z/OS
Resource Measurement Facility Reference Summary

Version 1 Release 13
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Preface

The RMF Reference Summary provides a quick reference to:
• Operator commands
• Monitor I session options
• Monitor II background session options
• Monitor II display commands
• Monitor III gatherer session options
• Monitor III reporter session commands

For detailed information about using RMF Monitors, see z/OS RMF User’s Guide.

How to read the diagrams

To read a syntax diagram, follow the path of the line, starting from left to right and moving from top to bottom.
• The "" symbol indicates the beginning of a syntax diagram.
• The "" symbol, at the end of a line, indicates that the syntax diagram continues on the next line.
• The "" symbol, at the beginning of a line, indicates that a syntax diagram continues from the previous line.
• The "" symbol indicates the end of a syntax diagram.

Syntax items (for example, a keyword or variable) may be:
• Directly on the line (required)
• Above the line (default)
• Below the line (optional)

Symbols
You must code these symbols exactly as they appear in the syntax diagram

#   Number sign
:   Colon
,   Comma
=   Equal Sign
-   Hyphen
Variables
Highlighted lowercase letters denote variable information that you must substitute with specific information.

Example
\[ U=user_id \]

Here you must code \( U \) as shown and supply an ID for user_id. You may, of course, enter \( U \) in lowercase, but you must not change it otherwise.

Repetition
An arrow returning to the left means that the item can be repeated.

Example
\[ \text{repeat} \]

A character within the arrow means you must separate repeated items with that character.

Example
\[ \text{repeat} \]

A footnote (1) by the arrow references a limit that tells how many times the item can be repeated.
Defaults

Defaults are above the line. The system uses the default unless you override it. You can override the default by coding an option from the stack below the line.

Example

```
repeat (1)
```

Notes:

1. Specify `repeat` up to 5 times.

Required Choices

When two or more items are in a stack and one of them is on the line, you must specify one item.

Example

```
A
B
C
```

In this example, A is the default. You can override A by choosing B or C.

Optional Choice

When an item is below the line, the item is optional. Only one item may be chosen.

Example

```
A
B
C
```
Here you may enter either A or B or C, or you may omit the field.
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  SX33-9033-05
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Chapter 1. Gathering Reference

This chapter contains a summary of the operator commands, the Monitor I session options, and the Monitor III session options.

To Start, Stop and Control Sessions

Three system commands, four session commands, and numerous display commands control RMF processing. The syntax for system and session commands is as follows; see chapters on specific RMF sessions in z/OS RMF User’s Guide for detailed descriptions and examples.

START system command

```
START RMF ...
parm ...
parm ...
```

Initializes RMF and/or starts a Monitor I session.

MODIFY system command

```
MODIFY RMF, input ...
```

Passes session commands to RMF or requests a display of RMF status.

The following session commands are passed to RMF through the input field of the system MODIFY command.
**START session command**

```
MODIFY RMF, START
```

*session-id*  
*options*  

Starts an RMF session.

**MODIFY session command**

```
MODIFY RMF, MODIFY
```

*session-id*  
*options*  

Changes options currently in effect.

**STOP session command**

```
MODIFY RMF, STOP
```

*session-id*  

Ends processing of a specified session.
DISPLAY session command

Displays status information for active non-TSO/E RMF sessions.

STOP system command

Ends all non-TSO/E RMF sessions.

where:

parm
Options for a Monitor I session (specify NOZZ if you do not want to start a Monitor I session concurrently with RMF initialization). Options have the form:

option[(value)]

input
Any session command (START, STOP, MODIFY, or DISPLAY).

session-id
Session identifier for a particular session. The session identifier is one of the following:

ZZ  Monitor I session
cc  Monitor II background session (any two characters except ZZ)
III Monitor III data gatherer session

options
Session options to be changed. Each option has the form

option[(value)]

and must be separated by a comma.
**ACTIVE**
Session identifiers of all active non-TSO/E sessions are to be displayed.

**ALL**
Session identifiers and current options of all active non-TSO/E sessions are to be displayed.

### Monitor I Session Options
You can specify Monitor I session options in:
- The **parm** field of the START command
- The PARM field of the EXEC statement in a cataloged procedure
- The RMF Monitor I Parmlib member ERBRMF00

#### Cache subsystem activity
- **CACHE**
- **NOCACHE**

#### Channel path activity
- **CHAN**
- **NOCHAN**

#### Processor activity
- **CPU**
- **NOCPU**

#### Cryptographic processor activity
- **CRYPTO**
- **NOCRYPTO**
Device activity

- DEVICE(DASD)
- DEVICE(NODEVICE)
- Type
- NONMBR
- NMNR(nmbr)
- DASD
- NOMDASD
- NOCHDR
- NOCOMM
- NOGRAPH
- NOTAPE
- NOUNITR
- TAPE
- UNITR

Enterprise Disk System statistics

- NOESS
- ESS(Options)

Enqueue contention activity

- NOENQ
- ENQ(SUMMARY)
- DETAIL
- maj
- min

Options:

- LINK
- NOLINK
- RANK
- NORANK
Report interval length

\[ \text{INTERVAL(30M)} \]

\[ \text{INTERVAL(nnn)} \]

Duration of session

\[ \text{STOP(8H)} \]

\[ \text{STOP(range)} \]

\[ \text{NOSTOP} \]

Interval synchronization

\[ \text{SYNC(SMF)} \]

\[ \text{SYNC(RMF,mm)} \]

\[ \text{NOSYNC} \]

Reporting Options

Option list

\[ \text{OPTIONS} \]

\[ \text{OPTN} \]

\[ \text{NOOPTIONS} \]

\[ \text{NOOPTN} \]

Write SMF record

\[ \text{RECORD} \]

\[ \text{NORECORD} \]
Print interval reports

- NOREPORT
- REPORT (REALTIME, DEFER)

Class for printed reports

- SYSOUT(A)
- SYSOUT(class)

Environment Options

User exit

- NOEXITS
- EXITS

Parmlib member

- MEMBER(00)
- MEMBER(xx)

Notes:
1. Up to five members can be specified.

Monitor III Session Options

Cache subsystem activity

- CACHE
- CACHE(SSID(ssid-list))
- NOCACHE

Specifies measurements for cache subsystem activity.
Coupling facility details

Specifies whether detailed data gathering for the activities in the coupling facility should be performed.

Gatherer cycle

Specifies, in milliseconds, the length of a cycle. Valid range is 50 to 9999.

Data set support

Controls the recording of samples to user-defined data sets.

Suboption:

ADD (data-set-name)
DEL (data-set-name)
START
SWITCH
WHOLD (7) (value)
Hierarchical file system activity

Suboption:

ADD(file-system-name)
DEL(file-system-name)

Specifies data recording of statistics for UNIX HFS names.

Spin locks and suspend locks

NOLOCK
LOCK

Specifies data recording about spin locks and suspend locks.

I/O subsystem activity

I0SUB
NOI0SUB

Specifies data recording for I/O subsystem and channel path activity.
Member

Specifies the members of a partitioned data set that contain the options to be used for the session.

Mintime

Specifies interval length in seconds. Valid range is 10 to 999.

OMVS process data

Specifies measurements for OMVS process data.

Print list of options

Specifies if options are to be displayed at operator console.
**Resource**

\[
\text{RESOURCE}(+\text{JES2}, \text{JES2})
\]

\[
\text{RESOURCE}(+\text{JES2}, \text{parm})
\]

\[
\text{RESOURCE}(+\text{JES3}, \text{parm})
\]

Specifies the job entry subsystem resource where \texttt{parm} is the given name if other than JES2 or JES3.

**Duration of session**

\[
\text{NOSTOP}
\]

\[
\text{STOP}(\text{value} M H)
\]

Specifies the duration of the session in minutes (M) or hours (H). Valid range is 1 minute to 168 hours.
Storage group/disk space monitoring

NOSGSPACE

SGSPACE( Suboption )

Suboption:

ADD( storage-group-name )

DEL( storage-group-name )

Controls data gathering for storage group space and disk space monitoring:

- You may specify multiple ADD/DEL suboptions.
- A storage group name must not be longer than 30 characters, otherwise it is ignored.
- You can specify up to 25 storage group names. Additional names are ignored.

Synchronous write SMF

SYNC(0M)

SYNC( mm )

NOSYNC

Synchronizes interval time with the hour where mm is the number of minutes after the hour at which synchronization will occur.
**Sysout**

`SYSOUT(A)
SYSOUT(class)`

Specifies the output class for session messages.

---

**VSAM RLS activity**

`VSAMRLS(Suboption)
NOVSAMRLS()`

Suboption:

`ADD(data-set-mask)
DEL(data-set-mask)`

Controls the collection of VSAM RLS activity data.

---

**Storage buffer**

`WSTOR(32)
WSTOR(nnn)`

Specifies in megabytes, the maximum storage buffer size. Valid range is 4 to 999 megabytes.
zFS activity

Specifies data gathering about zFS file system activity.
Chapter 2. Reporting Reference

This chapter contains a summary of the commands used in a reporting session.

To Start RMF in ISPF or TSO/E

To start RMF and display the RMF Performance Management menu, enter:

```
Start RMF
```

To bypass the RMF Performance Management Menu, enter the `RMF` command with the appropriate option:

```
Start RMF Monitor
```

To call the Postprocessor, enter:

```
RMF PP
```

To call Monitor II, enter:

```
RMF MON2
```

To call Monitor III, enter:

```
RMF MON3
```

To call the Monitor III Utility, enter:

```
RMF UTIL
```

Start RMF Monitor II

You can also use the following command to start Monitor II:

```
RMFMON
```
Monitor II Display and Background Session

Use the display session syntax in an ISPF or TSO/E session to obtain snapshot reports of specific address spaces or system resources.

Use the background session syntax in a non-interactive session to create a printed report and SMF records.

Report Commands and Options

The general format of a command to request a report is:

```
General syntax

Background session syntax:
rep(options)

Display session syntax:
rep options
```

*rep* is the report name, and *options* are the options for the report.

For the legend, see page 24.

AS resource data

```
AS resource data

Background session syntax

ARO(cs)

Display session syntax

ARO(cs)
```
AS resource data for job

Background session syntax

Display session syntax

AS state data

Background session syntax

Display session syntax

AS state data for job

Background session syntax

Display session syntax
Device activity

Background session syntax

```
NODEV

(DASD)

(type)
```

Display session syntax

```
DEV

(DASD)

(type)
```

Specific direct access device

Background session syntax

```
NODEVV

DEVV(VOLSER(xxxxx))

NUMBER(yyyy)
```

Display session syntax

```
DEVV

VOLSER(xxxxx)

NUMBER(yyyy)
```

HFS statistics

Display session syntax

```
HFS

hfsname
```

IRLM long lock detection

Display session syntax

```
ILOCK

ALL
```
I/O queuing

Background session syntax

- NOIOQUEUE
- IOQUEUE (DASD) (type)

Display session syntax

- IOQUEUE (DASD) (type)

Library lists

Display session syntax

- LLT
- LNK
- LPA
- APF
  - A

Page/Swap data set activity

Background session syntax

- NOPGSP
- PGSP (PAGE) (SWAP)

Display session syntax

- PGSP
  - PAGE
  - SWAP
Sysplex data server activity

Display session syntax

Enqueue contention activity

Background session syntax

Display session syntax

Reserve activity

Background session syntax

Display session syntax
System paging activity

Background session syntax

/SM590000/SM590000

NOSPAG

SPAG

Display session syntax

/SM590000/SM630000

SRM activity

Background session syntax

/SM590000/SM590000

NOSRCS

SRCS

Display session syntax

/SM590000/SM630000

User-specified activity

/SM590000/SM590000

NOUSER

USER

Legend:

- **c**: Class of the address spaces to be included; either A, B, T, AS, or O.
- **s**: Status of the address spaces to be included; either A or I.
- **d**: Domain of the address spaces to be included; either A or a domain number.

**hfsname**

Name of an hierarchical file system.

**jobname**

Specific job name.
**Display Session Commands**

What session commands you use depends on whether you are working with the ISPF interface or the TSO interface. Some commands are valid in both environments.

For the legend, see page \( \text{28} \)

**TSO Commands**

Scroll through a table report:

\[ \cdots \]

Display the list of reports on the display menu:

\[ \cdots \]

Display defaults:

\[ \cdots \]

Print a report:

\[ \cdots \]

Request reports repeatedly:

\[ \cdots \]

where:

- \( n \) is the number of times a report is repeated.
- \( t \) is the number of seconds between reports.
Set PF key:
\[ \text{rep(options)} \]

\[ \text{rep} \] is a report name.

**ISPF Commands**

Cancel the option dialog without saving changes:

\[ \text{CANCEL} \]

List of Monitor II reporter commands:

\[ \text{COMMANDS} \]

Find a text string:

\[ \text{FIND} \text{xxxxxxx} \]

If your search string contains blanks, you must enclose it in quotes.

Refresh a report after an interval:

\[ \text{GO} \text{nnn} \]

where:

\[ \text{nnn} \] is the number of seconds between refreshes. Valid values are between 1 and 3600s.

End GO mode by pressing the ATTN or PA1 key.

Print a report:

\[ \text{PRINT} \]

Reset all optional values on the option dialog to their defaults:

\[ \text{RESET} \]

Repeat a previously entered Find command:

\[ \text{RFIND} \]
Show the report options panel for the current report:

```
> RO
```

Sort the report according to column cursor is placed on:

```
> SORT A or D
```

**Note:** Numerical columns are sorted in descending order, and columns with character values are sorted in ascending order.

Specify the system to be monitored:

```
> SYSTEM smf-id
```

Stop the session:

```
> X END
```

**Both ISPF and TSO Commands**

Set delta mode:

```
> D ON OFF
```

Set hardcopy mode:

```
> H ON OFF
```

Recall the previous report:

```
> Rep options
```

where *rep* is the report name.

**Background Session Options**

Delta reporting:

```
> NODELTA DELTA
```

Session options Parmlib member:
Note: You can specify up to five members.
Print list of options:
- OPTIONS
- OPTNS
- NOOPTNS
- NOOPTIONS

Write SMF data set:
- RECORD
- NORECORD

Print interval reports:
- REPORT(DEFER)
- NOREPORT
- REPORT(REALTIME)

Duration of Monitor II session:
- STOP(10M)
- STOP(value)
- NOSTOP

Class for printed reports:
- SYSOUT(A)
- SYSOUT(class)

Number of seconds in interval:
- SINTV(30S)
- SINTV(value)

where:

**class**

is a SYSOUT class
value is a 1-5 digit number that specifies time in either minutes (M) or hours (H)

AS address space

**Monitor III Reporter Session**

To start a Monitor III session, from TSO or ISPF, enter:

```
RMF-MON3
```

**Session Commands**

Backward/forward referencing:

```
BREF FREF
```

**D:**

```
DATE mm dd yy
```

**T:**

```
TIME hh mm ss
```

**R:**

```
RANGE nnnM nnnH
```

**S:**

```
SYSTEM systemname
```

Restore options to original values:

```
CANCEL
```

Display RMF commands help panel:

```
COMMANDS
```

Display data from current range:
Search for character string:

```
FIND string
```

Start GO mode:

```
GO
```

Switch graphic mode on or off:

```
GRAPHIC ON OFF
```

Print hardcopy reports and screens:

```
HARDCOPY ON OFF SCREEN REPORT
```

Start an Interactive Chart Utility session:

```
ICU
```

Display listing of PF keys:

```
PFK
```

Reset options to RMF defaults:

```
RESET
```

Display last command entered:

```
RETRIEVE
```

Repeat FIND command:

```
RFIND
```

Switch between tabular and graphic mode:

```
TABULAR ON OFF
```

Switch between tabular and graphic mode:

```
TOGGLE
```

**Commands to Request Menus and Option Panels**

Display Color Graphic Options panel:

```
COLOR
```

Display Job Report panel:
Display Language Options panel:

Display Options panel:

Display Option Set panel:

Display Overview Report menu:

Display Report Options panel of current report:

Display Resource Report menu:

Display Session Options panel:

Display Subsystem Report menu:

Display Sysplex Report menu:

Display User-written Report menu:

**Report Commands**

Reports can be requested from the command line or from the Primary menu.

**Cache details**

```
CACHDET
  CAD
  ssid
```
You can specify a class and a selection separated by a comma.
Resource delays

Group response time

HSM delays

HSM delays - Job report

I/O queuing activity

JES delays
where:

cfname  Name of a coupling facility.
class   Either All (A), Batch (B), TSO (T), STC (S), ASCH (AS), or O (OMVS). For DELAY, you can also specify E for enclaves.
dname   Name of a data set.
jobname  Name of job to be reported.
period   Service or report class period.
resource  Name of resource to be reported.
s-class  Service class name.
s/r-class Service or report class name.
ssid     Cache subsystem identifier.
sstype   Name of a subsystem that schedules enclaves.
stclass  Storage class name.
voller   Volume serial number.
wlm      Name of a workload group, service class, or report class.