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SDSF for New Users – Hands-on-Lab

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This is a self-paced lab session which will walk the attendees through using SDSF at an introductory level. New users will learn how SDSF can help them monitor and control jobs, output, devices and system resources throughout the MAS. The session will also include hints and tips for more experienced SDSF users.

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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

```
HQX7780------- 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         NS    Network servers
JC     Job classes                NC    Network connections
SE     Scheduling environments
RES    WLM resources              RM    Resource monitor
ENC    Enclaves                   CK    Health checker
PS     Processes

                                  ULOG  User session log
```

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Here is the main panel in SDSF with all of the options enabled under JES2.

New in z/OS 1.13: The panel identifiers are now point-and-shoot fields.

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  Search  Help
 ---------------------------------------------------
HQX7780 ---------  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 it's 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  Search  Help          ┌──────────┐
 ------------------------------------------------------        │ Select a │
 SDSF DA AQTS SYS1 PAG 10 SIO 113 CPU 114/007                  │ function │
 COMMAND INPUT ===>_                                           └──────────┘
 NP JOBNAME   SysName Real Paging   SIO  CPU%  SrvCl     ┌─────────────┐
    *MASTER*  AQFT      10T   0.00  7.06  0.15  SYSTE     │ Type        │
    *MASTER*  AQTS     3594   0.00  0.12  0.04  SYSTE     │ SDSF and    │
    ABOWEN    AQTS      742   0.00  0.00  0.00  TSOPR     │ system      │
    ADAM      AQTS     1310   0.00  0.00  0.00  TSOPRIME  │ commands    │
    ADANPL    AQTS     1128   0.00  0.00  0.00  TSOPRIME  └─────────────┘
    ADINELL   AQTS      564   0.00  0.00  0.00  TSOPRIME  More
    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 overtypeing 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

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

Display action characters: set action (long|short)

```
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,L-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 and SET DISPLAY OFF to toggle the display line. If data is not being displayed, this can indicate why.

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 *.

Sort criteria can be set up using the SORT command or pulldown. Any sort criteria you set up are displayed as part of the display line

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 JOB20022  BKELLER
```

Filter on owning userid:
OWNER BKELLER

Filter on job name:
PREFIX 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  Search  He  CPU use for
---------------------------------------------------  the system
SDSF DA AQTS SYS1 PAG 10              CPU/L/Z 26/26/0
COMMAND INPUT ===>_
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     CPU use for each
   ABOWEN    AQTS      742   0.00  0.00   0.00     address space –
   ADAM      AQTS     1310   0.00  0.00   0.00     useful for sorting
   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
```

- 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    2. Tab to any highlighted
COMMAND INPUT ===>                  phrase and press F1…


      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        |                 Percentage of time
   on to         |                 the CPU is busy,
           Systems displayed       MVS, LPAR and zAAP
           (MVS value or           views
           SYSNAME value)
```

From any panel, F1 will put you int 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.
```

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SEARCH command

- Use to search help panels for specific keywords

Use from command
line or pulldown

```
Display  Filter  View  Print  Options  Search  Help
-----------------------------------------------------------------
SDSF STATUS DISPLAY ALL CLASSES                     LINE 1-26 (26)
COMMAND INPUT ===> search ziip                      SCROLL ===> CSR
```

```
                    Search Help              Row 1 to 15 of 24
Command ===>

Search for: ziip_____ _ Show titles

    Select a search result to display the help panel.
  _ zIIP-Time Accumulated zIIP service time, in seconds (RMF)
  / zIIP-NTime Normalized zIIP service time, in seconds (RMF)
  _ zIIP-Use% Percent of the total zIIP time used by the address
  _ zIIP-Time Accumulated zIIP service time, in seconds
```

Select topic

You can also search the SDSF help panels for any specific keyword or
phrase using the **SEARCH** command.

<u>Lab Task</u>:

Search the help for "zIIP", and select a topic.

Replace the search string with 'zAAP' and select a topic.

Manage Jobs – Status (ST) Panel

```
Display  Filter  View  Print  Options  Search  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
    - o 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
    - o 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.

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Tip – Canceling Active Jobs

```
 Display  Filter  View  Print  Options  Search  He      JES2 $C
----------------------------         MVS Cancel          U/L    11/ 11   LINE 1-16 (916)
SDSF DA AQTS  (ALL)
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 JOBNAME  StepName ProcStep JobID    Owner    C Pos DP Real
   *MAST      MVS FORCE                 STC10277 +MASTER+  N   MVS P (Stop)
   PCAUTH    PCAUTH                                        NS  FF    268
```

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

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  Search  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* AQTS     3594   0.00   0.12  0.0
    ABOWEN   AQTS      742   0.00   0.00  0.0
    ADAM     AQTS     1310   0.00   0.00  0.0
    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)

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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  Search  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* AQFT      12T   0.00   7.06   0.15
```

```
  Display  Filter  View  Print  Options  Search  Help
  --------------------------------------------------------
 SDSF DA AQTS SYS1 PAG 10 SIO 113    CPU/L/Z 26/26/0
 COMMAND INPUT ===>_
 NP JOBNAME   SysName Real      Paging    SIO
    *MASTER* AQFT      12,831    0.00   7.06
    *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

```
              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
```

Move
Real
after
Stepname

Change widths

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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.

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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 ?

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

Completion info & high return code

Overtypes

```
  Display  Filt                        Op        arch  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 O*x* 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 < or >, not =
  - Time will never match precisely

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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
```

Browse

Data sets are concatenated

```
SDSF OUTPUT DISPLAY BKELLERZ JOB32343  DSID     2
COMMAND INPUT ===>
09.25.05 JOB32343  IRR010I  USERID BKELLER  IS ASSIGNE[Job
09.25.06 JOB32343  ICH70001I BKELLER  LAST ACCESS AT ( log
09.25.06 JOB32343  $HASP373 BKELLERZ STARTED - INIT 12
09.25.07 JOB32343  IEF403I BKELLERZ - STARTED - TIME=09.
------------------------------------------------------------
       1 //BKELLERZ  JOB   '141691,B001D49A','WR KELLER'
        //          MSGCLASS=H,NOTIFY=BKELLER,CLASS=[JCL
       2 //OUT OUTPUT FORMDEF=010111,PAGEDEF=V06481
------------------------------------------------------------
16 IEFC001I PROCEDURE COMPARE WAS EXPANDED USING
ICH70001I BKELLER LAST ACCESS AT 09:25:06 ON MONDAY,[Messages
```

• Use NEXT and PREV to move between data sets

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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  R17JSHP2 2
```

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SET BROWSE with no arguments turns this off.

Browse JCL and Resubmit

Use SJ action to browse just the JCL
- Make changes and <u>resubmit</u>

```
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) JCLEDIT                    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

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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
      JESMSGLG   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

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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.

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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 ===>                 SCROLL ===> PAGE
NP   DDNAME     UserLib
     JESJCLIN  _____
```

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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 ===>                                              CSR
NP    DDNAME    Address-Line1      Address-Line2      Address-Line3
      SYS00139 +
```

Other columns not overtypeable

Type + in first column

Pop-up shows all values

```
                        Overtype Extension

Column Address-Line1
Maximum length 60


Type values or use blanks to erase values.
===>
===>
===>
===>
```

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 overtypable column; to work with the full set of values, you use "overtype extension." The Overtype 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
```

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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      ===>              **
```

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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.

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 or 2 columns
  - SORT ?
  - Cursor sorting (new in z/OS 1.13)

- Set screen colors and other attributes
  - SET SCREEN

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FILTER ?, SORT ? and SET SCREEN display pop-ups that require ISPF.
There are line commands that cans set filtering and sorting without the popup,
but the popup is easier since you don't need to know the exact column name.

The SET DISPLAY command can be used

New in z/OS 1.13: The column headers on tabular displays are now point-and-shoot fields. Clicking on the column header toggles between:

SORT *column* **A**   (sort ascending)

SORT *column* **D**   (sort descending)

SORT OFF   (default sorting)

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)
  - **Set csort off** disables cursor sorting

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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

```
HQX7780------- 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           NS     Network servers
JC     Job classes                  NC     Network connections
SE     Scheduling environments
RES    WLM resources                RM     Resource monitor
ENC    Enclaves                     CK     Health checker
PS     Processes

                                    ULOG   U
```

Devices

System resources

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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 (JES3)

```
HQX7780------- 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
J0     Job zero                  NODE   Nodes
                                 SP     Spool volumes
LOG    System log                NS     Network servers
SR     System requests           NC     Network connections
JP     Members in the JESPlex
JC     Job classes               CK     Health Checker
SE     Scheduling environments
RES    WLM resources             ULOG   User session log
ENC    Enclaves
PS     Processes
```

Devices

System resources

Under JES3, you see mostly the same selection of panels. The only exceptions are:

J0 – this is a JES3 only panel with "job zero" information (spool data sets associated with JES3 DSPs)

JP – same as the MAS panel in JES2. "MAS" and "JP" are synonyms and either can be used under either JES

SO and RM – these are JES2 only panels with no equivalent under JES3.

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Operators and System Programmers

Monitor and control:
- Initiators
- Printers, punches
- Readers
- Lines, networking
- 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
```

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View the System Log

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

```
COMMAND INPUT===> FIND HASP395                          SCROLL===> CSR
N 4000000 AQFT 01303 16:37:20.94 JOB23185 0000009         Search log data    D
NC0000000 AQFT 01303 16:37:21.33 INTERNAL 0000028                            5
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 NCCF SY
8000000 AQFT 01.04.42 *57 DSI802A M03AO REPLY WITH             WTORs listed
0002000 AQFT 01.49.45 STC15235 *12 DENQ002D ENQ Moni            below the
****************************** BOTTOM OF DATA ***              log data
```

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 ←                              SCROLL===> CSR
N 4000000 AQFT 01303 16:37:20.94 JOB23185 0000          ED
NC0000000 AQFT 01303 16:37:21.33 INTERNAL 0000          85 $H
N 0000000 AQFT 01303 16:37:21.37 TSU21704 0000          OGGED
N 4000000 AQFT 01303 16:37:21.37 TSU21704 0000          DED
N 0000000 AQFT 01303 16:37:26.65 00000291 IEA9          ON INT
N 0200000 AQFT 01303 16:37:29.08 JOB23211 00000081 $HASP100 D75CEMIC 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

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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(IBMRACF
D                                          311 00000090  IRRH204E The RACF_SENS
```

80-char session

Command line is unchanged

132-char session

```
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(IBMRACF,RACF_SENSITIVE_RESOURCES): 311
D                                          311 00000090  IRRH204E The RACF_SENSITIVE_RESOURCES check has found one or
```

More message text is visible

Complete your sessions evaluation online at SHARE.org/AnaheimEval

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

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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.

Overtype to change attributes

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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  POKVMXA1
   LINE10 DRAINED SY2     0406
   LINE11 DRAINED SY2     0407
```

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=us1
===> _____

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

=> D IPLINFO
=> $JDDETAILS
=> $jdhistory
```

Previous
commands

Tip: Long System Commands

Two input lines -- can be a problem with Insert

```
                   System Command Extension              Insert ran out
                                                         of room
Type or complete typing a system command, then press Enter

===> SETPROG APF,ADD,DSNAME=isftest.hqx7780.bkelledata,volume=******
===> _____
```

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

```
SDSF - System Command Extension                          Insert complete

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

 ===> setprog apf,add,dsname=isftest.hqx7780.bkeller.data,volume=******___
 _____
```

View a Log for Your Session

ULOG captures commands and msgs. for a user.

```
 Display  Filter  View  Print  Options  Search  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(BKELL
                                              $HASP890 JOB(BKELLE
                                              $HASP890            PRIO
                                              $HASP890            PURG
 AQFT       2011040  17:31:53.22             -$RALL,J=J309 22,D=BKELLER
 AQFT       2011040  17:31:53.72              $HASP000 OK
 ****************************** BOTTOM OF DATA ******************
```

Generated command

Messages

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(JPRIO),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 ISFPRM*xx* 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 ---- TUESDAY,   17 JUL 2012 ----
09.39.27 S0000007  IEF695I START SDSF     WITH JOBNAME SDSF
09.39.27 S0000007  $HASP373 SDSF     STARTED
09.39.28 S0000007  ISF724I SDSF level HQX7780 initialization
```

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Providing Security

- ISFPARMS
  - Combination of group definitions and auth lists

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

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 sessions evaluation online at SHARE.org/AnaheimEval

There is a session later this week that discusses how to use Rexx to access SDSF data:

11701: Accessing SDSF Data from Rexx and Java

Thursday, August 9, 2012: 4:30 PM-5:30 PM

Grand Ballroom Salon G

<u>**Lab Task**</u>:

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

… and Java!

- Available since z/OS V1R12 SDSF

- Access SDSF data and function with Java scripts

  - Invoke SDSF with new Java methods and classes
  - Data is returned in row objects
  - Methods to extract or modify columns or take actions against a row.

  • Javadoc exists to describe methods and object classes.

Complete your sessions evaluation online at SHARE.org/AnaheimEval

There is a session later this week that discusses how to use Java to access SDSF data:

11701: Accessing SDSF Data from Rexx and Java

Thursday, August 9, 2012: 4:30 PM-5:30 PM

Grand Ballroom Salon G

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/