



| z/TPF V1.1

## TPF Users Group Fall 2008

Title: Dump History and Various z/TPF Enhancements

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Venue: SCP Subcommittee

AIM Enterprise Platform Software  
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# Agenda

- **PJ33163 - Dump history**
- **PJ34402 - Display of STIMC table**
- **PJ34217 – Maximum SNAPC messages allowed to the console**
- **PJ34340 – Display CRPA**
- **PJ32705 – Norm State Time Change**
- **PJ32792 – Multiple Release Detection**

# PJ33163 - Dump history

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- **Records information about each dump taken on the system**
- **For each dump the following is recorded:**
  - Sequence number (SE-000401)
    - NODUMPs will be recorded.
  - Dump number (CTL-I 0000B1)
  - Dump type – OPR vs CTL vs SNP (SNAPC) vs MAN (Manual)
  - Date and time
  - CPU-ID
  - I-Stream
  - Subsystem name and Subsystem user name
  - Program name and Trace name
  - Tape VSN

## PJ33163 - Dump history (continued)

- **Data recorded to file in the file system**
- **Files kept in directory: /IBMsyserr**
- **One file per CPU-ID per day**
- **File names are: syserr\_x\_yyyymmdd.log**
  - x is the CPU-ID.
  - File /IBMsyserr/syserr\_b\_20080915 is CPU-B's file for September 15, 2008.
- **Retention period**
  - After the specified retention period, TPF will automatically remove the files.
  - To set the retention period to be 30 days, do ...
    - ZDHST SET RETENTION-30
  - To disable this support, set retention period to 0.
    - Initial support has retention period set to 0.

## PJ33163 - Dump history (continued)

- **Dump information is first put into an in core table.**
  - CINFC CMMDHST
  - 30,000 entries
  - Recoverable storage
- **Every minute new entries in the core table are written to file.**

# PJ33163 - Dump history - Example

## ==> ZDHST DISPLAY TOTALS

CSMP0097I 22.12.48 CPU-B SS-BSS SSU-HPN IS-01

DHST0001I 22.12.48 SYSTEM ERROR TOTALS DISPLAY

TARGET SS: BSS

RETENTION: 30

PROC	TYPE	CTL	OPR	SNAP	MANUAL	TOTALS
B	DUMP	2	7	2	0	11
	NODUMP	0	20	1	0	21 _
C	DUMP	0	0	0	0	0
	NODUMP	0	0	0	0	0
D	DUMP	0	0	0	0	0
	NODUMP	0	0	0	0	0
E	DUMP	0	0	0	0	0
	NODUMP	0	0	0	0	0 _

END OF DISPLAY+

# PJ33163 - Dump history - Example

## ==> ZDHST DISPLAY DETAILS

CSMP0097I 22.09.25 CPU-B SS-BSS SSU-HPN IS-01

DHST0002I 22.09.25 SYSTEM ERROR DETAILS DISPLAY

TARGET SS: BSS

RETENTION: 30

SE #	TYP	SYSERR	DATE	TIME	PROC	IS	SS/SSU	EBROUT	PRGM	TRACE	TAPE
000200	OPR	I0000069F	24Sep08	211653	B	01	BSS /HPN	010000B	DYDY	DYDY	Z00598
000201	OPR	U00911A7B	24Sep08	214346	B	01	BSS /HPN	010000B	QTA7	QTA7	Z00598
	OPR	U00911A7B	24Sep08	214347	B	01	BSS /HPN	010000B	QTA7	QTA7	
	OPR	U00911A7B	24Sep08	214347	B	01	BSS /HPN	010000B	QTA7	QTA7	
000202	OPR	U00911A77	24Sep08	214435	B	01	BSS /HPN	010000B	QTA7	QTA7	Z00598
000203	OPR	U00911A78	24Sep08	214505	B	01	BSS /HPN	010000B	QTA7	QTA7	Z00598
	OPR	U00911A77	24Sep08	214510	B	01	BSS /HPN	010000B	QTA7	QTA7	
000204	OPR	U00911A71	24Sep08	214524	B	01	BSS /HPN	010000B	QTA7	QTA7	Z00598
000205	OPR	U00911A72	24Sep08	214527	B	01	BSS /HPN	010000B	QTA7	QTA7	Z00598
	SNP	U00091162	24Sep08	214612	B	01	BSS /HPN	010000B	QXC6	QXC6	
	SNP	U00091163	24Sep08	214616	B	01	BSS /HPN	010000B	QXC6	QXC6	
000206	CTL	I00000003	24Sep08	220608	B	01	BSS /HPN	010000B	QTA7	QTA7	Z00598
000207	OPR	I00000004	24Sep08	220612	B	01	BSS /HPN	010000B	QTA7	QTA7	Z00598
000208	CTL	I00000001	24Sep08	220807	B	01	BSS /HPN	010000B	QTA7	QTA7	Z00598

END OF DISPLAY+



# PJ33163 - Dump history - Example

## ==> ZDHST DISPLAY DETAILS TYPE-CTL

CSMP0097I 22.18.19 CPU-B SS-BSS SSU-HPN IS-01

DHST0002I 22.18.19 SYSTEM ERROR DETAILS DISPLAY

TARGET SS: BSS

RETENTION: 30

SE #	TYP	SYSERR	DATE	TIME	PROC	IS	SS/SSU	EBROUT	PRGM	TRACE	TAPE
000206	CTL	I00000003	24Sep08	220608	B	01	BSS /HPN	010000B	QTA7	QTA7	Z00598
000208	CTL	I00000001	24Sep08	220807	B	01	BSS /HPN	010000B	QTA7	QTA7	Z00598

END OF DISPLAY+

## ==> ZDHST DISPLAY DETAILS ERROR-00000004 TRC-QTA7

CSMP0097I 22.23.50 CPU-B SS-BSS SSU-HPN IS-01

DHST0002I 22.23.50 SYSTEM ERROR DETAILS DISPLAY

TARGET SS: BSS

RETENTION: 30

SE #	TYP	SYSERR	DATE	TIME	PROC	IS	SS/SSU	EBROUT	PRGM	TRACE	TAPE
000207	OPR	I00000004	24Sep08	220612	B	01	BSS /HPN	010000B	QTA7	QTA7	Z00598

END OF DISPLAY+

# PJ33163 - Dump history - Example

==> ZDHST DISPLAY TOTALS START-01OCT08.000000 END-02OCT08.000000

CSMP0097I 15.39.05 CPU-B SS-BSS SSU-HPN IS-01

DHST0001I 15.39.05 SYSTEM ERROR TOTALS DISPLAY

TARGET SS: BSS

RETENTION: 30

PROC	TYPE	CTL	OPR	SNAP	MANUAL	TOTALS
B	DUMP	0	0	1	0	1
	NODUMP	0	55	0	0	55
C	DUMP	0	0	0	0	0
	NODUMP	0	57	0	0	57

END OF DISPLAY+

# PJ33163 - Dump history - Example

==> ZDHST DISPLAY DETAILS START-01OCT08.120000 END-01OCT08.140000 PROC-B

CSMP0097I 15.43.42 CPU-B SS-BSS SSU-HPN IS-01

DHST0002I 15.43.42 SYSTEM ERROR DETAILS DISPLAY

TARGET SS: BSS

RETENTION: 30

SE #	TYP	SYSERR	DATE	TIME	PROC	IS	SS/SSU	EBROUT	PRGM	TRACE	TAPE
	OPR	U00DEB005	010ct08	121214	B 02	WP	/WP1	000000B	QDED	QDED	—
	SNP	I00041001	010ct08	121857	B 01	WP	/WP1	010010B	BRPE	BRPE	
	OPR	U00DEB005	010ct08	125634	B 03	WP	/WP1	010100B	QDED	QDED	
	OPR	I0000000F	010ct08	134947	B 01	BSS	/HPN	000000B	CP	XLI I	
	OPR	I0000000F	010ct08	135159	B 01	BSS	/HPN	000000B	CP	XLI I	

END OF DISPLAY+

# PJ34402 - Display of STIMC table

## PJ34402 - Display of STIMC table

- **Enhancement to ZDCRT command.**
- **New option displays contents of the STIMC table**
  - ZDCRT TYPE-STIMC

# PJ34402 - Display of STIMC table - Example

==> ZDCRT TYPE-STIMC

CSMP0097I 14.07.21 CPU-B SS-BSS SSU-HPN IS-01

DCRT0005I 14.07.21 DISPLAY OF STIMC TABLE

TOTAL ENTRIES ALLOCATED : 4000

CURRENT ENTRIES IN USE : 44

MAXIMUM ENTRIES USED : 54

REMAINING REQUESTED

TIME (MS)	TIME (MS)	IS	TYPE	PIA	TARGET	DISP	ADDITIONAL INFO
20	20	1	S	002062D0	CCTLOG	0042D0	
50	100	1	R	001B0168	CCSONS	003168	
550	1000	1	R	00003450	CCNUCL	003450	
550	1000	1	R	010296C8			
1020	4000	1	S	00160038	CCRCSC	006038	
5620	60000	1	S	00004494	CCNUCL	004494	CRETC TO-CRYR FROM-CRYR
1705550	1800000	1	R	00220F44	CCVAGE	004F44	

END OF DISPLAY+

# PJ34217 – Maximum SNAPC messages allowed to the console

## PJ34217 – Maximum SNAPC messages allowed to the console

- **Allow a maximum number of SNAPC output messages each minute.**
- **When limit is reached ..**
  - Console output message not sent.
  - SNAP data is written to dump tape.



# PJ34217 – Maximum SNAPC messages allowed to the console

## ==> ZASER SNAP MAXSNAP-20

```
CSMP0097I 21.57.59 CPU-B SS-BSS SSU-HPN IS-01  
ASER0000I 21.57.59 - OK+
```

## ==> ZDSER SNAP

```
CSMP0097I 21.59.06 CPU-B SS-BSS SSU-HPN IS-01  
DSER0002I 21.59.06  
SNAP DATA TO DUMP DEVICE - ON  
SNAP DATA TO CONSOLE - ALL  
SUPPRESS DUPLICATE SNAP ERRORS  
LOG SNAP DUMPS TO TAPE  
DUMP TAPE - RTA  
DATA TO DUMP DATA USER EXIT - OFF  
MAX NUMBER OF SNAP MESSAGES-20  
END OF MESSAGE +
```

# PJ34340 – Display CRPA

## PJ34340 – Display CRPA

- **Display statistics about the core resident program area**

==> ZDCRP

```

CSMP0097I 21.47.50 CPU-B SS-BSS SSU-HPN IS-01
DCRP0001I 21.47.50 CORE RESIDENT PROGRAM AREA STATUS
                31-BIT AREA          64-BIT AREA
TOTAL ALLOCATION      104 857 600          419 430 400
CURRENTLY BACKED     15 728 640          34 603 008 _
PROGRAM USAGE        14 397 440          33 566 720
FREE CHAIN AREA              0              0
  NUMBER OF FRAGMENTS              0              0
  SMALLEST FRAGMENT                0              0
  LARGEST FRAGMENT                  0              0
  AVERAGE FRAGMENT                  0              0 _
END OF DISPLAY+

```

# PJ32705 – Norm State Time Change

# PJ32705 – Norm State Time Change

- **Apply time adjustments for daylight saving time (also known as summer time) without requiring a TPF outage.**
- **Support contains**
  - Daylight savings time (DST) offset
    - Number of minutes to add to clock when DST is active
    - Default is 60 minutes
  - Indicator to say whether DST offset is active
    - Ability to manually set indicator
    - Ability to automatically set indicator
      - Time / Date when DST is active
      - Time / Date when DST is not active
  - Display of DST settings

## PJ32705 – Norm State Time Change

- Clock concepts**

	<b>Before PJ32705</b>	<b>With PJ32705</b>
<b>Restart</b>	<b>Set TOD clock</b>	<b>Set TOD clock</b>
<b>TOD</b>	<b>Always increasing; based on GMT</b>	<b>Always increasing; based on GMT</b>
<b>Cycle up</b>	<b>Set TPF clock and calendar using TOD, time zone offset, and leap seconds</b>	<b>Set TPF clock and calendar using TOD, time zone offset, leap seconds, and DST offset</b>
<b>Cross a second</b>	<b>Add one to seconds</b>	<b>Add one to seconds</b>
<b>Cross a minute</b>	<b>Increment TPF clock and update calendar if crossing a day</b>	<b>Set TPF clock and calendar using TOD, time zone offset, leap seconds, and DST offset</b>

# PJ32705 – Norm State Time Change

- **Example of setting the offset**

==> ZATIM DST OFFSET-60

```
CSMP0097I 10.14.22 CPU-B SS-BSS SSU-HPN IS-01
ATIM0103I 10.14.22 OFFSET HAS BEEN CHANGED+
```

- **Example of displaying current settings**

==> ZDTIM DST

```
CSMP0097I 10.19.24 CPU-B SS-BSS SSU-HPN IS-01
DTIM0101I 10.19.24 DST IS NOT ACTIVE
OFFSET - 60
END OF DISPLAY +
```

# PJ32705 – Norm State Time Change

- **Example of manually setting DST**

==> ZATIM DST ON

```
CSMP0097I 10.24.09 CPU-B SS-BSS SSU-HPN IS-01
ATIM0100I 10.24.09 DST WILL BE TURNED ON +
CSMP0097I 11.25.00 CPU-B SS-BSS SSU-HPN IS-01
CLKS0301I 11.25.00 DST HAS BEEN TURNED ON+
```

==> ZDTIM DST

```
CSMP0097I 11.25.11 CPU-B SS-BSS SSU-HPN IS-01
DTIM0100I 11.25.11 DST SETTING IS ON
OFFSET - 60
END OF DISPLAY +
```

==> ZATIM DST OFF

```
CSMP0097I 11.26.52 CPU-B SS-BSS SSU-HPN IS-01
ATIM0101I 11.26.52 DST WILL BE TURNED OFF+
CSMP0097I 10.27.00 CPU-B SS-BSS SSU-HPN IS-01
CLKS0301I 10.27.00 DST HAS BEEN TURNED OFF+
```



# PJ32705 – Norm State Time Change

- **Example of automatically setting DST**

```
==> ZATIM DST AUTO ON-MAR. SUN. 2. 0200 OFF-NOV. SUN. 1. 0200
CSMP0097I 10.18.48 CPU-B SS-BSS SSU-HPN IS-01
ATIM0104I 10.18.48 DST AUTO PARAMETERS ARE SET +
```

```
==> ZDTIM DST
CSMP0097I 10.20.59 CPU-B SS-BSS SSU-HPN IS-01
DTIM0100I 10.20.59 DST SETTING IS ON
OFFSET - 60
MONTH ON- MAR
DAY ON- SUN
WEEK ON- 2
HOUR ON- 2 MINUTE ON 0
MONTH OFF- NOV
DAY OFF- SUN
WEEK OFF- 1
HOUR OFF- 2 MINUTE OFF 0
END OF DISPLAY +
```

# PJ32792 – Multiple Release Detection

# PJ32792 – Multiple Release Detection

- **Release (RELFC) a file address more than once**
- **PDU catches most multiple releases today**
  - Need to catch the multiple release sooner
  - Need better diagnostic data than PDU provides
- **Concepts**
  - Multiple Release Detection (MRD)
  - Get File Initialization (GFI)
  - Record ID Validation (RIV)

# PJ32792 – Multiple Release Detection

- **Multiple Release Detection (MRD) processing**
  - When a RELFC is done
    - If MRD is NOT active, release the file address
    - If MRD is active, do MRD processing ...
      - FINWC is done on file address being released
      - If record ID is NOT x'FC38'
        - Update record with diagnostic data
        - File record with diagnostic data and use record ID x'FC38'
        - Release the file address
      - If record ID = x'FC38', a multiple release has happened
        - Either take an error (SERRC / SNAPC) or send a message
        - Update and file record with diagnostic data about this RELFC request
        - Do NOT release the file address

# PJ32792 – Multiple Release Detection

- **MRD – RELFC options**

- Synchronous: RELFC MRDTYPE=SYNC or tpf\_relfc\_ext(, MRD\_SYNC,)
  - Do MRD processing at RELFC time
  - RELFC will do an ENTRC CMR0
  - CMR0 will do MRD processing
    - RELFC will give up control (this is a change in RELFC behavior)
  - Provides best possible diagnostics if a dump is taken
- Asynchronous: RELFC MRDTYPE=ASYNCR or tpf\_relfc\_ext(, MRD\_ASYNC,)
  - RELFC requests will be buffered
    - RELFC will NOT give up control (no change in RELFC behavior)
  - MRD processing will be done in a separate ECB
    - A new ECB will be created
    - Program CMR3 entered to do MRD processing on items in the buffer
- Default: RELFC where MRDTYPE is not specified
  - Define at the system level whether to do synchronous or asynchronous option
    - For default action to be Synchronous use ZGFSP MRD RELFC-SYNCR
    - If command ZGFSP MRD RELFC is not done, default action will be Asynchronous.

# PJ32792 – Multiple Release Detection

- **Get File Initialization (GFI) processing**
  - When a GETFC is done
    - If GFI is NOT active, return to the application with the file address
    - If GFI is active, do GFI processing ...
      - File the record with record ID = x'FC37' and include diagnostic data about this GETFC request in the record.
  - Reason for GFI...
    - RELFC ... MRD files record with record ID = x'FC38'
    - PDU / Recoup returns file address
    - GETFC
      - File record with record ID = x'FC37'
    - RELFC ... application did not file the record
      - MRD retrieves record; puts diagnostic data into record; continues with RELFC

# PJ32792 – Multiple Release Detection

- **Record ID Validation (RIV) processing**
  - Release file address if the record ID matches a given ID
  - RELFC ID= or `tpf_relfc_ext(,MRD_ID_CHECK,)`
    - ENTRC CMR2 will be done
    - If RIV is NOT active, proceed with RELFC
    - If RIV is active, do RIV processing...
      - FINWC on the file address being released
      - If ID in record matches the ID supplied on macro, proceed with RELFC
      - If ID is different, take a SERRC with return and will not release the file address.

# PJ32792 – Multiple Release Detection

- **Activate / deactivate by processor for each function**
  - MRD – Multiple Release Detection
  - GFI – Get File Initialization
  - RIV – Release ID Verification

## ==> ZGFSP MRD ON PROC-ALL

```
CSMP0097I 20.24.05 CPU-B SS-BSS SSU-HPN IS-01
GFSP0110I 20.24.05 MULTIPLE RELEASE DETECTION FOR ALL PROCESSORS IS ON+
```

## ==> ZGFSP GFI ON PROC-B

```
CSMP0097I 21.50.49 CPU-B SS-BSS SSU-HPN IS-01
GFSP0104I 21.50.49 GET FILE INITIALIZATION FOR PROCESSOR B IS ON+
```

## ==> ZGFSP RIV ON PROC-ALL

```
CSMP0097I 14.38.14 CPU-B SS-BSS SSU-HPN IS-01
GFSP0116I 14.38.14 RELEASE ID VERIFICATION FOR ALL PROCESSORS IS ON+
```



# PJ32792 – Multiple Release Detection

- **Control usage based on record ID**

==> ZGFSP MRD NOCHECK RECI D-ALL

CSMP0097I 21.19.25 CPU-B SS-BSS SSU-HPN IS-01  
GFSP0112I 21.19.25 MULTIPLE RELEASE DETECTION FOR ALL RECORD IDS IS OFF+

==> ZGFSP MRD CHECK RECI D-TM

CSMP0097I 21.21.19 CPU-B SS-BSS SSU-HPN IS-01  
GFSP0103I 21.21.19 MULTIPLE RELEASE DETECTION FOR RECID TM IS ON+

==> ZGFSP MRD CHECK RECI D-ALL

CSMP0097I 20.19.24 CPU-B SS-BSS SSU-HPN IS-01  
GFSP0112I 20.19.24 MULTIPLE RELEASE DETECTION FOR ALL RECORD IDS IS ON+

==> ZGFSP GFI CHECK RECI D-ALL

CSMP0097I 21.49.55 CPU-B SS-BSS SSU-HPN IS-01  
GFSP0115I 21.49.55 GET FILE INITIALIZATION FOR ALL RECORD IDS IS ON+

==> ZGFSP RIV CHECK RECI D-TM

CSMP0097I 21.57.19 CPU-B SS-BSS SSU-HPN IS-01  
GFSP0109I 21.57.19 RELEASE ID VERIFICATION FOR RECID TM IS ON+

## PJ32792 – Multiple Release Detection

- **Control usage by long term pool type for functions**
  - MRD – Multiple Release Detection
  - GFI – Get File Initialization

==> ZGFSP MRD CHECK LTYPE-4DP

CSMP0097I 21.22.54 CPU-B SS-BSS SSU-HPN IS-01

GFSP0102I 21.22.54 MULTIPLE RELEASE DETECTION FOR LONG-TERM POOL TYPE 4DP IS ON+

==> ZGFSP MRD CHECK LTYPE-ALL

CSMP0097I 21.23.17 CPU-B SS-BSS SSU-HPN IS-01

GFSP0111I 21.23.17 MULTIPLE RELEASE DETECTION FOR ALL LONG-TERM POOL TYPES IS ON

==> ZGFSP GFI CHECK LTYPE-ALL

CSMP0097I 21.50.22 CPU-B SS-BSS SSU-HPN IS-01

GFSP0114I 21.50.22 GET FILE INITIALIZATION FOR ALL LONG-TERM POOL TYPES IS ON+

## PJ32792 – Multiple Release Detection

- **Control usage by any pool type for function**
  - RIV – Release ID Verification

==> ZGFSP RIV CHECK PTYPE-ALL

CSMP0097I 21.59.47 CPU-B SS-BSS SSU-HPN IS-01

GFSP0117I 21.59.47 RELEASE ID VERIFICATION FOR ALL POOL TYPES IS ON+

## PJ32792 – Multiple Release Detection

- **Control notification of MRD errors**
  - WTOPC – output message to the console
  - DUMP
    - SERRC .. For RELFC MRDTYPE=SYNC
    - SNAPC .. For RELFC MRDTYPE=ASYNC
  - NONE – no notification is given

==> ZGFSP MRD NOTIFY-DUMP

CSMP0097I 21.25.24 CPU-B SS-BSS SSU-HPN IS-01

GFSP0123I 21.25.24 NOTIFICATION METHOD FOR MRD PROCESSING IS DUMP+

# PJ32792 – Examples of dump messages

## MRD DUMP Example

```
CPSE0152E 22.15.25 IS-0001 SS-BSS SSU-HPN SE-000498 OPR-I00069E
010000B TRC-DYDY
DYDY OBJ-dydy_mrd_notify 000004B4 LOADSET-BASE
RELFC MULTIPLE RELEASE DETECTED
FILE ADDRESS      ORG ID REL PGM      TRC      DI SP OBJECT NAME _
000000001003FCF1 E7C9/XI   2 QREL   QREL     6A56 rel sa.goff +
```

## MRD SNAPC Example

```
SNAP0003I 22.14.41 CPU-B SS-BSS SSU-HPN IS-1
PSW-07051001 80000000 00000000 ODD0EF8C
PGM-DYDY CODE-I0000069E TERM-000000B
RELFC MULTIPLE RELEASE DETECTED
FILE ADDRESS=000000001003FCF0
ORIGINAL ID=E7C9/XI
RELEASE=2
PROGRAM=QREL
TRC=QREL
DI SP=6A56 _
OBJECT NAME=rel sa.goff
```

# PJ32792 – Examples of dump messages

## RIV DUMP Example

```
CPSE0152E 21.16.53 IS-0001 SS-BSS SSU-HPN SE-000200 OPR-I00069F
010000B TRC-DYDY
DYDY     OBJ-dydy_mrd_notify 0000015A  LOADSET-BASE
RELFC RECORD ID VALIDATION ERROR _
FILE ADDRESS      ACT ID  EXP ID PGM      TRC          DI SP OBJECT NAME
00000000100017A3 E7C9/XI  C1C1/AA QZZ4YZ QZZ4          1E8 qzz4.goff +
```

# PJ32792 – Multiple Release Detection

- **Display control settings**
  - MRD control settings → ZGFSP DSP MRD
  - GFI control settings → ZGFSP DSP GFI
  - RIV control settings → ZGFSP DSP RIV
- **Display individual record ID settings**
  - → ZGFSP DSP RECID-xx

==> ZGFSP DSP RECID-OM

CSMP0097I 15.03.35 CPU-B SS-BSS SSU-HPN IS-01

GFSP0122I 15.03.35 RECORD ID SETTING

RECORD ID	MRD	GFI	RIV
-----	---	---	---
D6D4/OM	ON	ON	OFF

END OF DISPLAY+

# PJ32792 – Display Multiple Release Detection

==> ZGFSP DSP MRD

```
CSMP0097I 20.27.53 CPU-B SS-BSS SSU-HPN IS-01
GFSP0119I 20.27.53 MULTIPLE RELEASE DETECTION SETTINGS
PROCESSORS ON:  B  C  D  E  Z  O  F  G  H  I  J  K  L  M
                  N  O  P  Q  R  S  T  U  V  W  X  Y  1  2
                  3  4  5  6  _
POOLTYPES CHECK: SLT SDP LLT LDP 4LT 4DP 4D6
RELFC SETTING:   ASYNC
AUTO SHUTDOWN:  OFF
NOTIFICATION:    DUMP
RECID CHECK:     65535
RECID NOCHECK:  0000
ELAPSED TIME:    0000 DAYS  00 HOURS  00 MINUTES  00 SECONDS
LAST SHUTDOWN:   12/31/1899  19:00:00
END OF DISPLAY+
```



# PJ32792 – Display Get File Initialization - GFI

==> ZGFSP DSP GFI

```
CSMP0097I 21.52.40 CPU-B SS-BSS SSU-HPN IS-01
GFSP0120I 21.52.40 GET FILE INITIALIZATION SETTINGS
PROCESSORS ON: B
POOLTYPES CHECK: SLT SDP LLT LDP 4LT 4DP 4D6
RELFC SETTING: ASYNC
AUTO SHUTDOWN: OFF
NOTIFICATION: DUMP
RECID CHECK: 65535
RECID NOCHECK: 0000 _
ELAPSED TIME: 0000 DAYS 00 HOURS 00 MINUTES 00 SECONDS
LAST SHUTDOWN: 12/31/1899 19:00:00
END OF DISPLAY+
```

# PJ32792 – Display Release ID Verification - RIV

==> ZGFSP DSP RIV

```

CSMP0097I 22.01.47 CPU-B SS-BSS SSU-HPN IS-01
GFSP0121I 22.01.47 RELEASE ID VERIFICATION SETTINGS
PROCESSORS ON:  B  C  D  E  Z  O  F  G  H  I  J  K  L  M
                  N  O  P  Q  R  S  T  U  V  W  X  Y  1  2
                  3  4  5  6  _
POOLTYPES CHECK: SLT SST SDP LLT LST LDP 4LT 4ST 4DP 4D6
RELFC SETTING:   ASYNC
AUTO SHUTDOWN:   OFF
NOTIFICATION:    DUMP
RECID CHECK:     0001
RECID NOCHECK:   65534
ELAPSED TIME:    0000 DAYS  00 HOURS  00 MINUTES  00 SECONDS
LAST SHUTDOWN:   12/31/1899  19:00:00
END OF DISPLAY+

```

# PJ32792 – Multiple Release Detection

- **Display RELFC history of a file address**
  - History maintained in the record itself
  - Once the record is reused, history will be lost.

```
==> ZDMRD 000000001003FCF1
```

```
CSMP0097I 22.17.26 CPU-B SS-BSS SSU-HPN IS-01
```

```
DMRD0001I 22.17.26 DISPLAY OF RELEASE HISTORY
```

```
FILE ADDRESS - 000000001003FCF1 CURRENT RECID FC38/..
ORIGINAL RECID E7C9/XI
```

NBR	MM/DD-TIME	PROGVV	TRC	PROC	DISP	LNIATA	OBJECT
USERDATA							
1	09/11-22:16	QREL	QREL	B	00006A56	010000C2	relsa.goff
2	09/11-22:16	QREL	QREL	B	00006A56	010000C2	relsa.goff

END OF DISPLAY+

# PJ32792 – Multiple Release Detection

- **Automatic shutdown**
  - In shutdown MRD and GFI will act as if the function is not active
  - RIV is not affected by automatic shutdown
  - Runs once a second
  - Shutdown based on resource availability uses:
    - LODIC CLASS=IBMMRDSU
  - Restart based on resource availability uses:
    - LODIC CLASS=IBMMRDRE
    - IBMMRDRE only checked if shutdown is in effect
  - IBMMRDSU and IBMMRDRE have initial values set to zero
    - Automatic shutdown will not happen unless user sets LODIC values.
  - Shutdown based on utilization uses:
    - LODIC UTILCLASS=IBMMRDUT
    - IBMMRDUT must be defined using ZSYSL CREATE

The End

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