

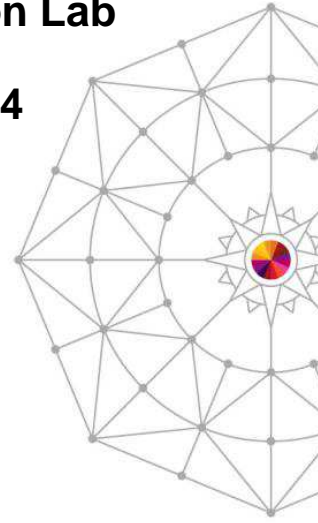


SDSF for New Users – Hands-on Lab

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Objectives

- Explain SDSF to the new or intermediate user:
 - Familiar with SDSF but not expert
 - Might include:
 - End users
 - Operators
 - System programmers
- Along the way, include tips for everyone

System Display and Search Facility

SDSF provides an easy & efficient way to:

- Control job processing
- Control output and browse jobs, without printing
- Control devices such as printers, lines, and initiators
- Manage system resources
- Work with checks for IBM Health Checker for z/OS

SDSF Organizes Data

- Data is presented in tabular format on 20+ different panels
- Panels are customizable by the system programmer and the user
- SDSF security controls the panels users see and the functions they can use

SDSF Main Panel

```
HQX7790----- SDSF PRIMARY OPTION MENU -----  
COMMAND INPUT ===>_                               SCROLL ===> PAGE  
  
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  
  
LOG  System log                                NODE  Nodes  
SR   System requests                           SO    Spool offload  
MAS  Members in the MAS                       SP    Spool volumes  
JC   Job classes                               RM    Resource monitor  
SE   Scheduling environments                  CK    Health checker  
RES  WLM resources                            ULOG  User session log  
ENC  Enclaves  
PS   Processes
```

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Here is the main panel in SDSF with all of the options enabled.

Lab Task:

Log on, enter ISPF, and access SDSF. You should see a panel that looks something like this.

Manage Jobs

```
Display  Filter  View  Print  Options  Help
-----
HQX7790  -----  SDSF PRIMARY OPTION MENU  -----
COMMAND INPUT ===>

DA      Active users
I       Input queue
O       Output queue
H       Held output queue
ST      Status of jobs
```

This is what the typical "End User" sees on the menu.

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Most of this session is devoted to these panels. However, many of the concepts discussed apply to all panels.

SDSF can be tailored either through SAF or through its own parameters (ISFPARM) so that various panels and functions within those panels are only available to select users or groups. So, for an average user who should have access to only his jobs and nothing else, the panel could be tailored to look like this.

SDSF Panels - Layout



```
Display Filter View Print Options Help
-----
SDSF DA AQTS SYS1 PAG 10 SIO 113 CPU 114/007
COMMAND INPUT ==>>_
NP JOBNAME SysName Real Paging SIO CPU% SrvCl
 *MASTER* AQFT 10T 0.00 7.06 0.15 SYSTE
 *MASTER* AQTS 3594 0.00 0.12 0.04 SYSTE
 ABOWEN AQTS 742 0.00 0.00 0.00 TSOPR
 ADAM AQTS 1310 0.00 0.00 0.00 TSOPRIME
 ADANPL AQTS 1128 0.00 0.00 0.00 TSOPRIME
 ADINELL AQTS 564 0.00 0.00 0.00 TSOPRIME
 ADOOLEY AQFT 1472 0.00 0.00 0.00 TSOPRIME
```

Type short commands here

Sysplex-wide data, current and customizable

Modify values by typing over them

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All SDSF panels have the same basic layout. For now, we'll look at DA just to see what this looks like.

Lab Task:

Access the DA panel, you should see something that looks like this.

The top row consists of pulldowns where you can access additional SDSF functions. Below that is a title line indicating what display you are on (in this case DA), and for some panels additional summary data may be displayed too.

Next is the command line where SDSF or TSO commands can be issued.

Finally, there is a columnar display of, in this case, all active jobs in the system. The NP column allows you to issue specific commands against row objects; also the values in some columns can be modified by overtyping them. You can page up and down to see additional rows, and left and right to see additional columns.

There may be some differences in what you see on your system because a prior user has modified some settings. You'll see how, and how to deal with it, on the next page.

Tips – Other settings

Display settings: set display (on|off|long)

```
SDSF STATUS DISPLAY ALL CLASSES LINE 1-20 (24651)
COMMAND INPUT ==> SCROLL ==> PAGE
PREFIX=BKELLER* DEST=(ALL) OWNER=* FILTERS=2
NP JOBNAME JobID Owner Prty Queue C
BKELLER TSU23637 BKELLER 15 EXECUTION
```

Display action characters: set action (long|short|off)

```
SDSF HELD OUTPUT DISPLAY ALL CLASSES LINES 452,893 LINE 429-449 (449)
COMMAND INPUT ==> SCROLL ==> CSR
ACTION=// -Block,=-Repeat,+-Extend,?-JDS,A-Release,C-Cancel,H-Hold,I-List
ACTION=O-Release,P-Purge,Q-Outdesc,S-Browse,X-Print
NP JOBNAME JOBID OWNER PRTY C ODISP DEST TOT-REC
DB2LU32 JOB09111 DB2JOB 7 H HOLD LOCAL 730
```

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Lab Task:

Issue SET DISPLAY ON, SET DISPLAY LONG, and SET DISPLAY OFF to toggle the display line. If data is not being displayed, this can indicate why. SET DISPLAY LONG is new in z/OS 2.1 and displays more detailed information than SET DISPLAY ON if filters are specified or many sort criteria are being used.

The PREFIX command can be used to limit what job names are displayed. PREFIX with no operands is the same as PREFIX *.

The OWNER command limits the display based on the owner of the row object (in this case, a job). Again, OWNER with no operands is the same as OWNER *.

Other filters can be set up using the FILTER command but it's easier from the FILTER pulldown. FILTERS= on the display line displays how many are in effect. Go to the pulldown or issue FILTER ? to see what filters are in effect for this panel.

Issue SET ACTION LONG, SET ACTION SHORT, and SET ACTION OFF and notice the difference in the display. These lines are there to remind you what you can type in the NP column for this panel.

Customizing Panels

Use commands to show just your own jobs

- ISFPARMS can also limit jobs

```
SDSF STATUS DISPLAY ALL CLASSES
COMMAND INPUT ==>
NP  JOBNAME  JobID   Owner   Status  Prty  Queue
  BKELLER  TSU23995  BKELLER
  BKELLER  JOB13185  BKELLER
  BKELLER  JOB06091  BKELLER
  BKELLERA JOB30922  BKELLER
```

Filter on job name:
PREFIX BKELLER*

Filter on owning userid:
OWNER BKELLER

- PREFIX and OWNER commands apply to all job panels

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Note that PREFIX and OWNER require a trailing generic character; otherwise, they look for an exact match. You can modify the generic character with the SET SCHARS command.

Lab Task:

Set PREFIX to your userid followed by an *. Then set it to just * and note the differences.

Set OWNER to your userid. Then set it back to * and note the differences.

Manage Jobs – Active (DA)

Display Filter View Print Options Help						
SDSF DA AQTS SYS1 PAG 10				CPU/L/Z 26/26/0		
NP	JOBNAME	SysName	Real	Paging	SIO	CPU%
MASTER	AQFT	10T	0.00	7.06	0.15	
MASTER	AQTS	3594	0.00	0.12	0.04	
ABOWEN	AQTS	742	0.00	0.00	0.00	
ADAM	AQTS	1310	0.00	0.00	0.00	
ADANPL	AQTS	1128	0.00	0.00	0.00	
ADINELL	AQTS	564	0.00	0.00	0.00	
ADOOLEY	AQFT	1472	0.00	0.00	0.00	

CPU use for the system

CPU use for each address space – useful for sorting

- DA shows only active jobs (address spaces)
 - MVS and performance info such as CPU use
 - Includes address spaces not running under JES
 - Data comes from RMF

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Values in the SysName column indicate that this is a sysplex-wide view.

If RMF isn't installed, this display shows a subset of the columns.



Manage Jobs – CPU Values

MVS, LPAR and zAAP views of CPU use on the title line:

CPU/L/Z 26/26/0

Many CPU-related columns

- GCP-Time Accumulated general processor service time, in seconds
- zAAP-Time Accumulated zAAP service time, in seconds
- zACP-Time Accumulated general processor service time that was eligible for a zAAP, in seconds
- GCP-Use% Percent of the total general processor time used by the address space in the most recent interval (not normalized)
- zAAP-Use% Percent of the total zAAP time used by the address space in the most recent interval (not normalized)
- SzAAP% zAAP view of CPU use **for the system**, in the most recent interval
- SzIIP% zIIP view of CPU use **for the system**, in the most recent interval

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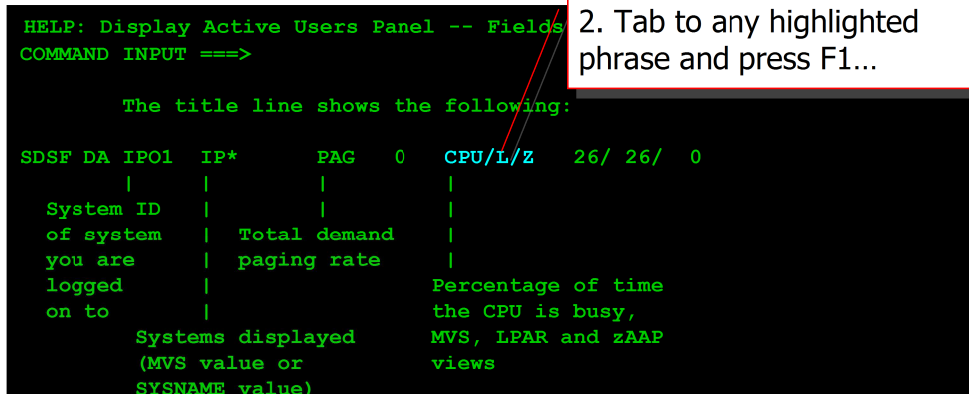


Values for the system columns (SzAAP% and SzIIP%) are the same for all rows for a given system. This information is shown in columns because there is no room on the title line. The title line reflects just the system you are logged on to.

Tip: Help

Detailed help on each of the CPU fields is available

1. Press F1 from DA, then select "Fields on the DA panel"



```

HELP: Display Active Users Panel -- Fields
COMMAND INPUT ==>

The title line shows the following:

SDSF DA IPO1 IP* PAG 0 CPU/L/Z 26/ 26/ 0
| | | | | |
System ID | | | | |
of system | Total demand | |
you are | paging rate | |
logged | | | | |
on to | | | | |
Systems displayed | Percentage of time
(MVS value or | the CPU is busy,
SYSNAME value) | MVS, LPAR and zAAP
views
  
```

2. Tab to any highlighted phrase and press F1...

From any panel, F1 will put you into a general help for that panel. There are options that you can then follow which will get you closer to the specific help you're looking for. You can also get there from the Help pulldown.

Within the help, you may also find highlighted phrases that you can tab to and hit F1 to find relevant to that specific phrase. This help function requires ISPF. It exploits what ISPF calls "reference phrase" help. Anytime you see a highlighted phrase in the help that you can tab to, it is probably a reference phrase "link" that you can follow by pressing F1.

Lab Task:

Access the help for DA, and find specific help on the zIIP and zAAP related columns.

Tip: Help for CPU Values

Further help on that topic is displayed (7 panels on CPU)

```
HELP: Display Active Users Panel -- CPU Fields Panel 1 of 7
COMMAND INPUT ==>

Title line: You may see one, two or three values depending
on your configuration. If three values are shown, the label
preceding the values indicates the order. All three values
are obtained from RMF.

MVS view: is the first value, or the only value if just one
is present. It is the best indicator of a CPU bottleneck. It is
CPU-time
----- * 100
online-time

LPAR view: is the second value, if present. It takes into
account several states related to PR/SM. A value of ***
indicates RMF Monitor I CPU Report is not active.
```

Manage Jobs – Status (ST) Panel

```

Display  Filter  View  Print  Options  Help
-----
SDSF STATUS DISPLAY ALL CLASSES          LINE 1-20 (24651)
COMMAND INPUT  ===>                      SCROLL  ===> PAGE
NP  JOBNAME  JobID   Owner    Prty Queue   C
    BKELLER  TSU23637 BKELLER   15 EXECUTION
    BKELLERA JOB23991 BKELLER   15 INPUT      J
  
```

- ST - basic panel for managing jobs and output
 - Jobs on any queue
 - Including started tasks that are executing
 - Held and non-held output
 - Overtypes for job cols like service class, priority
 - I panel shows jobs on the input queue or executing
 - Columns and actions nearly identical to ST

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This example shows a typical setup with jobs being limited to just the user's jobs. This could be done through either PREFIX (job name) or OWNER commands.

Lab Task:

Issue the ST command to check out the ST panel.

Submit the job in **CLWOOD.S2343.JCL(IEFBR14)**. Tailor the display so that it only displays your jobs using the PREFIX and OWNER commands.

Go to the I panel. Note that the PREFIX and OWNER settings are still in effect. Now release your job. If you don't remember how, SET ACTION LONG to see a list of actions to remind you how to do it.

Finally, go back to ST to see the status of the job. Don't worry, we'll do more with it later.

Tip – Canceling Active Jobs

```

Display Filter View Print Options Help
-----
SDSF DA AQTs (ALL) MVS Cancel PU/L 11/ 11 LINE 1-16 (916) JES2 $C
COMMAND INPUT ==> SCROLL ==> CSR
ACTION=//-Block,=-Repeat,+-Extend,?-JDS,A-Release,C-Cancel,
ACTION=D-Display,E-Restart,H-Hold,K-SysCancel,L-List,P-Purge,
ACTION=Q-Outdesc,R-Reset,S-Browse,W-Spin,X-Print,Y-SysStop,
ACTION=Z-SysForce
NP JOBNAM StepName ProcStep JobID Owner C Pos DP Real
 *MAST MVS FORCE STC10277 +MASTER+ N MVS P (Stop)
 PCAUTH PCAUTH NS FF Z00
  
```

- Five different forms of "cancel"
 - Note Y (MVS Stop) for started tasks
 - New with z/OS V1R5
- SET ACTION (LONG|SHORT) shows valid actions

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SET ACTION is enhanced as of z/OS 1.9: SET ACTION LONG used to show just the base form of each action, meaning, for example, it would include C but not CD (cancel and take a dump) or CDA (cancel a job defined to ARM and take a dump). With R9, all forms of each action character are included with SET ACTION LONG.

Tip: Scaling and Arrange

- SDSF scales numbers to make them fit the column width

```

Display  Filter  View  Print  Options  Help
-----
SDSF DA AQTs SYS1 PAG 10          CPU/L/Z 26/26/0
COMMAND INPUT ===>_
NP JOBNAME  SysName  Real  Paging  SIO  CPU%
 *MASTER*  AQFT      12T   0.00   7.06  0.15
 *MASTER*  AOTS      3594   0.00   0.12  0.00
 ABOWEN    AQTs      742    0.00   0.00  0.00
 ADAM      AQTs     1310   0.00   0.00  0.00
 ADANPL    AQTs     1128   0.00   0.00  0.00
 ADINELL   AQTs      564    0.00   0.00  0.00
 ADOOLEY   AQFT     1472   0.00   0.00  0.00
  
```

12T means
12 thousand

T=thousands, M=millions, B=billions, plus KB, MB, GB, TB, PB (bytes)

You can resize columns with the ARRANGE command, as shown on the next page.

Tip: Scaling and Arrange

- To see the actual number, use Arrange to increase the column width

```

Display Filter View Print Options Help
-----
SDSF DA AQTs SYS1 PAG 10 CPU/L/Z 26/26/0
COMMAND INPUT ==> arr real 8
NP JOBNAME SysName Real Paging SIO CPU%
 *MASTER* AQT 12T 0.00 7.06 0.15
  
```



```

Display Filter View Print Options Help
-----
SDSF DA AQTs SYS1 PAG 10 SIO 113 CPU/L/Z 26/26/0
COMMAND INPUT ==>
NP JOBNAME SysName Real Paging SIO CPU%
 *MASTER* AQT 12,831 0.00 7.06 0.15
 *MASTER* AQTs 3594 0.00 0.12 0.04
  
```

Full
number

You can also do this through the Arrange pop-up, which you access with this command: ARR ? (requires ISPF). There is also an Arrange option on the View pulldown which shows the same information.

Customizing Panels

Arrange and resize columns

Move
Real
after
Stepname

Change widths

Arrange		Column	Width
—		SysName	8
/		Real	4
—		Paging	6
—		SIO	6
—		CPU%	6
—		SrvClass	8
a		StepName	8
—		ProcStep	8
—		Owner	8
—		Status	6
—		C	1

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Lab Task:

Use the arrange commands and popup to reorder and resize columns on the DA panel.

When you're done issue **ARR ?** to access the popup and hit PF6 to restore the columns to their default size and order.

Tip: Alternate Field Lists

- Every panel has two sets of columns, a primary and a secondary, or alternate
 - Defined in ISFPARMS
- Secondary includes things like output descriptors (Programmer name, Room number, Account number, etc.) that may take longer to obtain
- Different sets of ARRANGE criteria can be used for each
- Access the alternate set with ?

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The alternate set of fields, by default, contains all of the primary fields plus the alternate fields.

Both sets of fields can be customized for the installation through SDSF's customization module, ISFPARMS.

Note that for many displays, the primary and alternate lists are the same by default and include all possible columns.

Lab Task:

Issue a ? from the command line to see the alternate columns. Note that both list are the same for DA.

Now use arrange to rearrange the columns and toggle back and forth between primary and secondary.

When you're done set the order for both the primary and secondary back to the default (**ARR ?** and PF6)

Manage Output – Output (O) Panel

Display	Filter	Completion info & high return code	Overtypes	Operations	Help
SDSF OUTPUT	ALL CLASSES	ALL FORMS	LINES 1,442		
COMMAND INPUT	====>		SCROLL	====>	PAGE
NP	JOBNAME	Max-RC	C Forms	JobID	Tot-Rec
	BKELLERA	CC 0000	A REC	JOB18690	1,178
	BKELLERB	ABEND S622	A REC	TSU01320	485

- Output (O) panel displays information about output that is ready to be printed.
 - Overtypes for output characteristics
- Output panel can be filtered by output class by issuing Ox to see output class x. Up to 7 output classes can be listed.

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Lab Task:

Issue the O command to check out the output panel.

Issue the OABC command and note the differences.

Manage Output - O Panel

O shows a row for each output group, so a job can have multiple rows:

JOBNAME	JobID	Owner	O-Grp-N	OGID1	OGID2	C
ABCGR2XX	JOB01736	ABCARSO	2	1	1	4
ABCGR2XX	JOB01736	ABCARSO	1	1	1	6
ABCGR3XX	JOB01738	ABCARSO	2	1	1	4
ABCGR3XX	JOB01738	ABCARSO	1	1	1	6
ABCGR4XX	JOB01740	ABCARSO	2	1	1	4
ABCGR4XX	JOB01740	ABCARSO	1	1	1	6

Output groups have identical characteristics, such as forms, class, destination, address and building

Tip: Held Output (H) Panel

H panel shows *held* output.

- O and H have nearly identical columns and actions
- H has a built-in filter that limits it to your own jobs.
- To display output for all jobs on the H panel:
 - **prefix ** then h**
 - or -
 - **prefix then h all**

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Note that PREFIX works differently on the H display from how it works on the other displays. This is because historically, JES2 used to have to do spool I/O to determine what held datasets were associated with a job, and this was to limit the amount of I/O to be done. This changed many years ago but the behavior has remained for compatibility.

PREFIX ** or H ALL can be used to override the default filtering.

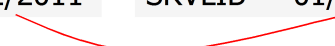
Lab Task:

Issue H to get to the held panel.

Tip: Time/Date Columns

- O and H panels have a CRDate column:
 - Default width shows just a date
 - Expand with **arr crdate 20** to see the time


JOBNAME	CrDate	JOBNAME	CrDate
SRVLIB	01/12/2011	SRVLIB	01/12/2011 16:39:39
SRVLIB	01/12/2011	SRVLIB	01/12/2011 16:39:49



- When filtering on any date/time field,
use GT or LT, not EQ
 - Time will never match precisely

Browse

- Output as it is being created, consisting of:
 - Data written to SPOOL
 - In-memory buffers (most recent data) if:
 - Job is running on the local system or
 - You have SDSF's sysplex support
 - See earlier slide...
- Input data sets for jobs being processed or waiting to be processed



NP	JOBNAME	JOBID	OWNER	C
S	BKELLERZ	JOB32343	BKELLER	D
	WLMBKP#	JOB30138	KJONAS	D

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Browse

Data sets are concatenated

```
SDSF OUTPUT DISPLAY BKELLERZ JOB32343 DSID      2
COMMAND INPUT ==>
09.25.05 JOB32343  IRR010I  USERID BKELLER  IS ASSIGNED
09.25.06 JOB32343  ICH70001I BKELLER  LAST ACCESS AT 09:25:06
09.25.06 JOB32343  $HASP373 BKELLERZ  STARTED - INIT 12
09.25.07 JOB32343  IEF403I  BKELLERZ  - STARTED - TIME=09:25:06

-----
1 //BKELLERZ  JOB    '141691,B001D49A','WR KELLERZ'
//              MSGCLASS=H,NOTIFY=BKELLER,CLASS=H
2 //OUT OUTPUT FORMDEF=010111,PAGEDEF=V06481
-----

16 IEFC001I PROCEDURE COMPARE WAS EXPANDED USING
ICH70001I BKELLER LAST ACCESS AT 09:25:06 ON MONDAY,
```

Job log

JCL

Messages

- Use NEXT and PREV to move between data sets

Lab Task:

Use the S action character from the ST panel to browse a job's output.

Use PF7/PF8 to page up and down

Use the NEXT and PREV commands to jump forward backward to the next or prior data set.

Tip: ISPF Edit or Browse

Instead of S (SDSF browse), you can use

- SE to browse using ISPF Edit
- SB to browse using ISPF Browse

- Then you can use any ISPF Edit or Browse commands or macros

- SDSF NEXT and PREV actions cannot be used.

Lab Task:

Look at the same job's output using the SB action character to get ISPF Browse

Look at the same job's output using the SE action character to get ISPF Edit.

Tip: Default Browse Action

- Default browse action
 - Browse a job by pressing Enter next to it
 - No action character required
- ==> SET BROWSE S

```
SDSF STATUS DISPLAY ALL CLASSES
COMMAND INPUT ==>
NP  JOBNAME  JobID
BKELLER TSU09
BKELLER JOB07
BKELLER TSU26
SDSF OUTPUT DISPLAY BKELLER JOB07810
COMMAND INPUT ==>
***** TOP OF DATA *****
\INMR01      S390VM      BKELLER
12113 \INMR07      BKELLER R17JSH2 2
```

SET BROWSE with no arguments turns this off.

Browse JCL and Resubmit

Use SJ action to browse just the JCL

- Make changes and resubmit

```
SDSF EDIT HOLDE (JOB00017) JCLEDIT          Columns 00001 00072
Command ==> SUB                             Scroll ==> PAGE
***** ***** Top of Data *****
000001//HOLDE JOB CLASS=E,MSGCLASS=E
000005 //STEP1 EXEC PGM=IEBDG
000006 //OUTA DD SYSOUT=E,DCB=(LRECL=80,RECFM=FB,BLKSIZE=800)
000007 //SYSPRINT DD SYSOUT=E
000008 //SYSIN DD *
```

- Uses ISPF Edit
- Changes you make are not saved

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Lab Task:

Use SJ to browse the input JCL for a job.

Modify the JCL and re-submit the job.

Tip: Save Changes

To save changes, use ISPF's **CREATE** or **REPLACE** commands

```
SDSF EDIT HOLDE (JOB00017) JCLEEDIT          Columns 00001 00072
Command ==> create                          Scroll ==> PAGE
***** Top of Data *****
cc0001//HOLDE JOB CLASS=E,MSGCLASS=E
000005 //STEP1EXEC PGM=IEBDG
000006 //OUTA DD SYSOUT=E,DCB=(LRECL=80,RECFM=FB,BLKSIZE=800)
000007 //SYSPRINT DD SYSOUT=E
cc0008 //SYSIN DD *
```

- Displays a panel that lets you specify where to save

Work with Job Data Sets (JDS)

The **?** action lists the data sets for a job:

```
NP  JOBNAME  JOBID  OWNER  PRTY  C
?  BKELLERZ  JOB32343  BKELLER  7  D
```

```
SDSF JOB DATA SET DISPLAY - JOB BERKEA5 (JOB00042)
COMMAND INPUT ===>                SCROLL ===> PAGE
NP  DDNAME      StepName ProcStep DSID  Owner  C  Dest
    JESJCLIN           1  BEVK  R  LOCAL
    JESMSG LG     JES2           2  BEVK  R  LOCAL
    JESJCL         JES2           3  BEVK  R  LOCAL
    JESYSMSG       JES2           4  BEVK  R  LOCAL
S   ISFOUT         FINDDA        104 BEVK  R  LOCAL
```

↑
Browse, print, purge release

↑
Change class, dest,
output descriptors

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

Lab Task:

Use the **?** Action character to display the list of data sets associated with the job.

Now use the **S**, **SB**, or **SE** commands to look at individual data sets.

Tip: Working with Data Sets

Overtyping long columns:

- Entire column must be visible
- Use LOC *column-name*

```
SDSF JOB DATA SET DISPLAY - JOB BERKEA5 (JOB00042)
COMMAND INPUT ===> loc userlib          SCROLL ===> PAGE
NP   DDNAME      StepName ProcStep DSID Owner C Dest
    JESJCLIN                    1 BEVK  R LOCAL
```

Scrolls to that column

```
SDSF JOB DATA SET DISPLAY - JOB BERKEA5 (JOB00042)
COMMAND INPUT ===>
NP   DDNAME      UserLib
    JESJCLIN      _____
```

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

Note that LOC can be used on any display, not just JDS

Tip: Working with Data Sets

Overtyping related fields:

```

SDSF JOB DATA SET DISPLAY - JOB BKELLER / (
COMMAND INPUT ===>
NP DDNAME Address-Line1 Address-Line2 Address-Line3
SYS00139 +
  
```

Other columns not overtypeable

Type + in first column

Pop-up shows all values

Overtyping Extension

Column Address-Line1
Maximum length 60

Type values or use blanks to erase values.

====>
====>
====>
====>

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

Many columns have sets of related values. For example, you can specify multiple selection forms and selection destinations for printers. SDSF typically handles these “related fields” by providing a single overtypeable column; to work with the full set of values, you use “overtyping extension.” The Overtyping Extension pop-up always shows as many input fields as are valid for that column. If there are no “related” columns, the pop-up has only one field. If you are unsure if a column has related values, type the + by itself to find out.

Printing

You can print:

- Output data
- Data from the log panels
- Screen images of SDSF panels

The print output can be sent to:

- SYSOUT
- Data set
- Print file (specified with a *ddname*).

Printing – Fast Path

```
SDSF OUTPUT ALL CLASSES ALL FORMS LINES 499 LINE 1-2 (18)
COMMAND INPUT ==>
NP   JOBNAME  JOBID    OWNER   PRTY C  FORMS  FCB  DEST
     TCAS     STC00007  IBMUSER 144  A  STD   **** LOCAL
XDC  CLRMANB  STC00009  ++++++ 144  A  STD   **** LOCAL
```

Print with the X action:
D – Data Set, S – SYSOUT,
F – File, C - Close

Print from browse

```
SDSF OUTPUT DISPLAY BKELLERZ JOB32343  DSID    2
COMMAND INPUT ==> print
09.25.05 JOB32343  IRR010I  USERID BKELLER  IS ASSIGNED
09.25.06 JOB32343  ICH70001I BKELLER  LAST ACCESS AT 09:
09.25.06 JOB32343  $HASP373 BKELLERZ  STARTED - INIT 12 -
09.25.07 JOB32343  IEF403I  BKELLERZ -  STARTED - TIME=09
```

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

XDC prints to a data set and closes the print file when the printing is done.

The PRINT command entered from within browse prints the output that you are browsing. In the example, it would print to SYSOUT.

Printing - Control

PRINT command and pop-ups provide more control:

```
SDSF Open Print
COMMAND INPUT ==>
Enter SYSOUT attributes below:
Class          ==>          (A through Z, 0 through 9)
Copies         ==>          (1to 255)
Forms          ==>          **
Destination    ==>
FCB            ==>
UCS            ==>
Process Mode   ==>          **
Pagedef        ==>          **
Formdef        ==>          **
Output Descriptor Name ==> (Omit with fields marked with **)
Writer name    ==>          **
Record format  ==> VBA
Record length  ==> 133
Use source attributes ==> (YES or NO)
```

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

You can use options on the X action character and print command to display panels that let you define the destination. XS or PRINT S display the pop-up for SYSOUT, shown here.

Tip – Printing As Is

SDSF's print function inserts ANSI carriage control, or converts machine carriage control, if present, to ANSI, unless:

- You use the PRINT FILE command or the XF or XFC action character
- The data is page-mode. SYSOUT files containing both page-mode data and machine character data are not defined as page-mode in JES2.
- You specify a RECFM other than the default of VBA. As of z/OS 2.1, SDSF honors the RECFM of the output data set when deciding what carriage control (if any) to use.

As of z/OS 2.1, SDSF makes printing data sets “as is” easier by allowing you to override the default RECFM of VBA. SDSF will honor the RECFM of the output data set when determining what carriage control to insert. For example, a RECFM of VBM will result in machine carriage control, and a RECFM of VB will result in no carriage control.

You can specify SET PRTCCASA ON to have SDSF process carriage control as it did in prior releases (ANSI carriage control for all data regardless of output RECFM).

Manage Other (non-JES) Workload

- WLM enclaves

```

SDSF ENCLAVE DISPLAY (ALL) ALL LINE 1-6 (6)
COMMAND INPUT ==> SCROLL==
NP TOKEN SSType Status SrvClass CPU-Time zIIP-Time
240000149E DDF INACTIVE SYSOTHER 34.51 0.00
640000145B DDF INACTIVE SYSOTHER 63.24 0.00
2C00000004 DDF INACTIVE SYSOTHER 7.64 0.00
3000000020 DDF INACTIVE SYSOTHER 0.15 0.00
3800000033 DDF INACTIVE SYSOTHER 0.31 0.00
4000000021 DDF INACTIVE SYSOTHER 0.15 0.00

```

- zIIP and zAAP use columns
- Actions to resume, quiesce

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The token (the fixed field) is generated by z/OS.

Manage Other (non-JES) Workload

- Unix System Services processes

```
SDSF PROCESS DISPLAY SY1 ALL LINE          1- 10 (10)
COMMAND INPUT===>_                        SCROLL===> CSR
NP JOBNAME  Status                Owner   State CPU-
BPXOINIT  SWAPPED, RUNNING        SYSTASK MRI    1
MQS1CHIN  RUNNING                 MQS     1R     11
MQS1CHIN  RUNNING                 MQS     1R     12
MQS1CHIN  FILE SYS KERNEL WAIT    MQS     1F     20
KDMQDKJ   RUNNING                 SYSTASK HR
```

- Actions for Cancel (address space) and Unix Kill

Customizing Panels

- Filter by any column or combination of columns, including boolean operators
 - Set for a single panel
 - FILTER ?

- Sort using 1 to 10 columns
 - SORT ?

- Set screen colors and other attributes
 - SET SCREEN

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

FILTER ?, SORT ? and SET SCREEN display pop-ups that require ISPF.

In z/OS 2.1, SDSF increases the maximum number of sort columns you can specify from 2 to 10.

Tips – Other settings

- Require confirmation of destructive actions
 - **Set confirm** displays a confirmation pop-up for cancel & purge on job and output panels

- Control cursor placement
 - **Set cursor on** keeps the cursor on the row you are working with
 - **Set cursor top** returns cursor to the command line (V1R7)

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

Lab Task:

Issue **SET CONFIRM ON**. Now go to the ST panel and purge the job that you submitted earlier with the **P** action character.

Operators and System Programmers

```

HGX7790----- SDSF PRIMARY OPTION MENU -----
COMMAND INPUT ==>_                               SCROLL ==> PAGE

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
                                           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                               ULOG  User session log
ENC  Enclaves
PS   Processes
  
```

Devices

System resources

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

The remainder of the presentation is geared toward operator and system programmer type actions. Many of the hints and tips you've seen so far apply equally well to those tasks, such as ARRANGE, FILTER, and so on.

Operators and System Programmers

Monitor and control:

- Initiators
- Printers, punches
- Readers
- Lines, nodes
- Job classes
- Spool volumes
- Spool offloaders
- Members in the MAS
- WLM scheduling environment, resources
- IBM Health Checker for z/OS
- JES2 resources
- SYSLOG

SDSF PR DISPLAY			
SDSF NODE DISPLAY			
SDSF LINE DISPLAY			
NP	DEVICE	STATUS	UNIT
	LINE1	ACTIVE	B00
	L1.JR1	INACTIVE	
	L1.JT1	INACTIVE	
	L1.SR1	ACTIVE	
	L1.ST1	ACTIVE	

View the System Log

- View the system log online
- View a merged sysplex log (LOG O)

```
COMMAND INPUT===> FIND HASP395<
N 4000000 AQFT 01303 16:37:20.94 JOB23185 00000091 NDED
NC0000000 AQFT 01303 16:37:21.33 INTERNAL 00000281 SE 16:37:21 JOB23185
N 0000000 AQFT 01303 16:37:21.37 TSU21704 00000081 IEF126I RIMFIRE - LOGG
N 4000000 AQFT 01303 16:37:21.37 TSU21704 00000091 $HASP395 RIMFIRE ENDED
N 0000000 AQFT 01303 16:37:26.65 00000291 IEA989I SLIP TRAP ID=X33
N 0200000 AQFT 01303 16:37:29.08 JOB23211 00000081 $HASP100 D75CEM1C ON I
8000000 AQFT 01.10.09 STC17351 *60 DSI802A CNM03 REPLY WITH VALID MCF SY
8000000 AQFT 01.04.42 *57 DSI802A M03AO REPLY WITH VAL
0002000 AQFT 01.49.45 STC15235 *12 DENQ002D ENQ Monitc or
***** BOTTOM OF DATA *****
```

Search log data

WTORs listed below the log data

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

Lab Task:

Issue LOG command to browse SYSLOG.

Tip – Auto-refresh the Log

- New log data is added to the bottom
- & command repeats a command at an interval

```
COMMAND INPUT==> BOT &15 ←====> CSR
N 4000000 AQFT 01303 16:37:20.94 JOB23185 0000009 ENDED
NC0000000 AQFT 01303 16:37:21.33 INTERNAL 0000028 23185 $H
N 0000000 AQFT 01303 16:37:21.37 TSU21704 0000008 - LOGGED
N 4000000 AQFT 01303 16:37:21.37 TSU21704 0000008 ENDED
N 0000000 AQFT 01303 16:37:26.65 00000291 IEA989I SLIP TRAP ID=X33
N 0200000 AQFT 01303 16:37:29.08 JOB23211 00000081 $HASP100 D75CEM1C ON INT
8000000 AQFT 01.10.09 STC17351 *60 DSI802A CNM03 REPLY WITH VALID NCCF SY
8000000 AQFT 01.04.42 *57 DSI802A M03AO REPLY WITH VALID NCCF SY
0002000 AQFT 01.49.45 STC15235 *12 DENQ002D ENQ Monitor - Reply 'ENQ' or 'E
***** BOTTOM OF DATA *****
```

Scroll the log
to the bottom
every 15 seconds

Tip: Emulator

Wide 3270 emulator session shows more data:

```

SDSF SYSLOG 12.101 SY1 SY1 01/18/2007 0W 3021 COLUMNS 1 80
COMMAND INPUT ==>> SCROLL ==>> CSR
N 4040000 SY1 2011018 09:01:16.49 00000090 CEA0107I COMMON EVENT
M 4040000 SY1 2011018 09:02:07.76 S0000014 00000090 HZS0001I CHECK(IBMCSV,
E 310 00000090 CSVH0957E Problem(s) w
M 4040000 SY1 2011018 09:02:16.61 S0000014 00000090 *HZS0003E CHECK(IBMRACTF
D 311 00000090 IRRH204E The RACF_SENS
  
```

80-char session

Command line is unchanged

```

SDSF SYSLOG 12.101 SY1 SY1 01/18/2007 0W 3032 COLUMNS 1 132
COMMAND INPUT ==>> SCROLL ==>> CSR
N 4040000 SY1 2011018 09:01:16.49 00000090 CEA0107I COMMON EVENT ADAPTER IS RUNNING IN FULL FUNCTION MODE.
M 4040000 SY1 2011018 09:02:07.76 S0000014 00000090 HZS0001I CHECK(IBMCSV,CSV_APF_EXISTS): 310
E 310 00000090 CSVH0957E Problem(s) were found with data sets in the APF list.
M 4040000 SY1 2011018 09:02:16.61 S0000014 00000090 *HZS0003E CHECK(IBMRACTF,RACF_SENSITIVE_RESOURCES): 311
D 311 00000090 IRRH204E The RACF_SENSITIVE_RESOURCES check has found one or
  
```

132-char session

More message text is visible

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

Work with Action Messages

SR panel shows system requests

```
SDSF SYSTEM REQUESTS ALL 6 WTORS LINE 1-16 (16)
COMMAND INPUT ==>>          SCROLL ==>> CSR
NP REPLYID SysName JobName Message-Text
r  43      AQTS     AUTONET *43 DSI802A M05AO REPLY WITH
   52      AQTS     WHOSP2  *52 DENQ002D ENQ Monitor - R
   53      AQTS     NETVNET *53 DSI802A CNM05 REPLY WITH
```

R action displays a pop-up for replying to the message

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

Lab Task:

Issue SR to get to the system request panel. There probably are not any WTORS to reply to. If there are, **please do not reply to them!**

Control Devices

Information displayed about devices includes:

- Status and characteristics (such as selection criteria)
- The job currently being processed

Control with action characters and overtypes

```

SDSF PRINTER DISPLAY                               LINE 33-54 (102)
COMMAND INPUT ===>                                SCROLL ===> PAGE
NP  PRINTER  STATUS  SFORMS  SCLASS  JOBNAME  JOBID
   PRT33    ACTIVE  STD     UIC12  TDOOLY  JOB02733
   PRT34    ACTIVE  NAR     UIC12  KHODGE  JOB02539
  
```

Start, stop,
forward space, etc.

Overtyping to change attributes

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

Sysplex-wide Data

Users can work with devices anywhere in the sysplex.

```

SDSF LINE DISPLAY SY1 LINE 1-5 (5)
COMMAND INPUT ==> SCROLL ==> CSR
NP DEVICE Status SysName Unit Node Jobname
LINE1 ACTIVE SY1 SNA
LINE2 ACTIVE SY1 F00C
LINE3 ACTIVE SY1 F012 POKVMA1
LINE10 DRAINED SY2 0406
LINE11 DRAINED SY2 0407
  
```

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

Prior to z/OS 1.13, in order to work with devices across the plex, there were two things you had to do:

1. You had to run a SDSF server on each system in your sysplex, and
2. You had to use Websphere MQSeries to allow those servers to communicate with each other

As of z/OS 1.13, both of those restrictions are lifted for most displays.

For some non-device displays (CK, ENC, RM, and PS) you still have to have a SDSF server on all systems in the sysplex. However, the servers will automatically communicate with each other using XCF.

System Commands - /

Enter system commands from within SDSF

COMMAND INPUT ===> /setprog apf,add,ddname=isf +

Type /, then cmd.

Trailing + displays the pop-up

System Command Extension

Type or complete typing a system command, then press Enter.

```
===> setprog apf,add,ddname=isf.isfload,vol=usl  
===> _____
```

Place the cursor on a command and press Enter to retrieve it.

More: +

```
=> D IPLINFO  
=> $JDDETAILS  
=> $jdhhistory
```

Previous
commands

Tip: Long System Commands

Two input lines -- can be a problem with Insert

```
System Command Extension
Type or complete typing a system command, then press Enter.
===> SETPROG APF,ADD,DSNAME=isftest.hqx7730.bkelledata,volume=*****
===> _____
```

Insert ran out of room

Press F5 for a full-screen version with a single input line:

```
SDSF - System Command Extension
Type or complete typing a system command, then press Enter.
===> setprog apf,add,dsname=isftest.hqx7730.bkeller.data,volume=***** _____
```

Insert complete

View a Log for Your Session

ULOG captures commands and msgs. for a user.

```

Display  Filter  View  Print  Options  Help
-----
SDSF ULOG  CONSOLE BKELLER                LINE 0      COL
COMMAND INPUT ==>                          SCROLL
***** TOP OF DATA *****
AQFT      2011040  17:30:22.29  ISF031I CONSOLE BKELLER ACT
AQFT      2011040  17:30:55.58  -$CJ(5903),P
AQFT      2011040  17:30:55.59  JOB05903  $HASP890 JOB (BKELLER,
$HASP890 JOB (BKELLER,
$HASP890                                PRIO
$HASP890                                PURG
AQFT      2011040  17:31:53.22  -$RALL,J=J30922,D=BKELLER
AQFT      2011040  17:31:53.72  $HASP000 OK
***** BOTTOM OF DATA *****

```

Generated command

Messages

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

Lab Task:

Go to the ST panel and issue a D action character to get a JES display of the job.

Issue the ULOG command and see the command that was issued, plus the response.

Customizing SDSF

System programmers use SDSF's internal parameters, ISFPARMS, to customize SDSF:

- Global initialization values (data set names, etc.)
- Columns on SDSF panels
- Action bar on or off, confirmation on or off, etc.
- Systems to include

ISFPARMS example (excerpt)

```
GROUP TSOAUTH (JCL, OPER, ACCT) ,  
      XUID (XLIST) ,  
      AUTH (LOG, I, O, H, DA, INIT, PR, NO, DEST) ,  
      IFIELDS (DFLD)
```

```
NTBL NAME (XLIST)  
      NTBLENT STRING ($S) , OFFSET (1)  
      NTBLENT STRING (OPER) , OFFSET (3)
```

```
FLD NAME (DFLD) TYPE (IN)  
      FLDENT COLUMN (JNUM) , TITLE ('JOB NUM') , WIDTH (7)  
      FLDENT COLUMN (JPRIOR) , TITLE (PRTY) , WIDTH (4)
```

Columns definition

Name list used in group definition

Group definition

Processing ISFPARMS

- Processed by an SDSF server (address space) at initialization
- Server reads from PARMLIB member ISFPRMxx or from a PDS defined in the server JCL.
 - Can specify the xx suffix when starting the server, for example `s sdsf,m=01`

Note: ISFPARMS can also be coded with ASSEMBLER macros if JES2 is being used, but is not recommended.

Controlling the SDSF Server

- START *proc-name* to start the server
 - Example: **s sdsf**

- MODIFY *server-name* to refresh the statements or check syntax without activating
 - Example: **f sdsf,refresh,test**

- STOP *server-name* to stop the server
 - Example: **p sdsf**

Tip: Starting the SDSF Server

- After starting a server, be sure ISFPRMxx read okay
- Check the console for error messages
- Or, in SDSF, browse the job log for the server

```
SDSF JOB DATA SET DISPLAY - JOB SDSF      (
COMMAND INPUT ==>
NP  DDNAME  StepName ProcStep DSID Owner
   JESJCLIN                1 SDSF
S   JESMSGLG JES2          2 SDSF
   JES SDSF OUTPUT DISPLAY SDSF      S0000007 DSID      2 LINE 0
COMMAND INPUT ==>
***** TOP OF DATA *****
                J E S 2  J O B  L O G  --  S Y S T E M

09.39.27 S0000007 ---- MONDAY,      29 JAN 2007 ----
09.39.27 S0000007 IEF695I START SDSF      WITH JOBNAME SDSF
09.39.27 S0000007 $HASP373 SDSF      STARTED
09.39.28 S0000007 ISF724I SDSF level HQX7740 initialization
```

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

Providing Security

- ISFPARMS
 - Combination of group definitions and auth lists

- SAF
 - Recommended! Required for JES3!
 - Dynamic
 - Granular
 - Better audit trail
 - Falls back to ISFPARMS when there is no decision in JES2 only

Providing Security



- **SET SECTRACE** command
 - New in z/OS 2.1
 - Causes SDSF to issue an informational message whenever a security decision is made (based on either SAF or ISFPARMS)
 - Messages go to ULOG by default but can be requested as write-to-programmer if ULOG is unavailable for some reason (such as a security failure!)

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



Lab Task

Issue **SET SECTRACE ON**

Now go to the ST panel.

Now go to ULOG. Note the ISF05xl message describing the results of the security checks

REXX!



- Available since z/OS V1R9 SDSF
- Access SDSF data and function with REXX execs
 - Invoke SDSF with ISFEXEC and ISFACT commands
 - Data is returned in REXX stem variables with variable name corresponding to column name and subscript corresponding to row.
- Type REXXHELP in SDSF for information and examples
- Also described in the SDSF book

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



There is also a presentation that has been given at SHARE several times which describes the SDSF REXX functionality. You can find it in the 2009 SHARE in Denver proceedings:

2344: SDSF REXX API Usage Tutorial

Lab Task:

Check out the REXX EXEC in **CLWOOD.S2343.CLIST(TOPTEN)**. This will display the top ten users of spool space in the system.

Where to Learn More

- Online interactive tutorial demonstrates the most common tasks. → TUTOR command
- Help panels describe SDSF panels, commands, and messages. → PF1 or Help command
 - Over 1,800 help and tutorial panels
- *SDSF Operation and Customization* provides detailed information for the system programmer
- The SDSF Web site has tips, presentations, & links:
→ www.ibm.com/servers/eserver/zseries/zos/sdsf/