

zOSEM (z Awesome) for z/OS Resource Routing

Scheduling Environment and ISV Cost Reduction

Workload Routing



WLM Managed Initiators provides a step forward in the automation of batch workload. However, WLM Managed Initiators give rise to a new problem, that of routing the workload to where you want it to run. Prior to WLM Managed Initiators you could control this by defining initiators of certain classes where you wanted a particular workload to run. An example would be putting your Production Job Classes on your fastest CPU or processor, or putting BMP (IMS Batch) Job Classes where the IMS/VS region is running.




IBM's solution is Resource Affinity Scheduling, a JCL based facility to route work within a multi-access spool (MAS) complex. **zOSEM's** Resource Routing Functions offers a more automated, user independent means of achieving a solution to Job Routing Problems.

Scheduling Environment

WLM's Resource Affinity Scheduling provides a facility to route work within a multi-access spool (MAS) complex. However, WLM's Resource Affinity Scheduling requires the user to specify a SINGLE Resource Scheduling Environment on the Job Card, SCHENV=.

Rather than relying on your users to select the correct SINGLE Resource Scheduling Environment, **zOSEM** can detect and set MULTIPLE Resource Routing requirements automatically, using **zOSEM's** Resource Routing Functions, based on knowledge (by examining the submitted JCL) of the real resource requirements of the Job. Using the **zOSEM's** Resource Routing Function provides a richer, user independent, automated solution to the problem of workload routing.

-  WLM resource names are limited to sixteen characters vs. **zOSEM's** forty-four characters.
-  The "F WLM,RESOURCE=" command must be issued separately on each processor. **zOSEM** allows a resource status to be changed on any processor from any other one.

-  WLM does not maintain the status of its resources across an IPL, **zOSEM** does. Thus, WLM requires additional operator or automated operations intervention before batch work can be run.
-  WLM requires that all Scheduling Environments and Resource Names must be predefined in the service definition. **zOSEM** has no such requirement.
-  WLM will force a JCL error if an undefined Scheduling Environment is coded in the JCL, while **zOSEM** will merely let the job sit in the input queue forever.

Controlling ISV Program Execution

An example for DB2 Subsystems and Program Products are:

CPUA	CPUB	CPUC	CPUD
DBP1	DBP2 DBP1	DBP1 DBP2	DBP2
	SAS FOCUS	SAS FILEAID FOCUS EASYTRIVE	

zOSEM Resource Routing

zOSEM's Resource Routing Function can detect and set MULTIPLE Resource Routing requirements automatically, based on knowledge (by examining the submitted JCL) of the real Resource requirements of the Job. **zOSEM** uses and/or relationships for Jobname mask(s), Program Name mask(s), RACF Group, DDNAME mask(s), DSNNAME mask(s), Jobclass, Service Class, Program Parm Field mask(s) and Userid name to determine Job Resource requirements.

zOSEM ISPF Resource Routing Interface would require definitions for six resources. The definitions would be DBP1, DBP2, SAS, FOCUS, FILEAID and EASYTRIVE.

The following **zOSEM** JES2 Operator commands would be issued to activate Resource Routing for the example environment:

- On CPUA
\$QA,DBP1

- On CPUB
\$QA,DBP1
\$QA,DBP2
\$QA,SAS
\$QA,FOCUS

- On CPUC
\$QA,DBP1
\$QA,DBP2
\$QA,SAS
\$QA,FOCUS
\$QA,FILEAID
\$QA,EASYTRIVE

- On CPUD
\$QA,DBP2

To de-activate the DBP1 Scheduling Resource with **zOSEM** the following JES2 Command would be issued:

- On CPUA
\$QD,DBP1

- On CPUB
\$QD,DBP1

- On CPUC
\$QD,DBP1

IBM Scheduling Environment

Using the IBM Resource Scheduling Environment (SCHENV=) to control Job Routing by Program Name requires MULTIPLE Scheduling Environments to be defined for each permutation.

The following Scheduling Environment definitions would need to be defined to WLM, and Users would be required to know and code the correct Scheduling Environment using the SCHENV= on the Job Parameter.

The twenty-four IBM Scheduling Resources defined below are required to Support the example Environment with total ISV and DB2 Subsystem independence:

IBM Scheduling Environments Required to Support Example Environment

SCHENV		Supported Environment
DBP1#	=	DBP1 Subsystem no ISV products
DBP2#	=	DBP2 Subsystem no ISV products
SAS#	=	Batch SAS no DBP1 or DBP2
FOCUS#	=	Batch FOCUS no DBP1 or DBP2
DBP1SF#	=	DBP1 Subsystem + FOCUS and SAS
DBP2SF#	=	DBP2 Subsystem + FOCUS and SAS
DBP1FOC#	=	DBP1 Subsystem + FOCUS
DBP2FOC#	=	DBP2 Subsystem + FOCUS
DBP1SAS#	=	DBP1 Subsystem + SAS
DBP2SAS#	=	DBP2 Subsystem + SAS
EASY#	=	EASYTRIVE no DBP1 or DBP2
DBP1EZY#	=	DBP1 Subsystem + EASYTRIVE
DBP2EZY#	=	DBP2 Subsystem + EASYTRIVE
DBP1SFF#	=	DBP1 Subsystem + SAS, FILEAID and FOCUS
DBP2SFF#	=	DBP2 Subsystem + SAS, FILEAID and FOCUS
DBP1FF#	=	DBP1 Subsystem + FILEAID and FOCUS
DBP2FF#	=	DBP2 Subsystem + FILEAID and FOCUS

DBP1FIL# = DBP1 Subsystem + FILEAID

DBP2FIL# = DBP2 Subsystem + FILEAID

DBP1SFI# = DBP1 Subsystem + SAS and FILEAID

DBP2SFI# = DBP2 Subsystem + SAS and FILEAID

DBP1OTH# = DBP1 Subsystem + SAS, FILEAID, FOCUS and EASYTRIVE

DBP2OTH # = DBP2 Subsystem + SAS, FILEAID, FOCUS and EASYTRIVE

OTHER# = SAS, FILEAID, FOCUS and EASYTRIVE no DBP1 or DBP2

The following MVS Operator Commands would be issued to activate IBM's Resource Affinity Scheduling for the example environment:

➡ On CPUA
F WLM,RESOURCE=DBP1,ON

➡ On CPUB
F WLM,RESOURCE=DBP1,ON
F WLM,RESOURCE=DBP2,ON
F WLM,RESOURCE=SAS,ON
F WLM,RESOURCE=FOCUS,ON

➡ On CPUC
F WLM,RESOURCE=DBP1,ON
F WLM,RESOURCE=DBP2,ON
F WLM,RESOURCE=SAS,ON
F WLM,RESOURCE=FOCUS,ON
F WLM,RESOURCE=EASY,ON
F WLM,RESOURCE=FILEAID,ON

➡ On CPUD
F WLM,RESOURCE=DBP2,ON

To de-activate the DBP1 Scheduling Resource for IBM's Resource Affinity Scheduling the following MVS Operator Commands would be issued:

➡ On CPUA
F WLM,RESOURCE=DBP1,OFF

➡ On CPUB
F WLM,RESOURCE=DBP1,OFF

➡ On CPUC
F WLM,RESOURCE=DBP1,OFF