z/TPF V1.1

TPF Users Group - Spring 2009

z/TPF APAR PJ34869

User-Defined Device Support

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Introduction - User-Defined Device Support (UDEV)

- **Response to TPFUG Requirements**
  - D06003F - Logical Device Support
- **Provides the ability to support multiple user-defined devices**
  - Subdivision/partitioning of a z/TPF DASD device type (A, B, C, D)
    - Based on subsets of module ranges within a specified device type
      - Note - format of each module assigned to a z/TPF device type must be consistent across all modules in that device type (A, B, C, D)
    - One or more user-defined devices allowed per device type
    - UDEVs defined in SIP/FCTB build process using new UDEVCE macro
    - Data residency for records on UDEV assigned with RAMFIL statements

Introduction - User-Defined Device Support (UDEV)

- **Benefits to the customer**
  - Facilitates the addition or removal of DASD hardware on a customer's z/TPF system
    - Minimizes risk to the integrity of the online database
    - Allow separation of movement of data from changes to hardware configuration
  - Prerequisite for an online data base reorganization package

External Interface Changes - SIP

- UDEVCE Macro (New)
  - Optional macro that specifies the existence and characteristics of user-defined devices.

```
>>-UDEVCE-- ------------------------------------------------------------->
 >--+-------------------------------------------------------------------+-----><
    '-UDEVNAME=-+-(uname,firstmod,nummod)-------+---'
                |      .-,--------------------------------.    |
                |      V                                  |    |
                   '-(-----(uname,firstmod,nummod)-+-)-'
```

  - Where:
    - *uname – a unique 4- to 16-character alphanumeric user-defined device name*
      - ***u*** **-** a character (A, B, C, or D) that represents the z/TPF device type that this user-defined device type is associated with.
      - *name* - a 3- to 15-character alphanumeric value.
    - *firstmod - starting relative prime module number for this user-defined device*
    - *nummod - number of prime modules used to spread the fixed and pool records*

Note: The values coded on the UDEVNAME parameter for firstmod and nummod are not affected by prime/duplicate module pairing. They are a count of the number of prime devices that start at 0 and increment by 1 for the selected z/TPF device type **(A, B,C, D)** and cannot exceed the physical limitations of that device type as defined in the ONLFIL macro.

External Interface Changes - SIP

- **UDVEND** Macro (New)
  - Used by the assembler to signal the end of the UDEVCE macro
  - It ***must*** be coded after the UDEVCE macro.

```
>>----- UDVEND ------------------------------<<
```

External Interface Changes - SIP

- **RAMFIL** Macro (Changed)
  - Obsoleted parameters
    - PSEUDO, LOWMOD, NOMOD
  - Added one optional parameter
    - UDEV=*udevnam*
      - *udevnam* is the name of a user-defined device defined by the UDEVCE macro
      - Specifies the user-defined device across which fixed file or pool records are distributed.
      - Can be coded on Fixed, Pool, or Spare allocations
      - Cannot be coded on VTOC, IFORMAT, or Vertical record allocations
      - If not coded or UDEV=NONE, indicates the records specified are spread across all of the physical devices

External Interface Changes – SIP (Examples)

- The following demonstrates the use of user-defined devices on DEVA
  - For purposes of these examples, the following constant values are used:
    - 4 cylinders per mod (10-13), 2 heads per cyl, 2 records per track
    - 3 allocated record types
  - ***z/TPF system configuration - 1***
    - 4 prime modules in device type A (DEVA) -
    - 1 optional UDEV defined
      - **A2008XFINAL** – Across the 4 prime modules in DEVA
        (Note – Defined the same as the default value if no UDEV used)
  - ***z/TPF system configuration - 2***
    - 8 prime modules in device type A (DEVA)
    - 3 UDEV's defined
      - **A2008XFINAL** – Across the original 4 prime modules in DEVA
      - **A2009YTEMP** - Across the additional 4 prime modules in DEVA
      - **A2009ZFINAL** – Across all 8 prime modules in DEVA
        (Note – A2009ZFINAL values are the same as if the UDEV- parameter is not coded)
  - ***z/TPF system configuration - 3***
    - 8 prime modules in device type A (DEVA) -
    - 1 optional UDEV defined
      - **A2009ZFINAL** – Across the 8 prime modules in DEVA
        (Note – Defined the same as the default value if no UDEV used)

External Interface Changes – SIP (Examples)

z/TPF system configuration – 1 (4 Prime Mods on DEVA)

```
UDEVCE UDEVNAME=(A2008XFINAL,0,4)
UDVEND ,
:            :            :
RAMFIL TYPE=4SA,RECNO=00016,RECID=#DEMOA,DUPE=NO,BASE=01000,EQU=213,X
               UDEV=A2008XFINAL,UFTI4=(48,551),UFTI5=(48,552)
RAMFIL TYPE=4SA,RECNO=00008,RECID=#DEMOB,DUPE=NO,EQU=315,          X
               UDEV=A2008XFINAL,UFTI4=(48,553),UFTI5=(48,554)
RAMFIL TYPE=4SA,RECNO=00024,RECID=#DEMOC,DUPE=NO,EQU=318,          X
               UDEV=A2008XFINAL,UFTI4=(48,555),UFTI5=(48,556)
:            :            :
RAMEND ,
```

PRIME MOD NBRs	MOD - 0		MOD - 1		MOD - 2		MOD - 3	
CYL/HEAD								
Cyl - 13 Head - 1								
Cyl - 13 Head - 0								
Cyl - 12 Head - 1	*C-10*	*C-14*	*C-11*	*C-15*	*C-12*	*C-16*	*C-13*	*C-17*
Cyl - 12 Head - 0	*C-8*	*C-C*	*C-9*	*C-D*	*C-A*	*C-E*	*C-B*	*C-F*
Cyl - 11 Head - 1	*C-0*	*C-4*	*C-1*	*C-5*	*C-2*	*C-6*	*C-3*	*C-7*
Cyl - 11 Head - 0	B-0	B-4	B-1	B-5	B-2	B-6	B-3	B-7
Cyl - 10 Head - 1	A-8	A-C	A-9	A-D	A-A	A-E	A-B	A-F
Cyl - 10 Head - 0	A-0	A-4	A-1	A-5	A-2	A-6	A-3	A-7
Record Nbr -	0	1	0	1	0	1	0	1

External Interface Changes – SIP (Examples)

Z/TPF system configuration – 2 (8 Prime Mods on DEVA)

```
UDEVCE UDEVNAME=((A2008XFINAL,0,4),(A2009YTEMP,4,4),(A2009ZFINAL,0,8))
UDVEND ,
:            :            :
RAMFIL TYPE=4SA,RECNO=00016,RECID=#DEMOA,DUPE=NO,BASE=01000,EQU=213,  X
              UDEV=A2008XFINAL,UFTI4=(48,551),UFTI5=(48,552)
RAMFIL TYPE=4SA,RECNO=00008,RECID=#DEMOB,DUPE=NO,BASE=01000,EQU=315,  X
UDEV=A2009YTEMP,UFTI4=(48,553),UFTI5=(48,554)
RAMFIL TYPE=4SA,RECNO=00024,RECID=#DEMOC,DUPE=NO,BASE=01300,EQU=318,  X
UDEV=A2009ZFINAL,UFTI4=(48,555),UFTI5=(48,556)
:            :            :
RAMEND ,
```

PRIME MOD NBRs CYL/HEAD	MOD – 0		MOD - 1		MOD - 2		MOD - 3		MOD - 4		MOD - 5		MOD - 6		MOD - 7	
Cyl - 13 Head - 1	*C-10*		*C-11*		*C-12*		*C-13*		*C-14*		*C-15*		*C-16*		*C-17*	
Cyl - 13 Head - 0	*C-0*	*C-8*	*C-1*	*C-9*	*C-2*	*C-A*	*C-3*	*C-B*	*C-4*	*C-C*	*C-5*	*C-D*	*C-6*	*C-E*	*C-7*	*C-F*
Cyl - 12 Head - 1																
Cyl - 12 Head - 0																
Cyl - 11 Head - 1																
Cyl - 11 Head - 0																
Cyl - 10 Head - 1	A-8	A-C	A-9	A-D	A-A	A-E	A-B	A-F								
Cyl - 10 Head - 0	A-0	A-4	A-1	A-5	A-2	A-6	A-3	A-7	B-0	B-4	B-1	B-5	B-2	B-6	B-3	B-7
Record Nbr -	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1

External Interface Changes – SIP (Examples)

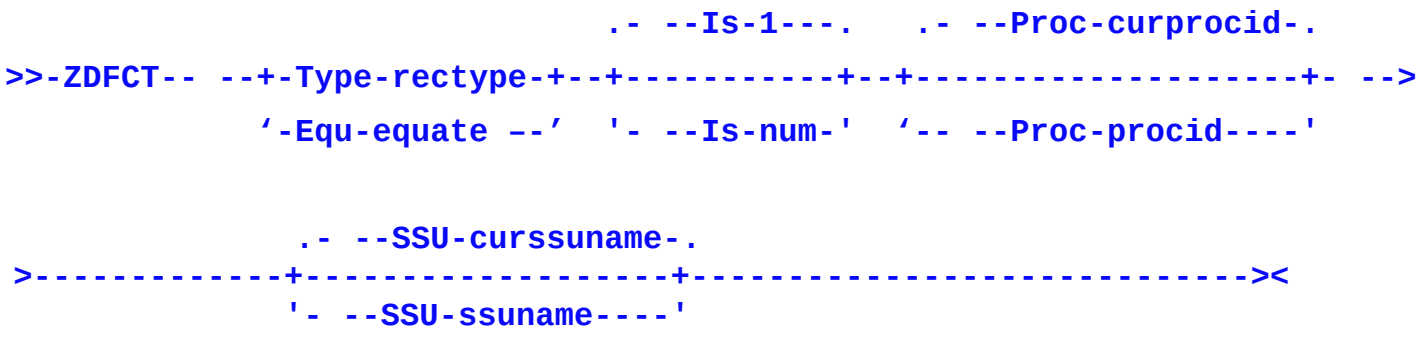
```
Z/TPF system configuration – 3  (8 Prime Mods on DEVA)
   UDEVCE UDEVNAME=(A2009ZFINAL,0,8)
   UDVEND ,
   :            :            :
   RAMFIL TYPE=4SA,RECNO=00016,RECID=#DEMOA,DUPE=NO,BASE=01101,EQU=213, X
                  UDEV=A2009ZFINAL,UFTI4=(48,551),UFTI5=(48,552)
   RAMFIL TYPE=4SA,RECNO=00024,RECID=#DEMOC,DUPE=NO, EQU=318,          X
                  UDEV=A2009ZFINAL,UFTI4=(48,555),UFTI5=(48,556)
   RAMFIL TYPE=4SA,RECNO=00008,RECID=#DEMOB,DUPE=NO,EQU=315,           X
                  UDEV=A2009ZFINAL,UFTI4=(48,553),UFTI5=(48,554)
   :            :            :
   RAMEND ,
```

PRIME MOD NBRs

CYL/HEAD	MOD - 0		MOD - 1		MOD - 2		MOD - 3		MOD - 4		MOD - 5		MOD - 6		MOD - 7	
Cyl - 13 Head - 1																
Cyl - 13 Head – 0																
Cyl - 12 Head – 1	*C-10*	B-0	*C-11*	B-1	*C-12*	B-2	*C-13*	B-3	*C-14*	B-4	*C-15*	B-5	*C-16*	B-6	*C-17*	B-7
Cyl - 12 Head – 0	*C-0*	*C-8*	*C-1*	*C-9*	*C-2*	*C-A*	*C-3*	*C-B*	*C-4*	*C-C*	*C-5*	*C-D*	*C-6*	*C-E*	*C-7*	*C-F*
Cyl - 11 Head – 1	A-0	A-8	A-1	A-9	A-2	A-A	A-3	A-B	A-4	A-C	A-5	A-D	A-6	A-E	A-7	A-F
Cyl - 11 Head – 0																
Cyl - 10 Head – 1																
Cyl - 10 Head – 0																
Record Nbr -	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1

Updated Command - ZDFCT

- **Display file address compute program (FACE) table data**
  - Displays information for a selected record type that is allocated in the current online FACE table (FCTB).



- **Changes for this APAR**
  - Support unique record types (SSU, Processor, Istream)
    - Allow selection by unique attributes
    - Display owner information about the record type
  - Support pool record types
    - Use the internal pool record types defined in the FCTB
    - Display the pool RCC for each pool segment
  - Expand output for 8-byte file address format
  - Display additional information about the record type from the FCTB
    - Vertical, Restorable, In use, Type of use (fixed or pool), First mod, Number of mods

Updated Command - ZDFCT

```
Examples :
Display information about a fixed record type

User:     ZDFCT T-#SONRI

System:   CSMP0097I 16.28.54 CPU-B SS-BSS  SSU-HPN  IS-01
          DFCT0010I 16.28.54 RECORD TYPE INFORMATION REPORT
          RECORD TYPE: #SONRI   / 0059      MAX ORDINAL NBR: 0000000000000A8B
          ATTRIBUTES
           UNIQUE : ---  SIZE: L  VERT: N   RESTORE: Y  INUSE: Y  TYPE USE: F   _
           OWNING SSU: HPN  PROC: B IS: 1   REQUESTED SSU: HPN  PROC: B IS: 1
          SPLIT INFORMATION
           DEV  FIRST NBR
           TYPE  MOD  MODS DUP RCC           ORD/PSON      FILE ADDRESS        MCHR
           ---- ----- ---- --- ---      ---------------- ---------------- --------------
           DEVA 0000  000A  D  -- START 0000000000000000 00000000D01EC000 005704D0000B19
                                END   0000000000000A8B 00000000D01ECA8B 005504D100041F
        END OF DISPLAY+
```

Updated Command - ZDFCT

```
Examples :
Display information about a pool record type

User:     zdfct type-#ip4d6

System:   CSMP0097I 12.47.36 CPU-B SS-BSS  SSU-HPN  IS-01
          DFCT0010I 12.47.36 RECORD TYPE INFORMATION REPORT
          RECORD TYPE: #IP4D6   / 0141      MAX ORDINAL NBR: 00000000000FC9EF
          ATTRIBUTES
           UNIQUE : ---  SIZE: 4  VERT: N   RESTORE: Y  INUSE: Y  TYPE USE: P
           OWNING SSU: HPN  PROC: B IS: 1   REQUESTED SSU: HPN  PROC: B IS: 1
          SPLIT INFORMATION
           DEV  FIRST NBR
           TYPE  MOD  MODS DUP RCC          ORD/PSON      FILE ADDRESS        MCHR
           ---- ----- ---- --- ---      ---------------- ---------------- -------------
           DEVA 0000  000A  D  94 START 0000000000000000 0000070000000000 00470533000701
                                  END   00000000000000EF 00000700000000EF 0059053300080C
           DEVA 0000  000A  D  94 START 00000000000000F0 00000700000000F0 00470533000901
                                  END   00000000000001DF 00000700000001DF 00590533000A0C
            :    :     :   :   :  :         :     :        :       :         :     :
            :    :     :   :   :  :         :     :        :       :         :     :
           DEVB 0000  0020  D  98 START 0000000000044970 0000070000044970 005B00DF000A01
                                  END   0000000000044AEF 0000070000044AEF 009900DF000A0C
           DEVB 0000  0020  D  98 START 0000000000044AF0 0000070000044AF0 005B00DF000B01
                                  END   000000000004916F 000007000004916F 009900E2000C0C

          MORE DATA AVAILABLE, ENTER ZPAGE TO CONTINUE+
```

Updated Command - ZPOOL [NORM] DISPLAY

- **Display the online pool segment tables**
  - Displays entries in the selected online pool segment table.
    - Provides a summary or a detailed display of pool sections in the allocated (OPMAAA) or deactivated (OPMBBB) areas of the selected online pool segment table.
    - The display is sorted by pool section.

```
                                          .- PST-CUR -.
>>-ZPOOL [NORM] DISPLAY-- OPM- -+-AAA -+--+-----------+----------->
                               '-BBB -'  |- PST-NEW -|
                                         '- PST-OLD -'

                                       .- SUMmary-N -.
>----+-----------------------------+------+------------+----------><
     '- SECtion-pool -+----------|      '- SUMmary-Y -'
                      '-devtype -'
```

Updated Command - ZPOOL [NORM] DISPLAY

- Changes made with this APAR
  - Refined starting information to include record number and relative prime mod number.
  - Allows for display of summary information (**SUM-**Y/N)
  - Allows selection by pool type or pool section (**SECT-***pppd*)
    - Where: *ppp* is pool type (4DP) and *d* is device type (A,B,C,D)
  - Compatible with the ZPOOL NORM GENERATION function
    - Expands selection of pool segment table (**PST-***OLD/NEW/CUR*)
    - Displays the record type for the PST being displayed (i.e. #PSTNEW)
    - Displays the creation time of the PST being displayed
  - Added Help option

Updated Command – ZPOOL DISPLAY

Examples :

Display a summary report for a selected pool type:

```
User:     ZPOOL DISPLAY OPM-AAA SECT-4DP SUM-Y

System:   POOL0302I 09.50.50 POOL SECTION SUMMARY - OPM-AAA PST-CUR
          PST CREATED - 02/18/2008 23:05:52 PST RECORD TYPE - #PSTXCUR

           POOL    POOL  NUMBER       RECORDS
          SECTION RCC  SEGMENTS     ALLOCATED
          ------- ---- -------- ------------------
            4DPA   24      13              1750680
            4DPB   48     112              3249408

          END OF DISPLAY+
```

Display a summary report for a selected pool section:

```
User:     ZPOOL DISPLAY OPM-AAA SECT-4D6A SUM-Y

System:   POOL0302I 09.50.50 POOL SECTION SUMMARY - OPM-AAA PST-CUR
          PST CREATED - 02/18/2008 23:05:52 PST RECORD TYPE - #PSTXCUR

           POOL    POOL  NUMBER       RECORDS
          SECTION RCC  SEGMENTS     ALLOCATED
          ------- ---- -------- ------------------
            4D6A   94     113               280560

          END OF DISPLAY+
```

Updated Command – ZPOOL DISPLAY

Examples :

Display a summary report for all pool sections:

User: ZPOOL DISPLAY OPM-AAA PST-NEW SUM-Y

System:

```
POOL0302I 09.22.51 POOL SECTION SUMMARY - OPM-AAA PST-NEW
PST CREATED - 02/18/2008 23:05:52 PST RECORD TYPE - #PSTXNEW

 POOL    POOL   NUMBER        RECORDS
SECTION RCC   SEGMENTS      ALLOCATED
------- ---- -------- ------------------
 SSTA    08       70               112200
 SDPA    0C       89               250800
 LSTA    14       79               131670
 LDPA    18      115               477180
 4STA    20      644               158040
 4DPA    24       13              1750680
 SSTB    2C       74               177760
 SDPB    30      117               272800
 LSTB    38       65                68640
 LDPB    3C       94               392832
 4STB    44       63                42240
 4DPB    48      112              3249408
 4D6A    94      113               280560
 4D6B    98      104               752640

END OF DISPLAY+
```

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