

z/OS V2.5 IBM Education Assistant

Solution Name: SCM Busy Percentage

Solution Element(s): RMF

July 2021



Agenda

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- Objectives
- Overview
- Usage & Invocation
- Interactions & Dependencies
- Upgrade & Coexistence Considerations
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Trademarks

- See url <http://www.ibm.com/legal/copytrade.shtml> for a list of trademarks.
- Additional Trademarks:
 - None

Objectives

- Explain purpose/usage of RMF update
 - RMF Postprocessor
 - Introduce enhanced Postprocessor I/O Queuing Activity report with SCM Busy statistics
 - Introduce new Overview and Exception Conditions for SCM Busy statistics.

Overview

- Who (Audience)
 - z/OS Performance Analysts
- What (Solution)
 - Enhanced System Assist Processor (IOP) utilization reporting for Storage Class Memory (SCM).
- Wow (Benefit / Value, Need Addressed)
 - Provide capability to analyze IOP performance related to over-utilization on z15

Usage & Invocation

- Enhanced I/O Queuing Activity Report
 - SCM Busy %

I/O QUEUING ACTIVITY																			
z/OS V2R5			SYSTEM ID TRX1			DATE 05/13/2020			INTERVAL 15.00.011										
			RPT VERSION V2R5 RMF			TIME 06.14.33			CYCLE 1.000 SECONDS										
TOTAL SAMPLES = 900			IODF = 00			CR-DATE: 05/06/2020			CR-TIME: 09.58.51			ACT: ACTIVATE							

INPUT/OUTPUT PROCESSORS																			

-INITIATIVE		QUEUE-	-----		IOP UTILIZATION			-----		-- % I/O REQUESTS RETRIED --				-----		RETRIES / SSCH		-----	
IOP	ACTIVITY	AVG Q	% IOP	% CMPR	% SCM	I/O START	INTERRUPT			CP	DP	CU	DV			CP	DP	CU	DV
	RATE	LNTH	BUSY	BUSY	BUSY	RATE	RATE	ALL	BUSY	BUSY	BUSY	BUSY	BUSY	ALL	BUSY	BUSY	BUSY	BUSY	BUSY
00	42.437	0.00	0.11	0.00	0.02	42.391	133.358	0.1	0.0	0.0	0.0	0.0	0.1	0.00	0.00	0.00	0.00	0.00	0.00
01	42.585	0.00	2.02	0.00	0.02	42.538	24.790	2.5	2.5	0.0	0.0	0.0	0.0	0.03	0.03	0.00	0.00	0.00	0.00
02	42.437	0.00	0.11	0.00	0.02	42.391	133.358	0.1	0.0	0.0	0.0	0.0	0.1	0.00	0.00	0.00	0.00	0.00	0.00

Usage & Invocation Part 1

- Enhanced I/O Queuing Activity XML Report
 - SCM Busy %

```
<name>I/O Processor (IOP) Data</name>
<part id="5">
  <table id="6">
    <column-headers>
      <col type="T">IOP</col>
      <col type="S">Initiative Queue Activity Rate</col>
      <col type="S">Initiative Queue Average Length</col>
      <col type="N">IOP Utilization %Busy</col>
      <col type="N">IOP Utilization %Busy Compression</col>
      <col type="N">IOP Utilization %Busy SCM</col>
      <col type="S">IOP Utilization I/O Start Rate</col>
      <col type="S">IOP Utilization Interrupt Rate</col>
      <col type="N">%I/O Requests Retried All</col>
      <col type="N">%I/O Requests Retried CP Busy</col>
      <col type="N">%I/O Requests Retried DP Busy</col>
      <col type="N">%I/O Requests Retried CU Busy</col>
      <col type="N">%I/O Requests Retried DEV Busy</col>
      <col type="N">Retries/SSCH All</col>
      <col type="N">Retries/SSCH CP Busy</col>
      <col type="N">Retries/SSCH DP Busy</col>
      <col type="N">Retries/SSCH CU Busy</col>
      <col type="N">Retries/SSCH DEV Busy</col>
    </column-headers>
```

```
<row refno="1">
  <col>00</col>
  <col>116.566</col>
  <col>0.00</col>
  <col>1.25</col>
  <col>5.89</col>
  <col>0.67</col>
  <col>116.566</col>
  <col>0.000</col>
  <col>0.0</col>
  <col>0.0</col>
  <col>0.0</col>
  <col>0.0</col>
  <col>0.0</col>
  <col>0.0</col>
  <col>0.00</col>
  <col>0.00</col>
  <col>0.00</col>
  <col>0.00</col>
  <col>0.00</col>
</row>
```

Usage & Invocation Part 2

- New Overview and Exception conditions

Spreadsheet and Overview reference

Table. Overview names in the I/O Queuing Activity Report

<i>Field Heading or Meaning</i>	<i>Overview Name</i>
...	
% IOP BUSY	IOIPB
% CMPR BUSY	IOPECB
% SCM BUSY	IOPSCB
Percent I/O processor idle	IOIPI
...	

Table: I/O Queuing Activity – Conditions Based on SMF Record Type 78-3

<i>Condition</i>	<i>Condition Name</i>	<i>Qualifier</i>	<i>Source</i>	<i>Algorithm</i>
...				
Percent I/O processor busy with EADM compression/decompression	IOPECB	<u>iopid</u>	R783IECB R783IIPB R783IPI	$(IECB * 100) / (IIPB + IPI)$
Percent I/O processor busy with SCM	IOPSCB	<u>iopid</u>	R783ISCB R783IIPB R783IPI	$(ISCB * 100) / (IIPB + IPI)$
Percent I/O processor idle	IOIPI	<u>iopid</u>	R783IIPB R783IPI	$(IPI * 100) / (IIPB + IPI)$
...				

Interactions & Dependencies

- Software Dependencies
 - None
- Hardware Dependencies
 - z15 GA1 counts IOP Busy conditions caused by SCM work.
- Exploiters
 - None

Upgrade & Coexistence Considerations

- None

Installation & Configuration

- This support is included in the GA shipment of the z/OS V2.5 RMF (HRM77D0) deliverable.

Summary

- Introduce enhanced I/O Queuing Activity Report with SCM Busy Percentage statistics
- Introduce enhanced I/O Queuing Activity XML Report with SCM Busy Percentage statistics
- Introduce new Overview and Exception conditions for SCM Busy Percentage

Appendix

- RMF - <https://github.com/IBM/IBM-Z-zOS/tree/master/zOS-RMF>
 - Contains Product information, presentations, etc.
- Documentation and news
 - RMF Report Analysis, SC34-2665
 - RMF User's Guide, SC34-2664
 - RMF Programmer's Guide, SC34-2667
 - Latest version of PDF files can be downloaded from:
<http://www.ibm.com/systems/z/os/zos/bkserv/>