z/TPF DASD usage reporting tool readme

NOTE: Before using this information and the product it supports, read the general information under "Notices" in this document.

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This file includes the following information:

1.0 Introduction
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z/TPF DASD usage reporting tool

The z/TPF DASD usage reporting tool works with continuous data collection (CDC) and the CDC_DASD_METRICS data type to produce a report of DASD usage during a user-specified time period.

The IBM Tivoli Monitoring Agent for z/TPF does not process the DASD metrics that are provided with APAR PJ46077. If you want to collect and analyze this information, you must write a tool to retrieve and process the data.

The z/TPF DASD usage reporting tool is an example of how to get the CDC information from the IBM MQ queue and how locate the CDC_DASD_METRICS data type in the CDC information.

In addition, this tool provides an example of how to determine certain values such as average reads and writes per second and average service time.

Additionally, you can use this tool to create DASD usage reports for z/TPF test systems or z/TPF production systems.

The z/TPF DASD usage reporting tool creates a report of DASD usage over a specified time period for the z/TPF system where CDC is running. There are two report formats. The format is dependent on the file extension that is requested.

- If the file extension is .txt, the report is easily readable.
- If the file extension is .csv, the report is in a comma separated variable format. The intent is for the report to be used in a spreadsheet or a relational database.

The report contains information for all online modules on the z/TPF system. There is no information for general files, general data sets, modules that are the destination of an all file copy process, or HyperPAV alias symbolic device addresses (SDAs).

The report is organized by symbolic module.

The report contains information that is similar to z/TPF data reduction random file access summary report.

2.0 Change history
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2020JUN16 Initial version

3.0 Prerequistes
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1. An IBM MQ client or MQ server must be installed on your Linux system .

    For more information about installing an IBM MQ client, see
    https://www.ibm.com/support/pages/mqc91-ibm-mq-clients

    Additional information:
    - The z/TPF DASD usage reporting tool is a procedural application. For information about how to build a procedural application with IBM MQ, see
      https://www.ibm.com/support/knowledgecenter/SSFKSJ_9.0.0/com.ibm.mq.dev.doc/q0283 30_.htm
    - The z/TPF DASD usage reporting tool is a 64-bit application. For information about hot to build a 64-bit application with IBM MQ see

2. On the z/TPF system the following must be installed and in use.
   - PJ46077 must be installed.
   - Continuous data collection (CDC) must be started.
   - The CDC_DASD_METRICS data type must have a frequency greater than zero.

4.0 Installing the z/TPF DASD usage reporting tool
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To install the z/TPF DASD usage reporting tool, complete the following steps:

1. Use FTP to transfer the tar file (amqsCDCdasd.tar.gz) to your Linux system. This file can be placed in any directory as a holding location, for example, /tmp/ztpftar.

2. On the Linux system, extract the files from the amqsCDCdasd.tar.gz file:
   tar -xvzf amqsCDCdasd.tar.gz

3. Compile the amqsCDCdasd.c program, which is a non-threaded 64-bit C client application. Ensure that the program has execute file permissions.

   gcc -m64 -o amqsCDCdasd_64 amqsCDCdasd.c -I MQ_INSTALLATION_PATH/inc -L MQ_INSTALLATION_PATH/lib64 -Wl,-rpath=MQ_INSTALLATION_PATH/lib64 -Wl,-rpath=/usr/lib64 -lmqic

   For example, the following command is used to compile the amqsCDCdasd.c program in the IBM TPF lab:

   gcc -m64 -o amqsCDCdasd_64 amqsCDCdasd.c -I/opt/mqm/inc -L/opt/mqm/lib64 -Wl,-rpath=/opt/mqm/lib64 -Wl,-rpath=/usr/lib64 -lmqic

   Enter the following command to ensure the program has the execute file permissions:
   chmod +x amqsCDCdasd_64

4. Place the executable file in a directory that is accessible with the PATH setting.

6.0 Running the z/TPF DASD usage reporting tool
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Before you run the program on Linux, enter the following command, where <ipaddress> is the IP address of the target z/TPF system where CDC is running.
  export MQSERVER=CDCSVRCHL/TCP/'<ipaddress>'

To run the z/TPF DASD usage reporting tool at a Linux prompt, enter the following command:

  amqsCDCdasd_64 <MQ_queue_name> <MQ_queue_manager_name> [flags]

  Where the required positional parameters are:
  - amqsCDCdasd_64 = name of the program that is being executed
  - <MQ_queue_name> = For CDC, the IBM MQ queue name is CDCRTQ.cpuid where cpuid is the CPU ID of the z/TPF processor. For example, CDCRTQ.B is the CDC MQ queue name for CPU B.
  - <MQ_queue_manager_name> = TPFQM is an example.

  Optional keyword parameters [flags]:
  -t <number_of_second> - Specifies the number of seconds that amqsCDCdasd_64 will collect data, where <number_of_seconds> is the number of seconds. It is recommended to use the -t parameter.
  -r <file_name> - Specifies the name of the file where the report will be written, where <file_name> is the name of a file. If you do not specify this option, the report will be written to the Linux session where you entered the command. The file must have a file extension of .txt or .csv. If .txt is used, the file is more easily readable. If .csv is used, the file is a comma separated variable format and is intended for a spreadsheet or a relational database. It is recommended to use the -r option.
  -a - Appends to the file that is specified by the -r option. If you do not specify this option, the file specified by the -r option is overwritten.
  -save   Saves the report every minute. A report will be created every minute that covers the minute. If the file extension is .txt, there will also be a report at the end that covers the entire time period. If the file extension is .csv, there will not be an entry at the end that covers the entire time period. If you do not specify -save, the report will cover the entire time period. You can use the -save option to prevent the loss of data. If you do not specify the -save option, and if the report period is a long period of time (such as 1 hour or 1 day) and if the program ends, all data will be lost. If you specify the -save option, data is saved as time progresses. This option also provides a breakdown of what happens every minute.

  Examples
  The following example processes a single MQ GET request for CDC information and displays the report on your Linux system. If the frequency of the CDC_DASD_METRICS data type in CDC is greater than the frequency for other data types, the DASD usage information might not be reported.
  amqsCDCdasd_64 CDCRTQ.B TPFQM

The following example processes MQ GET requests for CDC information over 60 seconds. The report is written to the CDCtest.txt file.   If the frequency of the CDC_DASD_METRICS data type in CDC is greater than 60 seconds, the DASD usage information might not be reported.

```
amqsCDCdasd_64 CDCRTQ.B TPFQM -t 60 -r CDCtest.txt
```

The following example processes MQ GET requests for CDC information over 600 seconds or 10 minutes. The report is written to the CDCtest.txt file. The report will be saved every minute over the 10 minute time period.

```
amqsCDCdasd_64 CDCRTQ.B TPFQM -t 600 -r CDCtest.txt -save
```

The following example shows the output in Linux when the tool is run. The time period for this example is 180 seconds and the report is written to the CDC_0617_1.txt file. Status messages are sent every time that the DASD metrics are in the CDC information. The report is saved when a minute boundary is crossed. Also, the tool disconnects and reconnects to the MQ queue manager every 120 seconds in order to prevent a long running ECB on z/TPF.

```
shershn@linuxtpf:~/PJ46077> amqsCDCdasd_64 CDCRTQ.B TPFQM -t 180 -r CDC_0617_1.txt -save
amqsCDCdasd - Started at Wed Jun 17 15:24:18 2020
amqsCDCdasd - MQCONNX request connection to TPFQM on Wed Jun 17 15:24:18 2020
amqsCDCdasd - MQOPEN request for queue CDCRTQ.B on Wed Jun 17 15:24:18 2020
Received DASD Metrics that was collected on 20200617 at 152407 that covered  10.46 seconds on Wed Jun 17 15:24:18 2020
Received DASD Metrics that was collected on 20200617 at 152417 that covered  10.38 seconds on Wed Jun 17 15:24:18 2020
Received DASD Metrics that was collected on 20200617 at 152427 that covered   9.61 seconds on Wed Jun 17 15:24:22 2020
Received DASD Metrics that was collected on 20200617 at 152437 that covered   9.81 seconds on Wed Jun 17 15:24:32 2020
Received DASD Metrics that was collected on 20200617 at 152447 that covered   9.75 seconds on Wed Jun 17 15:24:42 2020
Received DASD Metrics that was collected on 20200617 at 152457 that covered  10.42 seconds on Wed Jun 17 15:24:52 2020
Received DASD Metrics that was collected on 20200617 at 152507 that covered  10.46 seconds on Wed Jun 17 15:25:02 2020
amqsCDCdasd - Saving the report on Wed Jun 17 15:25:02 2020
Received DASD Metrics that was collected on 20200617 at 152517 that covered   9.43 seconds on Wed Jun 17 15:25:12 2020
Received DASD Metrics that was collected on 20200617 at 152527 that covered   9.70 seconds on Wed Jun 17 15:25:22 2020
Received DASD Metrics that was collected on 20200617 at 152537 that covered  10.80 seconds on Wed Jun 17 15:25:32 2020
Received DASD Metrics that was collected on 20200617 at 152547 that covered   9.51 seconds on Wed Jun 17 15:25:42 2020
```

Received DASD Metrics that was collected on 20200617 at 152557 that covered 10.35 seconds on Wed Jun 17 15:25:52 2020
Received DASD Metrics that was collected on 20200617 at 152607 that covered   9.39 seconds on Wed Jun 17 15:26:02 2020
amqsCDCdasd - Saving the report on Wed Jun 17 15:26:02 2020
Received DASD Metrics that was collected on 20200617 at 152617 that covered 10.71 seconds on Wed Jun 17 15:26:12 2020
amqsCDCdasd - Intermediate close and disconnect is complete
amqsCDCdasd - MQCONNX request connection to TPFQM on Wed Jun 17 15:26:22 2020
amqsCDCdasd - MQOPEN request for queue CDCRTQ.B on Wed Jun 17 15:26:22 2020
Received DASD Metrics that was collected on 20200617 at 152627 that covered   9.70 seconds on Wed Jun 17 15:26:22 2020
Received DASD Metrics that was collected on 20200617 at 152637 that covered   9.67 seconds on Wed Jun 17 15:26:32 2020
Received DASD Metrics that was collected on 20200617 at 152647 that covered 10.40 seconds on Wed Jun 17 15:26:42 2020
Received DASD Metrics that was collected on 20200617 at 152657 that covered 10.39 seconds on Wed Jun 17 15:26:52 2020
Received DASD Metrics that was collected on 20200617 at 152707 that covered   9.59 seconds on Wed Jun 17 15:27:02 2020
amqsCDCdasd - Saving the report on Wed Jun 17 15:27:02 2020
Received DASD Metrics that was collected on 20200617 at 152717 that covered   9.68 seconds on Wed Jun 17 15:27:12 2020
amqsCDCdasd - Saving the report at Wed Jun 17 15:27:22 2020
amqsCDCdasd - Creating the final the report at Wed Jun 17 15:27:22 2020
Number of intervals with DASD Metrics   = 20
Number of intervals without DASD Metrics = 22
amqsCDCdasd - Ended at Wed Jun 17 15:27:22 2020

shershn@linuxtpf:~/PJ46077>

8.0 Other sources of information
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z/TPF product documentation in IBM Knowledge Center:
https://www.ibm.com/support/knowledgecenter/SSB23S_latest

9.0 Notices
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