



| z/TPF V1.1

TPF Users Group - Fall 2009

DASD Monitoring Enhancements

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Chris Filachek
Operations & Coverage Subcommittee

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Topics

- **Monitoring Individual DASD Modules**
 - Updates to DASD Queue Monitoring
 - New DASD Service Time Monitoring
- **New DASD Subsystem Monitoring**
- **New Display Information and ZDMOD Parameters**

Updates to DASD Queue Monitoring

- **Current support: On a given time interval, check length of all DASD module queues**
 - If queue length exceeds user-specified threshold, z/TPF displays a warning message
 - Available since z/TPF PUT 4
- **New queue length thresholds**
 - RLTCCount – Threshold for real-time modules
 - Previous Count threshold applied to all modules
 - Redefined previous Count threshold as RLTCCount
 - NORLTCCount - Threshold for non-real-time modules
 - Skip monitoring non-real-time modules by setting to zero
 - Monitor non-real-time modules using a different threshold

DASD Queue Warning Messages

- **Separate warning messages for real-time and non-real-time modules**

- Warnings issued only if modules have exceeded the threshold
- Displays up to 10 modules with highest queues
- Sorted by queue length

- **CYDQ0002W for real-time modules**

```

CYDQ0002W 12.00.00 2 RLT DASD MODULES AT OR OVER QUEUE COUNT 6
SDA  MOD  VSN      DUPE SS  USE/T SSID QUEUE*  SERVTIME  STATUS
FCC1 0049 TX0003 004A BSS  RLT/A 107D    10        742  NORMAL
4282 0060 TX0026 005F BSS  RLT/B 104A     6        1186  NORMAL
END OF DISPLAY

```

- **CYDQ0003W for non-real-time modules**

```

CYDQ0003W 12.00.00 1 NORLT DASD MODULES AT OR OVER QUEUE COUNT 20
SDA  MOD  VSN      DUPE SS  USE/T SSID QUEUE*  SERVTIME  STATUS
0EE8 00D8 VALDR          BSS  GDS   0C43    21        3978  NORMAL
END OF DISPLAY

```

New DASD Service Time Monitoring

- **On a given time interval, check DASD service times**
 - If any service time exceeds a user-specified threshold, z/TPF displays warning messages
 - Integrated with DASD module queue monitor
 - Single scanner checks both queue length and service time thresholds
 - Same time interval as DASD module queue monitor
- **Unique service time thresholds for each device type (DEVA / B / C / D)**
 - Threshold from 50 – 99999 microseconds
 - Applies to real-time DASD modules only

DASD Service Time Warning Messages

- **Separate warning message and message number for each device type**
 - Warnings issued only if modules have exceeded the threshold
 - Displays up to 10 modules with highest service times
 - Sorted by service time
- **Example for DEVA (CYDQ0004W):**

```
CYDQ0004W 12.00.00 4 MODULES AT OR OVER 10000 MICROSECOND
SERVICE TIME
```

SDA	MOD	VSN	DUPE	SS	USE/T	SSID	QUEUE	SERVTIME*	STATUS
1845	0055	TX0015	0056	BSS	RLT/A	104A	2	318790	NORMAL
0EEE	004E	TX0008	004D	BSS	RLT/A	107D	1	307535	NORMAL
0EE5	0047	TX0001	0048	BSS	RLT/A	107D	0	43143	NORMAL
1840	0050	TX0010	004F	BSS	RLT/A	104A	4	21912	NORMAL

```
END OF DISPLAY
```

Changing Module Queue & Service Time Values

- Use **ZSONS ALTER DQMON** to change monitor values

```
ZSONS ALTER DQMON TIME-tt RLTCOUNT-rr NORLTCOUNT-nn
      DEVASERVTIME-useca DEVBSERVTIME-usecb DEVCSERVTIME-usecc
      DEVDSERVTIME-usecd ALLSERVTIME-usec (IPROC-p)
```

- **Example:** `zsons alter dqmon time-5 rltcount-6 devaservtime-15000`

```
SONS0042I 12.00.00 DASD QUEUE MONITORING SETTINGS
```

```
SCAN TIME 5 SECONDS - SCANNERS ARE ENABLED
```

```
DASD I/O QUEUE DEPTH THRESHOLDS
```

```
RLTCOUNT:      6 - ACTIVE
```

```
NORLTCOUNT:    0
```

```
DASD SERVICE TIME THRESHOLDS IN MICROSECONDS
```

```
DEVASERVTIME: 15000 - ACTIVE
```

```
DEVBSERVTIME:  0
```

```
DEVCSERVTIME:  0
```

```
DEVDSERVTIME:  0
```

```
END OF DISPLAY
```

- Scan enabled: check every 5 seconds
- Check real-time module queues and DEVA service times
- Zero thresholds are not checked

Module Queue & Service Time Values (cont.)

- **More on monitor values...**
 - Setting TIME to zero turns off all monitoring
 - Values are MDBF subsystem and processor unique
- **Use ZSONS DISPLAY DQMON (IPROC-n) to display values**
- **Use ONLFIL SIP macro to set initial values in Keypoint B**
 - Queue thresholds:
DQRLTCOUNT=rr and DQNORLTCOUNT=nn
 - Service time thresholds:
DQSERV= [usec | (useca, usecb, usecc, used)]
 - Use existing DQMONTIME parameter for time interval

New DASD Subsystem (SSID) Monitoring

- **Issues a warning when a DASD subsystem has multiple modules with excessive queue lengths**
 - Problem may be at DASD subsystem level instead of isolated modules
 - Problems with multiple DASD subsystems could point to problems with physical control unit or other shared infrastructure
- **On given time interval, check queue lengths of all real-time modules on each DASD subsystem**
 - If more than *MODS* modules on a subsystem have exceeded the queue threshold, count this SSID for potential warning message

DASD Subsystem Warning Message

- **New SSID monitor warning message**
 - Warning issued only if more than NUM subsystems have exceeded the queue and module thresholds
 - Displays up to 10 DASD subsystems with largest number of modules exceeding the queue threshold
 - Sorted by number of modules exceeding queue threshold
- **Example: 2 SSID's have more than 10 modules with queues of 20 or more**

```
CYSS0001W 12.00.00 2 DASD SSID AT OR OVER THRESHOLDS
```

```
THRESHOLDS: NUM-2 MODS-10 RLTCOUNT-20
```

DASD	TOTAL	TOTAL	TOTAL	AT_OVER	HIGHEST	AVERAGE	AVERAGE
SSID	MODS	RLT	NORLT	RLTCOUNT*	QCOUNT	QCOUNT	SERVTIME
104A	64	48	0	14	33	21	3148
107D	64	48	0	10	28	20	2743

```
END OF DISPLAY
```

DASD Subsystem Monitor User Exit

- **USS0 user exit**
 - Called before message CYSS0001W is issued
 - Input: List of all DASD subsystems exceeding thresholds
 - Includes values displayed in CYSS0001W message for each DASD subsystem
 - Customized messages
 - Issue customer messages from user exit
 - Return code indicates to suppress or issue CYSS0001W message
 - Additional customer error handling or system management

Changing DASD Subsystem Monitor Values

- Use **ZSONS ALTER SSIDMON** to change monitor values

```
ZSONS ALTER SSIDMON RLTCOUNT-rr MODS-mm NUM-ssidnum (IPROC-p)
```

- **Example:** `zsons alter ssidmon rltcount-20 num-2`

```
SONS0043I 15.19.04 DASD SSID MONITORING SETTINGS
```

```
DQMON SCAN TIME 5 SECONDS - SSID SCANNER IS ENABLED
```

- Scan every 5 seconds - uses DQMON TIME from BSS

```
DASD SSID I/O QUEUE DEPTH THRESHOLDS
```

```
NUM SSID: 2
```

```
MODS/SSID: 10
```

```
RLTCOUNT: 20 - ACTIVE
```

```
END OF DISPLAY
```

- Warn if more than 2 SSID's exceed queue & mod thresholds
- Check for SSID's with more than 10 RLT mods with queues of 20 or more

DASD Subsystem Monitor Values (cont.)

- **More on SSID monitor values...**
 - Setting DQMON TIME or any SSIDMON value to zero turns off SSID monitoring
 - SSIDMON values are set in BSS only and are processor unique
- **Use ZSONS DISPLAY SSIDMON (IPROC-n) to display values**
- **Use ONLFIL SIP macro to set initial values in Keypoint B**
 - Queue threshold: SSIDRLTCOUNT=rr
 - Module threshold: SSIDMODS=mm
 - SSID's that exceed thresholds: SSIDNUM=ssidnum

New Information in Monitor Warnings and ZDMOD Displays

- Asterisk indicates sort column: SDA, MOD, VSN, QUEUE, SERVTIME
 - Symbolic module number of duplicate module
 - Device type (DEVA / B / C / D)
 - New status indicators: CPYT = ZMCPY Target module
CPYS = ZMCPY Source module
MCD = MPLF Connect Device

Input: `zdmmod disp sda-ee0 num-16`

DMOD0022I 12.00.00 DASD MODULE DISPLAY

INPUT FILTERS: SDA-EE0 NUMBER-16

NUMBER OF DASD MODULES: 4

SDA*	MOD	VSN	DUPE	SS	USE/T	SSID	QUEUE	SERVTIME	STATUS
0EE0	004D	TX0007	004E	BSS	RLT/A	FF01	0	1231	NORMAL
0EE2	005F	TX0025	0060	BSS	RLT/B	FF01	1	2145	CPYT
0EE3	0065	TX0031	0066	BSS	RLT/C	FF01	0	951	CPYS
0EE5	0047	TX0001	0048	BSS	RLT/A	FF01	0	919	NORMAL/MCD

END OF DISPLAY

IOB Summary for ZDMOD Display of Single Module

- **New SUMMARY and OCCUR parameters summarize module queues**
 - SUMMARY displays counts of file addresses and programs on module queue
 - Optional OCCUR-nmbr only displays items that occur nmbr times or more
- **Example: Display module 58 and show summary of items with 15 or more occurrences**

```
Input: zdmod display mod-58 summary occur-15
DMOD0016I 12.00.00 DASD MODULE QUEUE SUMMARY DISPLAY
INPUT FILTERS:  MOD-58 SUMMARY OCCUR-15
SDA  MOD  VSN      DUPE SS  USE/T  SSID  QUEUE  SERVTIME  STATUS
FB12 0058 SK0018 0059 BSS  RLT/A 1076    47      1708  NORMAL
```

```
[ MFST & SSST addresses not shown due to space constraints ]
```

FILE ADDRESS SUMMARY:

```
23 ITEMS FOR FILE ADDRESS - 0000000011146000
16 ITEMS FOR FILE ADDRESS - 000000001115700D
```

PROGRAM SUMMARY:

```
27 ITEMS FOR PROGRAM - QHT1
15 ITEMS FOR PROGRAM - QHT2
```

```
END OF DISPLAY
```

Program QHT2 has 15 IOB's
on this module

Filter ZDMOD Displays by RLT/NORLT

- **RLT and NORLT added as optional filters to QUEUE and SSID parameters**
 - RLT: Display only real-time modules
 - NORLT: Display only non-real-time modules
- **Example: Display all real-time modules with a queue length of 10 or greater**

```
Input: zdmmod display queue-10 rlt
```

```
DMOD0023I 12.00.00 DASD MODULE DISPLAY BY QUEUE LENGTH
```

```
INPUT FILTERS:  QUEUE-10 RLT
```

```
NUMBER OF DASD MODULES:  1
```

```
SDA  MOD  VSN      DUPE SS    USE/T  SSID  QUEUE*  SERVTIME  
STATUS
```

```
0E82 007B TX0053 007C BSS   RLT/B  FF05    11      2819
```

```
NORMAL
```

```
END OF DISPLAY
```


Filter ZDMOD Displays by Service Time

- **SERVTIME** added as optional filter to **MOD**, **SDA**, **VSN** and **SSID** parameters
 - ZDMOD DISPLAY [MOD | SDA | VSN] NUMBER-numb (SERVTIME-usec)
 - ZDMOD DISPLAY SSID-ssid (SERVTIME-usec) (RLT | NORLT)
- **SERVTIME** added as separate parameter
 - ZDMOD DISPLAY SERVTIME-usec (RLT | NORLT | DEVA | DEVB | DEVC | DEVD)
 - Optional filters to check only real-time, non-real-time, or device-specific modules
- **Example: Display all DEVB modules with a service time of 30000 microseconds or greater**

```
Input: zdmmod display servtime-30000 devb
```

```
DMOD0017I 12.00.00 DASD MODULE DISPLAY BY SERVICE TIME
```

```
INPUT FILTERS:  SERVTIME-30000 DEVB
```

```
NUMBER OF DASD MODULES:  2
```

SDA	MOD	VSN	DUPE	SS	USE/T	SSID	QUEUE	SERVTIME*	STATUS
0266	0063	TX0029	0064	BSS	RLT/B	FF03	0	64630	NORMAL
18A0	005C	TX0022	005B	BSS	RLT/B	FF10	0	45887	NORMAL

```
END OF DISPLAY
```

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