF0024I</td>
<td>SRDF Control record refresh completed</td>
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<td>CSMP0097I</td>
<td>12.41.51 CPU-A SS-BSS SSU-SSU0 IS-01</td>
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<tr>
<td>E1V00000I</td>
<td>SRDF Operation Verification Started</td>
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<tr>
<td>E1V00001P</td>
<td>SRDF Group SRDFA</td>
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<td>E1V00001I</td>
<td>SRDF Group Properties Verification Started</td>
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Options

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<th>Permissions</th>
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<tbody>
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**SRDF Status Display**

**SRDF Group:** SRDFA  **Base Operation:** Rfrresume  **Status:** Monitor Active  **Start Time:** 22.41.50  **Date:** 12/14/15

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<tr>
<th>Set Name</th>
<th>CU Serial #</th>
<th>SDA</th>
<th>Complete</th>
<th>Progress</th>
<th>Started</th>
<th>Summary</th>
<th>Itrks</th>
<th>Pct</th>
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End of Display
### SRDF Commands

**Action**
Display all source (R1) devices in the local storage system in set 46C0 in SRDF group SRDFA.

**User**
ZURDF DIS GRO-SRDFA SET-46C0

**System**

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<tr>
<th>Group SRDFA</th>
<th>Set 46C0 in Local</th>
<th>CU 000196701170</th>
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<tbody>
<tr>
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<tr>
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<td>SDA   Dev</td>
<td>GRP Status MR R1 Itrk R2 Itrk RC</td>
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End of Display

**Action**
Display all target (R2) devices in the remote storage system in set 46C0 in SRDF group SRDFA.

**User**
ZURDF DIS REM GRO-SRDFA SET-46C0

**System**

<table>
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<tr>
<th>Group SRDFA</th>
<th>Set 46C0 in Remote</th>
<th>CU 000196701305</th>
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</thead>
<tbody>
<tr>
<td>MDBF Symb</td>
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<td>Opr</td>
</tr>
<tr>
<td>SSN  Mod</td>
<td>SDA   Dev</td>
<td>GRP Status MR R1 Itrk R2 Itrk RC</td>
</tr>
<tr>
<td>N/A 0000 0000 0000051C 000009FD 20 R/O DL2 0 0 0000</td>
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<td>N/A 0000 0000 0000051D 000009FE 20 R/O DL2 0 0 0000</td>
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</table>

End of Display
ZURDF SUSpend|RESume

Set the SRDF operational state of source (R1) devices.

Requirements and restrictions

Use issue this command for source (R1) volumes.

Format

ZURDF SUSpend|RESume [LOCa|REMote] GROуп-cccccccc [SET-cccccccc] [SDN-hhhhhhhh] [CNT-dddd]

Parameters

SUSpend Suspend the operational state.
RESume Resume the operational state.
LOCa A host-attached storage system, or the member of an SRDF pair that is the least number of hops away from the host-attached storage system.
REMote The storage system furthest from the locally attached storage system in the specified set and SRDF group.
GROуп-cccccccc A one- to eight-alphanumeric character name for an SRDF group.
SET-cccccccc A one- to eight-alphanumeric character name for an SRDF set that identifies an SRDF pair.
SDN-hhhhhhhh Starting SRDF device number.
CNT-dddd Number of SRDF devices.

Additional information

If the ITRK property option is enabled, the operator is prompted to halt or proceed if there are invalid tracks on the target (R2) devices.

Examples

Example 1

Action Display devices in the local storage system of set 46C0 in SRDF group SRDFA.
User ZURDF DIS GRO-SRDFA SET=46C0
System

<table>
<thead>
<tr>
<th>Action</th>
<th>Display devices in the local storage system of set 46C0 in SRDF group SRDFA.</th>
</tr>
</thead>
<tbody>
<tr>
<td>User</td>
<td>ZURDF DIS GRO-SRDFA SET=46C0</td>
</tr>
<tr>
<td>System</td>
<td>CSMP0097I 13.31.16 CPU-A SS-BSS SSU-SSU0 IS-01</td>
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<tr>
<td></td>
<td>E1RQ00001 RDF Device ITR Display</td>
</tr>
<tr>
<td></td>
<td>Group SRDFA Set 46C0 in Local CU 000196701170</td>
</tr>
<tr>
<td></td>
<td>MDBF Symb This Othr RDF Device Opr</td>
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<tr>
<td></td>
<td>SSN Mod SDA Dev Dev GRP Status MR R1 Itrk R2 Itrk RC</td>
</tr>
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<tr>
<td>A64</td>
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</tr>
</tbody>
</table>
SRDF Commands

Action
Suspend the operational state of the source R1 devices in the local storage system of all sets in SRDF group SRDFA.

User  ZURDF SUS GRO-SRDFA

System

CSMP0097I 13.31.25 CPU-A SS-BSS SSU-SSU0 IS-01
URDF0019P SRDF Group SRDFA
URDF0019I SRDF Control record refresh started
CSMP0097I 13.31.26 CPU-A SS-BSS SSU-SSU0 IS-01
URDF1043I Local CU 000196701175 discovered for Group SRDFA Set 46C0
CSMP0097I 13.31.26 CPU-A SS-BSS SSU-SSU0 IS-01
URDF1043I Remote CU 000196701305 discovered for Group SRDFA Set 46C0
CSMP0097I 13.31.26 CPU-A SS-BSS SSU-SSU0 IS-01
URDF1043I Local CU 000196701170 discovered for Group SRDFA Set 56C0
CSMP0097I 13.31.26 CPU-A SS-BSS SSU-SSU0 IS-01
URDF1043I Remote CU 000196701305 discovered for Group SRDFA Set 56C0
CSMP0097I 13.31.26 CPU-A SS-BSS SSU-SSU0 IS-01
URDF0024P SRDF Group SRDFA
URDF0024I SRDF Control record refresh completed
CSMP0097I 13.31.26 CPU-A SS-BSS SSU-SSU0 IS-01
E1V00001P SRDF Group SRDFA
E1V00000I SRDF Operation Verification Started
CSMP0097I 13.31.26 CPU-A SS-BSS SSU-SSU0 IS-01
E1V00001P SRDF Group SRDFA
E1V00001I SRDF Group Properties Verification Started
Options

Permissions

None
E1V00003I SRDF Device State Verification Started
CSMP0097I 13.31.31 CPU-A SS-BSS SSU-SSU0 IS-01
E1V00004I SRDF Group SRDFA
E1V00004I SRDF Operation Verification Completed
CSMP0097I 13.31.31 CPU-A SS-BSS SSU-SSU0 IS-01
URDF1000I SRDF Group SRDFA Set 46C0 started issuing Suspend
CSMP0097I 13.31.31 CPU-A SS-BSS SSU-SSU0 IS-01
URDF1000I SRDF Group SRDFA Set 56C0 started issuing Suspend
CSMP0097I 13.31.31 CPU-A SS-BSS SSU-SSU0 IS-01
URDF1000I SRDF Group SRDFA Set 46C0 completed issuing Suspend
CSMP0097I 13.31.32 CPU-A SS-BSS SSU-SSU0 IS-01
URDF1000I SRDF Group SRDFA Set 56C0 completed issuing Suspend
CSMP0097I 13.31.32 CPU-A SS-BSS SSU-SSU0 IS-01
URDF1031I SRDF Status Display
SRDF Group: SRDFA Base Operation: Suspend
Status: Monitor Active
Start Time : 23.31.25 Date : 12/14/15

<table>
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<tr>
<th>Set Name</th>
<th>CU Serial #</th>
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<th>Progress</th>
<th>Started</th>
<th>Summary</th>
<th>Itrks</th>
<th>Pct</th>
</tr>
</thead>
<tbody>
<tr>
<td>46C0</td>
<td>000196701170</td>
<td>44C1</td>
<td>16</td>
<td>0</td>
<td>0</td>
<td>00000</td>
<td>0</td>
<td>100</td>
</tr>
<tr>
<td>56C0</td>
<td>000196701175</td>
<td>54C0</td>
<td>16</td>
<td>0</td>
<td>0</td>
<td>00000</td>
<td>0</td>
<td>100</td>
</tr>
</tbody>
</table>

End of Display
URDF1003I SRDF Group SRDFA Suspend complete
Example 2

**Action**
Display devices in the local storage system of set 46C0 in SRDF group SRDFA.

**User**
ZURDF DIS GRO-SRDFA SET-46C0

**System**

---

**User**
ZURDF RES GRO-SRDFA

**System**

---

**Action**
Resume the operational state of the source R1 devices in the local storage system of all sets in SRDF group SRDFA.

---

**Options**
Permissions
None
SRDF Commands

| CSMP0097I | 13.52.03 CPU-A SS-BSS SSU-SSU0 IS-01 |
| URDF0214P | SRDF Group SRDFA |
| URDF0214I | QOS Controls completed |
| CSMP0097I | 13.52.03 CPU-A SS-BSS SSU-SSU0 IS-01 |
| URDF1000I | SRDF Group SRDFA Set 46C0 started issuing Resume |
| CSMP0097I | 13.52.03 CPU-A SS-BSS SSU-SSU0 IS-01 |
| URDF1000I | SRDF Group SRDFA Set 56C0 started issuing Resume |
| CSMP0097I | 13.52.03 CPU-A SS-BSS SSU-SSU0 IS-01 |
| URDF1001I | SRDF Group SRDFA Set 46C0 completed issuing Resume |
| CSMP0097I | 13.52.03 CPU-A SS-BSS SSU-SSU0 IS-01 |
| URDF1001I | SRDF Group SRDFA Set 56C0 completed issuing Resume |
| CSMP0097I | 13.52.06 CPU-A SS-BSS SSU-SSU0 IS-01 |
| URDF1031I | SRDF Status Display |

SRDF Group: SRDFA Base Operation: Resume
Status: Monitor Active
Start Time: 23.51.56 Date: 12/14/15

<table>
<thead>
<tr>
<th>Set Name</th>
<th>CU Serial #</th>
<th>SDA</th>
<th>Complete Progress</th>
<th>Started Summary</th>
<th>Itrks Pct</th>
</tr>
</thead>
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<td>44C1</td>
<td>0</td>
<td>16</td>
<td>0 00000 221 99</td>
</tr>
<tr>
<td>56C0</td>
<td>000196701175</td>
<td>54C0</td>
<td>0</td>
<td>16</td>
<td>0 00000 274 99</td>
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</table>

End of Display

Action
Display devices in the local storage system of set 46C0 in SRDF group SRDFA.

User
ZURDF DIS GRO-SRDFA SET-46C0

System

| CSMP0097I | 13.52.13 CPU-A SS-BSS SSU-SSU0 IS-01 |
| E1RQ0000I | RDF Device ITR Display |

Group SRDFA Set 46C0 in Local CU 000196701170

<table>
<thead>
<tr>
<th>MDDBF Symb</th>
<th>This</th>
<th>Othr</th>
<th>RDF Device</th>
</tr>
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<tr>
<td>SSN Mod SDA Dev Dev GRP Status MR R1 Itrk R2 Itrk RC</td>
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<td></td>
<td></td>
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<td>A64 0128 46C8 000000A05 000000524 20 R/W-SY DL1 0 0 0000</td>
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<tr>
<td>A64 0129 46C9 000000A06 000000525 20 R/W-SY DL1 0 0 0000</td>
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<td>A64 012A 46CA 000000A07 000000526 20 R/W-SY DL1 0 0 0000</td>
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<tr>
<td>A64 012B 46CB 000000A08 000000527 20 R/W-SY DL1 0 0 0000</td>
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<tr>
<td>A64 012C 46CC 000000A09 000000528 20 R/W-SY DL1 0 0 0000</td>
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<tr>
<td>A64 012D 46CD 000000A0A 000000529 20 R/W-SY DL1 0 0 0000</td>
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<tr>
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<td>A64 012F 46CF 000000A0C 000000531 20 R/W-SY DL1 0 0 0000</td>
<td></td>
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<td></td>
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</table>

End of Display
Example 3

**Action**  Suspend synchronization for SRDF group UAF2UEUS. The ITRK property option is enabled and there are invalid tracks on the R2s. Halt the operation.

**User**  ZURDF SUS GRO-UAF2UEUS

**System**

CSMP0097I 23.33.36 CPU-B SS-BSS SSU-SSU0 IS-01
URDF0019P SRDF Group UAF2UEUS
URDF0019I SRDF Control record refresh started
CSMP0097I 23.33.36 CPU-B SS-BSS SSU-SSU0 IS-01
URDF1043I Local CU 000187430936 discovered for Group UAF2UEUS Set UED2UAF
CSMP0097I 23.33.36 CPU-B SS-BSS SSU-SSU0 IS-01
URDF1043I Remote CU 000190100840 discovered for Group UAF2UEUS Set UED2UAF
URDF1043I Local CU 000190100840 discovered for Group UAF2UEUS Set UAF2USG
CSMP0097I 23.33.43 CPU-B SS-BSS SSU-SSU0 IS-01
URDF1043I Remote CU 000190300346 discovered for Group UAF2UEUS Set UAF2USG
CSMP0097I 23.34.19 CPU-B SS-BSS SSU-SSU0 IS-01
URDF0024P SRDF Group UAF2UEUS
URDF0024I SRDF Control record refresh completed
CSMP0097I 23.34.19 CPU-B SS-BSS SSU-SSU0 IS-01
E1V000000P SRDF Group UAF2UEUS
E1V000001P SRDF Operation Verification Started
CSMP0097I 23.34.19 CPU-B SS-BSS SSU-SSU0 IS-01
E1V00001P SRDF Group UAF2UEUS
E1V00001I SRDF Group Properties Verification Started
Options Permissions
ITRK ON
E1V00003I SRDF Device State Verification Started
CSMP0097I 23.34.28 CPU-B SS-BSS SSU-SSU0 IS-01
SRDF Exception - Group UAF2UEUS Set UAF2USG: Invalid tracks on R2: 32 of 32
CSMP0097I 23.34.28 CPU-B SS-BSS SSU-SSU0 IS-01
SRDF Exception - Group UAF2UEUS Set UED2UAF: Invalid tracks on R2: 32 of 32
CSMP0097I 23.34.30 CPU-B SS-BSS SSU-SSU0 IS-01
E1V20001I Review SRDF exceptions above for Group UAF2UEUS SUSpend:
To proceed, enter: ZURDF PROceed GROup-UAF2UEUS
To halt, enter: ZURDF HALt GROup-UAF2UEUS

**Example 4**

**Action**  Suspend synchronization for SRDF group UAF2UEUS. The ITRK property option is enabled and there are invalid tracks on the R2s.

**User**  ZURDF SUS GRO-UAF2UEUS

**System**

CSMP0097I 23.35.07 CPU-B SS-BSS SSU-SSU0 IS-01
URDF0019P SRDF Group UAF2UEUS
URDF0019I SRDF Control record refresh started
CSMP0097I 23.35.07 CPU-B SS-BSS SSU-SSU0 IS-01
CYEM0099E 23.35.07 SIM SCU SERVICE ALERT DVC-1018,TYPE-3390,
CSW-0200,CCW-FA,CHPID-81,SNS-00010000 18008FE0 42000000 00000014 0300013C F8481
47C 05104E00 F1000000
CSMP0097I 23.35.07 CPU-B SS-BSS SSU-SSU0 IS-01
URDF1043I Local CU 000187430936 discovered for Group UAF2UEUS Set UED2UAF
CSMP0097I 23.35.41 CPU-B SS-BSS SSU-SSU0 IS-01
URDF1043I Remote CU 000190100840 discovered for Group UAF2UEUS Set UED2UAF
CSMP0097I 23.35.46 CPU-B SS-BSS SSU-SSU0 IS-01
SRDF Commands

URDF1043I Local CU 000190100840 discovered for Group UAF2UEUS Set UAF2USG
CSMP0097I 23.56.48 CPU-B SS-BSS SSU-SSU0 IS-01
URDF1043I Remote CU 000190300346 discovered for Group UAF2UEUS Set UAF2USG
CSMP0097I 23.57.45 CPU-B SS-BSS SSU-SSU0 IS-01
URDF0024P SRDF Group UAF2UEUS
URDF0024I SRDF Control record refresh completed
CSMP0097I 23.57.45 CPU-B SS-BSS SSU-SSU0 IS-01
EIV00000P SRDF Group UAF2UEUS
EIV00000I SRDF Operation Verification Started
CSMP0097I 23.57.45 CPU-B SS-BSS SSU-SSU0 IS-01
EIV00001P SRDF Group UAF2UEUS
EIV00001I SRDF Group Properties Verification Started
Options Permissions
ITRK ON
EIV20001I Review SRDF exceptions above for Group UAF2UEUS SUSpend:
To proceed, enter: ZURDF PROceed GROup-UAF2UEUS
To halt, enter: ZURDF HALt GROup-UAF2UEUS

Action Display device pairs with invalid tracks on the R2 storage system for SRDF group UAF2UEUS.
User ZURDF DIS GRO-UAF2UEUS SET-UED2UAF TYP-ITR

System
CSMP0097I 23.58.04 CPU-B SS-BSS SSU-SSU0 IS-01
E1RG0001I RDF Device Matrix Display
Group UAF2UEUS Set UED2UAF in Local CU 000187430936
MDBF Symb This Othr RDF Device Opr
SSN Mod SDA Dev Dev GRP Status MR R1 Itrak R2 Itrak RC
B64 0110 6780 00000486 00000700 31 RW-SY DL1 0 681 0000
B64 0111 6781 00000487 00000701 31 RW-SY DL1 0 643 0000
B64 0113 6783 00000489 00000703 31 RW-SY DL1 0 601 0000
B64 0114 6784 0000048A 00000704 31 RW-SY DL1 0 654 0000
B64 0118 6788 0000048E 00000708 31 RW-SY DL1 0 582 0000
B64 011B 678B 00000491 0000070B 31 RW-SY DL1 0 561 0000
B64 011C 678C 00000492 0000070C 31 RW-SY DL1 0 693 0000
B64 011E 678E 00000494 0000070E 31 RW-SY DL1 0 111 0000
B64 0120 6790 00000496 00000710 31 RW-SY DL1 0 594 0000
B64 0123 6793 00000499 00000713 31 RW-SY DL1 0 622 0000
B64 0124 6794 0000049A 00000714 31 RW-SY DL1 0 623 0000
B64 012C 679C 000004A2 0000071C 31 RW-SY DL1 0 583 0000
B64 012E 679E 000004A4 0000071E 31 RW-SY DL1 0 201 0000
End of Display

Action Proceed with the SUSpend operation for SRDF group UAF2UEUS.
User ZURDF PRO GRO-UAF2UEUS

System
EIV00004P SRDF Group UAF2UEUS
EIV00004I SRDF Operation Verification Completed
CSMP0097I 23.58.18 CPU-B SS-BSS SSU-SSU0 IS-01
URDF1000I SRDF Group UAF2UEUS Set UAF2USG started issuing Suspend
CSMP0097I 23.58.18 CPU-B SS-BSS SSU-SSU0 IS-01
URDF1000I SRDF Group UAF2UEUS Set UED2UAF started issuing Suspend
CSMP0097I 23.58.21 CPU-B SS-BSS SSU-SSU0 IS-01
URDF1001I SRDF Group UAF2UEUS Set UAF2USG completed issuing Suspend
CSMP0097I 23.58.21 CPU-B SS-BSS SSU-SSU0 IS-01
URDF1001I SRDF Group UAF2UEUS Set UED2UAF completed issuing Suspend
CSMP0097I 23.58.29 CPU-B SS-BSS SSU-SSU0 IS-01
URDF1031I SRDF Status Display
SRDF Group: UAF2UEUS Base Operation: Suspend
### Status
Status: Monitor Active  
Start Time: 23.56.38  Date: 11/23/09

### Operation Summary

<table>
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<tr>
<th>Set Name</th>
<th>CU Serial #</th>
<th>SDA</th>
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<th>In Progress</th>
<th>Not Started</th>
<th>Summary</th>
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<tbody>
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<td>UAF2USG</td>
<td>00190100840 5043</td>
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<td>UED2UAF</td>
<td>00187430936 6704</td>
<td>32</td>
<td>0</td>
<td>0</td>
<td>0</td>
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</table>

End of Display

**URDF1003I** SRDF Group UAF2UEUS Suspend complete

**Action**
Display device pairs with invalid tracks on the R2 for SRDF group UAF2UEUS.

**User**
ZURDF DIS GRO-UAF2UEUS SET-UED2UAF TYP-ITR

**System**

```
CSMP0097I 23.58.04 CPU-B SS-BSS SSU-SSU0 IS-01
E1RG0001I RDF Device Matrix Display
Group UAF2UEUS Set UED2UAF in Local CU 000187430936

<table>
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<tr>
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<th>Status</th>
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</table>
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End of Display
SRDF Commands

ZURDF SWApair

Swap the SRDF relationship for dynamic RDF pairs. The source (R1) becomes target (R2) and the target (R2) becomes the source (R1).

Requirements and restrictions

- Establish the intended SRDF relationship with the ZURDF CRTpair command (see page 98) before using ZURDF SWApair.
- Always use the SWApair command on the local storage system. SWApair only swaps the dynamic RDF device type and does not transfer the mode, adaptive copy, or readiness states over unless specified on input.
- The state of the source (R1) devices must be Target Not Ready (TNR).
- The SWApair command is not available for Diskless Cascaded SRDF groups.

Format

ZURDF SWAPAIR GROup-cccccccc [SET-cccccccc] [SDN-hhhhhhhh] [CNT-dddd] [R1Mode-SYNC] [R1Adc-NADC|ADCD|ADCW] [R2Rdy-RDY|NRD] [R2State-RO|RW]

Parameters

- **GROup-cccccccc**: A one- to eight-alphanumeric character name for an SRDF group.
- **SET-cccccccc**: A one- to eight-alphanumeric character name for an SRDF set that identifies an SRDF pair.
- **SDN-hhhhhhhh**: Starting SRDF device number.
- **CNT-dddd**: Number of SRDF devices.
- **R1Mode**: SRDF mode of operation for the source (R1):
  - SYNC = Synchronous mode.
- **R1Adc**: Adaptive Copy mode of operation for the source (R1):
  - NADC = No adaptive copy mode (default).
  - ADCD = Adaptive copy disk mode.
  - ADCW = Adaptive copy write pending mode.
- **R2Rdy**: Ready state of the target (R2):
  - RDY = Target (R2) is made ready to the host (default).
  - NRD = Target (R2) is made not ready to the host.
- **R2State**: Host state of the target (R2):
  - RO = Target (R2) is made read only to the host (default).
  - RW = Target (R2) is made read/write to the host.
Additional information

- The R2 in all SWApair operations defaults to RO and RDY on the channel. If a different state is required, specify intended states using the R2Rdy and R2State parameters.

- If an adaptive copy mode is specified the maximum skew value defaults to the maximum value of 65535. Use the ZURDF ADMax|AWMax command (see page 47) to set the maximum skew value.

- The SRDF state of the source (R1) defaults to Target Not Ready (TNR). Synchronization from the R1 to the R2 or from the R2 to the R1 is accomplished using other SRDF commands.

Example

Action  Display remote RDF pairs in set-00TO11. Volumes are in sync mode, ADCD, TNR, and established with the Othr Dev.

User  ZURDF DIS REM GRO-DYNRDF01 SET-00TO11 TYP-MAT

System

CSMP0097I  19.50.03 CPU-A SS-BSS SNU-SSU0 IS-01
E1RQ00001 RDF Device MAT Display
Group DYNRDF01 Set 00TO11 in Remote CU 000196701305
MDBF Symb  This  Othr  RDF
SSN  Mod  SDA  Dev  Dev  GRP  HS  MO  AC  IT  MR  R1-Itrk  R2-Itrk
Disruptive States:  TNR
N/A  0000 0000 0000BB 00000000  7 RW  SY  AD  DL1  0  0
Disruptive States:  TNR
N/A  0000 0000 0000BC 00000001  7 RW  SY  AD  DL1  0  0
Disruptive States:  TNR
N/A  0000 0000 0000BD 00000002  7 RW  SY  AD  DL1  0  0
Disruptive States:  TNR
N/A  0000 0000 0000BE 00000003  7 RW  SY  AD  DL1  0  0
Disruptive States:  TNR
N/A  0000 0000 0000BF 00000004  7 RW  SY  AD  DL1  0  0
Disruptive States:  TNR
N/A  0000 0000 00000C0 00000005  7 RW  SY  AD  DL1  0  0
Disruptive States:  TNR
N/A  0000 0000 00000C1 00000006  7 RW  SY  AD  DL1  0  0
Disruptive States:  TNR
N/A  0000 0000 00000C2 00000007  7 RW  SY  AD  DL1  0  0
Disruptive States:  TNR
N/A  0000 0000 00000C3 00000008  7 RW  SY  AD  DL1  0  0
Disruptive States:  TNR
N/A  0000 0000 00000C4 00000009  7 RW  SY  AD  DL1  0  0
Disruptive States:  TNR
N/A  0000 0000 00000C5 0000000A  7 RW  SY  AD  DL1  0  0
Disruptive States:  TNR
N/A  0000 0000 00000C6 0000000B  7 RW  SY  AD  DL1  0  0
Disruptive States:  TNR
N/A  0000 0000 00000C7 0000000C  7 RW  SY  AD  DL1  0  0
Disruptive States:  TNR
N/A  0000 0000 00000C8 0000000D  7 RW  SY  AD  DL1  0  0
Disruptive States:  TNR
N/A  0000 0000 00000C9 0000000E  7 RW  SY  AD  DL1  0  0
Disruptive States:  TNR
N/A  0000 0000 00000CA 0000000F  7 RW  SY  AD  DL1  0  0
Disruptive States:  TNR
N/A  0000 0000 00000CB 00000010  7 RW  SY  AD  DL1  0  0
Disruptive States:  TNR
N/A  0000 0000 00000CC 00000011  7 RW  SY  AD  DL1  0  0
Disruptive States:  TNR

End of Display
SRDF Commands

**Action**
Display local RDF pairs in set-00TO11. Volumes are N/R to the host and established with the Othr Dev.

**User**
ZURDF DIS GRO-DYNRDF01 SET-00TO11 TYP-MAT

**System**

CSMP0097I 19.50.03 CPU-A SS-BSS SSU-SSU0 IS-01
E1RQ0000I RDF Device MAT Display
Group DYNRDF01 Set 00TO11 in Local CU 000196701170

MDFB Symb This Othr RDF
SSN Mod SDA Dev Dev GRP HS MO AC IT MR R1-Itrk R2-Itrk
N/A 0000 0000 00000000 000000BB 7 NR DL2 0 0
Disruptive States:
N/A 0000 0000 00000001 000000BC 7 NR DL2 0 0
Disruptive States:
N/A 0000 0000 00000002 000000BD 7 NR DL2 0 0
Disruptive States:
N/A 0000 0000 00000003 000000BE 7 NR DL2 0 0
Disruptive States:
N/A 0000 0000 00000004 000000BF 7 NR DL2 0 0
Disruptive States:
N/A 0000 0000 00000005 000000C0 7 NR DL2 0 0
Disruptive States:
N/A 0000 0000 00000006 000000C1 7 NR DL2 0 0
Disruptive States:
N/A 0000 0000 00000007 000000C2 7 NR DL2 0 0
Disruptive States:
N/A 0000 0000 00000008 000000C3 7 NR DL2 0 0
Disruptive States:
N/A 0000 0000 00000009 000000C4 7 NR DL2 0 0
Disruptive States:
N/A 0000 0000 0000000A 000000C5 7 NR DL2 0 0
Disruptive States:
N/A 0000 0000 0000000B 000000C6 7 NR DL2 0 0
Disruptive States:
N/A 0000 0000 0000000C 000000C7 7 NR DL2 0 0
Disruptive States:
N/A 0000 0000 0000000D 000000C8 7 NR DL2 0 0
Disruptive States:
N/A 0000 0000 0000000E 000000C9 7 NR DL2 0 0
Disruptive States:
N/A 0000 0000 0000000F 000000CA 7 NR DL2 0 0
Disruptive States:
N/A 0000 0000 00000010 000000CB 7 NR DL2 0 0
Disruptive States:
N/A 0000 0000 00000011 000000CC 7 NR DL2 0 0
Disruptive States:

End of Display

**Action**
Swap dynamic RDF pairs in SRDF group DYNRDF01. Default parms are R1A-NADC, and R2R-RDY.

**User**
ZURDF SWAPAIR GRO-DYNRDF01

**System**

CSMP0097I 20.08.07 CPU-A SS-BSS SSU-SSU0 IS-01
URDF0019I SRDF Control record refresh started
CSMP0097I 20.08.07 CPU-A SS-BSS SSU-SSU0 IS-01
URDFP0143I Local CU 000184505047 discovered for Group DYNRDF01 Set 00TO11
CSMP0097I 20.08.19 CPU-A SS-BSS SSU-SSU0 IS-01
URDFP0143I Remote CU 000185400212 discovered for Group DYNRDF01 Set 00TO11
CSMP0097I 20.08.19 CPU-A SS-BSS SSU-SSU0 IS-01
URDFP0143I Remote CU 000185400212 discovered for Group DYNRDF01 Set 12TO23
CSMP0097I 20.08.31 CPU-A SS-BSS SSU-SSU0 IS-01
URDFP0143I Remote CU 000185400212 discovered for Group DYNRDF01 Set 12TO23
CSMP0097I 20.08.35 CPU-A SS-BSS SSU-SSU0 IS-01
SRDF Commands

URDF0024I SRDF Control record refresh completed
CSMP0097I 20.08.35 CPU-A SS-BSS SSU-SSU0 IS-01

URDF1000I SRDF Control started issuing Swapair for Set 00TO11
CSMP0097I 20.08.35 CPU-A SS-BSS SSU-SSU0 IS-01

URDF1000I SRDF Control started issuing Swapair for Set 12TO23
CSMP0097I 20.08.35 CPU-A SS-BSS SSU-SSU0 IS-01

URDF1001I SRDF Control completed issuing Swapair for Set 00TO11
CSMP0097I 20.08.36 CPU-A SS-BSS SSU-SSU0 IS-01

URDF1001I SRDF Control completed issuing Swapair for Set 12TO23
CSMP0097I 20.08.39 CPU-A SS-BSS SSU-SSU0 IS-01

URDF1031I SRDF Status Display
SRDF Group DYNRDF01 Swapair active
Status: Monitor Active
Start Time : 20.08.35 Date : 12/20/04

<table>
<thead>
<tr>
<th>Opr</th>
<th>Operation Status</th>
<th>Opr RC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Set Name</td>
<td>CU Serial #</td>
<td>SDA</td>
</tr>
<tr>
<td>00TO11</td>
<td>000184505047 33C0</td>
<td>18</td>
</tr>
<tr>
<td>12TO23</td>
<td>000184505047 33C0</td>
<td>18</td>
</tr>
</tbody>
</table>

End of Display

URDF1003I SRDF Swapair completed
CSMP0097I 19.50.03 CPU-A SS-BSS SSU-SSU0 IS-01
E1RQ0000I RDF Device MAT Display
Group DYNRDF01 Set 00TO11 in Local CU 000196701170

MDF Symb This Othr RDF
SSN Mod SDA Dev Dev GRP HS MO AC IT MR R1-Itrk R2-Itrk
N/A 0000 0000 00000000 000000BB 7 RW SY DL1 0 0
Disruptive States: TNR
N/A 0000 0000 00000001 000000BC 7 RW SY DL1 0 0
Disruptive States: TNR
N/A 0000 0000 00000002 000000BD 7 RW SY DL1 0 0
Disruptive States: TNR
N/A 0000 0000 00000003 000000BE 7 RW SY DL1 0 0
Disruptive States: TNR
N/A 0000 0000 00000004 000000BF 7 RW SY DL1 0 0
Disruptive States: TNR
N/A 0000 0000 00000005 000000C0 7 RW SY DL1 0 0
Disruptive States: TNR
N/A 0000 0000 00000006 000000C1 7 RW SY DL1 0 0
Disruptive States: TNR
N/A 0000 0000 00000007 000000C2 7 RW SY DL1 0 0
Disruptive States: TNR
N/A 0000 0000 00000008 000000C3 7 RW SY DL1 0 0
Disruptive States: TNR
N/A 0000 0000 00000009 000000C4 7 RW SY DL1 0 0
Disruptive States: TNR
N/A 0000 0000 0000000A 000000C5 7 RW SY DL1 0 0
Disruptive States: TNR
N/A 0000 0000 0000000B 000000C6 7 RW SY DL1 0 0
Disruptive States: TNR
N/A 0000 0000 0000000C 000000C7 7 RW SY DL1 0 0
Disruptive States: TNR
N/A 0000 0000 0000000D 000000C8 7 RW SY DL1 0 0
Disruptive States: TNR
N/A 0000 0000 0000000E 000000C9 7 RW SY DL1 0 0
Disruptive States: TNR
N/A 0000 0000 0000000F 000000CA 7 RW SY DL1 0 0
Disruptive States: TNR
N/A 0000 0000 00000010 000000CB 7 RW SY DL1 0 0
Disruptive States: TNR

ZURDF DIS GRO-DYNRDF01 SET-00TO11 TYP-MAT

Action: Display local RDF pairs in set-00TO11. Volumes are TNR, and established with the Othr Dev.

User: ZURDF DIS GRO-DYNRDF01 SET-00TO11 TYP-MAT

System:
CSMP0097I 19.50.03 CPU-A SS-BSS SSU-SSU0 IS-01
E1RQ0000I RDF Device MAT Display
Group DYNRDF01 Set 00TO11 in Local CU 000196701170

MDF Symb This Othr RDF
SSN Mod SDA Dev Dev GRP HS MO AC IT MR R1-Itrk R2-Itrk
N/A 0000 0000 00000000 000000BB 7 RW SY DL1 0 0
Disruptive States: TNR
N/A 0000 0000 00000001 000000BC 7 RW SY DL1 0 0
Disruptive States: TNR
N/A 0000 0000 00000002 000000BD 7 RW SY DL1 0 0
Disruptive States: TNR
N/A 0000 0000 00000003 000000BE 7 RW SY DL1 0 0
Disruptive States: TNR
N/A 0000 0000 00000004 000000BF 7 RW SY DL1 0 0
Disruptive States: TNR
N/A 0000 0000 00000005 000000C0 7 RW SY DL1 0 0
Disruptive States: TNR
N/A 0000 0000 00000006 000000C1 7 RW SY DL1 0 0
Disruptive States: TNR
N/A 0000 0000 00000007 000000C2 7 RW SY DL1 0 0
Disruptive States: TNR
N/A 0000 0000 00000008 000000C3 7 RW SY DL1 0 0
Disruptive States: TNR
N/A 0000 0000 00000009 000000C4 7 RW SY DL1 0 0
Disruptive States: TNR
N/A 0000 0000 0000000A 000000C5 7 RW SY DL1 0 0
Disruptive States: TNR
N/A 0000 0000 0000000B 000000C6 7 RW SY DL1 0 0
Disruptive States: TNR
N/A 0000 0000 0000000C 000000C7 7 RW SY DL1 0 0
Disruptive States: TNR
N/A 0000 0000 0000000D 000000C8 7 RW SY DL1 0 0
Disruptive States: TNR
N/A 0000 0000 0000000E 000000C9 7 RW SY DL1 0 0
Disruptive States: TNR
N/A 0000 0000 0000000F 000000CA 7 RW SY DL1 0 0
Disruptive States: TNR
N/A 0000 0000 00000010 000000CB 7 RW SY DL1 0 0
Disruptive States: TNR
### SRDF Commands

<table>
<thead>
<tr>
<th>Action Display remote RDF pairs in set-00TO11. Volumes are now RO to the host and established with the Othr Dev.</th>
</tr>
</thead>
<tbody>
<tr>
<td>User ZURDF DIS REM GRO-DYNRDF01 SET-00TO11 TYP-MAT</td>
</tr>
</tbody>
</table>

### System

CSMP0097I 19.50.03 CPU-A SS-BSS SSU-SSU0 IS-01
EIRQ00001 RDF Device MAT Display
Group DYNRDF01 Set 00TO11 in Remote CU 000196701305

<table>
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<th>Mod</th>
<th>SDA</th>
<th>Dev</th>
<th>Dev</th>
<th>GRP</th>
<th>HS</th>
<th>MO</th>
<th>AC</th>
<th>IT</th>
<th>MR</th>
<th>R1-Itrk</th>
<th>R2-Itrk</th>
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<td></td>
</tr>
</tbody>
</table>

End of Display
ZURDF SYNchd

Set the synchronization direction of the storage system.

Requirements and restrictions

None.

Format

ZURDF SYNchdirection [LOCal|REMote] GRoup-cccccccc [SET-cccccccc]
PARm-R1R2|R2R1|NONE|GLBL

Parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>LOCal</td>
<td>A host-attached storage system, or the member of an SRDF pair that is the least number of hops away from the host-attached storage system.</td>
</tr>
<tr>
<td>REMote</td>
<td>The storage system furthest from the locally attached storage system in the specified set and SRDF group.</td>
</tr>
<tr>
<td>GRoup-cccccccc</td>
<td>A one- to eight-alphanumeric character name for an SRDF group.</td>
</tr>
<tr>
<td>SET-cccccccc</td>
<td>A one- to eight-alphanumeric character name for an SRDF set that identifies an SRDF pair.</td>
</tr>
<tr>
<td>PARm-R1R2</td>
<td>Synchronization direction is from the source to the target.</td>
</tr>
<tr>
<td>PARm-R2R1</td>
<td>Synchronization direction is from the target to the source.</td>
</tr>
<tr>
<td>PARm-NONE</td>
<td>Synchronization direction is NONE.</td>
</tr>
<tr>
<td>PARm-GLBL</td>
<td>Synchronization direction is as defined by the GLBL synchronization direction.</td>
</tr>
</tbody>
</table>

Additional information

A storage system with synchronization direction set to NONE cannot use the VALidate|INValidate or REFRESH|RFResume processes. When the global synchronization direction is defined as NONE, the storage system with synchronization direction set to GLBL cannot use the VALidate|INValidate or REFRESH|RFResume processes.
Examples

Example 1

Action
Display Control Unit Summary.

User
ZURDF DIS GRO-SRDFA STA-CTL

System
CSMP0097I 16.47.44 CPU-A SS-BSS SSU-SSU0 IS-01
E1RR0000I CU Control Record Summary
Local Group Name - SRDFA
Set Name - 46C0 MHL- 99- 33- 67- 20
  Serial #  Model  GP Ucod SDA MOD SSN GKD Sync Orient.
  000196701170 VMAX200K  20 5977 46C0 0112 BSS 44C1 Glbl LCLISR2
  000196701305 VMAX200K  20 5977 46C0 0114 BSS 44C1 Glbl
Set Name - 56C0 MHL- 99- 33- 67- 20
  Serial #  Model  GP Ucod SDA MOD SSN GKD Sync Orient.
  000196701170 VMAX200K  20 5977 56E0 0113 BSS 54C0 Glbl LCLISR2
  000196701305 VMAX200K  20 5977 56E0 0116 BSS 54C0 Glbl
End of Display

Example 2

Action
Set the synchronization direction of the local storage system in all Sets in SRDF group SRDFA to NONE.

User
ZURDF SYN GRO-SRDFA PAR-NONE

System
CSMP0097I 16.47.44 CPU-A SS-BSS SSU-SSU0 IS-01
E1RR0000I CU Control Record Summary
Local Group Name - SRDFA
Set Name - 46C0 MHL- 99- 33- 67- 20
  Serial #  Model  GP Ucod SDA MOD SSN GKD Sync Orient.
  000196701170 VMAX200K  20 5977 46C0 0112 BSS 44C1 None LCLISR2
  000196701305 VMAX200K  20 5977 46C0 0114 BSS 44C1 Glbl
Set Name - 56C0 MHL- 99- 33- 67- 20
  Serial #  Model  GP Ucod SDA MOD SSN GKD Sync Orient.
  000196701170 VMAX200K  20 5977 56E0 0113 BSS 54C0 None LCLISR2
  000196701305 VMAX200K  20 5977 56E0 0116 BSS 54C0 Glbl
End of Display

Example 3

Action
Set the synchronization direction of the remote storage system in all Sets in SRDF group SRDFA to NONE.

User
ZURDF SYN REM GRO-SRDFA PAR-NONE

System
CSMP0097I 16.47.44 CPU-A SS-BSS SSU-SSU0 IS-01
E1RR0000I CU Control Record Summary
Local Group Name - SRDFA
Set Name - 46C0 MHL- 99- 33- 67- 20
  Serial #  Model  GP Ucod SDA MOD SSN GKD Sync Orient.
  000196701170 VMAX200K  20 5977 46C0 0112 BSS 44C1 None LCLISR2
  000196701305 VMAX200K  20 5977 46C0 0114 BSS 44C1 Glbl
Set Name - 56C0 MHL- 99- 33- 67- 20
  Serial #  Model  GP Ucod SDA MOD SSN GKD Sync Orient.
  000196701170 VMAX200K  20 5977 56E0 0113 BSS 54C0 None LCLISR2
  000196701305 VMAX200K  20 5977 56E0 0116 BSS 54C0 Glbl
End of Display
ZURDF TARget

Set the device status of SRDF target (R2) devices in relation to the target's locally attached host.

Requirements and restrictions

Use this command on target (R2) volumes only.

Format

ZURDF TARget [LOCal|REMote] GROup-cccccccc [SET-cccccccc] [SDN- hhhhhhhh] [CNT- dddd] PARM-RW|RO|RDY|NRDY|DIS|ENA

Parameters

LOCal A host-attached storage system, or the member of an SRDF pair that is the least number of hops away from the host-attached storage system.
REMote The storage system furthest from the locally attached storage system in the specified set and SRDF group.
GROup-cccccccc A one- to eight-alphanumeric character name of an SRDF group.
SET-cccccccc A one- to eight-alphanumeric character Name for an SRDF set that identifies an SRDF pair.
SDN- hhhhhhhh Starting SRDF device number.
CNT- dddd Number of SRDF devices.
PARm-RW Read and write enabled to locally attached host and unavailable for synchronization with source device.
PARm-RO Read only to the locally attached host and available for synchronization with source device.
PARm-RDY Device ready to locally attached host.
PARm-NRDY Device not ready to locally attached host.
PARm-DIS Disable synchronization from source (R1).
PARm-ENA Enable synchronization from source (R1).
Examples

Example 1

**Action**

Display the status of nine target (R2) devices starting with device number x'520' in the remote storage system in set 46C0 in SRDF group SRDFA.

**User**

ZURDF DIS REM GRO-SRDFA SET-46C0 SDN-520 CNT-9

**System**

CSMP0097I 08.05.49 CPU-A SS-BSS SSU-SSU0 IS-01
E1RQ0000I RDF Device ITR Display
Group SRDFA Set 46C0 in Remote CU 000196701305
MDRF Symb This Other RDF Device
SSN Mod SDA Dev Dev GRP Status MR R1 Itrak R2 Itrak RC
N/A 0000 0000 00000520 00000A01 20 R/O DL2 0 293 0000
N/A 0000 0000 00000521 00000A02 20 R/O DL2 0 294 0000
N/A 0000 0000 00000522 00000A03 20 R/O DL2 0 293 0000
N/A 0000 0000 00000523 00000A04 20 R/O DL2 0 293 0000
N/A 0000 0000 00000524 00000A05 20 R/O DL2 0 294 0000
N/A 0000 0000 00000525 00000A06 20 R/O DL2 0 293 0000
N/A 0000 0000 00000526 00000A07 20 R/O DL2 0 293 0000
N/A 0000 0000 00000527 00000A08 20 R/O DL2 0 294 0000
N/A 0000 0000 00000528 00000A09 20 R/O DL2 0 293 0000
End of Display

**Action**

Set the status of target (R2) devices starting with device number x'520' in the remote storage system in set 46C0 in SRDF group SRDFA to read/write enabled.

**User**

ZURDF TAR REM GRO-SRDFA SET-46C0 SDN-520 CNT-9 PAR-RW

**System**

CSMP0097I 08.06.37 CPU-A SS-BSS SSU-SSU0 IS-01
URDF0019P SRDF Group SRDFA Set 46C0
URDF0019I SRDF Control record refresh started
CSMP0097I 08.06.37 CPU-A SS-BSS SSU-SSU0 IS-01
URDF1043I Local CU 000196701170 discovered for Group SRDFA Set 46C0
CSMP0097I 08.06.37 CPU-A SS-BSS SSU-SSU0 IS-01
URDF1043I Remote CU 000196701305 discovered for Group SRDFA Set 46C0
CSMP0097I 08.06.38 CPU-A SS-BSS SSU-SSU0 IS-01
URDF0024P SRDF Group SRDFA Set 46C0
URDF0024I SRDF Control record refresh completed
CSMP0097I 08.06.38 CPU-A SS-BSS SSU-SSU0 IS-01
E1V00000P SRDF Group SRDFA Set 46C0
E1V00000I SRDF Operation Verification Started
CSMP0097I 08.06.38 CPU-A SS-BSS SSU-SSU0 IS-01
E1V00001P SRDF Group SRDFA Set 46C0
E1V00001I SRDF Group Properties Verification Started
Options Permissions
None
E1V00003I SRDF Device State Verification Started
CSMP0097I 08.06.43 CPU-A SS-BSS SSU-SSU0 IS-01
E1V00004P SRDF Group SRDFA Set 46C0
E1V00004I SRDF Operation Verification Completed
CSMP0097I 08.06.43 CPU-A SS-BSS SSU-SSU0 IS-01
URDF1000I SRDF Group SRDFA Set 46C0 started issuing Target
CSMP0097I 08.06.46 CPU-A SS-BSS SSU-SSU0 IS-01
URDF1001I SRDF Group SRDFA Set 46C0 completed issuing Target
CSMP0097I 08.06.49 CPU-A SS-BSS SSU-SSU0 IS-01
URDF1009I SRDF Status Display
SRDF Group: SRDFA Set: 46C0 Range Operation: Target
Status: Monitor Active
Start Time : 18.06.37 Date : 12/15/15
### Operation Status

<table>
<thead>
<tr>
<th>Opr</th>
<th>In</th>
<th>Not</th>
<th>Opr</th>
<th>RC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Set Name</td>
<td>CU</td>
<td>Serial #</td>
<td>SDA</td>
<td>Complete Progress Started Summary</td>
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<td>46C0</td>
<td>000196701305</td>
<td>44C1</td>
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</table>

End of Display

URDF1014I SRDF Group SRDFA Set 46C0 Target complete

**Action**
Display the status of nine target (R2) devices starting with device number x'520' in the remote storage system in set 46C0 in SRDF group SRDFA.

**User**
ZURDF DIS REM GRO-SRDFA SET-46C0 SDN-520 CNT-9

**System**
CSMP0097I 08.07.02 CPU-A SS-BSS SSU-SSU0 IS-01
E1RQ0000I RDF Device ITR Display
Group SRDFA Set 46C0 in Remote CU 000196701305

<table>
<thead>
<tr>
<th>SSN</th>
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<th>SDA</th>
<th>Dev</th>
<th>Dev</th>
<th>GRP</th>
<th>Status</th>
<th>MR</th>
<th>R1</th>
<th>Itrk</th>
<th>R2</th>
<th>Itrk</th>
<th>Opr</th>
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<tbody>
<tr>
<td>N/A</td>
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<td>00000520</td>
<td>00000A01</td>
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<td>293</td>
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<td>N/A</td>
<td>0000</td>
<td>0000</td>
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<td>R/W</td>
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<td>294</td>
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<td>0000</td>
<td>0000</td>
<td>00000522</td>
<td>00000A03</td>
<td>20</td>
<td>R/W</td>
<td>DL2</td>
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<td>DL2</td>
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</tbody>
</table>

End of Display

**Example 2**

**Action**
Display the status of target (R2) devices in the secondary storage system in set 46C0 in SRDF group SRDFA.

**User**
ZURDF DIS REM GRO-SRDFA SET-46C0 TYP-MAT

**System**
CSMP0097I 08.12.50 CPU-A SS-BSS SSU-SSU0 IS-01
E1RQ0000I RDF Device MAT Display
Group SRDFA Set 46C0 in Remote CU 000196701305

<table>
<thead>
<tr>
<th>SSN</th>
<th>Mod</th>
<th>SDA</th>
<th>Dev</th>
<th>Dev</th>
<th>GRP</th>
<th>Status</th>
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<th>R1</th>
<th>Itrk</th>
<th>R2</th>
<th>Itrk</th>
<th>Opr</th>
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<tr>
<td>N/A</td>
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<td>0000051C</td>
<td>000009FD</td>
<td>20</td>
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<td></td>
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<td>0000</td>
<td>0000051D</td>
<td>000009FE</td>
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<td>RO</td>
<td>DL2</td>
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<td></td>
</tr>
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<td>0000</td>
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<td>RO</td>
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</tr>
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<td>N/A</td>
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<tr>
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</tr>
<tr>
<td>N/A</td>
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<td>RO</td>
<td>DL2</td>
<td>0</td>
<td>294</td>
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<tr>
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<td>294</td>
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</tr>
</tbody>
</table>
SRDF Commands

Disruptive States:

| N/A | 0000 0000 | 00000052 A 00000A90 | DL2 | 0 | 293 |
| N/A | 0000 0000 | 00000052 A 00000A0A | DL2 | 0 | 293 |
| N/A | 0000 0000 | 00000052 B 00000A0B | DL2 | 0 | 294 |
| N/A | 0000 0000 | 00000052 A 00000A0C | DL2 | 0 | 293 |

End of Display

Action
Disable synchronization of the target (R2) devices in SRDF Group SRDFA.

User
ZURDF TAR REM GRO-SRDFA PAR-DIS

System
CSMP0097I 08.14.27 CPU-A SS-BSS SSU-SSU0 IS-01
URDF0019P SRDF Group SRDFA Set 46C0
URDF0019I SRDF Control record refresh started
CSMP0097I 08.14.27 CPU-A SS-BSS SSU-SSU0 IS-01
URDF1043I Local CU 000196701170 discovered for Group SRDFA Set 46C0
CSMP0097I 08.14.27 CPU-A SS-BSS SSU-SSU0 IS-01
URDF1043I Remote CU 000196701305 discovered for Group SRDFA Set 46C0
CSMP0097I 08.14.28 CPU-A SS-BSS SSU-SSU0 IS-01
URDF0024P SRDF Group SRDFA Set 46C0
URDF0024I SRDF Control record refresh completed
CSMP0097I 08.14.28 CPU-A SS-BSS SSU-SSU0 IS-01
E1V00000P SRDF Group SRDFA Set 46C0
E1V00000I SRDF Operation Verification Started
CSMP0097I 08.14.28 CPU-A SS-BSS SSU-SSU0 IS-01
E1V00001P SRDF Group SRDFA Set 46C0
E1V00001I SRDF Group Properties Verification Started

Options

ONLDEV ON
E1V00003I SRDF Device State Verification Started
CSMP0097I 08.14.33 CPU-A SS-BSS SSU-SSU0 IS-01
E1V00004P SRDF Group SRDFA Set 46C0
E1V00004I SRDF Operation Verification Completed
CSMP0097I 08.14.33 CPU-A SS-BSS SSU-SSU0 IS-01
URDF1000I SRDF Group SRDFA Set 46C0 started issuing Target
CSMP0097I 08.14.33 CPU-A SS-BSS SSU-SSU0 IS-01
URDF1000I SRDF Group SRDFA Set 46C0 completed issuing Target
CSMP0097I 08.14.36 CPU-A SS-BSS SSU-SSU0 IS-01
URDF1009I SRDF Status Display
SRDF Group: SRDFA Set: 46C0 Range Operation: Target
Status: Monitor Active
Start Time : 18.14.27 Date : 12/15/15

Operation Status

<table>
<thead>
<tr>
<th>Opr</th>
<th>In</th>
<th>Not</th>
<th>Opr RC</th>
<th>Itrks</th>
<th>Pct</th>
</tr>
</thead>
<tbody>
<tr>
<td>Set Name</td>
<td>CU Serial #</td>
<td>SDA</td>
<td>Complete</td>
<td>Progress</td>
<td>Started</td>
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<td>46C0</td>
<td>000196701305</td>
<td>44C1</td>
<td>16</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

End of Display
URDF1014I SRDF Group SRDFA Set 46C0 Target complete
Action Display the status of target (R2) devices in the secondary storage system in set 46C0 in SRDF group SRDFA.

User ZURDF DIS REM GRO-SRDFA SET-46C0 TYP-MAT

System

CSMP0097I 08.14.44 CPU-A SS-BSS SSU-SSU0 IS-01
E1RQ0000I RDF Device MAT Display
Group SRDFA Set 46C0 in Remote CU 000196701305

MDBF Symb This Othr RDF

SSN Mod SDA Dev Dev GRP HS MO AC IT MR R1-Itrk R2-Itrk
N/A 0000 0000 0000051C 000009FD 20 RO DL2 0 241
Disruptive States: DIS
N/A 0000 0000 0000051D 000009FE 20 RO DL2 0 293
Disruptive States: DIS
N/A 0000 0000 0000051E 000009FF 20 RO DL2 0 293
Disruptive States: DIS
N/A 0000 0000 00000520 00000A01 20 RO DL2 0 293
Disruptive States: DIS
N/A 0000 0000 00000521 00000A02 20 RO DL2 0 294
Disruptive States: DIS
N/A 0000 0000 00000522 00000A03 20 RO DL2 0 293
Disruptive States: DIS
N/A 0000 0000 00000523 00000A04 20 RO DL2 0 293
Disruptive States: DIS
N/A 0000 0000 00000524 00000A05 20 RO DL2 0 294
Disruptive States: DIS
N/A 0000 0000 00000525 00000A06 20 RO DL2 0 293
Disruptive States: DIS
N/A 0000 0000 00000526 00000A07 20 RO DL2 0 293
Disruptive States: DIS
N/A 0000 0000 00000527 00000A08 20 RO DL2 0 294
Disruptive States: DIS
N/A 0000 0000 00000528 00000A09 20 RO DL2 0 293
Disruptive States: DIS
N/A 0000 0000 00000529 00000A0A 20 RO DL2 0 293
Disruptive States: DIS
N/A 0000 0000 0000052A 00000A0B 20 RO DL2 0 294
Disruptive States: DIS
N/A 0000 0000 0000052B 00000A0C 20 RO DL2 0 293
Disruptive States: DIS

End of Display
ZURDF VALidate

Perform full volume synchronization in the direction specified by the storage system’s synchronization direction.

Requirements and restrictions

◆ Use this command on source (R1) or target (R2) volumes.
◆ Ensure synchronization direction is set at the storage system level before using this command.

When you set the synchronization direction to R1 to R2, use the VALidate command on the target (R2) volume. This ensures that all of the R1 device tracks are considered valid from the perspective of the target (R2) volume.

Conversely, when you set the synchronization direction to R2 to R1, use the VALidate on the source (R1) volume. This ensures that all of the R2 device tracks are considered valid from the perspective of the source (R1) volume.

The system makes sure that you do not use the command on the incorrect device type. For example, issuing the command to the R1 device when the synchronization direction is set to R1 to R2 or NONE.

Format

ZURDF VALidate [LOCal|REMoTe] GROup-cccccccc [SET-cccccccc] [SDN-hhhhhhhh] [CNT-dddd]

Parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>VALidate</td>
<td>Set partner device invalid tracks to zero.</td>
</tr>
<tr>
<td>LOCal</td>
<td>A host-attached storage system, or the member of an SRDF pair that is the least number of hops away from the host-attached storage system.</td>
</tr>
<tr>
<td>REMote</td>
<td>The storage system furthest from the locally attached storage system in the specified set and SRDF group.</td>
</tr>
<tr>
<td>GROup-cccccccc</td>
<td>A one- to eight-alphanumeric character name for an SRDF group.</td>
</tr>
<tr>
<td>SET-cccccccc</td>
<td>A one- to eight-alphanumeric character name for an SRDF set that identifies an SRDF pair.</td>
</tr>
<tr>
<td>SDN-hhhhhhhh</td>
<td>Starting SRDF device number.</td>
</tr>
<tr>
<td>CNT-dddd</td>
<td>Number of SRDF devices.</td>
</tr>
</tbody>
</table>
### Additional information

VALidate updates the invalid track table to remove all invalid track flags for all tracks on the SRDF partner device. Having done this, all tracks on the SRDF partner volume are considered to be valid from the point of view of the volume on which the command was issued.

Keep in mind that in an SRDF configuration, both storage systems maintain their own invalid track tables for both the source (R1) and target (R2) volumes.

### Example

**Action**  
Display all target (R2) devices in the remote storage system in set 46C0 in SRDF group SRDFA.

**User**  
ZURDF DIS REM GRO-SRDFA SET-46C0

**System**  

<table>
<thead>
<tr>
<th>SSN</th>
<th>Mod</th>
<th>SDA</th>
<th>Dev</th>
<th>Dev</th>
<th>GRP Status</th>
<th>MR</th>
<th>R1</th>
<th>R2</th>
<th>Itrk</th>
<th>R2</th>
<th>Itrk</th>
<th>Opr</th>
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<td>00000A03</td>
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End of Display

**Action**  
Display all source (R1) devices in the local storage system in set 46C0 in SRDF group SRDFA.

**User**  
ZURDF DIS GRO-SRDFA SET-46C0

**System**  

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### Action

With synchronization direction set to R1 → R2, set target R2 partner device invalid tracks to zero in the remote storage system in all sets in SRDF group SRDFA.

### User

**ZURDF VAL REM GRO-SRDFA**

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<th>Operation</th>
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### SRDF Group: SRDFA Base Operation: Validate

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### Status

**Monitor Active**

### Start Time: 21:39.58  Date: 12/14/15

### Operation Status

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End of Display

**URDF1003I SRDF Group SRDFA Validate complete**
Action
Display all target (R2) devices in the remote storage system in set 46C0 in SRDF group SRDFA.

User
ZURDF DIS REM GRO-SRDFA SET-46C0

System
CSMP0097I 11.40.23 CPU-A SS-BSS SSU-SSU0 IS-01
E1RQ0000I RDF Device ITR Display
Group SRDFA Set 46C0 in Remote CU 000196701305

End of Display

Action
Display all source (R1) devices in the local storage system in set 46C0 in SRDF group SRDFA.

User
ZURDF DIS GRO-SRDFA SET-46C0

System
CSMP0097I 11.40.31 CPU-A SS-BSS SSU-SSU0 IS-01
E1RQ0000I RDF Device ITR Display
Group SRDFA Set 46C0 in Local CU 000196701170

End of Display
SRDF Commands

ZURDF WRItteenable

Set the state of source (R1) devices to read/write enable.

Requirements and restrictions

- Use this command on source (R1) devices only.
- The target (R2) devices, that the source (R1) devices are paired with, must be in a read-only state.

Format

ZURDF WRItteenable [LOCal|REMote] GROup-cccccc [SET-ccccc] [SDN-hhhhhhh][CNT-dddd]

Parameters

- WRItteenable: Alter the state of the source (R1) devices to R/W enable.
- LOCal: A host-attached storage system, or the member of an SRDF pair that is the least number of hops away from the host-attached storage system.
- REMote: The storage system furthest from the locally attached storage system in the specified set and SRDF group.
- GROup-cccccccc: A one- to eight-alphanumeric character name for an SRDF group.
- SET-cccccccc: A one- to eight-alphanumeric character name for an SRDF set that identifies an SRDF pair.
- SDN-hhhhhhh: Starting SRDF device number.
- CNT-dddd: Number of SRDF devices.
Example

**Action**
Display all source (R1) devices in the local storage system in set RAG3 in SRDF group UVAS1.

**User**
ZURDF DIS GRO-UVAS1 SET-RAG3

**System**

```plaintext
CSMP0097I 11.40.31 CPU-A SS-BSS SSU-SSU0 IS-01
E1RQ0000I RDF Device ITR Display
Group UVAS1 Set RAG3 in Local CU 000184505047
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End of Display

**Action**
Display all target (R2) devices in the remote storage system in set RAG3 in SRDF group UVAS1.

**User**
ZURDF DIS REM GRO-UVAS1 SET-RAG3

**System**

```plaintext
CSMP0097I 11.40.31 CPU-A SS-BSS SSU-SSU0 IS-01
E1RQ0000I RDF Device ITR Display
Group UVAS1 Set RAG3 in Remote CU 000185400212
```

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<th>Dev</th>
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<th>Status</th>
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### SRDF Commands

#### End of Display

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| N/A | 0000 | 0000 | 000000029 | 00000005 | 3 | R/O | DL2 | 0 | 57 0000 |
| N/A | 0000 | 0000 | 00000002A | 00000006 | 3 | R/O | DL2 | 0 | 57 0000 |
| N/A | 0000 | 0000 | 00000002B | 00000007 | 3 | R/O | DL2 | 0 | 57 0000 |
| N/A | 0000 | 0000 | 00000002C | 00000008 | 3 | R/O | DL2 | 0 | 57 0000 |
| N/A | 0000 | 0000 | 00000002D | 00000009 | 3 | R/O | DL2 | 0 | 57 0000 |
| N/A | 0000 | 0000 | 00000002E | 0000000A | 3 | R/O | DL2 | 0 | 57 0000 |
| N/A | 0000 | 0000 | 00000002F | 0000000B | 3 | R/O | DL2 | 0 | 57 0000 |
| N/A | 0000 | 0000 | 000000030 | 0000000C | 3 | R/O | DL2 | 0 | 57 0000 |
| N/A | 0000 | 0000 | 000000031 | 0000000D | 3 | R/O | DL2 | 0 | 57 0000 |
| N/A | 0000 | 0000 | 000000032 | 0000000E | 3 | R/O | DL2 | 0 | 57 0000 |
| N/A | 0000 | 0000 | 000000033 | 0000000F | 3 | R/O | DL2 | 0 | 57 0000 |
| N/A | 0000 | 0000 | 000000034 | 00000010 | 3 | R/O | DL2 | 0 | 57 0000 |
| N/A | 0000 | 0000 | 000000035 | 00000011 | 3 | R/O | DL2 | 0 | 57 0000 |
| N/A | 0000 | 0000 | 000000036 | 00000012 | 3 | R/O | DL2 | 0 | 57 0000 |
| N/A | 0000 | 0000 | 000000037 | 00000013 | 3 | R/O | DL2 | 0 | 57 0000 |
| N/A | 0000 | 0000 | 000000038 | 00000014 | 3 | R/O | DL2 | 0 | 57 0000 |
| N/A | 0000 | 0000 | 000000039 | 00000015 | 3 | R/O | DL2 | 0 | 57 0000 |
| N/A | 0000 | 0000 | 00000003A | 00000016 | 3 | R/O | DL2 | 0 | 57 0000 |
| N/A | 0000 | 0000 | 00000003B | 00000017 | 3 | R/O | DL2 | 0 | 57 0000 |
| N/A | 0000 | 0000 | 00000003C | 00000018 | 3 | R/O | DL2 | 0 | 57 0000 |
| N/A | 0000 | 0000 | 00000003D | 00000019 | 3 | R/O | DL2 | 0 | 57 0000 |
| N/A | 0000 | 0000 | 00000003E | 0000001A | 3 | R/O | DL2 | 0 | 57 0000 |
| N/A | 0000 | 0000 | 00000003F | 0000001B | 3 | R/O | DL2 | 0 | 57 0000 |
| N/A | 0000 | 0000 | 000000040 | 0000001C | 3 | R/O | DL2 | 0 | 57 0000 |
| N/A | 0000 | 0000 | 000000041 | 0000001D | 3 | R/O | DL2 | 0 | 57 0000 |
| N/A | 0000 | 0000 | 000000042 | 0000001E | 3 | R/O | DL2 | 0 | 57 0000 |
| N/A | 0000 | 0000 | 000000043 | 0000001F | 3 | R/O | DL2 | 0 | 57 0000 |
| N/A | 0000 | 0000 | 000000044 | 00000020 | 3 | R/O | DL2 | 0 | 57 0000 |
| N/A | 0000 | 0000 | 000000045 | 00000021 | 3 | R/O | DL2 | 0 | 57 0000 |
| N/A | 0000 | 0000 | 000000046 | 00000022 | 3 | R/O | DL2 | 0 | 57 0000 |
| N/A | 0000 | 0000 | 000000047 | 00000023 | 3 | R/O | DL2 | 0 | 57 0000 |

**Action**

Set the state of the source (R1) devices in all local storage systems in SRDF group UVAS1 to read/write enabled.

**User**

ZURDF WRI GRO-UVAS1

**System**

CSMP0097I 22.46.27 CPU-A SS-BSS SSU-SSU0 IS-01

URDF0019I SRDF Control record refresh started

CSMP0097I 22.46.33 CPU-A SS-BSS SSU-SSU0 IS-01

URDF1043I Local CU 000184505047 discovered for Group UVAS1 Set RAG2

URDF1045I Remote CU 000185400212 discovered for Group UVAS1 Set RAG2

URDF1043I Local CU 000184505047 discovered for Group UVAS1 Set RAG3

URDF1045I Remote CU 000185400212 discovered for Group UVAS1 Set RAG3

URDF0024I SRDF Control record refresh completed

CSMP0097I 22.46.33 CPU-A SS-BSS SSU-SSU0 IS-01

URDF1000I SRDF Control started issuing Writeenable for Set RAG2

CSMP0097I 22.46.33 CPU-A SS-BSS SSU-SSU0 IS-01

URDF1000I SRDF Control started issuing Writeenable for Set RAG3

CSMP0097I 22.46.33 CPU-A SS-BSS SSU-SSU0 IS-01

URDF1000I SRDF Control completed issuing Writeenable for Set RAG2

CSMP0097I 22.46.33 CPU-A SS-BSS SSU-SSU0 IS-01

URDF1000I SRDF Control completed issuing Writeenable for Set RAG3

URDF1000I SRDF Control started issuing Writeenable for Set RAG2

CSMP0097I 22.46.33 CPU-A SS-BSS SSU-SSU0 IS-01

URDF1000I SRDF Control completed issuing Writeenable for Set RAG3

URDF1000I SRDF Control started issuing Writeenable for Set RAG2

CSMP0097I 22.46.33 CPU-A SS-BSS SSU-SSU0 IS-01

URDF1000I SRDF Control completed issuing Writeenable for Set RAG3

**Status:** Monitor Active

Start Time: 22.46.33 Date: 06/12/04

<table>
<thead>
<tr>
<th>Set Name</th>
<th>CU Serial #</th>
<th>SDA</th>
<th>Complete</th>
<th>In Progress</th>
<th>Not Started</th>
<th>Summary</th>
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</table>

End of Display
### Action
Display all source (R1) devices in the local storage system in set RAG3 in SRDF group UVAS1.

### User
ZURDF DIS GRO-UVAS1 SET-RAG3

### System

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<th>R2 Itrk</th>
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</table>

End of Display
### SRDF commands summary

Table 5 provides a summary of the SRDF commands.

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<tr>
<th>Action</th>
<th>Parameters</th>
<th>Valid volume type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
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<td>ADMA</td>
<td>skew value</td>
<td>1</td>
<td>Set the Adaptive Copy maximum skew value for the volume(s). The maximum skew value may be specified in the range of 1-65535. Use this command only when the volume is in one of the supported Adaptive Copy modes. Note that setting this value too high in Adaptive Copy Write Pending mode can cause excessive cache use which adversely affects subsystem performance.</td>
</tr>
<tr>
<td>AWMA</td>
<td>skew value</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>ASYNC</td>
<td>ACT</td>
<td>R1/L1 DR1/DL1</td>
<td>Activate SRDF/A.</td>
</tr>
<tr>
<td></td>
<td>DEA</td>
<td>R1/L1 DR1/DL1</td>
<td>Wait until the end of the SRDF/A cycle, and then deactivate the SRDF/A session, but leave all devices ready on the link.</td>
</tr>
<tr>
<td></td>
<td>DROACT</td>
<td>R1/L1 DR1/DL1</td>
<td>Drop the SRDF/A session and make all source (R1) devices TNR.</td>
</tr>
<tr>
<td></td>
<td>PDR</td>
<td>R1/L1 DR1/DL1</td>
<td>Wait until the end of the SRDF/A cycle, and then do a DROP.</td>
</tr>
<tr>
<td></td>
<td>TON</td>
<td>R1/L1 DR1/DL1</td>
<td>Turn on tolerance mode.</td>
</tr>
<tr>
<td></td>
<td>TOF</td>
<td>R1/L1 DR1/DL1</td>
<td>Turn off tolerance mode.</td>
</tr>
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<td>MSA</td>
<td>R1/L1 DR1/DL1</td>
<td>Turn on multi-session consistency.</td>
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<td>MSD</td>
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<td>Turn off multi-session consistency.</td>
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<td>CMT</td>
<td>R1/L1 DR1/DL1</td>
<td>Commit held receive cycle.</td>
</tr>
<tr>
<td></td>
<td>DCD</td>
<td>R1/L1 DR1/DL1</td>
<td>Discard held receive cycle.</td>
</tr>
<tr>
<td></td>
<td>RCV</td>
<td>R1/L1 DR1/DL1</td>
<td>Perform multi-session consistency recovery.</td>
</tr>
<tr>
<td></td>
<td>MMR</td>
<td>R1/L1 DR1/DL1</td>
<td>Restart SRDF/A MSC cycle switch monitor.</td>
</tr>
<tr>
<td>CRTpair</td>
<td>R1Mode</td>
<td>DR1/DR2 DL1/DL2 DRX DLX</td>
<td>Establish the configured SRDF relationship between dynamic RDF pairs. The parameter value defaults are: R1Adc = NADC; R2Rdy = RDY; LCLis = R1</td>
</tr>
<tr>
<td></td>
<td>R1Adc</td>
<td>DR1/DR2 DL1/DL2 DRX DLX</td>
<td></td>
</tr>
<tr>
<td></td>
<td>R2Rdy</td>
<td>DR1/DR2 DL1/DL2 DRX DLX</td>
<td></td>
</tr>
<tr>
<td></td>
<td>LCLis</td>
<td>DR1/DR2 DL1/DL2 DRX DLX</td>
<td></td>
</tr>
<tr>
<td>DELpair</td>
<td>DR1/DR2 DL1/DL2 DRX DLX</td>
<td>R1/L1 DR1/DL1</td>
<td>Remove the established SRDF relationship between dynamic RDF pairs. The state of the dynamic source (R1) must be TNR.</td>
</tr>
<tr>
<td>GRP</td>
<td>DIS</td>
<td>—</td>
<td>Display information on one or more RDFGroups in a storage system identified by an SDA and a multi-hop list.</td>
</tr>
<tr>
<td>ADD</td>
<td>—</td>
<td></td>
<td>Create RDFGroups between storage systems connected through a fibre channel or GigE.</td>
</tr>
<tr>
<td>DEL</td>
<td>—</td>
<td></td>
<td>Delete RDFGroups between pairs of storage systems connected through a fibre channel or GigE.</td>
</tr>
<tr>
<td>Action</td>
<td>Parameters</td>
<td>Valid volume type</td>
<td>Description</td>
</tr>
<tr>
<td>---------</td>
<td>------------</td>
<td>------------------</td>
<td>-------------</td>
</tr>
<tr>
<td>INValidate</td>
<td>R1/R2 L1/L2 DR1/DR2 DL1/DL2</td>
<td></td>
<td>Perform full volume synchronization in the direction specified by the storage system’s synchronization direction. Use this command after a VALIDate command when all tracks on the RDF partner volume are considered to be invalid from the perspective of the volume to which the command was issued. Keep in mind that in an RDF configuration, both storage systems maintain their own invalid track tables for both the source (R1) and target (R2) volumes. When the synch direction is set to R1 to R2, issue this command to the source (R1) volume to ensure that all of the R2 tracks are considered invalid from the perspective of the source (R1) volume. When the synch direction is set to R2 to R1, issue this command to the target (R2) volume to ensure that all of the R1 tracks are considered invalid from the perspective of the target (R2) volume.</td>
</tr>
<tr>
<td>MODe</td>
<td>SYNC²</td>
<td>R1/L1/DR1/ DL1</td>
<td>Set source (R1) volume to the synchronous mode. This is an SRDF mode of operation that ensures 100% synchronized mirroring between the two storage systems. Please note that this value does not need to be reset following an IML.</td>
</tr>
<tr>
<td>ADCW</td>
<td>R1/L1/DR1/ DL1</td>
<td></td>
<td>Place the specified volume(s) in Adaptive Copy Write Pending mode. When this attribute is enabled, the storage system acknowledges all writes to source (R1) volumes as if they were local volumes. Please note that this value must be reset following an IML. ADCW is available on storage systems that run Enginuity 5773 to Enginuity 5876 only.</td>
</tr>
<tr>
<td>ADCD</td>
<td>R1/L1/DR1/ DL1</td>
<td></td>
<td>Place the specified volume(s) in Adaptive Copy Disk mode. When this attribute is enabled, the storage system acknowledges all writes to source (R1) volumes as if they were local volumes. Please note that this value must be reset following an IML.</td>
</tr>
<tr>
<td>NADC</td>
<td>R1/L1/DR1/ DL1</td>
<td></td>
<td>Disable Adaptive Copy mode for source (R1) volume. Please note that when switching from the Disk mode to Write Pending mode or from Write Pending mode to Disk mode, this command must first be used before setting the new Adaptive Copy mode. Please note that when this command is issued to remove a volume from Adaptive Copy mode, the state change will not take place until the volumes are synchronized.</td>
</tr>
<tr>
<td>NRDy</td>
<td>R1/R2 L1/L2 DR1/DR2 DL1/DL2</td>
<td></td>
<td>Set volume RDF not ready to the host. This action is valid for both source (R1) and target (R2) volumes. When a volume is set RDF not ready, (RNR in the device status of the ZURDF DISPLAY command output) any attempt to perform I/O to the volume from the host will result in an “intervention required” status. This command action may be used during R2 Read/Write testing to prevent host access during critical phases of recovery.</td>
</tr>
<tr>
<td>RDY</td>
<td>R1/R2 L1/L2 DR1/DR2 DL1/DL2</td>
<td></td>
<td>Set volume RDF ready to the host. This action is valid for both source (R1) and target (R2) volumes.</td>
</tr>
</tbody>
</table>
REFresh

R1/L1
DR1/DR2
DL1/DL2

Partially synchronize volumes in the direction specified by the storage system’s synchronization direction. This command refreshes the updated tracks only from the RDF partner volume.

When the synch direction is set to R1 to R2, invalid tracks are to be refreshed from the Source (R1) volume to the target (R2) volume. Enter the REFresh command for the target (R2) volume(s). Synchronization will commence after a subsequent RFRresume command is issued to the source (R1) volume(s).

When synch direction is set to R2 to R1, invalid tracks are to be refreshed from the target (R2) volume to the source (R1) volume. Enter the REFresh command to the source (R1) volume(s). Synchronization will commence after a subsequent RFRresume command is issued to the target (R2) volume(s).

RESume

R1/L1
DR1/DL1

Resume SRDF operation on specified RDF pair(s).

RFRresume

R1/L1
DR1/DR2
DL1/DL2

Partially synchronize a volume in the direction specified by the storage system’s synchronization direction. Use this command after a REFresh command to commence synchronization of the tracks updated since RDF operations were last suspended.

When the synch direction is set to R1 to R2, issue this command to the source (R1) volume to ensure that all of the R2 tracks are considered invalid from the perspective of the source (R1) volume.

When the synch direction is set to R2 to R1, issue this command to the target (R2) volume to ensure that all of the R1 tracks are considered invalid from the perspective of the target (R2) volume.

SWAPAIR

R1Mode
R1Adc
R2Rdy

Swap the established SRDF relationship between dynamic RDF pairs.

The parameter value defaults are: R1Adc = NADC; R2Rdy = RDY.

The dynamic source (R1) must be TNR.

SUSpend

R1/L1
DR1/DL1

Suspend SRDF operation on specified volume. If the volume is already suspended, or in RDF Write Disable status, the command is ignored. If the volume is configured for the Adaptive Copy mode, that volume is suspended immediately. All Adaptive Copy skew tracks that have not been sent to the target (R2) volume become invalid and are not sent until resynchronization begins after a RESume command.
Table 5 SRDF commands summary (4 of 4)

<table>
<thead>
<tr>
<th>Action</th>
<th>Parameters</th>
<th>Valid volume type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>TARget</td>
<td>RW R2/R21/R22</td>
<td>R2/L2/DR2/</td>
<td>Make target (R2) volume(s) read and write enabled. This allows a target (R2) volume to be written to from the channel.</td>
</tr>
<tr>
<td></td>
<td>/L2/DR2/L2</td>
<td>DL2</td>
<td></td>
</tr>
<tr>
<td>RO</td>
<td>R2/R21/R22</td>
<td>R2/L2/DR2/</td>
<td>Make target (R2) volume(s) read-only. When a target (R2) volume is in this state, any attempt to issue a write from the host produces an I/O error.</td>
</tr>
<tr>
<td></td>
<td>/L2/DR2/L2</td>
<td>DL2</td>
<td></td>
</tr>
<tr>
<td>RDY</td>
<td>R2/R21/R22</td>
<td>R2/L2/DR2/</td>
<td>Make target (R2) volume(s) ready to the host.</td>
</tr>
<tr>
<td></td>
<td>/L2/DR2/L2</td>
<td>DL2</td>
<td></td>
</tr>
<tr>
<td>NRDY</td>
<td>R2/R21/R22</td>
<td>R2/L2/DR2/</td>
<td>Make target (R2) volume(s) not ready. In this state, the target (R2) volume responds “intervention required” to the host for all read and write operations to that volume. This is the default state for a target (R2) volume.</td>
</tr>
<tr>
<td></td>
<td>/L2/DR2/L2</td>
<td>DL2</td>
<td></td>
</tr>
<tr>
<td>DIS</td>
<td>R2/R21/R22</td>
<td>R2/L2/DR2/</td>
<td>Disable synchronization from source (R1).</td>
</tr>
<tr>
<td></td>
<td>/L2/DR2/L2</td>
<td>DL2</td>
<td></td>
</tr>
<tr>
<td>ENA</td>
<td>R2/R21/R22</td>
<td>R2/L2/DR2/</td>
<td>Enable synchronization from source (R1).</td>
</tr>
<tr>
<td></td>
<td>/L2/DR2/L2</td>
<td>DL2</td>
<td></td>
</tr>
<tr>
<td>VALidate</td>
<td>R1/R2 L1/L1</td>
<td>DR1/DR2 DL1/DL2</td>
<td>Update the invalid track table to remove all invalid track flags for all tracks residing on the SRDF partner device. Once this action is taken, all tracks on the RDF partner volume are considered to be valid from perspective of the volume to which the command was issued. Keep in mind that in an RDF configuration, both storage systems maintain their own invalid track tables for both the source (R1) and target (R2) volumes. When the synch direction is set to R1 to R2, issue this command to the target (R2) volume to ensure that all of the R1 device tracks are considered valid from the perspective of the target (R2) volume. Synchronization starts after a subsequent INVALIDATE command is issued to the source (R1) volume(s). When the synch direction is set to R2 to R1, issue this command to the source (R1) volume to ensure that all of the R2 device tracks are considered valid from the perspective of the source (R1) volume. Synchronization starts after a subsequent INVALIDATE command is issued to the target (R2) volume(s).</td>
</tr>
<tr>
<td>WRITEenable</td>
<td>R1/L1/DR1/</td>
<td>DL1</td>
<td>Set the state of source (R1) devices to read/write enable. Use this command on a source (R1) volume that has a device status of RWD as shown in the ZURDF DISPLAY command. Before using this command, set the target (R2) volume to RO status. This command clears the RWD status and allow the RDF pair to begin synchronization.</td>
</tr>
<tr>
<td></td>
<td>DL1</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1. R1 = source volume, R2 = target volume.
2. Setting SYNC does not affect Adaptive Copy mode if in effect.
3. To ensure that the remotely mirrored volumes are synchronized, volumes operating in the adaptive copy mode must first be set to a synchronous state using the NADC parameter for the MODe command. Use the ZURDF DISPLAY command to verify that the volumes are in the synchronous mode prior to issuing the SUSpend command.
SRDF Commands

ZURCV ADD|DELeTe

Add or remove an SDA and RDF group specifying a SRDF/A MSC pair of storage systems.

Requirements and Restrictions

Use this command only for a valid SDA and RDF group. SRDF/A Multi-Session Consistency (MSC) allows multiple sets in an SRDF/A group for storage systems running Enginuity 5773 and higher or HYPERMAX OS.

Format

ZURCV ADD|DELeTe SDA-ccuu RDFGroup-dd
SET1-ccuu.dd [SET2-ccuu.dd SET3-ccuu.dd SET4-ccuu.dd
SET5-ccuu.dd SET6-ccuu.dd SET7-ccuu.dd SET8-ccuu.dd]

Parameters

ADD Add a set to the SRDF/A Scratch recovery list
DELeTe Delete a set to the SRDF/A Scratch recovery list.
SDA-ccuu SDA that identifies the host-attached operations device to which I/O can be issued to construct the recovery list.
RDFGroup-dd A decimal value that identifies the RDFGroup path associated with operations SDA where the recovery list resides.
SET1-ccuu.dd The set definition defined by a valid operations SDA on the remote storage system along with the corresponding RDFGroup path.
SET2-ccuu.dd The set definition defined by a valid operations SDA on the remote storage system along with the corresponding RDFGroup path.
SET3-ccuu.dd The set definition defined by a valid operations SDA on the remote storage system along with the corresponding RDFGroup path.
SET4-ccuu.dd The set definition defined by a valid operations SDA on the remote storage system along with the corresponding RDFGroup path.
SET5-ccuu.dd The set definition defined by a valid operations SDA on the remote storage system along with the corresponding RDFGroup path.
SET6-ccuu.dd The set definition defined by a valid operations SDA on the remote storage system along with the corresponding RDFGroup path.
SET7-ccuu.dd The set definition defined by a valid operations SDA on the remote storage system along with the corresponding RDFGroup path.
SET8-ccuu.dd The set definition defined by a valid operations SDA on the remote storage system along with the corresponding RDFGroup path.

Additional information

- Ensure that the multi-hop list in an ADD command designates the expected local and remote RDF pair. Consult your EMC Representative for SRDF configuration information.
- The operations device specified on the input SDA must be a supported SRDF volume to enable SRDF Controls for z/TPF to discover the RDF pairs using the EMC SymmAPI for z/TPF.
Example

**Action**  Add two sets to the MSC Recovery List on the storage system where 6300 and RDF group 33 resides.

**User**  
ZURDF ADD SDA-6300 RDFG-33 SET1-6300.33  
SET2-3C20.00

**System**  
P0097I 17.57.04 CPU-B SS-BSS SSU-SSU0 IS-01  
K0004I SRDF/A Multi-Session Display SDA 6300 RDFGroup 21  
   SDA R1 Group - R2 Group  
   3C20 00000006211/20 - 000190300063/00  
   6300 000190300063/01 - 000000006211/21  
complete
SRDF Commands

ZURCV DISPLAY

Display SRDF/MSC Recovery List information, storage system configuration information, and SRDF/A Multi-Session Consistency (MSC) recovery status.

Requirements and restrictions

Add entries to the SRDF/A MSC Recovery List to ensure that the display is accurate.

Format

ZURCV DISPLAY SDA-ccuu RDFGroup-dd TYPE-SDA

Parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>DISPLAY</td>
<td>Display information on an SRDF/A MSC group.</td>
</tr>
<tr>
<td>SDA-ccuu</td>
<td>SDA that identifies the host-attached operations device to which I/O can be issued to construct the recovery list.</td>
</tr>
<tr>
<td>RDFGroup-dd</td>
<td>A decimal value that identifies the RDF group path associated with operations SDA where the recovery list resides.</td>
</tr>
<tr>
<td>TYPE-SDA</td>
<td>SRDF/A session information.</td>
</tr>
<tr>
<td>TYPE-MSC</td>
<td>SRDF/A MSC recovery status.</td>
</tr>
</tbody>
</table>

Examples

Example 1

This example displays the following information:

R1 Group The serial number and RDF group on the primary (R1) side of an SRDF/A MSC set.

R2 Group The serial number and RDF group on the secondary (R2) side of an SRDF/A MSC set.

Action Display the MSC recovery list on the storage system where 6300 and RDF group 33 resides.

User ZURDF DIS SDA-6300 RDFG-33 TYPE-SDA

System

CSMP0097I 17.57.04 CPU-B SS-BSS SSU-SSU0 IS-01
E1VK0004I SRDF/A Multi-Session Display SDA 6300 RDFGroup 21
SDA R1 Group - R2 Group
3C20 000000006211/20 - 000190300063/00
6300 000190300063/01 - 000000006211/21
Add complete
Example 2

This example displays the following information:

- **R1/R2 Group**: The serial number and RDF group of each side of an SRDF/A MSC set.
- **MSC Status**: Indicates whether SRDF/A MSC is active.
- **Transmit status**: Indicates a the delta set represented by the Receive tag has completed transfer to the R2 for this MSC set.
- **Apply status**: Indicates the delta set represented by the Apply tag has been on the R2 for this set.
- **Host Intervention Required**: Indicates when Cleanup Running MSC must tell SRDF/A what to do with the complete receive cycle.
- **Receive Tag**: The tag for the data in the Receive cycle. The Receive Cycle Tag verifies that the multiple SRDF/A sessions in the MSC group are coordinated. When MSC is active, the Receive Cycle Tag functions like the cycle number when SRDF/A is active and MSC is not active.
- **Apply Tag**: The tag for the data in the apply cycle. The Apply Cycle Tag verifies the multiple SRDF/A sessions in the MSC group are coordinated. When MSC is active, the Apply Cycle Tag functions like the cycle number when SRDF/A is active and MSC is not active.
- **Recovery Analysis**: When Host Intervention is required for a set, analysis is performed. The display indicates whether clean up should apply or discard the Receive cycle for a given set to achieve data consistency for the SRDF/A MSC group.

- **Action**: Display the MSC list associated with the MSC set with operations SDA 6300 and RDF group 33.
- **User**: ZURDF DIS SDA-6300 RDFG-33 TYP-MSC
- **System**: CSMP0097I 17.57.04 CPU-B SS-BSS SSU-SSU0 IS-01

```
000000006211/20 - 000190300063/00
MSC is Active
Transmit Cycle is Complete
Apply Cycle is Complete
Host Intervention Required
Receive Tag = 0000000000000078 Apply Tag = 0000000000000077
```

```
000190300063/01 - 000000006211/21
MSC is Active
Transmit Cycle is Complete
Apply Cycle is Complete
Host Intervention Required
Receive Tag = 0000000000000078 Apply Tag = 0000000000000077
```

- **Commit All Cycles**:
  - SRDFA Session = 000190300063/00 Commit Receive Cycle
  - SRDFA Session = 000000006211/21 Commit Receive Cycle
- **End of Display**
SRDF Commands

ZURCV Help

List the ZURCV commands or display help on any specific command.

Requirements and Restrictions

None.

Format

ZURCV Help [command]

Parameters

command The command on which you want help.

Additional information

Individual command syntax is available by specifying the command parameter.

Examples

Example 1

Action Display basic help.
User ZURDF HELP
System

URCV0999I Valid SRDF Recovery Operations are:
ADD DELete DISplay INItialize
RECOVER PROceed Halt Help
For details enter: ZURCV H OPERATION

Example 2

Action Display the syntax of the INItialize command.
User ZURDF HINI
System

ZURCV HINI
CSMP0097I 17.57.16 CPU-B SS-BSS SSU-SSU0 IS-01
URCV0999I ZURCV INItialize SDA-ccuu RDFGroup-dd
SDA CU Where Recovery List Exists
RDFGROUP Where Recovery List Exists
ZURCV INITialize

Initialize the SRDF/A Multi-Session Consistency (MSC) Recovery list for use with z/TPF standalone recovery.

Requirements and restrictions

None.

Format

ZURCV INITialize SDA-ccuu RDFGroup-dd

Parameters

SDA-ccuu  The SDA that identifies the host-attached operations device to which I/O can be issued to construct the recovery list.
RDFGroup-dd  A decimal value that identifies the RDF group path associated with operations SDA where the recovery list resides.

Additional information

The command clears any SRDF set definitions that were previously defined in the Recovery List.

Example

Action  Initialize the MSC Recovery List on the storage system where 6300 and RDF group 33 resides.
User  ZURDF INI SDA-6300 RDFG-33
System

CSMP0097I 17.57.42 CPU-B SS-BSS SSU-SSU0 IS-01
Scratch Area Initialization Complete
SRDF Commands

ZURCV PROceed|HALt

Proceed with or halt the previous SRDF/A MSC Recovery command issued. Use the command in response to a warning or informational message from SRDF operation verification. SRDF operation verification occurs for each SRDF command to ensure that the command can be successfully completed as entered.

Requirements and restrictions

The verification prompt for the SRDF operation times out after five minutes.

Format

ZURCV PROceed|HALt SDA-ccuu RDFGroup-dd

Parameters

- **PROceed**: Halt the previously issued command.
- **HALt**: Proceed with the previously issued command.
- **SDA-ccuu**: The SDA that identifies the host-attached operations device to which I/O can be issued to construct the recovery list.
- **RDFGroup-dd**: A decimal value that designates the RDF group path associated with operations SDA where the recovery list resides.

Example

**Action**

Perform SRDF/A MSC Recovery for an MSC group that does not have all sets defined in the SRDF/A MSC Recovery list. Operation verification indicates that the SDA for a set is not defined and therefore no recovery is possible for that set.

**User**

ZURDF RECOVER SDA-6300 RDF GROUP-33

**System**

CSMP0097I 17.57.00 CPU-B SS-BSS SSU-SSU0 IS-01

000000006211/20 - 000190300063/00
MSC is Active
Transmit Cycle is Complete
Apply Cycle is Complete
Host Intervention Required
Receive Tag = 000000000000000A Apply Tag = 0000000000000009

000190300063/01 - 000000006211/21
SDA not defined for this set - no analysis available!

Commit All Cycles
SRDFA Session = 000190300063/00 Commit Receive Cycle
SRDFA Session = 000000006211/21 OPERATION SDA UNDEFINED!!!
E1VL0001I Review SRDF RECovery exception above for SDA 6300 RDFGroup 21
To proceed, enter: ZURCV PROceed SDA-6300 RDFGroup-33
To halt, enter: ZURCV HALt SDA-6300 RDFGroup-33
CSMP0097I 17.57.00 CPU-B SS-BSS SSU-SSU0 IS-01
Multi-Session Recovery Initiated

00000006211/20 - 000190300063/00
MSC is Active
Transmit Cycle is Complete
Apply Cycle is Complete
Receive Tag = 000000000000000A Apply Tag = 0000000000000009

000190300063/01 - 00000006211/21
SDA not defined for this set - no analysis available!

Commit All Cycles
SRDFA Session = 00000006211/21 OPERATION SDA UNDEFINED!!
End of Recovery

Action
Proceed with the Target operation.

User
ZURDF PRO SDA-6300 RDF GROUP-33

System
SRDF Commands

ZURCV RECOVER

Display SRDF/A Multi-Session Consistency (MSC) Recovery List information, storage system configuration information, and SRDF/A MSC recovery status.

Requirements and restrictions

Add entries to the SRDF/A MSC Recovery List to ensure that the recovery is complete.

Format

ZURCV RECOVER SDA-ccuu RDFGroup-dd

Parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>RECOVER</td>
<td>Recover an SRDF/A MSC group.</td>
</tr>
<tr>
<td>SDA-ccuu</td>
<td>The SDA that identifies the host-attached operations device to which I/O can be issued to construct the recovery list.</td>
</tr>
<tr>
<td>RDFGroup-dd</td>
<td>A decimal value that identifies the RDFGroup path associated with operations SDA where the recovery list resides.</td>
</tr>
</tbody>
</table>

Example

**Action**
Perform SRDF/A MSC Recovery for an MSC group with sets defined in the SRDF/A MSC Recovery list.

**User**
ZURDF RECOVER SDA-6300 RDFG-33

**System**

CSMP0097I 17.57.15 CPU-B SS-BSS SSU-SSU0 IS-01

00000006211/20 - 000190300063/00
MSC is Active
Transmit Cycle is Complete
Apply Cycle is Complete
Host Intervention Required
Receive Tag = 0000000000000009 Apply Tag = 0000000000000009

000190300063/01 - 00000006211/21
MSC is Active
Transmit Cycle is Incomplete
Apply Cycle is Complete
Receive Tag = 000000000000000A Apply Tag = 000000000000000A

Discard All Cycles
SRDFA Session = 000190300063/00 Discard Receive Cycle

00000006211/20 - 000190300063/00
MSC is Active
Transmit Cycle is Complete
Apply Cycle is Complete
Receive Tag = 0000000000000009 Apply Tag = 0000000000000009

000190300063/01 - 00000006211/21
MSC is Active
Transmit Cycle is Incomplete
Apply Cycle is Complete
Receive Tag = 000000000000000A Apply Tag = 000000000000000A

Discard All Cycles
End of Recovery
CHAPTER 4
SRDF Procedures

This chapter shows how to carry out data recovery procedures in an SRDF environment. It also provides procedures that illustrate how to configure and control SRDF/A Multi-Session Consistency (MSC).

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Getting started

⚠️ CAUTION

The procedures in this chapter are examples only and do not consider every circumstance. EMC recommends that you develop and validate all procedures specific to your environment.

Before using any of the procedures in this chapter, review the following:

- In this chapter, \texttt{cuu} refers to the z/TPF symbolic device address of the device and \texttt{dev#} refers to the device number.
- Specify the following configuration parameters for the storage system:
  - Enable Links Domino: NO
  - Prevent auto links recovery after all links failure? YES
  - Force RAs Links offline after power-up? YES

\textbf{Note:} Contact your EMC Customer Support Engineer to verify.

⚠️ CAUTION

Your configuration, the specific nature of the outage, and any special circumstances that may exist dictate the specific recovery steps that are required. ALWAYS contact the EMC Customer Support Center for assistance in a recovery situation. EMC personnel are trained for proper handling of these situations. An incorrect action during the recovery process can result in data corruption.
Recovery using operational host

This section provides an example set of procedures to use in a recovery situation.

The following site definitions are used in these procedures:

- Non-operational site: host and storage system containing source (R1) volumes that experience an outage.
- Operational site: host and storage system containing target (R2) volumes to be brought online.

Making the operational site available

To write-enable all target (R2) volumes to the host at the operational site using SRDF Controls at the non-operational host:

1. Suspend SRDF operation/synchronization:
   ```
   ZURDF SUS GRO-cccccccc
   ```
2. Write-enable all volumes on the operational storage system with an R2 designation:
   ```
   ZURDF TAR REM GRO-cccccccc PAR-RW
   ```
3. Set all target (R2) volumes to a “ready” state to the operational host:
   ```
   ZURDF RDY REM GRO-cccccccc
   ```
   and/or:
   ```
   ZURDF TAR REM GRO-cccccccc PAR-RDY
   ```
4. Disable the links by either disabling the RLD (Remote Link Director) switches on both storage systems, or disconnecting the link cables.

When the non-operational site becomes available

Use this procedure when the host and storage system at the non-operational site are ready to be brought back online.

**Note:** Before read/write operations to the source (R1) volumes can be resumed, set all target (R2) volumes to read-only.

At the operational site with access to, but not running on, the target (R2):

1. Stop I/O operations with the operational storage system.
2. Make all target (R2) volumes on the operational storage system read-only and optionally not ready to the operational host (as in the original configuration):
   ```
   ZURDF TAR GRO-cccccccc PAR-RO
   ```
   and optionally:
   ```
   ZURDF NRDY GRO-cccccccc
   ```
3. Enable the RLD (Remote Link Directors on the operational storage system by either enabling the RLD switches on both storage systems or connecting the link cables.
At the site of the original outage (non-operational host and storage system) perform:

1. Disable the channel directors and RLDs on the non-operational storage system to prevent host I/O processing until ready for synchronization.

2. Reconnect the link cables if they were previously disconnected.

3. Power up the newly operational storage system.
   At this point, the EMC technician verifies that:
   - There are no invalid tracks
   - The storage system is ready for resynchronization

4. Enable the remote link directors.
   The two storage systems begin synchronizing. When the links synchronize, the previously operational storage system copies its data to the newly operational storage system.

   After synchronization has begun, the newly operational storage system can be made available for host I/O processing.

5. Enable the channel directors.

6. IPL the newly operational host system.

You can track the resynchronization process by initializing the SRDF Controls data structures: `ZURDF INI CLEAR` and `ZURDF Config` and using display commands to the relative set(s). For example:

```
ZURDF DIS GRO-cccccccc SET-cccccccc TYP-ITR
```
Testing recovery procedures

In a normal SRDF device relationship, the source (R1) device may be synchronized with its target (R2) device or it may contain updated tracks which the RLD has not yet sent to the target (R2) device (adaptive copy state). In addition, the target (R2) volume is in a read-only mode.

R1 → R2 resynchronization describes a process where any updates to the target (R2) volume made during read/write testing are discarded, and updates made to the source (R1) volume during that same time are sent to the target (R2) volume. R1 ← R2 resynchronization describes a process by which any updates to the source (R1) volume made during read/write testing to the target (R2) volume are discarded, and updates made to the target (R2) volume are sent to the source (R1) volume.

Resynchronization control is a result of the SYNCH_DIRECTION setting and the sequence of SRDF Controls commands used in the following procedures. SYNCH_DIRECTION is not saved in the storage system.

You can test recovery procedures by enabling write operations to the target (R2) volumes. The procedures in this section show how to do this, how to resynchronize the RDF pairs and how to resume normal operations when testing is complete.

Note: When performing the procedures described in this chapter, you issue commands either at the host with access to the source (R1) device or at the host with access to, but not running on, the target (R2) device.

In concurrent SRDF configurations, special considerations apply. The procedures in this chapter apply to only one of the partner (R2) devices at a time. If both partner devices (R2) have been updated, the partner (R2) whose changes are to be retained must be determined. Then carry out all the procedures for this partner (R2). Then you can discard the other partner (R2) updates.

This section contains the following procedures:

- “1: Performing R2 read/write testing” on page 242
- “2: Selecting a synchronization method” on page 244
- “3-R1: R1 to R2 full volume resynchronization from R1 access” on page 246
- “3-R2: R1 to R2 full volume resynchronization from R2 access” on page 248
- “4-R1: R2 to R1 full volume resynchronization from R1 access” on page 250
- “4-R2: R2 to R1 full volume resynchronization from R2 access” on page 252
- “5-R1: R1 to R2 changed tracks resynchronization from R1 access” on page 254
- “5-R2: R1 to R2 changed tracks resynchronization from R2 access” on page 256
- “6-R1: R2 to R1 changed tracks resynchronization from R1 access” on page 258
- “6-R2: R2 to R1 changed tracks resynchronization from R2 access” on page 260
SRDF Procedures

The procedures use the following conventions:

\[
devid# = \text{Symmetrix device number}
\]

\[
R1 = \text{source volume}
\]

\[
R2 = \text{target volume}
\]

\[
\text{GRO-cccccccc} = \text{The user-defined SRDF group}
\]

\[
\text{SET-cccccccc} = \text{The user-defined SET identifying an SRDF pair}
\]

1: Performing R2 read/write testing

Procedure 1 performs R2 read/write testing. Before doing this synchronize the source (R1) and target (R2) volumes, suspend SRDF operations between the devices, write-enable the target (R2) volumes, and then make the devices ready.

**Note:** Any source (R1) volumes configured in the Adaptive Copy mode may have a number of tracks (up to the value of the Adaptive Copy Skew) that are not synchronized.

To ensure complete synchronization prior to suspending SRDF operations, disable Adaptive Copy, and allow all tracks to synchronize. Use the ZURDF DIS (ADC) command (see page 132) to verify the synchronization. When all tracks are synchronized, volumes return to their default mode and no longer appear in the list that the ZURDF DIS command generates. Use the ZURDF DIS command to verify that the volumes are in the synchronous mode before using the ZURDF SUSPEND command (see page 197).

1. Suspend SRDF operations for the pair(s), by using the following at the host with access to the source (R1) volume(s):

   \[
   \text{ZURDF SUS GRO-cccccccc [SET-cccccccc]}
   \]

2. Write enable the target (R2) volume(s) by using the following command at the host with access to the source (R1) volume(s):

   \[
   \text{ZURDF TAR REM GRO-cccccccc [SET-cccccccc] PAR-RW}
   \]

3. If the target (R2) volume is RNR, make the target (R2) volume(s) ready to receive I/O from the host by using the following command at the host with access to the source (R1) volume(s):

   \[
   \text{ZURDF RDY REM GRO-cccccccc [SET-cccccccc]}
   \]

   If the target (R2) is N/R, make the target (R2) volume(s) ready to receive I/O from the host by using the following command at the host with access to the source (R1) volumes:

   \[
   \text{ZURDF TAR REM GRO-cccccccc [SET-cccccccc] PAR-RDY}
   \]

Figure 1 on page 243 illustrates this procedure. The boxes on the left contain actions performed on the source (R1) volume, and the boxes on the right contain actions performed on the target (R2) volume.
Procedure 1

Suspend normal RDF operations between the R1 and R2 volumes.

ZURDF SUS GRO-cccccccc [SET-cccccccc]

In order to suspend synchronization of tracks from the source to the target device, issue a
ZURDF SUS GRO-cccccccc [SET-cccccccc] command from the host with access to R1.

Enable the R2 volume for WRITE operations.

Write-enable the R2 volume

ZURDF TAR REM
GRO-cccccccc [SET-cccccccc]
PAR-RW

Many installations run with the R2 volume set not ready to the host. Any attempt to do I/O to the host in this mode, will result in an I/O error. By making the R2 volume ready, you will enable the host to issue I/O request to the device.

Make the R2 volume ready to accept I/O from the host

ZURDF RDY REM
GRO-cccccccc [SET-cccccccc]
and/or
ZURDF TAR REM
GRO-cccccccc [SET-cccccccc] PAR-RDY

Perform your read/write testing. During this process, the R2 volume will accumulate R1 invalid tracks. If write operations are going on at this point on the R1 side, the R1 volume will accumulate R2 invalid tracks.

IPL the host to run on the target (R2) volumes and proceed with R/W testing.

When R2 read/write testing is complete, the R2 volume will be in a Read/Write state, ready to the host, and will reflect R1 invalid tracks. During this process the R1 volume has been available to its host and may reflect R2 invalid tracks. Go to procedure 2 to determine the appropriate actions to resynchronize the RDF pair.

Go to Procedure: 2

Figure 1 R2 read/write test
2: Selecting a synchronization method

Procedure 2 selects a synchronization method.

**Note:** This procedure is a prerequisite for procedures 3, 4, 5, and 6.

Select the appropriate procedure for resynchronization of the source (R1) and the target (R2) and then resume normal operations. This procedure sets the target (R2) volume to the read-only mode and not ready for host access.

**Note:** The recovery procedures require that SRDF activity be suspended (RDF-SUSP) and that the RDF links be operational. The first step in procedure 1 is to suspend SRDF operations using the ZURDF SUS LOC GRO-
ccccc command. If the RDF links have been physically disconnected (due to link failure or intentional action) prior to executing step 1 of procedure 1 to SUSPEND the volumes, use the ZURDF SUS LOC GRO-
ccccc command to suspend the volumes before the RDF links are physically reconnected and before beginning the resynchronization processes of procedure 2 and procedures 3, 4, 5, or 6.

1. Make the target (R2) volume(s) read-only:

   ZURDF TAR REM GRO-
ccccc SET-ccccc PAR-RO

2. Determine the invalid tracks of each source (R1) and target (R2) volume involved in R2 read/write testing:

   ZURDF DIS [REM] GRO-
ccccc SET-ccccc TYP-ITR

3. Use the state of the remotely mirrored pair, the scope of synchronization you required and the information in Table 6 to select the synchronization procedure to follow.

<table>
<thead>
<tr>
<th>Table 6 Select a synchronization procedure</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>R1 indicates R2 invalid tracks</strong></td>
</tr>
<tr>
<td>-------------------------------------</td>
</tr>
<tr>
<td>N</td>
</tr>
<tr>
<td>Y</td>
</tr>
<tr>
<td>Y</td>
</tr>
<tr>
<td>----</td>
</tr>
<tr>
<td>----</td>
</tr>
</tbody>
</table>

**Note:** If you cannot determine the correct procedure to follow, or if you encounter unexpected results, contact the EMC Customer Support Center for assistance.

Figure 2 on page 245 illustrates this procedure. The boxes on the left contain actions performed on the source (R1) volume, and the boxes on the right contain actions performed on the target (R2) volume.
Procedure 2

The R2 volume is ready and read/write enabled. The R1 is SUSPENDED.

From Procedure 1

Issue an \texttt{ZURDF DIS [REM]} \texttt{GRO-cccccccc SET-cccccccc TYP-ITR]} command for both the R1 and R2 volumes to determine the Invalid track status.

Does the R1 volume indicate any R2 invalid tracks?

Yes

Discard R1 updates?

No

Resume normal RDF operations. From the host with access to the R1 volume

\texttt{ZURDF RFR GRO-cccccccc [SET-cccccccc]}

\textbf{DONE}

No

You must choose whether you want to keep the updates made to the R2 device during R/W testing. If you choose to keep the R2 updates, any updates that were made to the R1 volume after the SUSPEND will be discarded.

Does the R2 volume indicate any R1 invalid tracks?

Yes

Discard R2 updates?

No

Is the scope full volume or only changed tracks

Full volume

\textbf{GO TO Procedure 4}

Changed tracks

\textbf{GO TO Procedure 6}

No

\textbf{GO TO Procedure 3}

\textbf{GO TO Procedure 5}

The R2 volume indicates no R1 invalid tracks. Any updates to R1 will be sent to R2.

\textbf{GO TO Procedure 2}

Figure 2 Synchronization method
3-R1: R1 to R2 full volume resynchronization from R1 access

Procedure 3-R1 performs R1 to R2 full volume resynchronization from a host with R1 access.

**Note:** This procedure applies to storage systems running Enginuity 5773 and higher or HYPERMAX OS. Before using this procedure, ensure that you have completed “2: Selecting a synchronization method” on page 244.

Procedure 3-R1 resynchronizes the RDF pair after R2 read/write activity. All updates to the target (R2) volume that were made after the SUSPEND operation was executed are discarded and all updates to the source (R1) volume are kept.

**Note:** Issue all commands on the host that has access to the source (R1) volumes.

1. Set the current synchronization direction from source to target (R1 → R2):
   
   ```
   ZURDF SYN GRO-ccccc [SET-ccccc] PAR-R1R2
   and
   ZURDF SYN REM GRO-ccccc [SET-ccccc] PAR-R1R2
   ```

2. Identify the target (R2) volumes that have a non-zero R1 INV_TRKS value:
   
   ```
   ZURDF DIS REM GRO-ccccc SET-ccccc TYP-ITR
   ```

3. For all target (R2) volumes with non-zero R1 INV_TRKS values:
   
   Validate all invalid tracks for the source (R1) volume(s) on the target (R2) volume:
   
   ```
   ZURDF VAL REM GRO-ccccc [SET-ccccc]
   ```

4. Verify all target (R2) volumes have an R1 INV_TRKS value equal to zero:
   
   ```
   ZURDF DIS REM GRO-ccccc SET-ccccc TYP-ITR
   ```

5. For all source (R1) volumes whose target (R2) volumes were write-enabled and had an R1 INV_TRK value greater than zero (prior to step 2 above):
   
   Invalidate all valid tracks for the target (R2) volume on the source (R1) volume:
   
   ```
   ZURDF INV GRO-ccccc [SET-ccccc]
   ```

   When the Invalidate command completes, the R2 Invalid track count has the maximum value for the device, the TNR status no longer applies, and resynchronization begins.

   The SRDF Monitor monitors the process of invalidating all target tracks until complete. This may take several minutes for each device on a busy storage system.

6. Monitor the resynchronization process until complete, using the following command at the host with access the source (R1) volumes:
   
   ```
   ZURDF DIS GRO-ccccc SET-ccccc TYP-ITR
   ```

**Figure 3** illustrates this procedure. The boxes on the left contain actions performed on the source (R1) volume, and the boxes on the right contain actions performed on the target (R2) volume.
**Procedure 3-R1**

The R2 volume is not ready and read-only. The R1 is SUSPENDED.

Set the current synch_direction to R1>R2.

**ZURDF SYN**
`[SET-cccccccc]` PAR-R1R2

Use the **ZURDF SYN** command to set the current synchronization direction to R1>R2.

Set the current synch_direction to R1>R2.

**ZURDF SYN REM**
`GRO-cccccccc` [SET-cccccccc] PAR-R1R2

Determine which target (R2) volumes have accumulated R1 invalid tracks.

**ZURDF DIS REM**
`GRO-cccccccc` [SET-cccccccc] TYP-ITR

From the host with access to the R1 volume, use the **ZURDF DIS REM** `GRO-cccccccc` `SET-cccccccc` `TYP-ITR` command to determine which R2 volumes have accumulated R1 invalid tracks.

From the host with access to the R1 volumes, either enter the validate action code for all Sets in the SRDF Group, or enter the validate for one or more R2 volumes with accumulated R1 invalid tracks for one or more Sets in the SRDF Group. This command clears the invalid track indicators for all R1 tracks.

From the host with access to the R1 volume, use the **ZURDF DIS REM** `GRO-cccccccc` `SET-cccccccc` `TYP-ITR` command to verify that all R2 volumes indicate zero R1 invalid tracks.

For each selected R1, set all R2 tracks invalid.

**ZURDF INV**
`GRO-cccccccc` [SET-cccccccc]

From the Host with access to the R1 volumes, for each R1 whose partner R2 volume was validated above, set all R2 tracks invalid. The SRDF monitor will monitor the process of invalidating all R2 tracks. This may take several minutes on a heavily loaded controller. You may monitor the resynchronization process using the **ZURDF DIS** command.

Figure 3 R1 to R2 full volume resynchronization from a host with R1 access
3-R2: R1 to R2 full volume resynchronization from R2 access

Procedure 3-R2 performs R1 to R2 full volume resynchronization from a host with access to the R2 volumes.

**Note:** This procedure applies to storage systems running Enginuity 5773 and higher or HYPERMAX OS. Before using this procedure, ensure that you have completed “2: Selecting a synchronization method” on page 244.

Procedure 3-R2 resynchronizes the RDF pair after R2 read/write host activity. All updates to the target (R2) volume that were made after the SUSPEND operation was executed are discarded and all updates to the source (R1) volume are kept.

**Note:** Issue all commands from the host with access to but not running on the target (R2) volumes.

1. Set the current synchronization direction from source to target (R1 → R2):
   
   ZURDF SYN GRO-cccccccc [SET-cccccccc] PAR-R1R2
   
   and
   
   ZURDF SYN REM GRO-cccccccc [SET-cccccccc] PAR-R1R2

2. Identify which target (R2) volumes have a non-zero R1 INV_TRKS value:
   
   ZURDF DIS GRO-cccccccc SET-cccccccc TYP-ITR

3. For all target (R2) volumes with non-zero R1 INV_TRKS values:
   
   Validate all invalid tracks for the source (R1) volume(s) on the target (R2) volume:
   
   ZURDF VAL GRO-cccccccc [SET-cccccccc]

4. Verify that all target (R2) volumes have an R1 INV_TRKS value equal to zero:
   
   ZURDF DIS GRO-cccccccc SET-cccccccc TYP-ITR

5. For all source (R1) volumes whose target (R2) volumes were write-enabled and had an R1 INV_TRK value greater than zero (prior to step 2 above). Invalidate all valid tracks for the target (R2) volume on the source (R1) volume:
   
   ZURDF INV REM GRO-cccccccc [SET-cccccccc]

   When the Invalidate completes, the R2 Invalid track count has the maximum value for the device, the TNR status no longer applies, and resynchronization begins.

   The SRDF Monitor monitors the process of invalidating all target tracks until complete. This may take several minutes for each device in a busy storage system.

6. Monitor the resynchronization process until complete:
   
   ZURDF DIS REM GRO-cccccccc SET-cccccccc TYP-ITR

**Figure 4** illustrates this procedure. The boxes on the left contain actions performed on the source (R1) volume, and the boxes on the right contain actions performed on the target (R2) volume.
Procedure 3-R2

The R2 volume is not ready and read-only.
The R1 is SUSPENDED.

From the Host with access to but not running on the target (R2) volumes, for each R1 whose partner R2 volume was validated above, set all R2 tracks invalid. The SRDF monitor will monitor the process of invalidating all R2 tracks. This may take several minutes on a heavily loaded controller. You may monitor the resynchronization process using the ZURDF DIS command.

Figure 4  R1 to R2 full volume resynchronization from a host with R2 access
4-R1: R2 to R1 full volume resynchronization from R1 access

Procedure 4-R1 performs R2 to R1 full volume resynchronization from a host with R1 access.

**Note:** This procedure applies to storage systems running Enginuity 5773 and above or HYPERMAX OS. Before using this procedure, ensure that you have completed “2: Selecting a synchronization method” on page 244.

Procedure 4-R1 resynchronize the RDF pair after R2 read/write activity. All updates to the R1 device that were made after the SUSPEND operation was executed are discarded and all updates to the R2 device are kept.

**Note:** Issue all commands from a host with access to but not running on the source (R1) volumes.

1. Set the current synchronization direction from target to source (R1 ← R2):

   
   ZURDF SYN GRO-ccccccccc [SET-cccccccccc] PAR-R2R1

   and

   ZURDF SYN REM GRO-cccccccccc [SET-cccccccccc] PAR-R2R1

2. Identify which target (R2) volumes have a non-zero R1 INV_TRKS value:

   
   ZURDF DIS REM GRO-cccccccccc SET-cccccccccc TYP-ITR

3. For all target (R2) volumes with non-zero R1 invalid tracks, set the R1 invalid track count to its maximum value:

   
   ZURDF INV REM GRO-cccccccccc [SET-cccccccccc]

4. For all target (R2) volumes with non-zero R1 INV_TRKS values:

   Set R2 invalid tracks to zero and prepare the source (R1) volume for synchronization:

   
   ZURDF VAL GRO-cccccccccc [SET-cccccccccc]

   When the Validate command completes, the R1 Invalid track count has the maximum value for the device, the TNR status no longer applies, and resynchronization begins.

5. IPL the host with access to source (R1) volumes.

   Figure 5 on page 251 illustrates this procedure. The boxes on the left contain actions performed on the source (R1) volume, and the boxes on the right contain actions performed on the target (R2) volume.
Procedure 4-R1

The R2 device is not ready and read-only. The R1 is SUSPENDED.

Set the current synch_direction to R1<R2.

Use the ZURDF SYN command to set the current synchronization direction to R1<R2.

From the host with access to the R1 device, use the ZURDF SYN GRO-cccccccc [SET-cccccccc] PAR-R2R1 command to set the current synch_direction to R1<R2.

Set the current synch_direction to R1<R2.

Determine which target (R2) volumes have accumulated R1 invalid tracks.

From the host with access to the R1 device, use the ZURDF DIS REM GRO-cccccccc SET-cccccccc TYP-ITR command to determine which R2 volumes have accumulated R1 invalid tracks.

For each R2 volume that indicates R1 invalid tracks, set all R1 tracks invalid.

For each R1 volume whose partner device indicates R1 invalid tracks set all R2 tracks valid.

From the host with access to the R1 volumes, use the VALIDATE command to set all R2 tracks valid and prepare the R1 device for resynch from the R2. You may monitor the resynchronization process using the ZURDF VAL GRO-cccccccc [SET-cccccccc] command.

Figure 5 R2 to R1 full volume resynchronization from a host with R1 access
4-R2: R2 to R1 full volume resynchronization from R2 access

Procedure 4-R2 performs R2 to R1 full volume resynchronization from a host with R2 access.

**Note:** This procedure applies to storage systems running Enginuity 5773 and higher or HYPERMAX OS. Before using this procedure, ensure that you have completed “2: Selecting a synchronization method” on page 244.

Procedure 4-R2 resynchronizes the RDF pair after R2 read/write host activity. All updates to the R1 device that were made after the SUSPEND operation was executed are discarded and all updates to the R2 device are kept.

**Note:** Issue all commands for this procedure on the host with access to but not running on target (R2) volumes.

1. Set the current synchronization direction from target to source (R1 ← R2):
   
   ```
   ZURDF SYN GRO-cccccccc [SET-cccccccc] PAR-R2R1
   ```
   
   and
   
   ```
   ZURDF SYN REM GRO-cccccccc [SET-cccccccc] PAR-R2R1
   ```

2. Make the source (R1) device unavailable to the host:
   
   ```
   ZURDF NRD REM GRO-cccccccc [SET-cccccccc]
   ```

3. Identify the target (R2) volumes that have a non-zero R1 INV_TRKS value:
   
   ```
   ZURDF DIS GRO-cccccccc SET-cccccccc TYP-ITR
   ```

4. For all target (R2) volumes with non-zero R1 invalid tracks, set the R1 invalid track count to its maximum value:
   
   ```
   ZURDF INV GRO-cccccccc [SET-cccccccc]
   ```

5. For all target (R2) volumes with non-zero R1 INV-TRKS values:
   
   Set the R2 invalid tracks to zero and prepare the source (R1) volume for synchronization:
   
   ```
   ZURDF VAL REM GRO-cccccccc [SET-cccccccc]
   ```
   
   When the Validate completes, the R1 Invalid track count has the maximum value for the device, the TNR status no longer applies and resynchronization begins.

6. Make the source (R1) devices available to the host:
   
   ```
   ZURDF RDY REM GRO-cccccccc [SET-cccccccc]
   ```

**Figure 6 on page 253** illustrates this procedure. The boxes on the left contain actions performed on the source (R1) volume, and the boxes on the right contain actions performed on the target (R2) volume.
Procedure 4-R2

The R2 device is not ready and read-only. The R1 is SUSPENDED.

Use the ZURDF SYN command to set the current synchronization direction to R1<R2.

Set the current synch_direction to R1<R2.
ZURDF SYN GRO-cccccccc [SET-cccccccc] PAR-R2R1

From the host with access to the R1 device, make the R1 device RDF-NRDY. Any attempt to issue an I/O request to the device will result in an intervention required status.

From the host with access to the R1 device, use the ZURDF DIS GRO-cccccccc SET-cccccccc TYP-ITR command to determine which R2 volumes have accumulated R1 invalid tracks.

For each R2 volume that indicates R1 invalid tracks, set all R1 tracks invalid.
ZURDF INV GRO-cccccccc [SET-cccccccc]

From the host with access to the R1 device, use the ZURDF VAL REM GRO-cccccccc [SET-cccccccc] command to set all R2 tracks valid and prepare the R1 device for resynch from the R2. You may monitor the resynchronization process using the ZURDF VAL REM GRO-cccccccc [SET-cccccccc] command.

Once resynchronization has started, make the R1 device ready for access from the host.
ZURDF RDY REM GRO-cccccccc [SET-cccccccc]

Make the R1 device not ready to the host.
ZURDF NRD REM GRO-cccccccc [SET-cccccccc]

From the host with access to the R1 device, use the ZURDF DIS GRO-cccccccc SET-cccccccc TYP-ITR command to determine which R2 volumes have accumulated R1 invalid tracks.

For each R1 volume whose partner device indicates R1 invalid tracks set all R2 tracks valid:
ZURDF VAL REM GRO-cccccccc [SET-cccccccc]

Make the R1 available to the host.
ZURDF RDY REM GRO-cccccccc [SET-cccccccc]

Figure 6 R2 to R1 full volume resynchronization from a host with R2 access
5-R1: R1 to R2 changed tracks resynchronization from R1 access

Procedure 5-R1 performs R1 to R2 changed tracks resynchronization from a host with R1 access.

**Note:** This procedure applies to storage systems running Enginuity 5773 and higher or HYPERMAX OS. Before using this procedure, ensure that you have completed “2: Selecting a synchronization method” on page 244.

This procedure resynchronizes the RDF pair after R2 read/write host activity. All updates to the target (R2) volume that were made after the SUSPEND operation was executed are discarded and all updates to the source (R1) volume are kept.

**Note:** Issue all commands for this procedure on the host with access to the source (R1) volumes.

1. Set the synchronization direction from source to target (R1  →  R2):

   ```
   ZURDF SYN GRO-cccccccc [SET-cccccccc] PAR-R1R2
   and
   ZURDF SYN REM GRO-cccccccc [SET-cccccccc] PAR-R1R2
   ```

2. Identify which target (R2) volumes have a non-zero R1 INV_TRKS value:

   ```
   ZURDF DIS REM GRO-cccccccc SET-cccccccc TYP-ITR
   ```

3. Flag any tracks that were updated on the R2 as valid on the R1 and invalid on the R2:

   ```
   ZURDF REF REM GRO-cccccccc [SET-cccccccc]
   ```

4. Resume SRDF operation by entering the following command:

   ```
   ZURDF RFR GRO-cccccccc [SET-cccccccc]
   ```

   **Note:** Only the tracks that were updated during R2 read/write testing are copied from R1 to R2.

5. Monitor the resynchronization process until complete:

   ```
   ZURDF DIS GRO-cccccccc SET-cccccccc TYP-ITR
   ```

**Figure 7** illustrates this procedure. The boxes on the left contain actions performed on the source (R1) volume, and the boxes on the right contains actions performed on the target (R2) volume.
**Procedure 5-R1**

The R2 device is not ready and read-only. The R1 is SUSPENDED.

Set the current synch_direction to NONE.

**ZURDF SYN**

GRO-cccccccc [SET-cccccccc] PAR-R1R2

Use the **ZURDF SYN** command to set the current synchronization direction.

**ZURDF SYN REM**

GRO-cccccccc SET-cccccccc PAR-R1R2

From the host with access to the R2 volume, use the **ZURDF DIS REM** GRO-cccccccc SET-cccccccc TYP-ITR command to determine which R2 volumes have accumulated R1 invalid tracks.

The **ZURDF REF** command will cause any updated tracks on either of the SRDF partners to be flagged as invalid R2 tracks and valid R1 tracks. No transfer of data will occur at this time.

**Set the current synch_direction to R1>R2.**

**ZURDF SYN REM**

GRO-cccccccc [SET-cccccccc] PAR-R1R2

Determine which target (R2) volumes have invalid tracks.

**ZURDF DIS REM**

GRO-cccccccc SET-cccccccc TYP-ITR

For each R2 volume with R1 invalid tracks, set the R1 tracks valid, and flag the corresponding R2 tracks invalid.

**ZURDF REF REM**

GRO-cccccccc [SET-cccccccc]

The R2 tracks that are now flagged as invalid will be refreshed from the R1 device. Monitor the resynchronization process using the **ZURDF DIS GRO-cccccccc SET-cccccccc TYP-ITR** command from the Host with access to the R1.

**DONE**

The synchronization process is complete.

Resume normal SRDF operations and commence synchronization.

**ZURDF RFR**

GRO-cccccccc [SET-cccccccc]

**Figure 7** R1 to R2 changed tracks resynchronization from a host with R1 access
5-R2: R1 to R2 changed tracks resynchronization from R2 access

Procedure 5-R2 performs R1 to R2 changed tracks resynchronization from a host with R2 access.

**Note:** This procedure applies to storage systems running Enginuity 5773 and higher or HYPERMAX OS. Before using this procedure, ensure that you have completed “2: Selecting a synchronization method” on page 244.

Procedure 5-R2 resynchronizes the RDF pair after R2 read/write host activity. All updates to the target (R2) volume that were made after the SUSPEND operation was executed are discarded and all updates to the source (R1) volume are kept.

**Note:** Issue all commands for this procedure on a host with access to but not running on target (R2) volumes.

1. Set the synchronization direction from source to target (R1 → R2):
   
   ```
   ZURDF SYN GRO-[ccdname] [SET-ccccc] PAR-R1R2
   and
   ZURDF SYN REM GRO-[ccdname] [SET-ccccc] PAR-R1R2
   ```

2. Identify which target (R2) volumes have a non-zero R1 INV_TRKS value:
   
   ```
   ZURDF DIS GRO-[ccdname] SET-ccccc TYP-ITR
   ```

3. Flag any tracks that were updated on the R2 as valid on the R1 and invalid on the R2:
   
   ```
   ZURDF REF GRO-[ccdname] [SET-ccccc]
   ```

4. Resume SRDF operation:
   
   ```
   ZURDF RFR REM GRO-[ccdname] [SET-ccccc]
   ```

   **Note:** Only the tracks that were updated during R2 read/write testing are copied from R1→R2.

5. Monitor the resynchronization process until complete:
   
   ```
   ZURDF DIS REM GRO-[ccdname] SET-ccccc TYP-ITR
   ```

**Figure 8** illustrates this procedure. The boxes on the left contain actions performed on the source (R1) volume, and the boxes on the right contain actions performed on the target (R2) volume.
Procedure 5-R2

The R2 device is not ready and read-only. The R1 is SUSPENDED.

Set the current synch_direction to NONE.

Use the ZURDF SYN command to set the current synchronization direction.

Set the current synch_direction to R1>R2.

From the host with access to the R2 volume, use the ZURDF DIS GRO-cccccccc SET-cccccccc TYP-ITR command to determine which R2 volumes have accumulated R1 invalid tracks.

The ZURDF REF command will cause any updated tracks on either of the SRDF partners to be flagged as invalid R2 tracks and valid R1 tracks. No transfer of data will occur at this time.

For each R2 volume with R1 invalid tracks, set the R1 tracks valid, and flag the corresponding R2 tracks invalid.

The R2 tracks that are now flagged as invalid will be refreshed from the R1 device. Monitor the resynchronization process using the ZURDF DIS REM GRO-cccccccc SET-cccccccc TYP-ITR command from the Host with access to the R1.

The synchronization process is complete.

Figure 8 R1 to R2 changed tracks resynchronization from a host with R2 access
6-R1: R2 to R1 changed tracks resynchronization from R1 access

Procedure 6-R1 performs R2 to R1 changed tracks resynchronization from a host with R1 access.

**Note:** This procedure applies to storage systems running Enginuity 5773 and higher or HYPERMAX OS. Before using this procedure, ensure that you have completed “2: Selecting a synchronization method” on page 244.

Procedure 6-R1 resynchronizes the RDF pair after R2 read/write host activity. All updates to the source (R1) volume that were made after the SUSPEND operation was executed are discarded and all updates to the target (R2) volume are kept.

**Note:** Issue all commands for this procedure on a host with access to but not running on source (R1) volumes.

1. Set the synchronization direction from target to source (R1 ← R2):
   
   ZURDF SYN GRO-cccccccc [SET-cccccccc] PAR-R2R1
   and
   
   ZURDF SYN REM GRO-cccccccc [SET-cccccccc] PAR-R2R1

2. Identify which target (R2) volumes have a non-zero R1 INV_TRKS value:
   
   ZURDF DIS REM GRO-cccccccc SET-cccccccc TYP-ITR

3. Flag any tracks that were updated on the target (R2) volume as valid on the R2 and invalid on the R1:
   
   ZURDF REF GRO-cccccccc [SET-cccccccc]

4. Resume SRDF operation:
   
   ZURDF RFR GRO-cccccccc [SET-cccccccc]
   
   **Note:** Only the tracks that were updated during R2 read/write testing are copied from the R2 to the R1.

5. Monitor the resynchronization process until complete:
   
   ZURDF DIS GRO-cccccccc SET-cccccccc TYP-ITR

**Figure 9 on page 259** illustrates this procedure. The boxes on the left contain actions performed on the source (R1) volume, and the boxes on the right contain actions performed on the target (R2) volume.
**Procedure 6-R1**

The R2 volume is not ready and read-only. The R1 is SUSPENDED.

**Set the current synch_direction to NONE.**

Set the current sync direction to NONE.

\[ \text{ZURDF SYN GRO-cccccccc [SET-cccccccc] PAR-R2R1} \]

From the host with access to the R1 volume, use the ZURDF DIS REM GRO-cccccccc SET-cccccccc TYP-ITR command to determine which R1 volumes have accumulated R2 invalid tracks, and from the host with access to the R2 volume, use the ZURDF DIS REM GRO-cccccccc SET-cccccccc TYP-ITR command to determine which R2 volumes have accumulated R1 invalid tracks.

**Determine which source (R1) volumes have invalid tracks.**

Determine which source (R1) volumes have invalid tracks.

\[ \text{ZURDF DIS GRO-cccccccc SET-cccccccc TYP-ITR} \]

For each R1 volume with R2 invalid tracks or whose partner device indicates R1 invalid tracks, refresh updated tracks from the R2.

\[ \text{ZURDF REF GRO-cccccccc [SET-cccccccc]} \]

The ZURDF REF command will cause any updated tracks on either of the SRDF partners to be flagged as invalid R1 tracks and valid R2 tracks. No transfer of data will occur at this time.

**Resume Normal SRDF operations:**

Resume Normal SRDF operations:

\[ \text{ZURDF RFR GRO-cccccccc [SET-cccccccc]} \]

The R1 tracks that are now flagged as invalid will be refreshed from the R2 volume. Monitor the resynchronization process using the ZURDF DIS GRO-cccccccc SET-cccccccc TYP-ITR command from the Host with access to the R1.

**DONE**

The synchronization process is complete.

**Figure 9** R2 to R1 changed tracks resynchronization from a host with R1 access
6-R2: R2 to R1 changed tracks resynchronization from R2 access

Procedure 6-R2 performs R2 to R1 changed tracks resynchronization from a host with R2 access.

**Note:** This procedure applies to storage systems running Enginuity 5773 and higher or HYPERMAX OS. Before using this procedure, ensure that you have completed “2: Selecting a synchronization method” on page 244.

Procedure 6-R2 resynchronizes the RDF pair after R2 read/write host activity. All updates to the source (R1) volume that were made after the SUSPEND operation was executed are discarded and all updates to the target (R2) volume are kept.

**Note:** Issue commands for this procedure on host with access to but not running on target (R2) volumes.

**Note:** This procedure requires the R1 devices to be varied offline from all hosts that have access to them. This might not be achievable on the same host that has access to the R2 devices. So you must use MVS VARY commands on ALL hosts with access to the R1 devices.

1. Set the synchronization direction from target to source (R1 ← R2):
   
   \[
   \text{ZURDF SYN GRO-cccccccc [SET-cccccccc] PAR-R2R1}
   \]
   
   and
   
   \[
   \text{ZURDF SYN REM GRO-cccccccc [SET-cccccccc] PAR-R2R1}
   \]

2. Identify which target (R2) volumes have a non-zero R1 INV_TRKS value:
   
   \[
   \text{ZURDF DIS GRO-cccccccc SET-cccccccc TYP-ITR}
   \]

3. Flag any tracks that were updated on the target (R2) volume as valid on the R2 and invalid on the R1:
   
   \[
   \text{ZURDF REF REM GRO-cccccccc [SET-cccccccc]}
   \]

4. Resume SRDF operation:
   
   \[
   \text{ZURDF RFR REM GRO-cccccccc [SET-cccccccc]}
   \]

   **Note:** Only the tracks that were updated during R2 read/write testing are copied from the R2 to the R1.

5. Monitor the resynchronization process until complete:
   
   \[
   \text{ZURDF DIS REM GRO-cccccccc SET-cccccccc TYP-ITR}
   \]

**Figure 10** illustrates this procedure. The boxes on the left contain actions performed on the source (R1) volume, and the boxes on the right contain actions performed on the target (R2) volume.
**Procedure 6-R2**

The R2 volume is not ready and read-only. The R1 is SUSPENDED.

Set the current synch_direction to NONE.

ZURDF SYN REM
GRO-cccccccc
[SET-cccccccc]
PAR-R2R1

Use the ZURDF SYN command to set the current synchronization direction.

From the host with access to the R1 volume, use the ZURDF DIS GRO-cccccccc
SET-cccccccc
TYP-ITR command to determine which R1 volumes have accumulated R2 invalid tracks, and from the host with access to the R2 volume, use the ZURDF DIS GRO-cccccccc
SET-cccccccc
TYP-ITR command to determine which R2 volumes have accumulated R1 invalid tracks.

For each R1 volume with R2 invalid tracks or whose partner device indicates R1 invalid tracks, refresh updated tracks from the R2.

ZURDF REF REM
GRO-cccccccc
[SET-cccccccc]

The ZURDF REF command will cause any updated tracks on either of the SRDF partners to be flagged as invalid R1 tracks and valid R2 tracks. No transfer of data will occur at this time.

Determine which source (R1) volumes have invalid tracks.

ZURDF DIS REM
GRO-cccccccc
SET-cccccccc
TYP-ITR

Resume Normal SRDF operations:

ZURDF RFR REM
GRO-cccccccc
[SET-cccccccc]

The R1 tracks that are now flagged as invalid will be refreshed from the R2 volume. Monitor the resynchronization process using the ZURDF DIS REM
GRO-cccccccc
SET-cccccccc
TYP-ITR command from the Host with access to the R1.

The synchronization process is complete.

DONE

**Figure 10** R2 to R1 changed tracks resynchronization from a host with R2 access
Configuring SRDF control records

With SRDF configuration you can:

- Open and close a configuration session for a named SRDF group.
- Add and remove named SRDF sets from an SRDF group.
- Change and delete RDF pairs in the configured RDFGroup from an SRDF set.
- Rename SRDF groups and sets.
- Provide various views of the SRDF configuration through displays.

An SRDF group consists of one or more unique RDF pairs in each configured SRDF set. A specific source (R1) or target (R2) can appear in an SRDF group once only. However, a specific RDF device can be in multiple SRDF groups.

Although such a configuration can be useful for some purposes, there are restrictions that such a configuration imposes.

You can attach the same dynamic RDF device to different or distinct dynamic RDF devices at different points in time. When you detach (DELPair) and attach (CRTLpair) a dynamic RDF device, SRDF Controls clears any existing invalid track changes for the dynamic RDF pair. Therefore, partial volume synchronization of a dynamic RDF pair can occur only if you have not detached (Delpair) the dynamic RDF pair since the last full volume synchronization.

A fully synchronized set of target (R2) devices in an SRDF group consisting of a simplex or duplex set of online z/TPF modules, which are also source (R1) devices, constitutes a distinct copy of a z/TPF database.

SRDF configuration procedure

You can use SRDF configuration commands in either of the following instances:

- When the SRDF control records have been cleared using ZURDF INITialize CLEar (see page 170).
- When you have previously configured the SRDF control records using SRDF Controls for z/TPF.

The following is a general procedure for configuring a new SRDF group.

1. Back up the SRDF control records.

   SRDF Controls for z/TPF includes controls to back up and restore the SRDF control records to SRDF backup control records.

2. Open a configuration session for an SRDF group using the ZURDF CONfig OPEn|CLOse command (see page 92).

   If necessary, configuration control records are refreshed from existing SRDF control records. Create a configuration SRDF group control record for the SRDF group.

3. Add one or more SRDF sets for one or more logical subsystems (LSS) using the ZURDF CONfig ADD|REMove command (see page 77).

   For each SRDF set added, create an SRDF CU control record describing the logical subsystem and Device control records describing all logical volumes in the physical CU.
4. Change RDF pairs for each SRDF set in the SRDF group using the ZURDF CONfig CHAnge|DELete command (see page 80).
   Fill in RDF pair configuration information for the RDFGroup configured in the SRDF sets in the SRDF group.

5. Close the configuration session for the SRDF group using the ZURDF CONfig OPEn|CLOse command (see page 92).
   Indicate that the configuration session for the SRDF group is closed.

6. Accept the SRDF configuration using the ZURDF CONfig ACCEPT|DISCARD command (see page 75).

   At this point, the software takes the following steps:
   1. Validates that all configuration sessions are closed.
   2. Verifies that configured RDF pairs are unique.
   3. Modifies RDF pair status for all SRDF sets.
   4. Compresses SRDF control records by removing empty SRDF sets and empty SRDF groups.
   5. Calculates new SRDF group counts.
   6. Replaces existing SRDF control records with configuration control records.
   7. Rebuilds the core-resident Group Status Table (GST).

**Mixed vendor tolerance**

You cannot configure the control structures for control units that do not implement the EMC SymmAPI for z/TPF I/O commands. In a mixed vendor environment, configure SRDF groups only for the storage systems compatible with the EMC SymmAPI for z/TPF. All SRDF Controls for z/TPF operations bypass any unsupported control units.
SRDF/A MSC configuration and control

This section contains an example of configuring and operating SRDF/A MSC.

1. Configure SRDF group SRDFA containing two Sets.

   **ZURDF CON OPEN GRO-SRDFA**
   
   CSMP0097I 10.07.42 CPU-A SS-BSS SSU-SSU0 IS-01
   URDF0100I SRDF configuration ctl rcd refresh initiated
   CSMP0097I 10.07.48 CPU-A SS-BSS SSU-SSU0 IS-01
   URDF1049I SRDF Group SRDFA is Open
   CSMP0097I 10.07.48 CPU-A SS-BSS SSU-SSU0 IS-01
   URDF1006I SRDF Configuration Open complete

   **ZURDF CON ADD GRO-SRDFA SET-46C0 SDA-46C0 MHL1-20**
   
   CSMP0097I 10.09.38 CPU-A SS-BSS SSU-SSU0 IS-01
   URDF1043I Local CU 000196701170 discovered for Group SRDFA Set 46C0
   CSMP0097I 10.09.38 CPU-A SS-BSS SSU-SSU0 IS-01
   URDF1043I Remote CU 000196701305 discovered for Group SRDFA Set 46C0
   CSMP0097I 10.09.38 CPU-A SS-BSS SSU-SSU0 IS-01
   URDF1054I SRDF Group SRDFA Set 46C0 Added
   CSMP0097I 10.09.38 CPU-A SS-BSS SSU-SSU0 IS-01
   URDF1006I SRDF Configuration Add complete

   **ZURDF CON CHANGE GRO-SRDFA SET-46C0 TYP-DRX SDN-9FD OTYP-DRX OSDN-51C CNT-16**
   
   CSMP0097I 10.10.39 CPU-A SS-BSS SSU-SSU0 IS-01
   URDF1051I SRDF Group SRDFA Set 46C0 Change request processed
   URDF1006I SRDF Configuration Change complete

   **ZURDF CON ADD GRO-SRDFA SET-56C0 SDA-56C0 MHL1-21**
   
   CSMP0097I 10.18.42 CPU-A SS-BSS SSU-SSU0 IS-01
   URDF1043I Local CU 000196701175 discovered for Group SRDFA Set 56C0
   CSMP0097I 10.18.42 CPU-A SS-BSS SSU-SSU0 IS-01
   URDF1043I Remote CU 000196701305 discovered for Group SRDFA Set 56C0
   CSMP0097I 10.18.42 CPU-A SS-BSS SSU-SSU0 IS-01
   URDF1054I SRDF Group SRDFA Set 56C0 Added
   CSMP0097I 10.18.42 CPU-A SS-BSS SSU-SSU0 IS-01
   URDF1006I SRDF Configuration Add complete

   **ZURDF CON CHANGE GRO-SRDFA SET-56C0 TYP-DRX SDN-7BD OTYP-DRX OSDN-52C CNT-16**
   
   CSMP0097I 10.20.48 CPU-A SS-BSS SSU-SSU0 IS-01
   URDF1051I SRDF Group SRDFA Set 56C0 Change request processed
   URDF1006I SRDF Configuration Change complete

2. Close the SRDF group and accept the configuration.

   **ZURDF CON CLOSE GRO-SRDFA**
   
   CSMP0097I 10.23.30 CPU-A SS-BSS SSU-SSU0 IS-01
   URDF1049I SRDF Group SRDFA is Closed
   CSMP0097I 10.23.30 CPU-A SS-BSS SSU-SSU0 IS-01
   URDF1006I SRDF Configuration Close complete

   **ZURDF CON ACCEPT ALL**
   
   CSMP0097I 10.23.40 CPU-A SS-BSS SSU-SSU0 IS-01
   URDF0089I SRDF configuration verifying sessions not open
   CSMP0097I 10.23.40 CPU-A SS-BSS SSU-SSU0 IS-01
   URDF0113I SRDF configuration verifying RDF pairs unique
   CSMP0097I 10.23.40 CPU-A SS-BSS SSU-SSU0 IS-01
   URDF0105I SRDF configuration finalizing RDF pairs
   CSMP0097I 10.23.41 CPU-A SS-BSS SSU-SSU0 IS-01
   URDF0090I SRDF configuration finalizing RDF groups
   CSMP0097I 10.23.41 CPU-A SS-BSS SSU-SSU0 IS-01
   URDF0102I SRDF configuration inactive sets removed
   CSMP0097I 10.23.41 CPU-A SS-BSS SSU-SSU0 IS-01
   URDF0101I SRDF configuration inactive groups removed
3. Display the state matrix of each local SRDF set for SRDF group SRDFA. This shows that SDA, DBI, and symbolic module are NOT updated at accept time.

**ZURDF DIS GRO-SRDFA SET-46C0 TYP-MAT**

CSMP0097I 10.35.50 CPU-A SS-BSS SSU-SSU0 IS-01
E1RQ00001 RDF Device MAT Display
Group SRDFA  Set 46C0  in Local  CU 000196701170

<table>
<thead>
<tr>
<th>SSN Mod SDA Dev</th>
<th>GRP HS MO AC IT MR R1-Itrk R2-Itrk</th>
</tr>
</thead>
<tbody>
<tr>
<td>A64 0110 46C0</td>
<td>000009FD 0000051C 0 R/W  DLX 0 0</td>
</tr>
<tr>
<td></td>
<td>Disruptive States:</td>
</tr>
<tr>
<td></td>
<td>N/A 0000 0000 000009FE 0000051D 0 R/W  DLX 0 0</td>
</tr>
<tr>
<td></td>
<td>Disruptive States:</td>
</tr>
<tr>
<td></td>
<td>N/A 0000 0000 000009FF 0000051E 0 R/W  DLX 0 0</td>
</tr>
<tr>
<td></td>
<td>Disruptive States:</td>
</tr>
<tr>
<td></td>
<td>N/A 0000 0000 00000A00 0000051F 0 R/W  DLX 0 0</td>
</tr>
<tr>
<td></td>
<td>Disruptive States:</td>
</tr>
<tr>
<td></td>
<td>N/A 0000 0000 00000A01 00000520 0 R/W  DLX 0 0</td>
</tr>
<tr>
<td></td>
<td>Disruptive States:</td>
</tr>
<tr>
<td></td>
<td>N/A 0000 0000 00000A02 00000521 0 R/W  DLX 0 0</td>
</tr>
<tr>
<td></td>
<td>Disruptive States:</td>
</tr>
<tr>
<td></td>
<td>N/A 0000 0000 00000A03 00000522 0 R/W  DLX 0 0</td>
</tr>
<tr>
<td></td>
<td>Disruptive States:</td>
</tr>
<tr>
<td></td>
<td>N/A 0000 0000 00000A04 00000523 0 R/W  DLX 0 0</td>
</tr>
<tr>
<td></td>
<td>Disruptive States:</td>
</tr>
<tr>
<td></td>
<td>N/A 0000 0000 00000A05 00000524 0 R/W  DLX 0 0</td>
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<tr>
<td></td>
<td>Disruptive States:</td>
</tr>
<tr>
<td></td>
<td>N/A 0000 0000 00000A06 00000525 0 R/W  DLX 0 0</td>
</tr>
<tr>
<td></td>
<td>Disruptive States:</td>
</tr>
<tr>
<td></td>
<td>N/A 0000 0000 00000A07 00000526 0 R/W  DLX 0 0</td>
</tr>
<tr>
<td></td>
<td>Disruptive States:</td>
</tr>
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<td></td>
<td>N/A 0000 0000 00000A08 00000527 0 R/W  DLX 0 0</td>
</tr>
<tr>
<td></td>
<td>Disruptive States:</td>
</tr>
<tr>
<td></td>
<td>N/A 0000 0000 00000A09 00000528 0 R/W  DLX 0 0</td>
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<tr>
<td></td>
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<td>N/A 0000 0000 00000A0A 00000529 0 R/W  DLX 0 0</td>
</tr>
<tr>
<td></td>
<td>Disruptive States:</td>
</tr>
<tr>
<td></td>
<td>N/A 0000 0000 00000A0B 0000052A 0 R/W  DLX 0 0</td>
</tr>
<tr>
<td></td>
<td>Disruptive States:</td>
</tr>
<tr>
<td></td>
<td>N/A 0000 0000 00000A0C 0000052B 0 R/W  DLX 0 0</td>
</tr>
<tr>
<td></td>
<td>Disruptive States:</td>
</tr>
</tbody>
</table>

End of Display

**ZURDF DIS GRO-SRDFA SET-56C0 TYP-MAT**

CSMP0097I 10.30.44 CPU-A SS-BSS SSU-SSU0 IS-01
E1RQ00001 RDF Device MAT Display
Group SRDFA  Set 56C0  in Local  CU 000196701175

<table>
<thead>
<tr>
<th>SSN Mod SDA Dev</th>
<th>GRP HS MO AC IT MR R1-Itrk R2-Itrk</th>
</tr>
</thead>
<tbody>
<tr>
<td>A64 0120 56C0</td>
<td>000007BD 0000052C 0 R/W  DLX 0 0</td>
</tr>
<tr>
<td></td>
<td>Disruptive States:</td>
</tr>
<tr>
<td></td>
<td>N/A 0000 0000 000007BE 0000052D 0 R/W  DLX 0 0</td>
</tr>
<tr>
<td></td>
<td>Disruptive States:</td>
</tr>
<tr>
<td></td>
<td>N/A 0000 0000 000007BF 0000052E 0 R/W  DLX 0 0</td>
</tr>
</tbody>
</table>

End of Display
SRDF Procedures

N/A 0000 0000 000007C0 0000052F 0 R/W DLX 0 0
Disruptive States:
N/A 0000 0000 000007C1 00000530 0 R/W DLX 0 0
Disruptive States:
N/A 0000 0000 000007C2 00000531 0 R/W DLX 0 0
Disruptive States:
N/A 0000 0000 000007C3 00000532 0 R/W DLX 0 0
Disruptive States:
N/A 0000 0000 000007C4 00000533 0 R/W DLX 0 0
Disruptive States:
N/A 0000 0000 000007C5 00000534 0 R/W DLX 0 0
Disruptive States:
N/A 0000 0000 000007C6 00000535 0 R/W DLX 0 0
Disruptive States:
N/A 0000 0000 000007C7 00000536 0 R/W DLX 0 0
Disruptive States:
N/A 0000 0000 000007C8 00000537 0 R/W DLX 0 0
Disruptive States:
N/A 0000 0000 000007C9 00000538 0 R/W DLX 0 0
Disruptive States:
N/A 0000 0000 000007CA 00000539 0 R/W DLX 0 0
Disruptive States:
N/A 0000 0000 000007CB 0000053A 0 R/W DLX 0 0
Disruptive States:
N/A 0000 0000 000007CC 0000053B 0 R/W DLX 0 0
Disruptive States:

End of Display

4. Refresh the control records to update the SDA, DBI, and symbolic module. To be able to determine this information, the SDA of the device used to configure a particular SRDF set must be in the same SSID as all host attached devices in the SRDF set.

ZURDF CTLRCD REFRESH
CSMP0097I 10.36.27 CPU-A SS-BSS SSU-SSU0 IS-01
URDF0019I SRDF Control record refresh started
CSMP0097I 10.36.27 CPU-A SS-BSS SSU-SSU0 IS-01
URDF01043I Local CU 000196701175 discovered for Group SRDFA Set 56C0
CSMP0097I 10.36.27 CPU-A SS-BSS SSU-SSU0 IS-01
URDF01043I Remote CU 000196701305 discovered for Group SRDFA Set 56C0
CSMP0097I 10.36.27 CPU-A SS-BSS SSU-SSU0 IS-01
URDF01043I Local CU 000196701170 discovered for Group SRDFA Set 46C0
CSMP0097I 10.36.27 CPU-A SS-BSS SSU-SSU0 IS-01
URDF01043I Remote CU 000196701305 discovered for Group SRDFA Set 46C0
CSMP0097I 10.36.29 CPU-A SS-BSS SSU-SSU0 IS-01
URDF0024I SRDF Control record refresh completed

5. Display the CU control record summary for group SRDFA.

ZURDF DIS GRO-SRDFA STA-CTL
CSMP0097I 10.36.49 CPU-A SS-BSS SSU-SSU0 IS-01
E1RR0000I CU Control Record Summary
Local Group Name - SRDFA
Set Name - 46C0 MHL- 20
Serial # Model GP Ucod SDA MOD SSN GKD Sync Orient.
000196701170 VMAX200K 20 5977 46C0 0110 A64 No Glbl LCLISNP
000196701305 VMAX200K 20 5977 46C0 0110 A64 No Glbl
Set Name - 56C0 MHL- 21
Serial # Model GP Ucod SDA MOD SSN GKD Sync Orient.
000196701175 VMAX200K 21 5977 56E0 0102 BSS No Glbl LCLISNP
000196701305 VMAX200K 21 5977 56E0 0102 BSS No Glbl
End of Display

6. Display the state matrix of each local SRDF set for SRDF group SRDFA. This illustrates that SDA, DBI, and symbolic module have been updated by the CTLRCD REFRESH command.
### ZURDF DIS GRO-SRDFA SET-46C0 TYP-MAT

**CSMP0097I 10.35.50 CPU-A SS-BSS SSU-SSU0 IS-01**

**E1RQ0000I RDF Device MAT Display**

Group SRDFA Set 46C0 in Local CU 000196701170

<table>
<thead>
<tr>
<th>MDBF Symb</th>
<th>This</th>
<th>Othr</th>
<th>RDF</th>
</tr>
</thead>
<tbody>
<tr>
<td>SSN Mod SDA Dev Dev GRP HS MO AC IT MR R1-Itrk R2-Itrk</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A64 0110 46C0</td>
<td>000000FD</td>
<td>00000051C</td>
<td>0</td>
</tr>
<tr>
<td>Disruptive States:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A64 0111 46C1</td>
<td>0000009E</td>
<td>0000051D</td>
<td>0</td>
</tr>
<tr>
<td>Disruptive States:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A64 0112 46C2</td>
<td>0000009F</td>
<td>0000051E</td>
<td>0</td>
</tr>
<tr>
<td>Disruptive States:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A64 0113 46C3</td>
<td>000000A0</td>
<td>0000051F</td>
<td>0</td>
</tr>
<tr>
<td>Disruptive States:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A64 0114 46C4</td>
<td>000000A1</td>
<td>00000520</td>
<td>0</td>
</tr>
<tr>
<td>Disruptive States:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A64 0115 46C5</td>
<td>000000A2</td>
<td>00000521</td>
<td>0</td>
</tr>
<tr>
<td>Disruptive States:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A64 0116 46C6</td>
<td>000000A3</td>
<td>00000522</td>
<td>0</td>
</tr>
<tr>
<td>Disruptive States:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A64 0117 46C7</td>
<td>000000A4</td>
<td>00000523</td>
<td>0</td>
</tr>
<tr>
<td>Disruptive States:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A64 0118 46C8</td>
<td>000000A5</td>
<td>00000524</td>
<td>0</td>
</tr>
<tr>
<td>Disruptive States:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A64 0119 46C9</td>
<td>000000A6</td>
<td>00000525</td>
<td>0</td>
</tr>
<tr>
<td>Disruptive States:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A64 011A 46CA</td>
<td>000000A7</td>
<td>00000526</td>
<td>0</td>
</tr>
<tr>
<td>Disruptive States:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A64 011B 46CB</td>
<td>000000A8</td>
<td>00000527</td>
<td>0</td>
</tr>
<tr>
<td>Disruptive States:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A64 011C 46CC</td>
<td>000000A9</td>
<td>00000528</td>
<td>0</td>
</tr>
<tr>
<td>Disruptive States:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A64 011D 46CD</td>
<td>000000AA</td>
<td>00000529</td>
<td>0</td>
</tr>
<tr>
<td>Disruptive States:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A64 011E 46CE</td>
<td>000000AB</td>
<td>0000052A</td>
<td>0</td>
</tr>
<tr>
<td>Disruptive States:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A64 011F 46CF</td>
<td>000000AC</td>
<td>0000052B</td>
<td>0</td>
</tr>
<tr>
<td>Disruptive States:</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

End of Display

### ZURDF DIS GRO-SRDFA SET-56C0 TYP-MAT

**CSMP0097I 10.30.44 CPU-A SS-BSS SSU-SSU0 IS-01**

**E1RQ0000I RDF Device MAT Display**

Group SRDFA Set 56C0 in Local CU 000196701175

<table>
<thead>
<tr>
<th>MDBF Symb</th>
<th>This</th>
<th>Othr</th>
<th>RDF</th>
</tr>
</thead>
<tbody>
<tr>
<td>SSN Mod SDA Dev Dev GRP HS MO AC IT MR R1-Itrk R2-Itrk</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A64 0120 56C0</td>
<td>0000007ED</td>
<td>0000052C</td>
<td>0</td>
</tr>
<tr>
<td>Disruptive States:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A64 0121 56C1</td>
<td>0000007BE</td>
<td>0000052D</td>
<td>0</td>
</tr>
<tr>
<td>Disruptive States:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A64 0122 56C2</td>
<td>0000007BF</td>
<td>0000052E</td>
<td>0</td>
</tr>
<tr>
<td>Disruptive States:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A64 0123 56C3</td>
<td>0000007C0</td>
<td>0000052F</td>
<td>0</td>
</tr>
<tr>
<td>Disruptive States:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A64 0124 56C4</td>
<td>0000007C1</td>
<td>00000530</td>
<td>0</td>
</tr>
<tr>
<td>Disruptive States:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A64 0125 56C5</td>
<td>0000007C2</td>
<td>00000531</td>
<td>0</td>
</tr>
<tr>
<td>Disruptive States:</td>
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<tr>
<td>A64 0126 56C6</td>
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<td>00000532</td>
<td>0</td>
</tr>
<tr>
<td>Disruptive States:</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>A64 0127 56C7</td>
<td>0000007C4</td>
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<td>0</td>
</tr>
<tr>
<td>Disruptive States:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A64 0128 56C8</td>
<td>0000007C5</td>
<td>00000534</td>
<td>0</td>
</tr>
<tr>
<td>Disruptive States:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A64 0129 56C9</td>
<td>0000007C6</td>
<td>00000535</td>
<td>0</td>
</tr>
<tr>
<td>Disruptive States:</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
7. Define MSC gatekeepers for all SRDF sets in SRDF group SRDFA.

ZURDF DEF GRO-SRDFA SET-46C0 PRO-GMS SDA-44C1
CSMP0097I 10.40.38 CPU-A SS-BSS SSU-SSU0 IS-01
URDF0027P SRDF Group SRDFA Set 46C0
URDF0027I Define complete

8. Display a summary of the CU control record to illustrate GMS definition.

ZURDF DIS GRO-SRDFA STA-CTL
CSMP0097I 11.41.26 CPU-A SS-BSS SSU-SSU0 IS-01
E1R00001I CU Control Record Summary
Local Group Name - SRDFA
Set Name - 46C0 MHL- 20
Serial # Model GP Ucod SDA MOD SSN GKD Sync Orient.
000196701170 VMAX200K 20 5977 46C0 0114 BSS 44C1 Glbl LCLISR1
000196701305 VMAX200K 20 5977 46C0 0114 BSS 44C1 Glbl
Set Name - 56C0 MHL- 21
Serial # Model GP Ucod SDA MOD SSN GKD Sync Orient.
000196701175 VMAX200K 21 5977 56E0 0116 BSS 54C0 Glbl LCLISR1
000196701305 VMAX200K 21 5977 56E0 0116 BSS 54C0 Glbl
End of Display

9. Create RDF pairs for SRDF group SRDFA. The primary SRDF mode is synchronous and the secondary SRDF mode is adaptive copy disk.

ZURDF CRT GRO-SRDFA R1ADC-ADCD
CSMP0097I 10.44.02 CPU-A SS-BSS SSU-SSU0 IS-01
URDF0019P SRDF Group SRDFA
URDF0019I SRDF Control record refresh started
URDF01043I Local CU 000196701175 discovered for Group SRDFA Set 56C0
CSMP0097I 10.44.02 CPU-A SS-BSS SSU-SSU0 IS-01
URDF01043I Remote CU 000196701305 discovered for Group SRDFA Set 56C0
CSMP0097I 10.44.02 CPU-A SS-BSS SSU-SSU0 IS-01
URDF01043I Local CU 000196701170 discovered for Group SRDFA Set 46C0
CSMP0097I 10.44.02 CPU-A SS-BSS SSU-SSU0 IS-01
URDF0024P SRDF Group SRDFA
URDF0024I SRDF Control record refresh completed
CSMP0097I 10.44.03 CPU-A SS-BSS SSU-SSU0 IS-01
E1V00000P SRDF Group SRDFA
E1V00000I SRDF Operation Verification Started
CSMP0097I 10.44.03 CPU-A SS-BSS SSU-SSU0 IS-01
E1V00001P SRDF Group SRDFA
E1V00001I SRDF Group Properties Verification Started
Option  Permissions
NONE

E1V00003I SRDF Device State Verification Started
CSMP0097I 10.44.22 CPU-A SS-BSS SSU-SSU0 IS-01
E1V00004P SRDF Group SRDFA
E1V00004I SRDF Operation Verification Completed
CSMP0097I 10.44.23 CPU-A SS-BSS SSU-SSU0 IS-01
URDF10001I SRDF Group SRDFA Set 56C0 started issuing Crtpair
CSMP0097I 10.44.24 CPU-A SS-BSS SSU-SSU0 IS-01
URDF10001I SRDF Group SRDFA Set 46C0 started issuing Crtpair
CSMP0097I 10.44.35 CPU-A SS-BSS SSU-SSU0 IS-01
URDF10001I SRDF Group SRDFA Set 46C0 completed issuing Crtpair
CSMP0097I 10.44.35 CPU-A SS-BSS SSU-SSU0 IS-01
URDF10001I SRDF Group SRDFA Set 56C0 completed issuing Crtpair
CSMP0097I 10.44.38 CPU-A SS-BSS SSU-SSU0 IS-01
URDF10311I SRDF Status Display
SRDF Group: SRDFA Base Operation: Crtpair
Status: Monitor Active
Start Time : 20.44.02 Date : 11/20/15

<table>
<thead>
<tr>
<th>Opr</th>
<th>In</th>
<th>Not</th>
<th>Opr RC</th>
<th>Itrks</th>
<th>Pct</th>
</tr>
</thead>
<tbody>
<tr>
<td>Set</td>
<td>Name</td>
<td>CU</td>
<td>Serial #</td>
<td>SDA</td>
<td>Complete</td>
</tr>
<tr>
<td>46C0</td>
<td>000196701170</td>
<td>14</td>
<td>44C1</td>
<td>16</td>
<td>0</td>
</tr>
<tr>
<td>56C0</td>
<td>000196701175</td>
<td>15</td>
<td>54C0</td>
<td>16</td>
<td>0</td>
</tr>
</tbody>
</table>

End of Display
URDF1031I SRDF Group SRDFA Crtpair complete

10. Define SRDF group SRDFA as an SRDF/A MSC group. This command sets the ASYNC and the MSC indicators and writes the MSC list to each storage system in the configuration. The MSC list is used during SRDF/A MSC recovery. To define the SRDF group as an SRDF/A MSC group, an MSC gatekeeper (GMS) is required for each set.

ZURDF DEF GRO-SRDFA PRO-GEN MSC
CSMP0097I 10.49.09 CPU-A SS-BSS SSU-SSU0 IS-01
MSC List for SRDF/A MSC Group SRDFA

<table>
<thead>
<tr>
<th>Primary</th>
<th>Secondary</th>
</tr>
</thead>
<tbody>
<tr>
<td>GP</td>
<td>GP</td>
</tr>
<tr>
<td>000196701170</td>
<td>14</td>
</tr>
</tbody>
</table>

End of Display
CSMP0097I 10.49.09 CPU-A SS-BSS SSU-SSU0 IS-01
URDF0027P SRDF Group SRDFA
URDF0027I Define complete
CSMP0097I 10.49.09 CPU-A SS-BSS SSU-SSU0 IS-01
E1V30000I SRDF General Properties Display
Local SRDF Group - SRDFA

<table>
<thead>
<tr>
<th>Processing Delay Timer:</th>
<th>3</th>
<th>Scheduler Timeout:</th>
<th>1</th>
<th>Persistent Monitor:</th>
<th>OFF</th>
</tr>
</thead>
<tbody>
<tr>
<td>Monitor Interval Timer:</td>
<td>3</td>
<td>CTRLRCD Refresh:</td>
<td>ON</td>
<td>Ops Verification:</td>
<td>ON</td>
</tr>
<tr>
<td>Mode check:</td>
<td>NONE</td>
<td>R1 To Larger R2:</td>
<td>OFF</td>
<td>Sync Direction:</td>
<td>NONE</td>
</tr>
<tr>
<td>QOS:</td>
<td>0</td>
<td>is set</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

SRDF/A Mode: MSC | Drop Policy: | Drop All | Heartbeat Interval: | 30 |
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Window Open Threshold:</td>
<td>0</td>
<td>Cycle Switch Timeout:</td>
<td>12</td>
<td></td>
</tr>
<tr>
<td>Cycle Time:</td>
<td>User Defined - 15</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Drop Priority:</td>
<td>System Default</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Transmit Idle:</td>
<td>System Default</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cache Percentage:</td>
<td>System Default</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

End of Display
11. Set the interval of the MSC monitor heartbeat to a five minutes.

ZURDF DEF GRO-SRDF PRO-GEN MSH-5
CSM0097I 10.54.29 CPU-A SS-BSS SSU-SSU0 IS-01
URDF0027P SRDF Group SRDFA
URDF0027I Define complete
CSM0097I 10.54.29 CPU-A SS-BSS SSU-SSU0 IS-01
EIV30000I SRDF General Properties Display
Local SRDF Group - SRDFA

Processing Delay Timer: 3 Scheduler Timeout: 1 Persistent Monitor: OFF
Monitor Interval Timer: 3 CTRLCD Refresh: ON Ops Verification: ON
Mode check: NONE R1 To Larger R2: OFF Sync Direction: NONE
QOS: 0 is set

SRDF/A Mode: MSC Drop Policy: Drop All Heartbeat Interval: 5
Window Open Threshold: 0 Cycle Switch Timeout: 12
Cycle Time: User Defined - 15
Drop Priority: System Default
Transmit Idle: System Default
Cache Percentage: System Default

End of Display

12. Display the primary RDF pairs' state matrix for all sets in SRDF group SRDFA.

ZURDF DIS GRO-SRDF SET-46C0 TYP-MAT
CSM0097I 10.59.52 CPU-A SS-BSS SSU-SSU0 IS-01
ERQ00000I RDF Device MAT Display
Group SRDFA Set 46C0 in Local CU 000196701170
MDF Symb This Othr RDF
SEN Mod SDA Dev Dev GRP MO AC IT MR R1-Itrk R2-Itrk
Disruptive States: TNR
A64 0110 46C0 000009FD 0000051C 20 RW SY AD DL1 0 1
A64 0111 46C1 000009FE 0000051D 20 RW SY AD DL1 0 10
A64 0112 46C2 000009FF 0000051E 20 RW SY AD DL1 0 11
A64 0113 46C3 0000A00 0000051F 20 RW SY AD DL1 0 10
A64 0114 46C4 0000A01 00000520 20 RW SY AD DL1 0 0
A64 0115 46C5 0000A02 00000521 20 RW SY AD DL1 0 20
A64 0116 46C6 0000A03 00000522 20 RW SY AD DL1 0 1
A64 0117 46C7 0000A04 00000523 20 RW SY AD DL1 0 30
A64 0118 46C8 0000A05 00000524 20 RW SY AD DL1 0 0
A64 0119 46C9 0000A06 00000525 20 RW SY AD DL1 0 63
A64 011A 46CA 0000A07 00000526 20 RW SY AD DL1 0 10
A64 011B 46CB 0000A08 00000527 20 RW SY AD DL1 0 10
A64 011C 46CC 0000A09 00000528 20 RW SY AD DL1 0 0
A64 011D 46CD 0000A0A 00000529 20 RW SY AD DL1 0 20
A64 011E 46CE 0000A0B 0000052A 20 RW SY AD DL1 0 1
A64 011F 46CF 0000A0C 0000052B 20 RW SY AD DL1 0 30

End of Display
### SRDF Procedures

**ZURDF DIS GRO-SRDFA SET-56C0 TYP-MAT**

CSMP0097I 11.00.05 CPU-A SS-BSS SSU-SSU0 IS-01  
E1Q0000I RDF Device MAT Display  
Group SRDFA Set 56C0 in Local CU 000196701175

| MDBF Symb | This | Othrr | RDF | SSN | Mod | SDA | Dev | Dev | GRP | HS | MO | AC | IT | MR | R1-Itrk | R2-Itrk | A64 | 0120 | 56C0 | 000007BD | 0000052C | 21 | RW | SY | AD | DL1 | 0 | 1 |
|-----------|------|-------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|---------|---------|-----|-----|-----|---------|---------|-----|-----|-----|---------|---------|-----|-----|-----|---------|---------|
|           |      |       |    |    |     |     |     |     |     |    |    |     |    |    |          |          |    |    |    |         |         |
| Disruptive States: | TNR |
| A64 | 0121 | 56C1 | 000007BE | 0000052D | 21 | RW | SY | AD | DL1 | 0 | 12 |
| Disruptive States: | TNR |
| A64 | 0122 | 56C2 | 000007BF | 0000052E | 21 | RW | SY | AD | DL1 | 0 | 11 |
| Disruptive States: | TNR |
| A64 | 0123 | 56C3 | 000007C0 | 0000052F | 21 | RW | SY | AD | DL1 | 0 | 12 |
| Disruptive States: | TNR |
| A64 | 0124 | 56C4 | 000007C1 | 00000530 | 21 | RW | SY | AD | DL1 | 0 | 1 |
| Disruptive States: | TNR |
| A64 | 0125 | 56C5 | 000007C2 | 00000531 | 21 | RW | SY | AD | DL1 | 0 | 23 |
| Disruptive States: | TNR |
| A64 | 0126 | 56C6 | 000007C3 | 00000532 | 21 | RW | SY | AD | DL1 | 0 | 1 |
| Disruptive States: | TNR |
| A64 | 0127 | 56C7 | 000007C4 | 00000533 | 21 | RW | SY | AD | DL1 | 0 | 32 |
| Disruptive States: | TNR |
| A64 | 0128 | 56C8 | 000007C5 | 00000534 | 21 | RW | SY | AD | DL1 | 0 | 2 |
| Disruptive States: | TNR |
| A64 | 0129 | 56C9 | 000007C6 | 00000535 | 21 | RW | SY | AD | DL1 | 0 | 12 |
| Disruptive States: | TNR |
| A64 | 012A | 56CA | 000007C7 | 00000536 | 21 | RW | SY | AD | DL1 | 0 | 11 |
| Disruptive States: | TNR |
| A64 | 012B | 56CB | 000007C8 | 00000537 | 21 | RW | SY | AD | DL1 | 0 | 13 |
| Disruptive States: | TNR |
| A64 | 012C | 56CC | 000007C9 | 00000538 | 21 | RW | SY | AD | DL1 | 0 | 1 |
| Disruptive States: | TNR |
| A64 | 012D | 56CD | 000007CA | 00000539 | 21 | RW | SY | AD | DL1 | 0 | 22 |
| Disruptive States: | TNR |
| A64 | 012E | 56CE | 000007CB | 0000053A | 21 | RW | SY | AD | DL1 | 0 | 2 |
| Disruptive States: | TNR |
| A64 | 012F | 56CF | 000007CC | 0000053B | 21 | RW | SY | AD | DL1 | 0 | 32 |
| Disruptive States: | TNR |

**End of Display**

13. Display the SRDF/A session information for all sets in SRDF group SRDFA.

### ZURDF DIS GRO-SRDFA SET-46C0 TYP-SAS

CSMP0097I 11.00.21 CPU-A SS-BSS SSU-SSU0 IS-01  
E1Q0000I SRDF/A Session Display  
Group SRDFA Set 46C0 in Primary CU 000196701170

<table>
<thead>
<tr>
<th>Capture Cycle Size</th>
<th>0</th>
<th>Transmit Cycle Size</th>
<th>0</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average Cycle Time</td>
<td>15</td>
<td>Average Cycle Size</td>
<td>6</td>
</tr>
<tr>
<td>Last Cycle Size</td>
<td>2</td>
<td>Secondary Delay</td>
<td>00:01:40:51</td>
</tr>
<tr>
<td>Secondary Consistent</td>
<td>?</td>
<td>Tolerance</td>
<td>Off</td>
</tr>
<tr>
<td>HA Writes</td>
<td>4 319 038</td>
<td>Repeated HA Writes</td>
<td>1 802 492</td>
</tr>
<tr>
<td>HA Duplicate Slots</td>
<td>2 211 014</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Transmit Idle</td>
<td>On</td>
<td>Drop Priority</td>
<td>33</td>
</tr>
<tr>
<td>Max Throttle Time</td>
<td>0</td>
<td>Max Cache Percentage</td>
<td>74</td>
</tr>
<tr>
<td>Time Since Last Cycle Switch</td>
<td>01:40:36</td>
<td>Duration of Last Cycle</td>
<td>15</td>
</tr>
<tr>
<td>Write Pacing Active</td>
<td>No</td>
<td>Write Pacing Stats On</td>
<td>No</td>
</tr>
</tbody>
</table>

**End of Display**

### ZURDF DIS GRO-SRDFA SET-56C0 TYP-SAS

CSMP0097I 11.53.15 CPU-A SS-BSS SSU-SSU0 IS-01  
E1VA0000I SRDF/A Session Display  
Group SRDFA Set 56C0 in Primary CU 000196701170

<table>
<thead>
<tr>
<th>Capture Cycle Size</th>
<th>0</th>
<th>Transmit Cycle Size</th>
<th>0</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average Cycle Time</td>
<td>0</td>
<td>Average Cycle Size</td>
<td>0</td>
</tr>
</tbody>
</table>

**End of Display**
14. Define the synchronization direction for all Sets in SRDF group SRDFA.

ZURDF SYN GRO-SRDFA PAR-R1R2
CSMP0097I 11.54.33 CPU-A SS-BSS SSU-SSU0 IS-01
URDF0019P SRDF Group SRDFA
URDF0019I SRDF Control record refresh started
URDF1043I Local CU 000196701175 discovered for Group SRDFA Set 56C0
CSMP0097I 11.54.33 CPU-A SS-BSS SSU-SSU0 IS-01
URDF1043I Remote CU 000196701305 discovered for Group SRDFA Set 56C0
CSMP0097I 11.54.33 CPU-A SS-BSS SSU-SSU0 IS-01
URDF1043I Local CU 000196701170 discovered for Group SRDFA Set 46C0
CSMP0097I 11.54.33 CPU-A SS-BSS SSU-SSU0 IS-01
URDF1043I Remote CU 000196701305 discovered for Group SRDFA Set 46C0
CSMP0097I 11.54.34 CPU-A SS-BSS SSU-SSU0 IS-01
URDF0024P SRDF Group SRDFA
URDF0024I SRDF Control record refresh completed
CSMP0097I 11.54.34 CPU-A SS-BSS SSU-SSU0 IS-01
E1V00000P SRDF Group SRDFA
E1V00000I SRDF Operation Verification Started
CSMP0097I 11.54.34 CPU-A SS-BSS SSU-SSU0 IS-01
E1V00001P SRDF Group SRDFA
E1V00001I SRDF Group Properties Verification Started
Options Permissions
None
E1V00003I SRDF Device State Verification Started
CSMP0097I 11.54.39 CPU-A SS-BSS SSU-SSU0 IS-01
E1V00004P SRDF Group SRDFA
E1V00004I SRDF Operation Verification Completed
CSMP0097I 11.54.39 CPU-A SS-BSS SSU-SSU0 IS-01
URDF1000I SRDF Group SRDFA Set 56C0 started issuing Synchdirection
CSMP0097I 11.54.39 CPU-A SS-BSS SSU-SSU0 IS-01
URDF1000I SRDF Group SRDFA Set 56C0 completed issuing Synchdirection
CSMP0097I 11.54.39 CPU-A SS-BSS SSU-SSU0 IS-01
URDF1000I SRDF Group SRDFA Set 46C0 started issuing Synchdirection
CSMP0097I 11.54.39 CPU-A SS-BSS SSU-SSU0 IS-01
URDF1000I SRDF Group SRDFA Set 46C0 completed issuing Synchdirection
CSMP0097I 11.54.39 CPU-A SS-BSS SSU-SSU0 IS-01
E1RR0000I CU Control Record Summary
Local Group Name - SRDFA
Set Name - 46C0 MHL- 20
Serial # Model GP Ucod SDA MOD SSN GKD Sync Orient.
000196701170 VMAX200K 20 5977 46C0 0114 BSS 44C1 R1R2 LCLISR1
000196701305 VMAX200K 20 5977 46C0 0114 BSS 44C1 Glbl
Set Name - 56C0 MHL- 21
Serial # Model GP Ucod SDA MOD SSN GKD Sync Orient.
000196701175 VMAX200K 21 5977 56E0 0116 BSS 54C0 R1R2 LCLISR1
000196701305 VMAX200K 21 5977 56E0 0116 BSS 54C0 Glbl
End of Display

ZURDF SYN REM GRO-SRDFA PAR-R1R2
CSMP0097I 11.54.55 CPU-A SS-BSS SSU-SSU0 IS-01
URDF0019P SRDF Group SRDFA
URDF0019I SRDF Control record refresh started
CSMP0097I 11.54.55 CPU-A SS-BSS SSU-SSU0 IS-01
URDF1043I Local CU 000196701175 discovered for Group SRDFA Set 56C0
15. Refresh the invalid track counters for target (R2) devices in the secondary storage system.

**SRDF Procedures**

CSMP0097I 11.54.55 CPU-A SS-BSS SSU-SUU0 IS-01
URDF1043I Remote CU 000196701305 discovered for Group SRDFA Set 56C0
CSMP0097I 11.54.55 CPU-A SS-BSS SSU-SUU0 IS-01
URDF1043I Local CU 000196701170 discovered for Group SRDFA Set 46C0
CSMP0097I 11.54.55 CPU-A SS-BSS SSU-SUU0 IS-01
URDF1043I Remote CU 000196701305 discovered for Group SRDFA Set 46C0
CSMP0097I 11.54.56 CPU-A SS-BSS SSU-SUU0 IS-01
URDF0024P SRDF Group SRDFA
URDF0024I SRDF Control record refresh completed
CSMP0097I 11.54.56 CPU-A SS-BSS SSU-SUU0 IS-01
E1V00000P SRDF Group SRDFA
E1V00000I SRDF Operation Verification Started
CSMP0097I 11.54.56 CPU-A SS-BSS SSU-SUU0 IS-01
E1V00001P SRDF Group SRDFA
E1V00001I SRDF Group Properties Verification Started
Options Permissions
None
E1V00003I SRDF Device State Verification Started
CSMP0097I 11.55.02 CPU-A SS-BSS SSU-SUU0 IS-01
E1V00004P SRDF Group SRDFA
E1V00004I SRDF Operation Verification Completed
CSMP0097I 11.55.02 CPU-A SS-BSS SSU-SUU0 IS-01
URDF1000I SRDF Group SRDFA Set 56C0 started issuing Synchdirection
CSMP0097I 11.55.02 CPU-A SS-BSS SSU-SUU0 IS-01
URDF1000I SRDF Group SRDFA Set 56C0 completed issuing Synchdirection
CSMP0097I 11.55.02 CPU-A SS-BSS SSU-SUU0 IS-01
URDF1000I SRDF Group SRDFA Set 46C0 started issuing Synchdirection
CSMP0097I 11.55.02 CPU-A SS-BSS SSU-SUU0 IS-01
URDF1000I SRDF Group SRDFA Set 46C0 completed issuing Synchdirection
CSMP0097I 11.55.02 CPU-A SS-BSS SSU-SUU0 IS-01
E1RR0000I CU Control Record Summary
Local Group Name - SRDFA
Set Name - 46C0 MHL - 20
Serial # Model GP Ucod SDA MOD SSN GKD Sync Orient.
000196701170 VMAX200K 20 5977 46C0 0114 BSS 44C1 R1R2 LCLISR1
000196701305 VMAX200K 20 5977 46C0 0114 BSS 44C1 R1R2
Set Name - 56C0 MHL - 21
Serial # Model GP Ucod SDA MOD SSN GKD Sync Orient.
000196701175 VMAX200K 21 5977 56E0 0116 BSS 54C0 R1R2 LCLISR1
000196701305 VMAX200K 21 5977 56E0 0116 BSS 54C0 R1R2
End of Display
SRDF Procedures

Options | Permissions
---|---
None

E1V00003I SRDF Device State Verification Started
CSMP0097I 12.09.31 CPU-A SS-BSS SSU-SSU0 IS-01
E1V00004P SRDF Group SRDFA
E1V00004I SRDF Operation Verification Completed
CSMP0097I 12.09.31 CPU-A SS-BSS SSU-SSU0 IS-01
URDF1000I SRDF Group SRDFA Set 56C0 started issuing Refresh
CSMP0097I 12.09.31 CPU-A SS-BSS SSU-SSU0 IS-01
URDF1000I SRDF Group SRDFA Set 46C0 started issuing Refresh
CSMP0097I 12.09.31 CPU-A SS-BSS SSU-SSU0 IS-01
URDF1000I SRDF Group SRDFA Set 56C0 completed issuing Refresh
CSMP0097I 12.09.31 CPU-A SS-BSS SSU-SSU0 IS-01
URDF1000I SRDF Group SRDFA Set 46C0 completed issuing Refresh
CSMP0097I 12.09.31 CPU-A SS-BSS SSU-SSU0 IS-01
URDF1031I SRDF Status Display
SRDF Group: SRDFA Base Operation: Refresh
Status: Monitor Active
Start Time : 22.09.23 Date : 11/20/15

<table>
<thead>
<tr>
<th>Opr</th>
<th>In</th>
<th>Not</th>
<th>Opr RC</th>
<th>Itrks Pct</th>
</tr>
</thead>
<tbody>
<tr>
<td>Set Name</td>
<td>CU Serial #</td>
<td>SDA</td>
<td>Complete Progress</td>
<td>Started</td>
</tr>
<tr>
<td>46C0</td>
<td>000196701305</td>
<td>44C1</td>
<td>16</td>
<td>0</td>
</tr>
<tr>
<td>56C0</td>
<td>000196701305</td>
<td>54C0</td>
<td>16</td>
<td>0</td>
</tr>
</tbody>
</table>

End of Display
URDF1003I SRDF Group SRDFA Refresh complete

16. Begin partial volume synchronization (changed tracks only) for SRDF group SRDFA.

ZURDF RFR GRO-SRDFA
CSMP0097I 12.19.01 CPU-A SS-BSS SSU-SSU0 IS-01
URDF0019P SRDF Group SRDFA
URDF0019I SRDF Control record refresh started
CSMP0097I 12.19.01 CPU-A SS-BSS SSU-SSU0 IS-01
URDF1043I Local CU 000196701175 discovered for Group SRDFA Set 56C0
CSMP0097I 12.19.01 CPU-A SS-BSS SSU-SSU0 IS-01
URDF1043I Remote CU 000196701305 discovered for Group SRDFA Set 56C0
CSMP0097I 12.19.01 CPU-A SS-BSS SSU-SSU0 IS-01
URDF1043I Local CU 000196701170 discovered for Group SRDFA Set 46C0
CSMP0097I 12.19.01 CPU-A SS-BSS SSU-SSU0 IS-01
URDF1043I Remote CU 000196701305 discovered for Group SRDFA Set 46C0
CSMP0097I 12.19.01 CPU-A SS-BSS SSU-SSU0 IS-01
URDF0024P SRDF Group SRDFA
URDF0024I SRDF Control record refresh completed
CSMP0097I 12.19.02 CPU-A SS-BSS SSU-SSU0 IS-01
E1V00000P SRDF Group SRDFA
E1V00000I SRDF Operation Verification Started
CSMP0097I 12.19.02 CPU-A SS-BSS SSU-SSU0 IS-01
E1V00001P SRDF Group SRDFA
E1V00001I SRDF Group Properties Verification Started
Options | Permissions
---|---
None

E1V00003I SRDF Device State Verification Started
CSMP0097I 12.19.07 CPU-A SS-BSS SSU-SSU0 IS-01
E1V00004P SRDF Group SRDFA
E1V00004I SRDF Operation Verification Completed
CSMP0097I 12.19.07 CPU-A SS-BSS SSU-SSU0 IS-01
URDF0213P SRDF Group SRDFA
URDF0213I QOS Controls started
CSMP0097I 12.19.08 CPU-A SS-BSS SSU-SSU0 IS-01
URDF0214P SRDF Group SRDFA
URDF0214I QOS Controls completed
CSMP0097I 12.19.08 CPU-A SS-BSS SSU-SSU0 IS-01
URDF1000I SRDF Group SRDFA Set 56C0 started issuing Rfrresume
CSMP0097I 12.19.08 CPU-A SS-BSS SSU-SSU0 IS-01
URDF1000I SRDF Group SRDFA Set 46C0 started issuing Rfrresume
17. Display RDF pairs' state matrix for Set 46C0 in SRDF group SRDFA. Synchronization
does not complete because the secondary SRDF mode is adaptive copy disk.

18. Terminate monitoring of the partial synchronization to enable transition to SRDF/A
mode.
### SRDF Procedures

**Status:** Monitor Active  
**Start Time:** 22.19.01  
**Date:** 11/20/15

<table>
<thead>
<tr>
<th>Set Name</th>
<th>CU Serial #</th>
<th>SDA</th>
<th>Complete</th>
<th>Progress</th>
<th>Started</th>
<th>Summary</th>
<th>Itrks</th>
<th>Pct</th>
</tr>
</thead>
<tbody>
<tr>
<td>46C0</td>
<td>000196701170</td>
<td>44C1</td>
<td>0</td>
<td>16</td>
<td>0</td>
<td>00000</td>
<td>1</td>
<td>415</td>
</tr>
<tr>
<td>56C0</td>
<td>000196701175</td>
<td>54C0</td>
<td>0</td>
<td>16</td>
<td>0</td>
<td>00000</td>
<td>1</td>
<td>745</td>
</tr>
</tbody>
</table>

**URDF1035T SRDF Group SRDFA Rfrresum aborted**

19. Activate single session SRDF/A for all sets in SRDF group SRDFA. SRDF Controls monitors activation until all secondaries in the SRDF group are consistent.

**ZURDF ASYNC GRO-SRDFA PAR-ACT**

<table>
<thead>
<tr>
<th>CSMP0097I</th>
<th>12.36.48 CPU-A SS-BSS SSU-SSU0 IS-01</th>
</tr>
</thead>
<tbody>
<tr>
<td>URDF0019P</td>
<td>SRDF Group SRDFA</td>
</tr>
<tr>
<td>URDF0019I</td>
<td>SRDF Control record refresh started</td>
</tr>
<tr>
<td>CSMP0097I</td>
<td>12.36.48 CPU-A SS-BSS SSU-SSU0 IS-01</td>
</tr>
<tr>
<td>URDF0431I</td>
<td>Local CU 000196701175 discovered for Group SRDFA Set 56C0</td>
</tr>
<tr>
<td>CSMP0097I</td>
<td>12.36.48 CPU-A SS-BSS SSU-SSU0 IS-01</td>
</tr>
<tr>
<td>URDF0431I</td>
<td>Remote CU 000196701305 discovered for Group SRDFA Set 56C0</td>
</tr>
<tr>
<td>CSMP0097I</td>
<td>12.36.48 CPU-A SS-BSS SSU-SSU0 IS-01</td>
</tr>
<tr>
<td>URDF0431I</td>
<td>Local CU 000196701170 discovered for Group SRDFA Set 46C0</td>
</tr>
<tr>
<td>CSMP0097I</td>
<td>12.36.49 CPU-A SS-BSS SSU-SSU0 IS-01</td>
</tr>
<tr>
<td>URDF0431I</td>
<td>Remote CU 000196701305 discovered for Group SRDFA Set 46C0</td>
</tr>
<tr>
<td>CSMP0097I</td>
<td>12.36.53 CPU-A SS-BSS SSU-SSU0 IS-01</td>
</tr>
<tr>
<td>URDF0024P</td>
<td>SRDF Group SRDFA</td>
</tr>
<tr>
<td>URDF0024I</td>
<td>SRDF Control record refresh completed</td>
</tr>
<tr>
<td>CSMP0097I</td>
<td>12.36.53 CPU-A SS-BSS SSU-SSU0 IS-01</td>
</tr>
<tr>
<td>E1V00000P</td>
<td>SRDF Group SRDFA</td>
</tr>
<tr>
<td>E1V00000I</td>
<td>SRDF Operation Verification Started</td>
</tr>
<tr>
<td>CSMP0097I</td>
<td>12.36.53 CPU-A SS-BSS SSU-SSU0 IS-01</td>
</tr>
<tr>
<td>E1V000001P</td>
<td>SRDF Group SRDFA</td>
</tr>
<tr>
<td>E1V000001I</td>
<td>SRDF Group Properties Verification Started</td>
</tr>
<tr>
<td>Options</td>
<td>Permissions</td>
</tr>
<tr>
<td>None</td>
<td></td>
</tr>
<tr>
<td>E1V00003I</td>
<td>SRDF Device State Verification Started</td>
</tr>
<tr>
<td>CSMP0097I</td>
<td>12.37.17 CPU-A SS-BSS SSU-SSU0 IS-01</td>
</tr>
<tr>
<td>E1V00004P</td>
<td>SRDF Group SRDFA</td>
</tr>
<tr>
<td>E1V00004I</td>
<td>SRDF Operation Verification Completed</td>
</tr>
<tr>
<td>CSMP0097I</td>
<td>12.37.17 CPU-A SS-BSS SSU-SSU0 IS-01</td>
</tr>
<tr>
<td>URDF1000I</td>
<td>SRDF Group SRDFA Set 46C0 started issuing Async</td>
</tr>
<tr>
<td>CSMP0097I</td>
<td>12.37.17 CPU-A SS-BSS SSU-SSU0 IS-01</td>
</tr>
<tr>
<td>URDF1000I</td>
<td>SRDF Group SRDFA Set 56C0 started issuing Async</td>
</tr>
<tr>
<td>CSMP0097I</td>
<td>12.37.17 CPU-A SS-BSS SSU-SSU0 IS-01</td>
</tr>
<tr>
<td>URDF1000I</td>
<td>SRDF Group SRDFA Set 46C0 completed issuing Async</td>
</tr>
<tr>
<td>CSMP0097I</td>
<td>12.37.17 CPU-A SS-BSS SSU-SSU0 IS-01</td>
</tr>
<tr>
<td>URDF1000I</td>
<td>SRDF Group SRDFA Set 56C0 completed issuing Async</td>
</tr>
<tr>
<td>CSMP0097I</td>
<td>12.37.20 CPU-A SS-BSS SSU-SSU0 IS-01</td>
</tr>
<tr>
<td>URDF1031I</td>
<td>SRDF Status Display</td>
</tr>
<tr>
<td>SRDF Group: SRDFA Base Operation: Async</td>
<td></td>
</tr>
</tbody>
</table>

**Status:** Monitor Active  
**Start Time:** 22.36.48  
**Date:** 11/20/15

<table>
<thead>
<tr>
<th>Set Name</th>
<th>CU Serial #</th>
<th>SDA</th>
<th>Complete</th>
<th>Progress</th>
<th>Started</th>
<th>Summary</th>
<th>Itrks</th>
<th>Pct</th>
</tr>
</thead>
<tbody>
<tr>
<td>46C0</td>
<td>000196701170</td>
<td>44C1</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>00000</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>56C0</td>
<td>000196701175</td>
<td>54C0</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>00000</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

End of Display

<table>
<thead>
<tr>
<th>CSMP0097I</th>
<th>12.40.12 CPU-A SS-BSS SSU-SSU0 IS-01</th>
</tr>
</thead>
<tbody>
<tr>
<td>URDF1031I</td>
<td>SRDF Status Display</td>
</tr>
<tr>
<td>SRDF Group: SRDFA Base Operation: Async</td>
<td></td>
</tr>
</tbody>
</table>

**Status:** Monitor Active  
**Start Time:** 22.36.48  
**Date:** 11/20/15

<table>
<thead>
<tr>
<th>Set Name</th>
<th>CU Serial #</th>
<th>SDA</th>
<th>Complete</th>
<th>Progress</th>
<th>Started</th>
<th>Summary</th>
<th>Itrks</th>
<th>Pct</th>
</tr>
</thead>
<tbody>
<tr>
<td>46C0</td>
<td>000196701170</td>
<td>44C1</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>00000</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>56C0</td>
<td>000196701175</td>
<td>54C0</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>00000</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>
20. Activate SRDF/A Multi-Session Consistency (MSC) for SRDF group SRDFA. Turning on SRDF/A MSC initiates SRDF/A Cycle Switch Controls. An MSC heartbeat message is issued at the defined interval for each Set in the SRDF group.

<table>
<thead>
<tr>
<th>Set Name</th>
<th>CU Serial #</th>
<th>SDA</th>
<th>Complete</th>
<th>Progress</th>
<th>Started</th>
<th>Summary</th>
<th>Itrks</th>
<th>Pct</th>
</tr>
</thead>
<tbody>
<tr>
<td>46C0</td>
<td>000196701170</td>
<td>44C1</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>00000</td>
<td>0</td>
<td>100</td>
</tr>
<tr>
<td>56C0</td>
<td>000196701175</td>
<td>54C0</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>00000</td>
<td>0</td>
<td>100</td>
</tr>
</tbody>
</table>

End of Display
21. To enable restarting the SRDF/A Multi-Session Consistency (MSC) for SRDF group SRDFA after a restart of the z/TPF system, add the MSC Monitor Restart message to the z/TPF time-initiated table for all z/TPF processors in the complex using the following functional message.

ZSTIM A FR=EVEY, TI=1052E, MS='ZURDF ASYNC GRO-SRDFA PAR-MMR'

CSMP0097I 03.03.34 CPU-B SS-BSS SSU-SSU0 IS-01
STMA0001I 03.03.34 MSG ADDED TO TIM TBL
SRDF/A MSC standalone recovery

This section contains an example of SRDF/A Multi-Session Consistency (MSC) Standalone Recovery configuration and operation. The SRDF/A MSC Standalone Recovery utility is run on a z/TPF system with host access to the secondary storage system (R2 side).

Note: Recovery analysis may not be possible from the primary side in a real recovery situation. The following display is included for descriptive purposes.

Consider the following situation as described by the SRDF/A MSC group recovery analysis initiated from a z/TPF host with knowledge of the SRDF/A group configuration and host access to the primary storage system.

```
ZURDF DIS GRO-U6DSRDF SET-6100 TYP-MSC
CSMP0097I 17.57.04 CPU-B SS-BSS SSU-SSU0 IS-01
E1VF0000I SRDF/A Multi-Session Display
Group U6DSRDF Set 6100 CU 000000006211

000000006211/20 - 000190300063/00 SET-6100
MSC is Active
Transmit Cycle is Complete
Apply Cycle is Complete
Host Intervention Required
Receive Tag = 0000000000000078 Apply Tag = 0000000000000077

000190300063/01 - 000000006211/21 SET-3B60
MSC is Active
Transmit Cycle is Complete
Apply Cycle is Complete
Host Intervention Required
Receive Tag = 0000000000000078 Apply Tag = 0000000000000077

End of Display
```

1. Display the SRDF/A MSC list and associated SDA list:

```
ZURCV DIS SDA-6300 RDFG-33 TYP-MSC
CSMP0097I 17.57.04 CPU-B SS-BSS SSU-SSU0 IS-01
URCV0002I Recovery area initialization required

____________________________________________________________
000000006211/20 - 000190300063/00 SET-6100
SDA not defined for this set - no analysis available!

____________________________________________________________
000190300063/01 - 000000006211/21 SET-3B60
SDA not defined for this set - no analysis available!

End of Display
```

2. Initialize the Recovery List for use with z/TPF:

```
ZURCV INI SDA-6300 RDFG-33
CSMP0097I 17.57.04 CPU-B SS-BSS SSU-SSU0 IS-01
Scratch Area Initialization Complete
```

3. Display the MSC list and SDA list indicate that definitions are required:

```
ZURCV DIS SDA-6300 RDFG-33 TYP-MSC
CSMP0097I 17.57.04 CPU-B SS-BSS SSU-SSU0 IS-01

000000006211/20 - 000190300063/00
SDA not defined for this set - no analysis available!

000190300063/01 - 000000006211/21
SDA not defined for this set - no analysis available!

End of Display
```

```
ZURCV DIS SDA-6300 RDFG-33 TYP-SDA
CSMP0097I 17.57.04 CPU-B SS-BSS SSU-SSU0 IS-01
E1VK0004I SRDF/A Multi-Session Display SDA 6300 RDFGroup 21
```
SRDF Procedures

4. Add the correct SDA/RDF group definitions to perform recovery:

```
ZURCV ADD SDA-6300 RDFG-33 SET1-6300.33 SET2-3C20.00
CSMP0097I 17.57.04 CPU-B SS-BSS SSU-SSU0 IS-01
E1VK0004I SRDF/A Multi-Session Display SDA 6300 RDFGroup 21
SDA   R1 Group       -    R2 Group
3C20  00000006211/20 - 000190300063/00
6300  000190300063/01 - 00000006211/21
Add complete
```

5. Display the MSC List and initiate SRDF/A MSC recovery analysis:

```
ZURCV DIS SDA-6300 RDFG-33 TYP-MSC
CSMP0097I 17.57.04 CPU-B SS-BSS SSU-SSU0 IS-01

00000006211/20 - 000190300063/00
MSC is Active
Transmit Cycle is Complete
Apply Cycle is Complete
Host Intervention Required
Receive Tag = 0000000000000078 Apply Tag = 0000000000000077

000190300063/01 - 00000006211/21
MSC is Active
Transmit Cycle is Complete
Apply Cycle is Complete
Host Intervention Required
Receive Tag = 0000000000000078 Apply Tag = 0000000000000077
Commit All Cycles
SRDFA Session = 000190300063/00 Commit Receive Cycle
SRDFA Session = 00000006211/21 Commit Receive Cycle
End of Display
```

6. Perform recovery:

```
ZURCV RECOVER SDA-6300 RDFG-33
CSMP0097I 17.57.04 CPU-B SS-BSS SSU-SSU0 IS-01

00000006211/20 - 000190300063/00
MSC is Active
Transmit Cycle is Complete
Apply Cycle is Complete
Host Intervention Required
Receive Tag = 0000000000000078 Apply Tag = 0000000000000077

000190300063/01 - 00000006211/21
MSC is Active
Transmit Cycle is Complete
Apply Cycle is Complete
Host Intervention Required
Receive Tag = 0000000000000078 Apply Tag = 0000000000000077
SRDFA Session = 00000006211/21 Commit Receive Cycle
00000006211/20 - 000190300063/00
MSC is Active
Transmit Cycle is Complete
Apply Cycle is Complete
Receive Tag = 0000000000000078 Apply Tag = 0000000000000077
```

End of Display
SRDF/A MSC recovery analysis

You can run SRDF/A MSC recovery analysis on a z/TPF host that has:

- Knowledge of the SRDF/A group configuration
- Host access to the primary storage system using either:
  - SRDF Controls for z/TPF
  - The z/TPF Standalone Recovery utility on a z/TPF system with host access to the secondary storage system

SRDF/A MSC recovery analysis determines if the MSC group is part of one of three possible cases:

- **Case 1**: All R2 receive cycles have the same tag, and all R2 receive cycles are complete.
- **Case 2**: All R2 receive cycles have the same tag, but not all R2 receive cycles are complete.
- **Case 3**: Apply cycle tags of some R2 storage systems match receive cycle tags of one or more other R2 storage systems (that is, not all R2 receive cycles were committed) and not all receive cycles may be complete.

The following examples illustrate each of these cases.

**Example 1**  
Recovery analysis for Case 1.

```
ZURDF DIS GRO-U6D2USA SET-6200 TYP-MSC
CSMP0097I 21.59.45 CPU-C SS-BSS SSU-SSU0 IS-01
ELVP0000I SRDF/A Multi-Session Display
Group U6D2USA Set 6200 CU 000000006211

000190300063/01 - 000000006211/21
MSC is Active
Transmit Cycle is Complete
Apply Cycle is Complete
Receive Tag = 0000000000000078 Apply Tag = 0000000000000077

Commit All Cycles
End of Recovery
```

SRDF/A MSC group recovery analysis
SRDF Procedures

Example 2  Recovery analysis for Case 2.

ZURDF DIS GRO-U6D2USA SET-6200 TYP-MSC
CSMP0097I 21.59.45 CPU-C SS-BSS SSU-SSU0 IS-01
E1VF0000I SRDF/A Multi-Session Display
Group U6D2USA Set 6200 CU 000000006211

000190300063/05 - 000000006211/3F SET-3B90
MSC is Active
Transmit Cycle is Complete
Apply Cycle is Complete
Host Intervention Required
Receive Tag = 000000000000006F Apply Tag = 000000000000006E

Commit All Cycles
SRDFA Session = 000190300063/03 Commit Receive Cycle
SRDFA Session = 00000006211/22 Commit Receive Cycle
SRDFA Session = 000190300063/04 Commit Receive Cycle
SRDFA Session = 00000006211/3F Commit Receive Cycle
End of Display

Example 3  Recovery analysis for Case 3.

ZURDF DIS GRO-U6D2USA SET-6200 TYP-MSC
CSMP0097I 21.59.45 CPU-C SS-BSS SSU-SSU0 IS-01
E1VF0000I SRDF/A Multi-Session Display
Group U6D2USA Set 6200 CU 000000006211

000000006211/23 - 000190300063/03 SET-6200
MSC is Active
Transmit Cycle is Incomplete
Apply Cycle is Complete
Host Intervention Required
Receive Tag = 000000000000006F Apply Tag = 000000000000006E

000190300063/02 - 000000006211/22 SET-3B80
MSC is Active
Transmit Cycle is Incomplete
Apply Cycle is Complete
Host Intervention Required
Receive Tag = 000000000000006F Apply Tag = 000000000000006E

000000006211/1E - 000190300063/04 SET-6240
MSC is Active
Transmit Cycle is Incomplete
Apply Cycle is Complete
Host Intervention Required
Receive Tag = 000000000000006F Apply Tag = 000000000000006E

000190300063/05 - 000000006211/3F SET-3B90
MSC is Active
Transmit Cycle is Complete
Apply Cycle is Complete
Receive Tag = 000000000000006F Apply Tag = 000000000000006E

Discard All Cycles
SRDFA Session = 000190300063/03 Discard Receive Cycle
SRDFA Session = 00000006211/22 Discard Receive Cycle
SRDFA Session = 000190300063/04 Discard Receive Cycle
SRDFA Session = 00000006211/3F Discard Receive Cycle
End of Display
MSC is Active
Transmit Cycle is Complete
Apply Cycle is Complete
Host Intervention Required
Receive Tag = 0000000000000070 Apply Tag = 000000000000006F

000190300063/02 - 000000006211/22 SET-3B80
MSC is Active
Transmit Cycle is Complete
Apply Cycle is Complete
Host Intervention Required
Receive Tag = 000000000000006F Apply Tag = 000000000000006E

000000006211/1E - 000190300063/04 SET-6240
MSC is Active
Transmit Cycle is Complete
Apply Cycle is Complete
Host Intervention Required
Receive Tag = 000000000000006F Apply Tag = 000000000000006E

000190300063/05 - 000000006211/3F SET-3B90
MSC is Active
Transmit Cycle is Complete
Apply Cycle is Complete
Host Intervention Required
Receive Tag = 000000000000006F Apply Tag = 000000000000006E

Not All Boxes Have the Same Receive Tag
SRDFA Session = 000190300063/03 Discard Receive Cycle
SRDFA Session = 000000006211/22 Commit Receive Cycle
SRDFA Session = 000190300063/04 Commit Receive Cycle
SRDFA Session = 000000006211/3F Commit Receive Cycle
End of Display
SRDF/A MSC drop policy

This section contains an example of the SRDF/A MSC drop policy and behavior. The user-defined drop policy is invoked if any one session in an SRDF/A MSC group drops. There are three policies:

- **Remove All**
  Drop all sessions if any one session drops (see “Remove All - behavior and recovery”).

- **Remove Failing**
  Remove the failing session from the multi-session group and continue cycling all other sessions in the group (see “Remove Failing - behavior and recovery” on page 293).

- **Disable**
  Disable control of the multi-session group. All remaining sessions operate in single session mode and the MSC monitor no longer drives cycle switching (see “Disable - behavior and recovery” on page 305).

Remove All - behavior and recovery

1. Display the drop policy and check it is Remove All for SRDF group U6D2USA.

   ```
   ZURDF DIS GRO-U6D2USA PRO-GEN
   CSPM0097I 21.50.04 CPU-C SS-BSS SSU-SSU0 IS-01
   E1V300001 SRDF General Properties Display
      Local SRDF Group - U6D2USA
      RDF Pair Processing Delay Timer:  3
      Monitor Interval Timer:  3
      R1 To Larger R2: ON  Sync Direction: NONE  QOS:  0 is set
      SRDF/A: MSC  Target Cycle Switch:   15  Heartbeat Interval:   5
      Drop Policy: Drop All
   End of Display
   ```

2. Suspend set 3B80 to force dropping an SRDF/A session in SRDF group U6D2USA.

   ```
   ZURDF SUS GRO-U6D2USA SET-3B80
   CSPM0097I 21.51.31 CPU-C SS-BSS SSU-SSU0 IS-01
   URDF0019I SRDF Control record refresh started
   CSPM0097I 21.51.31 CPU-C SS-BSS SSU-SSU0 IS-01
   URDF1043I Local CU 000190300063 discovered for Group U6D2USA Set 3B80
   CSPM0097I 21.51.32 CPU-C SS-BSS SSU-SSU0 IS-01
   URDF1043I Remote CU 000000006211 discovered for Group U6D2USA Set 3B80
   CSPM0097I 21.51.36 CPU-C SS-BSS SSU-SSU0 IS-01
   URDF0024I SRDF Control record refresh completed
   CSPM0097I 21.51.36 CPU-C SS-BSS SSU-SSU0 IS-01
   E1V000001 SRDF Operation Verification Started
   E1V00001I SRDF Group Properties Verification Started
      Options Permissions
         None
   E1V00003I SRDF Device State Verification Started
   CSPM0097I 21.51.36 CPU-C SS-BSS SSU-SSU0 IS-01
   URDF1000I SRDF Operation Verification Completed
   CSPM0097I 21.51.36 CPU-C SS-BSS SSU-SSU0 IS-01
   URDF0001I SRDF Group U6D2USA Set 3B80 started issuing Suspend
   CSPM0097I 21.51.36 CPU-C SS-BSS SSU-SSU0 IS-01
   URDF1001I SRDF Group U6D2USA Set 3B80 completed issuing Suspend
   CSPM0097I 21.51.40 CPU-C SS-BSS SSU-SSU0 IS-01
   URDF1009I SRDF Status Display
      SRDF Group: U6D2USA Set: 3B80 Range Operation: Suspend
      Status: Monitor Active
   ```
Start Time : 21.51.31 Date : 08/19/05
Opr ________Operation Status ________ Opr RC
Set Name CU Serial #  SDA  Complete In Progress Not Started Summary
3B80     000190300063 3C21      16            0           0    0000
End of Display
URDF1014I SRDF Group U6D2USA Set 3B80 Suspend complete
CSPM0097I 21.51.42 CPU-C SS-BSS SSU-SSU0 IS-01
URDF1057I SRDF/A MSC Group U6D2USA Cycle Switch Controls Halted
CSPM0097I 18.38.28 CPU-A SS-BSS SSU-SSU0 IS-01
URDF1062I SRDF/A MSC Group U6D2USA Auto Recovery Initiated
CSPM0097I 18.38.28 CPU-A SS-BSS SSU-SSU0 IS-01
E1V00000P SRDF Group U6D2USA
E1V00000I SRDF Operation Verification Started
CSPM0097I 18.38.28 CPU-A SS-BSS SSU-SSU0 IS-01
E1V00001P SRDF Group U6D2USA
E1V00001I SRDF Group Properties Verification Started
Options         Permissions
None
E1V00003I SRDF Device State Verification Started
CSPM0097I 18.38.28 CPU-A SS-BSS SSU-SSU0 IS-01
E1V00004P SRDF Group U6D2USA
E1V00004I SRDF Operation Verification Completed
CSPM0097I 18.38.28 CPU-A SS-BSS SSU-SSU0 IS-01
E1VF0000I SRDF/A Multi-Session Recovery Analysis
started for Group U6D2USA

000000006211/23 - 000190300063/03
MSC is Active
Transmit Cycle is Complete
Apply Cycle is Complete
Host Intervention is Required
Receive Tag = 000000000000006F Apply Tag = 000000000000006E

000190300063/02 - 000000006211/22
MSC is Active
Transmit Cycle is Complete
Apply Cycle is Complete
Host Intervention is Required
Receive Tag = 000000000000006F Apply Tag = 000000000000006E

000000006211/1E - 000190300063/04
MSC is Active
Transmit Cycle is Complete
Apply Cycle is Complete
Host Intervention is Required
Receive Tag = 000000000000006F Apply Tag = 000000000000006E

000190300063/05 - 000000006211/3F
MSC is Active
Transmit Cycle is Complete
Apply Cycle is Complete
Host Intervention is Required
Receive Tag = 000000000000006F Apply Tag = 000000000000006E

Commit All Cycles
SRDF/A Session = 000190300063/03 Commit Receive Cycle
SRDF/A Session = 000000006211/22 Commit Receive Cycle
SRDF/A Session = 000190300063/04 Commit Receive Cycle
SRDF/A Session = 000000006211/3F Commit Receive Cycle
End of Display
E1VF0000I Review SRDF RBCovery suggestion above for Group U6D2USA
To proceed, enter: ZURDF PROceed GROup-U6D2USA
To halt, enter: ZURDF HALt GROup-U6D2USA

SRDF Procedures
3. This example demonstrates the behavior of the automatic recovery when the MSRP (MSC Recovery Prompt) Asynchronous property is set. When the NOMSRP property is set, the auto recovery proceeds without a prompt.

ZURDF PROceed GROup-U6D2USA
CSMP0097I 18.38.28 CPU-A SS-BSS SSU-SSU0 IS-01
E1VF0002I SRDF/A Multi-Session Recovery started for Group U6D2USA
Group U6D2USA Set 6200 CU 000000006211

000000006211/23 - 0019030063/03
MSC is Active
Transmit Cycle is Incomplete
Receive Tag = 0000000000000006F Apply Tag = 0000000000000006F

0019030063/02 - 000000006211/22
MSC is Active
Transmit Cycle is Incomplete
Receive Tag = 0000000000000006F Apply Tag = 0000000000000006F

000000006211/1E - 0019030063/04
MSC is Active
Transmit Cycle is Incomplete
Receive Tag = 0000000000000006F Apply Tag = 0000000000000006F

0019030063/05 - 000000006211/3F
MSC is Active
Transmit Cycle is Incomplete
Receive Tag = 0000000000000006F Apply Tag = 0000000000000006F

Recovery Complete
CSMP0097I 18.38.28 CPU-A SS-BSS SSU-SSU0 IS-01
URDF1001I SRDF Group UEDUSA completed issuing Async

4. Display SRDF/A MSC recovery summary for all Sets in SRDF group U6D2USA. All receive cycles have been committed and apply cycle destaged to target (R2) devices in SRDF group U6D2USA.

ZURDF DIS GRO-U6D2USA SET-6200 TYP-MSC
CSMP0097I 22.03.15 CPU-C SS-BSS SSU-SSU0 IS-01
E1VF0000I SRDF/A Multi-Session Display
Group U6D2USA Set 6200 CU 000000006211

000000006211/23 - 0019030063/03
MSC is Active
Transmit Cycle is Incomplete
Apply Cycle is Complete
Receive Tag = 0000000000000006F Apply Tag = 0000000000000006F

0019030063/02 - 000000006211/22
MSC is Active
Transmit Cycle is Incomplete
Apply Cycle is Complete
Receive Tag = 0000000000000006F Apply Tag = 0000000000000006F

000000006211/1E - 0019030063/04
MSC is Active
Transmit Cycle is Incomplete
Apply Cycle is Complete
Receive Tag = 0000000000000006F Apply Tag = 0000000000000006F

0019030063/05 - 000000006211/3F
MSC is Active
Transmit Cycle is Incomplete
Apply Cycle is Complete
Receive Tag = 000000000000006F Apply Tag = 000000000000006F

5. Display SRDF/A information for SRDF group U6D2USA set 6240 to illustrate that Host Intervention is NOT required and manual recovery is complete or not required.

ZURDF DIS REM GRO-U6D2USA SET-6240 TYP-SAS
CSPM0097I 22.03.53 CPU-C SS-BSS SSU-SSU0 IS-01
E1VA0000I SRDF/A Session Display
Group U6D2USA Set 6240 in Secondary CU 000190300063
SRDF/A Session RDFGroup 04 Inactive Cycle Number 115
Receive Cycle Size 0 Apply Cycle Size 0
Average Cycle Time 58 Average Cycle Size 0
Last Cycle Size 0 Secondary Delay 00:00:12:25
Cycle Suspended No Restore Done No
Total Restores 0 Total Merges 0
Time Since Last Cycle Switch 00:00:45 Duration of Last Cycle 700
Max Throttle Time 0 Max Cache Percentage 93
Multi-Session Consistency Active Since 08/19/05 21:24:00
Clean-up Running No MSC Window is Open No
Apply Cycle Tag 000000000000006F Receive Cycle Tag 000000000000006F
Host Intervention Required No
End of Display

6. Display RDF device state matrix for SRDF group U6D2USA set 6200 to illustrate that a secondary SRDF mode is NOT set.

ZURDF DIS GRO-U6D2USA SET-6200 TYP-MAT
CSPM0097I 22.04.50 CPU-C SS-BSS SSU-SSU0 IS-01
E1RG00001 RDF Device Matrix Display
Group U6D2USA Set 6200 in Local CU 000000006211
MDBF Symb This Othr RA
SSN Mod SDA Dev Dev GP HS MO AC IT Disruptive States MR R1-Itrak R2-Itrak
B64 0130 6200 00A6 007C 23 RW SY TNR DL1 0 1410
B64 0131 6201 00A7 007D 23 RW SY TNR DL1 0 1414
B64 0132 6202 00A8 007E 23 RW SY TNR DL1 0 1392
B64 0133 6203 00A9 007F 23 RW SY TNR DL1 0 1419
B64 0134 6204 00A0 0080 23 RW SY TNR DL1 0 1461
B64 0135 6205 00B1 0081 23 RW SY TNR DL1 0 1479
B64 0136 6206 00AC 0082 23 RW SY TNR DL1 0 1393
B64 0137 6207 00AD 0083 23 RW SY TNR DL1 0 1422
B64 0108 6208 00AE 0084 23 RW SY TNR DL1 0 1955
B64 0109 6209 00AF 0085 23 RW SY TNR DL1 0 1998
B64 010A 620A 00B0 0086 23 RW SY TNR DL1 0 2016
B64 010B 620B 00B1 0087 23 RW SY TNR DL1 0 1992
B64 010C 620C 00B2 0088 23 RW SY TNR DL1 0 1921
B64 010D 620D 00B3 0089 23 RW SY TNR DL1 0 1700
B64 010E 620E 00B4 008A 23 RW SY TNR DL1 0 1487
B64 010F 620F 00B5 008B 23 RW SY TNR DL1 0 1445
End of Display

7. Set the secondary SRDF mode to adaptive copy disk for SRDF group U6D2USA.

ZURDF MOD GRO-U6D2USA PAR-ADCD
CSPM0097I 22.07.29 CPU-C SS-BSS SSU-SSU0 IS-01
URDF0019I SRDF Control record refresh started
CSPM0097I 22.07.29 CPU-C SS-BSS SSU-SSU0 IS-01
URDF1043I Local CU 000190300063 discovered for Group U6D2USA Set 3B80
CSPM0097I 22.07.29 CPU-C SS-BSS SSU-SSU0 IS-01
URDF1043I Remote CU 000000006211 discovered for Group U6D2USA Set 3B80
CSPM0097I 22.07.29 CPU-C SS-BSS SSU-SSU0 IS-01
URDF1043I Local CU 000190300063 discovered for Group U6D2USA Set 3B90
CSPM0097I 22.07.30 CPU-C SS-BSS SSU-SSU0 IS-01
URDF1043I Remote CU 000000006211 discovered for Group U6D2USA Set 3B90
CSPM0097I 22.07.31 CPU-C SS-BSS SSU-SSU0 IS-01
URDF1043I Local CU 000000006211 discovered for Group U6D2USA Set 6240
CSPM0097I 22.07.31 CPU-C SS-BSS SSU-SSUO IS-01
URDF1043I Remote CU 000190300063 discovered for Group U6D2USA Set 6240
CSPM0097I 22.07.33 CPU-C SS-BSS SSU-SSUO IS-01
URDF1043I Local CU 000000006211 discovered for Group U6D2USA Set 6200
CSPM0097I 22.07.33 CPU-C SS-BSS SSU-SSUO IS-01
URDF1043I Remote CU 000190300063 discovered for Group U6D2USA Set 6200
CSPM0097I 22.07.43 CPU-C SS-BSS SSU-SSUO IS-01
URDF0024I SRDF Control record refresh completed
CSPM0097I 22.07.43 CPU-C SS-BSS SSU-SSU0 IS-01
E1V00000I SRDF Operation Verification Started
E1V00001I SRDF Group Properties Verification Started
Options Permissions
None
E1V00003I SRDF Device State Verification Started
CSPM0097I 22.07.43 CPU-C SS-BSS SSU-SSUO IS-01
URDF1000I SRDF Group U6D2USA Set 3B80 started issuing Mode
CSPM0097I 22.07.44 CPU-C SS-BSS SSU-SSUO IS-01
URDF1000I SRDF Group U6D2USA Set 3B90 started issuing Mode
CSPM0097I 22.07.44 CPU-C SS-BSS SSU-SSUO IS-01
URDF1000I SRDF Group U6D2USA Set 6200 started issuing Mode
CSPM0097I 22.07.44 CPU-C SS-BSS SSU-SSUO IS-01
URDF1000I SRDF Group U6D2USA Set 6240 started issuing Mode
CSPM0097I 22.07.47 CPU-C SS-BSS SSU-SSUO IS-01
URDF1001I SRDF Group U6D2USA Set 3B90 completed issuing Mode
CSPM0097I 22.07.47 CPU-C SS-BSS SSU-SSUO IS-01
URDF1001I SRDF Group U6D2USA Set 3B80 completed issuing Mode
CSPM0097I 22.07.47 CPU-C SS-BSS SSU-SSUO IS-01
URDF1001I SRDF Group U6D2USA Set 6240 completed issuing Mode
CSPM0097I 22.07.47 CPU-C SS-BSS SSU-SSUO IS-01
URDF1001I SRDF Group U6D2USA Set 6200 completed issuing Mode
CSPM0097I 22.07.52 CPU-C SS-BSS SSU-SSUO IS-01
URDF1031I SRDF Status Display
SRDF Group: U6D2USA Base Operation: Mode
Status: Monitor Active
Start Time : 22.07.29 Date : 08/19/05
<table>
<thead>
<tr>
<th>Set Name</th>
<th>CU Serial #</th>
<th>SDA</th>
<th>Complete</th>
<th>In Progress</th>
<th>Not Started</th>
<th>Summary</th>
</tr>
</thead>
<tbody>
<tr>
<td>6200</td>
<td>000000006211</td>
<td>6303</td>
<td>16</td>
<td>0</td>
<td>0</td>
<td>0000</td>
</tr>
<tr>
<td>3B80</td>
<td>000190300063</td>
<td>3C21</td>
<td>16</td>
<td>0</td>
<td>0</td>
<td>0000</td>
</tr>
<tr>
<td>6240</td>
<td>000000006211</td>
<td>6303</td>
<td>16</td>
<td>0</td>
<td>0</td>
<td>0000</td>
</tr>
<tr>
<td>3B90</td>
<td>000190300063</td>
<td>3C21</td>
<td>16</td>
<td>0</td>
<td>0</td>
<td>0000</td>
</tr>
</tbody>
</table>
End of Display
URDF1003I SRDF Group U6D2USA Mode complete

8. Display RDF device state matrix for SRDF group U6D2USA set 6200 to illustrate that the secondary SRDF mode adaptive copy disk is set.

ZURDF DIS GRO-U6D2USA SET-6200 TYP-MAT
CSPM0097I 22.07.55 CPU-C SS-BSS SSU-SSUO IS-01
E1RG0001I RDF Device Matrix Display
Group U6D2USA Set 6200 in Local CU 000000006211
MDBF Symb This Othr RA
SSN Mod SDA Dev Dev GP HS MO AC IT Disruptive States MR R1-Itrk R2-Itrk
B64 0130 6200 00A6 007C 23 RW SY AD TNR DL1 0 2192
B64 0131 6201 00A7 007D 23 RW SY AD TNR DL1 0 2184
B64 0132 6202 00A8 007E 23 RW SY AD TNR DL1 0 2216
B64 0133 6203 00A9 007F 23 RW SY AD TNR DL1 0 2210
B64 0134 6204 00AA 0080 23 RW SY AD TNR DL1 0 2291
B64 0135 6205 00AB 0081 23 RW SY AD TNR DL1 0 2252
B64 0136 6206 00AC 0082 23 RW SY AD TNR DL1 0 2072
B64 0137 6207 00AD 0083 23 RW SY AD TNR DL1 0 2000
B64 0138 6208 00AE 0084 23 RW SY AD TNR DL1 0 2095
B64 0139 6209 00AF 0085 23 RW SY AD TNR DL1 0 2125

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9. Refresh invalid track counters for target (R2) devices in the secondary storage system.
10. Begin partial volume synchronization (changed tracks only) for SRDF group U6D2USA.

ZURDF RFR GRO-U6D2USA

URDF0019I SRDF Control record refresh started
CSPMP0971 22.08.26 CPU-C SS-BSS SSU-SSU0 IS-01
URDF1043I Local CU 000190300063 discovered for Group U6D2USA Set 3B80
CSPMP0971 22.08.26 CPU-C SS-BSS SSU-SSU0 IS-01
URDF1043I Remote CU 0000000006211 discovered for Group U6D2USA Set 3B80
CSPMP0971 22.08.27 CPU-C SS-BSS SSU-SSU0 IS-01
URDF1043I Local CU 0000000006211 discovered for Group U6D2USA Set 3B90
CSPMP0971 22.08.27 CPU-C SS-BSS SSU-SSU0 IS-01
URDF1043I Remote CU 0000000006211 discovered for Group U6D2USA Set 3B90
URDF0019I SRDF Control record refresh started
CSPMP0971 22.08.26 CPU-C SS-BSS SSU-SSU0 IS-01
URDF1043I Local CU 000190300063 discovered for Group U6D2USA Set 6240
CSPMP0971 22.08.28 CPU-C SS-BSS SSU-SSU0 IS-01
URDF1043I Remote CU 0000000006211 discovered for Group U6D2USA Set 6240
CSPMP0971 22.08.28 CPU-C SS-BSS SSU-SSU0 IS-01
URDF1043I Local CU 0000000006211 discovered for Group U6D2USA Set 6200
CSPMP0971 22.08.29 CPU-C SS-BSS SSU-SSU0 IS-01
URDF1043I Remote CU 000190300063 discovered for Group U6D2USA Set 6200
CSPMP0971 22.08.30 CPU-C SS-BSS SSU-SSU0 IS-01
URDF1043I Remote CU 000190300063 discovered for Group U6D2USA Set 6200
CSPMP0971 22.08.40 CPU-C SS-BSS SSU-SSU0 IS-01
URDF0024I SRDF Control record refresh completed
E1V00001I SRDF Operation Verification Started
CSPMP0971 22.08.40 CPU-C SS-BSS SSU-SSU0 IS-01
URDF1031I SRDF Status Display
SRDF Group: U6D2USA Base Operation: Rfrresume
Status: Monitor Active
Start Time : 22.08.26 Date : 08/19/05

<table>
<thead>
<tr>
<th>Set Name</th>
<th>CU Serial #</th>
<th>SDA</th>
<th>Opr</th>
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<th>Opr RC</th>
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<tr>
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<td>3B80</td>
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<td>000190300063 3C21</td>
<td>0</td>
<td>16</td>
<td>In Progress</td>
<td>6</td>
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</table>
End of Display
11. Terminate monitoring partial synchronization to enable transition to SRDF/A mode.

**SRDF ABRPT GROUP-U6D2USA**

CSPMP0971 22.09.45 CPU-C SS-BSS SSU-SSU0 IS-01
URDF1031I SRDF Status Display
SRDF Group: U6D2USA Base Operation: Rfrresume
Status: Monitor Active
Start Time : 22.08.26 Date : 08/19/05

<table>
<thead>
<tr>
<th>Set Name</th>
<th>CU Serial #</th>
<th>SDA</th>
<th>Complete</th>
<th>In Progress</th>
<th>Not Started</th>
<th>Summary</th>
</tr>
</thead>
<tbody>
<tr>
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<td>16</td>
<td>0</td>
<td>0000</td>
<td></td>
</tr>
<tr>
<td>3B80</td>
<td>000190300063 3C21</td>
<td>0</td>
<td>16</td>
<td>0</td>
<td>0000</td>
<td></td>
</tr>
<tr>
<td>6240</td>
<td>000000006211 6303</td>
<td>0</td>
<td>16</td>
<td>0</td>
<td>0000</td>
<td></td>
</tr>
<tr>
<td>3B90</td>
<td>000190300063 3C21</td>
<td>0</td>
<td>16</td>
<td>0</td>
<td>0000</td>
<td></td>
</tr>
</tbody>
</table>

URDF1035T SRDF Group U6D2USA Rfrresume aborted

12. Activate single session SRDF/A for all sets in SRDF group U6D2USA. SRDF Controls monitors activation until all secondaries in the SRDF group are consistent.

**SRDF ASYNC GRO-U6D2USA PAR-ACT**

CSPMP0971 22.09.48 CPU-C SS-BSS SSU-SSU0 IS-01
URDF0019I SRDF Control record refresh started
CSPMP0971 22.09.49 CPU-C SS-BSS SSU-SSU0 IS-01
URDF1043I Local CU 000190300063 discovered for Group U6D2USA Set 3B80
CSPMP0971 22.09.49 CPU-C SS-BSS SSU-SSU0 IS-01
URDF1043I Remote CU 00000006211 discovered for Group U6D2USA Set 3B80
CSPMP0971 22.09.49 CPU-C SS-BSS SSU-SSU0 IS-01
URDF1043I Local CU 000190300063 discovered for Group U6D2USA Set 3B90
CSPMP0971 22.09.49 CPU-C SS-BSS SSU-SSU0 IS-01
URDF1043I Remote CU 00000006211 discovered for Group U6D2USA Set 3B90
CSPMP0971 22.09.50 CPU-C SS-BSS SSU-SSU0 IS-01
URDF1043I Local CU 00000006211 discovered for Group U6D2USA Set 6240
CSPMP0971 22.09.51 CPU-C SS-BSS SSU-SSU0 IS-01
URDF1043I Remote CU 000190300063 discovered for Group U6D2USA Set 6240
CSPMP0971 22.09.52 CPU-C SS-BSS SSU-SSU0 IS-01
URDF1043I Local CU 00000006211 discovered for Group U6D2USA Set 6200
CSPMP0971 22.09.52 CPU-C SS-BSS SSU-SSU0 IS-01
URDF1043I Remote CU 000190300063 discovered for Group U6D2USA Set 6200
CSPMP0971 22.10.02 CPU-C SS-BSS SSU-SSU0 IS-01
URDF0024I SRDF Control record refresh completed
CSPMP0971 22.10.02 CPU-C SS-BSS SSU-SSU0 IS-01
EIV000001I SRDF Operation Verification Started
EIV00001I SRDF Group Properties Verification Started

Options

AMSA: ON

EIV00003I SRDF Device State Verification Started
CSPMP0971 22.10.03 CPU-C SS-BSS SSU-SSU0 IS-01
EIV00004I SRDF Operation Verification Completed
CSPMP0971 22.10.03 CPU-C SS-BSS SSU-SSU0 IS-01
URDF10001I SRDF Group U6D2USA Set 6200 started issuing Async
CSPMP0971 22.10.03 CPU-C SS-BSS SSU-SSU0 IS-01
URDF10001I SRDF Group U6D2USA Set 3B80 started issuing Async
CSPMP0971 22.10.03 CPU-C SS-BSS SSU-SSU0 IS-01
URDF10001I SRDF Group U6D2USA Set 3B90 started issuing Async
CSPMP0971 22.10.03 CPU-C SS-BSS SSU-SSU0 IS-01
URDF10001I SRDF Group U6D2USA Set 6240 started issuing Async
CSPMP0971 22.10.03 CPU-C SS-BSS SSU-SSU0 IS-01
URDF10001I SRDF Group U6D2USA Set 3B80 completed issuing Async
CSPMP0971 22.10.03 CPU-C SS-BSS SSU-SSU0 IS-01
URDF10001I SRDF Group U6D2USA Set 3B90 completed issuing Async
CSPMP0971 22.10.03 CPU-C SS-BSS SSU-SSU0 IS-01
URDF10001I SRDF Group U6D2USA Set 6240 completed issuing Async
CSPMP0971 22.10.03 CPU-C SS-BSS SSU-SSU0 IS-01
URDF10001I SRDF Group U6D2USA Set 6200 completed issuing Async
CSPMP0971 22.10.03 CPU-C SS-BSS SSU-SSU0 IS-01
URDF10001I SRDF Group U6D2USA Set 3B80 completed issuing Async
CSPMP0971 22.10.03 CPU-C SS-BSS SSU-SSU0 IS-01
URDF10001I SRDF Group U6D2USA Set 3B90 completed issuing Async
CSPMP0971 22.10.06 CPU-C SS-BSS SSU-SSU0 IS-01
URDF1031I SRDF Status Display
SRDF Procedures

SRDF Group: U6D2USA Base Operation: Async
Status: Monitor Active
Start Time : 22.09.48 Date : 08/19/05

<table>
<thead>
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<th>Opr</th>
<th>Operation Status</th>
<th>Opr RC</th>
</tr>
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<td>CU Serial #</td>
<td>SDA</td>
</tr>
<tr>
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<td>000000006211</td>
<td>6303</td>
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<tr>
<td>3B80</td>
<td>000190300063</td>
<td>3C21</td>
</tr>
<tr>
<td>6240</td>
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<td>6303</td>
</tr>
<tr>
<td>3B90</td>
<td>000190300063</td>
<td>3C21</td>
</tr>
</tbody>
</table>

End of Display

CSMP0097I 22.13.28 CPU-C SS-BSS SSU-SSU0 IS-01
URDF1031I SRDF Status Display
SRDF Group: U6D2USA Base Operation: Async
Status: Monitor Active
Start Time : 22.09.48 Date : 08/19/05

<table>
<thead>
<tr>
<th>Opr</th>
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</tr>
</thead>
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<td>Set Name</td>
<td>CU Serial #</td>
<td>SDA</td>
</tr>
<tr>
<td>6200</td>
<td>000000006211</td>
<td>6303</td>
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<tr>
<td>3B80</td>
<td>000190300063</td>
<td>3C21</td>
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<tr>
<td>6240</td>
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<td>6303</td>
</tr>
<tr>
<td>3B90</td>
<td>000190300063</td>
<td>3C21</td>
</tr>
</tbody>
</table>

End of Display
URDF1003I SRDF Group U6D2USA Async complete

13. Activate SRDF/A Multi-session Consistency for SRDF group U6D2USA. Turning on SRDF/A MSC initiates SRDF/A cycle switch controls. An MSC heartbeat message occurs at the defined interval for each set in the SRDF group.

ZURDF ASYNC GRO-U6D2USA PAR-MSA
CSMP0097I 22.13.41 CPU-C SS-BSS SSU-SSU0 IS-01
URDF0019I SRDF Control record refresh started
CSMP0097I 22.13.41 CPU-C SS-BSS SSU-SSU0 IS-01
URDF1043I Local CU 000190300063 discovered for Group U6D2USA Set 3B80
CSMP0097I 22.13.41 CPU-C SS-BSS SSU-SSU0 IS-01
URDF1043I Remote CU 000000006211 discovered for Group U6D2USA Set 3B80
CSMP0097I 22.13.42 CPU-C SS-BSS SSU-SSU0 IS-01
URDF1043I Local CU 000190300063 discovered for Group U6D2USA Set 3B90
CSMP0097I 22.13.42 CPU-C SS-BSS SSU-SSU0 IS-01
URDF1043I Remote CU 000000006211 discovered for Group U6D2USA Set 3B90
CSMP0097I 22.13.43 CPU-C SS-BSS SSU-SSU0 IS-01
URDF1043I Local CU 000190300063 discovered for Group U6D2USA Set 6240
CSMP0097I 22.13.43 CPU-C SS-BSS SSU-SSU0 IS-01
URDF1043I Remote CU 000000006211 discovered for Group U6D2USA Set 6240
CSMP0097I 22.13.44 CPU-C SS-BSS SSU-SSU0 IS-01
URDF1043I Local CU 000190300063 discovered for Group U6D2USA Set 6200
CSMP0097I 22.13.44 CPU-C SS-BSS SSU-SSU0 IS-01
URDF1043I Remote CU 000000006211 discovered for Group U6D2USA Set 6200
CSMP0097I 22.13.55 CPU-C SS-BSS SSU-SSU0 IS-01
URDF0024I SRDF Control record refresh completed
CSMP0097I 22.13.55 CPU-C SS-BSS SSU-SSU0 IS-01
E1V000001I SRDF Operation Verification Started
E1V000001I SRDF Group Properties Verification Started
Options Permissions
AMSA ON
E1V00003I SRDF Device State Verification Started
CSMP0097I 22.13.56 CPU-C SS-BSS SSU-SSU0 IS-01
E1V00004I SRDF Operation Verification Completed
CSMP0097I 22.13.56 CPU-C SS-BSS SSU-SSU0 IS-01
URDF1000I SRDF Group U6D2USA Set 6200 started issuing Async
CSMP0097I 22.13.56 CPU-C SS-BSS SSU-SSU0 IS-01
URDF1000I SRDF Group U6D2USA Set 3B80 started issuing Async
CSMP0097I 22.13.56 CPU-C SS-BSS SSU-SSU0 IS-01
URDF1000I SRDF Group U6D2USA Set 6240 started issuing Async
CSMP0097I 22.13.56 CPU-C SS-BSS SSU-SSU0 IS-01
URDF1001I SRDF Group U6D2USA Set 6200 completed issuing Async

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CSMP0097I 22.13.56 CPU-C SS-BSS SSU-SSU0 IS-01
URDF1000I SRDF Group U6D2USA Set 3B90 started issuing Async
CSMP0097I 22.13.56 CPU-C SS-BSS SSU-SSU0 IS-01
URDF1000I SRDF Group U6D2USA Set 3B80 completed issuing Async
CSMP0097I 22.13.56 CPU-C SS-BSS SSU-SSU0 IS-01
URDF1000I SRDF Group U6D2USA Set 6240 completed issuing Async
CSMP0097I 22.13.56 CPU-C SS-BSS SSU-SSU0 IS-01
URDF1000I SRDF Group U6D2USA Set 3B90 completed issuing Async
CSMP0097I 22.13.56 CPU-C SS-BSS SSU-SSU0 IS-01
URDF1059I SRDF/A MSC Group U6D2USA Cycle Switch Controls Started
CSMP0097I 22.13.56 CPU-C SS-BSS SSU-SSU0 IS-01
URDF1031I SRDF Status Display
SRDF Group: U6D2USA Base Operation: Async
Status: Monitor Active
Start Time : 22.13.41 Date : 08/19/05

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<tr>
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<th>SDA</th>
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<th>Not Started</th>
<th>Summary</th>
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<td>0</td>
<td>0</td>
<td>0000</td>
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<td>00019030063 3C21</td>
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<td>0</td>
<td>0</td>
<td>0000</td>
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<tr>
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<td>0</td>
<td>0000</td>
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<tr>
<td>3B90</td>
<td>00019030063 3C21</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0000</td>
</tr>
</tbody>
</table>

End of Display
URDF1003I SRDF Group U6D2USA Async complete

CSMP0097I 22.18.16 CPU-C SS-BSS SSU-SSU0 IS-01
URDF1058I SRDF/A MSC Group U6D2USA Set 6240 Cycle Switch Controls Active
CSMP0097I 22.18.16 CPU-C SS-BSS SSU-SSU0 IS-01
URDF1058I SRDF/A MSC Group U6D2USA Set 3B80 Cycle Switch Controls Active
CSMP0097I 22.18.16 CPU-C SS-BSS SSU-SSU0 IS-01
URDF1058I SRDF/A MSC Group U6D2USA Set 6200 Cycle Switch Controls Active
CSMP0097I 22.18.16 CPU-C SS-BSS SSU-SSU0 IS-01
URDF1058I SRDF/A MSC Group U6D2USA Set 3B90 Cycle Switch Controls Active
CSMP0097I 22.18.16 CPU-C SS-BSS SSU-SSU0 IS-01
URDF1058I SRDF/A MSC Group U6D2USA Set 6240 Cycle Switch Controls Active
CSMP0097I 22.18.16 CPU-C SS-BSS SSU-SSU0 IS-01
URDF1058I SRDF/A MSC Group U6D2USA Set 3B80 Cycle Switch Controls Active
CSMP0097I 22.18.16 CPU-C SS-BSS SSU-SSU0 IS-01
URDF1058I SRDF/A MSC Group U6D2USA Set 6200 Cycle Switch Controls Active
CSMP0097I 22.18.16 CPU-C SS-BSS SSU-SSU0 IS-01
URDF1058I SRDF/A MSC Group U6D2USA Set 3B90 Cycle Switch Controls Active
CSMP0097I 22.18.16 CPU-C SS-BSS SSU-SSU0 IS-01
URDF1058I SRDF/A MSC Group U6D2USA Set 6240 Cycle Switch Controls Active
CSMP0097I 22.18.16 CPU-C SS-BSS SSU-SSU0 IS-01
URDF1058I SRDF/A MSC Group U6D2USA Set 3B80 Cycle Switch Controls Active
CSMP0097I 22.18.16 CPU-C SS-BSS SSU-SSU0 IS-01
URDF1058I SRDF/A MSC Group U6D2USA Set 6200 Cycle Switch Controls Active
CSMP0097I 22.18.16 CPU-C SS-BSS SSU-SSU0 IS-01
URDF1058I SRDF/A MSC Group U6D2USA Set 3B90 Cycle Switch Controls Active
CSMP0097I 22.18.16 CPU-C SS-BSS SSU-SSU0 IS-01
URDF1058I SRDF/A MSC Group U6D2USA Set 6240 Cycle Switch Controls Active
CSMP0097I 22.18.16 CPU-C SS-BSS SSU-SSU0 IS-01
URDF1058I SRDF/A MSC Group U6D2USA Set 3B80 Cycle Switch Controls Active
CSMP0097I 22.18.16 CPU-C SS-BSS SSU-SSU0 IS-01
URDF1058I SRDF/A MSC Group U6D2USA Set 6200 Cycle Switch Controls Active
CSMP0097I 22.18.16 CPU-C SS-BSS SSU-SSU0 IS-01
URDF1058I SRDF/A MSC Group U6D2USA Set 3B90 Cycle Switch Controls Active
CSMP0097I 22.18.16 CPU-C SS-BSS SSU-SSU0 IS-01
URDF1058I SRDF/A MSC Group U6D2USA Set 6240 Cycle Switch Controls Active
CSMP0097I 22.18.16 CPU-C SS-BSS SSU-SSU0 IS-01
URDF1058I SRDF/A MSC Group U6D2USA Set 3B80 Cycle Switch Controls Active
CSMP0097I 22.18.16 CPU-C SS-BSS SSU-SSU0 IS-01
URDF1058I SRDF/A MSC Group U6D2USA Set 6200 Cycle Switch Controls Active
CSMP0097I 22.18.16 CPU-C SS-BSS SSU-SSU0 IS-01
URDF1058I SRDF/A MSC Group U6D2USA Set 3B90 Cycle Switch Controls Active
CSMP0097I 22.18.16 CPU-C SS-BSS SSU-SSU0 IS-01

Remove Failing - behavior and recovery

1. Set the drop policy to Remove Failing for SRDF group U6D2USA.

ZURDF DEF GRO-U6D2USA PRO-GEN MDP-RMF
CSMP0097I 22.28.18 CPU-C SS-BSS SSU-SSU0 IS-01
URDF0027I Define complete
CSMP0097I 22.28.18 CPU-C SS-BSS SSU-SSU0 IS-01
E1V30000I SRDF General Properties Display
Local SRDF Group - U6D2USA
RDF Pair Processing Delay Timer:  3
Monitor Interval Timer:  3
R1 To Larger R2: ON  Sync Direction: NONE  QOS:  0 is set
SRDF/A: MSC  Target Cycle Switch:   15  Heartbeat Interval:   5
Drop Policy: Drop Failing
End of Display

2. Suspend set 3B80 to force dropping an SRDF/A session in SRDF group U6D2USA.

ZURDF SUS GRO-U6D2USA SET-3B80
CSMP0097I 22.28.32 CPU-C SS-BSS SSU-SSU0 IS-01
URDF0019I SRDF Control record refresh started
CSMP0097I 22.28.32 CPU-C SS-BSS SSU-SSU0 IS-01
3. Display SRDF/A MSC recovery summary for all Sets in SRDF group U6D2USA.

ZURDF DIS GRO-U6D2USA SET-6200 TYP-MSC
CSMP0097I 22.30.33 CPU-C SS-BSS SSU-SSU0 IS-01
E1VF0000I SRDF/A Mult-Session Display
Group U6D2USA Set 6200 CU 000000006211

000000006211/23 - 000190300063/03
MSC is Active
Transmit Cycle is Incomplete
Receive Tag = 0000000000000044 Apply Tag = 0000000000000043

000190300063/02 - 000000006211/22
MSC is Active
Transmit Cycle is Complete
Apply Cycle is Complete
Receive Tag = 000000000000003C Apply Tag = 000000000000003B

000000006211/1E - 000190300063/04
MSC is Active
Transmit Cycle is Incomplete
Receive Tag = 0000000000000044 Apply Tag = 0000000000000043

End of Display

4. Display SRDF/A information for primary and secondary storage systems in SRDF group U6D2USA Set 3B80.

ZURDF DIS GRO-U6D2USA SET-3B80 TYP-SAS
5. Display RDF device state matrix for SRDF group U6D2USA set 3B80 to illustrate that no secondary SRDF mode is set for set 3B80.

6. Suspend set 6240 to force dropping an SRDF/A session in SRDF group U6D2USA.
SRDF Procedures

URDF0019I SRDF Control record refresh started
CSPM00971 22.33.10 CPU-C SS-BSS SSU-SSU0 IS-01
URDF1043I Local CU 000000006211 discovered for Group U6D2USA Set 6240
CSPM00971 22.33.10 CPU-C SS-BSS SSU-SSU0 IS-01
URDF1043I Remote CU 000190300063 discovered for Group U6D2USA Set 6240
CSPM00971 22.33.13 CPU-C SS-BSS SSU-SSU0 IS-01
URDF0024I SRDF Control record refresh completed
CSPM00971 22.33.13 CPU-C SS-BSS SSU-SSU0 IS-01
E1V00001I SRDF Operation Verification Started
E1V00001I SRDF Group Properties Verification Started
Options Permissions
None
E1V00003I SRDF Device State Verification Started
CSPM00971 22.33.13 CPU-C SS-BSS SSU-SSU0 IS-01
E1V00004I SRDF Operation Verification Completed
CSPM00971 22.33.13 CPU-C SS-BSS SSU-SSU0 IS-01
URDF10001I SRDF Group U6D2USA Set 6240 started issuing Suspend
CSPM00971 22.33.13 CPU-C SS-BSS SSU-SSU0 IS-01
URDF1001I SRDF Group U6D2USA Set 6240 completed issuing Suspend
CSPM00971 22.33.16 CPU-C SS-BSS SSU-SSU0 IS-01
URDF1060I SRDF/A MSC Group U6D2USA Set 6240 Cycle Switch Controls Inactive
CSPM00971 22.33.16 CPU-C SS-BSS SSU-SSU0 IS-01
URDF1058I SRDF/A MSC Group U6D2USA Set 6240 Cycle Switch Controls Active
CSPM00971 22.33.16 CPU-C SS-BSS SSU-SSU0 IS-01
URDF1060I SRDF/A MSC Group U6D2USA Set 6240 Cycle Switch Controls Inactive
CSPM00971 22.33.16 CPU-C SS-BSS SSU-SSU0 IS-01
URDF1058I SRDF/A MSC Group U6D2USA Set 6200 Cycle Switch Controls Active
CSPM00971 22.33.16 CPU-C SS-BSS SSU-SSU0 IS-01
URDF109I SRDF Status Display
SRDF Group: U6D2USA Set: 6240 Range Operation: Suspend
Status: Monitor Active
Start Time : 22.33.09 Date : 08/19/05
<table>
<thead>
<tr>
<th>Set Name</th>
<th>CU Serial #</th>
<th>SDA</th>
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<th>In Progress</th>
<th>Not Started</th>
<th>Summary</th>
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<tbody>
<tr>
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<td>6303</td>
<td>16</td>
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<td>0</td>
<td>0000</td>
</tr>
</tbody>
</table>
End of Display
URDF1014I SRDF Group U6D2USA Set 6240 Suspend complete

7. Display SRDF/A MSC recovery summary for all sets in SRDF group U6D2USA.

ZURDF DIS GRO-U6D2USA SET-6200 TYP-MSC
CSPM00971 22.33.57 CPU-C SS-BSS SSU-SSU0 IS-01
E1VF00001I SRDF/A Multi-Session Display
Group U6D2USA Set 6200 CU 000000006211

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<th>Receive Tag</th>
<th>Apply Tag</th>
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<tbody>
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<td>000190300063/04</td>
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<td>000000000000004D</td>
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</table>
8. Display SRDF/A information for the primary storage system in SRDF group U6D2USA Set 6240.

**ZURDF DIS GRO-U6D2USA SET-6240 TYP-SAS**

<table>
<thead>
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<th>1E Inactive</th>
<th>Cycle Number</th>
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<td>Average Cycle Time</td>
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<td>510</td>
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<td>Last Cycle Size</td>
<td>252</td>
<td>Secondary Delay</td>
<td>00:00:01:30</td>
</tr>
<tr>
<td>Secondary Consistent</td>
<td>?</td>
<td>Tolerance</td>
<td>Off</td>
</tr>
<tr>
<td>HA Writes</td>
<td>0</td>
<td>Repeated HA Writes</td>
<td>0</td>
</tr>
<tr>
<td>HA Duplicate Slots</td>
<td>0</td>
<td>Drop Priority</td>
<td>33</td>
</tr>
<tr>
<td>Time Since Last Cycle Switch</td>
<td>00:01:15</td>
<td>Duration of Last Cycle</td>
<td>11</td>
</tr>
<tr>
<td>Max Throttle Time</td>
<td>0</td>
<td>Max Cache Percentage</td>
<td>93</td>
</tr>
<tr>
<td>Multi-Session Consistency</td>
<td>Active</td>
<td>Active Since</td>
<td>08/19/05 22.13.56</td>
</tr>
<tr>
<td>Clean-up Running</td>
<td>No</td>
<td>MSC Window is Open</td>
<td>No</td>
</tr>
<tr>
<td>Capture Cycle Tag</td>
<td>000000000000004E</td>
<td>Transmit Cycle Tag</td>
<td>000000000000004F</td>
</tr>
</tbody>
</table>

End of Display

9. Display RDF device state matrix for SRDF group U6D2USA set 6240 to illustrate that no secondary SRDF mode is set for set 6240.

**ZURDF DIS GRO-U6D2USA SET-6240 TYP-MAT**

<table>
<thead>
<tr>
<th>MDBF Symb</th>
<th>This Othr RA</th>
<th>SSN</th>
<th>Mod</th>
<th>SDA</th>
<th>Dev</th>
<th>Dev</th>
<th>GP</th>
<th>HS</th>
<th>MO</th>
<th>AC</th>
<th>IT</th>
<th>Disruptive States</th>
<th>MR</th>
<th>R1-Itrk</th>
<th>R2-Itrk</th>
</tr>
</thead>
<tbody>
<tr>
<td>B64 0100 6240 00B6 008C 1E RW SY</td>
<td>TNR</td>
<td>DL1</td>
<td>0</td>
<td>97</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B64 0101 6241 00B7 008D 1E RW SY</td>
<td>TNR</td>
<td>DL1</td>
<td>0</td>
<td>114</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B64 0102 6242 00B8 008E 1E RW SY</td>
<td>TNR</td>
<td>DL1</td>
<td>0</td>
<td>132</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B64 0103 6243 00B9 008F 1E RW SY</td>
<td>TNR</td>
<td>DL1</td>
<td>0</td>
<td>120</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B64 0104 6244 00BA 0090 1E RW SY</td>
<td>TNR</td>
<td>DL1</td>
<td>0</td>
<td>111</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B64 0105 6245 00BB 0091 1E RW SY</td>
<td>TNR</td>
<td>DL1</td>
<td>0</td>
<td>114</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B64 0106 6246 00BC 0092 1E RW SY</td>
<td>TNR</td>
<td>DL1</td>
<td>0</td>
<td>111</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B64 0107 6247 00BD 0093 1E RW SY</td>
<td>TNR</td>
<td>DL1</td>
<td>0</td>
<td>105</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B64 0108 6248 00BE 0094 1E RW SY</td>
<td>TNR</td>
<td>DL1</td>
<td>0</td>
<td>226</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B64 0109 6249 00BF 0095 1E RW SY</td>
<td>TNR</td>
<td>DL1</td>
<td>0</td>
<td>140</td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B64 010A 624A 00C0 0096 1E RW SY</td>
<td>TNR</td>
<td>DL1</td>
<td>0</td>
<td>157</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B64 010B 624B 00C1 0097 1E RW SY</td>
<td>TNR</td>
<td>DL1</td>
<td>0</td>
<td>113</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B64 010C 624C 00C2 0098 1E RW SY</td>
<td>TNR</td>
<td>DL1</td>
<td>0</td>
<td>131</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B64 010D 624D 00C3 0099 1E RW SY</td>
<td>TNR</td>
<td>DL1</td>
<td>0</td>
<td>109</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B64 010E 624E 00C4 009A 1E RW SY</td>
<td>TNR</td>
<td>DL1</td>
<td>0</td>
<td>125</td>
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<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B64 010F 624F 00C5 009B 1E RW SY</td>
<td>TNR</td>
<td>DL1</td>
<td>0</td>
<td>106</td>
<td></td>
<td></td>
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<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

End of Display

10. Set the secondary SRDF mode to adaptive copy disk for SRDF group U6D2USA set 3B80.

**ZURDF MOD GRO-U6D2USA SET-3B80 PAR-ADCD**

<table>
<thead>
<tr>
<th>SRDF Control Control record refresh started</th>
</tr>
</thead>
<tbody>
<tr>
<td>CSM#0097I 22.35.07 CPU-C SS-BSS SSU-SSU0 IS-01</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>URDF Control Control record refresh started</th>
</tr>
</thead>
<tbody>
<tr>
<td>CSM#0097I 22.35.07 CPU-C SS-BSS SSU-SSU0 IS-01</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>URDF Control Control record refresh completed</th>
</tr>
</thead>
<tbody>
<tr>
<td>CSM#0097I 22.35.12 CPU-C SS-BSS SSU-SSU0 IS-01</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>URDF Control Control record refresh completed</th>
</tr>
</thead>
<tbody>
<tr>
<td>CSM#00241 22.35.12 CPU-C SS-BSS SSU-SSU0 IS-01</td>
</tr>
</tbody>
</table>

**SRDF/A MSC drop policy**
11. Refresh the invalid track counters for target (R2) devices in the secondary storage system for SRDF group U6D2USA set 3B80.

```
ZURDF REFRESH REMOTE GRO-U6D2USA SET-3B80
CSPM0097I 22.35.26 CPU-C SS-BSS SSU-SSU0 IS-01
URDF0019I SRDF Control record refresh started
CSPM0097I 22.35.26 CPU-C SS-BSS SSU-SSU0 IS-01
URDF1043I Local CU 000190300063 discovered for Group U6D2USA Set 3B80
CSPM0097I 22.35.26 CPU-C SS-BSS SSU-SSU0 IS-01
URDF1043I Remote CU 000000006211 discovered for Group U6D2USA Set 3B80
CSPM0097I 22.35.30 CPU-C SS-BSS SSU-SSU0 IS-01
URDF0024I SRDF Control record refresh completed
CSPM0097I 22.35.30 CPU-C SS-BSS SSU-SSU0 IS-01
E1V00000I SRDF Operation Verification Started
E1V00001I SRDF Group Properties Verification Started
Options Permissions
None
E1V00003I SRDF Device State Verification Started
CSPM0097I 22.35.31 CPU-C SS-BSS SSU-SSU0 IS-01
E1V00004I SRDF Operation Verification Completed
CSPM0097I 22.35.31 CPU-C SS-BSS SSU-SSU0 IS-01
URDF1000I SRDF Group U6D2USA Set 3B80 started issuing Refresh
CSPM0097I 22.37.18 CPU-C SS-BSS SSU-SSU0 IS-01
URDF1001I SRDF Group U6D2USA Set 3B80 completed issuing Refresh
CSPM0097I 22.37.22 CPU-C SS-BSS SSU-SSU0 IS-01
URDF1009I SRDF Status Display
SRDF Group: U6D2USA Set: 3B80 Range Operation: Refresh
Status: Monitor Active
Start Time : 22.35.26 Date : 08/19/05
  Opr  Operation Status ________  Opr RC
   Set Name  CU Serial #   SDA  Complete In Progress Not Started  Summary
3B80      000000006211 3C21        16            0           0     0000
End of Display
URDF1014I SRDF Group U6D2USA Set 3B80 Refresh complete
```

12. Begin partial volume synchronization (changed tracks only) for SRDF group U6D2USA set 3B80.

```
ZURDF RFR GRO-U6D2USA SET-3B80
CSPM0097I 22.37.28 CPU-C SS-BSS SSU-SSU0 IS-01
URDF0019I SRDF Control record refresh started
CSPM0097I 22.37.28 CPU-C SS-BSS SSU-SSU0 IS-01
```
13. Terminate monitoring partial synchronization for SRDF group U6D2USA set 3B80 to enable transition to SRDF/A mode.

**ZURDF ABORT GROUP-U6D2USA SET-3B80**

CSP0097I 22.38.41 CPU-C SS-BSS SSU-SSU0 IS-01

URDF1009I SRDF Status Display

SRDF Group: U6D2USA Set: 3B80 Range Operation: Rfrresume
Status: Monitor Active
Start Time : 22.37.28 Date : 08/19/05

<table>
<thead>
<tr>
<th>Set Name</th>
<th>CU Serial #</th>
<th>SDA</th>
<th>Complete</th>
<th>In Progress</th>
<th>Not Started</th>
<th>Summary</th>
</tr>
</thead>
<tbody>
<tr>
<td>3B80</td>
<td>000190300063</td>
<td>3C21</td>
<td>0</td>
<td>16</td>
<td>0</td>
<td>0000</td>
</tr>
</tbody>
</table>

URDF1008T SRDF Group U6D2USA Set 3B80 Rfrresume aborted

14. Activate single session SRDF/A for SRDF group U6D2USA Set 3B80. SRDF Controls monitors activation until the secondary for this set is consistent.

**ZURDF ASYNC GRO-U6D2USA SET-3B80 PAR-ACT**

CSP0097I 22.38.46 CPU-C SS-BSS SSU-SSU0 IS-01

URDF0019I SRDF Control record refresh started

CSP0097I 22.38.46 CPU-C SS-BSS SSU-SSU0 IS-01

URDF1043I Local CU 000190300063 discovered for Group U6D2USA Set 3B80

CSP0097I 22.38.46 CPU-C SS-BSS SSU-SSU0 IS-01

URDF1043I Remote CU 000000006211 discovered for Group U6D2USA Set 3B80

CSP0097I 22.38.50 CPU-C SS-BSS SSU-SSU0 IS-01

URDF0024I SRDF Control record refresh completed

CSP0097I 22.38.50 CPU-C SS-BSS SSU-SSU0 IS-01

E1V00000I SRDF Operation Verification Started

E1V00001I SRDF Group Properties Verification Started

Options Permissions

None
15. Activate SRDF/A Multi-session Consistency for SRDF group U6D2USA set 3B80. Turning on SRDF/A MSC for this set allows SRDF/A cycle switch controls to integrate cycle switching for this set the active cycle. An MSC heartbeat message occurs for set 3B80 when it is integrated into the current cycle for SRDF group U6D2USA.
16. Display SRDF/A MSC recovery summary to illustrate that set 3B80 has been integrated into the current SRDF/A MSC cycle.

17. Set the secondary SRDF mode to adaptive copy disk for SRDF group U6D2USA set 6240.
SRDF Procedures

ZURDF REFRESH REMOTE GRO-U6D2USA SET-6240
CSMP0097I 22.40.22 CPU-C SS-BSS SSU-SSU0 IS-01
URDF0019I SRDF Control record refresh started
CSMP0097I 22.40.22 CPU-C SS-BSS SSU-SSU0 IS-01
URDF1043I Local CU 000000006211 discovered for Group U6D2USA Set 6240
CSMP0097I 22.40.23 CPU-C SS-BSS SSU-SSU0 IS-01
URDF1043I Remote CU 000190300063 discovered for Group U6D2USA Set 6240
CSMP0097I 22.40.25 CPU-C SS-BSS SSU-SSU0 IS-01
URDF0024I SRDF Control record refresh completed
E1V00001I SRDF Operation Verification Started
E1V00001I SRDF Group Properties Verification Started
Options Permissions
None
E1V00003I SRDF Device State Verification Started
CSMP0097I 22.40.26 CPU-C SS-BSS SSU-SSU0 IS-01
E1V00004I SRDF Operation Verification Completed
ZURDF REFRESH REMOTE GRO-U6D2USA SET-6240
CSMP0097I 22.40.22 CPU-C SS-BSS SSU-SSU0 IS-01
URDF0019I SRDF Control record refresh started
CSMP0097I 22.40.22 CPU-C SS-BSS SSU-SSU0 IS-01
URDF1043I Local CU 000000006211 discovered for Group U6D2USA Set 6240
CSMP0097I 22.40.23 CPU-C SS-BSS SSU-SSU0 IS-01
URDF1043I Remote CU 000190300063 discovered for Group U6D2USA Set 6240
CSMP0097I 22.40.25 CPU-C SS-BSS SSU-SSU0 IS-01
URDF0024I SRDF Control record refresh completed
E1V00001I SRDF Operation Verification Started
E1V00001I SRDF Group Properties Verification Started
Options Permissions
None
CSMP0097I 22.40.26 CPU-C SS-BSS SSU-SSU0 IS-01
E1V00004I SRDF Operation Verification Completed

18. Refresh invalid track counts for target (R2) devices in the secondary storage system for SRDF group U6D2USA set 6240.

19. Begin partial volume synchronization (changed tracks only) for SRDF group U6D2USA set 6240.
20. Terminate monitoring partial synchronization for the SRDF group U6D2USA set 6240 to enable transition to SRDF/A mode.

ZURDF ABORT GROUP-U6D2USA SET-6240

21. Activate single session SRDF/A for the SRDF group U6D2USA Set 6240. SRDF Controls monitors activation until the secondary for this set is consistent.

ZURDF ASYNC GRO-U6D2USA SET-6240 PAR-ACT
22. Activate SRDF/A Multi-session Consistency for SRDF group U6D2USA set 6240.

Turning on SRDF/A MSC for set 6240 causes SRDF/A cycle switch controls to integrate cycle switching for set 6240 into the current cycle. An MSC heartbeat message is issued for set 6240 when it is integrated into the current cycle for SRDF group U6D2USA. In this case, the message is issued following the subsequent MSC display.

23. Display SRDF/A MSC recovery summary to illustrate that set 6240 has been integrated into the current SRDF/A MSC cycle.
SRDF Procedures

000000006211/23 - 000190300063/03
MSC is Active
Transmit Cycle is Incomplete
Apply Cycle is Complete
Receive Tag = 000000000000008E Apply Tag = 000000000000008D

000190300063/02 - 000000006211/22
MSC is Active
Transmit Cycle is Incomplete
Apply Cycle is Complete
Receive Tag = 000000000000008E Apply Tag = 000000000000008D

000000006211/1E - 000190300063/04
MSC is Active
Transmit Cycle is Complete
Apply Cycle is Complete
Receive Tag = 000000000000008E Apply Tag = 0000000000000000

000190300063/05 - 000000006211/3F
MSC is Active
Transmit Cycle is Incomplete
Apply Cycle is Complete
Receive Tag = 000000000000008E Apply Tag = 000000000000008D

End of Display

CSMP0097I 22.49.16 CPU-C SS-BSS SSU-SSU0 IS-01
URDF1058I SRDF/A MSC Group U6D2USA Set 6240 Cycle Switch Controls Active

Disable - behavior and recovery

1. Set drop policy as disable for SRDF group U6D2USA.

ZURDF DEF GRO-U6D2USA PRO-GEN MDP-DIS
CSMP0097I 18.29.21 CPU-C SS-BSS SSU-SSU0 IS-01
URDF0027I Define complete
CSMP0097I 18.29.21 CPU-C SS-BSS SSU-SSU0 IS-01
E1V30000I SRDF General Properties Display
  Local SRDF Group - U6D2USA
  RDF Pair Processing Delay Timer:  3
  Monitor Interval Timer:  3
  R1 To Larger R2: ON     Sync Direction: NONE  QOS:  0 is set
  SRDF/A: MSC        Target Cycle Switch:   15  Heartbeat Interval:   5
  Drop Policy: Disable
End of Display

2. Suspend set 3B80 to force dropping an SRDF/A session in SRDF group U6D2USA.

ZURDF SUS GRO-U6D2USA SET-3B80
CSMP0097I 18.29.53 CPU-C SS-BSS SSU-SSU0 IS-01
URDF0019I SRDF Control record refresh started
CSMP0097I 18.29.53 CPU-C SS-BSS SSU-SSU0 IS-01
URDF1043I Local CU 000190300063 discovered for Group U6D2USA Set 3B80
CSMP0097I 18.29.53 CPU-C SS-BSS SSU-SSU0 IS-01
URDF1043I Remote CU 000000006211 discovered for Group U6D2USA Set 3B80
CSMP0097I 18.29.57 CPU-C SS-BSS SSU-SSU0 IS-01
URDF0024I SRDF Control record refresh completed
CSMP0097I 18.29.57 CPU-C SS-BSS SSU-SSU0 IS-01
E1V00000I SRDF Operation Verification Started
E1V00001I SRDF Group Properties Verification Started
  Options         Permissions
    None
E1V00003I SRDF Device State Verification Started
CSMP0097I 18.29.57 CPU-C SS-BSS SSU-SSU0 IS-01
E1V00004I SRDF Operation Verification Completed
SRDF Procedures

3. Display the SRDF/A MSC recovery summary for all Sets in SRDF group U6D2USA.

Cycle switching controls remains active for one more cycle after an SRDF/A session drops. Any outstanding cycle for the dropped session is discarded.
Receive Tag = 00000000000010D9 Apply Tag = 00000000000010D8

0000000006211/1E - 000190300063/04
MSC is Not Active
Apply Cycle is Empty
Receive Tag = 00000000000010DC Apply Tag = 00000000000010DB

000190300063/05 - 000000006211/3F
MSC is Not Active
Apply Cycle is Empty
Receive Tag = 00000000000010DC Apply Tag = 00000000000010DB

Case 3 - Not All Boxes Have the Same Receive Tag
Case 2 - Discard All Cycles
End of Display

4. Display SRDF/A information for all sets in SRDF group U6D2USA.

Note: SRDF/A active for set 6200
SRDF/A inactive for set 3B80 due to previous suspend
SRDF/A active for set 3B90
SRDF/A active for set 6200

ZURDF DIS GRO-U6D2USA SET-6200 TYP-SAS
CSPM0097I 18.31.04 CPU-C SS-BSS SSU-SSU0 IS-01
E1VA0000I SRDF/A Session Display
Group U6D2USA Set 6200 in Primary CU 0000000006211
SRDF/A Session RDFGroup 23 Active Cycle Number 4353
Capture Cycle Size 422 Transmit Cycle Size 0
Average Cycle Time 16 Average Cycle Size 849
Last Cycle Size 2018 Secondary Delay 00:00:00:36
Secondary Consistent Yes Tolerance Off
HA Writes 47 708 962 Repeated HA Writes 1 871 682
HA Duplicate Slots 17 212 Drop Priority 33
Time Since Last Cycle Switch 00:00:06 Duration of Last Cycle 30
Max Throttle Time 0 Max Cache Percentage 93
End of Display

ZURDF DIS GRO-U6D2USA SET-3B80 TYP-SAS
CSPM0097I 18.31.08 CPU-C SS-BSS SSU-SSU0 IS-01
E1VA0000I SRDF/A Session Display
Group U6D2USA Set 3B80 in Primary CU 000190300063
SRDF/A Session RDFGroup 02 Inactive Cycle Number 4350
Capture Cycle Size 0 Transmit Cycle Size 0
Average Cycle Time 15 Average Cycle Size 468
Last Cycle Size 477 Secondary Delay 00:00:01:26
Secondary Consistent ? Tolerance Off
HA Writes 0 Repeated HA Writes 0
HA Duplicate Slots 0 Drop Priority 33
Time Since Last Cycle Switch 00:01:11 Duration of Last Cycle 15
Max Throttle Time 0 Max Cache Percentage 93
Multi-Session Consistency Active Since 08/23/05 00.31.43
Clean-up Running No MSC Window is Open No
Capture Cycle Tag 00000000000010DA Transmit Cycle Tag 00000000000010DB
End of Display

ZURDF DIS GRO-U6D2USA SET-3B90 TYP-SAS
CSPM0097I 18.31.14 CPU-C SS-BSS SSU-SSU0 IS-01
E1VA0000I SRDF/A Session Display
Group U6D2USA Set 3B90 in Primary CU 000190300063
SRDF/A Session RDFGroup 05 Active Cycle Number 4353
Capture Cycle Size 250 Transmit Cycle Size 0
SRDF Procedures

Average Cycle Time                 16   Average Cycle Size              766
Last Cycle Size                   481   Secondary Delay         00:00:00:46
Secondary Consistent             Yes   Tolerance                       Off
HA Writes                  46 617 250   Repeated HA Writes        813 405
HA Duplicate Slots             18 248   Drop Priority                    33
Time Since Last Cycle Switch 00:00:16   Duration of Last Cycle           30
Max Throttle Time               0   Max Cache Percentage             93

End of Display

ZURDF DIS GRO-U6D2USA SET-6240 TYP-SAS
CSMP0097I 18.31.17 CPU-C SS-BSS SSU-SSUO IS-01
E1VA00001 SRDF/A Session Display
Group U6D2USA Set 6240 in Primary CU 0000000006211
SRDF/A Session RDFGroup 1E Active Cycle Number 4353
Capture Cycle Size 375 Transmit Cycle Size 0
Average Cycle Time 16 Average Cycle Size 560
Last Cycle Size 545 Secondary Delay 00:00:00:49
Secondary Consistent Yes Tolerance Off
HA Writes 47 709 748 Repeated HA Writes 1 871 692
HA Duplicate Slots 17 212 Drop Priority 33
Time Since Last Cycle Switch 00:00:19 Duration of Last Cycle 30
Max Throttle Time 0 Max Cache Percentage 93
End of Display

5. Display the RDF device state matrix for SRDF group U6D2USA, set 3B80, to illustrate that no secondary SRDF mode is set for set 3B80.

ZURDF DIS GRO-U6D2USA SET-3B80 TYP-MAT
CSMP0097I 18.31.32 CPU-C SS-BSS SSU-SSUO IS-01
E1RG0001I RDF Device Matrix Display
Group U6D2USA Set 3B80 in Local CU 000190300063
MDBF Symb This Othr RA
SSN  Mod  SDA  Dev  Dev  GP  HS  MO  AC  IT  Disruptive States  MR  R1-Itrk  R2-Itrk
B64 012F 3B9F 0058 0538 02 RW SY  TNR  DL1 0 835
B64 0111 3B81 0059 0539 02 RW SY  TNR  DL1 0 880
B64 0112 3B82 005A 053A 02 RW SY  TNR  DL1 0 923
B64 0113 3B83 005B 053B 02 RW SY  TNR  DL1 0 931
B64 0114 3B84 005C 053C 02 RW SY  TNR  DL1 0 945
B64 0115 3B85 005D 053D 02 RW SY  TNR  DL1 0 503
B64 0116 3B86 005E 053E 02 RW SY  TNR  DL1 0 408
B64 0117 3B87 005F 053F 02 RW SY  TNR  DL1 0 242
B64 0118 3B88 0060 0540 02 RW SY  TNR  DL1 0 213
B64 0119 3B89 0061 0541 02 RW SY  TNR  DL1 0 176
B64 011A 3B8A 0062 0542 02 RW SY  TNR  DL1 0 145
B64 011B 3B8B 0063 0543 02 RW SY  TNR  DL1 0 149
B64 011C 3B8C 0064 0544 02 RW SY  TNR  DL1 0 155
B64 011D 3B8D 0065 0545 02 RW SY  TNR  DL1 0 136
B64 011E 3B8E 0066 0546 02 RW SY  TNR  DL1 0 171
B64 011F 3B8F 0067 0547 02 RW SY  TNR  DL1 0 135
End of Display

6. Set the secondary SRDF mode to adaptive copy disk for SRDF group U6D2USA set 3B80.

ZURDF MOD GRO-U6D2USA SET-3B80 PAR-ACCD
CSMP0097I 18.31.38 CPU-C SS-BSS SSU-SSUO IS-01
URDF00191 SRDF Control record refresh started
CSMP0097I 18.31.38 CPU-C SS-BSS SSU-SSUO IS-01
URDF1043I Local CU 000190300063 discovered for Group U6D2USA Set 3B80
CSMP0097I 18.31.38 CPU-C SS-BSS SSU-SSUO IS-01
URDF1043I Remote CU 0000000006211 discovered for Group U6D2USA Set 3B80
CSMP0097I 18.31.38 CPU-C SS-BSS SSU-SSUO IS-01
URDF00241 SRDF Control record refresh completed
CSMP0097I 18.31.38 CPU-C SS-BSS SSU-SSUO IS-01
E1V00000I SRDF Operation Verification Started
E1V00001I SRDF Group Properties Verification Started
7. Refresh the invalid track counters for target (R2) devices in the secondary storage system for SRDF group U6D2USA set 3B80.

8. Begin partial volume synchronization (changed tracks only) for SRDF group U6D2USA, set 3B80.
URDF0024I SRDF Control record refresh completed
CSP0097I 18.46.37 CPU-C SS-BSS SSU-SSU0 IS-01
E1V00000I SRDF Operation Verification Started
E1V00001I SRDF Group Properties Verification Started
Options Permissions
None
E1V00003I SRDF Device State Verification Started
CSP0097I 18.46.37 CPU-C SS-BSS SSU-SSU0 IS-01
E1V00004I SRDF Operation Verification Completed
CSP0097I 18.46.37 CPU-C SS-BSS SSU-SSU0 IS-01
URDF1000I SRDF Group U6D2USA Set 3B80 started issuing Rfrresume
CSP0097I 18.47.32 CPU-C SS-BSS SSU-SSU0 IS-01
URDF1001I SRDF Group U6D2USA Set 3B80 completed issuing Rfrresume
CSP0097I 18.47.36 CPU-C SS-BSS SSU-SSU0 IS-01
URDF1009I SRDF Status Display
SRDF Group: U6D2USA Set: 3B80 Range Operation: Rfrresume
Status: Monitor Active
Start Time : 18.46.32 Date : 08/23/05
Opr Operation Status ________ Opr RC
Set Name  CU Serial #   SDA  Complete  In Progress Not Started  Summary
3B80      000190300063 3C21         0           16           0     0000
End of Display

9. Terminate monitoring of the partial synchronization for SRDF group U6D2USA, set 6240, to enable transition to SRDF/A mode.

ZURDF ABORT GROUP-U6D2USA SET-3B80
CSP0097I 18.47.39 CPU-C SS-BSS SSU-SSU0 IS-01
URDF1009I SRDF Status Display
SRDF Group: U6D2USA Set: 3B80 Range Operation: Rfrresume
Status: Monitor Active
Start Time : 18.46.32 Date : 08/23/05
Opr Operation Status ________ Opr RC
Set Name  CU Serial #   SDA  Complete  In Progress Not Started  Summary
3B80      000190300063 3C21         0           16           0     0000
URDF1008T SRDF Group U6D2USA Set 3B80 Rfrresume aborted

10. Activate single session SRDF/A for the SRDF group U6D2USA, set 3B80. SRDF Controls monitors activation until the secondary for this set is consistent.

ZURDF ASYNC GRO-U6D2USA SET-3B80 PAR-ACT
CSP0097I 18.47.44 CPU-C SS-BSS SSU-SSU0 IS-01
URDF0019I SRDF Control record refresh started
CSP0097I 18.47.44 CPU-C SS-BSS SSU-SSU0 IS-01
URDF1043I Local CU 000190300063 discovered for Group U6D2USA Set 3B80
CSP0097I 18.47.44 CPU-C SS-BSS SSU-SSU0 IS-01
URDF1043I Remote CU 00000006211 discovered for Group U6D2USA Set 3B80
CSP0097I 18.47.49 CPU-C SS-BSS SSU-SSU0 IS-01
URDF0024I SRDF Control record refresh completed
CSP0097I 18.47.49 CPU-C SS-BSS SSU-SSU0 IS-01
E1V00000I SRDF Operation Verification Started
E1V00001I SRDF Group Properties Verification Started
Options Permissions
None
E1V00003I SRDF Device State Verification Started
CSP0097I 18.47.49 CPU-C SS-BSS SSU-SSU0 IS-01
E1V00004I SRDF Operation Verification Completed
CSP0097I 18.47.49 CPU-C SS-BSS SSU-SSU0 IS-01
URDF1000I SRDF Group U6D2USA Set 3B80 started issuing Async
CSP0097I 18.47.49 CPU-C SS-BSS SSU-SSU0 IS-01
URDF1001I SRDF Group U6D2USA Set 3B80 completed issuing Async
CSP0097I 18.47.52 CPU-C SS-BSS SSU-SSU0 IS-01
URDF1009I SRDF Status Display
SRDF Group: U6D2USA Set: 3B80 Range Operation: Async
Status: Monitor Active
Start Time : 18.47.44 Date : 08/23/05
11. Activate SRDF/A Multi-session Consistency for SRDF group U6D2USA. Turning on SRDF/A MSC initiates SRDF/A cycle switch controls. An MSC heartbeat message occurs at the defined interval for each set in the SRDF group.
**SRDF Procedures**

URDF1059I SRDF/A MSC Group U6D2USA Cycle Switch Controls Started

CSMP00971 19.05.33 CPU-C SS-BSS SSU-SSU0 IS-01

URDF1031I SRDF Status Display

SRDF Group: U6D2USA Base Operation: Async

Status: Monitor Active

Start Time: 19.05.18 Date: 08/23/05

<table>
<thead>
<tr>
<th>Opr</th>
<th>Operation Status</th>
<th>Opr RC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Set Name</td>
<td>CU Serial #</td>
<td>SDA</td>
</tr>
<tr>
<td>------</td>
<td>------------</td>
<td>-----</td>
</tr>
<tr>
<td>6200</td>
<td>000000006211 6303</td>
<td>1</td>
</tr>
<tr>
<td>3B80</td>
<td>000190300063 3C21</td>
<td>1</td>
</tr>
<tr>
<td>6240</td>
<td>000000006211 6303</td>
<td>1</td>
</tr>
<tr>
<td>3B90</td>
<td>000190300063 3C21</td>
<td>1</td>
</tr>
</tbody>
</table>

End of Display

URDF1003I SRDF Group U6D2USA Async complete

12. Display the SRDF/A MSC information for all sets in SRDF group U6D2USA.

**ZURDF DIS GRO-U6D2USA SET-6200 TYP-SAS**

CSMP00971 19.05.35 CPU-C SS-BSS SSU-SSU0 IS-01

EIVA0000I SRDF/A Session Display

Group U6D2USA Set 6200 in Primary CU 000000006211

SRDF/A Session RDFGroup 23 Active Cycle Number 4421

Capture Cycle Size 2380 Transmit Cycle Size 0
Average Cycle Time 30 Average Cycle Size 1180
Last Cycle Size 2146 Secondary Delay 00:00:00:55
Secondary Consistent Yes Tolerance Off
HA Writes 47 894 989 Repeated HA Writes 1 876 602
HA Duplicate Slots 17 313 Drop Priority 33
Time Since Last Cycle Switch 00:00:24 Duration of Last Cycle 31
Max Throttle Time 0 Max Cache Percentage 93
Multi-Session Consistency Active Since 08/23/05 19.05.33
Clean-up Running No MSC Window is Open No
Capture Cycle Tag 0000000000000002 Transmit Cycle Tag 00000000000000001

End of Display

**ZURDF DIS GRO-U6D2USA SET-3B80 TYP-SAS**

CSMP00971 19.05.37 CPU-C SS-BSS SSU-SSU0 IS-01

EIVA0000I SRDF/A Session Display

Group U6D2USA Set 3B80 in Primary CU 000190300063

SRDF/A Session RDFGroup 02 Active Cycle Number 36

Capture Cycle Size 1157 Transmit Cycle Size 0
Average Cycle Time 30 Average Cycle Size 1534
Last Cycle Size 765 Secondary Delay 00:00:00:45
Secondary Consistent Yes Tolerance Off
HA Writes 46 758 712 Repeated HA Writes 816 818
HA Duplicate Slots 18 345 Drop Priority 33
Time Since Last Cycle Switch 00:00:15 Duration of Last Cycle 30
Max Throttle Time 0 Max Cache Percentage 93
Multi-Session Consistency Active Since 08/23/05 19.05.33
Clean-up Running No MSC Window is Open No
Capture Cycle Tag 0000000000000002 Transmit Cycle Tag 00000000000000001

End of Display

**ZURDF DIS GRO-U6D2USA SET-3B90 TYP-SAS**

CSMP00971 19.05.40 CPU-C SS-BSS SSU-SSU0 IS-01

EIVA0000I SRDF/A Session Display

Group U6D2USA Set 3B90 in Primary CU 000190300063

SRDF/A Session RDFGroup 05 Active Cycle Number 4422

Capture Cycle Size 109 Transmit Cycle Size 352
Average Cycle Time 30 Average Cycle Size 1471
Last Cycle Size 2508 Secondary Delay 00:00:00:29
Secondary Consistent Yes Tolerance Off
HA Writes 46 758 712 Repeated HA Writes 816 818
HA Duplicate Slots 18 345 Drop Priority 33
Time Since Last Cycle Switch 00:00:01 Duration of Last Cycle 28
Max Throttle Time 0 Max Cache Percentage 93
Multi-Session Consistency Active Since 08/23/05 19.05.33
Clean-up Running No MSC Window is Open No
Capture Cycle Tag 0000000000000003 Transmit Cycle Tag 0000000000000002
End of Display

ZURDF DIS GRO-U6D2USA SET-6240 TYP-SAS
CSMP0097I 19.05.42 CPU-C SS-BSS SSU-SSU0 IS-01
E1VA0000I SRDF/A Session Display
Group U6D2USA Set 6240 in Primary CU 000000006211
SRDF/A Session RDFGroup 1E Active Cycle Number 4422
Capture Cycle Size 79 Transmit Cycle Size 0
Average Cycle Time 29 Average Cycle Size 1395
Last Cycle Size 1479 Secondary Delay 00:00:00:27
Secondary Consistent Yes Tolerance Off
HA Writes 47 896 074 Repeated HA Writes 1 876 634
HA Duplicate Slots 17 318 Drop Priority 33
Time Since Last Cycle Switch 00:00:03 Duration of Last Cycle 24
Max Throttle Time 0 Max Cache Percentage 93
Multi-Session Consistency Active Since 08/23/05 19.05.33
Clean-up Running No MSC Window is Open No
Capture Cycle Tag 0000000000000002 Transmit Cycle Tag 0000000000000002
End of Display

13. SRDF/A MSC heartbeat messages continue.
CSMP0097I 19.09.53 CPU-C SS-BSS SSU-SSU0 IS-01
URDF1058I SRDF/A MSC Group U6D2USA Set 6200 Cycle Switch Controls Active
CSMP0097I 19.09.53 CPU-C SS-BSS SSU-SSU0 IS-01
URDF1058I SRDF/A MSC Group U6D2USA Set 6240 Cycle Switch Controls Active
CSMP0097I 19.09.53 CPU-C SS-BSS SSU-SSU0 IS-01
URDF1058I SRDF/A MSC Group U6D2USA Set 6240 Cycle Switch Controls Active
CSMP0097I 19.09.53 CPU-C SS-BSS SSU-SSU0 IS-01
URDF1058I SRDF/A MSC Group U6D2USA Set 3B80 Cycle Switch Controls Active
CSMP0097I 19.14.53 CPU-C SS-BSS SSU-SSU0 IS-01
URDF1058I SRDF/A MSC Group U6D2USA Set 6200 Cycle Switch Controls Active
CSMP0097I 19.14.53 CPU-C SS-BSS SSU-SSU0 IS-01
URDF1058I SRDF/A MSC Group U6D2USA Set 3B80 Cycle Switch Controls Active
CSMP0097I 19.14.53 CPU-C SS-BSS SSU-SSU0 IS-01
URDF1058I SRDF/A MSC Group U6D2USA Set 6240 Cycle Switch Controls Active
CSMP0097I 19.14.53 CPU-C SS-BSS SSU-SSU0 IS-01
URDF1058I SRDF/A MSC Group U6D2USA Set 3B90 Cycle Switch Controls Active
Monitoring SRDF operations

The SRDF Monitor:

◆ Determines the status of each SRDF device (or link) in the set(s) in the SRDF group being operated on by an SRDF operation
◆ Displays the SRDF device status summary for each local or remote storage system in each set in the SRDF group

The SRDF device status summary identifies the number of SRDF devices (or links) on each local or remote storage system in the set for which the requested operation has completed, is in progress, or was not started.

Use the available SRDF displays to identify any specific SRDF devices (or links) for which the requested operation could not be started.

You can then use the SRDF range commands to initiate the SRDF operations necessary to put the SRDF devices (or links) in the desired state. You may enter one range command for an SRDF group while the SRDF Monitor is active for that SRDF Group. The SRDF monitor is re-initiated for the SRDF Group when the range command has completed issuing the requested command.

Multiple SRDF Groups can be operated on or monitored concurrently.

The SRDF Monitor is initiated by the SRDF Scheduler following completion of all command processes. The SRDF Scheduler delays initiation of the SRDF Monitor by a user-defined delay value (the default is three seconds). The SRDF Monitor re-initiates itself at a user defined interval (the default is three minutes) until the requested SRDF operation has completed for the specified sets in the SRDF group, or until the user terminates the monitor.

“ZURDF DEFine PROp-INT|DEL” on page 107 shows how to set the delay and interval timer for the SRDF Monitor.
Verifying operations

When you issue a command to perform an SRDF operation, SRDF Controls for z/TPF verifies the command by:

- Applying predefined options defined for the SRDF group and command.
- Validating any input options against defined permissions.
- Reporting anything about the SRDF group that would prohibit successful operation of the command.

In some cases, you may be prompted to halt or proceed with the operation.

Verification checks

The following list identifies the specific checks done for the various SRDF operations:

- Apply options defined for the command.
- Validate input options against defined permissions.
- Initiate one operation verification ECB for each set in the SRDF group specified:
  - Event facility driven
- Validate the operations device for each set in the SRDF group.
- Validate synchronization direction for each set in the SRDF group if applicable.
- Validate SRDF/A and MSC states for applicable operations.
- Verify this side and other side dynamic SRDF device pair states.
- Validate Cascaded and Concurrent device pair states if applicable.
- Verifying an operation accumulates:
  - Active RDF pair counts
  - Unpaired dynamic RDF pair counts
  - Other side dynamic RDF device pairs attached counts
  - Both sides dynamic RDF device paired with a different RDF device counts
  - Not R1 counts
  - Not R2 counts
  - Both sides online device counts
  - R2 not R/O state counts
  - R1 not TNR state counts
  - R1 not R/W state counts
  - Mode incorrect counts
  - Cascaded SRDF pair creation error counts
  - RDF mirrors with invalid tracks
Messages associated with verifying operations

"Messages for verification operations" on page 366 contains a list of the messages that the verification operations can produce.
APPENDIX A

Messages

This appendix lists the messages that by SRDF Controls for z/TPF can generate, the reason for the message, and the recommended user action, if any.

- Message format .................................................................................................... 318
- EMC Knowledgebase and messages...................................................................... 318
- Messages ............................................................................................................. 319
- Service Information Messages................................................................................ 365
Messages

Message format

Messages have the following format:

```
ppppnnnnx hh.mm.ss text
```

Where:

- **pppp**
  - Is the first 4 characters of the segment name or the secondary action code of the associated input message.

- **nnnn**
  - Is a unique message number.

- **x**
  - Is one of the following severity codes:
    - **I** Information only. The message is a normal response.
    - **A** Action required. Additional operator action is required.
    - **W** Attention. An error that could require additional user action.
    - **E** Error. An error without program shutdown.
    - **T** Termination. An error with program shutdown.
    - **P** Prefix. This includes Group or Set information for subsequent messages with the same message number.

- **hh.mm.ss**
  - Is the time of day that the message was reported.

- **text**
  - Is the text of the message.

EMC Knowledgebase and messages

As an aid in finding solutions to issues described by the messages listed in this guide, go to EMC Knowledgebase on the EMC Powerlink® website. Knowledgebase is a searchable repository of solutions to known issues and answers to questions that is continuously updated by EMC experts around the globe.

Knowledgebase lets you open searches by topic or from a list of recently used solutions. Within a category, you can then drill down to focus your search criteria and select the solutions with the highest probability of resolving your issue or addressing your question.

In addition, as new error messages are implemented, they are added to the EMC Knowledgebase. If you receive a message not documented in this guide, go to Powerlink and choose Support > Knowledgebase Search > Support Solutions Search. Enter the message number in the Search for Content text box, and click Search. The corresponding message is described in the EMC Message ID topic.

EMC Knowledgebase is integrated with WebSupport, the EMC case submission and management system. If you still need assistance after searching Knowledgebase, you can submit a service request to EMC Customer Service from your Knowledgebase session.
Messages

URDF0000I

SRDF control record restore complete

Explanation: The SRDF control records have been restored from the SRDF control backup records.

System Action: None.

User Response: None.

URDF0001T

Invalid device record ordinal

Explanation: The SRDF CU control record contains a zero ordinal pointer for the device control record.

System Action: The SRDF command is terminated.

User Response: SRDF Initialization may be required.

URDF0002E

Invalid multihop list specified

Explanation: The multi-hop list specified on the CONfig ADD command is not valid, or the mult-hop list stored in the CU control record for the specified SRDF group and set is not valid.

System Action: None.

User Response: Re-issue the SRDF CONfig command with a valid multi-hop list describing the RDF group path to the remote storage system in an RDF pair, or display the multi-hop list for the SRDF group and set and contact the EMC Customer Support Center.

URDF0003I

See SRDF Controls for z/TPF product guide

Explanation: An EMC SymmAPI macro call did not complete successfully.

System Action: None.

User Response: Determine the source and cause of the EMC SymmAPI macro call error and reissue the command.

URDF0004E

SRDF Control records not configured

Explanation: The SRDF control records have not been configured.

System Action: None.

User Response: Configure the SRDF environment.
Messages

URDF0005E
FDCTC error during EMC SymmAPI call Check operations or gatekeeper SDA
Explanation: An error occurred on an FDCTC macro call during an EMC SymmAPI call. Check the operations or gatekeeper SDA for any problems.
System Action: None.
User Response: Determine the cause of the FDCTC error, resolve it, and reissue the SRDF command.

URDF0006E
Requested operation cannot be processed for an unsupported CU
Explanation: An SRDF operation was requested for another vendor’s CU or an unsupported storage system model.
System Action: None.
User Response: None.

URDF0007E
EMC Symmetrix HW/SW incompatibilities
Explanation: One or more storage systems in the complex do not meet the minimum hardware and software requirements for the requested SRDF Controls command.
System Action: None.
User Response: Contact the EMC Customer Support Center.

URDF0008E
Master Control Record FACS error
Explanation: #EMCRD records are not allocated in the BSS FCTB.
System Action: None.
User Response: Refer to “Install SRDF Controls for z/TPF” on page 36, or contact the EMC Customer Support Center.

URDF0009E
Invalid time value specified. Max value is 255.
Explanation: The value must be within the range of 1 to 255 for the SRDF Monitor interval timer and RDF pair processing delay. The Monitor interval value specifies minutes. The delay value specifies seconds.
System Action: None.
User Response: Correct the value and retry.
URDF0010E

SRDF operation currently active

**Explanation:** An SRDF operation is already active on the system.

**System Action:** None.

**User Response:** Determine the status of the SRDF group.

*Note:* “ZURDF DISPLAY STATUs” on page 156 provides additional information.

URDF0011E

SRDF Master Control Record FILNC error

**Explanation:** A FILNC error has occurred when filing the SRDF master control record.

**System Action:** None.

**User Response:** Ensure the SRDF control records are initialized and that the master control record header is not corrupt.

URDF0012E

z/TPF event not active for SRDF operation

**Explanation:** A POSTC macro was issued for a non-existent z/TPF SRDF event name. The SRDF operation scheduler may have timed out.

**System Action:** None.

**User Response:** Determine the status of SRDF Controls for z/TPF Operations.

URDF0013E

MDBF SS inactive - unable to issue SRDF operation

**Explanation:** An MDBF subsystem to which an SRDF operation is to be issued has become inactive during SRDF initialization or validation.

**System Action:** None.

**User Response:** Ensure all MDBF subsystems for which SRDF operations are used are active. Reissue the SRDF operation.

URDF0015E

Invalid Group property definition requested

**Explanation:** You attempted to define an SRDF group property option or permission for an SRDF group and SRDF operation, but the property option or permission specified is not allowed.

**System Action:** None.

**User Response:** Define only valid SRDF group property options and permissions.
Messages

URDF0016E  
Invalid MDBF SS encountered during SRDF initialization or validation

**Explanation:** An invalid MDBF subsystem was encountered during SRDF control record refresh.

**System Action:** None.

**User Response:** Contact the EMC Customer Support Center.

URDF0017E  
Symmetrix device number not found in Device Record

**Explanation:** The device number to be processed was not found in the device control record.

**System Action:** None.

**User Response:** Ensure the CU control record associated with the device record does not contain an invalid device counter. Contact the EMC Customer Support Center.

URDF0018E  
CU Control Record FINDC error

**Explanation:** A FINDC error has occurred during CU control record retrieval.

**System Action:** None.

**User Response:** Ensure that SRDF control records have been initialized and that the control unit record header is not corrupt. Contact the EMC Customer Support Center.

URDF0019I  
SRDF Control record refresh started

**Explanation:** The SRDF control record refresh, initiated by all SRDF operations, has started.

**System Action:** None.

**User Response:** None.

URDF0020E  
MDBF subsystem validation unsuccessful

**Explanation:** Validation of the SRDF control record showed that the MDBF subsystem on which the SRDF command was issued is not in the master control record.

**System Action:** None.

**User Response:** Contact the EMC Customer Support Center.
URDF0021E
Duplicate SRDF Command Scheduler or Monitor Event
Previous SRDF Command Event still active
Explanation: An SRDF command has been issued before the event associated with a previous, unsuccessful process has timed out.
System Action: None.
User Response: Allow enough time for all SRDF operation events to complete or timeout before issuing the next SRDF operation.

URDF0023E
SDA out of range
Explanation: The Symbolic Device Address specified in the input message is not in the range of online SDAs for the system.
System Action: None.
User Response: Verify the correct SDA range for your system and reenter the request using a valid SDA.

URDF0024I
SRDF Control record refresh completed
Explanation: The SRDF control record refresh, initiated by all SRDF operations, has completed.
System Action: None.
User Response: None.

URDF0025E
Invalid CU serial number specified
Explanation: There is no logical storage system CU with the specified serial number connected to the system.
System Action: None.
User Response: Identify the correct 12-digit serial number, using the “ZURDF DISplay CTRLRCD” command, and re-enter the original command.

URDF0026E
SRDF operation device is offline. Try again later
Explanation: A device to which SRDF operations were to be issued is offline.
System Action: None.
User Response: Determine the problem with the device and reissue the command for the storage system that this SDA identifies.
Messages

URDF0027I
Define complete
Explanation: The SRDF DEFine command has completed successfully.
System Action: None.
User Response: None.

URDF0028E
EMCSA macro call error while validating remote Symmetrix control records
Explanation: An EMCSA macro call issued for a remote storage system during SRDF control record initialization or validation did not complete successfully.
System Action: None.
User Response: Determine cause of EMCSA error and reissue command.

URDF0029E
An SRDF/A Group may contain only one set
Explanation: You tried to add a second set to an SRDF/A group. In SRDF Controls for z/TPF provides only single SRDF/A session or set configurations.
System Action: None.
User Response: None.

URDF0030E
Invalid SRDF Group specified
Explanation: The SRDF group name specified in the SRDF command is not valid.
System Action: None.
User Response: Reissue the command specifying a valid SRDF group.

URDF0031E
Command disallowed for non-SRDF/A Groups
Explanation: An SRDF/A command was issued to a non-SRDF/A group.
System Action: None.
User Response: None.

URDF0032E
Unable to add SRDF/A set to a non-SRDF/A group
Explanation: The RDFGroup specified in the multi-hop list of the CONfig ADD command is an SRDF/A RDFGroup. A pre-existing set in the SRDF group is a non-SRDF/A set. An SRDF group cannot contain both SRDF/A sets and non-SRDF/A sets.
**URDF0033E**

**SRDF/A cycle switch value out of range 15-255**

**Explanation:** The value of the SRDF/A cycle switch must be between 15 and 255 seconds.

**System Action:** None.

**User Response:** Reissue the command using a valid SRDF/A MSC cycle switch value between 15 and 255 seconds.

**URDF0035E**

**A gatekeeper must be defined for all Sets in an SRDF/A MSC Group**

**Explanation:** You tried to define an SRDF group as an SRDF/A MSC group, but one or more sets do not include an SRDF/A MSC gatekeeper.

**System Action:** None.

**User Response:** Ensure an SRDF/A MSC gatekeeper is defined for all sets in the SRDF group and reissue the command.

**URDF0036E**

**SRDF/A MSC heartbeat value out of range 1-255**

**Explanation:** The supplied value of the SRDF/A MSC heartbeat must be between 1 and 255 minutes.

**System Action:** None.

**User Response:** Reissue the command with a value between 1 and 255 minutes.

**URDF0037I**

**SRDF control record backup complete**

**Explanation:** The SRDF control records have been copied to the SRDF control backup records.

**System Action:** None.

**User Response:** None.

**URDF0038I**

**SRDF INITialize CLEar complete**

**Explanation:** SRDF control records have been cleared to allow re-initialization.

**System Action:** None.

**User Response:** Proceed with SRDF Initialization.
Messages

URDF0039I
SRDF master indicator reset
Monitor stopping

Explanation: SRDF Controls has flagged the monitor for termination.
System Action: SRDF Controls terminates the monitor.
User Response: None.

URDF0043E
CU Control Record FACS error

Explanation: A FACS error occurred during SRDF Control Unit record retrieval.
System Action: None.
User Response: Ensure that the SRDF control records are allocated. Initialization may be necessary.

URDF0044E
Device Control Record FACS error

Explanation: A FACS error has occurred during SRDF Device record retrieval.
System Action: None.
User Response: Ensure that the SRDF control records are allocated. Initialization may be necessary.

URDF0045E
CU Control Record FIWHC error

Explanation: A FIWHC error occurred during retrieval of the SRDF Control Unit record.
System Action: None.
User Response: Ensure that the SRDF control records are initialized and that the SRDF Control Unit record header is not corrupt. Contact the EMC Customer Support Center.

URDF0046E
Master Control Record FIWHC error

Explanation: A FIWHC error occurred during retrieval of the SRDF Master Control record.
System Action: None.
User Response: Ensure that the SRDF control records are initialized and that the SRDF Master Control record header is not corrupt. Contact the EMC Customer Support Center.

URDF0047E
Processor Resource Ownership Table FINWC error

Explanation: A FINWC error occurred during retrieval of the PROT record.
URDF0048E

Processor Resource Ownership Table FACS error

Explanation: A FACS error occurred during retrieval of the PROT record.

System Action: None.

User Response: Contact your z/TPF Coverage group and the EMC Customer Support Center.

URDF0049E

This processor is not the SYMM resource owner

Explanation: You can issue SRDF commands only on the processor that owns the SYMM resource.

System Action: None.

User Response: Reissue the command on the processor that owns the SYMM resource.

URDF0050E

Device Control Record FINDC error

Explanation: A FINDC error occurred during retrieval of a SRDF device record.

System Action: None.

User Response: Ensure that the SRDF control records are initialized and that the device record header is not corrupt. Contact the EMC Customer Support Center.

URDF0051E

Master Control Record FINDC error

Explanation: A FINDC error occurred during retrieval of the SRDF master control record.

System Action: None.

User Response: Ensure that SRDF control records are initialized and that the SRDF master control record header is not corrupt. Contact the EMC Customer Support Center.

URDF0052E

SRDF Control Unit Record FILNC error

Explanation: A FILNC error has occurred during filing of a SRDF Control Unit record.

System Action: None.

User Response: Ensure that SRDF control records are initialized and that the SRDF Control Unit record header is not corrupt. Contact the EMC Customer Support Center.
URDF0053E

Device Control Record End of File encountered

**Explanation:** The device item count in the CU control record is greater than the actual number of device items in the device control record.

**System Action:** None.

**User Response:** Determine if the CU control record or device control record is corrupt. SRDF initialization may be required.

URDF0054E

SRDF Group Control Record FILNC error

**Explanation:** A FILNC error occurred during filing of a SRDF group control record.

**System Action:** None.

**User Response:** Ensure that SRDF control records are initialized and that the SRDF group record header is not corrupt. Contact the EMC Customer Support Center.

URDF0055I

SRDF command not issued since configuration acceptance

**Explanation:** You have issued a ZURDF DISplay GRO-ccccccc STA- command after SRDF configuration has been accepted but before any command has been issued.

**System Action:** None.

**User Response:** Reissue the Status command while an SRDF operation is active for the SRDF group, or after at least one SRDF operation has completed for the SRDF group.

URDF0056E

Heap storage not available. Try again later

**Explanation:** An SRDF command could not acquire the heap storage necessary to issue the command.

**System Action:** None.

**User Response:** Re-issue the command when the system is less busy.

URDF0057E

SRDF Command Scheduler time limit exceeded. Scheduler exiting
SRDF Command Processors may still be active
SRDF Monitor will not be initiated

**Explanation:** The SRDF Scheduler time limit has been exceeded before all SRDF processor ECBs have completed.

**System Action:** None.

**User Response:** Determine the reason for the SRDF Scheduler time limit to be exceeded. Define an appropriate SRDF Command Scheduler time limit and reissue the SRDF command.
**URDF0058E**

**SRDF Scheduler timeout waiting for Control Record Refresh**

**Explanation:** The SRDF scheduler started to refresh the SRDF control record, but did not receive any indication that the refresh completed in the time defined by the Scheduler Timeout (STO) general property.

**System Action:** The SRDF command is terminated.

**User Response:** Determine why the refresh of the control record did not complete. If the refresh control record completed after receiving this message, increase the scheduler timeout value to a number greater than the time elapsed since the operation started. Review the job documentation for errors. Search the EMC Knowledgebase for applicable solutions relating to this message ID. If you cannot determine and correct the problem, contact the EMC Customer Support Center for technical assistance. Make sure you have all relevant job documentation available.

**URDF0059E**

**SRDF operation already being issued**

**Explanation:** An SRDF operation is in the process of being issued.

**System Action:** None.

**User Response:** Reissue the command after SRDF has completed (issuing) the operation.

**URDF0060E**

**Group Control Record FACS error**

**Explanation:** A FACS error occurred during retrieval of a SRDF group control record.

**System Action:** None.

**User Response:** Ensure that the SRDF control records are allocated. SRDF Configuration may be necessary. Contact the EMC Customer Support Center.

**URDF0061E**

**Group Control Record FIWHC error**

**Explanation:** A FIWHC error has occurred during retrieval of a SRDF group control record.

**System Action:** None.

**User Response:** Ensure that the SRDF control records are initialized and that the SRDF group control record header is not corrupt. Contact the EMC Customer Support Center.
Messages

URDF0062E

Group Control Record FINDC error

Explanation: A FINDC error occurred during retrieval of a SRDF group control record.

System Action: None.

User Response: Ensure that SRDF control records are initialized and that the SRDF group control record header is not corrupt. Contact the EMC Customer Support Center.

URDF0063I

SRDF Monitor not active
Use BYPASS to reset SRDF master indicator

Explanation: You issued an SRDF RESET command without the BYPASS parameter, but the monitor is inactive.

System Action: None.

User Response: Reissue the RESET command with the BYPASS parameter.

URDF0064I

SRDF master indicator reset
Monitor not active

Explanation: The ZURDF RESET [BASE|RANGE] BYPASS command completed successfully.

System Action: None.

User Response: None.

URDF0065E

Unable to mount specified SDA

Explanation: You issued a ZURDF CON ADD command specifying an SDA that could not be mounted to the z/TPF system.

System Action: None.

User Response: Reissue the command specifying a valid SDA.

URDF0066E

Previous SRDF range command is active

Explanation: An SRDF range command is already active.

System Action: None.

User Response: Use the ZURDF DIS GRO-STA-RAN status command to determine the status of the current SRDF range command.
URDF0067E
Invalid SDA specified for use as gatekeeper

**Explanation:** You issued a ZURDF DEF GRO-PRO-GKD|GMS SDA-ccud specifying an SDA in an SSID other than the SSID of the current Gatekeeper or Operations SDA.

**System Action:** None.

**User Response:** The SSID of the Gatekeeper SDA must be the same as the SSID of the current Gatekeeper or operations SDA. Reissue the ZURDF DEF command with a valid SDA.

URDF0068E
Invalid SRDF set specified

**Explanation:** You issued a ZURDF command specifying an invalid SRDF set.

**System Action:** None.

**User Response:** Reissue the ZURDF command with a valid SRDF set.

URDF0069E
Configuration Control Record FACS error

**Explanation:** The SRDF Configuration control record type #EMCRM or ordinal is not allocated.

**System Action:** The SRDF Configuration command is terminated.

**User Response:** Ensure that there are an adequate number of SRDF Configuration control records #EMCRM.

URDF0070E
Config Master Control Record FACS error

**Explanation:** The SRDF Configuration master control record #EMCRM ordinal 0 or 1 is not allocated.

**System Action:** The SRDF Configuration command is terminated.

**User Response:** Ensure that there are an adequate number of SRDF Configuration control records #EMCRM.

URDF0071E
Config Master Control Record FIWHC error

**Explanation:** An error occurred on the FIWHC of the SRDF Configuration master control record #EMCRM ordinal 0.

**System Action:** The SRDF Configuration command is terminated.

**User Response:** Determine the cause of the I/O error. Ensure that SRDF Configuration control records are initialized and that the SRDF Configuration master control record header is not corrupt.
Messages

URDF0072E
Config Master Control Record FINDC error
Explanation: An error occurred on the FINDC of the SRDF Configuration master control record #EMCRM ordinal 0.
System Action: The SRDF Configuration command is terminated.
User Response: Determine the cause of the I/O error. Ensure that SRDF Configuration control records are initialized and that the SRDF Configuration master control record header is not corrupt.

URDF0073E
Config CU Control Record FACS error
Explanation: The SRDF Configuration CU control records #EMCRM are not allocated.
System Action: The SRDF Configuration command is terminated.
User Response: Ensure that an adequate number of SRDF Configuration control records #EMCRM are allocated.

URDF0074E
Config CU Control Record FIWHC error
Explanation: An error occurred on the FIWHC of a SRDF Configuration CU control record #EMCRM.
System Action: The SRDF Configuration command is terminated.
User Response: Determine the cause of the I/O error. Ensure that SRDF Configuration control records are initialized and that the SRDF Configuration CU control record header is not corrupt.

URDF0075E
Config CU Control Record FINDC error
Explanation: An error occurred on the FINDC of a SRDF Configuration CU control record #EMCRM.
System Action: The SRDF Configuration command is terminated.
User Response: Determine the cause of the I/O error. Ensure that SRDF Configuration control records are initialized and that the SRDF Configuration CU control record header is not corrupt.
URDF0076E

Config Device Control Record FACS error

Explanation: The SRDF Configuration Device control records #EMCRM are not allocated.

System Action: The SRDF Configuration command is terminated.

User Response: Ensure that an adequate number of SRDF Configuration control records #EMCRM are allocated.

URDF0077E

Config Device Control Record FIWHC error

Explanation: An error occurred on the FIWHC of a SRDF Configuration device control record #EMCRM.

System Action: The SRDF Configuration command is terminated.

User Response: Determine the cause of the I/O error. Ensure that SRDF Configuration control records are initialized and that the SRDF Configuration device control record header is not corrupt.

URDF0078E

Config Device Control Record FINDC error

Explanation: An error occurred on the FINDC of a SRDF Configuration device control record #EMCRM.

System Action: The SRDF Configuration command is terminated.

User Response: Determine the cause of the I/O error. Ensure that SRDF Configuration control records are initialized and that the SRDF Configuration device control record header is not corrupt.

URDF0079E

Not enough configuration control records

Explanation: New hardware was discovered during a Configuration Open command, but there were not enough SRDF Configuration control records #EMCRM allocated to build the control records.

System Action: The SRDF Configuration Open command is terminated.

User Response: Allocate an adequate number of SRDF Configuration control records #EMCRM to accommodate the addition of new hardware.
Messages

**URDF0080E**

Ctlrcd Backup and Restore FACS error

**Explanation:** A FACS error occurred during a ZURDF CTLRCD BACKUP or RESTORE command. Target record allocations must be greater than or equal to the source record allocation.

**System Action:** The SRDF CTLRCD command is terminated.

**User Response:** Allocate an adequate number of SRDF backup control records #EMCRB.

**URDF0081E**

Control Record FINDC error

**Explanation:** An error occurred on the FINDC of a SRDF control record #EMCRD during a refresh of the SRDF Configuration control record.

**System Action:** The SRDF Configuration Open command is terminated.

**User Response:** Determine the cause of the I/O error. Ensure that SRDF control records are initialized and that the SRDF control record header is not corrupt.

**URDF0082E**

Configuration control record FILNC error

**Explanation:** An error occurred on the FILNC of a SRDF configuration control record #EMCRM during a refresh of the SRDF Configuration control record.

**System Action:** The SRDF Configuration command is terminated.

**User Response:** Determine the cause of the I/O error. Ensure that SRDF Configuration control records are initialized and that the SRDF Configuration control record header is not corrupt.

**URDF0083E**

SRDF master indicator could not be reset. Manual reset may be necessary

**Explanation:** An error occurred on the FIWHC of the SRDF master control record #EMCRD ordinal 0 after processing of a SRDF Configuration command.

**System Action:** The SRDF Configuration command is terminated.

**User Response:** Determine the cause of the I/O error. Ensure that SRDF Configuration control records are initialized and that the SRDF Configuration master control record header is not corrupt. After the reason for the I/O error has been determined it may be necessary to reset the SRDF master control record indicator using the ZURDF RESET command.
URDF0084I

SRDF configuration ctl rcds not refreshed

Explanation: A SRDF Configuration Close command was issued before the SRDF Configuration control records had been refreshed with a SRDF Configuration Open command.

System Action: The SRDF Configuration Close command is terminated.

User Response: Ensure that a Configuration session is open for a SRDF group of a logical subsystem before entering the Configuration Close command for that SRDF group of the logical subsystem.

URDF0085E

Ctlrcd Backup and Restore source FINDC error

Explanation: An error occurred on the FINDC of the source record during a CTLRCD BACKUP|RESTORE command.

System Action: The SRDF CTLRCD command is terminated.

User Response: Determine the cause of the I/O error. Ensure that SRDF control records and backup control records are initialized and that the record header is not corrupt.

URDF0086I

Remote request initiated by non-SRDF R1 device

Explanation: A remote SRDF command was issued to a non-SRDF R1 device in a local storage system.

System Action: None.

User Response: Define an R1 device as the z/TPF gatekeeper for the storage system and reissue the command.

URDF0087E

Remote request with no link available

Explanation: An attempt was made to issue a remote SRDF command across an offline or disconnected RLD link.

System Action: None.

User Response: Ensure that the RLD link is online and reissue the command.

URDF0088E

CNT parameter must be greater than zero

Explanation: The user issued an SRDF command specifying a count of zero.

System Action: The SRDF command is terminated.

User Response: Reissue the SRDF command specifying a valid count.
URDF0089I

SRDF configuration verifying sessions not open

Explanation: The SRDF Configuration Accept command has been issued and the application is verifying that no Configuration sessions are open for any SRDF groups.

System Action: None.
User Response: None.

URDF0090I

SRDF configuration finalizing RDF groups

Explanation: The SRDF Configuration Accept command has been issued and the application is finalizing the SRDF groups.

System Action: None.
User Response: None.

URDF0091E

SRDF R2 device is not ready

Explanation: An attempt was made to issue a remote SRDF command to an R1 whose partner R2 device is in a not ready state.

System Action: None.
User Response: Ensure that the target (R2) device is ready and reissue the command. Contact the EMC Customer Support Center.

URDF0092E

SRDF remote call not started

Explanation: An SRDF operation issued to a remote storage system failed.

System Action: None.
User Response: Contact the EMC Customer Support Center.

URDF0093E

Unexpected return from EMCSA macro call

Explanation: An unexpected return code was encountered from an EMCSA macro call.

System Action: None.
User Response: Contact the EMC Customer Support Center.
URDF0094I
SRDF control records updated
Explanation: You issued the SRDF Configuration Accept command and the application is updating the SRDF control records with the new configuration from the SRDF Configuration control records.
System Action: None.
User Response: None.

URDF0095E
SRDF Version: dddd Modification: dddd Revision: dddd control record migration required
Explanation: You issued an SRDF command and the SRDF control record version does not match the SRDF software version.
System Action: The SRDF command is terminated.
User Response: Convert the SRDF control records using the conversion procedure outlined in “Migrating from an earlier release of SRDF Controls for z/TPF” on page 39.

URDF0096I
Ctlrcd Backup and Restore target FILNC error
Explanation: An error occurred on the FILNC of the target record during a CTLRCD BACKUP|RESTORE command.
System Action: The SRDF CTLRCD command is terminated.
User Response: Determine the cause of the I/O error. Ensure that SRDF control records and backup control records are initialized and that the record header is not corrupt.

URDF0097I
SRDF configuration command disallowed
Explanation: The SRDF configuration command is disallowed because another SRDF operation was in progress or the SRDF control records are not initialized.
System Action: The SRDF Configuration command is terminated.
User Response: Retry the configuration command after the current SRDF operation is complete. If necessary, initialize SRDF control records using the ZURDF INI CLEar command.

URDF0098I
SRDF control record restore started
Explanation: The SRDF control records restore has started.
System Action: None.
User Response: None.
Messages

URDF0099I
SRDF control record backup started
Explanation: The SRDF control records backup has started.
System Action: None.
User Response: None.

URDF0100I
SRDF configuration ctl rcd refresh initiated
Explanation: You issued the first SRDF Configuration Open command in a configuration session and the SRDF Configuration control records are being refreshed from the SRDF control records.
System Action: None.
User Response: None.

URDF0101I
SRDF configuration inactive groups removed
Explanation: The SRDF Configuration Accept command removed any SRDF groups found to contain no sets.
System Action: None.
User Response: None.

URDF0102I
SRDF configuration inactive sets removed
Explanation: The SRDF Configuration Accept command removed any sets flagged as removed from all SRDF groups.
System Action: None.
User Response: None.

URDF0103I
SRDF configuration verifying SRDF pairs unique
Explanation: You issued the SRDF Configuration Accept command and the application is verifying that no devices are configured more than once in any SRDF group.
System Action: None.
User Response: None.
URDF0104I

This side RDF type is incompatible with other side RDF type

**Explanation:** You issued the SRDF Configuration CHAnge/DELete command specifying device pairs that have incompatible device types.

**System Action:** The SRDF Configuration command is terminated.

**User Response:** Correct and retry.

URDF0105I

SRDF configuration finalizing RDF pairs

**Explanation:** You issued the SRDF Configuration Accept command and the application is finalizing the SRDF device pairs.

**System Action:** None.

**User Response:** None.

URDF0106E

Config Group Control Record FACS error

**Explanation:** A FACS error has occurred during retrieval of an SRDF configuration group control record.

**System Action:** None.

**User Response:** Ensure that the SRDF configuration control records are allocated. SRDF Configuration may be necessary. Contact the EMC Customer Support Center.

URDF0107E

Config Group Control Record FIWHC error

**Explanation:** A FIWHC error has occurred during retrieval of an SRDF configuration group control record.

**System Action:** None.

**User Response:** Ensure that SRDF configuration control records have been initialized and that the SRDF configuration group control record header is not corrupt. Contact the EMC Customer Support Center.

URDF0108E

Config Group Control Record FINDC error

**Explanation:** A FINDC error occurred during retrieval of an SRDF configuration group control record.

**System Action:** None.

**User Response:** Ensure that SRDF configuration control records have been initialized and that the SRDF configuration group control record header is not corrupt. Contact the EMC Customer Support Center.
URDF0110I

Duplicate RDF devices defined within the same SRDF group for CU Serial Number(s):

User Response: SRDF configuration verify discovered one or more devices in the specified control unit are configured more than once in the SRDF group.

System Action: None.

User Response: Remove any incidents of duplicate devices from the SRDF configuration.

URDF0111I

Enter ZURDF CONFIG VERify CU-ssssssssssss to generate report(s)

Explanation: You attempted to ACCEPT the SRDF configuration, but it was determined that one or more devices in the specified control unit(s) are configured more than once in the SRDF group.

System Action: Configuration ACCEPT is terminated.

User Response: Enter ZURDF CONFIG VERify for the specified control units. Remove any incidents of duplicate devices from the SRDF configuration and reissue the configuration ACCEPT command.

URDF0112T

Operation Verification Failed - Operation not started

Explanation: Prior to starting the requested operation, SRDF determined the status of the system was inconsistent with requirements.

System Action: The requested operation was not started.

User Response: See preceding messages for detailed information. Correct the error, and retry.

URDF0113I

SRDF configuration verifying RDF pairs unique

Explanation: You issued the SRDF Configuration Accept command and the application is verifying that no devices are configured more than once in any SRDF group.

System Action: None.

User Response: None.

URDF0114I

SRDF migration command disallowed

Explanation: An SRDF operation is active or no SRDF groups have been configured.

System Action: None.

User Response: Let the current operation complete or initialize the SRDF control records and configure.
URDF0115I

SRDF migration command disallowed while configuration session active

Explanation: An SRDF configuration session is active.

System Action: None.

User Response: Complete or DISCARD current configuration active session.

URDF0116I

SRDF control record migration started

Explanation: An SRDF MIGRATE command has been successfully started.

System Action: None.

User Response: None.

URDF0117I

SRDF control record migration completed

Explanation: An SRDF migrate command has been successfully completed.

System Action: None.

User Response: Accept the migrated configuration filing it to the SRDF control records. Refer to “Migrating from an earlier release of SRDF Controls for z/TPF” on page 39.

URDF0118I

SRDF Group count calculated

Explanation: The SRDF Configuration Accept command has been issued and the application has calculated the SRDF group count.

System Action: None.

User Response: None.

URDF0123E

SRDF Operator Verification not pending for specified group name

Explanation: You issued the ZURDF PROceed|HALt command, but operation verification is not expecting an operator response for the specified group.

System Action: None.

User Response: Ensure the correct group is specified on input.
**URDF0124E**

SRDF Operator Verification pending

**Explanation:** You issued an SRDF command for a group, but operation verification is currently waiting on an operator response for that or another group.

**System Action:** None.

**User Response:** Proceed or Halt the current SRDF operation before issuing a new SRDF operation.

**URDF0125E**

Invalid Multi-session gatekeeper device specified

**Explanation:** The SDA specified in the ZURDF DEF PRO-GMS entry does not have the properties of a valid SRDF/A MSC gatekeeper. The MSC gatekeeper can not be a BCV or SRDF device.

**System Action:** None.

**User Response:** Determine why the SDA is not a valid MSC gatekeeper device and define the SRDF/A MSC gatekeeper using a valid device.

**URDF0126E**

Command disallowed with MSC Cycle Switch active

**Explanation:** You cannot issue a command that can change the group information in the Group Status Table while SRDF/A MSC is active.

**System Action:** None.

**User Response:** Stop SRDF/A MSC and reissue the command.

**URDF0127E**

Command disallowed for non-SRDF/A MSC HA groups

**Explanation:** The ZURDF ASYNC GRO-ggpppppp PAR-MMR command requires that the MHA (SRDF/A/ MSC High Availability) General Property has a value.

**System Action:** None.

**User Response:** Review the action to determine if SRDF/A MSC High Availability is appropriate for your system. If so, follow the procedures to implement this feature.

**URDF0199E**

QOS Feature use is blocked for SDA ....

**Explanation:** QOS Controls determined that the QOS Pacing feature is currently unavailable on the control unit.

**System Action:** QOS Controls exits for this control unit. Operation processing continues.

**User Response:** Review the QOS Controls messages and contact EMC Customer Support Center if the condition persists.
URDF0208E
Invalid device control record ordinal encountered

**Explanation:** QOS Controls Scheduler has found that the ordinal pointer to the device control records is invalid.

**System Action:** QOS Controls exits and the operation is terminated.

**User Response:** Determine why the control record pointer is invalid. Contact the EMC Customer Support Center.

URDF0209E
Duplicate QOS Controls Event
Previous QOS Controls Event still active

**Explanation:** The event name used to schedule and wait on QOS Controls processing is a duplicate of an existing event.

**System Action:** QOS Controls exits and the operation is terminated.

**User Response:** Wait for the existing event to terminate and try again.

URDF0210E
z/TPF event not active for QOS Controls

**Explanation:** The QOS scheduler event has terminated while the scheduler is active.

**System Action:** QOS Controls exits and the operation is terminated.

**User Response:** Determine why the event name terminated and try again.

URDF0211E
Invalid Group name specified

**Explanation:** The group name passed to QOS Controls is not configured for SRDF.

**System Action:** QOS Controls exits and the operation is terminated.

**System Action:** Ensure a valid group name is used in the functional entry.

URDF0212I
Review QOS Controls Messages -- Operation Continues

**Explanation:** Before starting the requested operation, SRDF QOS Controls was started, but could not set the desired QOS value for all relevant devices.

**System Action:** The requested operation continues.

**User Response:** Review any preceding messages for detailed information. Correct the error and redefine QOS values for the next QOS Controls session, if necessary. Otherwise, contact the EMC Customer Support Center.
Messages

URDF0213I

QOS Controls started
Explanation: QOS Controls user exit has been begun.
System Action: None.
User Response: None.

URDF0214I

QOS Controls completed
Explanation: QOS Controls user exit is complete.
System Action: None.
User Response: None.

URDF0215E

QOS value out of valid range: 0-10
Explanation: The QOS parameter in the ZURDF DEF...PRO-GEN command has an invalid value.
System Action: None.
User Response: Supply a value between 0 and 10 for the parameter.

URDF0216I

18.50.38 QOS Controls Display
MDBF Symb     Symm QOS Values
SSN  Mod  SDA  Dev  BCV  RDF  Service
BSS  0100 3600 0007   0    3        3
End of Display

Explanation: QOS Controls Display message header.
System Action: None.
User Response: None.
URDF0217T

QOS Controls Failed - Operation not started

Explanation: Before starting a command you entered, SRDF QOS controls was started but could not set the desired QOS value for all relevant devices due to an error condition which may prevent successful completion of the operation.

System Action: The requested operation continues.

User Response: Review any preceding messages for detailed information about the error. Correct the error, and redefine QOS values for next QOS Controls session, if necessary, and retry the command. Otherwise, contact the EMC Customer Support Center.

URDF0218I

QOS Controls for z/TPF not enabled

Explanation: QOS Controls for z/TPF is not enabled.

System Action: None

User Response: QOS Controls for z/TPF is a component of ResourcePak for z/TPF. Contact your EMC representative for more information about this product.

URDF0219T

Unable to allocate system heap for Group Status Control data refresh.

Explanation: GST Refresh cannot allocate system heap storage.

System Action: The SRDF operation terminates.

User Response: Determine why system heap is not available for the GST Refresh.

URDF0220T

Unable to return system heap for Group Status Control data refresh.

Explanation: GST Refresh cannot return system heap storage.

System Action: The SRDF operation terminates.

User Response: Determine why system heap cannot be returned.

URDF0221I

GST Refresh Started

Explanation: Group Status Control area refresh has started.

System Action: Group Status Control refresh continues.

User Response: None.
Messages

URDF0222I

GST Refresh Complete
Explanation: Group Status Control area refresh has completed.
System Action: None.
User Response: None.

URDF0223I

Group Status Control not installed
Explanation: Group Status Control support is not installed for z/TPF.
System Action: None.
User Response: Contact your EMC representative for more information about this feature of the product.

URDF0224I

INITialize CLEar timeout or CANcelled
Explanation: You issued a ZURDF INI CLEAR command and either allowed the entry to timeout by not making a subsequent response to a prompt, or entered ZURDF INI CANCEL to cancel initialization of SRDF control records.
System Action: None.
User Response: None.

URDF0225I

INITialize CLEar CONTinuing
Explanation: You issued a ZURDF INI CONTINUE entry subsequent to entering ZURDF INI CLEAR. SRDF control records are initialized.
System Action: None.
User Response: None.

URDF0229E

Dynamic RDFGroup Controls operation complete
Explanation: The preceding RDFGroup configuration request completed.
System Action: None.
User Response: None.

URDF0230E

Primary (PD1) and Secondary (SD1) directors must be specified
Explanation: You must specify RDF directors from which the RDFGroup is intended to be added or deleted for either the primary or secondary storage system.
System Action: None.

User Response: For adding an RDFGroup, see your EMC representative. For deleting, enter the ZURDF GRP DIS functional entry for both the primary and secondary Symmetrix to review the configured RDF directors. Re-enter the ZURDF GRP DEL functional entry specifying the correct RDF director number(s).

**URDF0231E**

Invalid RDF director

Explanation: An invalid director number was specified on the ZURDF GRP ADD|DEL functional entry.

System Action: None.

User Response: Enter the ZURDF GRP DIS functional entry for both the primary and secondary Symmetrix to review the configured RDF directors. Valid RDF directors for Enginuity Microcode 5773 and earlier are 1 to 64. Valid RDF directors for Enginuity Microcode 5874 and higher are 1 to 128.

Re-enter the ZURDF GRP ADD|DEL functional entry specifying the correct RDF director numbers.

**URDF0232E**

Primary RDFGroup does not exist or defined to another secondary CU

Explanation: You specified an incorrect primary RDFGroup in the ZURDF GRP DEL functional entry.

System Action: None.

User Response: Enter the ZURDF GRP DIS functional entry for both the primary and secondary storage system(s) to review the configured RDFGroups. Re-enter the ZURDF GRP DEL functional entry specifying the correct RDFGroup.

**URDF0233E**

Primary RDFGroup (PRG) must be specified

Explanation: The primary RDFGroup was not specified in the ZURDF GRP ADD|DEL functional entry.

System Action: None.

User Response: Enter the ZURDF GRP DIS functional entry for both the primary and secondary Symmetrix to review the configured RDFGroups. Re-enter the ZURDF GRP ADD|DEL functional entry specifying the correct RDFGroups.
URDF0234E

Static RDFGroup does not exist to input secondary CU

Explanation: Dynamic RDFGroups can only be added for Symmetrix pairs for which there is already a pre-configured static RDFGroup.

System Action: None.

User Response: Enter the ZURDF GRP DIS functional entry for both the primary and secondary storage systems to review the configured RDFGroups and directors. Re-enter the ZURDF GRPADD|DEL functional entry specifying the correct RDFGroups and RDF directors. If you cannot determine the correct parameters or there is no static RDFGroup configured for the pair of storage systems, contact the EMC Customer Support Center for technical assistance.

URDF0235E

No RDF Directors

Explanation: Dynamic RDFGroups can only be added for Symmetrix configured with either fibre channel or GigE RDF directors.

System Action: None.

User Response: Contact the EMC Customer Support Center for technical assistance.

URDF0236E

Secondary CU (SCU) must be specified

Explanation: The secondary storage system on which the RDFGroup was intended to be added or deleted must be specified.

System Action: None.

User Response: Enter the ZURDF GRP DIS functional entry for both the primary and secondary storage systems to review the serial numbers. Re-enter the ZURDF GRP ADD|DEL functional entry specifying the correct secondary CU (SCU).

URDF0237E

RDFGroup label must consist of 0-9,A-Z, or :

Explanation: The RDFGroup label supplied in the ZURDF GRP ADD functional entry may consist only of the characters 0-9, A-Z, or :

System Action: None.

User Response: Enter the ZURDF GRP ADD functional entry specifying a valid RDFGroup label.

URDF0238E

Primary (PD1) or Secondary (SD1) directors must be specified

Explanation: You must specify RDF directors from which the RDFGroup is intended to be added for either the primary or secondary storage system.
**System Action:** None.

**User Response:** Enter the ZURDF GRP DIS functional entry for both the primary and secondary storage systems to review the configured RDF directors. Re-enter the ZURDF GRP ADD functional entry specifying the correct RDF director number(s).

**URDF0239E**

SRDF Feature not licensed or use is restricted

**Explanation:** Your feature you have requested is not licensed on the specified storage system.

**System Action:** None.

**User Response:** Contact the EMC Customer Support Center for technical assistance.

**URDF0241E**

Secondary RDFGroup does not exist or is not defined with the primary RDFGroup

**Explanation:** The specified secondary RDFGroup does not exist on the Symmetrix specified by the SCU parameter, or is not defined with the primary RDFGROUP.

**System Action:** None.

**User Response:** Enter the ZURDF GRP DIS functional entry for both the primary and secondary storage systems to review the configured RDFGroups. Re-enter the ZURDF GRP ADD|DEL functional entry specifying the correct RDF primary and secondary RDFGroups.

**URDF0999I**

CSMP0097I 10.57.26 CPU-A SS-BSS SSU-SSU0 IS-01

**URDF0999I Valid SRDF Operations are:**
- ABOrt
- CTLRCD
- DISplay
- MIGRATE
- RDY
- SYNchd
- ADMax
- CRTpair
- GRPcnfig
- MODE
- REFresh
- TARget
- ASYNC
- DEFine
- HALt
- NRDy
- RFRresume
- Validate
- AWMax
- DELHALF
- INItialize
- PROceed
- SUSpend
- WRIteenable
- CONfig
- DELpair
- INValidate

For details enter: ZURDF Help OPERATION
For version enter: ZURDF Help VERsion

**Explanation:** This is the output from the ZURDF Help command.

**System Action:** None.

**User Response:** None.

**URDF1000I**

SRDF Group *gggggggg* set *ssssssss* started issuing *cccccccccccc*

**Explanation:** SRDF has started issuing operation *cccccccccccc* for set *ssssssss* in group *gggggggg*.

**System Action:** None.

**User Response:** None.
URDF1001I

SRDF Group gggggggg set ssssssss completed issuing ccccccccccccc

**Explanation:** SRDF has completed issuing operation ccccccccccccc for set ssssssss in SRDF group gggggggg.

**System Action:** None.

**User Response:** None.

URDF1002I

SRDF/A found inactive in SRDF Group gggggggg Set ssssssss

**Explanation:** SRDF/A cycle switch detected SRDF/A inactive in SRDF group gggggggg Set ssssssss.

**System Action:** None.

**User Response:** Follow SRDF/A recovery procedures for your site.

URDF1003I

SRDF cccccc complete

**Explanation:** The SRDF operation cccccc has completed for all storage systems in the SRDF group specified by the preceding SRDF command.

**System Action:** None.

**User Response:** None.

URDF1004W

SRDF Group gggggggg Set sssssssss unable to complete issuing ccccccccccccc

**Explanation:** SRDF Control was unable to send SRDF operation ccccccccccccc to one or more devices in the storage system of set sssssssss in group gggggggg.

**System Action:** None.

**User Response:** Determine the reason for the failure by noting the operation return code in the monitor summary display or displaying the status of the SRDF devices in the storage system in the specified set.

URDF1005E

SRDF Group gggggggg Set sssssssss invalid RDFGroup configured for cccccc

**Explanation:** The RDFGroup configured between the partner storage system in the specified set is incorrect. SRDF command parameters could not be determined.

**System Action:** None.

**User Response:** Review the multi-hop list configured for the set and change accordingly. Contact the EMC Customer Support Center.
URDF1006I
SRDF Configuration ccccccccc complete
Explanation: The SRDF Configuration command ccccccccc has completed.
System Action: None.
User Response: None.

URDF1007I
SRDF Configuration ccccccccc aborted
Explanation: The SRDF Configuration command ccccccccc has terminated. The error encountered is in the preceding message.
System Action: The SRDF Configuration terminates.
User Response: Refer to the explanation for the preceding message.

URDF1008T
SRDF Group gggggggg Set ssssssss ccccccccccccccc aborted
Explanation: The SRDF operation ccccccccccc for RDF group gggggggg set ssssssss has terminated.
System Action: The SRDF operation terminates.
User Response: None.

URDF1009I
SRDF Status Display
SRDF Group: gggggggg Set: ssssssss Range Operation: ccccccccccccc
Explanation: Status display header for the SRDF range operation ccccccccccc for group gggggggg set ssssssss.
System Action: None.
User Response: None.

URDF1010I
SRDF Group gggggggg Set ssssssss ccccccccccccccc in progress
Explanation: The user tried to enter a conflicting SRDF entry while SRDF operation ccccccccccccccc is in progress for SRDF group gggggggg set ssssssss.
System Action: None.
User Response: Wait for the active operation to complete then try again.
URDF1011I

SRDF Group gggggggg operation ccccccccccc not active

Explanation: The SRDF Restart entry has determined that there is no operation to restart for this SRDF group.

System Action: None.

User Response: Ensure that you are restarting the correct SRDF group.

URDF1012I

SRDF Group gggggggg set sssssss operation ccccccccccc not active

Explanation: The SRDF Restart entry has determined that there is no operation to restart for this SRDF group and set.

System Action: None.

User Response: Ensure that you are restarting the correct SRDF group and set.

URDF1013I

SRDF Group gggggggg Set sssssss unable to issue ccccccccccc

Explanation: The operation could not be issued to the specified set because there were no devices online in the SSID.

System Action: None.

User Response: If the operation is intended for the specified set mount a device in the set's SSID and try again.

URDF1014I

SRDF group gggggggg Set sssssss ccccccccccc complete

Explanation: The operation for the specified set has completed.

System Action: None.

User Response: None.

URDF1015E

SRDF/A error on cycle switch for SRDF Group gggggggg Set sssssss

Explanation: An error was detected on the SymmAPI call to open the window and execute the SRDF/A cycle switch for SRDF Group gggggggg Set sssssss.

System Action: None.

User Response: Follow the SRDF/A recovery procedures for your site.
URDF1016E

SRDF/A error on close window for SRDF Group gggggggg Set sssssss

Explanation: An error was detected on the SymmAPI call to close the window after the SRDF/A cycle switch has completed for SRDF group gggggggg Set sssssss.

System Action: None.

User Response: Note any E4CA SIMs on the z/TPF console log. Follow the SRDF/A recovery procedures for your site.

URDF1017E

SRDF/A MSC timeout to open/switch window for SRDF Group gggggggg Set sssssss

Explanation: SRDF/A Multi-Session Consistency cycle switch has timed out waiting to open or switch the cycle for SRDF/A Group gggggggg Set sssssss. SRDF Controls for z/TPF halts cycle switching for SRDF/A Group gggggggg.

System Action: None.

User Response: Determine the cause of the timeout and restart SRDF/A MSC for SRDF/A Group gggggggg.

URDF1018E

SRDF/A MSC timeout to close window for SRDF Group gggggggg Set sssssss

Explanation: SRDF/A Multi-Session Consistency cycle switch has timed out waiting to close the window for SRDF/A Group gggggggg Set sssssss. SRDF Controls for z/TPF halts cycle switching for SRDF/A Group gggggggg.

System Action: None.

User Response: Determine the cause of the timeout and restart SRDF/A MSC for SRDF/A Group gggggggg.

URDF1024I

SRDF Configuration verification:

Explanation: SRDF Configuration Verification output header. See ZURDF CONfig VERify for more information.

System Action: None.

User Response: None.

URDF1025I

cccccc CU ccccccccccccc device cccccccc exceeds total volume count

Explanation: The SRDF configuration CHAnge/DELete command has been issued. The specified device number exceeds the total volume count for the storage system.
URDF1026I

cccccc CU cccccccccccc device cccccc not for use with SRDF/A

Explanation: The device is not configured with the SRDF/A attribute and cannot be added to an SRDF/A set.

System Action: None.
User Response: Correct and retry.

URDF1027I

cccccc CU cccccccccccc OSDN cccccc not paired with specified SDN

Explanation: The specified other side RDF device cannot be paired with the specified this side device.

System Action: None.
User Response: Correct and retry.

URDF1028I

cccccc CU cccccccccccc device cccccc RDFGroup mismatch

Explanation: The specified device is not configured in the specified RDFGroup.

System Action: None.
User Response: Correct and retry.

URDF1029I

cccccc CU cccccccccccc device cccccc is not the specified RDF device

Explanation: The device is not configured as the specified RDF device type.

System Action: None.
User Response: Correct and retry.

URDF1030I

cccccc CU cccccccccccc RDF pair with device cccccc must be deleted

Explanation: The specified device has previously been configured.

System Action: None.
User Response: The device must be deleted prior to being changed.
URDF1031I
SRDF Status Display
SRDF Group: gggggggg  Base Operation: cccccccccccc
Explanation: The status display header for the SRDF base operation cccccccccccc for group gggggggg.
System Action: None.
User Response: None.

URDF1032I
SRDF Range Status Display
SRDF Group: gggggggg  Range Operation: cccccccccccc
Explanation: The status display header for the SRDF range operation cccccccccccc for group gggggggg.
System Action: None.
User Response: None.

URDF1035T
SRDF Group gggggggg cccccccccccc aborted
Explanation: The SRDF operation cccccccccccc for SRDF group gggggggg has terminated.
System Action: The SRDF operation terminates.
User Response: None.

URDF1036I
SRDF Group gggggggg cccccccccccc in progress
Explanation: The user tried to enter a conflicting SRDF entry while SRDF operation cccccccccccc is in progress for SRDF group gggggggg.
System Action: None.
User Response: Wait for the active operation to complete and try again.

URDF1043I
cccc CU cccccccccccc discovered for Group gggggggg Set sssssss
Explanation: SRDF control record refresh or SRDF Configuration Add command discovered the local storage system and device characteristics for the specified SRDF group and set.
System Action: None.
User Response: None.
URDF1049I
SRDF Group gggggggg is yyyyyyy
Explanation: Describes the configuration status of SRDF group cccccccc.
System Action: None.
User Response: None.

URDF1050I
SRDF Group gggggggg does not contain specified set
Explanation: The set specified in an SRDF CONfig REMove command is not in SRDF group gggggggg.
System Action: None.
User Response: Issue the command for a set that is in SRDF group gggggggg.

URDF1051I
SRDF Group gggggggg Set sssssss request processed
Explanation: The SRDF request for the specified SRDF group of the local logical subsystem has been processed.
System Action: None.
User Response: None.

URDF1052I
SRDF Group gggggggg does not exist
Explanation: The SRDF group gggggggg specified in an SRDF CONfig command is not configured.
System Action: None.
User Response: Issue the command for an SRDF group that has been previously configured.

URDF1053I
SRDF Group gggggggg already contains specified set
Explanation: The set specified in an SRDF CONfig ADD command is already in the specified SRDF group.
System Action: None.
User Response: Issue the command for a valid SRDF group and set.
URDF1054I

SRDF Group ggggggg Set sssssss yyyyyyyyy

Explanation: The SRDF CONfig command yyyyyyyyyy was successfully completed for SRDF group gggggggg set ssssssss.

System Action: None.

User Response: None.

URDF1055I

SRDF Group gggggggg hop count <> input Set cccccccccc hop count

Explanation: The number of hops specified in the input is not equal to the hop count established for the group.

System Action: None.

User Response: Correct and retry.

URDF1056I

SRDF Group ggggggg already exists

Explanation: The specified group name was previously configured.

System Action: None.

User Response: Correct and retry.

URDF1057I

SRDF/A MSC Group gggggggg Cycle Switch Controls Halted

Explanation: SRDF/A MSC cycle switch controls were halted for SRDF group gggggggg.

System Action: None.

User Response: Take appropriate action to initiate SRDF/A MSC cycle switch controls.

URDF1058I

SRDF/A MSC Group gggggggg Set sssssssss Cycle Switch Controls Active

Explanation: The active SRDF/A Drop Policy is Remove Failing. SRDF/A MSC cycle switch controls previously dropped SRDF group gggggggg set ssssssss. SRDF/A MSC has been re-activated for SRDF group gggggggg Set sssssssss and has been integrated back into SRDF/A MSC cycle switch controls.

System Action: None.

User Response: None.
**URDF1059I**

SRDF/A MSC Group *gggggggg* Cycle Switch Controls Started

**Explanation:** SRDF/A MSC was activated for SRDF group *gggggggg* and cycle switch controls have started.

**System Action:** None.

**User Response:** None.

---

**URDF1060I**

SRDF/A MSC Group *gggggggg* Set *ssssssss* Cycle Switch Controls Inactive

**Explanation:** The active SRDF/A Drop Policy is Remove Failing. SRDF/A MSC cycle switch controls has determined that SRDF/A MSC has been dropped for SRDF group *gggggggg* set *ssssssss* and so bypasses cycle switching for this set until MSC has been re-activated.

**System Action:** None.

**User Response:** Re-activate SRDF/A MSC for SRDF group *gggggggg* Set *ssssssss*.

---

**URDF1061W**

SRDF/A MSC Group *gggggggg* Cycle Switching Inactive On this Processor

**Explanation:** The SRDF/A Cycle Switch Monitor is no longer active on this processor.

**System Action:** None.

**User Response:** Review messages on the console to determine why the cycle switch monitor stopped. To restart the cycle switch monitor, use ZURDF ASYNC GRO-*gggggggg* PAR-MMR.

---

**URDF1062I**

SRDF/A MSC Group *gggggggg* Auto Recovery Initiated

**Explanation:** The active SRDF/A MSC Drop Policy is Remove All. SRDF/A MSC cycle switch controls has initiated SRDF/A MSC Auto-Recovery processing to analyze the sessions for previously dropped SRDF group *gggggggg*.

**System Action:** None.

**User Response:** Review messages on the console to determine if SRDF/A MSC Auto Recovery is successful. If Asynchronous property MSRP (MSC Recovery Prompt) is set, a ZURDF PROceed GRO-*gggggggg* command is required to apply the recommendations from the SRDF/A MSC Recovery analysis.

---

**URDF1070W**

SRDF/A MSC Group *gggggggg* Cycle Monitor Inactive on CPU *p*

**Explanation:** The SRDF/A Cycle Switch Monitor is no longer active on the processor specified in the command.
System Action: None.
User Response: Review messages on the console to determine why the cycle switch monitor stopped. To restart the cycle switch monitor use ZURDF ASYNC GRO-9999999999 PAR-MMR.

URDF1071I
SRDF/A MSC Group 99999999999 Cycle Monitor Active on CPU p
Explanation: The SRDF/A Cycle Switch Monitor has started on the processor specified in the message.
System Action: None.
User Response: None.

URDF1256I
ccccccccccccccccccccccccccccccccccc in progress
Explanation: You issued a conflicting SRDF command while another SRDF command ccccccccccccccccccccccccccccc was in progress.
System Action: None.
User Response: Wait for the active command to complete and try again.

E1Rx0001E
Error on SymmAPI call - hhhhyyyy
Explanation: The SymmAPI call identified by the hexadecimal code hhhh returned a non-zero return code yyyy.
System Action: None.
User Response: This message can be issued by segments E1RB, E1RC, E1RH, E1RJ, E1RO, E1R3, E1R7. See return code yyyy description in Appendix C, “SRDF Operation Return Codes,” in order to identify the resolution. If the resolution cannot be identified, contact the EMC Customer Support Center.

E1Vx0001E
Error on SymmAPI call - hhhhyyyy
Explanation: The SymmAPI call identified by the hexadecimal code hhhh returned a non-zero return code yyyy.
System Action: None.
User Response: This message can be issued by segments E1RB, E1RC, E1RH, E1RJ, E1RO, E1R3, E1R7. See return code yyyy description in Appendix C, “SRDF Operation Return Codes,” in order to identify the resolution. If the resolution cannot be identified, contact the EMC Customer Support Center.
Messages

E1VI0001I

SS cccc not initialized

Explanation: The specified MDBF subsystem became inactive during SRDF validation.

System Action: None.

User Response: Ensure all subsystems, for which SRDF is intended to be used, remain active throughout the validation process.

E1VI0002W

nnnn SDAs are offline

Explanation: The specified number of devices was offline during the validation process.

System Action: None.

User Response: Ensure the z/TPF complex is in its preferred configuration. It may be acceptable to run with offline devices.

E1VI0003W

System call error count was nnnn

Explanation: There were nnnn error return codes from EMCSA calls during SRDF initialization.

System Action: None.

User Response: Determine if the errors resulted in incorrect SRDF Control operation. Determine the cause of the errors and reissue the operation.

E1V20001I

Review SRDF exceptions above for Group gggg ggggg: To proceed, enter: ZURDF PROceed GROup-ggggg
To halt, enter: ZURDF HALt GROup-ggggg

Explanation: Operations Verification for the operation ooooooooono for SRDF group ggggg gg has identified some exceptions. The exceptions are issued prior to message E1V20001I.

System Action: SRDF Controls waits for the operator to proceed or halt the operation using the entries specified.

User Response: Review the exceptions issued prior to message E1V20001I for the SRDF group to determine whether you should proceed or halt the operation.

E1V20002I

Review SRDF exceptions above for Group ggggg ggg gg Set sssssss sssssss sssss:

EMC SRDF Controls for z/TPF Version 8.0.0 Product Guide
To proceed, enter: ZURDF PROceed GROup-ppard- Set-ssssssss
To halt, enter: ZURDF HALt GROup-ppard- Set-ssssssss

Explanation: Operations Verification for the range operation ooooooo for SRDF group passssss Set sssssssss has identified some exceptions. The exceptions are issued prior to message E1V20002I.

System Action: TimeFinder Controls waits for the operator to proceed or halt the operation using the entries specified.

User Response: Review the exceptions issued prior to message E1V20002I for the SRDF group and Set to determine whether you should proceed or halt the operation.

URCV0001I

Invalid display TYPe, must be MSC or SDA

Explanation: An EMC ZURCV display was requested with an invalid display type specified.

System Action: None.

User Response: Verify the display type desired and issue the correct entry.

URCV0002I

Recovery area initialization required

Explanation: The recovery area associated with the specified SDA/RDF group is not initialized for use with z/TPF.

System Action: None.

User Response: Verify the SDA/RDF group and if necessary use the ZURCV INI command to initialize the recovery area.

URCV0003I

See SRDF Controls for z/TPF product guide Appendix C

Explanation: An EMC SymmAPI macro call did not complete successfully.

System Action: None.

User Response: Determine the source and cause of the EMC SymmAPI macro call error and reissue command.

URCV0004I

Recovery list is empty for this SDA/RDFGroup

Explanation: An EMC ZURCV action was requested for a SDA/RDFGroup recovery area that has no entries defined.

System Action: None.

User Response: Verify the SDA/RDFGroup and if necessary use the ZURCV ADD command to add SDA/RDFGroup items to the recovery area.
URCV0005E
FDCTC error during EMC SymmAPI call Check operations or gatekeeper SDA

Explanation: An error occurred on an FDCTC macro call during an EMC SymmAPI call. Check the operations or gatekeeper SDA for any problems.

System Action: None.

User Response: Determine the cause of the FDCTC error, resolve it, and reissue the SRDF command.

URCV0006E
Requested operation cannot be processed for an unsupported CU

Explanation: An SRDF operation was requested for another vendors CU or an unsupported storage system model.

System Action: None.

User Response: None

URCV0007E
EMC Symmetrix HW/SW incompatibilities

Explanation: One or more storage systems in the complex does not meet the minimum hardware and software requirements for the requested SRDF Controls command.

System Action: None.

User Response: Contact the EMC Customer Support Center.

URCV0008E
SDA out of range

Explanation: The Symbolic Device Address specified in a command is not in the range of online SDAs for the system.

System Action: None.

User Response: Verify the correct SDA range for your system and reenter the command using a valid SDA.

URCV0009E
SRDF operation device is offline. Mount the device

Explanation: A device to which SRDF operations were to be issued is offline.

System Action: None.

User Response: Determine the problem with the device and reissue the command for the storage system designated by this SDA.
URCV0010I

MSC list is empty for this SDA/RDFGroup

Explanation: You issued a EMC ZURCV command for a SDA/RDFGroup MSC list that has no entries defined.

System Action: None.

User Response: Verify the correct SDA/RDFGroup and reenter the command.

URCV0011E

Error on SymmAPI call - hhhhyyyy

Explanation: The SymmAPI call identified by the hexadecimal code hhhh returned a non-zero code yyyy.

System Action: None.

User Response: See the return code yyyy description in Appendix C, “SRDF Operation Return Codes,” in order to identify the resolution. If the resolution cannot be identified, contact the EMC Customer Support Center.

URCV0012T

Operation Verification Failed - Operation not started

Explanation: Prior to starting the requested operation, SRDF determined the status of the system was inconsistent with requirements.

System Action: The requested operation was not started.

User Response: See preceding messages for detailed information. Correct the error, and retry.

URCV0013I

Incorrect Multi-Session indicator for RDFGroup

Explanation: An MSC operation was attempted for an RDFGroup that does not have MSC active.

System Action: The requested operation was not started.

User Response: Verify the correct SDA/RDFGroup and reenter the request.

URCV0014E

SRDF Operator Verification not pending for specified RDFGroup

Explanation: ZURCV PROceed|HALt was entered, but operation verification is not expecting an operator response for the specified RDFGgroup.

System Action: None.
URCV0999I

Valid SRDF Recovery Operations are:

ADD      DELete      DISplay     INItialize
RECOVER   PROceed    Halt        Help
For details enter: ZURCV H OPERATION

Explanation: This is the output from the ZURCV Help command.
System Action: None.
# Service Information Messages

Service Information Messages (SIM) are produced by the storage system to report events. The SIM message is sent in response to the first I/O following the occurrence of the event. The device to which this I/O is issued is recorded as the reporting device (DVC).

The SIM message contains an exception code describing the abnormal condition in sense bytes x'16'-x'17'. This is a hex code identifying the event. The format for SIM messages in z/TPF is as follows:

```
CSMP0097I 01.25.54 CPU-A SS-A64 SSU-SSU1 IS-01
CYEM0099E 01.25.54 SIM SCU SERVICE ALERT, RCS SSID-00D2, DVC-0D94,TYPE-33
90,MOD-132,FARF-D4038546,CHR-00C3 04 02,
CSW-0200,CCW-E7,SNS-00101000 14008FE0 42000004 72000014 0300012C 00D21467 05104
E00 F1000000
```

Table 7 lists the possible SIM codes reported by the storage system.

<table>
<thead>
<tr>
<th>Exception code</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>1460</td>
<td>Dynamic sparing invoked</td>
</tr>
<tr>
<td>146D</td>
<td>All links offline</td>
</tr>
<tr>
<td>146E</td>
<td>All SRDF links operational</td>
</tr>
<tr>
<td>147D</td>
<td>Remote link director problem / failure</td>
</tr>
<tr>
<td>147E</td>
<td>SRDF adapter link operational</td>
</tr>
<tr>
<td>E454</td>
<td>Volume set to adaptive copy mode</td>
</tr>
<tr>
<td>E461</td>
<td>Target (R2) volume resynchronized with source (R1)</td>
</tr>
<tr>
<td>E462</td>
<td>Source (R1) volume resynchronized with target (R2)</td>
</tr>
<tr>
<td>E465</td>
<td>Resynchronization process has begun</td>
</tr>
<tr>
<td>E473</td>
<td>R1/L1/ML volume in not ready state</td>
</tr>
<tr>
<td>E474</td>
<td>R1 volume SRDF write disabled</td>
</tr>
<tr>
<td>E475</td>
<td>R2 volume in not ready state</td>
</tr>
</tbody>
</table>
Messages for verification operations

If operation verification finds a condition that may prevent successful completion of an operation, an exception message is issued. The message format is:

SRDF Exception - Group *grpname* Set *setname*: <message text>: n of n

Where:

- *grpname* and *setname* are the group and set verified.
- *message text* describes the condition found. Table 8 lists the exception messages that may be issued.
- *n of n* reflects the count of devices in this set that experienced the condition.

In some cases, the operator is prompted to halt or proceed.

Table 8  Operation verification messages (1 of 4)

<table>
<thead>
<tr>
<th>Message text</th>
<th>Description</th>
</tr>
</thead>
</table>
| CAS- Mode chg not allowed | - A MODE operation was issued to a Cascaded SRDF pair that would result in the removal of adaptive copy disk mode (ADCD mode) from the second leg of a Cascaded SRDF pair.  
- Processing halts. |
| CAS- R22 not supported | - A concurrent SRDF device with two R2 mirrors would result if processing continues.  
- Verified on both SWAp and CRTpair operations.  
- Processing halts. |
| CAS- requires ADCD mode | - On CRTpair, ADCD mode is required for the second leg (R21 -> R2) and must be specified.  
- Processing halts. |
| CAS- SRDFA act other leg | - On an Asynchronous activate, SRDF/A is already active on the other leg of a Cascaded SRDF device. SRDF/A can only be active on one leg of a Cascaded SRDF device.  
- Processing halts. |
| Check GK dev for SSID | - Gatekeeper device could not be validated.  
- Processing halts. |
| Dev MODE not as expected | - The current device mode does not match the setting defined in general property for this group.  
- Verified on RESume, INValidate, VALidate, and REFresh, RFRresume operations.  
- Processing halts.  
- Use the ZURDF MODE command to correct condition. |
| DRDF pairs not attached | - The current operation expects dynamic SRDF pairs to be attached through CRTpair but found pairs unattached.  
- Verified on all operations involving dynamic SRDF, except CRTpair and DELHALF.  
- Processing halts |
| Loc drdf att to diff dev | - Processing results in a concurrent SRDF device or Cascaded SRDF device.  
- Prompts operator to halt/proceed. |
### Table 8 Operation verification messages (2 of 4)

<table>
<thead>
<tr>
<th>Message text</th>
<th>Description</th>
</tr>
</thead>
</table>
| Loc drdf in diff RDFGrp             | • Verified on all operations involving dynamic SRDF.  
                              • Prompts operator to halt/proceed if dynamic SRDF device found to be in a different RDFGroup.                                      |
| LCL Orientation not set             | • A DELpair command was issued for a set that does not have LCL orientation set.  
                              • Processing halts.  
                              • If this is a dynamic SRDF pair, use the CRTpair command to set local orientation via LCLIS- parameter prior to issuing DELpair operation. |
| No ops dev for SSID                 | • Prompts operator to halt/proceed if operations device is not available.                                                                 |
| Other side drdf attached            | • On DELHALF operation, reports number of attached pairs found on the other side.  
                              • Prompts operator to halt/proceed.                                                                                                     |
| Other side onl RDF devs             | • On Target R/O|NRDY, NRDY, CRTpair, SWApair operations.  
                              • Passes operation if the intended target (R2) devices are offline.  
                              • Prompts operator to halt/proceed if online devices are found, and ONLDEV option and permission are on.  
                              • Processing halts if online devices found and ONLDEV permission is off.  
                              • “ZURDF DEFine PROp-TAR|NRD|CRT|SWA|ASY|SUS” on page 123 provides more information on the ONLDEV option. |
| RDF device not an R2                | • Verified on all operations issued to target (R2) devices.  
                              • Prompts operator to halt/proceed if count is not zero.                                                                                   |
| RDF device not an R1                | • Verified on all operations issued to target (R1) devices.  
                              • Prompts operator to halt/proceed if count is not zero.                                                                                   |
| Rem drdf in diff RDFGrp             | • Verified on all operations involving dynamic SRDF.  
                              • Prompts operator to halt/proceed.                                                                                                        |
| Rem drdf att to diff dev            | • Processing results in Cascaded SRDF device.  
                              • If current configuration supports Cascaded SRDF, prompts operator to halt/proceed.  
                              • If below Enginuity 5773, processing halts.                                                                                               |
| R1 not synchronized to R2           | • On Resume operation, R1 is found to not be fully synchronized with R2.  
                              • Processing halts.                                                                                                                        |
| Secondary is inconsistent           | • On ASYNC with option to activate MSC, verification process found the secondary side to be inconsistent and AMSA permission is not set.  
                              • Prompts operator to halt/proceed.  
                              • “ZURDF DEFine PROp-TAR|NRD|CRT|SWA|ASY|SUS” on page 123 describes the impact of defining AMSA for the ASYNC command. |
| Source(R1) not TNR                  | • Verification found that devices are not in TNR state when an operation requires it.  
                              • Processing terminates.                                                                                                                    |
<table>
<thead>
<tr>
<th>Message text</th>
<th>Description</th>
</tr>
</thead>
</table>
| Source(R1) not R/W                               | • Verification found that devices are in TNR state when an operation expects a R/W state.  
• Processing terminates.                                                                                                                                                                                                                                                                                                               |
| SRDF/A is active                                 | • Operator is prompted to halt/proceed if processing ASYNC command determines processing can continue, otherwise processing halts.                                                                                                                                                                                                         |
| SRDF/A is inactive                               | • Operator is prompted to halt/proceed if processing ASYNC command determines processing can continue, otherwise processing halts.                                                                                                                                                                                                         |
| SRDF/A MSC is active                             | • Operator is prompted to halt/proceed if processing ASYNC command determines processing can continue, otherwise processing halts.                                                                                                                                                                                                         |
| SRDF/A MSC is inactive                           | • Operator is prompted to halt/proceed if processing ASYNC command determines processing can continue, otherwise processing halts.                                                                                                                                                                                                         |
| SRDF/A Clean-up is running                      | • Requested operation is not valid when SRDF/A clean-up indicator is on.  
• Processing halts if requested operation is DELHALF, DELpair, INvalidate, VALidate, REFresh, or RFResume.  
• Operator is prompted to halt/proceed if processing ASYNC command determines processing can continue.                                                                                                                                                                                                 |
| SRDF/A Clean-up not running                     | • Operator is prompted to halt/proceed if processing ASYNC command determines processing can continue, otherwise processing halts.                                                                                                                                                                                                         |
| Sync direction not set                           | • Sync direction is not set appropriately for the SRDF operation.  
• Processing halts.  
• Verified on invalidate, validate, refresh, rfrresume operations.  
• See “ZURDF SYNchd” on page 209 to set the sync direction.                                                                                                                                                                                                                                                                 |
| This side onl RDF devs                           | • On Target R/O|NRDY, NRDY, CRTpair, SWApair operations.  
• Passes operation if the intended target (R2) devices are offline.  
• Prompts operator to halt/proceed if online devices are found, and ONLDEV option and permission are on.  
• Processing halts if online devices are found and ONLDEV is off.  
• “ZURDF DEFine PROp-TAR|NRD|CRT|SWA|ASY|SUS” on page 123 provides more information on the ONLDEV option.                                                                                                                                                                                                 |
| Target(R2) not R/O                               | • Verified on invalidate, validate, refresh, rfrresume operations.  
• Processing halts.                                                                                                                                                                                                                                                                                                                        |
| SRDF Feature is blocked                          | • SRDF feature is currently unavailable at the control unit level for commands CRTPAIR, VAL, INV, REF, RFR, and RES on Enginuity level 5874 and higher or on HYPERMAX OS.  
• Processing halts. If the condition persists, contact EMC Support.                                                                                                                                                                                                                                                                       |
| SRDF/A Feature is blocked                        | • SRDF/A feature is currently unavailable at the control unit level for command ASYNC with PArm-ACTivate on Enginuity level 5874 and higher or on HYPERMAX OS.  
• Processing halts. If the condition persists, contact EMC Support.                                                                                                                                                                                                                                                                 |
| CAS/CUR Feature blocked                          | • SRDF Cascaded/Concurrent feature is unavailable at the control unit level for commands CRTPAIR and SWAPAIR.  
• Processing halts. If the condition persists, contact EMC Support.                                                                                                                                                                                                                                                                 |

Table 8  Operation verification messages (3 of 4)
Table 8  Operation verification messages (4 of 4)

<table>
<thead>
<tr>
<th>Message text</th>
<th>Description</th>
</tr>
</thead>
</table>
| Invalid tracks on R2      | • Checked only if ITRK property option is defined for the Suspend operation.  
• Prompts to proceed or halt if ITRK property option is ON. |
| DCAS- SWApair not allowed | • SWAPair command is not allowed for diskless cascaded SRDF groups.  
• Processing halts. |
| DCAS- SRDFA not allowed   | • SRDF/A mode is not allowed on leg 1 of a diskless cascaded solution.  
• Processing halts. |
| DCAS- Conc not allowed    | • Concurrent SRDF is not allowed for diskless cascaded SRDF groups.  
• Processing halts. |
| DCAS- Leg 2 D21 not R/W   | • The source (D21) devices of leg 2 of a diskless cascaded solution must be ready on the SRDF link in order to start synchronizing the leg 1 diskless cascaded SRDF group.  
• Processing halts. |
This appendix describes the status of individual SRDF volumes and Remote Link Directors, including their impact on the host, probable cause, and the actions required to return to a normal operating status.

- Remote Link Director status codes
- SRDF volume status codes
Remote Link Director status codes

Table 9 lists Remote Link Director status codes and their relationship with the host:

<table>
<thead>
<tr>
<th>ZURDF DIS ... TYP-LIN</th>
<th>Host impact</th>
<th>Probable cause</th>
<th>Actions to return to normal status</th>
</tr>
</thead>
<tbody>
<tr>
<td>CONN</td>
<td>STATUS</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Y</td>
<td>ONLINE</td>
<td>Normal Status</td>
<td></td>
</tr>
<tr>
<td>N</td>
<td>OFFLINE</td>
<td>No synchronization can take place on this link; if all links are in this status, invalid R2 tracks accumulate on the source (R1) volume.</td>
<td>The link cables are physically disconnected, or the remote link director is offline.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>The link was set offline intentionally by EMC service technicians during maintenance or troubleshooting.</td>
</tr>
</tbody>
</table>
## SRDF volume status codes

*Table 10* lists the SRDF volume status codes and their relationship with the host:

### Table 10  Volume status and recovery (1 of 2)

<table>
<thead>
<tr>
<th>CNTLUNIT STATUS</th>
<th>Device type</th>
<th>Host impact</th>
<th>Probable cause</th>
<th>Actions to return to normal status</th>
</tr>
</thead>
<tbody>
<tr>
<td>R/W-xx-x</td>
<td>R1</td>
<td>Normal Status</td>
<td>The default storage system configuration status for target (R2) volumes.</td>
<td>To set the target (R2) volume into recovery mode (host R/W), issue a ZURDF TARGET GRO-cccccccc [SET-cccccccc] [SDN-hhhhhhhh CNT-dddd] PAR-RW command.</td>
</tr>
<tr>
<td>R/O-xx-x</td>
<td>R2</td>
<td>Normal R2 status. The host may read from the target (R2) volume, but all host write I/O will receive a Unit Check error (write disabled).</td>
<td>The default storage system configuration status for target (R2) volumes.</td>
<td></td>
</tr>
<tr>
<td>NR-xx-x</td>
<td>R2</td>
<td>Optional R2 status. The target (R2) volume will not come online during host IPL. If an I/O is attempted, an intervention required status is returned.</td>
<td>A storage system configuration option for target (R2) volumes.</td>
<td>Issue a ZURDF TARGET GRO-cccccccc [SET-cccccccc] [SDN-hhhhhhhh CNT-dddd] PAR-RDY command.</td>
</tr>
<tr>
<td>R/W-xx-x</td>
<td>R2</td>
<td>The host may write to the target (R2) volume.</td>
<td>ZURDF TARGET GRO-cccccccc [SET-cccccccc] [SDN-hhhhhhhh CNT-dddd] PAR-RW command was issued from the R2 host.</td>
<td>Issue a ZURDF TARGET GRO-cccccccc [SET-cccccccc] [SDN-hhhhhhhh CNT-dddd] PAR-RO command.</td>
</tr>
<tr>
<td>LNR-xx-x</td>
<td>R1</td>
<td>Link not ready, no synchronization occurs, R2 invalid tracks accumulate on the source (R1) volume.</td>
<td>The link is disabled (see <em>Table 9</em> on page 372).</td>
<td>Issue a ZURDF DISPLAY GRO-cccccccc SET-cccccccc TYP-LIN command. Refer to <em>Table 9</em> for recovery procedures.</td>
</tr>
<tr>
<td>CNTLUNIT STATUS</td>
<td>Device type</td>
<td>Host impact</td>
<td>Probable cause</td>
<td>Actions to return to normal status</td>
</tr>
<tr>
<td>-----------------</td>
<td>-------------</td>
<td>-------------</td>
<td>----------------</td>
<td>----------------------------------</td>
</tr>
<tr>
<td>TNR-xx-x</td>
<td>R1</td>
<td>Target not ready, no synchronization occurs, R2 invalid tracks accumulate on the source (R1) volume.</td>
<td>A ZURDF SUSPEND GRO-cccccccc [SET-cccccccc] [SDN-hhhhhhhh CNT-dddd] command was issued from the R1 host.</td>
<td>Issue a ZURDF RESUME GRO-cccccccc [SET-cccccccc] [SDN-hhhhhhhh CNT-dddd] command.</td>
</tr>
<tr>
<td>RNR-xx-x</td>
<td>R1 or R2</td>
<td>If I/O is attempted, an intervention required status is returned.</td>
<td>A device was operating in domino mode when the links or the RDF partner failed, a ZURDF NRDY GRO-cccccccc [SET-cccccccc] [SDN-hhhhhhhh CNT-dddd] command was entered or a target (R2) device went RNR due to the Invalid Track Attribute.</td>
<td>Ensure that the links and the partner device are ready, and issue a ZURDF RDY GRO-cccccccc [SET-cccccccc] [SDN-hhhhhhhh CNT-dddd] command.</td>
</tr>
<tr>
<td>RWD-xx-x</td>
<td>R1</td>
<td>Source volume is disabled to the link, no synchronization occurs, R2 invalid tracks accumulate on the source (R1) volume.</td>
<td>While the links were up and RDF operations were enabled, and the target (R2) volume was read/write enabled, a write was performed to the source (R1) volume.</td>
<td>Set the target (R2) volume to read/only by entering: ZURDF TARGET GRO-cccccccc [SET-cccccccc] [SDN-hhhhhhhh CNT-dddd] PAR-RO and resume normal RDF operations from the source (R1) by entering: ZURDF WRITEENABLE GRO-cccccccc [SET-cccccccc] [SDN-hhhhhhhh CNT-dddd]</td>
</tr>
</tbody>
</table>
APPENDIX C
SRDF Operation Return Codes

This appendix contains information on SRDF return codes.

- Error indicators ................................................................. 376
Error indicators

The error indicators are the two bytes in the Opr RC Summary column of the following SRDF Monitor display:

```
CSMP0097I 00.03.15 CPU-a SS-BSS SSU-SSU0 IS-01
URDF0031I SRDF Status Display
SRDF Group R1BCV Invalidate active
Status: Monitor Active
Start Time : 23.59.04 Date : 07/06/04

Opr _________ Operation Status_________ Opr RC
Set Name CU Serial # SDA Complete In Progress Not Started   Summary
RAG0  000184505047 3340 0 36 0 0000
RAG1  000184505047 3340 0 36 0 0000
End of Display
```

**Note:** If the return code you receive is not documented in this appendix, contact EMC Customer Support for more information.
### Byte 0 - z/TPF return codes

<table>
<thead>
<tr>
<th>RC</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0xE0</td>
<td>FDCTC error - Check operations or gatekeeper SDA</td>
</tr>
<tr>
<td>0xE1</td>
<td>Invalid synchronization direction set for issued operation</td>
</tr>
<tr>
<td>0xE2</td>
<td>HW/SW incompatible with API</td>
</tr>
<tr>
<td>0xE3</td>
<td>Zero SPT field (SPT base/DBI/MOD/SDA)</td>
</tr>
<tr>
<td>0xE4</td>
<td>Unable to allocate ECB Heap Storage - MALOC error</td>
</tr>
<tr>
<td>0xE5</td>
<td>SDA offline</td>
</tr>
<tr>
<td>0xE6</td>
<td>SDA invalid</td>
</tr>
<tr>
<td>0xE7</td>
<td>Invalid RDF group</td>
</tr>
<tr>
<td>0xE8</td>
<td>SDN not found device table</td>
</tr>
<tr>
<td>0xE9</td>
<td>SRDF director or RDF group offline</td>
</tr>
<tr>
<td>0xEA</td>
<td>SRDF Monitor found invalid RDF flags</td>
</tr>
</tbody>
</table>

### Byte 1 - Storage system general return codes

<table>
<thead>
<tr>
<th>RC</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0x00</td>
<td>System call succeeded</td>
</tr>
<tr>
<td>0x80</td>
<td>System call is not defined</td>
</tr>
<tr>
<td>0x81</td>
<td>Executing director type does not support the system call</td>
</tr>
<tr>
<td>0x82</td>
<td>Wrong system call parameters</td>
</tr>
<tr>
<td>0x83</td>
<td>Data called not found</td>
</tr>
<tr>
<td>0x84</td>
<td>Data exceeds buffer size</td>
</tr>
<tr>
<td>0x85</td>
<td>(SA_ADAPTER - ili)</td>
</tr>
<tr>
<td>0x86</td>
<td>Remote request initiated by non-RDF R1 device</td>
</tr>
<tr>
<td>0x87</td>
<td>Remote request with no link available</td>
</tr>
<tr>
<td>0x88</td>
<td>Illegal RSC - cannot use socket device</td>
</tr>
<tr>
<td>0x89</td>
<td>Requested length is not on 8 bytes bound</td>
</tr>
<tr>
<td>0x8A</td>
<td>Passive system call extended parameters cause parameter buffer overflow</td>
</tr>
<tr>
<td>0x8B</td>
<td>RSC on R1 when R2 is not ready</td>
</tr>
<tr>
<td>0x8C</td>
<td>RSC failed</td>
</tr>
<tr>
<td>0x8D</td>
<td>Inline system call not supported from host</td>
</tr>
</tbody>
</table>
Table 12  Byte 1 - Storage system general return codes (2 of 3)

<table>
<thead>
<tr>
<th>RC</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0x8E</td>
<td>Inline system call data timeout</td>
</tr>
<tr>
<td>0x8F</td>
<td>Inline system call request from incorrect utility</td>
</tr>
<tr>
<td>0x90</td>
<td>Attempt to write data beyond buffer end (internal logic error)</td>
</tr>
<tr>
<td>0x91</td>
<td>Sent parameter flag byte error</td>
</tr>
<tr>
<td>0x92</td>
<td>DA error (for disconnected system calls)</td>
</tr>
<tr>
<td>0x93</td>
<td>System Internal error (Data consistency problem encountered)</td>
</tr>
<tr>
<td>0x94</td>
<td>Multi-hop request with error on a remote link. Link in question may be offline</td>
</tr>
<tr>
<td>0x95</td>
<td>System call temporarily unavailable. Please retry</td>
</tr>
<tr>
<td>0x96</td>
<td>System call requires the use of a socket</td>
</tr>
<tr>
<td>0x97</td>
<td>System call not allowed on dir/port by field in IMPL</td>
</tr>
<tr>
<td>0x98</td>
<td>Error sending system call to a remote director (same VMAX system)</td>
</tr>
<tr>
<td>0x99</td>
<td>Error executing system call on a remote director (same VMAX system)</td>
</tr>
<tr>
<td>0x9A</td>
<td>Requested system call format does not support more than 32 directors</td>
</tr>
<tr>
<td>0x9B</td>
<td>System call not supported for detected configuration (upgrade application)</td>
</tr>
<tr>
<td>0x9C</td>
<td>Multi-hop system call timed out somewhere along the line</td>
</tr>
<tr>
<td>0x9D</td>
<td>Multi-hop system call was sent, and it ran into an existing multi-hop system call</td>
</tr>
<tr>
<td>0x9E</td>
<td>Requested count is not enough for extended parameters</td>
</tr>
<tr>
<td>0x9F</td>
<td>System call result remained un-initialized</td>
</tr>
<tr>
<td>0xA0</td>
<td>POLL</td>
</tr>
<tr>
<td>0xA1</td>
<td>Requested system call format does not support Open RDF</td>
</tr>
<tr>
<td>0xA2</td>
<td>Requested system call format does not support RDF Multicast</td>
</tr>
<tr>
<td>0xA3</td>
<td>Requested system call format does not support Dynamic RDF</td>
</tr>
<tr>
<td>0xA4</td>
<td>System call cannot be run to this device</td>
</tr>
<tr>
<td>0xA5</td>
<td>System call is disconnecting, user should not get this</td>
</tr>
<tr>
<td>0xA6</td>
<td>Format 6 input CRC does not match parameters</td>
</tr>
<tr>
<td>0xA7</td>
<td>System call timed out during execution</td>
</tr>
<tr>
<td>0xA8</td>
<td>Could not get access ID/tag from parameters</td>
</tr>
<tr>
<td>0xA9</td>
<td>The system call format is not supported</td>
</tr>
<tr>
<td>0xAA</td>
<td>The sub command is not valid</td>
</tr>
<tr>
<td>0xAB</td>
<td>The sub format is not valid</td>
</tr>
<tr>
<td>0xAC</td>
<td>Reserved parameters are not zero</td>
</tr>
</tbody>
</table>
### Table 12  Byte 1 - Storage system general return codes (3 of 3)

<table>
<thead>
<tr>
<th>RC</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0xAD</td>
<td>Operation is not allowed on a meta member</td>
</tr>
<tr>
<td>0xAE</td>
<td>The Quick Config parameters indicate a status has changed</td>
</tr>
<tr>
<td>0xAF</td>
<td>User requested abort on polling system call</td>
</tr>
<tr>
<td>0xB0</td>
<td>Director is in the middle of IML, please retry in 10 seconds</td>
</tr>
<tr>
<td>0xB1</td>
<td>SymmWin is in the middle of a NDU, please abort this IO</td>
</tr>
<tr>
<td>0xB2</td>
<td>Endian swap did not work (EAGLE)</td>
</tr>
</tbody>
</table>
## Byte 1 - Storage system CRTpair return codes

<table>
<thead>
<tr>
<th>RC</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0x00</td>
<td>System call succeeded</td>
</tr>
<tr>
<td>0x01</td>
<td>The serial number of the remote box was incorrect</td>
</tr>
<tr>
<td>0x02</td>
<td>The range is too big</td>
</tr>
<tr>
<td>0x03</td>
<td>The device number was not valid</td>
</tr>
<tr>
<td>0x04</td>
<td>A particular device failed</td>
</tr>
<tr>
<td>0x05</td>
<td>Unused</td>
</tr>
<tr>
<td>0x06</td>
<td>Either wrong RDF group specified, or could not determine the RDF group</td>
</tr>
<tr>
<td>0x07</td>
<td>This device is already an RDF device</td>
</tr>
<tr>
<td>0x08</td>
<td>This device is not configured for Dynamic RDF</td>
</tr>
<tr>
<td>0x09</td>
<td>The program was trying to undo the establish because of a failure, and it failed</td>
</tr>
<tr>
<td>0x0A</td>
<td>Attempted operation is only allowed in Enginuity 5568 and above or HYPERMAX OS</td>
</tr>
<tr>
<td>0x0B</td>
<td>The syscall mechanism had an internal error</td>
</tr>
<tr>
<td>0x0C</td>
<td>Unused</td>
</tr>
<tr>
<td>0x0D</td>
<td>Farpoint does not allow R1s on RA2s or R2s on RA1s</td>
</tr>
<tr>
<td>0x0E</td>
<td>Some RDF (mirror) flags (2) specified were incorrect</td>
</tr>
<tr>
<td>0x0F</td>
<td>R2s cannot be the destination of file smmf</td>
</tr>
<tr>
<td>0x10</td>
<td>Invalid multiexecute mask</td>
</tr>
<tr>
<td>0x11</td>
<td>This device is configured to be Split CE+DE in the configuration</td>
</tr>
<tr>
<td>0x12</td>
<td>The option bits specifying copy direction are not correct - or were used for non-PPRC</td>
</tr>
<tr>
<td>0x13</td>
<td>Unused</td>
</tr>
<tr>
<td>0x14</td>
<td>Raid-S devices are not valid for use with Dynamic RDF</td>
</tr>
<tr>
<td>0x15</td>
<td>Attempted PPRC re-establish where the R1 did not already exist</td>
</tr>
<tr>
<td>0x16</td>
<td>The R1 was ready on the link when the re-establish was sent</td>
</tr>
<tr>
<td>0x17</td>
<td>Vault devices cannot be R2s</td>
</tr>
<tr>
<td>0x18</td>
<td>Config comparison between the two sides failed</td>
</tr>
<tr>
<td>0x19</td>
<td>Config comparison between the two sides failed</td>
</tr>
<tr>
<td>0x1A</td>
<td>The same device was referenced twice in two different runs</td>
</tr>
<tr>
<td>0x1B</td>
<td>Unused</td>
</tr>
<tr>
<td>0x1C</td>
<td>Cannot establish when SymmPurge is active on a device</td>
</tr>
<tr>
<td>0x1D</td>
<td>Unused</td>
</tr>
</tbody>
</table>
### SRDF Operation Return Codes

**Table 13** Byte 1 - Storage system CRTpair return codes (2 of 3)

<table>
<thead>
<tr>
<th>RC</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0x1E</td>
<td>Unused</td>
</tr>
<tr>
<td>0x1F</td>
<td>To add a dynamic RDF mirror to a device that already has 2 mirrors</td>
</tr>
<tr>
<td>0x20</td>
<td>Is already an RDF mirror of this group established to the device</td>
</tr>
<tr>
<td>0x21</td>
<td>The RDF flags given in the syscall do not match those of the existing mirror</td>
</tr>
<tr>
<td>0x22</td>
<td>Cannot have two R2 mirrors on the same device</td>
</tr>
<tr>
<td>0x23</td>
<td>This device is already an RDF device</td>
</tr>
<tr>
<td>0x24</td>
<td>Dynamic SRDF operations not allowed in SRDF/A RDF groups</td>
</tr>
<tr>
<td>0x25</td>
<td>Unused</td>
</tr>
<tr>
<td>0x26</td>
<td>Dynamic SRDF operations not allowed while SRDF/A is active unless tolerance or consistency exempt is set</td>
</tr>
<tr>
<td>0x27</td>
<td>When SRDF/A is active, dv R1/R2 must match group R1/R2</td>
</tr>
<tr>
<td>0x28</td>
<td>Cannot use PPRC with SRDF/A</td>
</tr>
<tr>
<td>0x29</td>
<td>Concurrent SRDF/A mirrors are not supported</td>
</tr>
<tr>
<td>0x2A</td>
<td>Someone else has the SRDF/A activation lock</td>
</tr>
<tr>
<td>0x2B</td>
<td>Cannot do non-PPRC establish on an XRC enabled device</td>
</tr>
<tr>
<td>0x2C</td>
<td>Unused</td>
</tr>
<tr>
<td>0x2D</td>
<td>Unused</td>
</tr>
<tr>
<td>0x2E</td>
<td>Unused</td>
</tr>
<tr>
<td>0x2F</td>
<td>Cannot support concurrent Dynamic SRDF on a BCV device</td>
</tr>
<tr>
<td>0x30</td>
<td>Someone else has the SRDF/A state table lock</td>
</tr>
<tr>
<td>0x31</td>
<td>Device number is too high - ESCON only supports up to 0x1fef</td>
</tr>
<tr>
<td>0x32</td>
<td>Cannot establish. The group is STAR and the host override was not set.</td>
</tr>
<tr>
<td>0x34</td>
<td>The devices in the run are not the same size, type, etc.</td>
</tr>
<tr>
<td>0x35</td>
<td>Unused</td>
</tr>
<tr>
<td>0x36</td>
<td>Cannot do PPRC reestablish to a primary device or if the secondary is not pointing to the primary</td>
</tr>
<tr>
<td>0x37</td>
<td>Cannot do PPRC failback to a secondary device or if the primary is not pointing to the original primary</td>
</tr>
<tr>
<td>0x38</td>
<td>The other box does not support PPRC Failover/Failback</td>
</tr>
<tr>
<td>0x39</td>
<td>An attempt to create an RDF mirror for BCV device with 3 mirrors</td>
</tr>
<tr>
<td>0x3A</td>
<td>Dynamic RDF device being added is not in the same cache partition as other RDF devices in the SRDF/A enabled group</td>
</tr>
<tr>
<td>0x3C</td>
<td>Input flags are incompatible with cascaded RDF</td>
</tr>
<tr>
<td>0x3D</td>
<td>Cascaded RDF is not supported with ESCON RDF</td>
</tr>
</tbody>
</table>
### Table 13  Byte 1 - Storage system CRTpair return codes (3 of 3)

<table>
<thead>
<tr>
<th>RC</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0x3E</td>
<td>PPRC devices cannot be made cascading</td>
</tr>
<tr>
<td>0x3F</td>
<td>The R1 of an R21 can only be in SRDF/A or Adaptive Copy disk mode</td>
</tr>
<tr>
<td>0x40</td>
<td>The R2 is in FlashCopy Long Busy state and cannot allow a PPRC re-establish</td>
</tr>
<tr>
<td>0x41</td>
<td>Both the R1 and R2 devices are diskless</td>
</tr>
<tr>
<td>0x42</td>
<td>Diskless devices cannot be on the R2 side of SRDF/A</td>
</tr>
<tr>
<td>0x43</td>
<td>An SRDF/A Group cannot have a mixture of real disk and diskless devices</td>
</tr>
<tr>
<td>0x44</td>
<td>The R1 of a diskless R21 can only be in SRDF/A or Adaptive Copy Write Pending mode</td>
</tr>
<tr>
<td>0x45</td>
<td>Cannot convert from SRDF to PPRC with R11, R21, and R22 devices</td>
</tr>
<tr>
<td>0x46</td>
<td>PPRC devices must be CKD</td>
</tr>
<tr>
<td>0x47</td>
<td>Cannot convert from SRDF to PPRC when device is in CGROUP</td>
</tr>
<tr>
<td>0x48</td>
<td>Cannot convert from SRDF to PPRC when device is in links domino</td>
</tr>
<tr>
<td>0x49</td>
<td>Cannot convert from SRDF to PPRC when device is in device domino</td>
</tr>
<tr>
<td>0x4A</td>
<td>Cannot convert from SRDF to PPRC when RDFGroup &gt; 0x3F</td>
</tr>
</tbody>
</table>
### Byte 1 - Storage system DELpair return codes

<table>
<thead>
<tr>
<th>RC</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0x00</td>
<td>System call succeeded</td>
</tr>
<tr>
<td>0x01</td>
<td>The serial number of the remote box was incorrect</td>
</tr>
<tr>
<td>0x02</td>
<td>The range is too big</td>
</tr>
<tr>
<td>0x03</td>
<td>The device number was not valid</td>
</tr>
<tr>
<td>0x04</td>
<td>A particular device failed</td>
</tr>
<tr>
<td>0x05</td>
<td>An R1 had a ready RDF mirror</td>
</tr>
<tr>
<td>0x06</td>
<td>Either wrong RDF group specified, or could not determine the RDF group</td>
</tr>
<tr>
<td>0x07</td>
<td>R1 one side was not an R1 (or R2 side was not an R2)</td>
</tr>
<tr>
<td>0x08</td>
<td>This pair is not a Dynamic RDF pair</td>
</tr>
<tr>
<td>0x09</td>
<td>Unused</td>
</tr>
<tr>
<td>0x0A</td>
<td>Attempted operation is only allowed in Enginuity 5568 or above</td>
</tr>
<tr>
<td>0x0B</td>
<td>The syscall mechanism had an internal error</td>
</tr>
<tr>
<td>0x0C</td>
<td>Unused</td>
</tr>
<tr>
<td>0x0D</td>
<td>Unused</td>
</tr>
<tr>
<td>0x0E</td>
<td>Unused</td>
</tr>
<tr>
<td>0x0F</td>
<td>Unused</td>
</tr>
<tr>
<td>0x10</td>
<td>Invalid multiexecute mask</td>
</tr>
<tr>
<td>0x11</td>
<td>Unused</td>
</tr>
<tr>
<td>0x12</td>
<td>Unused</td>
</tr>
<tr>
<td>0x13</td>
<td>The devices specified as a pair are not actually a pair</td>
</tr>
<tr>
<td>0x14</td>
<td>Unused</td>
</tr>
<tr>
<td>0x15</td>
<td>Unused</td>
</tr>
<tr>
<td>0x16</td>
<td>Unused</td>
</tr>
<tr>
<td>0x17</td>
<td>Unused</td>
</tr>
<tr>
<td>0x18</td>
<td>Unused</td>
</tr>
<tr>
<td>0x19</td>
<td>Unused</td>
</tr>
<tr>
<td>0x1A</td>
<td>The same device was referenced twice in two different runs</td>
</tr>
<tr>
<td>0x1B</td>
<td>Unused</td>
</tr>
<tr>
<td>0x1C</td>
<td>Terminate not allowed SymmPurge is active on a device</td>
</tr>
<tr>
<td>0x1D</td>
<td>Unused</td>
</tr>
<tr>
<td>0x1E</td>
<td>Not allowed to terminate a pair if the R1 is in a CGROUP</td>
</tr>
<tr>
<td>RC</td>
<td>Description</td>
</tr>
<tr>
<td>------</td>
<td>-----------------------------------------------------------------------------</td>
</tr>
<tr>
<td>0x24</td>
<td>Disallow half terminate on SRDF/A R2</td>
</tr>
<tr>
<td>0x25</td>
<td>Cannot terminate with WP unless forced</td>
</tr>
<tr>
<td>0x26</td>
<td>Tolerance or consistency exempt must be set when removing a device from an active SRDF/A group</td>
</tr>
<tr>
<td>0x2C</td>
<td>IOs must be drained from SRDF/A circles before removing device</td>
</tr>
<tr>
<td>0x2D</td>
<td>Cannot delete device until R2 restore is complete</td>
</tr>
<tr>
<td>0x2E</td>
<td>Cannot delete device while cleanup is running</td>
</tr>
<tr>
<td>0x30</td>
<td>Unable to lock the SRDF/A state table for this group</td>
</tr>
<tr>
<td>0x32</td>
<td>Cannot terminate, the group is Star and the host override was not set</td>
</tr>
<tr>
<td>0x34</td>
<td>The devices in the run are not the same size, type, and so forth</td>
</tr>
</tbody>
</table>
### Byte 1 - Storage system SWApair return codes

<table>
<thead>
<tr>
<th>RC</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0x00</td>
<td>System call succeeded</td>
</tr>
<tr>
<td>0x01</td>
<td>The serial number of the remote box was incorrect</td>
</tr>
<tr>
<td>0x02</td>
<td>The range is too big</td>
</tr>
<tr>
<td>0x03</td>
<td>The device number was not valid</td>
</tr>
<tr>
<td>0x04</td>
<td>A particular device failed</td>
</tr>
<tr>
<td>0x05</td>
<td>An R1 had a ready RDF mirror</td>
</tr>
<tr>
<td>0x06</td>
<td>Either wrong RDF group specified, or could not determine the RDF group</td>
</tr>
<tr>
<td>0x07</td>
<td>R1 one side was not an R1 (or R2 side was not an R2)</td>
</tr>
<tr>
<td>0x08</td>
<td>This device is not configured for Dynamic RDF</td>
</tr>
<tr>
<td>0x09</td>
<td>This pair is not a Dynamic RDF pair</td>
</tr>
<tr>
<td>0x0B</td>
<td>The syscall mechanism had an internal error</td>
</tr>
<tr>
<td>0x0C</td>
<td>Swap is not allowed on multicast devices</td>
</tr>
<tr>
<td>0x0D</td>
<td>Swap is not allowed on farpoint systems</td>
</tr>
<tr>
<td>0x0E</td>
<td>Some RDF (mirror) flags (2) specified were incorrect</td>
</tr>
<tr>
<td>0x0F</td>
<td>This current R1 is the destination of file smmf</td>
</tr>
<tr>
<td>0x10</td>
<td>Invalid multiexecute mask</td>
</tr>
<tr>
<td>0x11</td>
<td>Unused</td>
</tr>
<tr>
<td>0x12</td>
<td>Unused</td>
</tr>
<tr>
<td>0x13</td>
<td>The devices specified as a pair are not actually a pair</td>
</tr>
<tr>
<td>0x14</td>
<td>Raid-S devices are not valid for use with Dynamic RDF</td>
</tr>
<tr>
<td>0x15</td>
<td>Unused</td>
</tr>
<tr>
<td>0x16</td>
<td>Unused</td>
</tr>
<tr>
<td>0x17</td>
<td>Vault devices cannot be R2s</td>
</tr>
<tr>
<td>0x18</td>
<td>Unused</td>
</tr>
<tr>
<td>0x19</td>
<td>Unused</td>
</tr>
<tr>
<td>0x1A</td>
<td>The same device was referenced twice in two different runs</td>
</tr>
<tr>
<td>0x1B</td>
<td>Attempt to swap a device where the R2 is larger than the R1</td>
</tr>
<tr>
<td>0x1C</td>
<td>Swap not allowed when SymmPurge is active on a device</td>
</tr>
<tr>
<td>0x1D</td>
<td>Not allowed to swap PPRC pairs</td>
</tr>
<tr>
<td>0x1E</td>
<td>Unused</td>
</tr>
<tr>
<td>0x24</td>
<td>Dynamic RDF operations not allowed in SRDF/A RDFGroups</td>
</tr>
</tbody>
</table>
### Table 15 Byte 1 - Storage system SWApair return codes (2 of 2)

<table>
<thead>
<tr>
<th>RC</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0x25</td>
<td>Cannot swap if device has outstanding write pendings</td>
</tr>
<tr>
<td>0x32</td>
<td>Cannot swap; the group is Star and the host override was not set</td>
</tr>
<tr>
<td>0x34</td>
<td>The devices in the run are not the same size, type, and so forth</td>
</tr>
<tr>
<td>0x35</td>
<td>Cannot failover non-PPRC or primary device</td>
</tr>
<tr>
<td>0x3C</td>
<td>Input flags are incompatible with cascaded RDF</td>
</tr>
<tr>
<td>0x3D</td>
<td>Cascaded RDF not supported over ESCON</td>
</tr>
<tr>
<td>0x3E</td>
<td>PPRC devices cannot be made cascading</td>
</tr>
<tr>
<td>0x3F</td>
<td>RDF modes not compatible with R21 restricted mode</td>
</tr>
<tr>
<td>0x44</td>
<td>The R1 of a diskless R21 can only be in SRDF/A or Adaptive Copy Write Pending mode</td>
</tr>
</tbody>
</table>
### Table 16: Byte 1 - Storage system ASYNC return codes (1 of 2)

<table>
<thead>
<tr>
<th>RC</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0x00</td>
<td>SymmAPI call succeeded</td>
</tr>
<tr>
<td>0x01</td>
<td>The passed SRDF/A session number was invalid</td>
</tr>
<tr>
<td>0x02</td>
<td>The passed SRDF/A session does not exist</td>
</tr>
<tr>
<td>0x03</td>
<td>A parameter used in the SymmAPI call was not correct</td>
</tr>
<tr>
<td>0x04</td>
<td>The SymmAPI call was not directed to the secondary side first (or the second hop was not the primary side)</td>
</tr>
<tr>
<td>0x06</td>
<td>Incorrect Multi-Session indicator</td>
</tr>
<tr>
<td>0x11</td>
<td>The primary side of the activation failed</td>
</tr>
<tr>
<td>0x12</td>
<td>The secondary side of the deactivation failed</td>
</tr>
<tr>
<td>0x13</td>
<td>SRDF/A cleanup following deactivation is in progress</td>
</tr>
<tr>
<td>0x21</td>
<td>The primary side of the activation failed</td>
</tr>
<tr>
<td>0x22</td>
<td>The primary side of the deactivation failed</td>
</tr>
<tr>
<td>0x23</td>
<td>This SymmAPI call must run on the primary side</td>
</tr>
<tr>
<td>0x24</td>
<td>This SymmAPI call must run on the secondary side</td>
</tr>
<tr>
<td>0x25</td>
<td>Could not perform a locked operation</td>
</tr>
<tr>
<td>0x30</td>
<td>A previous suspend SymmAPI call has suspended the SRDF/A cycle switch</td>
</tr>
<tr>
<td>0x31</td>
<td>The previous suspend SymmAPI call has timed out and the SRDF/A cycle switch has resumed</td>
</tr>
<tr>
<td>0x32</td>
<td>The cycle switch resume request found the SRDF/A cycle switch not suspended</td>
</tr>
<tr>
<td>0x34</td>
<td>A tolerance off request for tolerance already off</td>
</tr>
<tr>
<td>0x35</td>
<td>A tolerance off request found devices not ready</td>
</tr>
<tr>
<td>0x41</td>
<td>SRDF/A session is not active</td>
</tr>
<tr>
<td>0x42</td>
<td>SRDF/A Multi-Session mode is turned off</td>
</tr>
<tr>
<td>0x43</td>
<td>SRDF/A Cycle Switch window is not open as expected</td>
</tr>
<tr>
<td>0x44</td>
<td>R1 has not finished sending inactive cycle</td>
</tr>
<tr>
<td>0x45</td>
<td>R2 has not finished restoring active cycle</td>
</tr>
<tr>
<td>0x46</td>
<td>Command tag does not match cycle tag</td>
</tr>
<tr>
<td>0x47</td>
<td>SRDF/A session is already in Multi-Session mode</td>
</tr>
<tr>
<td>0x48</td>
<td>SRDF/A session is not in Multi-Session mode already</td>
</tr>
<tr>
<td>0x49</td>
<td>Inactive cycle is not on-hold</td>
</tr>
<tr>
<td>0x4A</td>
<td>SRDF/A Cycle Switch window has been closed due to timeout</td>
</tr>
<tr>
<td>RC</td>
<td>Description</td>
</tr>
<tr>
<td>------</td>
<td>-----------------------------------------------------------------------------</td>
</tr>
<tr>
<td>0x50</td>
<td>No more space for Multi-Session list entries</td>
</tr>
<tr>
<td>0x51</td>
<td>The cycle switch command was already sent once and received successfully</td>
</tr>
<tr>
<td>0x52</td>
<td>Attempt to cancel/start consistent SRDF/A deactivation failed because the session is in the wrong state</td>
</tr>
<tr>
<td>0x53</td>
<td>Attempt to start SRDF/A deactivation failed because there is not enough cache</td>
</tr>
<tr>
<td>0x55</td>
<td>The cycle number supplied is illegal</td>
</tr>
<tr>
<td>0x56</td>
<td>Spillover is already active in the group</td>
</tr>
<tr>
<td>0x57</td>
<td>Spillover is not active in the group</td>
</tr>
<tr>
<td>0x58</td>
<td>No spillover space is configured for the group</td>
</tr>
<tr>
<td>0x59</td>
<td>The RDF group spans more than one cache partition. SRDF/A can not be activated.</td>
</tr>
<tr>
<td>0x5B</td>
<td>Spillover is not allowed in ESCON groups</td>
</tr>
<tr>
<td>0x5C</td>
<td>Deactivate failed because adaptive copy disk is not specified for a group that has Cascaded (R21) devices</td>
</tr>
<tr>
<td>0x5D</td>
<td>Attempt to start SRDF/A deactivation failed because the SRDF/A group have Cascaded (R21) devices</td>
</tr>
<tr>
<td>0x5E</td>
<td>Deactivate failed because Adaptive Copy Write Pending is not specified for a group that has diskless devices</td>
</tr>
<tr>
<td>0x60</td>
<td>Open, Switch, Close multiple failed with bad status</td>
</tr>
<tr>
<td>0x61</td>
<td>Open, Switch, Close multiple invalid command failed with bad status</td>
</tr>
<tr>
<td>0x70</td>
<td>Attempt to activate pacing when already active</td>
</tr>
<tr>
<td>0x71</td>
<td>Attempt to deactivate pacing when already inactive</td>
</tr>
<tr>
<td>0x72</td>
<td>Attempt to activate pacing stats collection when already active</td>
</tr>
<tr>
<td>0x73</td>
<td>Attempt to deactivate pacing stats collection when already inactive</td>
</tr>
<tr>
<td>0x74</td>
<td>Wrong command provided as second argument</td>
</tr>
<tr>
<td>0x75</td>
<td>Wrong command provided as second argument</td>
</tr>
</tbody>
</table>
SRDF Operation Return Codes

Byte 1 - Storage system SUSpend and RESume return codes

Table 17  Byte 1 - Storage system SUSpend and RESume return codes

<table>
<thead>
<tr>
<th>RC</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0x10</td>
<td>Not all devices executed properly</td>
</tr>
<tr>
<td>0x20</td>
<td>All devices failed flag</td>
</tr>
<tr>
<td>0x30</td>
<td>All devices failed flag</td>
</tr>
<tr>
<td>0x01</td>
<td>Not a valid run type</td>
</tr>
<tr>
<td>0x02</td>
<td>Not a valid action code</td>
</tr>
<tr>
<td>0x03</td>
<td>None of the RDF groups is online for at least one device</td>
</tr>
<tr>
<td>0x04</td>
<td>All local mirrors have invalid tracks</td>
</tr>
<tr>
<td>0x05</td>
<td>All local mirrors are not ready or w/d</td>
</tr>
<tr>
<td>0x06</td>
<td>No R1 device found in the list</td>
</tr>
<tr>
<td>0x07</td>
<td>Zero RDF group bitmap specified for run type</td>
</tr>
<tr>
<td>0x08</td>
<td>Zero or too big runs count specified for run type</td>
</tr>
<tr>
<td>0x09</td>
<td>Cannot resume without a refresh/rfr-resume</td>
</tr>
<tr>
<td>0x0A</td>
<td>Cannot resume until the SRDF/A cleanup completes</td>
</tr>
<tr>
<td>0x0B</td>
<td>R1 is larger than R2 — cannot complete action</td>
</tr>
<tr>
<td>0x0C</td>
<td>No R2 device found in the list</td>
</tr>
<tr>
<td>0x0D</td>
<td>Cannot resume because the partner R2 mirror is not accepting I/Os from this device</td>
</tr>
<tr>
<td>0x0E</td>
<td>The subformat not valid for this subcommand</td>
</tr>
</tbody>
</table>

Byte 1 - Storage system TARget return codes

Table 18  Byte 1 - Storage system TARget return codes

<table>
<thead>
<tr>
<th>RC</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0x32</td>
<td>The Secondary/Remote storage system is busy. There may be a hardware issue with an FICON director/adapter in the Secondary/Remote storage system. Contact your EMC customer support representative to address any FICON director/adapter issues, and try again when resolved.</td>
</tr>
</tbody>
</table>
SRDF Operation Return Codes
APPENDIX D
SRDF RAID 1 Mirror Failure Scenarios

This appendix reviews RAID 1 mirror failure scenarios.

- Overview.................................................................................................................. 392
- Scenario 1 ............................................................................................................. 392
- Scenario 2 ............................................................................................................. 393
- Scenario 3 ............................................................................................................. 394
Overview

This appendix reviews RAID 1 mirror failure scenarios and any procedural impact a mirror failure may have on SRDF operation.

Scenario 1

**SRDF activity at time of failure - DELETE PAIR completed**

RAID-1 mirror fails, no synchronization is in progress, and no relationship between R1s and R2s exists. Displays of groups and sets would have the R1 device status set to Read/Write (R/W) and the R2 device status set to Read/Write (R/W).

```
zurdf dis gro-mirror set-set1
E1RQ0000I RDF Device ITR Display
Group MIRROR  Set SET1  in Local  CU 000185500808
MDBF Symb   This   Othrr   RDF Device   Opr
  SSN Mod SDA Dev Dev GRP Status   MR   R1 Itrk R2 Itrk RC
N/A 0000 0000 00000180 00000122   1 R/W      DRX       0       0 0000
N/A 0000 0000 00000181 00000123   1 R/W      DRX       0       0 0000
N/A 0000 0000 00000182 00000124   1 R/W      DRX       0       0 0000
N/A 0000 0000 00000183 00000125   1 R/W      DRX       0       0 0000
End of Display
```

```
zurdf dis rem gro-mirror set-set1
E1RQ0000I RDF Device ITR Display
Group MIRROR  Set SET1  in Remote CU 000187721324
MDBF Symb   This   Othrr   RDF Device   Opr
  SSN Mod SDA Dev Dev GRP Status   MR   R1 Itrk R2 Itrk RC
N/A 0000 0000 00000122 00000180   1 R/W      DRX       0       0 0000
N/A 0000 0000 00000123 00000181   1 R/W      DRX       0       0 0000
N/A 0000 0000 00000124 00000182   1 R/W      DRX       0       0 0000
N/A 0000 0000 00000125 00000183   1 R/W      DRX       0       0 0000
End of Display
```

<table>
<thead>
<tr>
<th>Failure description</th>
<th>CE action</th>
<th>Engagement action</th>
<th>z/TPF operator action</th>
</tr>
</thead>
<tbody>
<tr>
<td>R1 M1 fails</td>
<td>Replace failed mirror</td>
<td>R1 M1 rebuilt from R1 M2.</td>
<td>None</td>
</tr>
<tr>
<td>R1 M2 fails</td>
<td>Replace failed mirror</td>
<td>R1 M2 rebuilt from R1 M1.</td>
<td>None</td>
</tr>
<tr>
<td>R2 M1 fails</td>
<td>Replace failed mirror</td>
<td>R2 M1 rebuilt from R2 M2.</td>
<td>None</td>
</tr>
<tr>
<td>R2 M2 fails</td>
<td>Replace failed mirror</td>
<td>R2 M2 rebuilt from R2 M1.</td>
<td>None</td>
</tr>
</tbody>
</table>
Scenario 2

SRDF activity at time of failure - INVALIDATE completed and SUSPEND completed

RAID-1 mirror fails, synchronization is not in progress, and a relationship exists between the R1s and R2s. The R1 device status is set to Target Not Ready (TNR) and the R2 device status is set to Read Only (R/O). The data has already been copied.

```
zurdf dis gro-mirror set-set1
E1RQ0000I RDF Device ITR Display
Group MIRROR Set SET1 in Local CU 000185500808
MDBF Symb This Othr RDF Device Opr
SSN Mod SDA Dev Dev GRP Status MR R1 Itrak R2 Itrak RC
N/A 0000 0000 00000180 00000122 1 TNR-SY DL1 0 0 0000
N/A 0000 0000 00000181 00000123 1 TNR-SY DL1 0 0 0000
N/A 0000 0000 00000182 00000124 1 TNR-SY DL1 0 0 0000
N/A 0000 0000 00000183 00000125 1 TNR-SY DL1 0 0 0000
End of Display
```

```
zurdf dis rem gro-mirror set-set1
E1RQ0000I RDF Device ITR Display
Group MIRROR Set SET1 in Remote CU 000187721324
MDBF Symb This Othr RDF Device Opr
SSN Mod SDA Dev Dev GRP Status MR R1 Itrak R2 Itrak RC
N/A 0000 0000 00000122 00000180 1 R/O DL2 0 0 0000
N/A 0000 0000 00000123 00000181 1 R/O DL2 0 0 0000
N/A 0000 0000 00000124 00000182 1 R/O DL2 0 0 0000
N/A 0000 0000 00000125 00000183 1 R/O DL2 0 0 0000
End of Display
```

<table>
<thead>
<tr>
<th>Failure description</th>
<th>CE action</th>
<th>Ingenuity action</th>
<th>z/TPF operator action</th>
</tr>
</thead>
<tbody>
<tr>
<td>R1 M1 fails</td>
<td>Replace failed mirror</td>
<td>R1 M1 rebuilt from R1 M2.</td>
<td>None</td>
</tr>
<tr>
<td>R1 M2 fails</td>
<td>Replace failed mirror</td>
<td>R1 M2 rebuilt from R1 M1.</td>
<td>None</td>
</tr>
<tr>
<td>R2 M1 fails</td>
<td>Replace failed mirror</td>
<td>R2 M1 rebuilt from R2 M2.</td>
<td>None</td>
</tr>
<tr>
<td>R2 M2 fails</td>
<td>Replace failed mirror</td>
<td>R2 M2 rebuilt from R2 M1.</td>
<td>None</td>
</tr>
</tbody>
</table>
Scenario 3

SRDF activity at time of failure - INVALIDATE / REFRESH RESUME ACTIVE

Mirror fails during the full synchronization (Validate/Invalidate) or partial synchronization (Refresh/Refresh Resume) process. The R1 device status is set to Read/Write (R/W) and the R2 device status is set to Read Only (RO). This is the state where data is actually being moved.

```
zurdf dis gro-mirror set-set1
E1RQ0000I RDF Device ITR Display
Group MIRROR Set SET1 in Local CU 000185500808
MDBF Symb This Othr RDF Device Opr
SSN Mod SDA Dev Dev GRP Status MR R1 Itrk R2 Itrk RC
N/A 0000 0000 00000180 00000122   1 R/W-SY DL1 0 0 0000
N/A 0000 0000 00000181 00000123   1 R/W-SY DL1 0 0 0000
N/A 0000 0000 00000182 00000124   1 R/W-SY DL1 0 0 0000
N/A 0000 0000 00000183 00000125   1 R/W-SY DL1 0 0 0000
End of Display
```

```
zurdf dis rem gro-mirror set-set1
E1RQ0000I RDF Device ITR Display
Group MIRROR Set SET1 in Remote CU 000187721324
MDBF Symb This Othr RDF Device Opr
SSN Mod SDA Dev Dev GRP Status MR R1 Itrk R2 Itrk RC
N/A 0000 0000 00000122 00000180   1 R/O DL2 0 0 0000
N/A 0000 0000 00000123 00000181   1 R/O DL2 0 0 0000
N/A 0000 0000 00000124 00000182   1 R/O DL2 0 0 0000
N/A 0000 0000 00000125 00000183   1 R/O DL2 0 0 0000
End of Display
```

<table>
<thead>
<tr>
<th>Failure description</th>
<th>CE action</th>
<th>Enginuity action</th>
<th>z/TPF operator action</th>
</tr>
</thead>
<tbody>
<tr>
<td>R1 M1 fails</td>
<td>Replace failed mirror</td>
<td>R1 M1 rebuilt from R1 M2.</td>
<td>None</td>
</tr>
<tr>
<td>R1 M2 fails</td>
<td>Replace failed mirror</td>
<td>R1 M2 rebuilt from R1 M1.</td>
<td>None</td>
</tr>
<tr>
<td>R2 M1 fails</td>
<td>Replace failed mirror</td>
<td>R2 M1 rebuilt from R2 M2.</td>
<td>None</td>
</tr>
<tr>
<td>R2 M2 fails</td>
<td>Replace failed mirror</td>
<td>R2 M2 rebuilt from R2 M1.</td>
<td>None</td>
</tr>
</tbody>
</table>