

Dell EMC ResourcePak for z/TPF

Version 8.0.0

Product Guide

REV 02

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PREFACE

As part of an effort to improve its product lines, Dell 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 Dell EMC technical support professional 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 Dell EMC Online Support. Check Dell EMC Online Support to ensure that you are using the latest version of this document.

Purpose

This document shows how to install, configure, and use ResourcePak for z/TPF.

Audience

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

Related documentation

The following publications provide additional information:

- ◆ *Dell EMC Product Suite for z/TPF Release Notes*
- ◆ *Dell EMC SRDF Controls for z/TPF Product Guide*
- ◆ *Dell EMC TimeFinder Controls for z/TPF Product Guide*
- ◆ *Dell EMC PowerMax Family Product Guide*
- ◆ *Dell EMC VMAX All Flash Family Product Guide*
- ◆ *Dell EMC VMAX3 Family with HYPERMAX OS Product Guide*

Conventions used in this document

Dell 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

Dell EMC uses the following type style conventions in this document:

Normal	Used in running (nonprocedural) text for: <ul style="list-style-type: none">Names of interface elements, such as names of windows, dialog boxes, buttons, fields, and menusNames of resources, attributes, pools, Boolean expressions, buttons, DQL statements, keywords, clauses, environment variables, functions, and utilitiesURLs, pathnames, filenames, directory names, computer names, links, groups, service keys, file systems, and notifications
Bold	Used in procedures for: <ul style="list-style-type: none">Names of interface elements, such as names of windows, dialog boxes, buttons, fields, and menusWhat the user specifically selects, clicks, presses, or types
<i>Italic</i>	Used in all text (including procedures) for: <ul style="list-style-type: none">Full titles of publications referenced in textEmphasis, for example, a new termVariables
Courier	Used for: <ul style="list-style-type: none">System output, such as an error message or scriptURLs, complete paths, filenames, prompts, and syntax when shown outside of running text
Courier bold	Used for specific user input, such as commands
<i>Courier italic</i>	Used in procedures for: <ul style="list-style-type: none">Variables on the command lineUser 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:

- ◆ Capitalization 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

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

Note: To open a service request through Dell EMC Online Support, you must have a valid support agreement. Contact your Dell 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 Dell EMC products go to <https://www.dell.com/support> (registration required) or <https://www.dellemc.com/en-us/documentation/vmax-all-flash-family.htm>.

Technical support

Dell EMC offers a variety of support options.

Support by Product — Dell EMC offers consolidated, product-specific information on the Web at: <https://www.dell.com/support>.

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 Dell EMC Live Chat.

Dell EMC Live Chat — Open a Chat or instant message session with an Dell 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 comments and feedback to:

VMAXContentFeedback@emc.com

CHAPTER 1

Product Overview

This chapter provides an introduction to ResourcePak for z/TPF.

- ◆ Introduction 16
- ◆ Dell EMC Product Suite for z/TPF 16
- ◆ ResourcePak for z/TPF and z/VM 16

Introduction

Dell EMC ResourcePak® for z/TPF (Transaction Processing Facility) is a collection of Dell EMC utility programs that provide feature functionality, configuration and statistical reporting, and extended features for SRDF Controls for z/TPF and TimeFinder Controls for z/TPF.

Dell EMC Product Suite for z/TPF

ResourcePak for z/TPF is one component of the Dell EMC Product Suite for z/TPF. In addition to ResourcePak, the suite consists of:

- ◆ TimeFinder Controls for z/TPF
- ◆ SRDF Controls for z/TPF

ResourcePak for z/TPF and z/VM

When running z/TPF under z/VM on a storage system, ResourcePak for z/TPF requires that volumes through which SymmAPI macros are to be issued, be defined as unsupported devices. For PowerMaxOS, HYPERMAX OS, and Enginuity 5874 and later, the ResourcePak for z/TPF requirement for unsupported devices under z/VM no longer applies.

Note: Contact your Dell EMC representative for more information about running Dell EMC software products under z/VM.

CHAPTER 2

Installation

This chapter shows how to install ResourcePak for z/TPF:

- ◆ Overview..... 18
- ◆ Preparation 19
- ◆ Download the ResourcePak for z/TPF distribution kit 21
- ◆ Customize the z/TPF source 22
- ◆ Install ResourcePak for z/TPF 23

Overview

Installing ResourcePak for z/TPF has the following stages:

1. Preparation.
2. Download the distribution kit.
3. Customize the z/TPF source.
4. Install ResourcePak for z/TPF.

This chapter shows how to complete each stage.

Conventions

This chapter uses these conventions:

- ◆ *prod* represents a product name.
- ◆ *vrn* represents the version, release, and modification level of a software product.

Preparation

Before installing ResourcePak for z/TPF:

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

Hardware and software requirements

Storage systems

ResourcePak for z/TPF requires the hardware and software shown in [Table 1](#). Make sure your storage systems meet these requirements.

Table 1 Storage system requirements

Item	Requirements
Hardware	All currently-supported PowerMax, VMAX All Flash, VMAX 3, and VMAX storage systems.
Operating environment	PowerMaxOS 5978, HYPERMAX OS 5977, or Enginuity 5876. ^{a b}

a. Chapter 4 defines the minimum requirements for each utility.

b. The minimum supported release level was accurate at the time of the publication of this document, but is subject to change. Check the Release and End of Life Service Dates on Dell EMC Online Support for the most current information.

z/TPF mainframe

[Table 2](#) shows the mainframe hardware and software requirements for ResourcePak for z/TPF. Make sure your mainframe system meets these requirements:

Table 2 Mainframe hardware and software requirements

Item	Requirements
Hardware Configuration	Any system that supports current IBM mainframe operating systems.
Software	z/TPF 1.1 or higher.

Version compatibility

If you install any combination of TimeFinder Controls for z/TPF, SRDF Controls for z/TPF, and ResourcePak for z/TPF on to the z/TPF complex, they must all have the same version number. For example, ResourcePak for z/TPF V8.0.0 and SRDF Controls for z/TPF V8.0.0.

Download maintenance updates

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

You can download the latest maintenance updates and current release or service notes (identical to release notes) from the Dell EMC Online Support website at <https://www.dell.com/support>.

Register as a valid Dell EMC customer so you can access Dell 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_vrm_Fixes.txt** - contains information about the release.
- ◆ **Service_Notes_prodvrm.pdf** - contains information discovered after initial release of the product.
- ◆ **prodvrm_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 www.dell.com/support.
2. Search for **VMAX TPF** in the 'Enter a Service Tag, Serial Number, Service Request, Model, or Keyword' field to display a table of .zip files and document files for VMAX TPF.
3. Do one of the following:
 - To download a copy of a document, click either **ReadMe_prodvrm_Fixes.txt** or **Service_Notes_prodvrm.pdf**.
 - To download the zip file, click **prodvrm_fixes.zip**. Download the zip file to your home system, unpack the zip file, and follow the instructions it contains.

IMPORTANT

Do not apply any maintenance update until after ResourcePak for z/TPF is accepted.

Download the ResourcePak for z/TPF distribution kit

The ResourcePak 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 Dell EMC Online Support.

To extract the ResourcePak tar file to your LINUX file system:

1. Do one of the following:
 - Installing from a CD:
 - a. Mount the CD on an open system host.
 - b. Copy the contents of the CD to a working directory.
 - Installing from an Dell 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 in to the Dell EMC Online Support website.
 - d. Search for **VMAX TPF** in the 'Enter a Service Tag, Serial Number, Service Request, Model, or Keyword' field to display the VMAX TPF page.

Note: If you are not able to access this location, you may not have registered your software or you may have registered it incorrectly. Follow the prompts to register your software, correct your registration, or contact Dell EMC if there is a problem.
 - 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 ZTRPvrm.tar ZTRPvrm.tar
```

3. From LINUX:
 - a. List the contents of the tar file:

```
tar -tvf ZTRPvrm.tar
```
 - b. Extract the contents of the tar file:

```
tar -xvf ZTRPvrm.tar
```

This produces the following files:

File name	Description
RPreadMe	A ReadMe file
RPreNotes	Release Notes for ResourcePak for z/TPF 8.0.0
/TRPvrm_OBJ	ResourcePak for z/TPF shared object
/TRPvrm_SRC	ResourcePak for z/TPF source and macros
/TRPvrm_SAM	ResourcePak for z/TPF sample source and macros

Customize the z/TPF source

Table 3 describes z/TPF source customization required for ResourcePak. Sample code for z/TPF is included in the TRPvrm_SAM distribution file.

Table 3 z/TPF source customization

Segment	Description
umet.asm	Add ZUDCP, ZUDVQ, ZUECS, ZUEDS, ZUELM, ZUFRT, ZUGRP, ZULOC, ZUSRP, and ZUVTP as BSS only functional entries. Add ZUCPY and ZUOMA as subsystem-unique entries.
usr.cntl	Add entries for E1Sx and E1Ax program segments. For z/TPF, run the appropriate off-line jobs to generate the allocator source (TABLExx) and PAT source (IPATxx). Dell EMC recommends that all E1Ax and E1Sx segments be allocated for the BSS to reserve program names for any future expansion of Dell EMC ResourcePak for z/TPF.
ucnfeq.mac ^a	Define MDBF subsystem-unique user CINFC, tag UMMEOMA.
emcueq.mac ^b	<ul style="list-style-type: none"> Set the global variable &OMA to 1 if Offline Module Access is installed. Otherwise set the variable to 0. (The default setting is 1.) Set the global variable &QOS to 1 if Quality Of Service controls is installed or to 0 if Quality of Service Controls is not installed. (The default setting is 1.) Set the global variable &SES to 1 if Session controls is installed or to 0 if Session Controls is not installed. (The default setting is 1.) Set the global variable &TF to 1 if TimeFinder Controls is installed or to 0 if TimeFinder Controls is not installed. (The default setting is 1.) Set the global &RDF to 1 if SRDF Controls is installed or to 0 if SRDF Controls is not installed. (The default setting is 1.)

a. Required for ZUCPY and ZUOMA utilities. TimeFinder Controls for z/TPF is required.

b. Required for Offline Module Access, Session Controls and QOS for z/TPF integration.

Install ResourcePak for z/TPF

To install ResourcePak for z/TPF:

1. Unload ResourcePak for z/TPF into the appropriate source, object, listing, and macro libraries.
2. Review the Dell EMC Online Support website for up-to-date information on SymmAPI and ResourcePak for z/TPF. Download any segments specified as superseding those shipped with your copy of ResourcePak for z/TPF.

Note: “[Download maintenance updates](#)” on page 20 provides information about accessing Online Support.

3. Update the appropriate general Functional Message Table for:

- Display Cache Statistics
- Display Device Configuration
- Display Device/DA Statistics
- Display MPLF connection, lock, and attention message information
- TimeFinder Session Controls
- Virtual Tape Support Commands
- Display EMC License Management
- Display Feature Registration Table
- Dynamic Cache Partitioning Controls
- Dynamic RDF Group Controls
- Offline Module Access
- Display Point-In-Time Copy

Note: The sample Functional Message Editor Table entries in `umet.asm` contain more information about updating the Functional Message Table.

4. Assemble the general Functional Message Table.
5. Update `emcseq.mac` to indicate whether Offline Module Access, QOS Controls, Session Controls, SRDF Controls, and TimeFinder Controls are installed.
6. Define MDBF subsystem user CINFC tag UMMEOMA. Refer to sample `ucnfeq.mac` statements.
7. Update the Basic Subsystem Allocators with the program input cards for ResourcePak and SymmAPI for z/TPF.

The sample program allocation input deck in `usr.cntl` provides a model for updating the Allocators.

Note: If TimeFinder Controls for z/TPF or SRDF Controls for z/TPF is installed, some of the OCO program segments are already allocated.

8. Generate the Basic Subsystem SAL table (TABLExx) and program allocation table (IPATxx).

9. Assemble the Basic Subsystem IPATxx.
10. Using the program directory as a reference, determine which segments should be loaded to the BSS.

Note: If either TimeFinder Controls for z/TPF or SRDF Controls for z/TPF is installed, ensure that the compatible version of ResourcePak for z/TPF is loaded.

CHAPTER 3

ResourcePak Operation

This chapter describes the ResourcePak utilities.

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- ◆ Display Cache Statistics..... 27
- ◆ EMC Device/DA Performance Statistics display 27
- ◆ MPLF connection, lock, and attention message information display 28
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- ◆ Display Electronic License Management Entitlements..... 32
- ◆ Display Feature Registration Table 32
- ◆ Storage Resource Pool Management 32
- ◆ Dell EMC Virtual Tape Controls 32
- ◆ Offline module access for z/TPF 33

Introduction

ResourcePak for z/TPF is a collection of Dell EMC utility programs that provide feature functionality, configuration and statistical reporting, and extended features for SRDF Controls for z/TPF and TimeFinder Controls for z/TPF.

ResourcePak for z/TPF consists of the utilities shown in [Table 4](#).

Table 4 ResourcePak for z/TPF utilities

Utility	Function	See page
ZUCPY	Displays Point-in-Time Copy or Snapshot and provides access to data from a point-in-time copy or Snapshot created by TimeFinder for z/TPF using target devices.	44
ZUDCP	Create, modify, and display Dell EMC Dynamic Cache Partitions on a storage system.	46
ZUDVQ	Display Device Configuration and provide configuration information about logical devices in a storage system.	57
ZUECS	Display Cache Statistics and provide statistical information about the channel adapters in a storage system.	62
ZUEDS	Display device Statistics and statistical information about the disk adapters in a storage system.	65
ZUELM	Display Dell EMC License Management entitlements.	68
ZUFRT	Display the Dell EMC Feature Registration Table of a storage system.	70
ZUGRP	Add, delete and display information for one or more RDFGroups in a storage system identified by an SDA and a multi-hop list.	73
ZULOC	Display MPLF connection and lock or active attention messages for a SSID or active attention messages for a SSID for the issuing z/TPF host.	79
ZUOMA	Displays an in-core table containing control data and a target status table derived from the TimeFinder for z/TPF data structures.	82
ZUSR	Display information about Storage Resource Pools (SRP) and update the Reserved Capacity Limit of an SRP on PowerMax, VMAX All Flash, or VMAX 3.	85
ZUVTP	Load and display requests on supported virtual tape controllers.	93

ResourcePak for z/TPF also contains software extensions for both:

- ◆ TimeFinder Controls for z/TPF
- ◆ SRDF Controls for z/TPF

Quality of Service (QOS) Controls for z/TPF is an extension for both TimeFinder and SRDF Controls for z/TPF. Use QOS Controls for z/TPF to display and define the Quality of Service values for a group. The QOS values can be displayed and set when user exits are activated in the TimeFinder and SRDF Scheduler and Monitor.

Session Controls for z/TPF is an extension for TimeFinder Controls for z/TPF. Use Session Controls for z/TPF to display and terminate TimeFinder/Clone sessions and snapshots associated with the source or target of a TimeFinder device pair. Session Controls allows termination of TimeFinder sessions or snapshots for device pairs in other TimeFinder groups. Use this facility with care.

Offline Module Access for z/TPF is an extension for TimeFinder Controls for z/TPF that maintains and displays memory resident tables. You can use Offline Module Access for z/TPF to run the Find Data Recovery Software Copy (FDRSC) macro. Use the ZUOMA functional entry to control Offline Module Access for z/TPF.

Display Device Configuration

Display Device Configuration (see [page 57](#)) is a utility that displays the relationship of the internal logical devices to physical devices within a storage system.

Display Cache Statistics

Display Cache Statistics (see [page 62](#)) is a utility that displays cache statistics for all channel directors of the storage system designated by the input z/TPF SDA.

Display Cache Statistics updates the statistics in global memory as a low priority task. Cache statistics may be updated as infrequently as every 4 seconds.

Statistics are calculated on a short and long timer interval.

PowerMaxOS, HYPERMAX OS, and Enginuity provide the long-term statistics. To maintain consistency in the returned display, the API internally issues an EVNTW for a minimum of five seconds and calculates the short-term statistics for you.

Note: This action adds a delay to the response from ZUECS.

The long timer interval is the time since the last IML of the storage system or the last time global statistics were cleared through a service processor inline command.

EMC Device/DA Performance Statistics display

Display Device/DA Statistics (see [page 65](#)) is a utility that displays Disk Adapter statistics for all DAs of the storage system designated by the input z/TPF SDA. For Enginuity 5876 and earlier, you can also use the utility to display backend statistics for a range of device numbers specified in the input message.

DA Statistics are calculated on a short and long timer interval.

For the DA and Device option, the API internally issues an EVNTW for a minimum of five seconds and calculates the statistics during that term. The DA display long timer interval is the time since the last IML of the storage system or the last time global statistics were cleared through a service processor inline command.

MPLF connection, lock, and attention message information display

The MPLF utility (see [page 79](#)) displays:

- ◆ Multi-Path Lock Facility (MPLF) connection information
- ◆ Active MPLF locks
- ◆ Active MPLF attention messages for the z/TPF host issuing the message and the SSID designated by the input SDA

The information provided is for the SSID that the supplied SDA identifies.

MPLF processing takes approximately eight seconds. The MPLF structures for the connected z/TPF hosts and the SSID designated by the SDA are displayed followed by the active locks for the processor where the functional input was made and the SSID that the SDA identifies. The display contains only those locks that are active throughout the processing of the message.

For Attention messages, processing takes approximately five seconds. The display contains all active attention messages queued on the connect device associated with the SSID that the supplied SDA identifies.

Quality of Service Controls for z/TPF

Quality of Service (QOS) Controls for z/TPF utility allows you to define the Quality of Service value for an SRDF group or a TimeFinder group. The QOS value for an SRDF group determines the priority given to SRDF copy tasks: full or partial volume synchronization in both synchronization directions, R1 to R2 and R2 to R1.

The QOS value for a TimeFinder group determines the priority given to the following TimeFinder copy tasks:

- ◆ Establish
- ◆ Re-Establish
- ◆ Restore
- ◆ Incremental Restore

These capabilities are available on Enginuity 5876.

Setting the QOS value for all TimeFinder or SRDF pairs in a group is an automated process. Setting the QOS value is initiated in user exits provided for TimeFinder and SRDF Controls for z/TPF. You only need to define the QOS value as a general property of the TimeFinder or SRDF group. Enable QOS Controls for z/TPF to initiate the process of setting the QOS value for the TimeFinder or SRDF group.

Defining the QOS value for a TimeFinder or SRDF group sets an indicator in the group control record. The QOS Controls utility sets QOS values for the TimeFinder or SRDF group based on the value of the indicator for the group. The QOS Controls utility clears this indicator if the defined QOS value is set in one or more sets in the TimeFinder or SRDF group.

The QOS Controls utility also displays QOS values by group and set for TimeFinder Controls for z/TPF and SRDF Controls for z/TPF.

Enabling QOS Controls for z/TPF

IMPORTANT

The procedure to enable QOS Controls for z/TPF assumes that ResourcePak for z/TPF version 8.0.0 has been preloaded along with either or both of SRDF Controls for z/TPF version 8.0.0 and TimeFinder Controls for z/TPF version 8.0.0.

To enable QOS Controls for z/TPF for SRDF Controls for z/TPF and TimeFinder Controls for z/TPF:

1. Set the &QOS global variable defined in the Dell EMC User Equate Macro, emcueq.mac:

```
&QOS      SETB      1      QOS installed
```

Note: emcueq.mac is distributed with SRDF Controls for z/TPF and TimeFinder Controls for z/TPF.

2. Assemble the Dell EMC User Exit e1a0.asm with emcueq.mac to enable QOS Controls for z/TPF.

Note: e1a0.asm is distributed with SRDF Controls for z/TPF and TimeFinder Controls for z/TPF.

3. Load E1A0.so to the z/TPF system.

SRDF Controls for z/TPF

The Monitor uses the QOS Controls utility to set the QOS value for all SRDF pairs in an SRDF group when both of the following conditions apply:

- ◆ An SRDF group is being synchronized
- ◆ The Monitor is active when you define the QOS value for that SRDF group

Otherwise, the Scheduler uses the QOS Controls utility to set the QOS value for all SRDF pairs in the SRDF group the next time you issue an SRDF operation describing the source (R1) devices to the SRDF sets.

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

- ◆ Admax
- ◆ Suspend
- ◆ Resume
- ◆ Rdy
- ◆ Nrdy
- ◆ Invalidate
- ◆ Validate
- ◆ Refresh
- ◆ Rfr-resume
- ◆ Mode
- ◆ Write-enable

Dynamic RDF commands Crtpair, Delpair, and Swapair also run the QOS Controls utility. However, this happens only if the SRDF orientation indicates that the local storage system contains the source (R1) devices. A change of direction in synchronization runs the QOS Controls utility. However, this happens only if the SRDF orientation indicates that the sets contain the source (R1) devices.

TimeFinder Controls for z/TPF

If a TimeFinder group is being synchronized and the Monitor is active at the time you define the QOS value for that TimeFinder group, The Monitor runs QOS Controls and sets the QOS values for all TimeFinder pairs in the TimeFinder group when both of the following conditions apply:

- ◆ A TimeFinder group is being synchronized
- ◆ The Monitor is active at the time you define the QOS value for that TimeFinder group

Otherwise, the Scheduler runs QOS Controls and sets the QOS value for all TimeFinder pairs in the TimeFinder group the next time you start one of these TimeFinder operations:

- ◆ Establish
- ◆ Re-establish
- ◆ Split
- ◆ Clip
- ◆ Restore
- ◆ Incremental Restore

Session Controls for z/TPF

Session Controls for z/TPF is a feature extension for TimeFinder Controls for z/TPF. With Session Controls for z/TPF, you can:

- ◆ Display and Terminate TimeFinder/Clone sessions and snapshots associated with:
 - The source of a TimeFinder device pair
 - The target of a TimeFinder device pair
 - Both the source and target of a TimeFinder device pair

You can terminate TimeFinder sessions and snapshots for device pairs in other TimeFinder groups. Use Session Controls for z/TPF with caution.

- ◆ Display all TimeFinder sessions and snapshots associated with the source or target devices in a TimeFinder group. This includes TimeFinder sessions and snapshots on the source or target devices associated with a device not in the TimeFinder group.
- ◆ Delete a specified TimeFinder session or snapshot on:
 - The source device in a TimeFinder group
 - The target device in a TimeFinder group
 - Both the source and target devices in a TimeFinder group
- ◆ Delete TimeFinder Clone session identifiers by specifying the four-character TimeFinder session ID.

- ◆ Delete TimeFinder SnapVX snapshots by specifying the eight character TimeFinder snapshot identifier.

Enabling Session Controls for z/TPF

IMPORTANT

The procedure to enable Session Controls for z/TPF assumes that ResourcePak for z/TPF version 8.0.0 has been preloaded along with TimeFinder Controls for z/TPF version 8.0.0.

To enable Session Controls for z/TPF for TimeFinder Controls for z/TPF:

1. Set the &SES global variable defined in the Dell EMC User Equate Macro, emcueq.mac:

```
&SES SETB 1 Session Controls installed
```

Note: emcueq.mac is distributed with SRDF Controls for z/TPF and TimeFinder Controls for z/TPF.

2. Assemble the Dell EMC User Exit e1a0.asm with emcueq.mac to enable Session Controls for z/TPF.

Note: e1a0.asm is distributed with SRDF Controls for z/TPF and TimeFinder Controls for z/TPF.

3. Load E1A0.so on to the z/TPF system.

Session Controls and ZUTIM DISplay and ZUTIM TERminate

Session Controls for z/TPF enables extended functionality for the ZUTIM DISplay entry and the ZUTIM TERminate entry. The *Dell EMC TimeFinder Controls for z/TPF Product Guide* contains the syntax and examples of these commands.

Dynamic Cache Partitioning (DCP)

Dynamic Cache Partitioning (DCP) (see [page 46](#)) is a licensed feature available as an option in Enginuity 5773 and later. Use DCP to define up to eight cache partitions and associate devices as members of those partitions. The partitions are not static and you can specify minimum and maximum sizes.

To allow dynamic management of each partition, you specify periods at which partitions can donate to one another. This allows busy partitions to receive cache donations from less busy partitions, up to their specified maximum. The minimum values prevent a partition from being starved for cache resources. As with current cache thresholds, write pending limits and destage priority can be set for each partition.

When used in conjunction with SRDF/A, all the devices in the RDFGroup must be in the same cache partition. If not, the request to activate SRDF/A fails.

Dynamic RDFGroup Controls

Use Dynamic RDFGroup Controls (see [page 73](#)) to display information for one or more RDFGroups in a storage system that a supplied SDA and multi-hop list identify. With Dynamic RDFGroup Controls you can create RDFGroups between SRDF partner storage systems attached with Fibre Channel or GigE.

ZUGRP is valid only for SRDF partner storage systems that are:

- ◆ Running Enginuity 5876
- ◆ Configured with one or more static RDFGroups in a switched SRDF environment

The ZUGRP DISPLAY command shows RDFGroup information for a specified storage system and any or all of its SRDF partner storage systems. You can use the information to determine the correct parameter values to add RDFGroups between SRDF partner storage systems.

For systems running PowerMax OS 5978 or HYPERMAX OS 5977 and later, use the ZURDF GRP commands to create RDFGroups. The *Dell EMC SRDF Controls for z/TPF Product Guide* shows how to use those commands.

Display Electronic License Management Entitlements

Display Electronic License Management Entitlements is a utility (see [page 68](#)) that displays the features or bundles of features that a specified storage system is licensed for and the method that enables those entitlements. For further information regarding Electronic License Entitlements see your Dell EMC sales representative.

Display Feature Registration Table

The Feature Registration Table utility (see [page 70](#)) registers the usage of the different features for specified storage system. For further information on Feature Registrations see your Dell EMC sales representative.

Storage Resource Pool Management

Use Storage Resource Pool (SRP) Management (see [page 85](#)) to display and modify the properties of Storage Resource Pools. The utility is available on systems running PowerMax OS 5978 or HYPERMAX OS 5977 and later.

Dell EMC Virtual Tape Controls

Using the Dell EMC Disk Library for mainframe family of solutions users of IBM System z mainframe can replace physical tape systems with a dynamic, virtual tape solution. Physical tape systems include traditional, virtual tape servers such as the IBM VTS and Oracle/STK VSM.

Dell EMC Virtual Tape Controls is a utility (see [page 93](#)) that supports Dell EMC DLm. With the utility you can load, unload, and query virtual tape drives. There is also a fill option that causes scratch tapes to be loaded automatically whenever one is unloaded. This provides capabilities similar to an Automatic Cartridge Loader.

Offline module access for z/TPF

Offline Module Access for z/TPF provides the ability to read local z/TPF point-in-time copy or Snapshot data from Clone and SnapVX targets via the SymmAPI macro FDRSC.

TimeFinder for z/TPF provides a configuration option to define SDAs for targets intended to be accessed via Offline Module Access for z/TPF.

Access to the point-in-time copy or Snapshot data via Offline Module Access for z/TPF requires that the targets be detached from their device pair source via split (for Clone), or active and linked (for SnapVX), and made “User Ready”. For storage systems running Enginuity 5876, access to point-in-time copy data is only permitted if the most recent operation(s) was: for Clone – Split or Terminate; for SnapVX – Link and Clip. For storage systems running HYPERMAX OS access to point in time copy or Snapshot data is only permitted if the most recent operation(s) was: for Clone – Split or Terminate; for SnapVX – Link. (For storage systems running HYPERMAX OS, after a “CLIP” operation and subsequent OMA control data refresh for the TimeFinder group, OMA control data will reflect last operation as Split, Terminate, or Link.)

Note: For storage systems running PowerMaxOS or HYPERMAX OS, after a ZUTIM CLIP operation and subsequent OMA control data refresh for the TimeFinder group, OMA control data will reflect the last operation as Split, Terminate, or Link.

CAUTION

Be aware that targets that are host accessible and user ready may create duplicate VSN situations during z/TPF roll call.

Offline Module Access for z/TPF maintains and displays memory resident control information and tables. It allows for operation of the Dell EMC SymmAPI for z/TPF macro FDRSC. Offline Module Access for z/TPF is an extension of TimeFinder for z/TPF. This section describes the OMA control data structure.

IMPORTANT

Offline Module Access for z/TPF is supported only on storage systems running PowerMaxOS 5978, HYPERMAX OS 5977, or Enginuity 5876.

Federated System Support

Federated Systems are two or more z/TPF systems with database dependencies such that the DR solution must provide the same point of database consistency across all z/TPF systems. Dell EMC Product Suite for z/TPF supports both local and remote replication consistency for Federated z/TPF Systems. This is generally achieved by selecting one of the Federated systems as the controlling system.

Offline Module Access for z/TPF is supported for non-controlling TimeFinder federated system databases on the non-controlling TimeFinder federated system. This support is enabled by:

- ◆ Configuring the TimeFinder group in the non-controlling federated system as configured in the controlling TimeFinder system

- ◆ Defining operation devices for the non-controlling federated system group in the non-controlling TimeFinder configuration
- ◆ Defining the NOOMAREF TimeFinder property for the TimeFinder group
- ◆ Refreshing the TimeFinder control records in the non-controlling TimeFinder federated system
- ◆ Refreshing the OMA control data structures, by functional message, for the specified group in the non-controlling TimeFinder federated system after the point-in-time copy targets are made user ready for use on the non-controlling TimeFinder federated system

IMPORTANT

Offline Module Access for z/TPF is supported for non-controlling federated databases only on storage systems running PowerMaxOS or HYPERMAX OS.

Offline Module Access control data block (OCD)

The Offline Module Access control data block (OCD) is an MDBF subsystem-unique heap storage block addressed by the user CINFC tag UMMEOMA. A sample ucnfeq.mac containing the UMMEOMA equate is included on the installation tape.

The OCD consists of two components:

- ◆ OCD General Information
- ◆ Clone Target Status Table (TST)

Note: [Chapter 4](#) describes the OMA functional entries used to maintain and display the OCD.

OCD general information

OCD general information contains:

- ◆ Software version
- ◆ Timestamp set at the time the OCD is initialized
- ◆ Indicators reflecting status of TimeFinder data structures
- ◆ A count and list of DASD subsystem IDs that do not provide the minimum support for OMA
- ◆ Miscellaneous TimeFinder information

Target Status Table

The Target Status Table (TST) contains data describing the online data base point-in-time copies at the time of the last TimeFinder operation for each TimeFinder group.

You can calculate the number of 4 K frames of heap storage used for each MDBF subsystem unique OMA Control Data Block may be calculated as follows:

- ◆ The OCD general information is one (1) 4 K frame.
- ◆ The TST is $((\# \text{ SON FSTB slots } * 160 + 4096) / 4096)$ 4 K frames.

Offline Module Access Control Data Refresh

Offline Module Access Control Data Refresh initializes the OCD general information and Target Status Table with information derived from created snapshots and the TimeFinder Control Records allocated on the Basic Subsystem of the z/TPF complex.

Following the completion of the ZUOMA REFRESH entry after z/TPF operation completion, the OCD for the affected or specified TimeFinder group will be refreshed. Failure to properly refresh the OCD data structures prior to using any dependent utilities, such as ZUCPY, can cause unexpected results.

Segment logic flow

E-type segment E1SE.so controls Offline Module Access Control Data Refresh. The logic flow of this segment is:

1. Calculate # of 4K frames required for the OCD.
2. If the OCD does not exist or the existing OCD is not large enough, return any existing frames and get the correct number of frames for the OCD.
3. Clear the OCD.
4. For each online symbolic module and general file on this MDBF subsystem:
 - Check whether the minimum requirements for OMA (minimum hardware is a VMAX system running Enginuity 5876 and higher, PowerMaxOS, or HYPERMAX OS) are met.
5. Store TimeFinder group count in the OCD.
6. Store the software version in the OCD.
7. Establish the Target Status Table (TST) base address and store it in the OCD.
8. If the TimeFinder Control Records are not allocated on the Basic Subsystem, or not initialized, issue an error message and abandon the refresh.
9. For every TimeFinder group defined for TimeFinder for z/TPF, create a target item for every online module in this MDBF subsystem.
10. Store a Refresh Timestamp in the OCD.

Offline Module Access Control Data Display

The Offline Module Access Control Data Display utility shows OCD general information values and Target Status Table contents. The display is MDBF subsystem dependent. The OCD data display contains information such as:

- ◆ The time of the last OCD table refresh
- ◆ The OMA software version
- ◆ The TST core address
- ◆ List of the local TimeFinder groups

- ◆ Count of online unsupported SSIDs

The Target Status Table display shows the detailed information for each z/TPF module displayed. The display includes:

- ◆ The SDAs of the requested TimeFinder group's source and target devices associated with this z/TPF online module at the time of the last OCD refresh
- ◆ The storage system device number for the source and target devices in this pair for the requested TimeFinder group
- ◆ The last TimeFinder operation on this pair

Note: [“ZUOMA: Control data controls” on page 82](#) describes the OMA functional entry ZUOMA DISPLAY.

Segment logic flow

E-type segment E1SF.so controls Offline Module Access Control Data Display utility. The logic flow of this segment is as follows:

1. If the OCD does not exist, issue an error message and exit.
2. If Display OCD general information was chosen, collect and display general information.
3. If Display TST was chosen, do one of the following:
 - If the specified TimeFinder group is invalid, issue an error message and exit.
 - If the TimeFinder Control Records do not exist or were not initialized at the time of the Refresh, issue an error message and exit.
 - If the specified symbolic module is not valid, issue an error message and exit.
 - Determine TimeFinder group and target status item (TSI) base.
 - For the specified count, display the TSI information.

Display Point-in-Time Copy

The Display Point-in-Time Copy utility displays a record from a specified point-in-time copy (TimeFinder group). The functional entry ZUCPY initiates the display.

To operate this utility:

1. Load the Offline Module Access for z/TPF.
2. Initialize the OMA Control Data Block (OCD) on the MDBF subsystem on which the Display Point-in-Time Copy utility is to execute.

Refresh the OCD following the completion of every TimeFinder for z/TPF operation and before using any dependent utilities. Failure to refresh the OCD may cause unexpected results when using ZUCPY.

Note: [“ZUCPY: Display point-in-time copy” on page 44](#) and [“ZUOMA: Control data controls” on page 82](#) provide more information.

Segment logic flow

E-type segment e1si.asm is the Display Point-In-Time Copy utility. The logic flow of this segment follows:

1. Get 4K data block as the input work block to FDRSC macro.
2. Parse the input message to:
 - Determine whether MCHR or FARF was input and store in FARW of data level 1 as input to FDRSC macro.
 - Validate and store relative the start address and count.
 - Store the TF Group in EBW000 as input to FDRSC macro.

3. Load R2 with the work block address.

4. Issue FDRSC:

```
FDRSC D1, GROUP=EBW000,
WRKBLK= (R2) ,
ERROR=E1SCERR3
```

If you receive an error, check for non-zero return code. Non-zero return codes from the FDRSC macro are reported with the message:

```
UCPY0001E Error on FDRSC call - .....
See EMC product guide for z/TPF Return Codes
```

5. Validate the input Relative Start Address against the returned block size.
6. Setup ENTRC CVBN to display the returned record.

FDRSC macro: Find Data Recovery Software Copy

The Dell EMC SymmAPI for z/TPF macro FDRSC returns a single record of a specified point-in-time copy (TimeFinder group). FDRSC macro execution requires that:

- ◆ TimeFinder for z/TPF V8.0.0 or higher is loaded and TimeFinder Data Structures are initialized.
- ◆ Offline Module Access for z/TPF is loaded.
- ◆ The OMA Control Data Structure is initialized.
- ◆ For Clone target data access, TST “TF Operation” status must reflect “Split” or “Terminate”, and must be “user ready”.
- ◆ For SnapVX target data access, TST “TF Operation” status must reflect “Link”, and must be “user ready”.

The targets must be accessible to z/TPF for I/O on a channel to z/TPF and defined in keypoint 0.

Refresh the OCD before using any dependent utilities by the functional message ZUOMA REFRESH. Failure to refresh the OCD may cause unexpected results when you use dependent utilities such as ZUCPY.

FDRSC macro logic flow

The logic flow of the FDRSC macro call is:

1. If FARF or MCHR is invalid or missing, return the appropriate non-zero return code.

2. If FARF is specified, use SONIC to decode FARF and determine the size of requested record.
3. If MCHR is specified, read the record from the specified module to determine the size of requested record.
4. If the specified record size could not be determined, return the appropriate non-zero return code.
5. If OCD does not exist, return the appropriate non-zero return code.
6. If the input TimeFinder group is invalid, return the appropriate non-zero return code.
7. If the TimeFinder Control Records do not exist or are not initialized, return the appropriate non-zero return code.
8. Find head of TSI items for the symbolic module derived from input FARF or MCHR.
9. Lock head of the TSI items to serialize copies from this target in a tightly coupled environment.
10. Find the TSI item for input TimeFinder group.
11. If last TimeFinder operation for the TSI item is not Split, Clip, or Terminate return the appropriate non-zero return code.
12. Determine the SDA from the symbolic module number and TSI information. If the SDA is not currently online, locate the next available online SDA in the same SSID.
13. If the minimum hardware requirement is not met by this SSID, return the appropriate non-zero return code.
[“Hardware and software requirements” on page 19](#) lists the minimum hardware requirements.
14. If the SSID is unsupported, return the appropriate non-zero return code.
15. Determine the SDA of the destination storage system device as defined during TimeFinder configuration of the TimeFinder group.
16. Mount the target SDA if not already mounted.
17. Read the specified record from the target device via FDCTC.
18. Dismount target SDA unless mounted prior to initiation.
19. Unlock the head of the TSI item.
20. Return to the calling segment with the returned core block address on the input data level or in the input DECB.

FDRSC: Usage

The Find Data Recovery Software Copy (FDRSC) macro provides access to data on TimeFinder Target Volumes, which must be accessible on the channel. The Target SDAs must be defined during TimeFinder group configuration.

Format

```
FDRSC Dx | DECB=(Rx) | label, GROUP=(Rx) | label, WRKBLK=(Rx), ERROR=label
```

Parameters

Dx	<p>The data level on which the requested record is to be returned. Data level DE or DF may not be specified. One of the following ECB fields must be initialized with an address identifying the record to be returned:</p> <ul style="list-style-type: none"> ◆ CE1FMx — 8 hex digit FARF ◆ CE1FXx — 14 hex digit MCHR <p>Specify this parameter or the DECB parameter. Do not specify both.</p>
DECB= (Rx) label	<p>This parameter specifies a register Rx containing the address of a DECB in which the requested record is to be returned, or a data field containing the 4 byte address of the DECB. One of the following DECB fields must be initialized with an address identifying the record to be returned:</p> <ul style="list-style-type: none"> ◆ IDECFA — 8 hex digit FARF ◆ IDECFX0 - 14 hex digit MCHR <p>Specify this parameter or the Dx parameter. Do not specify both.</p>
GROUP= (Rx) label	<p>This parameter specifies a register Rx containing the address of the 8-character TimeFinder group name, or a data field containing an 8-character TimeFinder group name. The TimeFinder group name identifies the point-in-time copy from which the record is to be retrieved.</p>
WRKBLK= (Rx)	<p>Register Rx must contain the address of a 4K work block to be used as a communications interface between the application and E-type macro. The block must be initialized with zeros. The block may not be on data level DE or DF. The default register is R14.</p>
ERROR=label	<p>Label indicates where to branch to if a non-zero return code is encountered.</p>

Input requirements

The macro requires that:

- ◆ You specify either the Dx or the DECB parameter. Specify only one of these parameters. Do not specify data levels DE or DF.
- ◆ The register specified in the WRKBLK parameter contains the address of a 4K block. If the WRKBLK parameter is not included, the macro assumes that R14 contains the 4K block address. The block may not be on data level DE or DF.
- ◆ The GROUP value, DECB address, and WRKBLK address are greater than zero.

Limitations

- ◆ The FDRSC SymmAPI macro call can be used on a PowerMax system running PowerMaxOS 5978, a VMAX All Flash system running PowerMaxOS 5978 or HYPERMAX OS 5977, or a VMAX system running Enginuity 5876.
- ◆ TimeFinder for z/TPF V8.0.0 must be loaded on the BSS of the z/TPF complex and z/TPF TimeFinder data structures must be configured.

- ◆ Offline Module Access for z/TPF V8.0.0 must be loaded on the MDBF SS of the z/TPF complex on which the utility is intended to run and OMA data structures must have been refreshed since the last TimeFinder operation.
- ◆ Registers 1 through 7 are saved across the macro call. Registers 14 and 15 are considered work registers and are not saved nor restored. Register 0 contains the return code upon return.
- ◆ Data levels DE and DF must be available for macro use.

Return conditions

The requested record is returned on the data level or DECB specified on input.

A return code is placed in register zero. A non-zero return code indicates an error condition. If an error occurs during macro execution and the ERROR parameter was coded, a branch will be taken to the label specified in the calling segment.

[Appendix B](#) contains a list of Dell EMC SymmAPI return codes.

Programming considerations

The FDRSC macro can be used on any MDBF Subsystem on which Offline Module Access for z/TPF has been loaded. OMA data structures must have been refreshed since the last TimeFinder operation. Prior to using an application that uses the FDRSC macro, ensure that OMA data structures have been refreshed and the TimeFinder group to be accessed is not attached.

It is the responsibility of the application program to release the FDRSC work block and the data block containing the requested record on return from the macro call.

The FDRSC macro call expands to up to x'5A' bytes dependent on the parameters used. The macro can be executed on any I-Stream.

Assembly error messages

WRKBLK REGISTER VALUE IS NOT VALID

Severity: 8

Explanation: The register value specified for the WRKBLK parameter is invalid.

User Response: Code a valid register value for the WRKBLK parameter.

GROUP MUST BE SPECIFIED

Severity: 8

Explanation: The GROUP parameter was not specified.

User Response: Specify a register value or label for the GROUP parameter.

GROUP REGISTER VALUE IS NOT VALID

Severity: 8

Explanation: The register value specified for the GROUP parameter is invalid.

User Response: Code a valid register value for the GROUP parameter.

DATA LEVEL SPECIFIED IS NOT VALID

Severity: 8

Explanation: The data level specified is not one of D0 through DD.

User Response: Code a valid data level between D0 and DD.

EITHER LEVEL OR DECB MUST BE SPECIFIED

Severity: 8

Explanation: Neither Dx nor the DECB parameter was specified.

User Response: Code either a valid data level between D0 and DD or the DECB parameter.

EITHER LEVEL OR DECB MUST BE SPECIFIED, BUT NOT BOTH

Severity: 8

Explanation: Both Dx and DECB parameters were specified.

User Response: Code either a valid data level between D0 and DD or the DECB parameter. Do not code both.

DECB REGISTER VALUE IS NOT VALID

Severity: 8

Explanation: The register value specified for the DECB parameter is invalid.

User Response: Code a valid register value for the DECB parameter.

Example

Sample Source: e1si.asm

Input DSECT: esavid.mac

Input Data: D1 Data level
CE1FM1(4) 8 hex digit FARF
EBW000(8) 8 character TF group name

Return Data: CE1CR1(4) Core Block on Data Level D1

Macro Syntax

```
FDRSC D1, Return record on data level D1
GROUP=EBW000, TimeFinder Group
WRKBLK=(R2), ESAVID base register
ERROR=E1SCERR3 Branch to E1SCERR3 on error
```


CHAPTER 4

ResourcePak Commands

This chapter defines the ResourcePak commands:

- ◆ ZUCPY: Display point-in-time copy 44
- ◆ ZUDCP: EMC Dynamic Cache Partitioning Controls 46
- ◆ ZUDVQ: Display device configuration..... 57
- ◆ ZUECS: Cache statistics display 62
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- ◆ ZUELM: Display Electronic License Management Entitlements..... 68
- ◆ ZUFRT: Display Feature Registration Table..... 70
- ◆ ZUGRP: Dynamic RDFGroup Controls..... 73
- ◆ ZULOC: MPLF connection, lock, and attention message information display 79
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- ◆ ZUSRP: Storage Resource Pool Management..... 85
- ◆ ZUVTP: Virtual tape controls 93

ZUCPY: Display point-in-time copy

Requirements and limitations

- ◆ You can use ZUCPY on a PowerMax system that runs PowerMax OS 5978, a VMAX All Flash system that runs PowerMaxOS 5978 or HYPERMAX OS 5977, or a VMAX system that runs Enginuity 5876.
- ◆ Load TimeFinder for z/TPF V8.0.0 or higher on the BSS of the z/TPF complex and initialize the TimeFinder Controls for z/TPF data structures.
- ◆ Load Offline Module Access for z/TPF V8.0.0 or higher on each MDBF SS of the z/TPF complex on which the utility is intended to run.
- ◆ Ensure you have refreshed the OMA data structures since the last TimeFinder operation.

Format

```
ZUCPY hhhh rsa cnt GROUp-cccccccc
```

Parameters

<i>hhhh</i>	The 8-digit hexadecimal FARF or a 14-digit MCHR.
<i>rsa</i>	Offset into the record (in hexadecimal).
<i>cnt</i>	The number (in hexadecimal) of bytes to display.
<i>cccccccc</i>	The 1- to 8-character name of a TimeFinder group.

Additional information

- ◆ ZUCPY makes an external call to CVBN to display the data as specified and assumes the standard interface to CVBN.
- ◆ You can display a point-in-time copy record on a z/TPF duplicate symbolic module by specifying the duplicate symbolic module in the MCHR.
- ◆ For help information on ZUCPY, type:

```
ZUCPY Help
```

Examples

Example 1

Action Display the first 32 bytes of the point-in-time copy from TimeFinder group Group1 of the record with FARF 54000001.

User ZUCPY 54000001 GRO-GROUP1

System

```
CSMP0097I 03.16.33 CPU-A SS-BSS SSU-SSU0 IS-01
DFIL0010I 03.16.33 BEGIN DISPLAY
00000000- C5C30000 E4E4C1C4 FFFFFFFF 00000000 EC..UUAD .....
00000010- FFFFFFFF 00000000 00000000 00000000 .....
END OF DISPLAY - ZEROED LINES NOT DISPLAYED
```

Example 2

Action Display the entire point-in-time copy from TimeFinder group Group1 of the record with FARF 54000001 prior to refreshing the OMA Control Data.

User ZUCPY 54000001 0.FFF GRO-GROUP1

System

```
CSMP0097I 03.16.33 CPU-A SS-BSS SSU-SSU0 IS-01
Error on FDRSC call - 00000250
See EMC product guide for TPF Return Codes
```

Example 3

Action Display entry without specifying the GROUP parameter.

User ZUCPY 54000001 0.FFF

System

```
CSMP0097I 03.16.33 CPU-A SS-BSS SSU-SSU0 IS-01
BPKD0059E 03.16.33 ZUCPY, GROUP PARAMETER IS REQUIRED
```

Example 4

Action Display the entire point-in-time copy from TimeFinder group Group2 of the record with FARF 54000001 prior to having operated on TimeFinder group Group2.

User ZUCPY 54000001 0.FFF GRO-GROUP2

System

```
CSMP0097I 03.16.33 CPU-A SS-BSS SSU-SSU0 IS-01
Error on FDRSC call - 00000318
See EMC product guide for TPF Return Codes
```

Example 5

Action Display the duplicate point-in-time copy from TimeFinder group Group2 of the record with FARF 54000001.

User ZMCHR 54000001

System

```
CSMP0097I 03.16.36 CPU-A SS-BSS SSU-SSU0 IS-01
MCHR0001I 03.16.36 0101011C000A01 DUPE SMALL
```

User ZUCPY 0103011C000A01 GRO-GROUP2

System

```
UCPY0010I 03.16.36 BEGIN DISPLAY
00000000- C5C30000 E4E4C1C4 EEEEEEEE EEEEEEEE EC..UUAD .....
00000010- EEEEEEEE 00000000 00000000 00000000 .....
END OF DISPLAY - ZEROED LINES NOT DISPLAYED
```

ZUDCP: EMC Dynamic Cache Partitioning Controls

ResourcePak for z/TPF includes commands to manage and display partitions of cache memory on specified storage systems:

- ◆ ZUDCP CREATE
- ◆ ZUDCP DELETE
- ◆ ZUDCP DISPLAY
- ◆ ZUDCP HELP
- ◆ ZUDCP MODIFY
- ◆ ZUDCP MOVE
- ◆ ZUDCP SETSTATE

These commands are available on storage systems that run PowerMaxOS 5978, HYPERMAX OS 5977, or Enginuity 5876.

ZUDCP CREATE

The create command adds a new partition. You can optionally add devices to a partition with the create command. If no devices are added, the group is empty.

Types of partition — There are two types of partition flexible or static:

- ◆ A flexible partition set a target size but defines minimum and maximum cache allocations for the partition.
- ◆ A static partition has a fixed size with the same allocation defined for the minimum and maximum values.

The system definitions begin with a predefined default partition that contains 100% of cache. All devices are in the default partition, initially.

The target allocations across all defined partitions must add up to 100%. When you define a new partition, the default partition's target allocation automatically changes, keeping the total at 100% and any associated devices move from the default partition to the new partition.

Write pending limit — Each cache partition group has its own definable write pending (WP) limit of between 40 percent to 80 percent. As the partition group's write pending count approaches this limit, the storage system's front-end adapters introduce "WP fairness" delays to throttle write activity from the host. If write activity continues and the write pending limit is reached, the storage system carries out priority destage operations. If the purpose of cache partitioning is to contain an application that produces many writes, set the write pending limit to a premeditated low value. To operate in a way consistent with the system write pending limit, leave the value of the write pending limit at 80 percent.

Head devices — Storage systems include special types of device made up of multiple device numbers that appear to the host as a single volume called the head device. In mainframe environments, these include RAID-10 devices, also known as Striped CKD, or SCKD. In open systems environments these devices are known as FBA META devices.

When defining cache partitions, all device numbers associated with these special types must be in the same partition. The TYPE-SCKD or TYPE-META identifies the host addressable head device and the storage system identifies and includes all associated member devices on both the CREATE and MOVE commands.

Limitations

- ◆ The maximum number of partitions is eight.
- ◆ The name of each partition contains 8 to 31 alphanumeric characters.
- ◆ If you provide the GID, specify a unique hexadecimal value between 01 and FE, inclusive.
- ◆ The MAX, MIN, and TAR parameters are required and must be consistent with each other.

Format

```
ZUDCP Create ccuu NAME-ccccccc MAX-dd MIN-dd TAR-dd
[ GID-xx AGE-dddddddd WP-dd ]
[ TYPE-DEVS | META | SCKD SDN-xxxxxxxxx CNT-dd ]
[ TYPE-RDFG GRO-dd]
```

Parameters

<i>ccuu</i>	An SDA mounted on the z/TPF system, that identifies the storage system.
NAME	The 8- to 31-character, alphanumeric name of the new partition. Partition names are unique.
MAX	The maximum percentage of the total cache that the partition can use. The value cannot be less than the target or minimum cache allocations.
MIN	The minimum percentage of the total cache that the partition can use. The value cannot be greater than the target cache allocation.
TAR	The target (or desired) percentage of the total cache that the partition can use. The value can be between 10% and 90%.
GID	The partition identifier or Group ID. Supply a hexadecimal value between 01 and FE, inclusive. If not supplied, the system generates the Group ID.
AGE	The minimum number of seconds before cache can be donated to another partition. The maximum value is 268435455 and the default value is 300 seconds.
WP	The write pending limit for the partition expressed as a percentage of the partition size. The value can be between 40% and 80%.

TYPE	<p>The type of devices to be moved into the new partition. If the range of devices you are moving contains SRDF/A, META, or SCKD devices, include the TYPE parameter.</p> <ul style="list-style-type: none"> ◆ META — Moves all members in a meta definition. Specify the meta head device. Use CNT-1 for adding a meta device. ◆ RDFG — Moves all the devices in the specified RDF group. You cannot move SRDF/A devices individually but must move them as a group. ◆ SCKD — Use this option for striped CKD (Raid-10) devices. Specify a head device on the SDN parameter. Use CNT-1 to add all members of one SCKD device. You can use the MOVE command to add move devices. ◆ DEVS — This is the default and specifies a range of devices beginning with the device that the SDN parameter identifies and the value of the CNT parameter defining the number of devices in the group.
SDN	The number of starting device in the range. Used with all device types except TYPE-RDFG.
CNT	The number of devices in the range to move to the partition starting at the device identified by SDN. Used with all device types except TYPE-RDFG.
GRO	A decimal number that identifies the RDF group to move into the partition when the device type is TYPE-RDFG.

Additional Information

Best practices recommend creating empty partitions and then moving devices into the partition using the MOVE command. This is because the CREATE command allows devices to be taken from pre-existing partitions other than those in the default partition.

Example 1

Action Create a new partition for the CU identified by SDA 5180.
User ZUDCP CREATE 5180 NAME-TEST0001 MAX-100 MIN-0 TAR-20
System

```
CSMP0097I 20.32.17 CPU-G SS-BSS SSU-SSU0 IS-01
UDCP0011I DCP Create Complete
```


Example 2

Action Display partitions for the CU identified by SDA 5180.

User ZUDCP DISP 5180

System

```
CSMP0097I 20.32.17 CPU-G SS-BSS SSU-SSU0 IS-01
UDCP0002I EMC Dynamic Cache Partitioning for 5180 CU 000000000840
  GroupID: 0000      Name: DEFAULT_PARTITION
    Device Count:    2240      State: ENBL
    Target Allocation 80      Minimum Allocation 0
    Maximum Allocation 100    Write Pending Limit 80
    Destage Priority 1      Donation Time 300
  GroupID: 0001      Name: TEST0001
    Device Count:    0      State: ENBL
    Target Allocation 20      Minimum Allocation 0
    Maximum Allocation 100    Write Pending Limit 80
    Destage Priority 1      Donation Time 300
End of Display
```

ZUDCP DELETE

Delete the partition that the Group ID identifies. Any devices in the deleted partition return to the default partition.

Limitations

- ◆ Group ID must exist.
- ◆ You cannot delete the default partition.

Format

```
ZUDCP DELETE ccuu GID-xx
```

Parameters

ccuu An SDA mounted on the z/TPF system identifying the storage system.

GID The partition identifier of the group to be deleted.

Example

Action Delete a partition on the CU identified by SDA 5180.

User ZUDCP DELETE 5180 GID-01

System

```
CSMP0097I 20.32.17 CPU-G SS-BSS SSU-SSU0 IS-01
UDCP0012I DCP Delete Complete
```

ZUDCP DISPLAY

Display attributes, device ranges, or statistics, when statistics collection has been run, of a cache partition.

Limitations

If you supply the DEVS parameter, also supply the GID parameter.

Note: There is an overhead associated with enabling statistics. So enable statistics only in non-production environments or at the request of Dell EMC.

Format

```
ZUDCP DISplay ccuu [GID-hh]
      (DEVS GID-hh)
```

Parameters

GID	The partition identifier or Group ID. Supply a hexadecimal value between 01 and FE, inclusive. Omit this parameter to display all defined partitions. GID is required when you use the DEVS parameter.
DEVS	Displays the device ranges for the specified partition. The GID parameter is required.

Example 1

Action Display partitions for the CU designated by SDA 5180.

User ZUDCP DISP 5180

System

```
CSMP0097I 20.32.17 CPU-G SS-BSS SSU-SSU0 IS-01
UDCP0002I EMC Dynamic Cache Partitioning for 5180 CU 000000000840
GroupID: 0000 Name: DEFAULT_PARTITION
Device Count: 2227 State: ENBL
Target Allocation 70 Minimum Allocation 0
Maximum Allocation 100 Write Pending Limit 80
Destage Priority 1 Donation Time 300
GroupID: 0001 Name: TEST0002
Device Count: 13 State: ENBL
Target Allocation 30 Minimum Allocation 0
Maximum Allocation 100 Write Pending Limit 80
Destage Priority 1 Donation Time 300
End of Display
```

Example 2

Action Display the devices in the partition identified by
GID-01.

User ZUDCP DISP 5180 DEVS GID-01

System

```
CSMP0097I 20.32.17 CPU-G SS-BSS SSU-SSU0 IS-01
UDCP0002I EMC Dynamic Cache Partitioning for 5180 CU 000000000840
  GroupID: 0001      Name: TEST0001
    Device Count:      13      State: ENBL
    Device Range:     03D8 - 03E4
  End of Display
```

ZUDCP HELP

Display help information for Dynamic Cache Partitioning.

Format

ZUDCP Help

Example

Action Display the command help.

User ZUDCP HELP

System

```
CSMP0097I 20.32.17 CPU-G SS-BSS SSU-SSU0 IS-01
UDCP0000I ZUDCP Help
  ZUDCP DISplay ccuu [DEVS] [GID-xxx]
    SETstate ccuu ENAbLe | DISAbLe | ANALySis | INIT
    DELete ccuu GID-xx
    MOVE ccuu GID-xx (TYPe-DEVS | META |SCKD SDN-xxxx CNT-dddd)
      | (TYPe-RDFG GRO-dd)
    Create | MODify ccuu MIN-dd MAX-dd TAR-dd
      Name-ccccccc [GID-hh AGE-xxxxxxxx WP-xx
      TYPe-DEVS | META |SCKD SDN-xxxx CNT-dddd
      TYPe-RDFG GRO-dd]
```

ZUDCP MODIFY

Modify the attributes of the cache partition identified by the Group ID.

Limitations

- ◆ The GID must exist.
- ◆ For the default partition, you can change the AGE attribute only.

Format

```
ZUDCP MODify ccuu GID-xx
Name-ccccccc MAX-dd Min-dd TAR-dd
AGE-ddddddd WP-dd
```

Parameters

<i>ccuu</i>	A SDA mounted on the z/TPF system, that identifies the storage system.
GID	The partition identifier or Group ID. Supply a hexadecimal value between 01 and FE, inclusive. This is a required parameter and identifies the group to modify.
NAME	The 8- to 31-character, alphanumeric name of the partition to modify. Partition names are unique.
MAX	The maximum percentage of the total cache that the partition can use. The value cannot be less than the target or minimum cache allocation.
MIN	The minimum percentage pf the total cache that the partition can use. The value cannot be greater than the target cache allocation.
TAR	The target (or desired) percentage of the total cache that the partition can use. The value can be between 10% and 90%.
AGE	The minimum number of seconds before cache can be donated to another partition. The maximum value is 268435455 and the default value is 300 seconds.
WP	The write pending limit for the partition expressed as a percentage of the partition size. The value can be between 40% and 80%. “ZUDCP CREATE” on page 46 contains more information about the write pending limit and its uses.

Example 1

Action Modify the partition identified by GID-01 for the CU identified by SDA 5180:

- ◆ Set the target cache allocation to 30%.
- ◆ Rename the partition to TEST0002.

User **ZUDCP MODIFY 5180 GID-01 NAME-TEST0002 TAR-30**

System

```
CSMP0097I 20.32.17 CPU-G SS-BSS  SSU-SSU0 IS-01
UDCP0011I DCP Modify Complete
```

Example 2

Action Display the partitions for the CU identified by SDA 5180.

User **ZUDCP DISP 5180**

System

```
CSMP0097I 20.32.17 CPU-G SS-BSS  SSU-SSU0 IS-01
UDCP0002I EMC Dynamic Cache Partitioning for 5180 CU 000000000840
  GroupID: 0000      Name: DEFAULT_PARTITION
    Device Count:    2240      State: ENBL
    Target Allocation  70      Minimum Allocation    0
    Maximum Allocation 100     Write Pending Limit  80
    Destage Priority   1       Donation Time          300
  GroupID: 0001      Name: TEST0002
    Device Count:    0        State: ENBL
    Target Allocation  30      Minimum Allocation    0
    Maximum Allocation 100     Write Pending Limit  80
    Destage Priority   1       Donation Time          300
End of Display
```

ZUDCP MOVE

Move devices from between groups.

Format

```
ZUDCP MOVE ccuu GID-xx (TYPE-DEVS | META | SCKD SDN-xxxxxxxx CNT-ddd)
| (TYPE-RDFG GRO-dd)
```

Parameters

<i>ccuu</i>	An SDA mounted on the z/TPF system that identifies the storage system.
GID	The identifier of the partition that the group moves to.
TYPE	The type of devices to be moved. If the range of devices you are moving contains SRDF/A, META, or SCKD devices, include the TYPE parameter. <ul style="list-style-type: none"> ◆ META — Moves all members in a meta definition. Specify the meta head device. ◆ RDFG — Moves all the devices in the specified RDF group. You cannot move SRDF/A devices individually but must move them as a group. ◆ SCKD — Use this option for striped CKD (Raid-10) devices. The count parameter (CNT) defines the number of head devices in a range and is a number from 1 to 32, inclusive. ◆ DEVS — This is the default and specifies a range of devices beginning with the device that the SDN parameter identifies and the value of the CNT parameter defining the number of devices in the group.
SDN	The number of the starting device in the range. Used with all device types except TYPE-RDFG.
CNT	The number of devices in the range to move to the partition starting at the device identified by SDN. Used with all device types except TYPE-RDFG.
GRO	DA decimal number that identifies the RDF group to move into the partition when the device type is TYPE-RDFG.

Example 1

Action Move 13 devices from the default group, starting at device number 3D8, to the partition named GID-01.

User ZUDCP MOVE 5180 SDN-3D8 CNT-13 GID-01

System

```
CSMP0097I 20.32.17 CPU-G SS-BSS SSU-SSU0 IS-01
UDCP0011I DCP Move Device Complete
```

Example 2

Action Display the devices in the partition named GID-01.

User ZUDCP DISP 5180 DEVS GID-01

System

```
CSMP0097I 20.32.17 CPU-G SS-BSS SSU-SSU0 IS-01
UDCP0002I EMC Dynamic Cache Partitioning for 5180 CU 000000000840
  GroupID: 0001      Name: TEST0001
    Device Count:      13      State: ENBL
    Device Range:      000003D8 - 000003E4
  End of Display
```

ZUDCP SETSTATE

Initialize, enable, or disable Dynamic Cache Partitioning.

Format

```
ZUDCP SETstate ccuu ENable | DISable | INIT | ANALYSIS
```

Parameters

<i>ccuu</i>	An SDA mounted on the z/TPF system that identifies the storage system.
ENABLE	Enable cache partitioning.
DISABLE	Disable cache partitioning.
INIT	Initialize the data structures for cache partitioning and remove all defined partitions. All devices return to the default partition.
ANALYSIS	Allow for the allocation of partitions and movement of devices to partitions. DCP is not fully enabled in this mode. Analysis mode can be enabled only if all cache partitions are flexible. That is, MIN = 0 MAX = 100 AGE = 0. Modify Partition 0 to AGE=0.

Additional Information

In analysis mode, various counters and usage values are maintained without the full effect of DCP being enabled. When you complete the analysis, disable cache partitioning and modify or delete the cache partitions to reflect the values calculated during the analysis. Always disable cache partitioning and redefine your partitions after using analysis mode.

Example 1

Action Disable Cache Partitioning for the CU designated by SDA 38A2.

User `ZUDCP SETSTATE 38A2 DISABLE`

System

```
ZUDCP SETSTATE 38A2 DISABLE
CSMP0097I 20.32.17 CPU-G SS-BSS SSU-SSU0 IS-01
UDCP0010I DCP SetState Complete
```

Example 2

Action Enable Cache Partitioning for the CU designated by SDA 38A2.

User `ZUDCP SETSTATE 38A2 ENABLE`

System

```
ZUDCP SETSTATE 38A2 ENABLE
CSMP0097I 20.32.17 CPU-G SS-BSS SSU-SSU0 IS-01
UDCP0010I DCP SetState Complete
```


ZUDVQ: Display device configuration

Display the relationship between the internal logical devices and physical devices in a storage system.

Limitations

- ◆ ZUDVQ is available on storage systems that run PowerMaxOS 5978, HYPERMAX OS 5977, or Enginuity 5876.
- ◆ The z/TPF SDA must be locally attached and mounted on the z/TPF system.
- ◆ The default number of lines to be displayed is 500. If more or less is desired, specify the starting device number (ssss) and count (cccc).

Format

```
ZUDVQ ccud [INFO|SUMM] [ssss cccc] [MHL1-dd.dd MHL2-dd.dd]
```

Parameters

<i>ccud</i>	An SDA mounted on the z/TPF system that identifies the storage system.
INFO	Device information for input SDA. Valid only for a local storage system.
SUMM	Summary of device types in ranges.
<i>ssss</i>	Optional: The hexadecimal number of the starting device in the range to display. Default: Zero.
<i>cccc</i>	Optional: The number of devices in the range to display, in decimal. This parameter is ignored for the SUMM display. Default: ALL
<i>MHL1-dd.dd</i>	Optional: Hops one and two of the multi-hop list that identifies the RDFGroup path to the remote storage system.
<i>MHL2-dd.dd</i>	Optional: Hops three and four of the multi-hop list that identifies the RDFGroup path to the remote storage system.

Additional information

- ◆ The default number of lines to display is the total number of logical devices less the starting device number. As the number of devices can be large, the Display entry displays one page at a time. To display the next page type:

ZPAGE.

- ◆ For help information on ZUDVQ type:

ZUDVQ Help

Examples

The examples in this section display the following information:

Dev#	Hexadecimal, logical device number.
Type	Type of logical volume.
	Values can be:
R1	Source (R1) volume
R2	Target (R2) volume
ML	Local mirror device
L1	Source (R1) volume that is also locally mirrored
L2	Target (R2) volume that is also locally mirrored
ADL	Dynamic SRDF, SRDF/A, locally protected
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)
D21	Cascaded SRDF device
A21	Cascaded SRDF device in SRDF/A mode
UP	Unprotected device
STATE	Current state for this logical device.
	Values can be:
R/W	Read / write mode
R/O	Read only mode
N/R	Not ready mode
Mirror 1 – Mirror 4	
DA-IF	Identifies the physical address, disk adapter and SCSI interface for this mirror position.
	For RDF devices, this field may contain SRC or TGT indicating that the mirror position represents the RDF partner device on the remote storage system.
	BCV designates this mirror position is used for an attached BCV.
	N/A denotes a mirror position not in use.
ITRK	Indicates the invalid track count for this mirror position.

Example 1

Action Display the six logical volumes in the storage system3 hops along RDFGroups 6, 1, and 2 from the storage system identified by the z/TPF SDA 56C0 starting with logical volume 22.

User ZUDVQ 56C0 22 6 MHL1-6.1 MHL2-2

System

```

CSMP0097I 11.04.41 CPU-A SS-BSS SSU-SSU0 IS-01
UDVQ0001I EMC Device Configuration SDA 56C0 Total Lines 0006
EMC Symm|Typ|State|
Device #|
| Mirror1 | Mirror2 | Mirror3 | Mirror4
|DA-IF Itrk|DA-IF Itrk|DA-IF Itrk|DA-IF Itrk
00000022 DLX R/W
THIN 0 N/A 0 N/A 0 N/A 0
00000023 DL2 R/O
*TGT* 0 N/A 0 *SRC* 0 N/A 0
00000024 DL2 R/O
*TGT* 0 N/A 0 *SRC* 0 N/A 0
00000025 DLX R/W
THIN 0 N/A 0 N/A 0 N/A 0
00000026 DLX R/W
THIN 0 N/A 0 N/A 0 N/A 0
00000027 DLX R/W
THIN 0 N/A 0 N/A 0 N/A 0
End of EMC Device Configuration Display
    
```

Note: The device number in column 1 represents the logical volume and has no relation to z/TPF volumes or SDAs.

Example 2

Action Display twelve devices beginning at device number 00B4 on the control unit identified by z/TPF SDA 5C60.

User ZUDVQ 5C60 B4 12

System

```

CSMP0097I 11.04.41 CPU-A SS-BSS SSU-SSU0 IS-01
UDVQ0001I EMC Device Configuration SDA 56C0 Total Lines 0012
EMC Symm|Typ|State|
Device #|
| Mirror1 | Mirror2 | Mirror3 | Mirror4
|DA-IF Itrk|DA-IF Itrk|DA-IF Itrk|DA-IF Itrk
000000B4 DLX R/W
THIN 0 N/A 0 N/A 0 N/A 0
000000B5 DLX R/W
THIN 0 N/A 0 N/A 0 N/A 0
000000B6 DLX R/O
THIN 0 N/A 0 N/A 0 N/A 0
000000B7 DLX R/O
*TGT* 50103 N/A 0 *SRC* 0 N/A 0
000000B8 DLX R/O
*TGT* 50085 N/A 0 *SRC* 0 N/A 0
000000B9 DLX R/W
THIN 0 N/A 0 N/A 0 N/A 0
000000BA DLX R/W
THIN 0 N/A 0 N/A 0 N/A 0
000000BB DLX R/W
THIN 0 N/A 0 N/A 0 N/A 0
000000BC DLX R/W
*SRC* 0 N/A 0 *TGT* 0 N/A 0
    
```

ResourcePak Commands

```

000000BD DLX R/W
                                *SRC*          0 N/A          0 *TGT*          53 N/A          0
000000BE DLX R/W
                                *SRC*          0 N/A          0 *TGT*          1089 N/A         0
000000BF DLX R/W
                                *SRC*          0 N/A          0 *TGT*          0 N/A          0
000000C0 DLX R/W
                                THIN           0 N/A          0 N/A          0 N/A          0
000000C1 DLX R/W
                                THIN           0 N/A          0 N/A          0 N/A          0
000000C2 DLX R/W
                                THIN           0 N/A          0 N/A          0 N/A          0
000000C3 DLX R/W
                                THIN           0 N/A          0 N/A          0 N/A          0
000000C4 DLX R/W
                                THIN           0 N/A          0 N/A          0 N/A          0
000000C5 DLX R/W
                                THIN           0 N/A          0 N/A          0 N/A          0
MORE DATA AVAILABLE, ENTER ZPAGE

```

Example 3

Action Display device information associated with input SDA of 3542.

User ZUDVQ 3542 I

System

```

CSMP0097I 23.32.18 CPU-A SS-BSS SSU-SSU0 IS-01
SDA 3542 is Symmetrix device 000000DA in CU serial number 400000000435

```

Example 4

Action Display summarized device type information in ranges for the entire unit represented by z/TPF SDA 56C0.

User ZUDVQ 56C0 SUMM

System

SDA 56C0 Local CU 000196701175 - 5977

DEV#	DEV#	TYP	RANGE	SRP	NUMBER	SSID
STRT	END		COUNT	ID	of CYLs	
00000001	00000001	DLX		1 00000001	3	0000
00000002	00000003	DLX		2 00000001	6452	0000
00000004	00000005	DLX		2 00000001	40329	0000
00000006	00000006	DLX		1 00000001	134432	0000
00000007	00000012	DLX		12 00000001	3	0000
00000013	0000001F	DLX		13 00000001	1113	0000
00000020	00000022	DLX		3 00000001	1113	6400
00000023	00000024	DL2		2 00000001	1113	6400
00000025	0000002F	DLX		11 00000001	1113	6400
00000030	00000033	DL1		4 00000001	1113	6400
00000034	0000003F	DLX		12 00000001	1113	6400
00000040	00000040	DL2		1 00000001	1113	6400
00000041	00000059	DLX		25 00000001	1113	6400
0000005A	0000005F	DL1		6 00000001	1113	6400
00000060	0000006F	DLX		16 00000001	1113	6400
00000070	00000077	DL1		8 00000001	1113	6400
00000078	0000010F	DLX		152 00000001	1113	6400
00000110	0000011F	DLX		16 00000001	1113	0000

MORE DATA AVAILABLE, ENTER ZPAGE TO CONTINUE

ZPAGE

```

CSMP0097I 11.04.41 CPU-A SS-BSS SSU-SSU0 IS-01
00000120 0000017D DLX          94 00000001          1113 6500
0000017E 00000187 DLX          10 00000001          1113 0000
00000188 00000189 DL2           2 00000001          1113 0000

```

```

0000018A 000003AF DLX          550 00000001          1113 0000
000003B0 000003B5 D21           6 00000001          1113 0000
000003B6 00000432 DLX          125 00000001          1113 0000
00000433 00000437 DLX           5 00000001          10017 0000
00000438 00000447 DLX          16 00000001          10017 6500
00000448 00000472 DLX          43 00000001          10017 0000
End of EMC Device Configuration Display
    
```

Example 5

Action Display summarized device type information for Engenuity 5876 in ranges beginning with logical device 230 in the storage system represented by z/TPF SDA 3B80.

User ZUDVQ 3B80 230 SUMM

System

```

CSMP0097I 00.06.16 CPU-G SS-BSS SSU-SSU0 IS-01
UDVQ0006I EMC Device Configuration Display
SDA 3B80 Local CU 000000000063 - 5771
DEV#      DEV#      | TYP | RANGE | RAID | NUMBER | SSID |
STRT      END        |     | COUNT | PROT | of CYLs |     |
00000230 0000025B   | DLX | 44    | R5   | 3339   | 0141 |
0000025C 0000027D   | DLX | 34    | 2M   | 3339   | 0241 |
0000027E 00000293   | DLX | 22    | R5   | 10017  | 0A4B |
End of EMC Device Configuration Display
    
```

ZUECS: Cache statistics display

Display cache statistics for all channel directors of the storage system identified by a z/TPF SDA. You can limit the display to FICON or ESCON. Optionally, you can display SRDF link statistics.

Limitations

ZUECS is available on storage systems that run PowerMaxOS 5978, HYPERMAX OS 5977, or Enginuity 5876.

Format

```
ZUECS ccud [FIcon | LInk | MPLf | CLear]
```

Parameters

<i>ccud</i>	An SDA mounted on the z/TPF system. that identifies the storage system.
FIcon	Limit the display to active FICON directors.
LInk	Display SRDF director statistics.
MPLf	Display MPLF statistics.
CLear	Clear MPLF IO statistics.

Additional information

- ◆ The Link parameter is only valid on storage systems that run PowerMaxOS 5978, HYPERMAX OS 5977, and Enginuity 5876. A zero value may indicate the corresponding statistic is not available for the requested configuration.
- ◆ There is a delay of approximately 10 seconds when requesting ESCON or FICON statistics as the data must be collected over a short interval.
- ◆ For help information on ZUECS type:


```
ZUECS Help
```
- ◆ The MPLf and CLear parameters are only valid on storage systems that run PowerMaxOS 5978.
- ◆ The MPLf display request can result in a clear of the MPLF statistics if it is recognized that the accumulators need to be cleared to get proper calculations. The user will be notified to wait 1 minute to accumulate statistics before issuing the display again.

Examples

This example displays the following information:

Dir	Hexadecimal channel director number.
Cache Hits	Number of times records were read from cache.
Writes	Total number of writes.
Requests	Total number of reads or writes (cache hits or misses).
I/O	Number of chained I/Os.
Rate	Average number of I/Os per second from the channel director to cache.
Hit pct	The percentage of read/write hits for all I/O requests.
Write pct	The percentage of writes for all I/O requests.
Short Timer	Amount of time in minutes and seconds since the beginning of the last statistical collection period within the storage system.
Long Timer	The amount of time since the last clearing of long term statistical counters in the storage system in the format of <i>days:hours:minutes:seconds</i> .
Read hit pct	The percentage of reads satisfied from cache.
IO Requests	The IO requests made since the last clearing of the MPLF I/O statistics.
MPLF IO	The MPLF I/O requests made since the last clearing of the MPLF I/O statistics.
Percent MPLF IO	The percentage of MPLF I/O of the total I/O.

ZUECS displays only active directors, where total requests are greater than zero.

Example 1

Action Display cache statistics for the storage system identified by the z/TPF SDA 50C0.

User ZUECS 50C0

System

```

CSMP0097I 01.51.37 CPU-H SS-BSS SSU-SSU0 IS-01
UECS0001I EMC Cache Statistics for CU designated by SDA 50C0
Dir: 0B
Cache Hits:      89 980 220                Writes:      19 697 478
Requests:       91 352 761                I/O:        92 514 222
Short Timer:    00:10 I/O Rate:      992 Hit pct: 96 Write pct: 58
Long Timer : 125:06:25:15 I/O Rate:    8 Hit pct: 98 Write pct: 21
                    Read hit pct: 99
-----
Dir: 0E
Cache Hits:     94 174 920                Writes:     19 987 609
Requests:      95 587 556                I/O:       96 810 276
Short Timer:   00:10 I/O Rate:    1052 Hit pct: 96 Write pct: 58
Long Timer : 125:06:25:15 I/O Rate:    8 Hit pct: 98 Write pct: 20
                    Read hit pct: 99
-----
Dir: 33
Cache Hits: 1 054 737 285                Writes:    604 688 163
Requests:   1 056 956 788                I/O:      1 074 992 904
Short Timer: 00:10 I/O Rate:    999 Hit pct: 96 Write pct: 57
Long Timer : 125:06:25:15 I/O Rate:   99 Hit pct: 99 Write pct: 57
                    Read hit pct: 00
-----
Dir: 36

```

```
Cache Hits: 1 056 266 076           Writes: 585 580 950
Requests: 1 058 547 129           I/O: 1 077 383 497
Short Timer: 00:10 I/O Rate: 1076 Hit pct: 96 Write pct: 57
Long Timer : 125:06:25:15 I/O Rate: 99 Hit pct: 99 Write pct: 55
                        Read hit pct: 00
```

End of Display

Example 2

Action Display cache statistics for the SRDF links associated with storage system identified by the z/TPF SDA 3BA2.

User ZUECS 3BA2 LINK

System

```
ZUECS 3BA2 LINK
CSMP0097I 19.32.13 CPU-A SS-BSS SSU-SSU0 IS-01
UECS0001I EMC Cache Statistics for CU designated by SDA 3BA2
Dir: 30
I/O: 7 354 524 KB Received: 00000004 497C3CE0
Writes: 3 052 938 KB Sent: 00000004 4B206E90
Requests: 0 Util Cnt: 0
T1 Util Cnt: 0 T2 Util Cnt: 0
```

```
-----
Dir: 40
I/O: 38 282 KB Received: 00000000 0A0E4FA8
Writes: 438 KB Sent: 00000000 03FA80C0
Requests: 0 Util Cnt: 0
T1 Util Cnt: 0 T2 Util Cnt: 0
```

End of Display

Example 3

Action Display MPLF statistics for the storage system identified by the z/TPF SDA 607F.

User ZUECS 607F MPLF

System

```
ZUECS MPLF 607F
CSMP0097I 08.46.45 CPU-A SS-BSS SSU-SSU0 IS-01
UECS0002I EMC Cache Statistics for CU designated by SDA 607F
-----
IO Requests: 100 MPLF IO: 30
Percent MPLF IO: 30
```

End of Display

Example 4

Action Clear statistics for the storage system identified by the z/TPF SDA 607F.

User ZUECS 607F CLEAR

System

```
ZUECS MPLF 607F
CSMP0097I 08.46.45 CPU-A SS-BSS SSU-SSU0 IS-01
UECS0003I MPLF statistics have been cleared, wait 1 minute before displaying
MPLF statistics.
```


ZUEDS: Device/DA Performance Statistics display

Display disk adapter statistics for all adapters of the storage system identified by a z/TPF SDA. ZUEDS DEV displays backend statistics for each logical device in the storage system.

Limitations

ZUEDS is available on storage systems that run PowerMaxOS 5978, HYPERMAX OS 5977, or Enginuity 5876.

Format

```
ZUEDS DA|DEV SDA-ccud [SDN-hhhh] [CNT-dddd]
```

Parameters

DA	Display disk adapter statistics for all adapters in the storage system identified by SDA.
DEV	Display backend statistics for each logical device in the storage system identified by SDA. This parameter is not available on storage systems that run PowerMaxOS 5978 or HYPERMAX OS 5977.
SDA-ccud	An SDA mounted on the z/TPF system that identifies a storage system.
SDN-hhhh	The number of the starting device in the range, in hexadecimal.
CNT-dddd	The of devices to display, starting with the SDN, in decimal.

Additional information

- ◆ A zero value may indicate the corresponding statistic is not available for the requested configuration.
- ◆ There is a delay of approximately 10 seconds when requesting statistics as the data must be collected over a short interval.
- ◆ For help information for ZUEDS type:

```
ZUEDS Help
```

Examples

Example 1

This example displays the following information:

Dir	Hexadecimal channel director number.
Cache Hits	Number of times records were read from cache.
Reads	Total number of reads.
Writes	Total number of writes.
Requests	Total number of reads or writes.
I/O	Number of chained I/Os.

Rate Average number of I/Os per second from the channel director to cache.

Hit pct The percentage of read/write hits for all I/O requests.

Write pct The percentage of writes for all I/O requests.

Short Timer Amount of time in minutes and seconds used for the displayed statistical collection period within the storage system.

Long Timer The amount of time since the last clearing of long term statistical counters in the storage system in the format of *days:hours:minutes:seconds*.

I/O Rate The average I/Os per second for the statistical period.

Write PCT The write percentage of I/Os for the statistical period.

Action Displays DA statistics for the storage system identified by SDA 3260.

User ZUEDS DA SDA-3260

System

```

CSMP0097I 18.34.05 CPU-G SS-BSS SSU-SSU0 IS-01
UEDS0001I EMC Disk Adaptor Statistics for CU designated by SDA 3260
Dir: 01
Reads:          55 298 018                Writes:   815 441 269
Requests:       870 739 287                I/O:     3 586 511 446
Short Timer:    00:17 I/O Rate:           89 Write pct: 98
Long Timer : 128:18:25:41 I/O Rate:       322 Write pct: 93
-----
Dir: 02
Reads:          57 405 397                Writes:   949 314 475
Requests:       1 006 719 872              I/O:     4 024 913 248
Short Timer:    00:17 I/O Rate:           84 Write pct: 96
Long Timer : 128:18:25:41 I/O Rate:       361 Write pct: 94
-----
Dir: 0F
Reads:          47 971 307                Writes:   536 869 434
Requests:       584 840 741                I/O:     2 332 719 936
Short Timer:    00:17 I/O Rate:           91 Write pct: 97
Long Timer : 128:18:25:41 I/O Rate:       209 Write pct: 91
-----
Dir: 10
Reads:          55 202 030                Writes:   802 407 097
Requests:       857 609 127                I/O:     3 485 783 449
Short Timer:    00:17 I/O Rate:           84 Write pct: 98
Long Timer : 128:18:25:41 I/O Rate:       313 Write pct: 93
-----
Dir: 11
Reads:          55 419 628                Writes:   801 665 661
Requests:       857 085 289                I/O:     3 510 767 196
Short Timer:    00:17 I/O Rate:           85 Write pct: 99
Long Timer : 128:18:25:41 I/O Rate:       315 Write pct: 93
-----
Dir: 12
Reads:          58 070 867                Writes:   957 522 422
Requests:       1 015 593 289              I/O:     4 068 711 941
Short Timer:    00:17 I/O Rate:           89 Write pct: 98
Long Timer : 128:18:25:41 I/O Rate:       365 Write pct: 94
-----
Dir: 1F
Reads:          48 183 127                Writes:   539 802 415
Requests:       587 985 542                I/O:     2 333 545 398
Short Timer:    00:17 I/O Rate:           88 Write pct: 99
Long Timer : 128:18:25:41 I/O Rate:       209 Write pct: 91
-----
Dir: 20

```

```

Reads:          57 253 063                Writes:   930 549 440
Requests:      987 802 503                I/O:     4 060 936 056
Short Timer:   00:17 I/O Rate:           88 Write pct: 98
Long Timer : 128:18:25:41 I/O Rate:     365 Write pct: 94
    
```

 End of Display

Example 2

This example displays the following information:

SDN	The device number.
Reads	Total number of reads.
Blks	Total blocks read.
Writes	Total number of writes.
Blks	Total blocks written.
Write PCT	The write percentage of I/Os for the statistical period.
PFtch	Total number of prefetch operations.
Tot I/Os	Total number of chained I/Os.
Tot Blks	Total blocks.

Action Display device statistics for device number 64 for a count of 8 devices in the storage system identified by SDA 5040.

User ZUEDS DEV SDA-5040 SDN-64 CNT-8

System

```

CSMP0097I 18.50.08 CPU-G SS-BSS  SSU-SSU0 IS-01
UEDS0002I EMC Device Configuration Statistics Display
SDA 5040 Time Elapsed 00:10 Total Lines 8
SDN  Reads  Blks  Writes Blks  Wpct  PFTch  Tot  I/Os  Tot  Blks
0064   14   543     6   90   30     0    20   633
0065   14   518     5   74   26     0    19   592
0066   17   625     5   66   22     0    22   691
0067   15   689     7  105   31     0    22   794
0068   14   634     6   94   30     0    20   728
0069   13   507     5   77   27     0    18   584
006A   13   508     6   99   31     0    19   607
006B   14   561     6   94   30     0    20   655
ENS_0002501_08:50:09  End of Display
    
```

ZUELM: Display Electronic License Management Entitlements

Display the Electronic License Entitlements for a specified storage system.

Limitations

ZUELM is available on storage systems that run PowerMaxOS 5978, HYPERMAX OS 5977, or Enginuity 5876.

Format

```
ZUELM DISplay ccuu [MHL1-dd.dd] [MHL2-dd.dd]
```

Parameters

<i>ccud</i>	An SDA mounted on the z/TPF system that identifies the storage system.
MHL1- <i>dd.dd</i>	Hops one and two of the multi-hop list that identifies the RDFGroup path to the remote storage system.
MHL2- <i>dd.dd</i>	Hops three and four of the multi-hop list that identifies the RDFGroup path to the remote storage system.

Additional Information

For help information on ZUELM, type:

ZUELM Help

Examples

Example 1

This example displays the following items:

<i>ccud</i>	The SDA mounted on the z/TPF system.
Feature Name	A the name of the system entitlement.
Act	Activation type for entitlement
	E-IND means Evaluation Individual.
	P-IND means Permanent Individual.
	P-ENT means Permanent Enterprise Agreement.
	MAN means Manual Override.

Licensed Capacity Type/Units **Type Reg** means registered capacity.
R-TB-Non-SATA means raw non-SATA capacity.
R-TB-SATA means raw SATA capacity.
Units Terabytes of capacity allotted for type.
Usage Counts Number of times the feature was used.
Action Display table on a supported CU.

UELM0005I EMC License Information for 4CC0
 Symmetrix ID : 000192604124

Feature Name	Act	Type	Licensed Capacity	Units	Usage Counts
SYMM_VMAX_ENGINUITY	P-IND	R-TB-Non-SATA	100		00000000
		R-TB-SATA	50		00000000
SYMM_VMAX_TF_CLONE	E-IND	REG-TB	15		00000016
SYMM_VMAX_TF_SNAP	P-IND	REG-TB	15		00000000
SYMM_VMAX_SRDF_S	P-IND	REG-TB	15		0000051A
SYMM_VMAX_SRDF_A	P-ENT	REG-TB	15		00000505
SYMM_VMAX_SRDF_STAR	P-IND	REG-TB	15		00000011
SYMM_VMAX_DCP	P-IND	R-TB-Non-SATA	15		00000000
		R-TB-SATA	10		00000000
SYMM_VMAX_SPC	P-IND	R-TB-Non-SATA	15		00000000
		R-TB-SATA	10		00000000
SYMM_VMAX_OPTIMIZER	P-IND	R-TB-Non-SATA	15		00000000
		R-TB-SATA	10		00000000
SYMM_VMAX_FAST	P-IND	REG-TB	15		00000000
SYMM_VMAX_FAST_VP	P-IND	REG-TB	15		00000000
SYMM_VMAX_SRDF	P-IND	REG-TB	30		00000F10
SYMM_VMAX_OR_DM	P-IND	R-TB-Non-SATA	15		00000000
		R-TB-SATA	10		00000000
SYMM_VMAX_SMC	P-IND	R-TB-Non-SATA	15		00000005
		R-TB-SATA	10		00000000
SYMM_VMAX_PROSPHERE	P-IND	R-TB-Non-SATA	15		00000000
		R-TB-SATA	10		00000000

 Legend for Act(ivation Type):
 E-IND = Evaluation Individual
 P-IND = Permanent Individual
 P-ENT = Permanent Enterprise Agreement
 MAN = Manual Override
 End of Display

Example 2

Action Display table on an unsupported storage system.

User ZUELM DISP 64A1

System

CSMP0097I 13.57.08 CPU-A SS-BSS SSU-SSU0 IS-01
 UELM0003E SDA 64A1 designates an unsupported CU

ZUFRT: Display Feature Registration Table

ZUFRT displays the Feature Registration Table for the storage system that the supplied SDA identifies.

Limitations

You can use ZUFRT on storage systems that run PowerMaxOS 5978, HYPERMAX OS 5977, or Enginuity 5876.

Format

```
ZUFRT DISplay ccuu [FID-hhhh]
```

Parameters

<i>ccud</i>	An SDA mounted on the z/TPF system that identifies the storage system.
<i>FID-hhhh</i>	Hexadecimal feature ID.

Additional Information

For help information on ZUFRT, type:

ZUFRT Help

Examples

Example 1

This example displays the following information:

FID	Feature ID, a hexadecimal identifier for the feature.
Description	A short description of the feature.
EN	A flag indicating whether the feature is enabled.
BK	A flag indicating whether the feature is blocked.
Action	Display table on a supported storage system.
User	ZUFRT DISP 3880
System	

```
CSMP0097I 13.58.39 CPU-A SS-BSS SSU-SSU0 IS-01
UFRT0002I EMC Feature Registration Display for 3880
  FID      Description                               EN BK Counts
  0001     Max Number of ORS Sessions                N  N  00000000
  0004     Relax disk spare rules for hard           N  N  00000000
  0005     Relax disk spare rules for flash          N  N  00000000
  0006     Host access to unprotected std v         N  N  00000000
  0007     Disable Permanent Member Sparing         N  N  00000000
  0100     Enginuity                                 Y  N  00000009
  0102     Open Replicator                           N  N  00000000
  0103     TimeFinder/Mirror                         N  N  00000000
  0104     TimeFinder/Clone                          Y  N  00000012
  0105     TimeFinder/Extent Snap                   N  N  00000000
  0106     TimeFinder/Snap                          N  N  00000000
```

```

0107      Native FlashCopy                N  N  00000000
0108      SRDF/Synchronous                Y  N  00000057
0109      SRDF/Asynchronous               Y  N  0000000F
010A      XRC                             N  N  00000000
010B      PPRC                            N  N  00000000
010C      Cascaded SRDF                   Y  N  00000000
010D      Concurrent SRDF                 Y  N  00000000
MORE DATA AVAILABLE, ENTER ZPAGE TO CONTINUE

```

ZPAGE

```

CSMP0097I 13.58.47 CPU-A SS-BSS  SSU-SSU0 IS-01
010E      Diskless Cascaded SRDF         N  N  00000000
010F      SRDF/STAR                       N  N  00000000
0110      SRDF/A DSE Pools                 Y  N  00000000
0111      SRDF/A Transmit Idle             Y  N  00000000
0112      DPAV                            N  N  00000000
0113      HYPERPAV                        N  N  00000000
0114      Masking                          Y  N  00000000
0115      Config Change Management        Y  N  00000001
0116      Cfg Chg - Device Attributes      Y  N  00000001
0117      Cfg Chg - Device Create          Y  N  00000001
0118      Cfg Chg - Meta Form/Dissolve    Y  N  00000000
0119      Cfg Chg - Meta Reconfig         Y  N  00000000
011A      Cfg Chg - Mapping                Y  N  00000000
011B      Cfg Chg - Port Flags             Y  N  00000000
011C      Cfg Chg - Symmetrix attributes  Y  N  00000000
011D      Virtual Provisioning             N  N  00000000
011E      DeltaMark                       Y  N  00000000
011F      Double CheckSum (DCS)           N  N  00000000
MORE DATA AVAILABLE, ENTER ZPAGE TO CONTINUE

```

ZPAGE

```

CSMP0097I 13.58.52 CPU-A SS-BSS  SSU-SSU0 IS-01
0120      Generic SafeWrite               Y  N  00000000
0121      Quality of Service - Pace        Y  N  00000001
0122      Quality of Service - Cache Parti N  N  00000000
0123      Quality of Service - Priority     N  N  00000000
0124      Optimizer                       Y  N  00000003
0125      Virtual LUNs                     N  N  00000000
0126      Single disk erasure              N  N  00000000
0127      Device Geometry                  Y  N  00000000
0128      Enginuity Upgrade Preparation    Y  N  00000000
0129      SymFAST - Thick                  N  N  00000000
012A      Virtual Provisioning - Zero Spac Y  N  00000000
012B      Virtual Provisioning - Pool Reba Y  N  00000000
012C      SRDF/A Write Pacing              Y  N  00000000
012D      SRDF Software Compression        Y  N  00000000
012E      Timefinder/Clone - Thick to thin Y  N  00000000
End of Display

```

Example 2

Action Display a specific feature.
User ZUFRT DISP 3880 FID-104
System

```

CSMP0097I 13.59.48 CPU-A SS-BSS  SSU-SSU0 IS-01
UFRT0002I EMC Feature Registration Display for 3880
  FID      Description                EN BK Counts
  0104     TimeFinder/Clone           Y  N  00000012
End of Display

```

Example 3

Action Display table on an unsupported storage system.

User ZUFRT DISP 64A1

System

```
CSMP0097I 13.57.08 CPU-A SS-BSS SSU-SSU0 IS-01
UFRT0003E SDA 64A1 designates an unsupported CU
```


ZUGRP: Dynamic RDFGroup Controls

Display information for one or more RDFGroups in a specified storage system. In addition, you can create RDFGroups between SRDF partner storage systems attached through Fibre Channel or GigE.

Limitations

- ◆ You can use ZUGRP to display RDFGroup information for SRDF partner storage systems that run Enginuity 5876 and later.
- ◆ For information on dynamic RDFGroup controls for PowerMaxOS 5978 or HYPERMAX OS 5977 and later, see the *Dell EMC SRDF Controls for z/TPF Product Guide*.

Format

```
ZUGRP DISplay SDA-ccud [PRG-ddd] [MHL1-dd.dd MHL2-dd.dd]
```

```
ZUGRP ADD|DELeTe 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] [LABe1-cccccccccc] [MHL1-ddd.ddd  
MHL2-ddd.ddd] [NOVErify] [FIBRe|GIGE]
```

Parameters

ADD	Add the specified RDFGroup to the specified primary and secondary RDF directors and the specified RDFGroup label.
DELeTe	Delete the specified RDFGroup from the specified primary and secondary RDF directors and the specified label.
ccud	A z/TPF SDA that identifies the storage system.
PRG	Primary RDFGroup. 1-3 decimal digits. Values: 0 to 250 (inclusive).
SRG	Secondary RDFGroup. 1-3 decimal digits. Values: 0 to 250 (inclusive). If not specified, the default value is the value of the PRG parameter.
SCU	The serial number of the secondary storage system.
PD1-PD4	Primary RDF directors. Up to 8 directors, 1 to 3 decimal digits. Values: <ul style="list-style-type: none"> ◆ 1 to 128 A value of zero for PD1 on the delete command deletes the RDFGroup from all RDF directors on both the primary and secondary storage systems.
SD1-SD4	Secondary RDF directors. Up to 8 directors, 1 to 3 decimal digits. Values: <ul style="list-style-type: none"> ◆ 1 to 128

LABel	The label for the RDFGroup consisting of the characters 0 to 9,A to Z, and ":". If RDFGroup label is not specified, the default is "most_significant_digits_of_primary_serial_number:hexadecimal_PrimaryRDFGroup:most_significant_digits_of_secondary_serial_number".
MHL1-MHL2	RDFGroups specifying the path to the primary storage system. Specify up to 4 hops, each of 1 to 3 decimal digits.
NOVErify	Run the command without verifying the existence of RDFGroups between the partner storage systems.
FIBRe GIGE	The type of RDF link.

Additional information

- ◆ For the ADD command, the RDF director numbers specified by parameters PD1-PD4 and SD1-SD4 identify the RDF director where the RDFGroup specified is added. To add an existing dynamic RDFGroup to one or more directors on the primary side only (PD1-PD4), specify any RDF director already configured with the RDFGroup on the secondary side (SD1-SD4). To add an existing dynamic RDFGroup to one or more directors on the secondary side only (SD1-SD4), specify any RDF director already configured with the RDFGroup on the primary side (PD1-PD4).
- ◆ For the DEL command, the RDF director numbers specified by parameters PD1-PD4 and SD1-SD4 identify the RDF director from which the RDFGroup specified is deleted. To keep the RDFGroup on all RDF directors already configured with the RDFGroup on the primary side, do not specify PD1-PD4. To keep the RDFGroup on all RDF directors already configured with the RDFGroup on the secondary side, do not specify SD1-SD4. To delete the RDFGroup from all RDF directors on both the primary and secondary storage systems, specify a value of 0 for PD1.
- ◆ Deleting an RDFGroup from a specified director removes all paths for that RDFGroup from that specified director to all directors in its partner director.
- ◆ For help information on ZUGRP type:

ZUGRP Help

Examples

The examples display the following information:

DIR	Decimal director number on the Primary storage system.
GRP	Decimal RDFGroup on the Primary storage system.
Partner S/N	The serial number of the Secondary storage system.
ODR	Director number on the Secondary storage system (in decimal).
OGP	RDFGroup on the Secondary secondary storage system (in decimal).

RCS Where:
 R specifies the Remote Link Director type. Values are:
 M Source Remote Link Director
 S Target Remote Link Director
 F Fibre Remote Link Director
 C specifies the Port connection status. Values are:
 Y link path established
 N no link path established
 S specifies the Link status. Values are:
 Y link is online
 N link is not online

GRP Label The RDFGroup label.
 Type The RDFGroup type - Dynamic or Static.

Example 1

Action Display RDFGroup information for all RDFGroups in the storage system identified by SDA 64C0

User System ZUGRP DIS SDA-64C0

```
CSMP0097I 09.32.29 CPU-A SS-BSS SSU-SSU0 IS-01
UGRP0001I Dynamic RDFGroup display for CU 000187430936 Microcode 5773
DIR GRP Partner S/N ODR OGP RCS GRP Label Type
 20 6 000190300063 64 6 FYY 063:06:936 Dynamic
 20 6 000190300063 48 6 FYY 063:06:936 Dynamic
 29 6 000190300063 64 6 FYY 063:06:936 Dynamic
 29 6 000190300063 48 6 FYY 063:06:936 Dynamic
 20 63 000190300063 48 5 FYY 3F-936-063 Static
 20 63 000190300063 64 5 FYY 3F-936-063 Static
 29 63 000190300063 48 5 FYY 3F-936-063 Static
 29 63 000190300063 64 5 FYY 3F-936-063 Static
 36 29 000190100840 56 63 FYY 3F-840-936 Static
 45 29 000190100840 56 63 FYY 3F-840-936 Static
 36 28 000190100840 56 62 FYY 3E-840-936 Static
 45 28 000190100840 56 62 FYY 3E-840-936 Static
 36 27 000190100840 41 61 FYY 3D-840-936 Static
 36 27 000190100840 40 61 FYY 3D-840-936 Static
 45 27 000190100840 41 61 FYY 3D-840-936 Static
 45 27 000190100840 40 61 FYY 3D-840-936 Static
 20 12 000190100840 41 60 FYY 3C-840-936 Static
 20 12 000190100840 40 60 FYY 3C-840-936 Static
 29 12 000190100840 41 60 FYY 3C-840-936 Static
 29 12 000190100840 40 60 FYY 3C-840-936 Static
 4 11 000190100840 41 3 FYY 03-840-936 Static
 4 11 000190100840 40 3 FYY 03-840-936 Static
 13 11 000190100840 41 3 FYY 03-840-936 Static
 13 11 000190100840 40 3 FYY 03-840-936 Static
 4 10 000190100840 56 0 FYY 00-840-936 Static
 13 10 000190100840 56 0 FYY 00-840-936 Static
```

End of Display

Example 2

Action Display RDFGroup information for all RDFGroups in the secondary storage system on RDFGroup 10 from the primary storage system identified by the SDA 64C0.

User ZUGRP DIS SDA-64C0 MHL1-10

System

```
CSMP0097I 09.33.27 CPU-A SS-BSS SSU-SSU0 IS-01
UGRP0001I Dynamic RDFGroup display for CU 000190100840 Microcode 5773
DIR GRP Partner S/N ODR OGP RCS GRP Label Type
56 63 000187430936 36 29 FYY 3F-840-936 Static
56 63 000187430936 45 29 FYY 3F-840-936 Static
56 62 000187430936 36 28 FYY 3E-840-936 Static
56 62 000187430936 45 28 FYY 3E-840-936 Static
40 61 000187430936 36 27 FYY 3D-840-936 Static
40 61 000187430936 45 27 FYY 3D-840-936 Static
41 61 000187430936 36 27 FYY 3D-840-936 Static
41 61 000187430936 45 27 FYY 3D-840-936 Static
40 60 000187430936 29 12 FYY 3C-840-936 Static
40 60 000187430936 20 12 FYY 3C-840-936 Static
41 60 000187430936 29 12 FYY 3C-840-936 Static
41 60 000187430936 20 12 FYY 3C-840-936 Static
40 3 000187430936 13 11 FYY 03-840-936 Static
40 3 000187430936 4 11 FYY 03-840-936 Static
41 3 000187430936 4 11 FYY 03-840-936 Static
41 3 000187430936 13 11 FYY 03-840-936 Static
56 0 000187430936 4 10 FYY 00-840-936 Static
56 0 000187430936 13 10 FYY 00-840-936 Static
End of Display
```

Example 3

Action Add RDFGroup 31 to the primary storage system identified by the SDA 64C0 and the secondary storage system that has a Serial Number of 000190100840. The RDFGroup is added on primary directors 20 and 29 and secondary directors 40 and 41.

User ZUGRP ADD SDA-64C0 PRG-31 SRG-31 SCU-000190100840
PD1-20.29 SD1-40.41

System

```
CSMP0097I 09.35.53 CPU-A SS-BSS SSU-SSU0 IS-01
UGRP0001I Dynamic RDFGroup Controls operation complete
```

Example 4

Action Display RDFGroup information for RDFGroup 222 in the primary storage system designated by SDA 3840.

User ZUGRP DIS SDA-3840 PRG-222

System

```
CSMP0097I 02.58.45 CPU-B SS-BSS SSU-SSU0 IS-01
UGRP0001I Dynamic RDFGroup display for CU 000192600069 Microcode 5874
DIR GRP Partner S/N ODR OGP RCS GRP Label Type
87 222 000190300346 49 222 FYY 069:DE:346 Dynamic
87 222 000190300346 64 222 FYY 069:DE:346 Dynamic
88 222 000190300346 64 222 FYY 069:DE:346 Dynamic
88 222 000190300346 49 222 FYY 069:DE:346 Dynamic
End of Display
```

Action Delete RDFGroup 222 from RDF director 88 in the primary storage system identified by the SDA 3840. The RDFGroup label is the default label.

User ZUGRP DEL SDA-3840 PRG-222 SCU-000190300346 PD1-88

System

```
CSMP0097I 03.02.34 CPU-B SS-BSS SSU-SSU0 IS-01
UGRP0001I Dynamic RDFGroup Controls operation complete
```

Action Display RDFGroup information for RDFGroup 222 in the primary storage system identified by the SDA 3840.

User ZUGRP DIS SDA-3840 PRG-222

System

```
CSMP0097I 03.04.59 CPU-B SS-BSS SSU-SSU0 IS-01
UGRP0001I Dynamic RDFGroup display for CU 000192600069 Microcode 5874
DIR GRP Partner S/N ODR OGP RCS GRP Label Type
 87 222 000190300346 49 222 FYY 069:DE:346 Dynamic
 87 222 000190300346 64 222 FYY 069:DE:346 Dynamic
End of Display
```

Example 5

Action Delete RDFGroup 222 from RDF director 49 in the secondary storage system identified by the SDA 3840. The RDFGroup label is the default label.

User ZUGRP DEL SDA-3840 PRG-222 SCU-000190300346 SD1-49

System

```
CSMP0097I 03.06.39 CPU-B SS-BSS SSU-SSU0 IS-01
UGRP0001I Dynamic RDFGroup Controls operation complete
```

Action Display RDFGroup information for RDFGroup 222 in the primary storage system identified by the SDA 3840.

User ZUGRP DIS SDA-3840 PRG-222

System

```
CSMP0097I 03.06.58 CPU-B SS-BSS SSU-SSU0 IS-01
UGRP0001I Dynamic RDFGroup display for CU 000192600069 Microcode 5874
DIR GRP Partner S/N ODR OGP RCS GRP Label Type
 87 222 000190300346 64 222 FYY 069:DE:346 Dynamic
End of Display
```

Example 6

Action Add RDFGroup 222 to RDF director 87 in the primary storage system identified by the SDA 3840 and RDF director 49 in the secondary storage system. The RDFGroup label is the default label.

User ZUGRP ADD SDA-3840 PRG-222 SCU-000190300346 PD1-88 SD1-49

System

```
CSMP0097I 03.10.24 CPU-B SS-BSS SSU-SSU0 IS-01
UGRP0001I Dynamic RDFGroup Controls operation complete
```

Action Display RDFGroup information for RDFGroup 222 in the primary storage system identified by SDA 3840.

User ZUGRP DIS SDA-3840 PRG-222

System

```
CSMP0097I 03.12.19 CPU-B SS-BSS SSU-SSU0 IS-01
UGRP0001I Dynamic RDFGroup display for CU 000192600069 Microcode 5874
DIR GRP Partner S/N ODR OGP RCS GRP Label Type
87 222 000190300346 49 222 FYY 069:DE:346 Dynamic
87 222 000190300346 64 222 FYY 069:DE:346 Dynamic
88 222 000190300346 64 222 FYY 069:DE:346 Dynamic
88 222 000190300346 49 222 FYY 069:DE:346 Dynamic
End of Display
```

Example 7

Action Delete RDFGroup 222 from RDF directors 87 and 88 in the primary storage system identified by the SDA 3840 and RDF directors 49 and 64 in the secondary storage system. This is all RDF directors configured with RDFGroup 222. The RDFGroup label is the default label.

User ZUGRP DEL SDA-3840 PRG-222 SCU-000190300346 PD1-0

System

```
CSMP0097I 03.15.43 CPU-B SS-BSS SSU-SSU0 IS-01
UGRP0001I Dynamic RDFGroup Controls operation complete
```

Action Display RDFGroup information for RDFGroup 222 in the primary storage system identified by the SDA 3840.

User ZUGRP DIS SDA-3840 PRG-222

System

```
CSMP0097I 03.15.59 CPU-B SS-BSS SSU-SSU0 IS-01
UGRP0001I Dynamic RDFGroup display for CU 000192600069 Microcode 5874
DIR GRP Partner S/N ODR OGP RCS GRP Label Type
End of Display
```

ZULOC: MPLF connection, lock, and attention message information display

Display Multi-Path Lock Facility (MPLF) connection and lock allocation information and active MPLF locks. ZULOC ATTN displays active MPLF attention messages for the z/TPF host issuing the message and the SSID designated by the SDA.

Limitations

You can use ZULOC on the systems running Enginuity 5773 and later with MPLF enabled.

Format

```
ZULOC MPLF|ATTN SDA-ccud
```

Parameters

MPLF	Display Multi-Path Lock Facility (MPLF) connection and lock allocation information and MPLF locks active for the duration of entry (more than 6 sec) for the SSID designated by the input SDA.
ATTN	Display MPLF attention messages active for the duration of the entry (more than 6 sec) for the MPLF connect device of the z/TPF host issuing the message, and the SSID designated by the SDA.
SDA-ccud	An SDA mounted on the z/TPF system that identifies the storage system.

Additional information

- ◆ The information relates to the SSID that the SDA identifies.
- ◆ When specifying MPLF, the processing takes approximately eight seconds. The MPLF structures for the connected z/TPF hosts and the SSID identified by the SDA are displayed, followed by:
 - The active locks for the processor where you issued the ZULOC command
 - The SSID identified by the SDA

Note: ZULOC MPLF only displays the locks active throughout the processing of this command. The lock display indicates the minimum time that the locks have been active.

- ◆ When specifying Attention messages, the processing takes approximately five seconds. The display lists all active attention messages queued on the z/TPF host's connect device associated with the SSID identified by the SDA.
- ◆ For help information on ZUEDS, type:

```
ZULOC Help
```

Examples

Example 1

This example displays the following information:

AVAILABLE LOCKS	Hexadecimal and decimal number of MPLF locks allocated.
USED LOCKS	Hexadecimal and decimal number of MPLF locks in use.
CPU	CPU ID of the z/TPF host.
DIR	Channel director for the MPLF Connect Path on the storage system.
SDA	Symbolic device address of the MPLF Connect Device.
Token	Multi-Path Lock user token.
GIDN	Group ID number.
Group-ID	Path group ID.
CH/CU/IMG/LNK	Internal operating environment data structures.
Lock Name	Name assigned to the active lock.
Time Stamp	The time that the lock was created.
Holders	The CPU ID of the z/TPF host holding the lock.
Waiters	The CPU ID(s) of the z/TPF host(s) waiting on the lock.

Action Display the MPLF Connect information for the SSID and storage system identified by the SDA-3848. The MPLF connect information is followed by any locks that were active for the specified SSID during the information gathering.

User ZULOC MPLF SDA-3848

System

```
CSMP0097I 10.52.49 CPU-A SS-BSS SSU-SSU0 IS-01
ULOC0001I EMC MPLF Information designated by SDA 3848 for SSID 3841
```

```
-----
AVAILABLE LOCKS: X'000007FB' (2043) USED LOCKS: X'00000020' (32)
-----
CPU   DIR   SDA   TOKEN  GIDN  GROUP-ID                                CH/CU/IMG/LNK
-----
A    8g/67  3857  017201 4000  000880A500050A29000008910 17/01/07/000C
-----
```

MPLF locks active for more than 5 seconds

```
-----
LOCK NAME 00C5010B 55000000          TIME STAMP MAR/06/12 11:40:11
HOLDERS                                     A
WAITERS
LOCK NAME 0580030A 52000000          TIME STAMP MAR/06/12 11:40:46
HOLDERS                                     A
WAITERS
-----
```


Example 2

This example displays the following information:

- DR** Hexadecimal channel director number.
 - Time Stamp** The time the attention message was created.
 - State** The time the attention message state was changed.
 - CH/CU/IMG/LNK** Internal operating environment data structures.
 - ST** Attention message state. Values:
 - 01 = Suspended
 - 02 = Message held
 - 08 = Unassigned
 - 09 = Assigned
 - 19 = Previous message read
 - GIDN** Group ID number.
 - SDA** Symbolic device address of the MPLF Connect Device.
 - LN** Attention message type. Values:
 - 1 = In-Line Response
 - 2 = Contention response
 - 3 = Lock granted
 - 4 = Resources Available
 - Lock Name** Name assigned to the active lock.
- Action** Display attention messages for the SSID identified by the SDA and the MPLF connect device of the z/TPF host where the ZULOC ATTN was entered. The z/TPF host designated by GIDN 4002 shares the MPLF connect device, SDA 3613, with the z/TPF host designated by GIDN 4001.
- User** ZULOC ATTN SDA-3600
- System**

```
CSMP0097I 18.38.00 CPU-A SS-BSS SSU-SSU0 IS-01
ULOC0002I EMC Attention Messages on device 3613
```

```
-----
DR      TIME STAMP      STATE      CH/CU/IMG/LNK ST  GIDN  SDA  LN  LOCK-NAME
-----
25 SEP/10/08 13:22:24 13:22:24 00/01/03/00A3 19 4002 3613 2 0C980504 42000000
05 SEP/10/08 13:22:24 13:22:24 00/01/02/009E 19 4001 3613 2 0C980504 43000000
25 SEP/10/08 13:22:24 13:22:24 00/01/03/00A3 19 4002 3613 3 0C980504 44000000
05 SEP/10/08 13:22:24 13:22:24 00/01/02/009E 19 4001 3613 3 0C980504 42000000
05 SEP/10/08 13:22:24 13:22:24 00/01/02/009E 19 4001 3613 2 0C980504 42000000
25 SEP/10/08 13:22:24 13:22:24 00/01/03/00A3 19 4002 3613 3 0C980504 46000000
25 SEP/10/08 13:22:24 13:22:24 00/01/03/00A3 19 4002 3613 2 0C980504 46000000
16 SEP/10/08 13:22:24 13:22:24 00/01/01/0099 08 4000 3613 3 0B09030A 43000000
05 SEP/10/08 13:22:24 13:22:24 00/01/02/009E 19 4001 3613 2 0B09030A 47000000
End of display
```

ZUOMA: Control data controls

ResourcePak for z/TPF includes commands to display and refresh control data and a target status table (TST) derived from the TimeFinder for z/TPF data structures:

- ◆ [ZUOMA DISplay](#)
- ◆ [ZUOMA REFresh](#)

ZUOMA DISplay

Use the ZUOMA DISplay command to shows the content of a in-memory table that contains control data and the TST derived from TimeFinder for z/TPF data structures.

Requirements and limitations

- ◆ You can use ZUOMA DISplay on a PowerMax system that runs PowerMaxOS 5978, a VMAX All Flash system that runs PowerMaxOS 5978 or HYPERMAX OS 5977, a VMAX 3 system that runs HYPERMAX OS 5977, or a VMAX system that runs Enginuity 5876.
- ◆ Load TimeFinder for z/TPF V8.0.0 or higher on the BSS of the z/TPF complex and initialize the TimeFinder Controls for z/TPF data structures.
- ◆ Load Offline Module Access for z/TPF V8.0.0 or higher on each MDBF SS of the z/TPF complex on which the utility is intended to run.
- ◆ Initialize the Control Data structures of the Offline Module Access facility before using any ZUOMA command.

Format

```
ZUOMA DISplay OCD | (TST mod cnt GROup-cccccccc)
```

Parameters

<i>OCD</i>	Display the general OMA Control Data.
<i>TST</i>	Display the Target Status Table.
<i>mod</i>	The number (in hexadecimal) of the symbolic module.
<i>cnt</i>	The number (in decimal) of modules to display.
<i>GROup-ccccccc</i>	The 1- to 8-character name of a BCV group.

Additional information

For help information on ZUOMA DISplay, type:

```
ZUOMA Help
```

Example 1

This example displays the following information:

MOD	The symbolic module number of the device.
SSDA	The symbolic address of the source device at the time the specified TimeFinder operation was issued.
SRC#	The storage device number of the source device.
TGT#	The storage device number of the target device.
TSDA	The symbolic address of the target device as defined during configuration of the TimeFinder group.
TF operation	The last TimeFinder operation recorded in the TimeFinder Device pair Information Record.

Action Display four items from the TST for TimeFinder group Group2 starting with symbolic module 100.

User ZUOMA DIS TST 100 4 GRO-GROUP2

System

```
CSMP0097I 00.07.27 CPU-A SS-BSS SSU-SSU0 IS-01
UOMA1003I 00.07.27 Offline Module Access Display
TimeFinder Group GROUP2 Status Table Display
  MOD SSDA SRC#      TGT#      TSDA  TF Operation
0100 3600 00000007 0000014B 3640      Split
0101 3601 00000008 0000014C 3641      Split
0102 33C0 000000B4 000000FC 3380      Split
0103 33C1 000000B5 000000FD 3380      Split
End of Display
```

Example 2

This example displays the following information:

OMA Software Version The version number of the Offline Module Access facility and SymmAPI loaded.

Refreshed at HH/mm.ss on mm/dd/yy The time and date that the ZUOMA REFresh command was issued.

TF Daya Structures Initialized An indication of whether the TimeFinder Control Records were initialized during the previous ZUOMA REFresh command.

Target Status Table Core Address The memory address of the TST.

Unsupported SSIDs The DASD Subsystem identifiers that the Data Recover Utilities cannot operate on. For example, ZUCPY.

Action Display Offline Module Access control data.

User ZUOMA DIS OCD

System

```
CSMP0097I 00.11.02 CPU-A SS-BSS SSU-SSU0 IS-01
UOMA1004I 00.11.02 Offline Module Access Display
OMA Software Version: 0007 Modification: 0001 Revision: 0000
Refreshed at 00.07.13 on 01/08/14
```

```

TF Data Structures Initialized:    Yes
Target Status Table Core Address: 08001000
Local BCV Groups: 0004
GROUP1 GROUP2 GROUP3 GROUP4
Unsupported SSIDs: 0000
End of Display

```

ZUOMA REFresh

Use the ZUOMA REFresh command to initialize the Control Data structures for the Dell EMC Offline Module Access facility.

Requirements and limitations

- ◆ You can use ZUOMA REFresh on a PowerMax system that runs PowerMaxOS 5978, a VMAX All Flash system that run PowerMaxOS 5978 or HYPERMAX OS 5977, a VMAX 3 system that runs HYPERMAX OS 5977, or a VMAX system that runs Enginuity 5876.
- ◆ Load TimeFinder for z/TPF V8.0.0 or higher on the BSS of the z/TPF complex and initialize the TimeFinder Controls for z/TPF data structures.
- ◆ Load Offline Module Access for z/TPF V8.0.0 or higher on each MDBF SS of the z/TPF complex on which the utility is intended to run.
- ◆ Initialize the Control Data structures of the Offline Module Access facility before using any ZUOMA command.
- ◆ If you load multiple Dell EMC products for z/TPF on a z/TPF complex, they must be at the same version levels to ensure compatibility.

Format

```
ZUOMA REFresh GROup-cccccccc
```

Parameters

GROup-cccccccc The 1- to 8-character name of the TimeFinder group.

Additional information

For help information on ZUOMA REFresh, type:

```
ZUOMA Help
```

Example

Action Initialize Offline Module Access control data for TimeFinder group OMAVX.

User ZUOMA REFRESH GRO-OMAVX

System

```

CSMP0097I 13.46.01 CPU-A SS-BSS SSU-SSU0 IS-01
UOMA1000I 13.46.01 OMA Refresh Started - Group OMAVX
CSMP0097I 13.46.01 CPU-A SS-A64 SSU-SSU1 IS-01
UOMA1000I 13.46.01 OMA Refresh Started - Group OMAVX
CSMP0097I 13.46.02 CPU-A SS-BSS SSU-SSU0 IS-01
UOMA1001I 13.46.02 OMA Refresh Complete - Group OMAVX
CSMP0097I 13.46.02 CPU-A SS-A64 SSU-SSU1 IS-01
UOMA1001I 13.46.02 OMA Refresh Complete - Group OMAVX

```

ZUSRP: Storage Resource Pool Management

Display and manage the components of Storage Resource Pools (SRP).

Limitations

- ◆ ZUSRP is available on storage systems that run PowerMaxOS 5978 or HYPERMAX OS 5977.
- ◆ The z/TPF SDA that you provide must be locally attached and mounted on the z/TPF system.

ZUSRP DISPLAY

Display information about a Storage Resource Pool and its components.

Format

```
ZUSRP DISplay SDA-ccuu poolreq-typereq [MHL1-dd.dd MHL2-dd.dd]
```

Parameters

<i>SDA-ccuu</i>	An SDA mounted in the z/TPF system that identifies the storage system.
<i>poolreq</i>	The pool request. One of: <ul style="list-style-type: none"> ◆ SRP – Storage Resource Pool information request. ◆ DGP – Disk Group information request. ◆ SGP – Storage Group information request. ◆ SLO – Service Level Objective information request.
<i>typereq</i>	The type of display requested. One of: <ul style="list-style-type: none"> ◆ ALL – display all Pools and Groups. ◆ LIST – display a list of Pools and Groups. ◆ (<i>id</i>) – display the Pool or Group that has the specified identifier. ◆ (<i>name</i>) – display the Pool or Group with the specified name.
<i>MHL1-dd.dd</i>	Optional: Hops one and two of the multi-hop list that identifies the RDF group path to the remote storage system.
<i>MHL2-dd.dd</i>	Optional: Hops three and four of the multi-hop list that identifies the RDF group path to the remote storage system.

Examples

SRP Examples

The examples in this section display the following information:

SRP Name	The name of the SRP.
Description	The description of the SRP.
ID	The identifier of the SRP.
CKD Default	A flag indicating whether this is the default SRP for CKD volumes.
FBA Default	A flag indicating whether this is the default SRP for FBA volumes.
Resv Cap	The maximum percentage of the SRP capacity that can be allocated for SnapVX protection tracks.
DSE SRP	“Y” indicates that the SRP is the DSE allocation SRP.
DSE Max Cap	The maximum amount of an SRP (in GB) than can be allocated for SRDF/A spillover.
Capacity	The maximum capacity in CKD and FBA tracks.
Free	The amount of unallocated tracks in the SRP expressed as a number and as a percentage of the SRP capacity.
Allocated	The amount of allocated tracks in the SRP expressed as a number and as a percentage of the SRP capacity.
Snap	The amount of tracks in the SRP, expressed as a number and as a percentage of SRP capacity, that can be allocated for SnapVX protection.
DSE	The amount of tracks in the SRP , expressed as a number and as a percentage of SRP capacity, allocated for SRDF/A spillover.
Subscribed	The amount of logical tracks, expressed as a number and as a percentage of SRP capacity, bound to the SRP.

Example 1

Action Display all SRPs allocated in the storage system identified by the SDA 46E0.

User ZUSRPR DIS SDA-46E0 SRP-ALL

System

```
CSMP0097I 13.09.27 CPU-A SS-BSS SSU-SSU0 IS-01
USRP0010I SRP ALL Display for Local CU 000197700335
```

```
-----
SRP Name: SRP_1
Description: (None)
ID: 0001 CKD Default: N FBA Default: Y Resv Cap: 10 pct
DSE SRP: N DSE Max Cap: (None) (GB)
-----
```

	CKD	PCT	FBA	PCT
Capacity	0		85 962 240	
Free	0	0	75 840 199	88
Allocated	0	0	10 122 041	11
Snap	0	0		0
DSE	0	0		0
Subscribed	0	0	10 129 620	11

```
-----
SRP Name: SRP_0x102
Description: (None)
ID: 0102  CKD Default: Y  FBA Default: N  Resv Cap:  11 pct
DSE SRP: Y   DSE Max Cap:  100000(GB)
-----
                CKD                PCT                FBA                PCT
-----
Capacity          196 761 600                                0
Free              143 104 834                72                0      0
Allocated         53 656 766                27                0      0
Snap              1 961 741                0                 0      0
DSE               0                 0                 0      0
Subscribed        283 891 020                144                0      0
-----
End of Display
```

Example 2

Action List the SRPS allocated in the storage system identified by the SDA 46E0.
User ZUSR P DIS SDA-46E0 SRP-LIST
System

```
CSMP0097I 13.28.32 CPU-A SS-BSS SSU-SSU0 IS-01
USRP0011I SRP LIST Display for Local CU 000196701170
-----
ID SRP
-----
0001 SRP_1
0102 SRP_0x102
End of Display
```

Example 3

Action Display the SRP with the identifier 0001 allocated in the storage system identified by the SDA 46E0.
User ZUSR P DIS SDA-46E0 SRP-1
System

```
CSMP0097I 13.22.21 CPU-A SS-BSS SSU-SSU0 IS-01
USRP0012I SRP ID Display for Local CU 000197700335
-----
SRP Name: SRP_0x1
Description: (None)
ID: 0001  CKD Default: Y  FBA Default: N  Resv Cap:  11 pct
DSE SRP: Y   DSE Max Cap:  (Default)(GB)
-----
                CKD                PCT                FBA                PCT
-----
Capacity          196 761 600                                0
Free              143 104 839                72                0      0
Allocated         53 656 761                27                0      0
Snap              1 961 736                0                 0      0
DSE               0                 0                 0      0
Subscribed        283 891 020                144                0      0
-----
End of Display
```

DGP Example

The examples in this section display the following information:

Disk Group	The name of a Disk Group.
SRP	The name of the SRP that the Disk Group is part of.
ID	The identifier of the Disk Group.
Class	The class of the Disk group.
Speed	The physical speed of the disks in the Disk Group.
Prot	The protection or raid type of the disks in the Disk Group.
Unformatted Capacity	The total capacity (in GB) of the Disk group.
Capacity	The maximum capacity expressed in CKD and FBA tracks.
Free	The amount of unallocated tracks, expressed as a number and as a percentage of SRP capacity, in the Disk Group.
Allocated	The amount of allocated tracks, expressed as a number and as a percentage of SRP capacity, in the Disk Group.
Snap	The amount of tracks, expressed as a number and as a percentage of SRP capacity, allocated for SnapVX protection.
DSE	The amount of tracks, expressed as a number and as a percentage of SRP capacity, allocated for SRDF/A spillover.

Action Display all Device Groups allocated in the storage system identified by the SDA 46E0.

User ZUSRPR DIS SDA-46E0 DGP-ALL

System

```
CSMP0097I 13.28.32 CPU-A SS-BSS SSU-SSU0 IS-01
USRP0020I DGP ALL Display for Local CU 000196701170
```

```
-----
Disk Group: GRP_1_1200_10K_R1
SRP: SRP_1
ID: 0001 Class: SAS          Speed: 10K          Prot: RAID-1
Unformatted Capacity:      1200(GB)
-----
              CKD          PCT          FBA          PCT
-----
Capacity          0          0          45 057 600
Free              0          0          43 341 364          96
Allocated         0          0          1 716 236          3
Snap              0          0          0          0
DSE               0          0          0          0
-----
Disk Group: GRP_2_600_10K_R1
SRP: SRP_1
ID: 0002 Class: SAS          Speed: 10K          Prot: RAID-1
Unformatted Capacity:      600(GB)
-----
              CKD          PCT          FBA          PCT
-----
Capacity          75 297 600          21 974 400
Free              44 131 685          58          20 270 203          92
Allocated         31 165 915          41          1 704 197          7
Snap              1 342          0          0          0
DSE               0          0          0          0
-----
End of Display
```


SGP Example

The examples in this section display the following information:

SGP	The name of a Storage Group.
SRP	The name of the SRP that a Storage Group is part of.
ID	The identifier of a Storage Group.
SLO	The name of the Service Level Objective allocated to a Storage Group.
SLO ID	The identifier of the Service Level Objective allocated to a Storage Group.
Device Count	The number of devices in a Storage Group.
FAST	A flag indicating whether FAST manages the Storage Group.
RDFC	A flag indicating whether the Storage Group is enabled for SRDF coordination.
WORDLOAD	The name of the workload allocated to the SLO ID.
Devs	One or more ranges of devices that are in a Storage group. Each range consists of two device numbers indicating the start and end devices in the range.

Action Display the Storage Group with an identifier of 0001 allocated in the storage system identified by the SDA 46E0.

User ZUSRPR DIS SDA-46E0 SGP-1

System

```

CSMP0097I 13.28.32 CPU-A SS-BSS SSU-SSU0 IS-01
USRP0032I SGP ID Display for Local CU 000196701170
-----
SGP: GUEST_INTERNAL_SG
  ID : 0001                               Device Count: 17
  SRP: SRP_1                             FAST: N   RDFC: Y
  SLO: Optimized                         WORKLOAD: (None)
  SLO ID: 0001
-----
Devs:  START      END          START      END          START      END
-----
          00000002 00000012  3
-----
End of Display

```

SLO Example

The examples in this section display the following information:

SLO	The name of a Service Level Objective.
ID	The identifier of a Service Level Objective.
Description	The description of a Service Level Objective.
WORDLOAD	The name of the workload allocated to the Service level Objective.
Approx Average Response Time (usec)	The response time of the Service Level Objective expressed in microseconds.

Action Display the Service Level Objective with an identifier of 0004 allocated in the storage system identified by the SDA 46E0.

User ZUSRPF DIS SDA-46E0 SLO-4

System

```
CSMP0097I 13.28.32 CPU-A SS-BSS SSU-SSU0 IS-01
USRPF0042I SLO ID Display for Local CU 000196701170
```

```
-----
SLO: Diamond                                WORKLOAD: DSS_REP
ID : 0004      Approx Average Response Time (usec):    3700
Description: Emulation
-----
```

End of Display

ZUSRPF CHANGE

Change the properties of a Storage Resource Pool.

Format

```
ZUSRPF CHAnge SDA-ccuu SRP-hhhh RCP-dd [MHL1-dd.dd MHL2-dd.dd]
```

Parameters

SDA-ccuu	An SDA mounted in the z/TPF system that identifies the storage system.
SRP	The identifier of a Storage Resource Pool, in hexadecimal.
RCP	The Reserved Capacity Limit Percentage of the Storage Resource Pool, in decimal. Value: 0 to 100 (inclusive)
DMC	Change the DSE SRP to the specified SRP, and set the maximum capacity in GB for DSE. Decimal value: 0 to 100000 (0 = Default maximum capacity)
MHL1-dd.dd	Optional: Hops one and two of the multi-hop list that identifies the RDF group path to the remote storage system.
MHL2-dd.dd	Optional: Hops three and four of the multi-hop list that identifies the RDF group path to the remote storage system.

Example 1

Action Change the Reserve Capacity Percentage limit for the SRP with an identifier of 1 in the storage system identified by the SDA 46E0.

User ZUSRPF CHA SDA-46E0 SRP-1 RCP-11

System

```
ZUSRPF DIS SDA-46E0 SRP-1
CSMP0097I 13.28.32 CPU-A SS-BSS  SSU-SSU0 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:  10 pct
DSE Max Cap:          0(GB)
```

	CKD	PCT	FBA	PCT
Capacity	75 297 600		67 032 000	
Free	44 131 685	58	63 611 567	94
Allocated	31 165 915	41	3 420 433	5
Snap	1 342	0	0	0
DSE	0	0	0	0
Subscribed	117 889 380	156	4 570 095	6

End of Display

```
ZUSRPF CHA SDA-46E0 SRP-1 RCP-11
CSMP0097I 13.28.32 CPU-A SS-BSS  SSU-SSU0 IS-01
USRP0002I SRP Reserved Capacity Updated
```

```
ZUSRPF DIS SDA-46E0 SRP-1
CSMP0097I 13.28.32 CPU-A SS-BSS  SSU-SSU0 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)
```

	CKD	PCT	FBA	PCT
Capacity	75 297 600		67 032 000	
Free	44 131 685	58	63 611 567	94
Allocated	31 165 915	41	3 420 433	5
Snap	1 342	0	0	0
DSE	0	0	0	0
Subscribed	117 889 380	156	4 570 095	6

End of Display

Example 2

Action Change the DSE maximum allocation capacity in GB.

User ZUSRPF CHA SDA-42FD SRP-102 DSE-50000

System

```
ZUSRPF CHA SDA-42FD SRP-102 DMC-50000
CSMP0097I 14.41.42 CPU-A SS-BSS  SSU-SSU0 IS-01
USRP0003I SRP 0102 set to DSE SRP with   50 000(GB) maximum capacity
```

ZUSRP HELP

For help information on ZUSRP, type:

ZUSRP Help

ZUVTP: Virtual tape controls

ResourcePak for z/TPF includes commands to control virtual tape:

- ◆ [ZUVTP Fill](#)
- ◆ [ZUVTP Help](#)
- ◆ [ZUVTP Load](#)
- ◆ [ZUVTP Query](#)
- ◆ [ZUVTP Unload](#)

ZUVTP Fill

This function manages a Fill feature which instructs the DLm to automatically load a scratch tape from the specified scratch synonym to the specified virtual tape drive every time a tape is unloaded. If the device does not have a tape loaded, this function loads a scratch tape from the specified scratch synonym. If a tape is loaded, when it unloads, an automatic load of a scratch tape from the specified scratch synonym occurs. When an invalid synonym is specified, the DLm returns a unit check-in sense data and a message suggesting a check of the source scratch synonym.

Limitations

This version only supports the Dell EMC DLm. This command is restricted to BSS.

Format

```
ZUVTP FILL DEV-ccuu SYN-cccccccc
```

Parameters

<i>DEV-ccuu</i>	Address designating the virtual tape device that is configured on the z/TPF host.
<i>SYN-cccccccc</i>	The 8 character scratch synonym pool from which the virtual tape is to be loaded.

Additional information

The command confirms the VSN on the virtual tape that is loaded.

Example 1

```

Action          Request that fill processing be activated for a valid scratch synonym.
User            ZUVTP FILL DEV-8F5 SYN-SCRTCH
System
CSMP0097I 23.58.34 CPU-A SS-BSS  SSU-SSU0 IS-01
UVTP0009I VSN BB0004 LOADED ON 08F5 FILL-AUTO SYN-SCRTCH

```

Example 2

Action Request that fill processing be activated for a invalid scratch synonym.

User ZUVTP FILL DEV-8F5 SYN-BAD

System

```
CSMP0097I 23.58.34 CPU-A SS-BSS SSU-SSU0 IS-01
TCTL0001E 23.58.34 BSS YYY 8F5 CC0 CCW-9F LPU-40
CSW-01A2B028 0E000000
SNS-C0400024 00000020 009FFF00 00000000 00000000
00000000 0005B100 DE191210
CSMP0097I 23.58.34 CPU-A SS-BSS SSU-SSU0 IS-01
UVTP000BE FILL REQUEST FAILED CHECK SOURCE SYNONYM
```

ZUVTP Help

Display help information for the ZUVTP commands.

Format

ZUVTP Help

Example

Action Display basic help.

User ZUVTP HELP

System

```
CSMP0097I 23.58.00 CPU-A SS-BSS SSU-SSU0 IS-01
UVTP0000I VALID INPUT FORMAT :
    ZUVTP FILL DEV-ccuu,SYN-ssssssss
    ZUVTP QUERY DEV-ccuu
    ZUVTP LOAD DEV-ccuu VSN-volume
    ZUVTP LOAD DEV-ccuu SYN-ssssssss
    ZUVTP UNLOAD DEV-ccuu, NOALL|ALL
```

ZUVTP Load

Request the mount of a virtual tape on a virtual tape drive. This request can either mount a specific VSN or a scratch tape from a specified scratch synonym.

Limitations

ZUVTP is unsuccessful if there is a tape already loaded on this device. This version only supports Dell EMC DLM. This command is restricted to BSS.

Format

```
ZUVTP LOAD DEV-ccuu SYN-ccccccc|VSN-vvssnn
```

Parameters

DEV-ccuu Address designating the virtual tape device that is configured on the z/TPF host.

SYN-ccccccc The 8 character scratch synonym pool from which virtual tape is to be loaded.

VSN-vvssnn The 6 character VSN associated with the virtual tape to be loaded.

Additional information

The command confirms the VSN on the virtual tape that is loaded.

Example 1

Action Request a scratch tape load by specifying a scratch synonym.

User ZUVTP LOAD DEV-8F2 SYN-SCRATCH

System

```
CSMP0097I 23.58.34 CPU-A SS-BSS SSU-SSU0 IS-01
UVTP000AE VSN BB0001 LOADED ON 08F2 FILL-NONE
```

Example 2

Action Request a scratch tape load by specifying a VSN.

User ZUVTP LOAD DEV-8F2 VSN-AA0099

System

```
CSMP0097I 23.58.34 CPU-A SS-BSS SSU-SSU0 IS-01
UVTP000AE VSN AA0099 LOADED ON 08F2 FILL-NONE
```

ZUVTP Query

Check the status of a virtual tape device.

Limitations

This version only supports the Dell EMC DLm. This command is restricted to BSS.

Format

```
ZUVTP QUERy DEV-ccuu
```

Parameters

DEV-ccuu Address designating the virtual tape device that is configured on the z/TPF host.

Additional information

The command confirms the VSN on the virtual tape that is loaded.

Example

The following information is displayed in this example:

Tape	Either the VSN of the loaded tape or "NO TAPE LOADED"
Device	Address of the virtual tape device from the ZUVTP QUERY
FILL	AUTO if Fill is active or NONE
SYN	If Fill is AUTO this is the scratch synonym for the active scratch pool.

```
ZUVTP QUERY DEV-8F5
CSMP0097I 23.58.34 CPU-A SS-BSS SSU-SSU0 IS-01
UVTP0009I VSN BB0004 LOADED ON 08F5 FILL-AUTO SYN-TEST
```


ZUVTP Unload

Request a rewind and unload of a virtual tape on a virtual tape drive.

Limitations

ZUVTP is unsuccessful if there is no tape loaded on this device. This version only supports the Dell EMC DLM. This command is restricted to BSS.

Format

```
ZUVTP UNLoad DEV-ccuu [NOALL|ALL]
```

Parameters

<i>DEV-ccuu</i>	Address designating the virtual tape device that is configured on the z/TPF host.
NOALL	Instructs the DLM to unload the current tape from the specified device. If the Fill feature has been activated for this device, the DLM automatically loads another scratch tape from the scratch synonym specified for the Fill feature. NOALL is the default switch for this command.
ALL	Instructs the DLM to unload the current tape from the specified device and to discontinue the use of the Fill feature for this device. If there is currently an active tape mounted on this device, the tape remains active. When the active tape is unloaded during normal processing, the Fill feature does not load another tape from the scratch pool.

Additional information

The command confirms the VSN on the virtual tape that is unloaded.

Example 1

Action Request a scratch tape load by specifying a VSN with Fill processing inactive.

User ZUVTP UNLOAD DEV-8F5 NOALL

System

```
CSMP0097I 23.58.34 CPU-A SS-BSS SSU-SSU0 IS-01
UVTP0008I NO TAPE LOADED ON 08F5 FILL-NONE
```

Example 2

Action Request an unload of a tape on a device where fill is active with the NOALL option.

User ZUVTP UNLOAD DEV-8F5 NOALL

System

```
CSMP0097I 23.58.34 CPU-A SS-BSS SSU-SSU0 IS-01
UVTP0009I VSN CC0003 LOADED ON 08F5 FILL-AUTO SYN-TEST
```

Example 3

Action Request an unload of a tape on a device where fill is active with the ALL option.

User ZUVTP UNLOAD DEV-8F5 ALL

System

```
CSMP0097I 23.58.34 CPU-A SS-BSS SSU-SSU0 IS-01
UVTP0008I NO TAPE LOADED ON 08F5 FILL-NONE
```

APPENDIX A

Messages

This appendix lists the messages reported by the ResourcePak for z/TPF, the reason for the message, and the recommended user action, if any.

- ◆ Message format 100
- ◆ Message descriptions 101

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.

hh.mm.ss

Is the time of day that the message was reported.

text

Is the text of the message.

Message descriptions

UCPY0000I

Dell EMC Point In Time Copy Display

The format is:

```
ZUCPY hhhh rsa.cnt GROUP-cccccccc
```

Where:

<i>hhhh</i>	The eight-digit, hexadecimal FARF or 14-digit MCHR.
<i>rsa</i>	The hexadecimal offset into the record.
<i>cnt</i>	The number of bytes to display (in hexadecimal).
<i>cccccccc</i>	The one- through eight character name for a TimeFinder group.

Explanation: This is the normal response to the ZUCPY Help command and to a ZUCPY command with invalid parameters.

System Action: None.

User Response: Reissue the ZUCPY command using the specified format.

UCPY0001E

Error on FDRSC call -
See EMXC Product Guide for FDRSC Return Codes

Explanation: A FDRSC call could not return the requested Point-In-Time copy of the record.

System Action: None.

User Response: Determine the meaning of the return code ([Appendix B](#) lists the return codes). Search the Dell EMC Knowledgebase for applicable solutions relating to this message ID. If you cannot determine and correct the problem, contact the Dell EMC Customer Support Center for technical assistance. Make sure you have all relevant job documentation available.

UCPY0003E

Invalid relative start address specified

Explanation: The relative start address is invalid.

System Action: None.

User Response: Enter the ZUCPY functional entry specifying a valid relative start address.

UDCP0001E

Error on SymmAPI call -
See EMC Product Guide for SymmAPI Return Codes.

Explanation: A Dell EMC SymmAPI call could not perform the requested action.

System Action: None.

User Response: Determine the meaning of the return code ([Appendix B](#) lists the return codes). Search the Dell EMC Knowledgebase for applicable solutions relating to this message ID.

UDCP0002E

Heap storage not available. Try again later

Explanation: The operation could not acquire the heap storage necessary to issue the command.

System Action: None.

User Response: Try the operation when the system is less busy.

UDCP0003E

SDA *ccuu* designates an unsupported CU

Explanation: The specified SDA *ccuu* designates a storage system that does not support SymmAPI for z/TPF. The system is either another vendor's hardware or one that runs a version of the operating environment that does not support the API.

System Action: None.

User Response: Determine which of the aforementioned explanations applies.

UDCP0004E

SDA *ccuu* is an invalid device address

Explanation: The specified SDA is either invalid or not currently mounted on the z/TPF system.

System Action: None.

User Response: Mount the device to z/TPF or try the operation on another SDA residing on the same storage system.

UDCP0005E

Requested GID not found

Explanation: The cache partition Group ID for the requested partition does not exist on this storage system.

System Action: None.

User Response: Provide a valid partition Group ID using the ZUDCP DISPLAY command.

UDCP0006E

GID is required on DEVS display

Explanation: Since the DEVS display command is directed towards a specific partition, a partition Group ID is required.

System Action: None.

User Response: Reissue the command with the appropriate partition Group ID.

UDCP0007E

Requested GID already exists or is invalid

Explanation: The ZUDCP CREATE command requires a partition Group ID specified as a unique hexadecimal value between x'01 and x'FE.

System Action: None.

User Response: Reissue the CREATE command with a valid, unique partition Group ID. Or let the system to select a Group ID.

UDCP0008E

Error - Max Partitions already exist

Explanation: You issued a ZUDCP CREATE command when the maximum number of partitions already exist.

System Action: None.

User Response: Partitions can be rearranged with the move and modify commands or delete a partition before creating another.

UDCP0009E

Delete error - cannot delete default group

Explanation: The group ID of zero is a reserved default group and cannot be deleted.

System Action: None.

User Response: Enter the ZUDCP DELETE command with corrected partition Group ID.

UDCP0010E

Set state error - DCP is not DISABLED

Explanation: The requested action cannot be performed with Dynamic Cache Partitioning enabled.

System Action: None.

User Response: Issue the ZUDCP DISABLE command and then reissue the request.

UDCP0011E

Error - Name must be at least 8 chars

Explanation: When executing aZUDCP CREATE or MODIFY, provide a partition name that has between 8 and 31 characters.

System Action: None.

User Response: Reissue the command with a correct partition name.

UDCP0012E

Error - Name already exists

Explanation: Partition names must be unique.

System Action: None.

User Response: Reissue the command with a unique name. You can use the ZUDCP DISPLAY command to show names of existing partitions.

UDCP0013E

Error - WP should be between 40 and 80

Explanation: Write pending values for a partition must be between 40% and 80%.

System Action: None.

User Response: Reissue the command with a valid WP value or, if unsure, allow it to default.

UDCP0014E

Error - Type must be DEVS, RDFG, META, or SCKD

Explanation: The type parameter must be a valid defined type.

System Action: None.

User Response: Reissue the command with a valid type.

UDCP0015E

Error - Specified SDN is out of range or not valid

Explanation: The device number (SDN) is not valid or does not exist on the targeted storage system.

System Action: None.

User Response: Validate the targeted device range. Reissue the command with a valid SDN.

UDCP0016E

Error - MIN MAX TAR values are not compatible

Min <= TAR <= MAX, 10 <= TAR <= 90, and MAX <=100

Explanation: The MIN, MAX, and TAR values, which represent the minimum, maximum, and target allocation percentages, are not compatible. Minimum value must be equal or less than the target value and the target value must be equal to or less than the maximum value. The maximum value cannot exceed 100%. A fully flexible

configuration has the minimum equal to zero and maximum equal to 100%. The target value can be 10% to 90%. The sum of all partition target values must equal 100%.

System Action: None.

User Response: Validate the values for Min, Max, and Target allocations and reissue the command.

UDCP0017E

Error - Must specify SDN- and CNT- with TYPE'

Explanation: The TYPE parameter entered requires SDN and CNT be specified.

System Action: None.

User Response: Reissue the command with valid parameters .

UDCP0018E

Error - Must specify a valid GRO- with TYPE-RDFG

Explanation: With TYPE-RDFG the group parameter GRO- must be included and must be a valid RDF group that is not currently empty.

System Action: None.

User Response: Reissue the command with valid parameters.

UDCP0019E

Error - GRO- is not a valid RDF group

Explanation: The RDF group value specified with GRO- parameter was either invalid or empty.

System Action: None.

User Response: Reissue the command with valid parameters.

UDCP0020E

Error - target allocation of default group would be below min

Explanation: The default group requires a minimum allocation of 10% of cache. When defining or modifying groups, the target cache allocation specified is subtracted from the cache allocated to the default group. The command entered would force the default group to go below default minimum values and is disallowed.

System Action: None.

User Response: Reissue the command with valid parameters.

UDCP0021E

Error - cannot change attributes of default group

Explanation: The default group attributes cannot be changed. The only parameter that can be modified is AGE to allow AGE-0 for ANALYSIS mode.

System Action: None.

User Response: Reissue the command with valid parameters.

UDCP0022E

Error - specified SDN is not a head device

Explanation: When working with TYPE-SCKD or TYPE-META, the SDN must be directed to a appropriate head device.

System Action: None.

User Response: Reissue the command with valid parameters.

UDCP0023E

Error - Feature is not allowed or is restricted

Explanation: Feature Registration checks found the Cache Partitioning feature to be disallowed. Both ZUDCP ENABLE and CREATE commands are not permitted when Feature Registration is blocked.

System Action: None.

User Response: None. If condition persists, contact Dell EMC Support.

UDCP0024E

Error - CNT is invalid

Explanation: The CNT for TYPE-SCKD must be between 1 and 32.

System Action: None.

User Response: Reissue the command with valid parameters.

UDCP0025E

Error - partition definitions not valid for ANALYSIS mode

Explanation: Analysis mode requires that all defined partitions have minimum allocation of 0%, donation age of zero, and maximum allocation of 100%.

System Action: None.

User Response: Use the ZUDCP MODIFY command to set MIN-0 MAX-100 AGE-0 for each partition. Only AGE can be modified for the default partition.

UDCP0026E

Error - Name is not valid

Explanation: A cache partition name must be alphanumeric, may contain an underscore, but cannot begin with an underscore.

System Action: None.

User Response: Reissue the command with a valid name parameter.

UDVQ0000I

EMC Device Configuration Display

The formats are:

```
ZUDVQ ccud [ssss cccc] [MHL1-dd.dd MHL2-dd.dd] [SUMM]
ZUDVQ ccud [INFO]
```

Where:

<i>ccud</i>	One to four digit valid z/TPF SDA.
<i>ssss</i>	One to four digit starting Symm device.
<i>cccc</i>	One to four hex count of lines.
MHL1-2	SRDF groups specifying the path to the storage system.
SUMM	Summary of device types in ranges.
INFO	Device information for input SDA.

Explanation: This is the normal response to the ZUDVQ Help command and a ZUDVQ command with invalid parameters.

System Action: None.

User Response: Reissue the ZUDVQ command using the specified format.

UDVQ0001E

```
Error on SymmAPI call - .....
See EMC product guide for SymmAPI Return Codes
```

Explanation: A SymmAPI call could not perform the requested action.

System Action: None.

User Response: Determine the meaning of the return code ([Appendix B](#) lists the return codes). Search the Dell EMC Knowledgebase for applicable solutions relating to this message ID. If you cannot determine and correct the problem, contact the Dell EMC Customer Support Center for technical assistance. Make sure you have all relevant job documentation available.

UDVQ0002E

SDA *ccud* designates an unsupported CU

Explanation: The specified SDA *ccud* designates a storage system that does not support SymmAPI for z/TPF. The system is either another vendor's hardware or one running a version of operating environment that does not support the API.

System Action: None.

User Response: Determine which of the previous explanations applies.

UDVQ0003E

Invalid starting device number

Explanation: The starting device number specified is out of range.

System Action: None.

User Response: Reissue the ZUDVQ command specifying a valid device number.

UDVQ0004E

Invalid device count

Explanation: The device count specified is out of range.

System Action: None.

User Response: Reissue the ZUDVQ command specifying a valid device count.

UECS0000I

EMC Cache Statistics Display.

The format is:

ZUECS *ccud*

Where:

ccud 1 to 4 digit valid z/TPF SDA.

Explanation: This is the normal response to the ZUECS Help command and a ZUECS command with invalid parameters.

System Action: None.

User Response: Reissue the ZUECS command using the specified format.

UECS0001E

Error on SymmAPI call -

See EMC product guide for SymmAPI Return Codes

Explanation: A SymmAPI call could not perform the requested action. [Appendix B](#) lists the return codes.

System Action: None.

User Response: Determine the meaning of the return code. Search the Dell EMC Knowledgebase for applicable solutions relating to this message ID. If you cannot determine and correct the problem, contact the Dell EMC Customer Support Center for technical assistance. Make sure you have all relevant job documentation available.

UECS0002E

SDA *ccud* designates an unsupported CU

Explanation: The specified SDA *ccud* designates a storage system that does not support SymmAPI for z/TPF. The system is either another vendor's hardware or one running a version of operating environment that does not support the API.

System Action: None.

User Response: Determine which of the aforementioned explanations applies. defined as a minidisk for VPARS.

UECS0003E

Unsupported option on SDA *ccud*

The option specified is not supported version of the operating environment of the controller designated by SDA.

Explanation: The specified SDA *ccud* designates a storage system that does not support the specified option. An example is the Link option which requires Engenuity 5771 or later.

System Action: None.

User Response: Select an SDA which represents a controller at the appropriate version of the operating environment and reissue the command.

UECS0004E

Heap storage not available. Try again later

Explanation: The operation could not acquire the heap storage necessary to issue the command.

System Action: None.

User Response: Try the operation when the system is less busy.

UECS0005E

SDA *ccud* designates a CU without MPLF

Explanation: The device designates a storage system that does not have z/TPF configured.

System Action: None.

User Response: Reissue the ZULOC command specifying a valid storage system.

UEDS0000I

EMC Disk Adaptor/Device Statistics Display

Format is:

```
ZUEDS DA|DEV SDA-ccud [SDN-hhhh] [CNT-dddd]
```

Where:

ccud 1 to 4 digit valid z/TPF SDA.

hhh A valid device number on the storage system.

ddd The count of devices to display.

Explanation: This is the normal response to the ZUEDS Help command and a ZUEDS command with invalid parameters.

System Action: None.

User Response: Reissue the ZUEDS command using the specified format.

UEDS0001E

Error on SymmAPI call -

See EMC product guide for SymmAPI Return Codes

Explanation: A SymmAPI call could not perform the requested action.

System Action: None.

User Response: Determine the meaning of the return code ([Appendix B](#) lists the return codes). Search the Dell EMC Knowledgebase for applicable solutions relating to this message ID. If you cannot determine and correct the problem, contact the Dell EMC Customer Support Center for technical assistance. Make sure you have all relevant job documentation available.

UEDS0002E

Heap storage not available. Try again later

Explanation: The operation could not acquire the heap storage necessary to complete the command.

System Action: None.

User Response: Try the operation when the system is less busy.

UEDS0003E

SDA *ccud* designates an unsupported CU

Explanation: The specified SDA *ccud* designates a storage system that does not support SymmAPI for z/TPF. The system is either another vendor's hardware or one running a version of the operating environment that does not support the API

System Action: None.

User Response: Determine which of the aforementioned explanations applies. If running z/TPF under z/VM on a Dell EMC storage system, ensure the SDA is defined as an unsupported device to z/VM or is directly attached and not defined as a minidisk for VPARS.

UEDS0004E

SDA *ccud* is an invalid device address

Explanation: The input SDA specified is invalid.

System Action: None.

User Response: Determine the reason for the failure and reissue the ZUEDS command specifying a valid SDA.

UEDS0005E

Invalid starting device number

Explanation: The starting device number specified is out of range.

System Action: None.

User Response: Reissue the ZUEDS command specifying a valid device number.

UEDS0006E

Invalid device count

Explanation: The device count specified is out of range.

System Action: None.

User Response: Reissue the ZUEDS command specifying a valid device count.

UELM0000I

ZUELM Help

ZUELM DIS *ccuu* [MHL1-*dd.dd* MHL2-*dd.dd*]

Where:

ccuu One to four digit valid z/TPF SDA.

MHL1-2 SRDF groups specifying the path to the storage system.

Explanation: This is the response to the ZUELM Help command or to a ZUELM commands with invalid parameters.

System Action: None.

User Response: Reissue the ZUELM command using the specified format.

UELM0001E

Error on SymmAPI call-

See EMC product guide for SymmAPI Return Codes

Explanation: A SymmAPI call could not perform the requested action.

System Action: None.

User Response: Determine the meaning of the return code ([Appendix B](#) lists the return codes). Search the Dell EMC Knowledgebase for applicable solutions relating to this message ID. If you cannot determine and correct the problem, contact the Dell EMC Customer Support Center for technical assistance. Make sure you have all relevant job documentation available.

UELM0002E

Heap storage not available. Try again later.

Explanation: The operation could not acquire the heap storage necessary to complete the command.

System Action: None.

User Response: Try the operation when the system is less busy.

UELM0003E

SDA designates an unsupported CU

Explanation: The specified SDA *ccud* designates a storage system that does not support SymmAPI for z/TPF. The system is either another vendor's hardware or one running a version of the operating environment that does not support the API.

System Action: None.

User Response: Determine which of the aforementioned explanations applies.

ULEM0004E

SDA is an invalid device address

Explanation: The input SDA specified is invalid.

System Action: None.

User Response: Determine the reason for the failure and reissue the ZUELM command specifying a valid SDA.

UFRT0000I

ZUFRT Help

ZUFRT DISplay *ccuu* [FID-*xxx*] [MHL1-*dd.dd*] [MHL2-*dd.dd*]

Where:

<i>ccuu</i>	One to four digit valid z/TPF SDA.
FID- <i>xxx</i>	Hexadecimal feature ID.
MHL1-2	SRDF groups specifying the path to the storage system.

Explanation: This is the response to the ZUFRT Help command and a ZUFRT command with invalid parameters.

System Action: None.

User Response: Reissue the ZUFRT command using the specified format.

UFRT0001I

Error on SymmAPI call-

See EMC product guide for SymmAPI Return Codes

Explanation: A SymmAPI call could not perform the requested action.

System Action: None.

User Response: Determine the meaning of the return code ([Appendix B](#) lists the return codes). Search the Dell EMC Knowledgebase for applicable solutions relating to this message ID. If you cannot determine and correct the problem, contact the Dell EMC Customer Support Center for technical assistance. Make sure you have all relevant job documentation available.

UFRT0002E

Heap storage not available. Try again later.

Explanation: The operation could not acquire the heap storage necessary to complete the command.

System Action: None.

User Response: Try the operation when the system is less busy.

UFRT0003E

SDA designates an unsupported CU

Explanation: The specified SDA ccud designates a storage system that does not support SymmAPI for z/TPF. The system is either another vendor's hardware or one running a version of the operating environment that does not support the API.

System Action: None.

User Response: Determine which of the aforementioned explanations applies.

UFRT0004E

SDA is an invalid device address

Explanation: The input SDA specified is invalid.

System Action: None.

User Response: Determine the reason for the failure and reissue the ZUFRT command specifying a valid SDA.

UFRT0005E

Requested FID not found

Explanation: The input FID specified is invalid.

System Action: None.

User Response: Reissue the ZUFRT command specifying a valid FID.

UFRT0009I

ZUFRT ELM

To display ELM entitlements use

ZUELM DIS *ccuu* [MHL1-*dd.dd*] [MHL2-*dd.dd*]

Explanation: This is the normal response to the ZUFRT ELM command.

System Action: None.

User Response: Issue the ZUELM command using the specified format to display EMC License Management Entitlements.

UGRP0000I

EMC Dynamic RDFGroup Controls

ZUGRP DISplay SDA-*ccud* [PRG-*ddd*] [MHL1-*dd.dd* MHL2-*dd.dd*]

Where:

ccud - Valid z/TPF SDA
PRG - Primary RDFGroup

ZUGRP ADD|DELEte 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* SD4-*ddd.ddd*] [LABel-*cccccccccc*]
[MHL1-*dd.dd* MHL2-*dd.dd*]

Where:

<i>ccud</i>	The identifier of a z/TPF SDA.
PRG- <i>ddd</i>	The identifier of the Primary RDFGroup.
SRG- <i>ddd</i>	The identifier of the Secondary RDFGroup.
SCU- <i>cccccccc</i>	The one- through eight character name for a TimeFinder group.
PD1-4	The identifiers of the Primary RDF directors.
SD1-3	The identifiers of the Secondary RDF directors.
LABel- <i>cccccccc</i>	The label of the RDFGroup.
MHL1-2	RDFGroups that define the path to the primary storage system.

Explanation: This is the normal response to the ZUGRP Help command and a ZUGRP command with invalid parameters.

System Action: None.

User Response: Reissue the ZUGRP command using the specified format.

UGRP0001I

Dynamic RDFGroup Controls operation complete

Explanation: The request to add or delete a dynamic RDFGroup completed successfully.

System Action: None.

User Response: None.

UGRP0001E

Error on SymmAPI call -

See EMC product guide for SymmAPI Return Codes

Explanation: A SymmAPI call could not perform the requested action.

System Action: None.

User Response: Determine the meaning of the return code ([Appendix B](#) lists the return codes). Search the Dell EMC Knowledgebase for applicable solutions relating to this message ID. If you cannot determine and correct the problem, contact the Dell EMC Customer Support Center for technical assistance. Make sure you have all relevant job documentation available.

UGRP0002E

SDA ... designates an unsupported Control Unit

Explanation: The specified SDA *ccud* designates a storage system that does not support SymmAPI for z/TPF. The system is either another vendor's hardware or one running a version of the operating environment that does not support the API.

System Action: None.

User Response: Determine which of the aforementioned explanations applies.

UGRP0003E

Primary (PD1) and Secondary (SD1) directors must be specified

Explanation: The RDF directors on which the RDFGroup was intended to be added must be specified for the primary and the secondary storage systems.

System Action: None.

User Response: Issue the ZUGRP DIS command for both the primary and secondary systems to review the configured RDF directors. Then reissue the ZUGRP ADD command specifying the correct RDF director numbers.

UGRP0004E

Invalid RDF director

Explanation: An invalid director number was specified on the ZUGRP ADD|DEL functional entry.

System Action: None.

User Response: Issue the ZUGRP DIS command for both the primary and secondary storage systems to list the configured RDF directors. Valid RDF directors are 1 to 128.

Reissue the ZUGRP ADD|DEL command specifying the correct RDF director numbers.

UGRP0005E

Primary RDFGroup does not exist or defined to another secondary CU

Explanation: You specified an incorrect primary RDFGroup in the ZUGRP DEL command.

System Action: None.

User Response: Issue the ZUGRP DIS command for both the primary and secondary storage systems to list the configured RDFGroups. Then reissue the ZUGRP DEL command specifying the correct RDFGroup.

UGRP0006E

Primary RDFGroup (PRG) must be specified

Explanation: The primary RDFGroup was not specified in the ZUGRP ADD|DEL functional entry.

System Action: None.

User Response: Issue the ZUGRP DIS command for both the primary and secondary storage systems to list the configured RDFGroups. The reissue the ZUGRP ADD|DEL command specifying the correct RDFGroups.

UGRP0007E

Static RDFGroup does not exist to input secondary CU

Explanation: Dynamic RDFGroups can only be added for device pairs for which there is already a pre-configured static RDFGroup.

System Action: None.

User Response: Issue the ZUGRP DIS command for both the primary and secondary storage systems to list the configured RDFGroups and directors. The reissue the ZUGRP ADD|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 systems, contact the Dell EMC Customer Support Center for technical assistance.

UGRP0008E

No RDF Directors

Explanation: Dynamic RDFGroups can only be added for storage systems configured with either Fibre Channel or GigE RDF directors.

System Action: None.

User Response: Contact the Dell EMC Customer Support Center for technical assistance.

UGRP0009E

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: Issue the ZUGRP DIS command for both the primary and secondary systems to list the serial numbers. Then reissue the ZUGRP ADD|DEL command specifying the correct secondary storage system (SCU).

UGRP0010E

RDFGroup label must consist of 0-9,A-Z, or :

Explanation: The RDFGroup label specified in the ZUGRP ADD command may consist only of the characters 0-9, A-Z, or a colon (:).

System Action: None.

User Response: Reissue the ZUGRP ADD command specifying a valid RDFGroup label.

UGRP0011E

Primary (PD1) or Secondary (SD1) directors must be specified

Explanation: You must specify RDF directors from which the RDFGroup is intended to be deleted for either the primary or secondary storage systems.

System Action: None.

User Response: Issue the ZUGRP DIS command for both the primary and secondary systems to list the configured RDF directors. Then, reissue the ZUGRP DEL command specifying the correct RDF director number(s).

ULOC0000I

EMC Disk MPLF/Attention Message Display

The format is:

```
ZULOC MPLF|ATTN SDA-ccud
```

Where:

ccud 1 to 4 digit valid z/TPF SDA.

Explanation: This is the normal response to the ZULOC Help command and a ZULOC command with invalid parameters.

System Action: None.

User Response: Reissue the ZULOC functional entry using the specified format.

ULOC0001E

Error on SymmAPI call -

See EMC product guide for SymmAPI Return Codes

Explanation: A SymmAPI call could not perform the requested action.

System Action: None.

User Response: Determine the meaning of the return code ([Appendix B](#) lists the return codes). Search the Dell EMC Knowledgebase for applicable solutions relating to this message ID. If you cannot determine and correct the problem, contact the Dell EMC Customer Support Center for technical assistance. Make sure you have all relevant job documentation available.

ULOC0002E

Heap storage not available. Try again later

Explanation: The operation could not acquire the heap storage necessary to issue the command.

System Action: None.

User Response: Try the operation when the system is less busy.

ULOC0003E

SDA *ccud* designates an unsupported CU

Explanation: The specified SDA *ccud* designates a storage system that does not implement SymmAPI for z/TPF. The system is either another vendor's hardware or one running a version of operating environment that does not implement the API call being made. If running under VM, the system may implement SymmAPI for z/TPF, but be defined as DASD.

System Action: None.

User Response: Determine which of the aforementioned explanations applies. If you are running z/TPF under VM, ensure the SDA is defined as an unsupported device to VM or is directly attached and not defined

ULOC0004E

SDA *ccud* is an invalid device address

Explanation: The starting device number specified is out of range.

System Action: None.

User Response: Reissue the ZULOC command specifying a valid device number.

ULOC0005E

SDA *ccud* designates a CU without MPLF

Explanation: The device designates a storage system that does not have z/TPF configured.

System Action: None.

User Response: Reissue the ZULOC command specifying a valid storage system.

UOMA0000I

Valid Offline Module Access Commands are:

REfresh, DISplay

For details enter ZUOMA Help Command.

Explanation: This is the normal response to a ZUOMA command with invalid parameters.

System Action: None.

User Response: Enter the ZUOMA functional entry using the specified format.

UOMA0001I

EMC Offline Module Access Control Data Refresh

Format: ZUOMA REFresh

Explanation: This is the normal response to the ZUOMA Help REFresh command.

System Action: None.

User Response: Enter the ZUOMA command using the specified format.

UOMA0002I

EMC Offline Module Access Control Data Display

Format is: ZUOMA DISplay OCD|(TST *mod cnt*
GROup-*cccccccc*)

Where:

OCD Displays OMA Control data.

TST Displays the Target Status Table.

mod The symbolic number of the module (in hexadecimal).

cnt The number of modules (in decimal).

cccccccc The eight-character name of a TimeFinder group.

Explanation: This is the normal response to the ZUOMA Help DISplay command.

System Action: None.

User Response: Enter the ZUOMA command using the specified format.

UOMA0001E

Error during copy extent validation

Record type #EMCSP4 not found

Explanation: OMA record type #EMCSP4 does not exist. This message may also appear for record types #EMCTF, #EMCSPL, and #EMCSPS.

System Action: None.

User Response: OMA requires that the record types #EMCSP4, #EMCSPL, and #EMCSPS be allocated in the FCTB. Code FCTB allocations for these record types accordingly. If you intend to use Dell EMC Symmetrix Utility Display Point-In-Time Copy, allocate and initialize #EMCTF also.

UOMA0002E

Error during copy extent validation

Record equate #EMCSP4 not found

Explanation: The FCTB equate for OMA record type #EMCSP4 does not exist. This message may also appear for record types #EMCSPL and #EMCSPS.

System Action: None.

User Response: OMA requires that the record types #EMCSP4, #EMCSPL, and #EMCSPS be allocated in the FCTB. Code FCTB allocations for these record types accordingly.

UOMA0003E

Error during copy extent validation
RTCUC returned data block too small for record type
#EMCSP4

Explanation: ZUOMA REFRESH issued an RTCUC macro call for record type #EMCSP4 but the returned data block was larger than that provided by the application. This message may also appear for record types #EMCSPL and #EMCSPS.

System Action: None.

User Response: OMA requires that the FCTB allocations for each of the record types #EMCSP4, #EMCSPL, and #EMCSPS be on contiguous tracks and not split. If this requirement is properly met, the RDB provided by the application for the RTCUC macro call is adequate. Code FCTB allocations for these record types accordingly.

UOMA0004E

Error during copy extent validation
Record type #EMCSP4 allocation is split across more
than one extent

Explanation: ZUOMA REFRESH detected that the FCTB allocation for OMA record type #EMCSP4 is split and not on contiguous tracks. This message may also appear for record types #EMCSPL and #EMCSPS.

System Action: None.

User Response: OMA requires that the FCTB allocations for each of the record types #EMCSP4, #EMCSPL, and #EMCSPS be on contiguous tracks and not split. Code FCTB allocations for these record types accordingly.

UOMA0005E

Error during copy extent validation
Record type #EMCSP4 allocation must span at least
one entire track

Explanation: ZUOMA REFRESH detected that the FCTB allocation for OMA record type #EMCSP4 does not span an entire track across all symbolic modules. This message may also appear for record types #EMCSPL and #EMCSPS.

System Action: None.

User Response: OMA requires that the FCTB allocations for each of the record types #EMCSP4, #EMCSPL, and #EMCSPS span an entire track across all symbolic modules. Code FCTB allocations for these record types accordingly.

UOMA0006E

Unable to allocate system heap for Offline Module
Access control data refresh

Explanation: ZUOMA REFRESH was unable to get system heap for the OMA Control Data block.

System Action: None.

User Response: Review system heap allocations for your z/TPF complex and adjust to accommodate the expected size of the OMA Control Data.

UOMA0007E

Unable to return system heap for Offline Module
Access control data refresh

Explanation: ZUOMA REFRESH was unable to return the system heap for the OMA Control Data block.

System Action: None.

User Response: Note all errors indicated by ZUOMA REFRESH. Search the Dell EMC Knowledgebase for applicable solutions relating to this message ID.

If you cannot determine and correct the problem, contact the Dell EMC Customer Support Center for technical assistance. Make sure you have all relevant job documentation available.

UOMA0010W

OMA unsupported for SSID *hhhh*

Explanation: ZUOMA REFRESH determined that the DASD subsystem with SSID *hhhh* does not meet minimum hardware and operating environment requirements to support Offline Module Access.

System Action: None.

User Response: Note the unsupported SSID. You cannot use the OMA utilities on the reported SSID.

UOMA0011E

Error on SymmAPI call -
See EMC product guide for SymmAPI Return Codes

Explanation: A SymmAPI call could not perform the requested action.

System Action: None.

User Response: Determine the meaning of the return code ([Appendix B](#) lists the return codes). Search the Dell EMC Knowledgebase for applicable solutions relating to this message ID. If you cannot determine and correct the problem, contact the Dell EMC Customer Support Center for technical assistance. Make sure you have all relevant job documentation available.

UOMA0014E

OMA disabled for Target access
Record type #EMCTF master control record FACS error

Explanation: ZUOMA REFRESH determined that there is a problem with the TimeFinder Master Control Records on the Basic Subsystem of the z/TPF Complex.

System Action: None.

User Response: Allocate the TimeFinder for z/TPF Data Structures to enable ZUOMA REFRESH to build the Target Status Table. You cannot use the Dell EMC Symmetrix Utility, Display Point-In-Time Copy, unless the Target Status Table has been initialized. If you intend to use Dell EMC Symmetrix Utility Display Point-In-Time Copy, allocate and initialize the #EMCTF records also.

UOMA0015E

OMA disabled for Target access
Record type #EMCTF master control record FIND error

Explanation: ZUOMA REFRESH determined that there is a problem with the TimeFinder Master Control Records on the Basic Subsystem of the z/TPF Complex.

System Action: None.

User Response: Allocate the TimeFinder for z/TPF Data Structures to enable ZUOMA REFRESH to build the Target Status Table. You cannot use the Dell EMC Symmetrix Utility, Display Point-In-Time Copy, unless the Target Status Table has been initialized. If you intend to use Dell EMC Symmetrix Utility Display Point-In-Time Copy, allocate and initialize the #EMCTF records also.

UOMA0016E

TimeFinder data structures not initialized

Explanation: ZUOMA REFRESH determined that the TimeFinder Control Records are allocated but not initialized on the basic subsystem of the z/TPF Complex.

System Action: None.

User Response: Follow TimeFinder for z/TPF procedures to initialize the TimeFinder for z/TPF data structures.

UOMA0017E

OMA Disabled for Target access
Record type #EMCTF CU control record FACS error

Explanation: ZUOMA REFRESH determined that there is a problem with the TimeFinder CU Control Records on the Basic Subsystem of the z/TPF Complex.

System Action: None.

User Response: Allocate TimeFinder for z/TPF Data Structures to enable ZUOMA REFRESH to build the Target Status Table. You cannot use the Dell EMC Symmetrix Utility, Display Point-In-Time Copy, unless the Target Status Table has been initialized. If you intend to use Dell EMC Symmetrix Utility Display Point-In-Time Copy, allocate and initialize #EMCTF records.

UOMA0018E

OMA disabled or Target access
Record type #EMCTF CU control record FIND error

Explanation: ZUOMA REFRESH determined that there is a problem with the TimeFinder CU Control Records on the Basic Subsystem of the z/TPF Complex.

System Action: None.

User Response: Allocate the TimeFinder for z/TPF Data Structures to enable ZUOMA REFRESH to build the Target Status Table. You cannot use the Dell EMC Symmetrix Utility, Display Point-In-Time Copy unless the Target Status Table has been initialized. If you intend to use Dell EMC Symmetrix Utility Display Point-In-Time Copy, allocate and initialize #EMCTF records.

UOMA0019E

OMA disabled for Target access
Record type #EMCTF Device control record FACS error

Explanation: ZUOMA REFRESH determined that there is a problem with the TimeFinder Device Control Records on the Basic Subsystem of the z/TPF Complex.

System Action: None.

User Response: Allocate TimeFinder for z/TPF Data Structures to enable ZUOMA REFRESH to build the Target Status Table. You cannot use the Dell EMC Symmetrix Utility, Display Point-In-Time Copy, unless the Target Status Table has been initialized. If you intend to use Dell EMC Symmetrix Utility Display Point-In-Time Copy, allocate and initialize #EMCTF records.

UOMA0020A

OMA disabled for Target access
Record type #EMCTF Device control record FIND error

Explanation: ZUOMA REFRESH determined that there is a problem with the TimeFinder Device Control Records on the Basic Subsystem of the z/TPF Complex.

System Action: None.

User Response: Allocate TimeFinder for z/TPF Data Structures to enable ZUOMA REFRESH to build the Target Status Table. You cannot use the Dell EMC Symmetrix Utility, Display Point-In-Time Copy, unless the Target Status Table has been initialized. If you intend to use Dell EMC Symmetrix Utility Display Point-In-Time Copy, allocate and initialize #EMCTF records.

UOMA0021E

Offline Module Access Control Data not initialized
Enter ZUOMA REFRESH

Explanation: You ran the ZUOMA DISPLAY command without previously using the ZUOMA command to initialize the OMA Control Data.

System Action: None.

User Response: Use the ZUOMA REFRESH command to initialize OMA Control Data Structures and then use the ZUOMA DISPLAY command.

UOMA0022E

Specified TimeFinder Group name R2 is invalid

Explanation: The TimeFinder group named in a ZUOMA DISPLAY TST command does not exist.

System Action: None.

User Response: Re-enter the command specifying the name of a groups that exists.

UOMA0023E

TimeFinder data structures not initialized

Explanation: You used the ZUOMA DISPLAY command when the OMA Control Data indicates that TimeFinder Control Records are not initialized on the basic subsystem of the z/TPF Complex.

System Action: None.

User Response: Follow TimeFinder for z/TPF procedures to initialize the TimeFinder for z/TPF data structures. Initialize OMA Control Data using the ZUOMA REFRESH command.

UOMA0024E

The specified symbolic module number *hhhh* is Invalid

Explanation: The symbolic module number you supplied in a ZUOMA DISPLAY TST command lays outside the range of online symbolic module numbers for the MDBF subsystem.

System Action: None.

User Response: Re-enter the command supplying a valid symbolic module number.

UOMA0025E

UOMA0025E Offline Module Access not installed

Explanation: Offline Module Access is not installed.

System Action: None.

User Response: [“Customize the z/TPF source” on page 22](#) and [“Install ResourcePak for z/TPF” on page 23](#) show how to install Offline Module Access.

UOMA1000I

hh.mm.ss OMA Refresh Started

Explanation: ZUOMA REFRESH has started initializing OMA Control Data.

System Action: None.

User Response: None.

UOMA1001I

hh.mm.ss OMA Refresh Complete

Explanation: ZUOMA REFRESH has initialized the OMA Control Data.

System Action: None.

User Response: None.

UOMA1002I

hh.mm.ss OMA Refresh Aborted

Explanation: ZUOMA REFRESH did not complete successfully.

System Action: None.

User Response: Note the errors that ZUOMA REFRESH issued and contact your Dell EMC representative.

USRP0001I

Storage Resource Pool Management HELP message

The formats are:

ZUSRP DISplay SDA-*ccud* SRP|DGP|SGP|SLO-ALL|LIST| (*id*) | (*name*)
[MHL1-*dd.dd* MHL2-*dd.dd*]

ZUSRP CHAnge SDA-*ccuu* SRP-*hhhh* RCP-*dd* [MHL1-*dd.dd* MHL2-*dd.dd*]

Where:

SRP =Storage Resource Pool

DGP = Disk Group

SGP = Storage Group

SLO = Service Level Objective

ALL = Display all Pools or Groups

Llist = Display list of all Pools or groups

id = Display specified Pool or Group

name = Display specified Pool or Group

MHL1-2 -RDFGroups specifying path to the storage system

SRP - Hexadecimal SRP ID

RCP - SRP Reserved Capacity Limit Percentage (0-100)

MHL1-2 - RDFGroups specifying the path to the storage system

Explanation: This is the normal response to the ZUSRP Help command and a ZUSRP command with invalid parameters.

System Action: None.

User Response: Reissue the ZUSRP command using the specified format.

USRP0002I

SRP Reserved Capacity Updated

Explanation: The SRP Reserved Capacity Limit Percentage was successfully changed as requested for the specified SRP.

System Action: The new value comes into effect at the next activation of the SRP Monitor to ensure SnapVX tracks do not exceed the specified percentage of SRP capacity in accordance with defined iCDP properties.

User Response: None.

USRP9001E

SDA designates a CU that does not support Storage Resource Pools

Explanation: The specified SDA *ccud* designates a storage system that does not provide Storage Resource Pools.

System Action: None.

User Response: Correct the input SDA.

USRP9002E

Error on SymmAPI call -
See EMC product guide for SymmAPI Return Codes

Explanation: A SymmAPI call could not perform the requested action.

System Action: None.

User Response: Determine the meaning of the return code ([Appendix B](#) lists the return codes). Search the Dell EMC Knowledgebase for applicable solutions relating to this message ID. If you cannot determine and correct the problem, contact the Dell EMC Customer Support Center for technical assistance. Make sure you have all relevant job documentation available.

USRP9003E

SRP set to DSE SRP with(GB) maximum capacity

Explanation: The specified SRP has become the DSE SRP with a maximum capacity of GB.

System Action: None.

User Response: None.

UVTP0000I

```
VALID INPUT FORMAT :  
ZUVTP FILL DEV-ccuu,SYN-ssssssss  
ZUVTP QUERY DEV-ccuu  
ZUVTP LOAD DEV-ccuu VSN-volume  
ZUVTP LOAD DEV-ccuu SYN-ssssssss  
ZUVTP UNLOAD DEV-ccuu, NOALL|ALL
```

Explanation: This is the normal response to the ZUVTP Help command.

System Action: None.

User Response: None.

UVTP0001E

LOAD FAILED

Explanation: The requested load failed.

System Action: None.

User Response: Investigate the virtual tape device.

UVTP0002I

DEVICE *ccuu* IN USE

Explanation: The device specified in the message is already in use.

System Action: None.

User Response: Display the tape status table and choose an available device.

UVTP0003E

DEVICE *ccuu* NOT CONFIGURED

Explanation: The specified virtual tape device is not configured to the system.

System Action: None.

User Response: Check the device address. If this is the desired device, vary it online to the system.

UVTP0004E

TAPE ALREADY LOADED ON DEVICE *ccuu*

Explanation: A mount was requested on a device that already has a tape loaded.

System Action: None.

User Response: Check the device address. If this is the desired device, issue ZUVTP UNLOAD to unload the tape and then request a load.

UVTP0005E

DEVICE *ccuu* UNSUPPORTED CU

Explanation: The specified device is not a tape device supported by this function.

System Action: None.

User Response: Check the device address.

UVTP0006E

DEVICE *ccuu* NOT ADDRESSABLE

Explanation: A tape CCW failed when issued to the specified device.

System Action: None.

User Response: Investigate condition of the specified tape device.

UVTP0007I

NO TAPE LOADED ON *ccuu* FILL-AUTO SYN-*ssssssss*

Explanation: The status of this drive is no tape is loaded and Fill processing is active after the last ZUVTP command was issued. This is an unusual state because Fill processing should have loaded a scratch tape.

System Action: None.

User Response: Check the availability of scratch tapes in the scratch synonym specified.

UVTP0008I

NO TAPE LOADED ON *ccuu* FILL-NONE

Explanation: The status of this drive is no tape is loaded and Fill processing is inactive after the last ZUVTP command was issued.

System Action: None.

User Response: None.

UVTP0009I

VSN *vvssnn* LOADED ON *ccuu* FILL-AUTO SYN-*sssssss*

Explanation: The status of this drive is the specified tape is loaded and Fill processing is active after the last ZUVTP command was issued.

System Action: None.

User Response: None.

UVTP000AI

VSN *vvssnn* LOADED ON *ccuu* FILL-NONE

Explanation: The status of this drive is the specified tape is loaded and Fill processing is inactive after the last ZUVTP command was issued.

System Action: None.

User Response: None.

UVTP000BE

FILL REQUEST FAILED CHECK SOURCE SYNONYM

Explanation: A Fill request was issued with an invalid scratch synonym specified. This message is preceded by sense data indicating a unit check.

System Action: None.

User Response: Check the source synonym name and reenter the Fill request.

APPENDIX B Return Codes

This appendix lists return codes for the ESAPI and FDRSC macros.

- ◆ [SymmAPI return codes](#) 130
- ◆ [FDRSC macro return codes](#)..... 136

SymmAPI return codes

The return code from a SymmAPI call is a full word displayed in a message similar to the following:

```
Uxxx0001E Error on SymmAPI call - .....
```

See EMC product guide for SymmAPI Return Codes

Byte 0-1

System Call Code

Byte 2

Reserved

Byte 3

Return code

Byte 3 - General z/TPF Return Codes

RC	Description
0xE0	FDCTC error - Check operations or gatekeeper SDA
0xE1	Invalid synchronization direction set for issued operation
0xE2	HW/SW incompatible with API
0xE3	Zero SPT field (SPT base/DBI/MOD/SDA)
0xE4	Unable to allocate ECB Heap Storage - MALLOC error
0xE5	SDA offline
0xE6	SDA invalid
0xE7	Invalid RDF group
0xE8	SDN not found device table
0xE9	SRDF director or RDF group offline
0xEA	SRDF Monitor found invalid RDF flags
0xEB	Feature Registration Check Failed

Byte 3 - General SymmAPI return codes

RC	Description
0x00	System call succeeded
0x80	System call is NOT defined
0x81	Executing director type does NOT support the system call
0x82	Wrong system call parameters
0x83	Data called NOT found
0x84	Data exceeds buffer size
0x85	(SA_ADAPTER - ili)
0x86	Remote request initiated by non RDF R1 device
0x87	Remote request with no link available
0x88	Illegal RSC - can not use socket device
0x89	Requested length is not on 8 bytes bound
0x8a	Passive system call extended parameters cause parameter buffer overflow
0x8b	RSC on R1 when R2 is not ready
0x8c	RSC failed
0x8d	Inline system call not supported from host
0x8e	Inline system call data timeout
0x8f	Inline system call request from incorrect utility
0x90	Attempt to write data beyond buffer end (internal logic error)
0x91	Sent parameter flag byte error
0x92	DA error (for disconnected system calls)
0x93	System Internal error (Data consistency problem encountered)
0x94	Extended remote request with invalid route
0x95	System call temporarily unavailable. Please retry
0x96	System call requires the use of a socket
0x97	System call not allow on dir/port by field in IMPL
0x98	Error sending system call to a remote director (same storage system)
0x99	Error executing system call on a remote director (same storage system)
0x9a	Requested system call format does not support more than 32 directors
0x9b	System call not supported for detected configuration (upgrade application)
0x9c	Multi-hop system call timed out somewhere along the line
0x9d	Multi-hop system call was sent, and it ran into an existing multi-hop system call
0x9e	Requested count is not enough for extended parameters
0x9f	System call result remained un-initialized
0xa0	POLL
0xa1	Requested system call format does not support Open RDF
0xa2	Requested system call format does not support RDF Multicast
0xa3	Requested system call format does not support Dynamic RDF
0xa4	System call cannot be run to this device
0xa5	System call is disconnecting, you should not get this code
0xa6	Format 6 input CRC does not match parameters
0xa7	System call timed out during execution
0xa8	Could not get access ID/tag from parameters

0xa9	The system call format is not supported
0xaa	The sub command is not valid
0xab	The sub format is not valid
0xac	Reserved parameters are not zero
0xad	Operation is not allowed on a meta member
0xae	Quick Config parameters indicate a status has changed
0xaf	User requested abort on polling syscall
0xb0	Director is in the middle of IML, please retry in 10 seconds
0xb1	SymmWin is in the middle of a NDU, please abort this IO
0xb2	Endian swap did not work

Note: Other possible non-zero return codes are dependent on the system call code.

Byte 3 - Dynamic RDFGroups SymmAPI return codes

RC	Description
0x01	Illegal primary RDFGroup number
0x02	Illegal secondary RDFGroup number
0x03	storage system not switched dynamic SRDF
0x04	RDFGroup already defined as static
0x05	Supported RDF director include non dynamic RDF directors
0x06	RDFGroup label already in use
0x07	Mismatch in the serial number of the secondary storage system
0x08	RDFGroup default label not allowed
0x09	RDFGroup delete not supported on both sides
0x0A	Parameters don't match existing RDFGroup parameters
0x0B	Primary and secondary RDFGroup parameters mismatch
0x0C	Configuration flags value illegal
0x0D	Primary mixed directors type support not allowed
0x0E	Primary and secondary RDFGroup configuration flags conflict
0x0F	Invalid other side GigE anchor director
0x10	Other side GigE anchor director must be part of secondary supported director mask
0x11	RDFGroup interface configuration flag conflict with directory type
0x12	Illegal local RDFGroup parameters
0x13	Illegal secondary RDFGroup parameters
0x14	Dynamic RDFGroup change not on affected director
0x15	RDFGroup is not empty
0x16	RDF directors offline
0x17	RDF directors not switched
0x18	Other side GigE directors do not have matching entry in GigE IP table
0x19	Other side anchor GigE director does not have a matching entry in GigE IP table
0x1A	Dynamic RDFGroup change already in progress
0x1B	Not allowed during director IML
0x1C	Secondary storage system not found
0x1D	Timeout on connection attempt
0x1E	Dynamic RDFGroup request cancelled due to director IML
0x1F	Dynamic RDFGroup tables in the primary storage system NVD and GM are corrupt
0x20	Other side rejected the connection attempt
0x21	Internal microcode error
0x22	All RDFGroups already in use
0x23	Illegal limbo time value
0x24	Operation on Star RDFGroup without an override
0x25	Dynamic RDFGroup request and secondary storage system GM serial number mismatch
0x26	Dynamic RDFGroup request and secondary storage system GM mismatch

Byte 3 - Dynamic Cache Partitioning SymmAPI return codes**RC Description****DCP Create errors**

0x01	Cannot create a default group (GID must be > 0)
0x02	Requested allocation is more than maximum allowed
0x03	Requested allocation is less than minimum allowed
0x04	Group name already exists
0x05	Number of devices equals zero
0x07	Group already exists
0x08	Maximum number of groups already defined
0x09	Default group below minimum
0x0A	Illegal group ID
0x0B	WP allocation is more than maximum allowed
0x0C	WP allocation is less than minimum allowed
0x0D	Minimum allocation is more than target
0x0E	Maximum allocation id less than target
0x0F	Group ID is larger than max allowed

DCP Device Range errors

0x11	Power vault device in specified range
0x12	VCM device in specified range
0x13	FBA gatekeeper device is in the range
0x14	A META device is in the range
0x15	Device range goes beyond last device
0x16	RDF device is in the range
0x17	Striped CKD is in the range
0x18	RDF group specified does not exist
0x19	Number of devices must be zero when rdF group specified
0x1A	Illegal RDF group ID specified
0x1B	Start device not a META head
0x1C	Non-zero number of devices on META option
0x1D	Device not a striped CKD
0x1E	Non-zero number of devices
0x1F	RDF option empty group

DCP Delete Group errors

0x20	Trying to delete the default group
0x21	Group does not exist

General DCP error occurred

0x71	Director is either not available or busy with another task. Try message again. If failure persists, please check to see if directors are online and available.
0x74	Invalid Group ID
0x75	Group not defined
0x76	DCP not initialized
0x77	Invalid runtime parameters
0x78	Invalid runtime parameter value specified

- 0x79 Invalid minimum allocation for Analysis mode
- 0x7A Invalid maximum allocation for Analysis mode
- 0x7B Invalid donation age for Analysis mode
- 0x7C Unknown runtime parameter

FDRSC macro return codes

The return code from a FDRSC macro call is a full word returned in Register 0.

Byte 0-1 - Supplementary information

The meaning of the supplementary information is dependent on the value of the modifier byte.

Byte 2 - Modifier

See the following section for values of this byte.

Byte 3 - Error code

The meaning of the error code byte is dependent on the value of the modifier byte.

Modifier Value	Error Code	Description
0x01	0x50	WRKBLK register zero
	0x51	DECB register zero
	0x52	DECB label zero
	0x53	GROUP register zero
	0x54	GROUP label zero
	0x55	Missing FARF MCHR
	0x56	MCHR conversion unsuccessful
	0x57	Invalid FARF MCHR
	0x58	MCHR -- FNSPC error -- unable to determine record size
	0x59	MCHR -- module offline
0x02	0x50	OCD not allocated
	0x51	Copy track extents not allocated
	0x52	TimeFinder data not initialized
	0x53	Invalid TimeFinder group
0x03	0x04	Last operation was Establish
	0x08	Last operation was Re-establish
	0x10	Last operation was Restore
	0x14	Last operation was IncRestore
	0x18	No operation since TimeFinder initialization
	0x2C	Last operation was SnapVX Terminate
	0x50	SDA in unsupported SSID
	0x60	Last operation was Unlink
	0xe0	FDCTC error
	0xe4	MALOC error
0xe6	Invalid SDA	
0x04	See “Byte 3 - General SymmAPI return codes” on page 131	