IBM Education Assistance for z/OS V2R1

Line item: Dynamic SYSDSN ENQ Downgrade
Element/Component: BCP Allocation

Agenda

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Presentation Objectives

- Things you will learn from this session:
    - The purpose of SYSDSN ENQ Downgrade in JCL
    - The functional benefit and content
    - How to invoke the new function
    - Migration / coexistence issues or concerns
    - List of Publications and References

Overview

- Problem Statement / Need Addressed
  - In batch, the SYSDSN ENQ is held exclusive for the entirety of the job, even if later steps do not need exclusive control
  - This leads to other jobs that request the data set being hung until the original job ends (IEF099I/IEF861I/IEF863I)

- Solution
  - Downgrade of SYSDSN ENQ when applicable
  - New JCL keyword and JES jobclass attribute DSENQSHR
  - Set functionality on a per-job or per-jobclass basis

- Benefit / Value
  - Allow better parallelism of batch job execution when multiple jobs need to share a data set resource
  - Reduction of IEF099I/IEF861I/IEF863I messages

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Usage & Invocation

- Support is enabled/customized by:
  - New JCL keyword DSENQSHR on JOB statement
    - Allow function on a per-job basis
    - //JOBNAME   JOB   DSENQSHR=<value>
  - New JES jobclass attribute DSENQSHR
    - Allow function on a per-jobclass basis
    - Change value with JES command
    - $T JOBCLASS(<class>),DSENQSHR=<value>

		JES JOBCLASS attribute		
		AUTO	*ALLOW*	DISALLOW
JCL	**ALLOW**	yes	yes	no
	USEJC	yes	*no*	no
	DISALLOW	no	no	no

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Usage & Invocation

- Examples:
  - Batch Allocation

```
//DSNSHRDN   JOB MSGLEVEL=(1,1),DSENQSHR=ALLOW
//STEP1      EXEC PGM=IEFBR14
//DD1        DD DSN=BK.DS1,DISP=OLD  <-- Obtain ENQ EXCL for STEP1
//STEP2      EXEC PGM=IEFBR14
//DD2        DD DSN=BK.DS1,DISP=SHR  <-- Downgrade from EXCL to SHR
//STEP3      EXEC PGM=IEFBR14           after STEP1
//DD3        DD DSN=BK.DS1,DISP=SHR
```

  - GDGs
    - Obtain SYSDSN for GDG Base (BK.GDG) & GDS (BK.GDG.G0001V00)

```
//DSNSHRDN JOB MSGLEVEL=1,DSENQSHR=ALLOW
//STEP1     EXEC PGM=IEFBR14
//DDG1      DD DSN=BK.GDG(+1),DISP=(NEW,CATLG),<-- Obtain ENQ
//             SPACE=(TRK,1),VOL=SER=DASD01      EXCL for STEP1
//STEP2     EXEC PGM=IEFBR14
//DDG2      DD DSN=BK.GDG(+1),DISP=OLD
//STEP3     EXEC PGM=IEFBR14
//DDG3      DD DSN=BK.GDG(+1),DISP=SHR <-- Downgrade after STEP2
```

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Usage & Invocation

- More Examples:
  - Batch Allocation with Dynamic Allocation
    - Maintain exclusive control after Dynamic Allocation upgrade from shared to exclusive

```
//DSNSHRDN   JOB MSGLEVEL=(1,1),DSENQSHR=ALLOW
//STEP1      EXEC PGM=IEFBR14
//DD1        DD DSN=BK.DS1,DISP=OLD <-- Obtain ENQ EXCL for STEP1
//STEP2      EXEC PGM=IKJEFT01      <-- Downgrade from EXCL to SHR
...                                     after STEP1
 ALLOCATE DSN('BK.DS1') F(DD2) OLD <-- Dynamic Allocation upgrades
//STEP3      EXEC PGM=IEFBR14       from SHR to EXCL
//DD3        DD DSN=BK.DS1,DISP=SHR <-- EXCL control in STEP 3
```

  - Started jobs/tasks use JES JOBCLASS attribute of STC class
    - Started jobs will also use any DSENQSHR specification on the JCL
    - Started tasks will assume the default DSENQSHR=USEJC specification for the JCL unless specified on the START command
    - Started jobs/tasks with SUB=MSTR will not get the DSENQSHR function because they assume DISALLOW for JOBCLASS attribute

Interactions & Dependencies

- **Software Dependencies**
  - JES2 at V2R1 level

- **Hardware Dependencies**
  - None

- **Exploiters**
  - None

Migration & Coexistence Considerations

- OA36878 for JCL keyword toleration
  - V1R10 through V1R13

- Any job that requests new function (based on JCL keyword & JES JOBCLASS attribute) cannot be run on V1R13 and below level installations
  - Only JCL keyword toleration on V1R13 and below installations

		JES JOBCLASS attribute		
		AUTO	*ALLOW*	DISALLOW
JCL	**ALLOW**	yes	yes	no
	USEJC	yes	*no*	no
	DISALLOW	no	no	no

Installation

- Function is not available for GRS RING mode

- No JES3 support for function
  - Jobclass behavior is always DISALLOW in JES3

Presentation Summary

- New keyword DSENQSHR for JCL and JES jobclass attribute

- Allows for downgrade of SYSDSN ENQ from exclusive to shared control

- Jobs that access the same data set can run in parallel

Appendix

- Publications
  - z/OS JES2 Commands [SA22-7526]
  - z/OS MVS JCL Reference [SA22-7597]
  - z/OS MVS JCL User's Guide [SA22-7598]
  - z/OS MVS System Messages [SA22-7638]