



SDSF Product Update for z/OS 2.2

SHARE Orlando, Session 17432
Monday, August 10, 2015

Gary Puchkoff
Poughkeepsie, NY
puchkoff@us.ibm.com



#SHAREorg



SHARE is an independent volunteer-run information technology association that provides education, professional networking and industry influence.



Trademarks

The following are trademarks of the International Business Machines Corporation in the United States and/or other countries.

- IBM®
- MVS™
- Redbooks®
- RETAIN®
- z/OS®
- zSeries®

The following are trademarks or registered trademarks of other companies.

- Java and all Java-related trademarks and logos are trademarks of Sun Microsystems, Inc., in the United States and other countries.
- Linux is a registered trademark of Linus Torvalds in the United States, other countries, or both.
- Microsoft, Windows and Windows NT are registered trademarks of Microsoft Corporation.
- UNIX is a registered trademark of The Open Group in the United States and other countries.
- SET and Secure Electronic Transaction are trademarks owned by SET Secure Electronic Transaction LLC.
- All other products may be trademarks or registered trademarks of their respective companies.

Notes:

Performance is in Internal Throughput Rate (ITR) ratio based on measurements and projections using standard IBM benchmarks in a controlled environment. The actual throughput that any user will experience will vary depending upon considerations such as the amount of multiprogramming in the user's job stream, the I/O configuration, the storage configuration, and the workload processed. Therefore, no assurance can be given that an individual user will achieve throughput improvements equivalent to the performance ratios stated here.

IBM hardware products are manufactured from new parts, or new and serviceable used parts. Regardless, our warranty terms apply.

All customer examples cited or described in this presentation are presented as illustrations of the manner in which some customers have used IBM products and the results they may have achieved. Actual environmental costs and performance characteristics will vary depending on individual customer configurations and conditions.

This publication was produced in the United States. IBM may not offer the products, services or features discussed in this document in other countries, and the information may be subject to change without notice. Consult your local IBM Business contact for information on the product or services available in your area.

All statements regarding IBM's future direction and intent are subject to change or withdrawal without notice, and represent goals and objectives only.

Information about non-IBM products is obtained from the manufacturers of those products or their published announcements. IBM has not tested those products and cannot confirm the performance, compatibility, or any other claims related to non-IBM products. Questions on the capabilities of non-IBM products should be addressed to the suppliers of those products.

Prices subject to change without notice. Contact your IBM representative or Business Partner for the most current pricing in your geography.

I am not Tom Wasik

- Gary Puchkoff
 - z/OS and z/OSMF brand focal point
 - Content prioritization
 - SDSF, JES2, JES3, z/OSMF
 - Roadmaps and content
 - RFE focal point
 - Previous to z/OS
 - WebSphere on z/OS, zAAP processor, Manager
 - OS/390 Scheduler, Application programmer

z/OS SDSF V2.2

- The **most significant** release of SDSF since we delivered SDSF REXX
- Cadence
 - Plan for a 6 month cadence of new optional features
 - Approximately 12/2015, 6/2016, 12/2016
- New features focused on System Programmer
 - Display sysplex wide system information, enqs, tasks, loaded modules, catalogs, mountpoints
 - System Datasets (parmlib, apf, linklist, lpa, smf, page etc)
 - Virtual Storage Map, Subsystems, SMS, System Exits, XCF, Generic tracker, WLM,
 - Improved caching, improved performance
 - Improved (JM) memory display, even contents

Session Objectives

- Discuss the enhancements to SDSF in z/OS 2.2
 - JJExxxx component elimination
 - zIIP exploitation
 - System command improvements
 - UI enhancements
 - Batch Parallelism
 - Job Step display
 - Job Detail displays
 - Rexx enhancements
 - Custom row actions
 - Sample Rexx exec generator
 - Miscellaneous enhancements
- Migration and Installation considerations

JJE component elimination

- Problem Statement / Need Addressed
 - Since z/OS 1.10, SDSF has had a second component (JJExxxS) which contains parts which require JES2 control blocks
 - LOG, non-RMF DA, JES2 offset table, etc.
 - This increases the complexity of SDSF installs
- Solution
 - All JES data is now obtained via interfaces (such as the SSI) rather than by traversing JES2 control blocks.
 - The need for a second JJExxxS component has been eliminated
- Benefit / Value
 - Simplifies SDSF installation and maintenance
 - JES2 control block changes no longer require reassemblies of SDSF parts
 - More later in Migration and Installation topics

zIIP exploitation

- Problem Statement / Need Addressed
 - Some CPU-intensive SDSF work can be offloaded to a zIIP
- Solution
 - Some CPU-Intensive SDSF work now runs under a zIIP
 - Sorting for “large” panels
- Benefit / Value
 - Some CPU-Intensive SDSF work now runs under a zIIP.

System Command Improvements

- Problem Statement / Need Addressed
 - Increase number of saved slash commands on the slash popup
 - Simplify management of saved slash commands
- Solution
 - Redesigned System Command Extension (slash) pop-up
 - Implement slash command groups, comments
 - Number of saved commands increased from 20 to 50 by default
 - Up to 2000 commands can be saved with optional ISPF table defined (ISFTABL DD)
- Benefit / Value
 - More slash commands can be saved
 - Slash commands can be categorized based on task being performed

Usage & Invocation

- Redesigned System Command Extension (slash) pop-up
 - Access using / (with no parameters) or /+ (trailing +)
 - For example: /slip set,+
 - New input areas
 - Associated comment
 - Group name
 - Show pattern
 - New details pop-up (PF6) – displays full command text
 - New save command (PF10) – save command without issuing it
 - Enhanced clear capability (PF11) – delete groups of commands
 - New action bar choices: Edit, Options, Help

New System Command Extension Panel

```
Display Filter View Print Options Search Help
-----
HGX77A0 ----- SDSF PRIMARY OPTION MENU -----
COMMAND INPUT ==> /                                SCROLL ==> CSR

DA
I
O
H
ST
JG

LOG
SR
MAS
JC
SE
RES
ENC
PS
END

Edit Options Help
-----
System Command Extension

==> d r,l
==>

Comment Display Replies

Group MVS Show * (F4 for list)
More: +

=> d r,l
=> f sdsf,refresh,m=01
=> f sdsf,refresh
=> f sdsf,d,c
=> f sdsf,d
=> $dq
=> $da
=> $sspl(spool2)
=> setomvs ipcsmsgqbytes=2g
=> d omvs,o
=> d omvs
=> d prog,lnklst

F5=FullScr F6=Details F7=Up F8=Down F10=Save F11=Clear F12=Cancel
```

Filter commands by group

```
Display Filter View Print Options Search Help
-----
HGX77A0 ----- SDSF PRIMARY OPTION MENU -----
COMMAND INPUT ==> /                                SCROLL ==> CSR

DA
I
O
H
ST
JG

LOG
SR
MAS
JC
SE
RES
ENC
PS
END

Edit Options Help
-----
System Command Extension

==>
==>

Comment

Group _____ Show SDSF _____ (F4 for list)
More: +

=> f sdsf,refresh,m=01
=> f sdsf,refresh
=> f sdsf,d,c
=> f sdsf,d
=>
=>
=>
=>
=>
=>
=>

F5=FullScr F6=Details F7=Up F8=Down F10=Save F11=Clear F12=Cancel
```

Details View (F6)

```
Display Filter View Print Options Search Help
-----
HQX77A0 ----- SDSF PRIMARY OPTION MENU -----
COMMAND INPUT ==> /                                SCROLL ==> CSR

DA
I
O
H
ST
JG
LOG
SR
MAS
JC
SE
RES
ENC
PS
END

System Command Extension - Details      Row 1 to 6 of 15
Command ==>
Sort by group (F5), command (F6), or last used (F10).
Selection _____ Group *           Commands not shown 0

Number  Group          Comment
-----
1.      Display Replies
=> d r,l
-----
2.  JES2      Display jobs
=> $da
-----
3.  JES2      Display queue
=> $dq
-----
4.  JES2      Add Spool
=> $sspl(spool2)
-----
5.  MVS       Display replies
=> d r,l
-----
6.  MVS       Display Time
=> d t
-----
```

Select command from list by number

Group Selection Pop-up

```
Display Filter View Print Options Search Help
-----
HGX77A0 ----- SDSF PRIMARY OPTION MENU -----
COMMAND INPUT ==> /                               SCROLL ==> CSR

DA
I
O
H
ST
JG
LOG
SR
MAS
JC
SE
RES
ENC
PS
END
F5

Edit Options Help
-----
Group Select          Row 1 to 6 of 6
Command ==>
Selection:           ←
1.                  (Not grouped)
2.   JES2
3.   MVS
4.   OMVS
5.   PROG
6.   SDSF
***** Bottom of data *****
```

Select group from list by number

Enter / in either Group or Show field to select group from a list, or select PF4 when the cursor is in one of those fields

Clear Pop-up (F11)

```
Display Filter View Print Options Search Help
-----
HGX77A0 ----- SDSF PRIMARY OPTION MENU -----
COMMAND INPUT ==> /                                SCROLL ==> CSR

DA      Edit Options Help
I      -----
O      Select Clear Option
H      Select an option to clear commands. The number of commands
ST     affected is shown in parentheses.
JG
Co      1. Recent matching the value for Show (0)
LOG     2. All matching the value for Show (0)
SR      3. From list...
MAS     Gr
JC      =>
SE      => F1=Help F12=Cancel
RES     =>
ENC     => I sdsf,d,c
PS      => f sdsf,d
END     =>
=>
=>
=>
=>
=>
=>
=>
=>

F5=FullScr F6=Details F7=Up F8=Down F10=Save F11=Clear F12=Cancel
```

- 1. Clears all commands in recent list (last 20) in shown group(s)
- 2. Clears all commands in shown group(s)
- 3. Accesses detail popup to select command to delete by number

Migration & Coexistence Considerations

- Slash commands saved on down level systems are considered ungrouped when processed by V2R2 system
 - Ungrouped commands will be added to the current frequent list
 - If command text and group name (ungrouped) match existing command, order of command in list remains the same
 - If command text and group name (ungrouped) does not match an existing command, command added to bottom of recent list
- Ungrouped commands on V2R2 system visible to down level systems
 - Only first 20 ungrouped commands are saved

UI enhancements

- Problem Statement / Need Addressed
 - Issuing actions against many rows can be cumbersome.
- Solution
 - A command-line interface to issue actions against multiple rows is added
 - An optional row number column can be added
 - The size of the NP column can be expanded beyond the current limits and tailored on a display-by-display basis
- Benefit / Value
 - Reduces keystrokes when performing repetitive tasks

Line shortcut command

- On the command line, specify the line number or up to 3 ranges of line numbers, followed by an action to issue that action against multiple rows
- For example
 - **2 D** – issues the **D** action against the second row
 - **1-5 P** – issues the **P** action against rows 1-5
 - **1-3 6-10 14 C** – issues the **C** action against rows 1-3, 6-10, and 14
- Also allows overtypes when action is 'column-name=value'
 - **1-3 Q=A** – overtypes the **Q** column with the value **A** for rows 1-3
- Works the same as a set of line/block prefix commands
 - **SET CONFIRM** setting is honored
 - One confirmation is issued per range, just as it would with multiple line commands or blocks
 - Rows do not have to be “on screen” to use row number

Line shortcut example

```
Display Filter View Print Options Search Help
-----
SDSF STATUS DISPLAY ALL CLASSES                                LINE 11-25 (25)
COMMAND INPUT ==> 11-13 16-20 24 d                            SCROLL ==> CSR
PREFIX=* DEST=(ALL) OWNER=* SYSNAME=*
ACTION=+,//,%=?,=,A,C,CA,CD,CDA,CDP,CP,D,DE,DL,DM,DMA,DME,DMR,DMSS,DMSV,DMU,
ACTION=DSD,DSH,DSP,DX,E,H,I,J,JD,JM,L,LB,LH,LT,P,Q,S,Sn,SB,SE,SJ,W,X,XC,XD,XDC,
ACTION=XF,XFC,XS,XSC
NP  JOBNAME  JobID  Owner  Prty Queue  C  Pos  SAff  Asys  Stat
//d  MONITOR  JOB00001  JES2    15
    D96CLW1  JOB00025  D96CLW1  15
//   SYSLOG   JOB00002  +MASTER+ 15
    HZSPROC  JOB00005  SYSTASK  15
    PRIMEPSA JOB00006  SYSTASK  15
//d  BPXAS    JOB00010  OMVSKERN 15
    TCPIPALP JOB00011  SYSTASK  15
    SDSF     JOB00012  SDSF     15
    TCAS     JOB00013  SYSTASK  15 EXECUTION  A  SY1
//   VTAM44   JOB00014  SYSTASK  15 EXECUTION  A  SY1
    RMF     JOB00015  SYSTASK  15 EXECUTION  A  SY1
    BPXAS   JOB00018  OMVSKERN 15 EXECUTION  A  SY1
    RACF    JOB00024  SYSTASK  15 EXECUTION  A  SY1
d    READTCP  JOB00003  SYSTASK  15 PRINT      A
    DIP     JOB00004  SYSTASK  15 PRINT      A
```

This line command
is equivalent to
this set of actions

SET ROWNUM command

- Use the **SET ROWNUM** command to turn row numbering on and off
- **SET ROWNUM <ON|OFF|?>**
 - **ON** – turns row numbering on
 - **OFF** – turns row numbering off
 - **?** - displays popup
- Row number column appears between the NP column and the fixed field and remains fixed when scrolling left and right
 - Represents the row number within the display as a whole, not just the current screen
- Column title is ##### with a width of at least 4
 - Wider if there are more than 9999 rows

Row numbering

Display Filter View Print Options Search Help

SDSF STATUS DISPLAY ALL CLASSES

LINE 11-25 (25)

COMMAND INPUT ==> **set rownum on**

SCROLL ==> **CSR**

PREFIX=* DEST=(ALL) OWNER=* SYSNAME=*

ACTION=~~+~~, //, %, ?, =, A, C, CA, CD, CDA, CDP, CP, D, DE, DL, DM, DMA, DME, DMR, DMSS, DMSV, DMU,
ACTION=~~+~~SD, DSH, DSP, DX, E, H, I, J, JD, JM, L, LB, LH, LT, P, Q, S, Sn, SB, SE, SJ, W, X, XC, XD, XDC,
ACTION=~~+~~F, XFC, XS, XSC

NP	####	JOBNAME	JobID	Owner	Prty	Queue	C	Pos	SAff	ASys
	11	MONITOR	JOB00001	JES2	15	EXECUTION				SY1
	12	D96CLW1	JOB00025	D96CLW1	15	EXECUTION	A			SY1
	13	SYSLOG	JOB00002	+MASTER+	15	EXECUTION	A			SY1
	14	HZSPROC	JOB00005	SYSTASK	15	EXECUTION	A			SY1
	15	PRIMEPSA	JOB00006	SYSTASK	15	EXECUTION	A			SY1
	16	BPXAS	JOB00010	OMVSKERN	15	EXECUTION	A			SY1
	17	TCPIPALP	JOB00011	SYSTASK	15	EXECUTION	A			SY1
	18	SDSF	JOB00012	SDSF	15	EXECUTION	A			SY1
	19	TCAS	JOB00013	SYSTASK	15	EXECUTION	A			SY1
	20	VTAM44	JOB00014	SYSTASK	15	EXECUTION	A			SY1
	21	RMF	JOB00015	SYSTASK	15	EXECUTION	A			SY1
	22	BPXAS	JOB00018	OMVSKERN	15	EXECUTION	A			SY1
	23	RACF	JOB00024	SYSTASK	15	EXECUTION	A			SY1
	24	READTCP	JOB00003	SYSTASK	15	PRINT	A			
	25	DIP	JOB00004	SYSTASK	15	PRINT	A			

NP column width

- Pre-2.2 – the NP column was a fixed width for each display (usually 4), with a **+** action that expanded the column to a larger fixed width (usually 6)
- NP column can now be expanded to a specified width via **+nn** action, where *nn* is a value 4 to 20.
 - This value is temporary and is reset via **RESET** command or leaving the display.
- NP column can be more permanently expanded via the **ARRANGE** command
 - **ARR NP nn** – sets the default width of the NP column for the current tabular display to *nn*
 - Also can be set via the **ARRANGE** popup
 - Each tabular has its own NP width
 - Values are saved in ISPF profile

Sn (BrowseLocDS) action

- New **Sn** action (BrowseLocDs) on DA, I, ST, O, H, and JS panels allows browse to begin at a specified data set
 - *n* represents the dataset number not the dsid (similar to NEXT command)
 - A negative value (**S-*n***) can be specified to specify an offset from the bottom
- Examples
 - **S5** – positions to the fifth data set
 - **S-2** – positions to the next-to-last data set
- Useful in conjunction with line shortcut commands
 - **1-3 S3** – Browses the jobs associated with rows 1-3 and positions to the third data set in the job
 - **3-5 S-1** – Browses the jobs associated with rows 3-5 and positions to the last data set in the job

Batch Parallelism

- Problem Statement / Need Addressed
 - In z/OS 2.2, JES2 adds support for Dependent Job Control and Job Groups
 - SDSF support is needed for end users to manage the new functionality.
- Solution
 - Two new panels are added:
 - **JG** – Primary panel to display Job Groups
 - **JP** – Secondary panel to display dependencies for a job, or all dependencies within a job group.
 - **ST** (Status) panel can be accessed as a secondary panel from JG to display details about all of the jobs associated with a group.
- Benefit / Value
 - Simplifies management of the new JES2 functionality.

SDSF Main Panel

```
Display Filter View Print Options Search Help
-----
HGX77A0 ----- SDSF PRIMARY OPTION MENU -----
COMMAND INPUT ==>>                                SCROLL ==>> CSR

DA   Active users                                INIT  Initiators
I    Input queue                                 PR    Printers
O    Output queue                                PUN   PUNCHES
H    Held output queue                          RDR   Readers
ST   Status of jobs                             LINE  Lines
JG   Job groups ←                               NODE  Nodes

LOG  System log                                JFFLD JFFLOAD
SR   System requests                           VOLUM VOLUMES
MAS  Members in the MAS                        NC     Network connections
JC   Job classes
SE   Scheduling environments                  RM     Resource monitor
RES  WLM resources                            CK     Health checker
ENC  Enclaves
PS   Processes                                ULOG  User session log

END   Exit SDSF
```

New JG option to access job group panel

Job Group Display

```
Display  Filter  View  Print  Options  Search  Help
-----
SDSF JOB GROUP DISPLAY                                LINE 1-1 (1)
COMMAND INPUT ==>                                    SCROLL ==> CSR
PREFIX=*  DEST=(ALL)  OWNER=D96CLW1  SYSNAME=
ACTION=+ , // , % , ? , = , A , C , CP , D , DE , DJ , DL , DN , DP , H , JP , P , S , SB , SE , SJ , ST , X , XC , XD , XDC , XF ,
ACTION=XFC , XS , XSC
NP      JOBGROUP JobGrpID Owner      Status      Current-CC SAff Scheduling-Env
      PAYROLL   G0000043 D96CLW1  ACTIVE,INIT          SY1
```

Each row represents a job group
Columns represent various attributes of the group
Several flavors of actions exist:

- JES Action commands – A, C, H, P, etc.
- JES Display commands – D, DE, DJ, DL, DN, DP
- Browse and Print – S and X
- ST – invokes STATUS as a secondary display
- JP – Invokes new Job Dependency display as a secondary

Status Display (from JG display)

```
Display Filter View Print Options Search Help
-----
SDSF STATUS DISPLAY GROUP PAYROLL (G0000043) ← LINE 1-7 (7)
COMMAND INPUT ==>
PREFIX=* DEST=(ALL) OWNER=D96CLW1 SORT=JOBNAME/A
ACTION=+,//,%=?,=,A,C,CA,CD,CDA,D,DL,DP,E,EC,ES,ESH
ACTION=PO,PP,Q,S,Sn,SB,SE,SJ,W,X,XC,XD,XDC,XF,XFC,X
NP JOBNAME JobID Owner Prty Queue Max-RC C Pos SAff ASys S
JOBA J0000044 D96CLW1 14 SETUP A
JOB B J0000045 D96CLW1 14 SETUP A
JOB C J0000046 D96CLW1 14 SETUP A
JOB D J0000047 D96CLW1 14 SETUP A
JOB E J0000048 D96CLW1 14 SETUP A
JOB F J0000049 D96CLW1 14 SETUP A
JOB G 0
```

Title line indicates secondary from group display

Rows for jobs expected to be in group but not yet in system are displayed

Status Display – new columns and actions

```
Display Filter View Print Options Search Help
-----
SDSF STATUS DISPLAY GROUP PAYROLL (G0000043) LINE 1-7 (7)
COMMAND INPUT ==> SCROLL ==> CSR
PREFIX=* DEST=(ALL) OWNER=D96CLW1 SORT=JOBNAME/A SYSNAME=
ACTION=+ , / , % , ? , = , A , C , CA , CD , CDA , D , DL , DP , E , EC , ES , ESH , H , I , J , JD , JM , JP , JS , L , LL , O , P ,
ACTION=PO , PP , Q , S , Sn , SB , SE , SJ , W , X , XC , XD , XDC , XF , XFC , XS , XSC
NP JOBNAME JobGroup JobGrpID JobSet JGStatus FlushAct HoldUntil
JOBA PAYROLL G0000043 PENDING ALLFLUSH 04/15/2015 17:00:00
JOBB PAYROLL G0000043 PENDING ALLFLUSH 04/15/2015 17:00:00
JOBC PAYROLL G0000043 PENDING ALLFLUSH 04/15/2015 17:00:00
JOBD PAYROLL G0000043 PENDING ALLFLUSH
JOBE PAYROLL G0000043 PENDING ALLFLUSH
JOBF PAYROLL G0000043 PENDING ALLFLUSH
JOBG PAYROLL G0000043 PENDING ANYFLUSH
```

New columns (on far right of display) for new job attributes related to dependent control and deadline scheduling

Notable new actions

DP – Issues new JES2 \$DJ,AFT,BEF,CON command

JP – Access to Job Dependency display

Job Dependency Display (from ST or I display)

```
Display  Filter  View  Print  Options  Search  Help
-----
SDSF DEPENDENCY DISPLAY - JOB  JOBC      (J0000046)      LINE 1-3 (3)
COMMAND INPUT ==>                                SCROLL ==> CSR
PREFIX=*  DEST=(ALL)  OWNER=D96CLW1  SYSNAME=
ACTION=+ , // , % , =
NP  JOBNAME  JobID  Dependency  DJobName  DJobID  Time  When
   JOBC     J0000046  AFTER      JOBA      J0000044
   JOBC     J0000046  BEFORE     JOBE      J0000048
   JOBC     J0000046  HOLDUNTIL                                04/15/2015 17:00:00
```

Displays all dependencies associated with selected job
Selected job is always listed first in BEFORE, AFTER, and CONCURRENT dependencies

Job Dependency Display (from JG display)

Display Filter View Print Options Search Help

```
-----  
SDSF DEPENDENCY DISPLAY - GROUP PAYROLL (G0000043) LINE 1-7 (7)  
COMMAND INPUT ==> SCROLL ==> CSR  
PREFIX=* DEST=(ALL) OWNER=D96CLW1 SYSNAME=  
ACTION=+ , / , % , =  
NP JOBNAME JobID Dependency DJobName DJobID Time When  
JOB JOB000045 BEFORE JOB JOB000047  
JOB JOB000046 BEFORE JOB JOB000048  
JOB JOB000044 BEFORE JOB JOB000046  
JOB JOB000044 BEFORE JOB JOB000045  
JOB JOB000044 CONCURRENT JOB JOB000049  
JOB JOB000044 CONCURRENT JOB JOB000049  
JOB JOB000044 CONCURRENT JOB JOB000049  
JOB JOB000044 HOLDUNTIL 04/15/2015 17:00:00  
JOB JOB000045 HOLDUNTIL 04/15/2015 17:00:00  
JOB JOB000046 HOLDUNTIL 04/15/2015 17:00:00
```

Displays all dependencies associated with all jobs in group

Job Dependency Display (from JG display)

```
Display Filter View Print Options Search Help
-----
SDSF DEPENDENCY DISPLAY - GROUP PAYROLL (G0000043) LINE 1-7 (7)
COMMAND INPUT ==> s jobg SCROLL ==> CSR
PREFIX=* DEST=(ALL) OWNER=D96CLW1 SYSNAME=
ACTION=+,//,% ,=
NP JOBNAME JobID Dependency DJobName DJobID Time When
JOBG CONCURRENT JOBF J0000049
JOBA J0000044 CONCURRENT JOBG
```

SELECT command can be used to narrow dependencies to just those for a specific job
Can be used for "missing" jobs as well.

Job Step Display

- Problem Statement / Need Addressed
 - Long-standing requirement to easily be able to find the completion information for steps within a job
 - Information is available but requires some investigation to locate
- Solution
 - A new JS secondary panel is added to display step completion information
- Benefit / Value
 - Easy determination of job step completion information

Job Step Display

- The **JS** action is added to the I, ST, O, H, and DA displays to display a new tabular containing job step completion information
 - One row per step
 - “Flushed” steps are displayed
 - Some information is displayed for the active step if the job is active
- Step data may not be available for every job
 - Only available when new EVENTLOG special data set exists for the associated job
- JES2 only

Job Step Display

Display Filter View Print Options Search Help

SDSF JOB STEP DISPLAY - JOB D96CLW1Z (J0000059)

LINE 1-15 (15)

COMMAND INPUT ==>

SCROLL ==> CSR

PREFIX=* DEST=(ALL) OWNER=* SYSNAME=

ACTION=+,//,% , ?, =, S, Sn, SB, SE, SJ, X, XC, XD, XDC, XF, XFC, XS, XSC

NP	STEPNAME	ProcStep	Pgm-Name	Step-CC	AbendRsn	StepNum	SysName
	STEP1		RETCODE	CC 0020		1	SY1
	STEP2		RETCODE	CC 0000		2	SY1
	STEP3		RETCODE	CC 0057		3	SY1
	STEP4		RETCODE	ABEND S0C1	00000001	4	SY1
	STEP5		RETCODE	ABEND S09D	0000FFFF	5	SY1
	STEP6		RETCODE	ABENDU0919	0000FFFF	6	SY1
	STEP7		RETCODE	FLUSH		7	SY1
	STEP8		RETCODE	FLUSH		8	SY1
	STEP9		RETCODE	FLUSH		9	SY1
	STEPSA		RETCODE	CC 0000		10	SY1
	OUTER1	INNER	RETCODE	CC 0000		11	SY1
	OUTER2		RETCODE	CC 0000		12	SY1
	INNER		RETCODE	CC 0000		13	SY1
			RETCODE	CC 0000		14	SY1
	SPIN01		SPINLOOP	ACTIVE		15	SY1

Where is does Job Step information come from? (and why do I care?)

- Starting in z/OS 2.2 JES2 stores some job-related SMF information on spool in a new EVENTLOG dataset
 - The key record for step completion data is SMF 30, subtype 4.
 - SMF 30 subtype 4 data is obtained by accessing ***userid.jobname.jobid.EVENTLOG.SMFSTEP***
 - If that data is unavailable (there is a JES2 option to disable SMF data collection), a subset of this information can be obtained from ***userid.jobname.jobid.EVENTLOG.STEPDATA***
 - Both data set views are SAF protected (JESSPOOL)
- SDSF uses SMFSTEP view of EVENTLOG if available
- If SMFSTEP view is not available due to the JES2 **JOBDEF SUP_EVENTLOG_SMF** option, or if SAF Access is not allowed, the STEPDATA view is used instead if available and access is allowed
 - Only 9 of the 29 columns are available if SMF data is not used.

Job Step Display – Columns and Actions

- Columns displayable when STEPDATA is found:

STEPNAME	ProcStep	Pgm-Name	Step-CC	AbendRsn
StepNum	SysName	Step-Begin	Step-End	
- Additional columns displayable when SMF data is available for that job:

Elapsed	CPU-Time	SRB-Time	EXCP-Cnt	Conn
Serv	Workload	Page	Swap	VIO
Swaps	Region	Rgn-Used	MemLimit	Mlim-Used
zIIP-Time	zICP-Time	zIIP-NTime	HiCPU%	HiCPUPgm
- Actions:
 - **S, SB, SE** (Browse) actions, and **X** (Print) actions show only data sets associated with the selected step
 - **?** (JDS) action displays list of data sets for the selected step
 - **SJ** shows JCL for entire job

Job Detail displays

- Problem Statement / Need Addressed
 - Additional information about resources used by job can be useful for diagnosis of job or system problems.
- Solution
 - Three new panels are added:
 - **JD** (Job Device) – Secondary panel to display devices/pseudo-devices that are owned/allocated by a job
 - **JM** (Job Memory) – Secondary panel to display memory utilization by subpool/key
 - **JY** (Job Delay) – Secondary panel to display job-related delays
- Benefit / Value
 - Displays additional information useful for diagnosing job-related issues

Job Device panel

- Accessible via **JD** action from panels where individual rows represent (or can represent) an active address space.
 - DA
 - I, ST
 - INIT
 - NS (for NETSERV address spaces)
- ASID, ASIDX, and SYSNAME columns are added to those displays where they were absent.
- Rows on JD secondary panel are generated for
 - Active allocations (data sets or devices)
 - CF connections
 - Connections to remote IP addresses
 - Listens on local IP ports

Job Device panel – Columns of interest

- Type column value can be one of the following
 - DD
 - Fixed field = DD name
 - Interesting columns include:
 - Seq DataSetName VolSer Unit LrecLRecFm BlkSize EXCPCt
 - CF
 - Fixed field = Name used to couple to CF
 - Interesting columns include:
 - StrName VolSer Policy Status
 - IP
 - Fixed Field = TCP/IP Server name
 - Interesting columns include:
 - IPAddr Port Status BytesIn BytesOut Start-Time
 - Last-Time Stack Resource-ID ApplData

Job Device Detail Display Example (DD rows)

Display	Filter	View	Print	Options	Search	Help

SDSF JOB DEVICE	SY1		ASID 0027	D96CLW1	JOB00025	LINE 1-17 (57)
COMMAND INPUT ==>						SCROLL ==> CSR
PREFIX=* DEST=(ALL) OWNER=* SYSNAME=*						
ACTION=+,//,%=,DA,DAL,DB,DBL,DC,DN,DNL,DP,DR,DRD,DRDL,DRL,DS						
NP	####	NAME	Seq	Type	Status	DataSetName
	1	ISFTABL	1	DD	Open	D96CLW1.SDSF.TABL
	2	ISPILIB	1	DD	Alloc	ISP.SISPSAMP
	3	ISPMLIB	1	DD	Open	ISP.SISPMENU
	4	ISPMLIB	2	DD	Open	SYS1.HRFMSG
	5	ISPMLIB	3	DD	Open	ISFPP.SDSF322.SISFMLIB
	6	ISPMLIB	4	DD	Open	SYS1.SBLSMSG0
	7	ISPMLIB	5	DD	Open	SYS1.DGTMLIB
	8	ISPMLIB	6	DD	Open	SYS1.SBPXMENU
	9	ISPMLIB	7	DD	Open	SYS1.SERBMENU
	10	ISPMLIB	8	DD	Open	SYS1.SCBDMENU
	11	ISPMLIB	9	DD	Open	MVSBUILD.WMQ60.SCSQMSGE
	12	ISPPLIB	1	DD	Open	ISFSHR.V4R8M0.PANELS
	13	ISPPLIB	2	DD	Open	ISFPP.SDSF322.SISFPLIB
	14	ISPPLIB	3	DD	Open	ISP.SISPPENU
	15	ISPPLIB	4	DD	Open	SYS1.HRFPANL
	16	ISPPLIB	5	DD	Open	SYS1.SBLSPNL0
	17	ISPPLIB	6	DD	Open	SYS1.DGTPLIB

Job Device Detail Display Example (IP rows)

```
Display  Filter  View  Print  Options  Search  Help
-----
SDSF JOB DEVICE  SY1          ASID 0035  FTPD1      JOB00010  LINE 1-17 (57)
COMMAND INPUT ===>                                SCROLL ===> CSR
PREFIX=*  DEST=(ALL)  OWNER=*  SYSNAME=*
ACTION=+ , / , % , = , DA , DAL , DB , DBL , DC , DN , DNL , DP , DR , DRD , DRDL , DRL , DS
NP  ####  NAME                               Seq Type Status  DataSetName
    1  FTPD1                                IP  EstablsH
    2  FTPD1                                IP  Listen
```

(scroll right)

```
Display  Filter  View  Print  Options  Search  Help
-----
SDSF JOB DEVICE  SY1          ASID 0035  FTPD1      JOB00010  LINE 1-17 (57)
COMMAND INPUT ===>                                SCROLL ===> CSR
PREFIX=*  DEST=(ALL)  OWNER=*  SYSNAME=*
ACTION=+ , / , % , = , DA , DAL , DB , DBL , DC , DN , DNL , DP , DR , DRD , DRDL , DRL , DS
NP  ####  NAME                               IPAddr          Port  ApplData
    1  FTPD1                                9.56.58.133     63791  EZAFTPOS C D96CLW1
    2  FTPD1                                0.0.0.0         21  EZAFTPOD
```

Job Device Detail Display Example (CF rows)

```
Display Filter View Print Options Search Help
-----
SDSF JOB DEVICE SY1          ASID 0017 IXGLOGR          LINE 1-17 (57)
COMMAND INPUT ===>          SCROLL ===> CSR
PREFIX=*  DEST=(ALL)  OWNER=*  SYSNAME=*
ACTION=+ , / , % , = , DA , DAL , DB , DBL , DC , DN , DNL , DP , DR , DRD , DRDL , DRL , DS
NP  #### NAME                Seq Type Status  DataSetName
    1 IXGLOGR_SY1            CF   Allocate
```

(scroll right)

```
Display Filter View Print Options Search Help
-----
SDSF JOB DEVICE SY1          ASID 0017 IXGLOGR          LINE 1-17 (57)
COMMAND INPUT ===>          SCROLL ===> CSR
PREFIX=*  DEST=(ALL)  OWNER=*  SYSNAME=*
ACTION=+ , / , % , = , DA , DAL , DB , DBL , DC , DN , DNL , DP , DR , DRD , DRDL , DRL , DS
NP  #### NAME                StrName      VolSer      Unit UnitCt IPAddr
    1 IXGLOGR_SY1            LIST01       LF01        CF          1
```

Job Device panel – Actions

- Allowable actions are all displays and vary by row type
 - DD
 - No actions defined
 - CF
 - Display actions are different forms of D XCF command
 - **DC** (DisplayCF) – Displays the CF using D XCF command
 - **DS** (Display Structure) – Displays the structure using D XCF
 - **DP** (DisplayPolicy) – Displays the policy using D XCF
 - IP
 - Display actions are different forms of D TCPIP command
 - **DA** (DisplayAll) - D TCPIP,*stack*,N,ALL,IPP=
 - **DN** (DisplayConn) - D TCPIP,*stack*,N,CO,APPLDATA,IPP=
 - **DB** (DisplayByteinfo) – D TCPIP,*stack*,N,BYTE,IDLETIME,IPA=
 - **DR** (DisplayRoute) - D TCPIP,*stack*,N,ROUTE,IPA=

Job Memory panel

- Accessible via **JM** action from panels where individual rows represent (or can represent) an active address space.
 - DA
 - I, ST
 - INIT
 - NS (for NETSERV address spaces)
- Rows on JM secondary panel are generated for
 - Each subpool/key combination for which memory is allocated
 - 64-bit private storage (by key)
 - 64-bit common storage owned by address space (by key)
 - CSA and SQA owned by address space (if CSA tracking is active)

Job Memory Display Example

Display Filter View Print Options Search Help										

SDSF JOB MEMORY SY1			ASID 0024 SDSF			JOB00012		LINE 1-15 (15)		
COMMAND INPUT ==>							SCROLL ==> CSR			
PREFIX=* DEST=(ALL) OWNER=* SYSNAME=*										
ACTION=+ , / , % , =										
NP	TYPE	SP	Key	Fix	FP	Total	Total-24	Total-31	Total-64	Count
	PRIVATE	0	1	NO	YES	120KB	120KB			30
	LSQA	205	0	DREF	NO	912KB		912KB		24
	LSQA	215	0	DREF	YES	132KB		132KB		6
	LSQA	225	0	YES	YES	68KB		68KB		4
	PRIVATE	229	1	NO	YES	4KB		4KB		1
	PRIVATE	229	5	NO	YES	28KB		28KB		6
	PRIVATE	230	0	NO	NO	136KB		136KB		19
	PRIVATE	230	1	NO	NO	7164KB	64KB	7100KB		76
	PRIVATE	230	5	NO	NO	4KB		4KB		1
	PRIVATE	236	1	NO	NO	1500KB	780KB	720KB		90
	PRIVATE	252	0	NO	NO	1512KB	16KB	1496KB		3
	LSQA	255	0	YES	NO	9688KB	32KB	9656KB		30
	COMMON-64		0			1MB			1MB	1
	CSA					2912		2912		
	SQA					424		424		

Job Delay panel

- Accessible via JY action from DA panel
 - Not available from non-RMF version of DA
- Rows on JY secondary panel are generated for
 - Current delay information reported by WLM
 - All delays for latest interval as reported via RMF

Job Delay Display Example

```
Display  Filter  View  Print  Options  Search  Help
-----
SDSF JOB DELAY  SY1          ASID 002C  IBMUSERZ  J0000021  LINE 1-9 (9)
COMMAND INPUT ==>                                SCROLL ==> CSR
PREFIX=*  DEST=(ALL)  OWNER=*  SYSNAME=*
ACTION=+ , / , % , =
NP  ####  TYPE                                     Src  Samples  Percent  Interval  MinTime
   1  IDLE                                     WLM                                     0.250
   2  Total RMF Samples                       RMF      100    100.00          100
   3  Unknown                                 RMF        2     2.00          100
   4  On Processor                           RMF      23    23.00          100
   5  All Delays                             RMF      75    75.00          100
   6  Processor Delay                        RMF        2     2.00          100
   7  Operator Delay                         RMF      73    73.00          100
   8  Message_Delay                         RMF      73    73.00          100
   9  Logical Swap                          RMF      72    72.00          100
```

SNAPSHOT command

- A new **SNAPSHOT (SNAP)** command is added to capture the contents of a tabular display into a browse/edit session
 - Can use PRINT command (from SDSF Browse) or Copy (from ISPF Edit) to move data to a more permanent location if desired
 - Rows/column data are captured in the same order as on the display
 - Column widths are maximized to prevent data loss and numeric scaling
- Syntax:
 - **SNAP [S|SB|SE]**
 - **S** – Use SDSF Browse to view data
 - **SB** - Use ISPF Browse to view data (requires ISPF)
 - **SE** – Use ISPF Edit to view data (requires ISPF)
 - Default is specified via SET SNAP command
 - **SET SNAP [S|SB|SE|?]**
 - Sets the default method of viewing SNAP data
 - **?** - invokes popup to input choice

SNAP command output example (SDSF Browse)

```

Display  Filter  View  Print  Options  Search  Help
-----
SDSF OUTPUT DISPLAY *SNAP                                LINE 0                COLUMNS 02- 81
COMMAND INPUT ==>                                       SCROLL ==> CSR
***** TOP OF DATA *****
JOBNAME  JobID    Owner      Prty Queue      C          Pos          Saff  ASys  S
MONITOR  JOB00001  JES2       15  EXECUTION  C          15          SY1
D96CLW1  JOB00025  D96CLW1    15  EXECUTION  A          15          SY1
SYSLOG   JOB00002  +MASTER+  15  EXECUTION  A          15          SY1
HZSPROC  JOB00005  SYSTASK    15  EXECUTION  A          15          SY1
PRIMEPSA JOB00006  SYSTASK    15  EXECUTION  A          15          SY1
BPXAS    JOB00010  OMVSKERN   15  EXECUTION  A          15          SY1
TCPIPALP JOB00011  SYSTASK    15  EXECUTION  A          15          SY1
SDSF     JOB00012  SDSF       15  EXECUTION  A          15          SY1
TCAS     JOB00013  SYSTASK    15  EXECUTION  A          15          SY1
VTAM44   JOB00014  SYSTASK    15  EXECUTION  A          15          SY1
RMF      JOB00015  SYSTASK    15  EXECUTION  A          15          SY1
BPXAS    JOB00018  OMVSKERN   15  EXECUTION  A          15          SY1
RACF     JOB00024  SYSTASK    15  EXECUTION  A          15          SY1
BPXAS    JOB00026  OMVSKERN   15  EXECUTION  A          15          SY1
RMFGAT   JOB00028  SYSTASK    15  EXECUTION  A          15          SY1
READTCP  JOB00003  SYSTASK    15  PRINT      A          15          SY1
DIP      JOB00004  SYSTASK    15  PRINT      A          15          SY1
SYMUPD12 JOB00007  SYSTASK    15  PRINT      A          15          SY1

```

Rexx enhancements

- Problem Statement / Need Addressed
 - Samples for Rexx execs need to be expanded
 - Rexx functionality needs to allow access to a selected row more easily
- Solution
 - New **RGEN** command to create custom sample based on current context (e.g. to show how to access that panel via Rexx)
 - Tailored using current setting such as PREFIX, OWNER, and FILTER values
 - New % prefix character to allow Rexx execs to be run as actions against a row
- Benefit / Value
 - Better examples to get started writing Rexx execs
 - Common tasks can be more easily performed by creating custom Rexx actions

RGEN command

- **RGEN** command generates a custom Rexx exec based on the current panel
 - Generates ISFEXEC command and ISFACT command (for secondaries) to get to current panel
 - Generates code to access rows on the panel and issue ISFACT against them
 - From Browse, issues ISFEXEC/ISFACT/ISFBROWSE commands needed to read current data
 - From LOG, issues ISFLOG
 - From ULOG, issues ISFSLASH
 - PREFIX, OWNER, and FILTER values are automatically added as appropriate to limit rows returned
 - **RGEN X** or **RGEN EXAMPLE** to select additional samples
- Generated EXECs are expected to need additional tailoring.
- Generated EXEC is presented in an ISPF edit session
 - Can be copied elsewhere using CREATE, COPY, etc.

RGEN generated exec

```
SDSF EDIT      RGEN D96CLW1.SPFTEMP1.CNTL      Columns 00001 00080
Command ==>
***** Top of Data *****
000001 /* REXX */
000002 Arg debug
000003
==MSG>      Important: Copy this generated exec from temporary dataset
==MSG>      D96CLW1.SPFTEMP1.CNTL
==MSG>      and edit that copy to prevent your changes from being lost.
==MSG>
000004 /*****
000005 *
000006 * SDSF RGEN Generated EXEC
000007 *
000008 * This exec was generated by the SDSF RGEN command on
000009 * Monday 2015/03/09 at 12:28:43.46.
000010 *
000011 * 5650-ZOS
000012 * SDSF level = z/OS 02.02.00 (HQX77A0)
000013 *
=====
Use this exec as a starting point for writing your own execs.
=====
The RGEN command generates an exec that accesses the current
panel and shows how to use special variables.
=====
For more information and examples, use the SDSF REXXHELP
command. To search SDSF's help, use SEARCH search-string.
=====
000014 * Operation =
000015 *
000016 * - Access primary panel ST
000017 * - Issue ? action character
000018 * - Access secondary panel JDS
000019 * - Invoke browse
000020 *
000021 *****
000022
==NOTE= Tip: All SDSF/REXX execs must include the following statement:
000023 rc=isfcalls('ON')
000024
000025 trace o
000026
==NOTE= Tip: The verbose option provides additional diagnostics
```

Additional guidance is provided via **NOTE**, **MSG**, and **INFO** type lines

RGEN generated exec

```
SDSF EDIT      RGEN D96CLW1.SPFTEMP1.CNTL      Columns 00001 00080
Command ==> hilite rexx                          Scroll ==> CSR
000028
000029 /*-----*/
000030 /* Configure environment with special variables */
000031 /*-----*/
=NOTE= Tip: Not all variables may be needed in your exec.
=NOTE=
=NOTE= Tip: You must be authorized to the corresponding command
=NOTE= to set the variable.
000032 isfprefix='*' /* Corresponds to PREFIX command */
000033 isfowner='*' /* Corresponds to OWNER command */
000034 isfsysname='*' /* Corresponds to SYSNAME command */
000035
000036 isfdest=' ' || , /* Dest name 1 */
000037 ' ' || , /* Dest name 2 */
000038 ' ' || , /* Dest name 3 */
000039 ' ' /* Dest name 4 */
000040
000041
000042 /* Access the ST panel */
000043 Address SDSF "ISFEEXEC 'ST' (" verbose ")"
000044 lrc=rc
000045
=NOTE= Tip: Always check the return code after each request.
000046 call msg rtn "ISFEEXEC 'ST'" /* List messages */
000047 if lrc<>0 then /* If command failed */
000048 do
000049 Say "*** ISFEEXEC failed with rc="lrc"."
000050 exit 20
000051 end
000052
=NOTE= Tip: The special variable sdsfocols is a word delimited
=NOTE= list of column names returned on the request.
000053 call colsrtn isfrows "." sdsfocols /* List all rows and columns */
000054
000055
000056 numrows=isfrows /* Copy number of rows returned */
000057
000058 /*-----*/
000059 /* Loop for all rows returned */
000060 /*-----*/
000061 do ix=1 to numrows
```

Use HILITE command to highlight REXX syntax

Saved in EDIT profile
ISFREXX

RGEN EXAMPLE popup

Display Filter View Print Options Search Help

REXX Examples

Row 1 to 15 of 22

Command ==>

Sort by type (F5) or description (F6).

Type	Description
— Action	Cancel a job
— Action	Cancel a set of jobs
— Action	Invoke an EXEC with the % action character
— Action	List action characters
— Action	List job data sets
— Action	Modify a value for a set of jobs
— Action	Modify values for selected jobs (overtyp)
— Browse	Browse a single data set with EXECIO
— Browse	Browse a single data set with ISFBROWSE
— Browse	Browse check output
— Browse	Browse check output from check history
— Browse	Browse check output with ISFBROWSE
— Browse	Browse job output with EXECIO
— Browse	Browse job output with ISFBROWSE
— Browse	Browse job output with ISFBROWSE - groups of lines

Custom REXX Actions

- Use % action character on a row to execute a REXX exec against the row
 - Syntax:
 - **%execname userparms**
 - execname – The name of the exec in SYSEXEC or SYSPROC
 - Must be a REXX exec
 - userparms – any user parameters to be passed to the exec
 - % by itself generates a popup where the exec name and parameters can be filled in
 - Input parameters to the REXX exec include:
 - The current panel identifier (can be used to limit the scope of the command)
 - The primary panel identifier (needed for ISFACT / ISFGET / ISFBROWSE calls)
 - The row token of the selected row (needed for ISFACT / ISFGET / ISFBROWSE calls)
 - The user parameters specified on the command

Custom Rexx Action Example

Display Filter View Print Options Search Help

```
-----  
SDSF STATUS DISPLAY ALL CLASSES                                LINE 1-15 (25)  
COMMAND INPUT ==>                                           SCROLL ==> CSR  
ACTION=+ , / , % , ? , = , A , C , CA , CD , CDA , D , DL , DP , E , EC , ES , ESH , H , I , J , JD , JM , JP , JS , L , LL , O , P ,  
ACTION=PO , PP , Q , S , Sn , SB , SE , SJ , W , X , XC , XD , XDC , XF , XFC , XS , XSC  
NP  
%myexec p1 p2 p3  
JOBNAME JobID Owner TGPct Prty Queue Max-RC  
SYSLOG S0000005 +MASTER+ 0.18 15 EXECUTION  
RMF S0000010 SYSTASK 0.14 15 EXECUTION  
HZSPROC S0000015 SYSTASK 0.14 15 EXECUTION  
TCAS S0000006 SYSTASK 0.09 15 EXECUTION  
SDSF S0000008 SDSF 0.09 15 EXECUTION
```

Use **ARR NP *n*** command or **+*nn*** action to increase size of NP area if necessary

Can also issue from command line via
1 '%myexec p1 p2 p3'

Rexx Action Popup

Display Filter View Print Options Search Help

```
SDSF                                REXX Exec
COMM                                Command ==>
ACTIO                                CSR
ACTIO                                L,O,P,
NP                                    x-RC
%myex                                Exec      Arguments
MYEXEC                                P1 P2 P3

F1=Help  F5=Generate REXX  F12=Cancel
```

Popup is invoked if either:

- **%** is issued in the NP area with no Exec name
- Exec name/arguments not pre-filled in popup
- **%** is issued with a **+** as the last character
- Exec name/arguments up to **+** are pre-filled
- Above example shows popup for **%myexec p1 p2 p3+**

Parameters passed to Rexx Action Exec

- Format is sdsfparms (userparms
 - sdsfparms include several parameters
 - Current display
 - Primary display
 - Row token
- Sample Rexx code to parse parameters

```
/* REXX */  
Parse arg sdsfparms '(' userparms  
Parse var sdsfparms curr_panel prim_panel in_token .  
...  
Address SDSF 'ISFGET' prim_panel "TOKEN('in_token')"
```

Accessing current SDSF values from EXEC

- Some SDSF settings from the “parent” instance of SDSF may be useful to propagate to ISFEXEC / ISFACT / ISFGET / ISFBROWSE etc.
 - A new **isfquery()** function can be called to
 - Determine if a parent instance of SDSF exists
 - Return values from that parent instance into isfxxxx variables
 - For example
 - **isfquery()** - indicates whether or not parent instance exists
 - **isfquery(“ALL”)** gets all defined variables
 - **isfquery(“isfprefix”)** gets current PREFIX value into isfprefix
 - **isfquery(“isfprefix”,isfowner”)** gets PREFIX and OWNER
 - etc.
 - Variable names supported are either:
 - Values which SDSF requires on input (such as PREFIX and OWNER)
 - Values which correspond to the WHO command (such as server name, JES subsystem name, etc)

isfquery() Variables

Variable names allowed by isfquery()			
isfappc	isfcklim	isfconmod	isfcons
isfdate	isfdelay	isfdest	isfdisplaymode
isfdupds	isfglobal	isfglobalrel	isfgrpindex
isfgrpname	isfinput	isfispfrel	isfjesname
isfjesrel	isfjes3name	isfmember	isfmvsrel
isfowner	isfprefix	isfprocname	isfrel
isfrmfrel	isfseclabel	isfserver	isfsysid
isfsysname	isfsysplex	isfsystem	isfterminal
isftimeout	isfuserid	isfjestype	
Variable categories allowed by isfquery() ... color key			
ALL	INIT	WHO	

Miscellaneous Rexx Changes

- With the addition of the JG and JS panels, it is now possible for “secondary” displays to nest more than two levels deep
 - For example, **JG** → **ST** → **JS** → **JDS** would be a reasonable request (datasets associated with a particular step from a particular job in a job group)
- The current REXX variables defined pairs of variables (such as isffilter and isffilter2) to represent the primary and secondary panels, respectively
 - This scheme breaks down when the number of levels is >2.
- A new set of variables is defined to specifically represent the “deepest” level associated with the request
 - These variable names begin with the characters “sdsf” and the PREFIX value from the request (e.g. **st_sdsfcols**)
 - isfxxx2 variables always return values from the deepest secondary
- A second optional parameter is added to isfreset() to specify a prefix to apply to deleting the new special variables

New SDSF special variables

New variable	Existing variables	Input/Output	Description
sdsfcols	isfcols, isfcols2	Input	Column list (input)
sdsfocols	isfcols, isfcols2	Output	Column list (output)
sdsfucols	isfucols, isfucols2	Output	Update column list
sdsfdcols	isfdcols, isfdcols2	Output	Delayed column list
sdsfrcols	isfrcols, isfrcols2	Output	Related column list
sdsfcolumnngroups	isfcolumnngroups	Output	Column Group list
sdsftitles	isftitles, isftitles2	Output	Column title list
sdsffilter	isffilter, isffilter2	Input	Display Filter
sdsffiltermode	isffiltermode, isffiltermode2	Input	Display Filter Mode
sdsfsort	isfsort, isfsort2	Input	Sort parameters

Rexx Changes – COMPACT mode

- A new **COMPACT** options is added to ISFACT, ISFEXEC, and ISFGET
 - When specified, row data is returned in a single stem variable (**sdsfrow.x**, adjusted by PREFIX value) rather than a separate stem variable for each column
 - Additional variables are returned to indicate where the values for each column begin and end
 - **sdsfcolstart** – the starting location in each sdsfrow variable for the value of the variable (suitable for use with substr() function)
 - **sdsfcollen** – the length of the value at this location
 - **sdsfcolcount** – the number of values at the specified location (each being sdsfcollen characters long)
 - Each variable is a list of words which correspond to the words in the sdsfocols variable (column list)
 - This can result in significantly fewer variables being returned for large displays
 - Only variables specified in isfcols/sdsfocols are returned

COMPACT mode example

```
/* REXX */
```

```
rc = isfcalls("ON")
```

```
Address SDSF 'ISFEXEC ST ( COMPACT PREFIX ST_'
```

```
Do ix=1 to st_sdsfrow.0
```

```
  Say '***** ROW' ix '*****'
```

```
  Do jx=1 to words(st_sdsfcols)    /* For each column */
```

```
    w1 = word(st_sdsfcols,jx)    /* Get the column name */
```

```
    w2 = word(st_sdsfcolstart,jx) /* Get the corresponding data start index */
```

```
    w3 = word(st_sdsfcollen,jx)  /* Get the corresponding data length */
```

```
    w4 = word(st_sdsfcolcount,jx) /* Get the number of related fields */
```

```
    /* Use substr function to parse the value from sdsfrow variable for row */
```

```
    Do kx=1 to w4
```

```
      Say w1 '=' substr(st_sdsfrow.ix,w2,w3)
```

```
      w2=w2+w3    /* Add the column length to get the next related value */
```

```
    End
```

```
  End
```

```
End
```

```
rc = isfcalls("OFF")
```


Miscellaneous changes

- JES3 OUTDISP Support
 - OUTDISP columns on O and H enabled for JES3 (no overtype)
 - New overtypeable OUTDISP column on JDS display (JES3 only)
- JES2 Dynamic checkpoint tuning
 - HOLD and DORMANCY columns on MAS panel are not overtypeable when dynamic checkpoint tuning is being used
 - **(MASDEF CYCLEMGT=AUTO)**
 - Columns are still displayed and show values being used internally
 - MAS display title line indicator when in effect
- Userid included on enclave display

Migration & Coexistence Considerations

- SDSF V2R2 can coexist with SDSF V1R13 and V2R1
 - Toleration APAR **PI04906** needed to share ISFPRMxx:
 - SDSF V1R13 (HGX7780) - PTF **UI90015**
 - SDSF V2R1 (HGX7790) – PTF **UI90016**
 - Apply these PTFs any time prior to installing SDSF V2R2
- ISPF profiles are compatible
 - Saved arrange, sort, filter, print criteria
 - Saved slash commands
- SDSF/REXX execs will run unchanged in SDSF V2R2
 - Exploitation of new function will preclude exec running on down level SDSF
- SDSF/Java applications will run unchanged in SDSF V2R2

Migration & Coexistence Considerations ...

- HASPINDEX removal
 - HASPINDEX no longer used in SDSF V2R2
 - Was used to chronologically order JES2 syslog data sets
 - HASPINDEX related keywords in ISFPARMS/ISFPRMxx now obsolete
 - ISFPMAC / OPTIONS keywords ignored:
 - NIDBUF, IDBLKS, INDEX ,INDXVOL
 - Logon proc or initial clist does not need to ALLOC FI(HASPINDEX)
- HASPINDEX sharing
 - HASPINDEX could be shared between different levels of SDSF
 - For example, SDSF V1R13 and V2R1 could use the same physical data set
 - HASPINDEX not used in SDSF V2R2
 - If you are sharing HASPINDEX:
 - You can delete data set when all systems are at V2R2 level

Installation

- SDSF V2R2 now installed as single FMID: HQX77A0
 - SDSF now only installs in SMP/E BCP zone
 - ServerPac option for SDSF only SMP/E zone removed
- JES2 dependent feature JJE77xS now removed in SDSF V2R2
 - Feature was used for all modules that had dependency on JES2 distributed macros
 - Provided means for reassembling SDSF when JES2 macros were changed
 - SDSF V2R2 no longer uses the macros and hence reassembly no longer needed
- Data sets used by JJE77xS no longer needed in SDSF V2R2:
 - ISF.SISFJCL1 / ISF.AISFJCL1
 - ISF.SISFMOD1 / ISF.AISFMOD1(remove SISFMOD1 from Inklst)
 - ISF.SISFSRC1 / ISF.AISFSRC1

Installation ...

- ISFPARMS moved from JJE77xS to HQX77A0
 - If you modify ISFPARMS
 - Update your SMP/E apply job to specify right FMID
 - Source moved from ISF.SISFSRC1 to ISF.SISFSRC
 - IBM recommends you use ISFPRMxx instead of ISFPARMS
- UCLIN and reassembly sample jobs deleted
 - ISFISUCL – ran UCLIN for JES2 zone
 - ISFASMP – reassembled SDSF JES2 dependent parts
- Allocation and DDDEF sample jobs removed
 - ISFJ2ALC – allocated JJE77xS data sets
 - ISFJ2DDD – created DDDEF entries in JES2 zone
- Sample job ISFISALC no longer allocates HASPINDEX

Installation ...

- z/OSMF SDSF/UI plug-in
 - If you previously imported the plug-in using z/OSMF Import Manager in V2R1 no need to re-import plug-in
 - If you have not previously imported the plug-in and want to use the z/OSMF SDSF UI:
 - Review z/OSMF Import Manager online help for procedure to import z/OSMF SDSF plug-in
 - Launch Import Manager under z/OSMF Administration category
 - Import /usr/lpp/sdsf/zosmf/sdsf.properties

Session Summary

- Discuss the enhancements to SDSF in z/OS 2.2
 - JJExxxx component elimination
 - zIIP exploitation
 - System command improvements
 - Batch Parallelism
 - Job Step display
 - Job Detail displays
 - UI enhancements
 - Rexx enhancements
 - Custom row actions
 - Sample Rexx exec generator
 - Miscellaneous enhancements
- Migration and Installation considerations

Questions?

Questions?



Complete your session evaluations online at www.SHARE.org/Orlando-Eval

Appendix

- SDSF Operator and Customization, SA22-7670-15
- SDSF REXXHELP command
 - Contains SDSF/REXX usage, syntax, and examples
- SDSF Javadoc
 - Contains all SDSF Java documentation
- SDSF SEARCH command
 - Searches SDSF help system for word or phrase