

ibm.com



e-business



# JES3 Enhancements Version 1 Release 5



## Redbooks

International Technical Support Organization



© Copyright IBM Corp. 2004. All rights reserved.

## Trademarks



eNetwork	DFSMS/MVS	IMS	RACF
geoManager	DFSMSdfp	IMS/ESA	RMF
AD/Cycle	DFSMSdss	IP PrintWay	RS/6000
ADSTAR	DFSMSshm	IPDS	S/390
AFP	DFSMSrmm	Language Environment	S/390 Parallel Enterprise Server
APL2	DFSORT	Multiprise	SecureWay
APPN	Enterprise System 3090	MQSeries	StorWatch
BookManger	Enterprise System 4381	MVS/ESA	Sysplex Timer
BookMaster	Enterprise System 9000	Network Station	System/390
C/370	ES/3090	NetSpool	SystemView
CallPath	ES/4381	OfficeVision/MVS	SOM
CICS	ES/9000	Open Class	SOMobjects
CICS/ESA	ESA/390	OpenEdition	SP
CICS/MVS	ESCON	OS/2	VisualAge
CICSPlex	First Failure Support Technology	OS/390	VisualGen
COBOL/370	FLowMark	Parallel Sysplex	VisualLift
DataPropagator	FFST	Print Services Facility	VTAM
DisplayWrite	GDDM	PrintWay	WebSphere
DB2	ImagePlus	ProductPac	3090
DB2 Universal Database	Intelligent Miner	PR/SM	3890/XP
DFSMS/MVS	IBM	QMFr	z/OS
			z/OS.e

Domino (Lotus Development Corporation)  
DFS (Transarc Corporation)  
Java (Sun Microsystems, Inc.)  
Lotus (Lotus Development Corporation)

Tivoli (Tivoli Systems Inc.)  
Tivoli Management Framework  
(Tivoli Systems Inc.)  
Tivoli Manger (Tivoli Systems Inc.)

UNIX (X/Open Company Limited)  
Windows (Microsoft Corporation)  
Windows NT (Microsoft Corporation)

© Copyright IBM Corp. 2004. All rights reserved.

## JES3 Enhancements z/OS V1R5



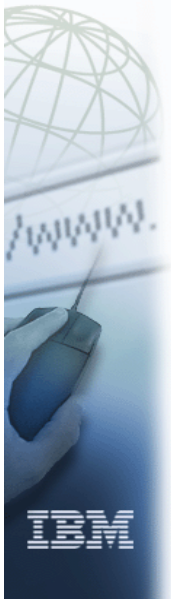
- ❑ z/OS 1.5.0 JES3 provides the following functions:
  - Support for Workload Manager (WLM) balanced initiators
  - Support for Blank Truncation Suppression
  - A new ENF58 signal type when a print checkpoint is taken
  - A resource monitor ("health monitor")
  - Greater than 8 media types

© Copyright IBM Corp. 2004. All rights reserved.

ibm.com



e-business



# JES3 Version 1 Release 5 WLM Batch Initiator Management



## Redbooks

International Technical Support Organization

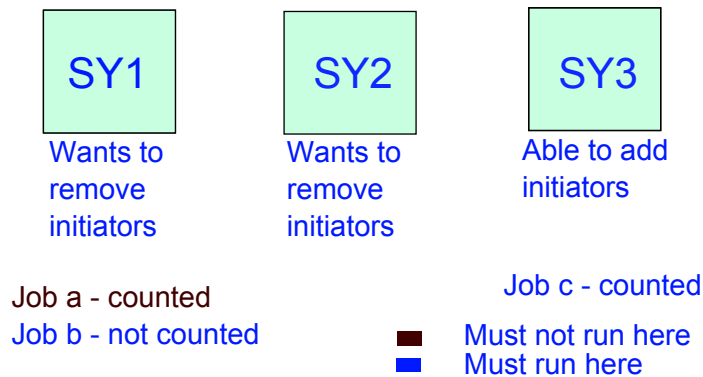


© Copyright IBM Corp. 2004. All rights reserved.

## WLM Balanced Initiators



- ❑ JES3 uses WLM service to find out which systems are constrained
- ❑ JES3 includes in sampling data the number of jobs that must run on constrained systems
- ❑ WLM makes more informed decisions when considering removing initiators



© Copyright IBM Corp. 2004. All rights reserved.

## WLM Balanced Initiators

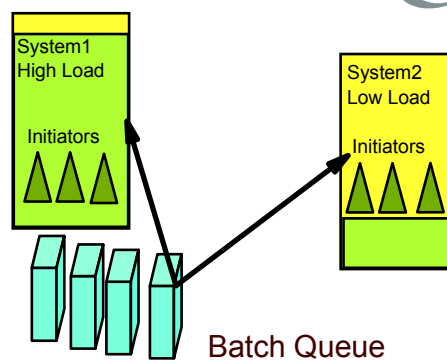


### ❑ Limitations prior to JES3 V1R5

- Balancing only when new initiators started

### ❑ When initiators are available

- JES3 & WLM can schedule jobs to an overloaded system (unless they happen to be eligible to only run on the less loaded systems)



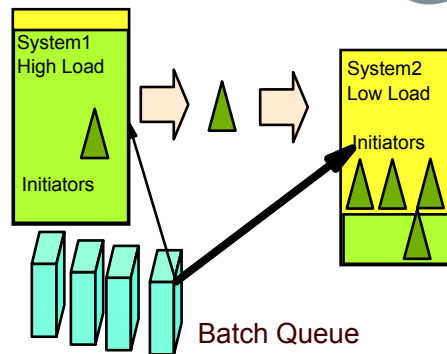
© Copyright IBM Corp. 2004. All rights reserved.

## WLM Initiator Rebalancing



### WLM in z/OS 1.4 and up:

- Rebalance distribution of initiators over sysplex members
- More aggressively reducing them on constrained systems
- Starting new ones on low usage systems
- Check for potential rebalancing made every 10 sec



© Copyright IBM Corp. 2004. All rights reserved.

## System Affinity Jobs

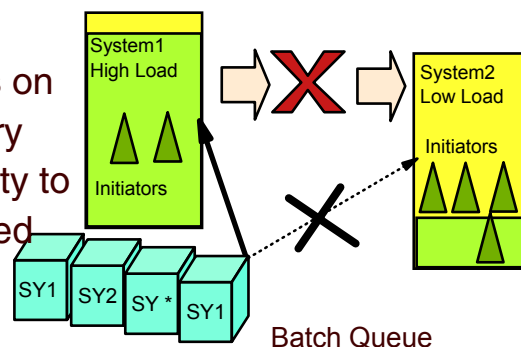


### Potential problems:

- If the reduction of initiators on constrained systems is very aggressive, jobs with affinity to that system could be treated worse than before

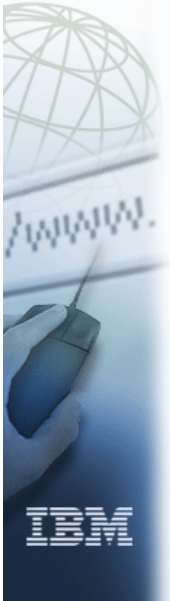
### Solution:

- WLM asks JES3 about jobs in the job queue that have system affinity
- If there are such jobs waiting, WLM keeps initiators on constrained systems



© Copyright IBM Corp. 2004. All rights reserved.

ibm.com



# JES3 Version 1 Release 5 ENF58 Signal for Printers



**Redbooks**  
International Technical Support Organization



© Copyright IBM Corp. 2004. All rights reserved.

## ENF58 Checkpoint Signal for PSF



- ☐ New signal qualifier type ENF58\_Q\_CHECKPOINT
- ☐ Requires the data set to have a client token (DALRTCTK text unit at allocation time)
- ☐ Issued when: FSS issues a checkpoint function for the data set
  - JES3 takes an internal checkpoint when printing the data set on a JES3 managed PSF printer
  - Provides an approximate line count, page count, copy count at the time of checkpoint

© Copyright IBM Corp. 2004. All rights reserved.

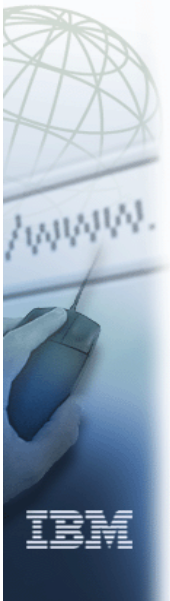
## ENF58 Signal



- ❑ Provides an approximate line count, page count, copy count at the time of checkpoint
  - Page count not provided for JES3 managed printers
- ❑ Client print applications can use this information as a rough progress monitor

© Copyright IBM Corp. 2004. All rights reserved.

ibm.com



# JES3 Version 1 Release 5 JES3 Blank Truncation Support



**Redbooks**  
International Technical Support Organization



© Copyright IBM Corp. 2004. All rights reserved.

## Blank Truncation Suppression



- ❑ Trailing x'40' bytes are truncated when a class is defined with TRUNC=YES
  - Using TRUNC=NO wastes spool
- ❑ In PostScript and ASCII data x'40' is not a blank causing a problem for these printers
- ❑ Trailing x'40' bytes continue to be truncated but the original length before the truncation is preserved
  - Application can reconstruct the original record

© Copyright IBM Corp. 2004. All rights reserved.

## Blank Truncation Suppression



- ❑ Original length is stored in new extension (DATCCX) to DATCC
- ❑ APAR OW57535 required on OS/390 2.10.0, (z/OS 1.1.0), z/OS 1.2.0, (z/OS 1.3.0), and z/OS 1.4.0 for coexistence, migration, and fallback
  - Allows jobs to be present across the migration
  - Allows jobs to be dumped and restored across the migration using the DJ DSP

© Copyright IBM Corp. 2004. All rights reserved.

## Application Support



- ❑ New macro to obtain record length
  - IATXDATX
- ❑ Specifies whether you want IATXDATX to return the original logical record length of the record, prior to truncation of trailing blanks
  - If you specify LRECL=YES, the original logical record length is returned in register 15

1-- byte	1-- byte	2-- byte	2-- byte	
DATCC	RESVD	DATLEN	DATCCX	DATA

© Copyright IBM Corp. 2004. All rights reserved.

## Blank Truncation Migration



- ❑ Usermods and exits are affected if they use the length of DATCC or other length-dependent areas.
- ❑ Original length is stored in new extension (DATCCX) to DATCC
- ❑ DATCC may or may not contain a DATCCX
- ❑ New macro IATXDATX support
  - Locates start of data within record whether or not a DATCCX is present
  - Determines present length of record (truncated)
  - Determines original length of record (prior to truncation)

© Copyright IBM Corp. 2004. All rights reserved.

## Migration and Coexistence



- ❑ **APAR OW57535 required on OS/390 V2R10 to(z/OS V1R4 for coexistence, migration, and fallback**
  - Allows jobs to be present across the migration
  - Allows jobs to be dumped and restored across the migration using the DJ DSP
- ❑ **APAR OW57535 includes a smaller version of IATXDATX**
  - Locates start of data whether or not a DATCCX is present
  - Determines the current (truncated) record length
  - Does not determine the original record length
- ❑ **User code changes to use IATXDATX must be in place on all processors before bringing z/OS V1R5 into the complex**

© Copyright IBM Corp. 2004. All rights reserved.

ibm.com



# JES3 Health Monitor Version 1 Release 5

## JES3 Loop and Wait Monitor



**Redbooks**  
International Technical Support Organization



© Copyright IBM Corp. 2004. All rights reserved.

## JES3 Loop and Wait Monitor

---



- ❑ Detects FCTs continuously dispatched for an excessive amount of time (might be in a loop or MVS wait)
- ❑ Detects unusual conditions on request:
  - Unexpected error conditions
  - Undesirable operator settings
  - Detects same unusual conditions in a dump
- ❑ Can prevent outages by detecting loops and, in some cases, breaking out of them

© Copyright IBM Corp. 2004. All rights reserved.

## Loop and Wait Monitor Functions - Commands

---



- ❑ The 'Health' Monitor has two main functions:
  - Auto-detection of possible loop or MVS wait
  - Detection of unusual conditions on request
    - On the live system - F JES3,CHK
    - Diagnosing a dump - VERBX JES3 'OPTION=CHK'

© Copyright IBM Corp. 2004. All rights reserved.

## Loop and Wait Monitor Commands



### ☐ F JES3,INT=n

- This command allows changing of the Monitoring interval for the Wait and Loop monitor. n specifies the interval in seconds. The default value is 10 seconds. The maximum value is 59940 (999 minutes). The interval specification controls how frequently JES3 checks what the currently dispatched FCT is.

### ☐ F JES3,THRSH=n

- This command allows changing of the Monitoring threshold for the Wait and Loop Monitor. n specifies the threshold in seconds. The default value is 30 seconds. The maximum value is 300 seconds.

© Copyright IBM Corp. 2004. All rights reserved.

## Health Monitor Command Example



### F JES3,CHK

```
IAT6397 FCT ISDRVR (NODEVICE) HAS BEEN DISPATCHED CONTINUOUSLY FOR:
IAT6398 00000 HOURS 00 MINUTES 38 SECONDS
IAT6415 at 056B814C in LOADMOD=IATUX28 , EPNAME=IATUX28
,EPADDR=056B8120,LEN=000080
*15 IAT6410 Reply 'JES3 ' to fail the FCT or 'nnn' to ask later
15,20
IEE600I REPLY TO 15 IS;20
IAT6397 FCT ISDRVR (NODEVICE) HAS BEEN DISPATCHED CONTINUOUSLY FOR:
IAT6398 00000 HOURS 01 MINUTES 22 SECONDS
IAT6415 at 056B814C in LOADMOD=IATUX28 , EPNAME=IATUX28
,EPADDR=056B8120,LEN=000080
*16 IAT6410 Reply 'JES3 ' to fail the FCT or 'nnn' to ask later
```

© Copyright IBM Corp. 2004. All rights reserved.

## Operator Fails DSP



```
SY1 16,jes3
SY1 IEE600I REPLY TO 16 IS;JES3
SY1 IAT3713 FAILURE LOGOUT
IAT3713 *****
IAT3713 *****
IAT3713 DATE = 2003169 TIME = 1636249 JES3 z1.5.0
IAT3713 JES3 FAILURE NUMBER = 0001 FAILED DM134
IAT3729 FAILURE EXPLANATION:
IAT3832 OPERATOR FAILED THE FCT VIA ACTIVE FCT MONITOR.
IAT3713 ACTIVE FCT = ISDRVR DEVICE = NONE FCT FAIL NO = 0001
IAT3713 MODULE = NOT JES3 MOD BASE = 00000000 DISP = 000000
IAT3713 APAR NUMBER = PTF NUMBER =
IAT3713 CALLING SEQUENCE (HIGHEST LEVEL MODULE LISTED LAST)
IAT3713 MODULE = IATISJB MOD BASE = 05A6F710 DISP = 000C10
IAT3713 APAR NUMBER = PTF NUMBER = 1.5.0
IAT3713 MODULE = IATISLG MOD BASE = 05A6CE48 DISP = 000420
IAT3713 APAR NUMBER = PTF NUMBER = 1.5.0
IAT3713 MODULE = IATISDV MOD BASE = 05A6A138 DISP = 000F04
IAT3713 APAR NUMBER = PTF NUMBER = 1.5.0
IAT3713 PSW AT TIME OF FAILURE 071C0000 856B814C ILC 2
IAT3713 THE FAILING INSTRUCTION IS 8190
IAT3713 REGISTERS AT TIME OF FAILURE
IAT3713 REGS 0- 3 00000000 0565532C 00000001 7F241964
IAT3713 REGS 4- 7 05A69B80 7F3BC00C 7F241929 05A69B80
IAT3713 REGS 8-11 7F3BC360 05A70710 056B8120 05877050
IAT3713 REGS 12-15 05607000 05A67F18 85659F8E 056B8120
IAT3713 *****
IAT3713 *****
SY1 IAT3702 ISDRVR FAILED DM134 - JES3 FAILURE NO. 0001
```

© Copyright IBM Corp. 2004. All rights reserved.

ibm.com



e-business



# JES3 Version 1 Release 5 Greater than 8 Media Types



**Redbooks**  
International Technical Support Organization



© Copyright IBM Corp. 2004. All rights reserved.

## Greater than 8 Media Types



- z/OS 1.5 JES3 includes support for BCP line item to provide up to 255 tape media types.
- z/OS 1.5 BCP and JES3 are required on:
  - Global
  - Any processor on which a job needing the support might have to run.
  - Any processor with a C/I FSS

© Copyright IBM Corp. 2004. All rights reserved.

ibm.com



## Migration and Coexistence z/OS Version 1 Release 5



**Redbooks**  
International Technical Support Organization

© Copyright IBM Corp. 2004. All rights reserved.

## Coexistence and Migration



- ❑ z/OS V1R5 JES3 can coexist with:
  - z/OS V1R5
  - z/OS V1R4 JES3
  - z/OS V1R2 JES3 or functionally equivalent z/OS V1R3
  - OS/390 V2R10 JES3 or functionally equivalent z/OS V1R1
- ❑ z/OS V1R5, V1R4, V1R2, and OS/390 V2R10 JES3 can run on z/OS V1R5 BCP
- ❑ Can be installed across the complex in any order with a rolling IPL/CLPA

© Copyright IBM Corp. 2004. All rights reserved.

## Coexistence Service



- ❑ APAR OW57535 is required
  - PTFs are UA04008 (z/OS V1R1 & OS/390 R2V10), UA04009 (z/OS V1R2 & z/OS V1R3), UA04010 (z/OS V1R4)
  - Must be on entire complex for coexistence or fallback.
  - Usermods that reference the length of DATCC or the field DATXMLEN must be recoded to use IATXDATX
- ❑ Maximum NJERMT BFSIZ decreases by 2
  - JES3 must be hot started with refresh, before z/OS 1.5 is introduced anywhere

© Copyright IBM Corp. 2004. All rights reserved.