

Controlling batch jobs with MyEPV Quick View



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Problem

- ▶ Client complains that it was not easy to identify job delay problems in the morning after their night batch processing. He had to do a lot of manual work to find the problem area even though he had a very good tool to analyse jobs. He needed to find the problem in a quicker way.



Solution

- ▶ Create historical database with most important job and job steps metrics (SMF 30 subtype 4,5)
- ▶ Develop MyEPV Quick View application to:
 - Spot jobs with elapsed times higher than their normal distribution or average. The criteria can be customized.
 - Compare all the jobs executions and their resource utilization, activity and delays for a specific defined period.
 - Compare the job steps executions and their resource utilization, activity and delays for a specific defined period.



Metrics from SMF 30 subtype 4

► Considerations (1/3)

The SMF data does not contain the detailed RMF monitor III information for the major primary resource delay such as:

- COMM - common storage paging (includes shared pages)
- LOCL - local storage paging (includes shared pages)
- VIO - virtual I/O paging
- SWAP - swap-in delay
- OUTR - swapped out and ready
- XMEM - cross memory address space
- HIPR - standard hiperspace paging delays



Metrics from SMF 30 subtype 4

► Considerations (2/3)

- DEV - This field contains the volume serial number of the device that the reported job was most frequently delayed for.
- SUB - This field contains either JES, HSM, or XCF depending on which subsystem is causing the most delay.
- OPR - This field contains Message if most of the delay was due to a message or Mount.
- ENQ - This field contains the major name of the resource most responsible for the delay.



Metrics from SMF 30 subtype 4

► Considerations (3/3)

Various delays needed to be calculated starting from the existing metrics.

Examples:

ACTIVE_DELAY_TIME - duration when the task was executing but was not active. Calculated as: **EXECUTION_TIME - ACTIVE_TIME**.

DISPATCH_DELAY_TIME – Dispatch delay time.

Calculated as: **Resident time – (total CPU times)**



Metrics from SMF 30 subtype 4

► Times before job starts

- **Conversion delays** - This is the amount of time it takes to complete Converter/Interpreter processing (small time)
- **Ineligible delays** – jobs in hold status, duplicate jobs, or threshold limit passed
- **JES Scheduling Delay** – Spool space unavailable, TDEPTH/MDEPTH/TLIMIT/MLIMIT limits
- **Queue delay** – waiting for an initiator (calculated in WLM)



Metrics from SMF 30 subtype 4

- ▶ Job elapsed time - From start to end
- ▶ Job CPU times
 - CPU TIME – general processor time
 - zIIP TIME – IIP special processor time
- ▶ Job disk times
 - Disk Connect - The time actually transferring data between the channel and DASD or channel and cache.
 - Disk Disconnect - The time the device has an active channel program and is disconnected (not transferring data).
 - Disk Pending - The time all I/O requests wait before a path is available.
- ▶ Job activity
 - DISKIO - amount of physical I/O's
 - TAPEIO - amount of tape I/O's



Metrics from SMF 30 subtype 4

► JOB DELAYS

- **ENQUEUE_TIME**– If the data set name is not available for this job
- **ALLOCATION_TIME** - Allocation is the process that connects the DDNAME that your program will use to the actual physical
- **ACTIVE_DELAY_TIME** - Duration when the task was executing but was not active. This duration includes time the address space swapped out due to Detected Wait or Long Wait Swaps (which includes think time for TSO users), and any time spent waiting for mount pending.
- **RESIDENT_DELAY_TIME** - MPL Delay time, This includes all swapped out time (except DW/LW, which is caught in ACTIVE_DELAY_TIME)
- **DISPATCH_DELAY_TIME** (was active) Duration when the task was resident but not dispatched (job executing)



MyEPV Quick View Application

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MyEPV QUICKVIEW

- QUICKVIEW_SYSTEM_ANALYSIS
- WORKLOAD
- SLA_CICS_PERCENTILE
- QUICKVIEW_JOB_ANALYSIS
- QUICKVIEW_EXCEPTIONS

Created on: 2019-06-26 1
Where SYSTEMX = 'SYJJ'

- TEMPLATES/JOBDELAYS_TEMPLATE
- JOB_HISTORY_ANALYSIS
- JOB_DELAYS_SYSPLEX
- JOB_DELAYS
- JOB_DAILY_ANALYSIS

SYJJ 2019-06-25
SYJI More...

Description Criteria

Report Criteria RATIO_ELAPSED > 1.2

QUICKVIEW JOB DELAYS

SYSTEM	JOB	JESNUM	READTIME	ACTUAL				RATIO ACTUAL/AVERAGE					ACTUAL INIT DELAYS				ACTUAL JOB DELAYS					
				ELAPSED	CPUTIME	ZIIPTM	DISKIO	#JOBS	ELAPSED	CPU	ZIIPTM	DISKIO	TAPEIO	CONV	AFF	INEL	INIT	DSENG	ALLOC	ACT	RES	DSP
SYJJ	C1CC T01	65506	2017-01-13 11:32:11.94	10,06	0,07	0	129	2	1,6	1,2	.	1,1	1	4,2	0	0	2,7	0	1,3	0	0	8,7
SYJJ	CA1CLEAN	58208	2017-01-09 02:12:22.14	13,5	0,21	0	1.386	7	1,3	1,1	.	1,2	.	0	0	0	0,5	0	0	0	0	13,2
SYJJ	CA1CLEAN	59874	2017-01-10 02:13:39.57	20,05	0,22	0	948	7	1,9	1,1	.	0,8	.	1	0	0	1,9	0,1	0,6	0,2	0	19
SYJJ	CA1CLEAN	62887	2017-01-12 02:12:21.72	14,01	0,24	0	1.282	7	1,4	1,2	.	1,1	.	0	0	0	0,5	0	0	0,1	0	13,7
SYJJ	CA1CLERL	59875	2017-01-10 02:14:09.99	4,51	0,1	0	322	7	5	1,3	.	1	.	1	0	0	0,3	0	1,2	0,6	0	2,6
SYJJ	CA1COPY	59860	2017-01-10 02:11:10.25	15,55	0,18	0	2.524	7	4	1,4	.	1	.	1	0	0	2,2	0,2	1	0,4	0	13,8
SYJJ	CA1ENDE	59885	2017-01-10 02:16:30.69	2,23	0,07	0	17	7	5,5	2	.	0,9	.	1	0	0	0,4	0	0	0	0	2,1



MyEPV Quick View Application

MyEPV

JOB DELAYS

MyEPV Help System



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From this report it is possible to see the single execution of the jobs (see Note 1) collected from the zPARSER database and compare them with their average historical statistics.

The red background color helps locate potential delay areas (see Note 2).

SYSTEM	system name
JOB	job name (see Note 3)
JESNUM	JES number
READTIME	read time
	ACTUAL
ELAPSED	job elapsed time
CPUTIME	job cputime time
ZIIPTM	job iip time
DISKIO	job total diskio
	RATIO ACTUAL/AVERAGE
#JOBS	number of jobs from historical database
ELAPSED	ratio of elapsed time (see Note 3)
CPU	ratio of CPU time (see Note 3)



MyEPV Quick View Application



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QUICKVIEW ▾

JOB DELAYS

Created on: 2019-06-26 16:55:08, using template: C:/MyEPV/TEMPLATES/JOBDELAYS_DET_TEMPLATE

Where SYSTEMX = 'SYJJ' and SMF30JBNX = 'CA1CLEAN'

JOB DELAYS																			
											INIT DELAYS				JOB DELAYS				
SYSTEM	JOB	JESNUM	READTIME	DAY	STATUS	ELAPSED	CPUTIME	ZIIPTIME	DISKIO	TAPEIO	CONV	AFF	INEL	INIT	DSENG	ALLOC	ACT	RES	DSP
SYJJ	CA1CLEAN	62887	2017-01-12 02:12:21.72	Thu	NEW	14,01	0,24	0	1.282	.	0	0	0	0,5	0	0	0,1	0	13,7
SYJJ	CA1CLEAN	59874	2017-01-10 02:13:39.57	Tue	NEW	20,05	0,22	0	948	.	1	0	0	1,9	0,1	0,6	0,2	0	19
SYJJ	CA1CLEAN	58208	2017-01-09 02:12:22.14	Mon	NEW	13,5	0,21	0	1.386	.	0	0	0	0,5	0	0	0	0	13,2
SYJJ	CA1CLEAN	02954	2017-01-15 02:12:31.13	Sun	OLD	9,31	0,25	0	1.537	0	0	0	0	1,5	0	0	0,1	0	9
SYJJ	CA1CLEAN	01534	2017-01-14 02:12:29.68	Sat	OLD	6,41	0,16	0	989	0	0	0	0	1	0	0	0,1	0	6,2
SYJJ	CA1CLEAN	64404	2017-01-13 02:12:27.89	Fri	OLD	4,4	0,16	0	916	0	1	0	0	0,4	0	0	0,1	0	4,1
SYJJ	CA1CLEAN	61415	2017-01-11 02:12:27.97	Wed	OLD	4,34	0,14	0	902	0	0	0	0	1	0	0	0	0	4,1



MyEPV Quick View Application

MyEPV QUICKVIEW

JOB DELAYS

Created on: 2019-06-26 17:10:06, using template: C:/MyEPV/TEMPLATES/JOBDELAYS_STEP_LAST_DET_TEMPLATE

Where SYSTEMX = 'SYJJ' and SMF30JBNX = 'CA1CLEAN'



JOB DELAYS

														DELAYS				
SYSTEM	JOB	READTIME	DAY	JESNUM	STEP	ELAPSED	CPUTIME	ZIIPM	DISK_CONN	DISK_DISC	DISK_PEND	DISKIO	TAPEIO	DSENQ	ALOC	ACT	RES	DSP
SYJJ	CA1CLEAN	2017-01-15 02:12:31.13	Sun	02954	01_CLEAN_TMSCLEAN	9,3	0,25	0	1,54	0,01	0,03	1.537	.	0	0	0,1	0	9
SYJJ	CA1CLEAN	2017-01-14 02:12:29.68	Sat	01534	01_CLEAN_TMSCLEAN	6,41	0,16	0	0,99	0,01	0,01	989	.	0	0	0,1	0	6,2
SYJJ	CA1CLEAN	2017-01-13 02:12:27.89	Fri	64404	01_CLEAN_TMSCLEAN	4,39	0,16	0	0,92	0,02	0	916	.	0	0	0,1	0	4,1
SYJJ	CA1CLEAN	2017-01-12 02:12:21.72	Thu	62887	01_CLEAN_TMSCLEAN	14,01	0,24	0	1,28	0,04	0	1.282	.	0	0	0,1	0	13,7
SYJJ	CA1CLEAN	2017-01-11 02:12:27.97	Wed	61415	01_CLEAN_TMSCLEAN	4,33	0,14	0	0,9	0,01	0,01	902	.	0	0	0	0	4,1
SYJJ	CA1CLEAN	2017-01-10 02:13:39.57	Tue	59874	01_CLEAN_TMSCLEAN	20,04	0,22	0	0,95	0,01	0,01	948	.	0,1	0,6	0,2	0	19
SYJJ	CA1CLEAN	2017-01-09 02:12:22.14	Mon	58208	01_CLEAN_TMSCLEAN	13,49	0,21	0	1,39	0,02	0,01	1.386	.	0	0	0	0	13,2



Future enhancements

- ▶ Need to control jobs on specific periods (beginning or end of the month, on a specific day or date)
- ▶ Improve the folder structure. Too many files in the same folder. Takes a lot of time to delete old files
- ▶ Create user exit to exclude specific jobs with abnormal executions (loops , abends) on specific dates



Questions?

