

Introduction to SDSF Support for REXX

NY Metro NaSPA Chapter meeting

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Part 1

SDSF Overview

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-		-	

System Display and Search Facility (SDSF)

Monitor, manager and control

SDSF gives you an easy and efficient way to monitor, manage and control the key aspects of your MVS/JES system. You can:

- Control job processing
- Control output, and browse jobs
- Control devices |
- Browse the syslog
- Manage system resources

Displa	y Filter View Print Options D	Help	
~	50 SDSF PRIMARY OPTION MENU		
COMMAI	ND INPUT ===>		SCROLL ===> CSR
DA	Active users	INIT	Initiators
I	Input queue	PR	Printers
0	Output queue	PUN	Punches
Н	Held output queue	RDR	Readers
ST	Status of jobs	LINE	Lines
		NODE	Nodes
LOG	System log	SO	Spool offload
SR	System requests	SP	Spool volumes
MAS	Members in the MAS		
JC	Job classes	RM	Resource monitor
SE	Scheduling environments	CK	Health checker
RES	WLM resources		
ENC	Enclaves	ULOG	User session log
PS	Processes		
END	Exit SDSF		

SDSF Main menu display, with full user authority



Interactive Panels

Dis	play Filt	er View	Print	t Opti	ons Hel	-p 🔶	 Select a function;
SDSF	DA AQTS	SYS1	PAG 1	O SIO	113 CPU	114/007	no learning curve
COMM	AND INPUT	===>			S	SCROLL ===> PAGE	
NP	JOBNAME	SysName	Real I	Paging	SIO	CPU% SrvClass	
	MASTER	AQFT	10T	0.00	7.06	0.15 SYSTEM	Authorized users
	MASTER	AQTS	3594	0.00	0.12	0.04 SYSTEM	
	ABOWEN	AQTS	742	0.00	0.00	0.00 TSOPRIME	can issue system
	ADAM	AQTS	1310	0.00	0.00	0.00 TSOPRIME	commands from
	ADANPL	AQTS	1128	0.00	0.00	0.00 TSOPRIME	the command line
	ADINELL	AQTS	564	0.00	0.00	0.00 TSOPRIME	
	ADOOLEY	AQFT	1472	0.00	0.00	0.00 TSOPRIME	
	ADSM	AQTS	9544	0.00	0.00	0.59 SYSSTC	
	AFOSTER	AQFT	1261	0.00	0.00	0.00 TSOPRIME	
	AFUREY	AQTS	5496	0.00	0.00	0.00 TSOPRIME	
•						T	
	e short cor d to remen				no	Modify values by o	overtyping



Control Jobs

 Immediate, up-todate, sysplex-wide information about jobs waiting to be processed or in execution.

IBM Systems

- Display all active jobs, all jobs on a specific queue, or display detail for a job no matter where it is in the sysplex.
- Display output as it is created

Disp	olay Filt	er View	Print	Option	ıs Help	
COMMA	AND INPUT	===>_	L CLASSES		SINE 1-20	
NP	JOBNAME	JobID	Owner	Prty	Queue	С
	PEKOW2	JOB19199	SCHED	15	INPUT	J
	ACTAPSO2	JOB23991	SCHED	15	INPUT	J
	SCHEDULC	JOB23474	????????	10	XMITTER	J
	SCHEDULC	JOB31939	????????	10	XMITTER	J
	SCHEDULC	JOB03103	????????	10	XMITTER	J
	IBMUSERU	JOB09173	RACF2ND	7	EXECUTION	JA
	AGRAFA	JOB13490	AGRAF	7	EXECUTION	JA
	XWALLET3	JOB04538	XWALLET	7	EXECUTION	I B

Status Panel - jobs on any queue

Manage work with commands and action characters

Cancel, hold or release jobs

IBM Systems

- Filter the jobs to show just the jobs that interest you
- View output
- Change a job's priority, class, or destination
- Edit and resubmit the JCL without leaving SDSF

Disp	play Filt	er View	Print Oj	ption	s Hel	р
	F INPUT QU MAND INPUT JOBNAME #CLRLCG #CLRLCG	EUE DISPLA ===> JobID JOB26627 JOB26658	Owner	ہ Prty	SCROLI C Pc D 1	22-42 (69) ===> PAGE s PrtDest 8 LOCAL 9 LOCAL
	#CLRLCG #CLRLCG JYINBKUP JYINFPS JYINFPS JYINS	JOB26693 JOB27326 JOB32332 JOB32333 JOB32337	CLRUSER +++++++ ++++++++++++++++++++++++++++	8 7 7 7	D 2 D 2 D 2 D 2 D 2	9 LOCAL 0 LOCAL 1 LOCAL 2 LOCAL 3 LOCAL 4 LOCAL
С	WLMBKP# WLMBKP#	JOB32343 JOB30138	THERESA	7		5 LOCAL 1 LOCAL

Canceling a job on the Input Queue



Output

- SDSF allows you to control how and where your output is printed.
- Hold or purge the output
- Change the output's class, destination or forms

Di	splay Filt	er View	Print	Options	Help	
	' HELD OUTPU' AND INPUT =		ALL CL	ASSES LIN	ES 20,	599
NP	JOBNAME	JobID	Owner	Prty C	ODisp	Dest
11	D16DRS1A	JOB16330	DLR	- 7 H	HOLD	P2D436
	HASCUBES	JOB15536	DLR	7 C	HOLD	LOCAL
	DLRTEST	JOB16339	DLR	7 H	HOLD	LOCAL
	DLRRPTA	JOB17832	DLR	7 H	HOLD	LOCAL
	DLRRPTB	JOB17848	DLR	7 H	HOLD	LOCAL
//	DLREXT	JOB17888	DLR	7 H	HOLD	LOCAL

Changing the destination on multiple rows



•

•

set



Output

Work with the Display Filter View Print Options Help individual output data sets for a job SDSF JOB DATA SET DISPLAY - JOB BERKEA5 (JOB00042) COMMAND INPUT ===> SCROLL ===> PAGE Purge or release a DDNAME StepName ProcStep DSID Owner C Dest NP data set JESJCLIN 1 BEVK R LOCAL JESMSGLG JES2 2 BEVK R LOCAL Browse or print a 3 BEVK R LOCAL JESJCL JES2 data set 4 BEVK R LOCAL JESYSMSG JES2 \$INTTEXT JES2 A LOCAL 5 BEVK Change the class, FINDDA 101 BEVK R LOCAL ISFIN destination or output xdc ISFOUT FINDDA 104 BEVK R LOCAL descriptors of a data

Printing an individual output dataset on the Job Data Set Panel



Browse Output

- You can display job output before deciding to print it.
- Print or search output. Or exploit the power of ISPF and use ISPF's edit or browse function to view output.
- SDSF shows the job's SYSOUT data sets the JES2 job log, the JCL for the job, and any jobrelated messages.

SDSF OUTPUT DISPLAY BKELLERZ JOB26263 DSID 2 COMMAND INPUT ===>_ JES2 JOB LOG SYSTEM AQFT
09.25.05 JOB26263 IRR010I USERID BKELLER IS ASSIGNED 09.25.06 JOB26263 ICH70001I BKELLER LAST ACCESS AT 09: 09.25.06 JOB26263 \$HASP373 BKELLERZ STARTED - INIT 12 - 09.25.07 JOB26263 IEF403I BKELLERZ - STARTED - TIME=09.
<pre>1 //BKELLERZ JOB '141691,B001D49A','WR KELLER'</pre>
// FORMAT=FULL, 16 IEFC001I PROCEDURE COMPARE WAS EXPANDED USING ICH70001I BKELLER LAST ACCESS AT 09:25:06 ON MONDAY, IEF236I ALLOC. FOR BKELLERZ COMPARE ZACTION

Excerpts from an Output Dataset Panel



With SDSF, you can...

- Control Devices, local and remote printers, punches, and readers
- Start and stop initiators

- Control Lines
- Manage Spool volumes, spool offloads, and a Multi-Access Spool (MAS)
- Control and Manage Nodes
- Display WLM Enclaves

- Control z/OS Unix System Services
 Processes
- Monitor and manage Health Checker





Part 2

SDSF and REXX



SDSF and REXX

- z/OS V1R9 SDSF adds support for the REXX programming language
 - z/OS V1R9 GA September, 2007
- Use REXX to quickly develop scripts to perform complex and repetitive tasks
- Little or no training needed if you already know SDSF
- Simpler and more powerful alternative to SDSF batch
 - Lets you include logic
- Answers or partially answers 14 customer requirements



SDSF and REXX

- With SDSF's REXX, you can perform most of the tasks that you can perform interactively, such as:
 - Display and modify jobs
 - Display and modify resources and devices
 - Browse SYSOUT data sets
 - Print SYSOUT data sets
- Use the same panel commands, action characters and column overtypes as with interactive SDSF



Getting Started

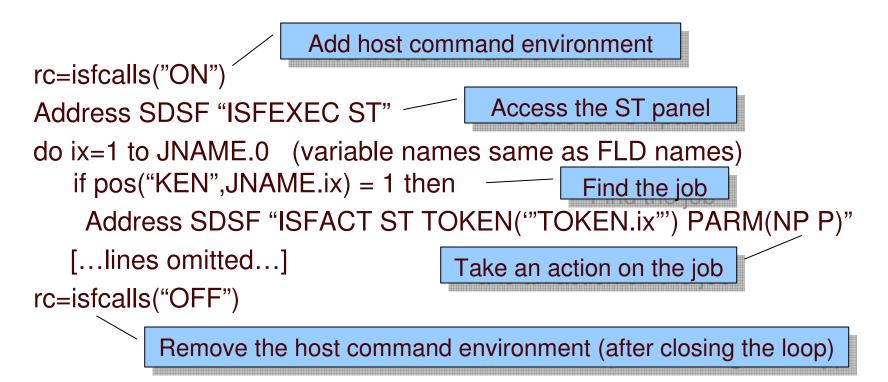
IBM Systems

In a basic SDSF REXX exec, you:

- 1. Add the REXX host command environment; before issuing any SDSF commands, using **ISFCALLS**
- 2. Issue an SDSF command to access a panel, using **ISFEXEC**
- 3. Issue an action character or "overtype" a column using **ISFACT**
- Data is returned in stem variables
- Use new special variables to control results
 - These correspond to SDSF commands such as PREFIX and OWNER



Quick Start Example – Cancel a Job





Accessing an SDSF Panel with REXX

- Use ISFEXEC to access a panel
- Syntax:

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Address SDSF "ISFEXEC sdsf-command (options)"

- *sdsf-command* is the same SDSF command as you use interactively, including parameters, for example:
 - Address SDSF "ISFEXEC DA"
 - Address SDSF "ISFEXEC CK ALL"

CK command with the ALL parameter



Accessing an SDSF Panel - Options

Options you can use when accessing a panel with ISFEXEC or ISFACT:

- PREFIX: specify a prefix for variables that are created
- PRIMARY: use the primary field list
- ALTERNATE: use the alternate field list
- DELAYED: include delayed-access columns
- NOMODIFY: don't return row tokens for use in modifying values
- VERBOSE: add diagnostic messages to the isfmsg2. stem variable (more on this later)



Accessing an SDSF Panel - Data

- SDSF builds stem variables that correspond to the panel's rows and columns
 - column-name.index format

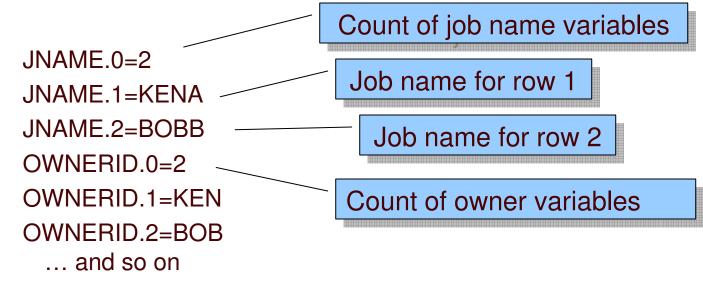
- column-name is the name used on an FLDENT statement (not the column title), for example: FLDENT COLUMN(OWNERID),TITLE(OWNER),WIDTH(8)
- *index* is the number of the row
 - 0 index is the number of variables in the stem
- Display the column names with the COLSHELP command



Stem Variables for Panel Data - Example

IBM Systems

Stem variables and values for columns on the Status panel:





Special Variables to Control SDSF

- Special variables for use with SDSF REXX
 - Defined by SDSF

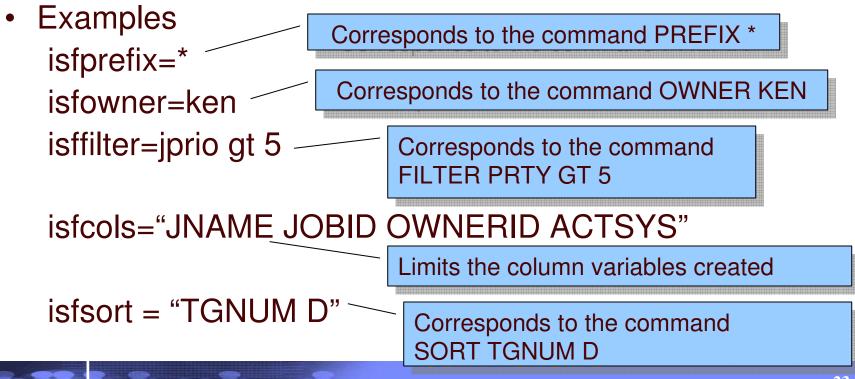
- Some correspond to SDSF commands
- Others provide access to fields or data, such as the title line on an SDSF panel
- Names start with "ISF"



Special Variables – Limit Panel Response

• Special variables with panel commands:

- Limit the response when accessing a panel
- Use before invoking ISFEXEC or ISFACT





Special Variables - Others

- ISTLINE contents of the panel title line
- ISFROWS number of rows on the panel
- ISFDELAY delay limit for system command responses (like SET DELAY command)
- ISFACTIONS controls the list of valid action characters (like SET ACTION command)
- ISFSERVER names the SDSF server to be used (like the server name on the SDSF command)
- ... many more



A More Complete REXX Example

```
rc=isfcalls("ON")
Address SDSF "ISFEXEC ST"
                                    Variable isfcols contains a list of
if rc <>0 then Exit 20
                                   columns, with fixed field first
fixedfield=word(isfcols,1)
                                              Variable isfrows contains
say "Number of rows returned" isfrows
                                              a count of rows
do ix=1 to isfrows
 say "Now processing job:" value(fixedField"."ix)
  do jx=1 to words(isfcols)
    col=word(isfcols,jx)
    say "Column" col"."ix "has the value:" value(col"."ix)
  end
end
rc=isfcalls("OFF)"
```

A More Complete Example – Output from the Exec

Number of rows returned: 35 Now processing job: RJONES Column JNAME.1 has the value: RJONES Column TOKEN.1 has the value: 2hg0EwU7o5 Column JOBID.1 has the value: T0000034 Column OWNERID.1 has the value: RJONES Column JPRIO.1 has the value: 15 Column QUEUE.1 has the value: EXECUTION ... and so on Now processing job: TCAS Column JNAME.2 has the value: TCAS

... and so on

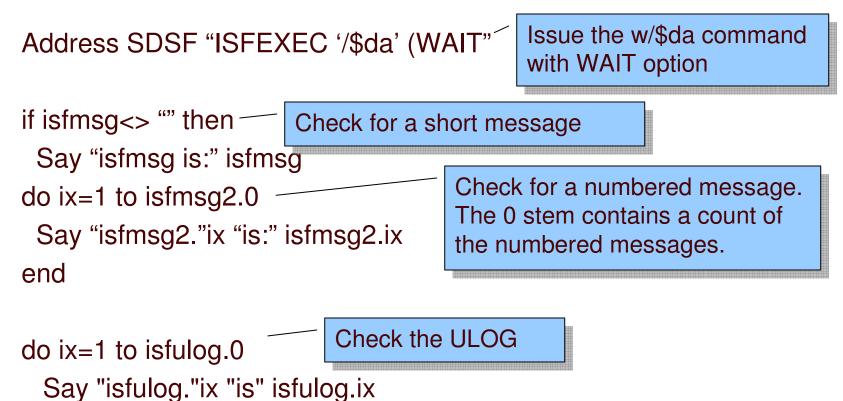


Message Variables

- Message variables contain SDSF messages
 - isfmsg contains the SDSF short message (displayed in the upper right corner on an SDSF panel)
 - isfmsg2. stem contains the SDSF numbered messages
 - **Isfulog** stem is for the user log (ULOG)
- Check after each SDSF request to ensure the request was successful



Message Variables Example with Slash



end



Actions

IBM Systems

Should also check the return code from the SDSF command, for example: if rc<>0 then ...

Return codes for ISFEXEC and ISFACT:

- **00** The request completed successfully.
- 08 An incorrect or invalid parameter was specified for an option or command.
- 12 A syntax error occurred parsing a host environment command.
- 16 The user is not authorized to invoke SDSF.
- 20 A request failed due to an environmental error.
- 24 A request failed due to an environmental error.



Actions

- Use the ISFACT command to issue an action character or modify a value (overtype a column)
- Syntax:
- Address SDSF "ISFACT *sdsf-cmd* TOKEN("'*token*"') PARM(*parms*) (*options*)"
 - *sdsf-cmd* is the same SDSF command you used with ISFEXEC to access the panel
 - token identifies the row
 - parms identifies the column and action



Actions - continued

TOKEN(*'token'*)

- TOKEN stem is returned by ISFEXEC
- Each row is identified with a TOKEN variable
- TOKEN is used as input to ISFACT

PARM(parms)

- Describes the action or modification
- column value format, for example:
 - PARM(OCLASS A FORMS 1234)
 - PARM(NP C)

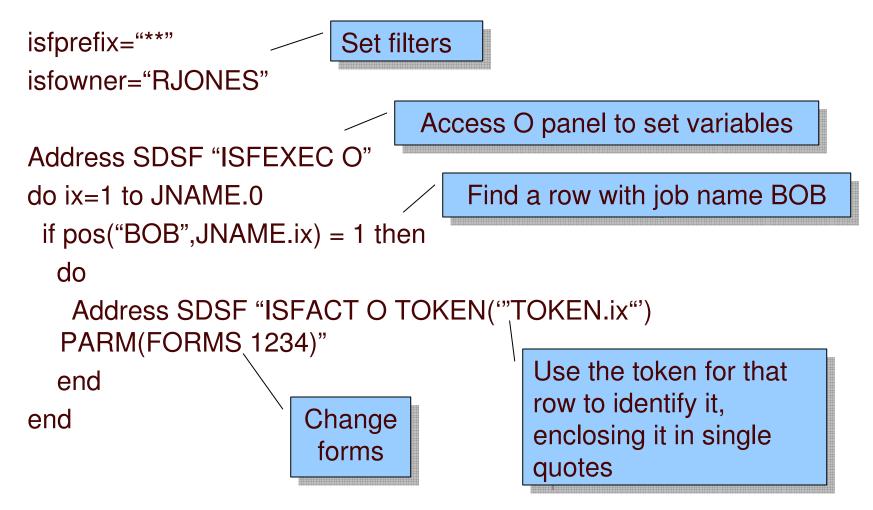
Use NP for action characters

Change both

class & forms



Example - Change Output Forms





Browse Job Data Sets

- Use ISFACT to issue the SA action character against a job
 - Allocates the data set (free=close)
 - REXX only

- Allocated ddname is returned in isfddname. stem variable
- Data set name is in **isfdsname.** stem variable
- Use EXECIO to read the data set



Example: Browse Job Data Sets

```
Address SDSF "ISFEXEC ST" Access the ST panel, then use logic to find a job (not shown)
```

Address SDSF "ISFACT ST TOKEN("TOKEN.ix") PARM(NP SA)"

do jx=1 to isfddname.0

Loop through ddnames

EXECIO reads the data set

Issue SA action

Say "Now reading" isfdsname.jx

"EXECIO * DISKR" isfddname.jx "(STEM line. FINIS"

Say "Lines read" line.0

do kx=1 to line.0

Say " line."kx "is:" line.kx

end

end



Browse Health Check Output

- Use ISFEXEC to access the CK panel
- Use ISFACT to issue the S action character to browse check output
 - Output is placed in the **isfline**. stem special variable



Printing a Job Data Set

• Print a job data set

- Use X, XS, XD action characters
 - ISFACT PARM(NP X)
- Attributes of print data set are controlled through special variables, for example:
 - isfprtclass="U"
 - isfprtcopies="2"
 - isfprtdest="ken"
 - isfprtformdef="ffff"
 - isfprtforms="8888"
 - isfprtpagedef="pppp"
 - isfprtprmode="pmode"

Avoiding Duplicate Variable Names

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Use the **PREFIX** option on ISFEXEC and ISFACT to add a prefix to variable names created by SDSF

- Prevents duplicate variable names in existing scripts
 - Needed when accessing the job data set panel, so that column variables don't conflict
- Format: (PREFIX prefix)



Example: Using the PREFIX Option

Address SDSF "ISFACT ST TOKEN('"TOKEN.ix") PARM(NP '?') (PREFIX jds_)"

Access JDS using NP ? and define a prefix for all JDS variables.

do jx=1 to jds_DDNAME.0 say "DSName is" jds_DSNAME.jx Say "Stepname is" jds_STEPN.jx Say "Procstep is" jds_PROCS.jx end

References to variables all include the prefix



Using SDSF with SYSREXX

- SDSF REXX Support works with System REXX
- Need proper security environment to access SDSF
 - Logon from console to get security environment
 - Need access to all commands used by EXEC
- Need to specify ISFJESNAME or ISFSERVER
 - ISFSERVER defaults to 'SDSF'

JES3 Support (z/OS 1.10)

- Different subset of panels/columns are available
- Use output from WHO command to determine JES being processed



Security

- SDSF security applies to using SDSF through REXX
- No changes to ISFPARMS or SAF
- IBM recommends SAF for security instead of ISFPARMS for better control and auditing

