IBM Education Assistance for z/OS V2R2

Item: SDSF Enhancements
Element/Component: SDSF

Material current as of May 2015

Agenda

- Trademarks
- Presentation Objectives
- Overview
- Usage & Invocation
- Migration & Coexistence Considerations
- Installation
- Presentation Summary
- Appendix

Trademarks

- See url http://www.ibm.com/legal/copytrade.shtml for a list of trademarks.

Presentation Objectives

- Discuss the enhancements to SDSF in the z/OS V2R2 release
  - JJExxxx component elimination
  - zIIP exploitation
  - System command improvements
  - Batch Parallelism
  - Job Step display
  - Job Detail displays
  - UI enhancements
  - Rexx enhancements
    - Custom row actions
    - Sample Rexx exec generator
  - Miscellaneous enhancements
- Migration and Installation considerations

Overview: JJE component elimination

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

Overview: zIIP exploitation

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

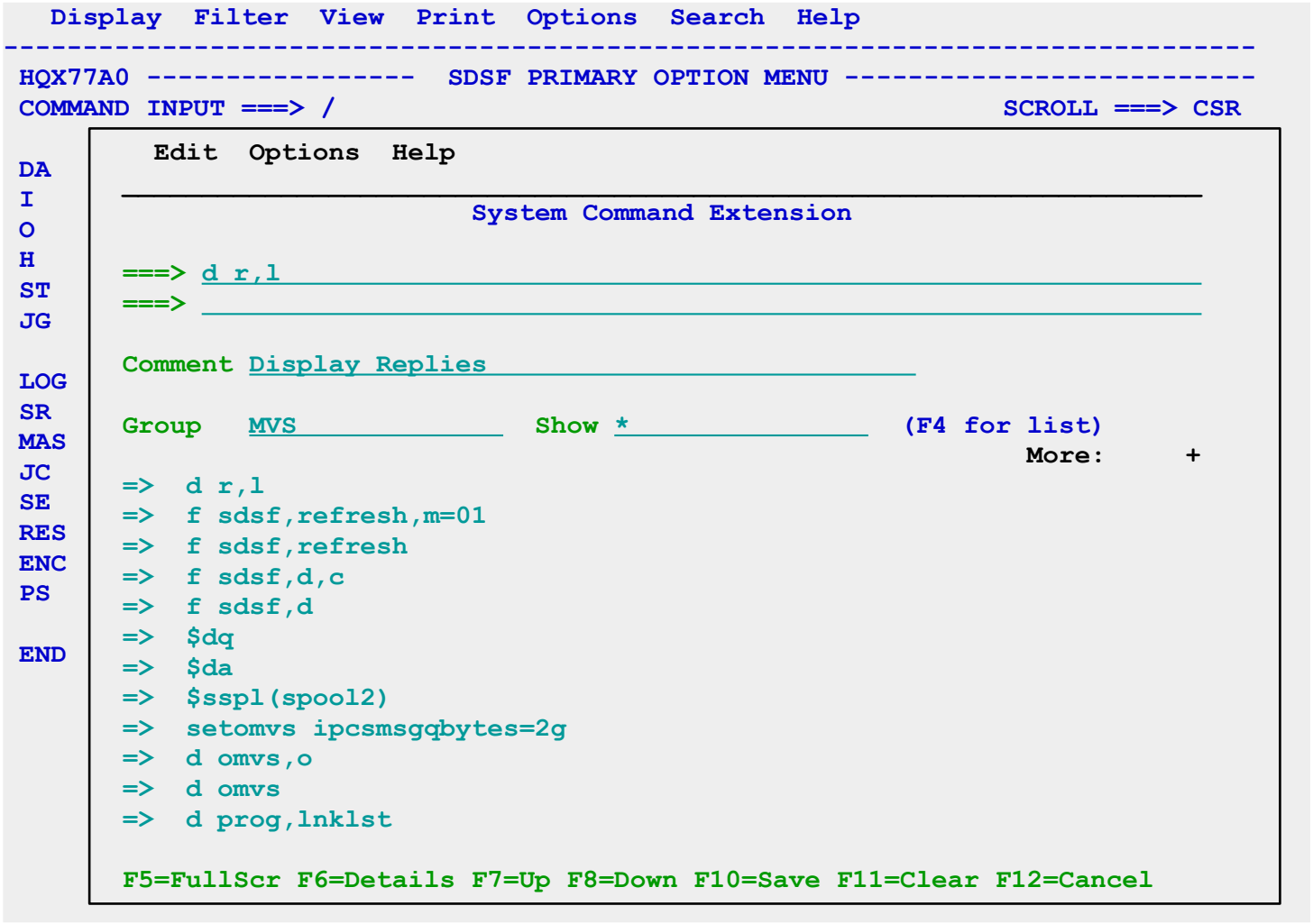
Overview: System Command Improvements

- Problem Statement / Need Addressed
  - Increase number of saved slash commands
  - Simplify management of saved slash commands
- Solution
  - Number of saved commands increased from 20 to 50, or more with optional ISPF table
  - Implement slash command groups, comments
- Benefit / Value
  - Slash commands can be categorized based on task being performed

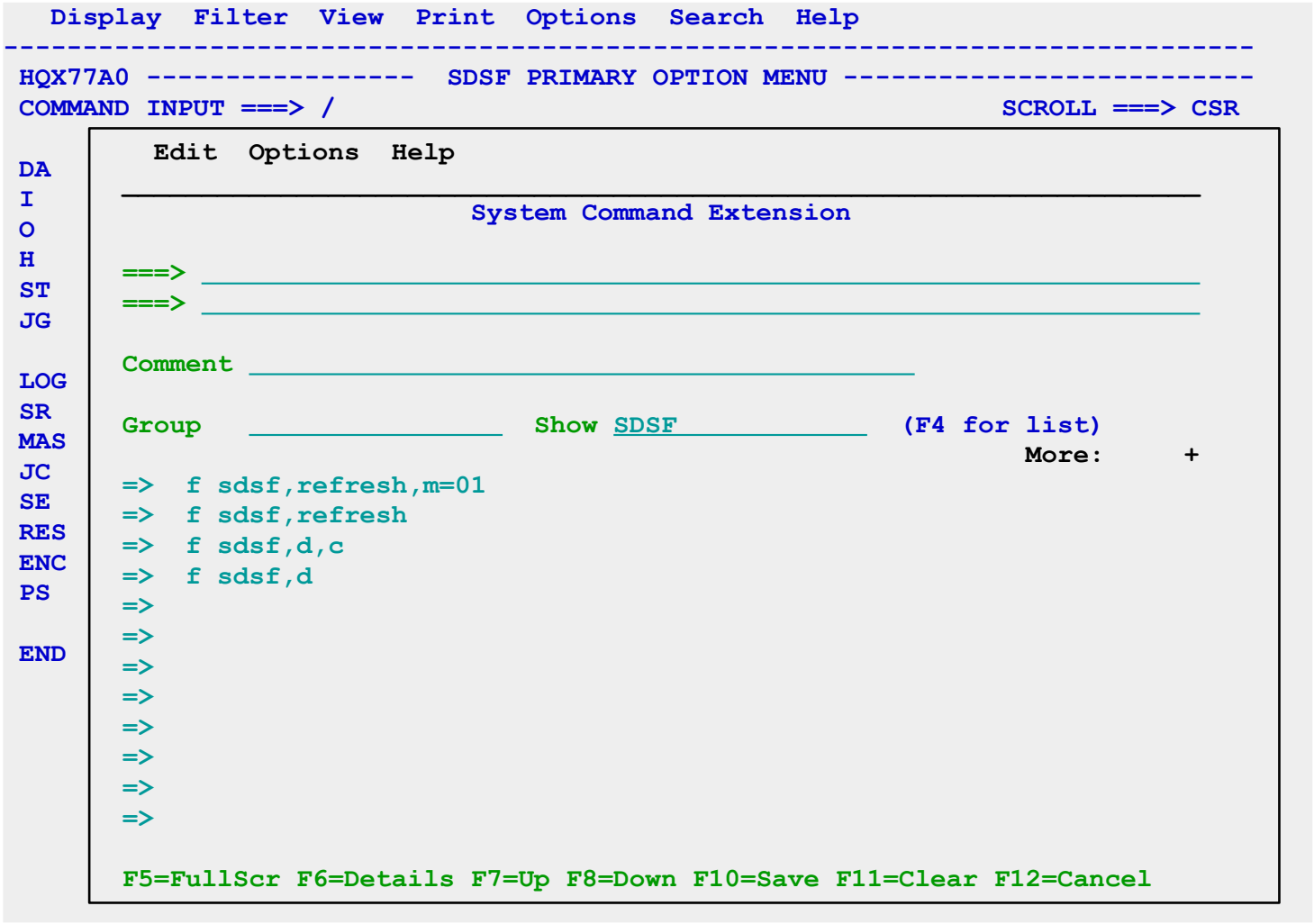
Usage & Invocation

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

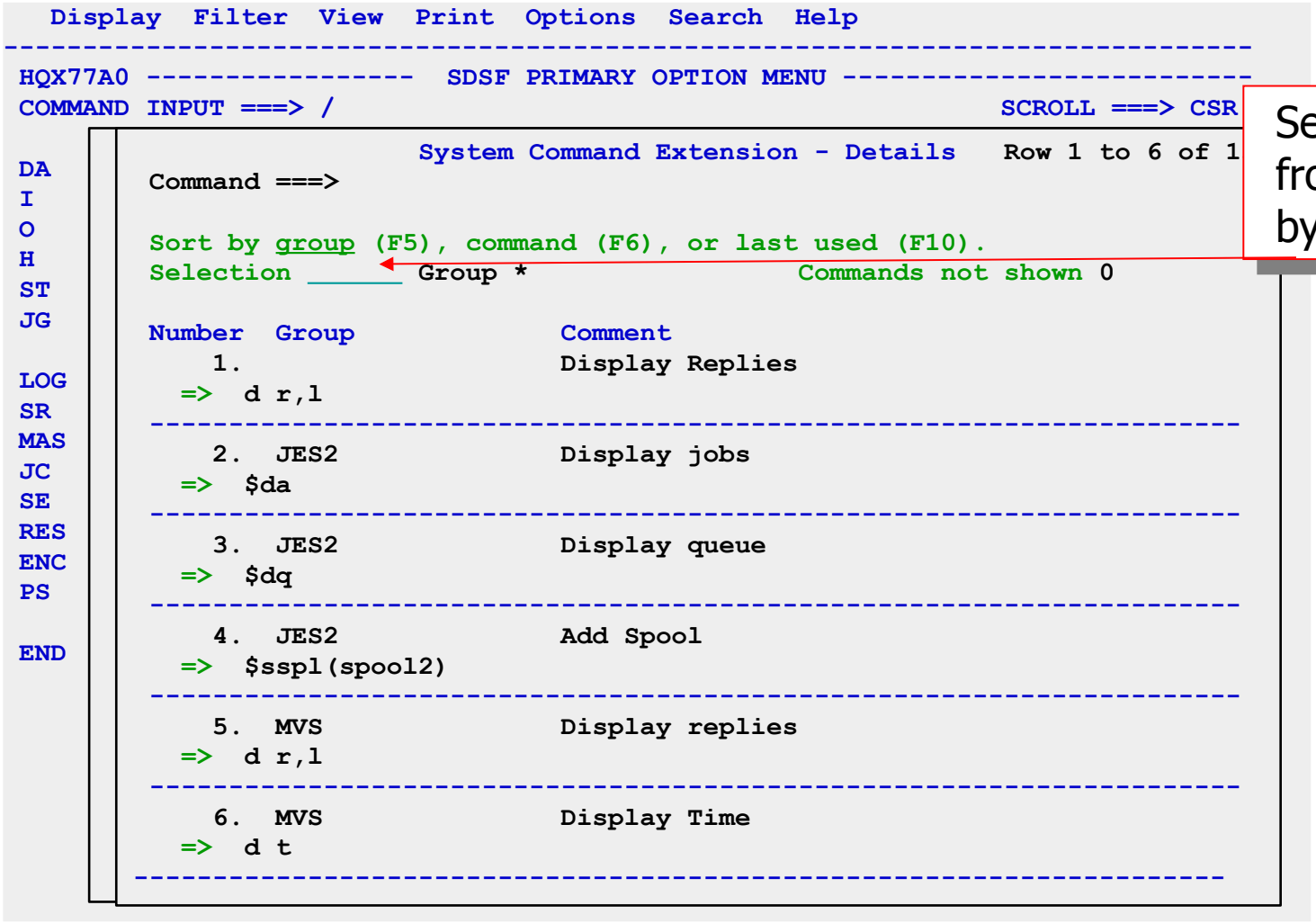
New System Command Extension Panel



Filter commands by group

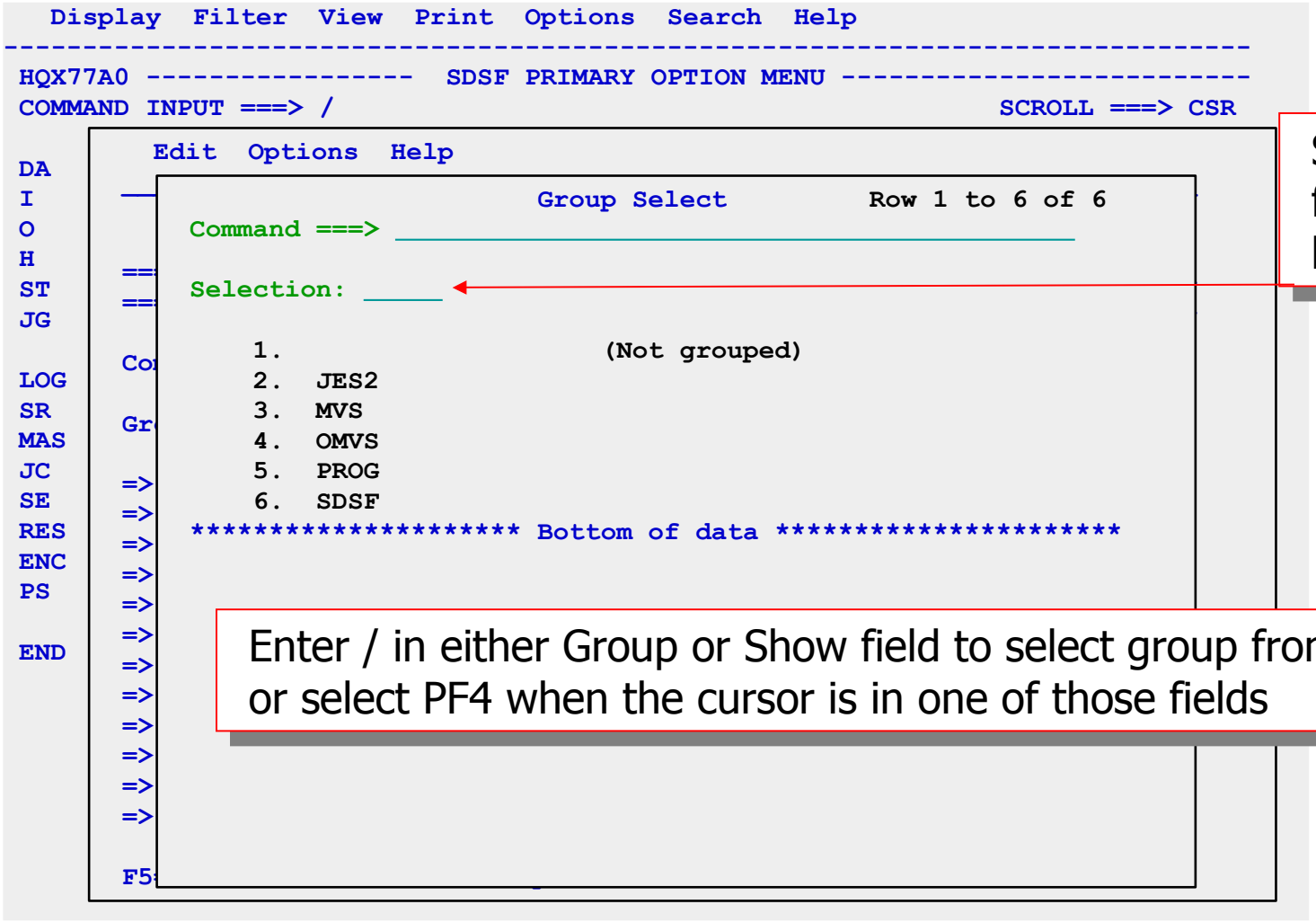


Details View (F6)



Select command from list by number

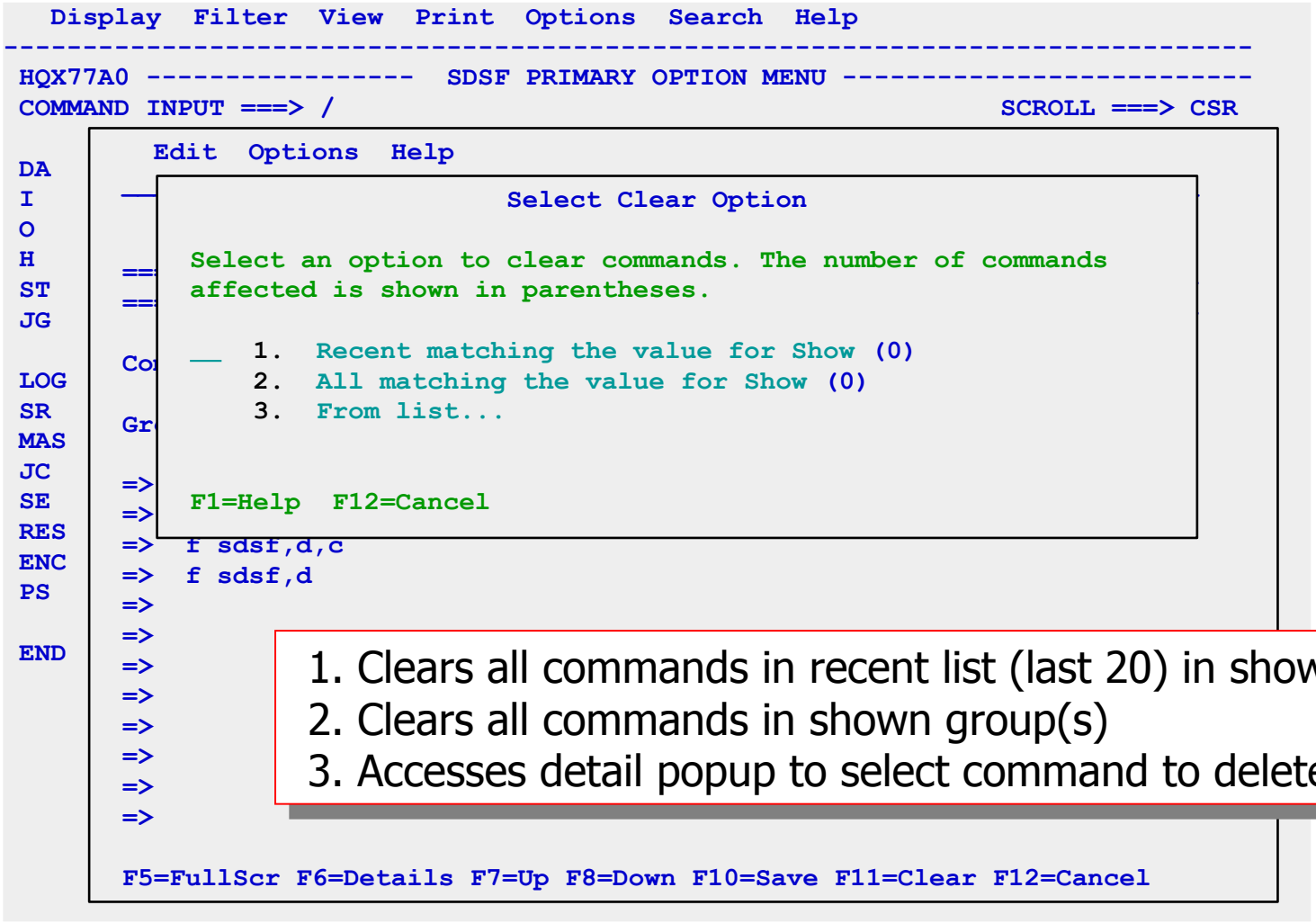
Group Selection Pop-up



Select group from list by number

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

Clear Pop-up (F11)

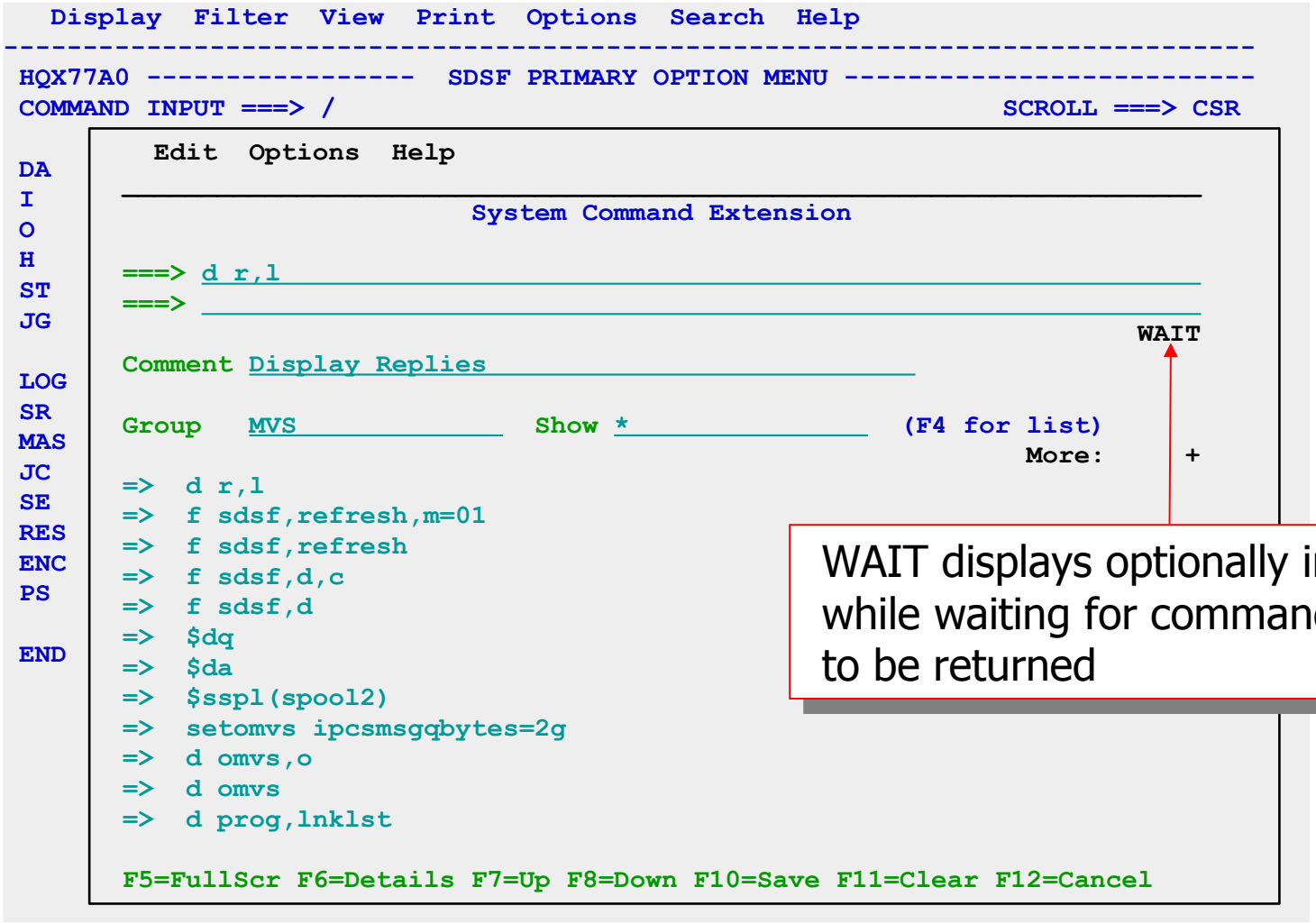


1. Clears all commands in recent list (last 20) in shown group(s)
2. Clears all commands in shown group(s)
3. Accesses detail popup to select command to delete by number

Options pull-down

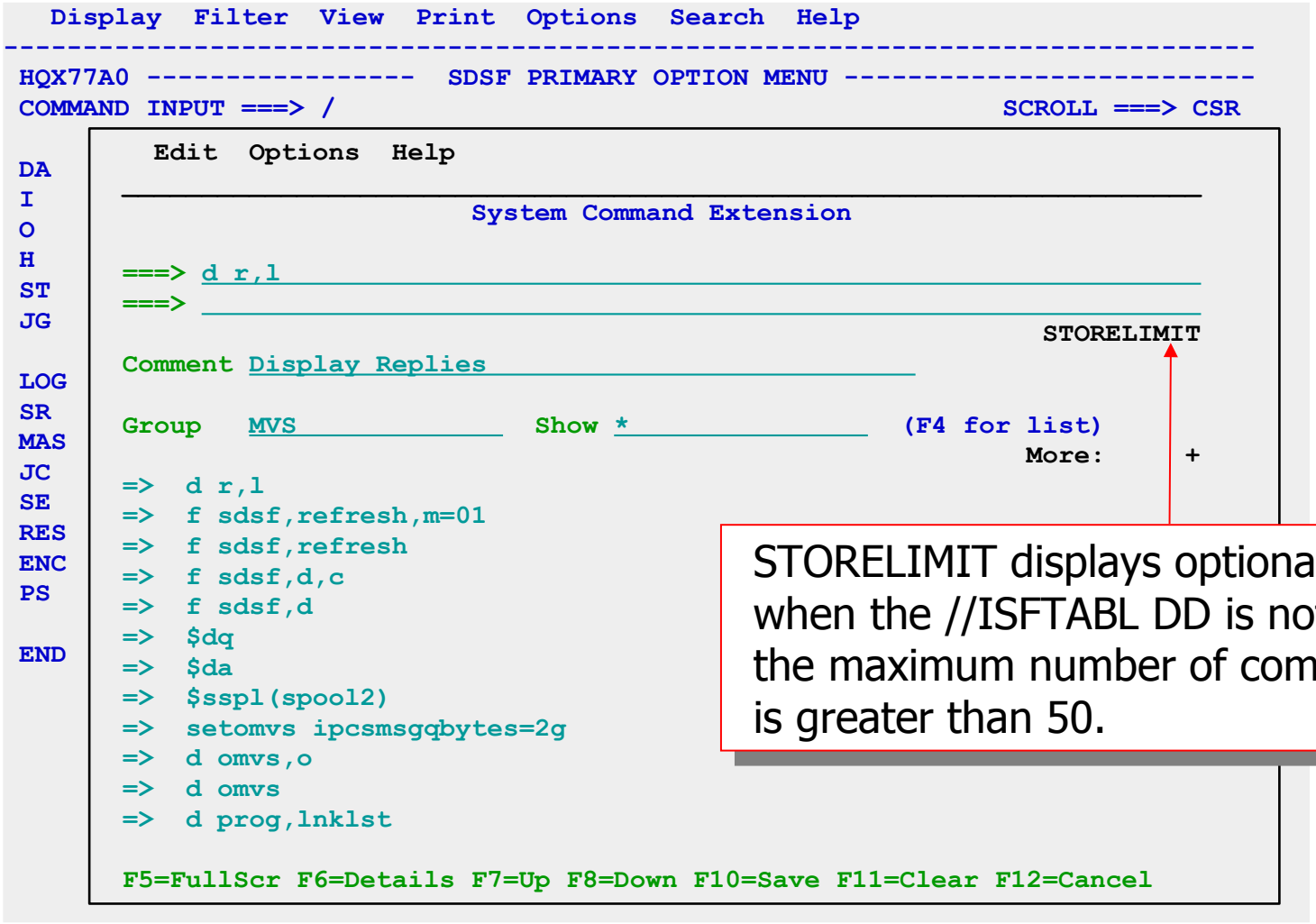
```
  Display  Filter  View  Print  Options  Search  Help
------------------------------------------------------------------------------
HQX77A0 -----------------  SDSF PRIMARY OPTION MENU --------------------------
COMMAND INPUT ===> /                                      SCROLL ===> CSR

DA        Edit  Options  Help
I         ------------------------------------------------------------------
O                 _ 1. Set Wait for Responses to ON
H                   2. Set Store Commands in ISPF Profile at Exit to OFF
ST        ===>      3. Set Store Limit Warning to OFF
JG        ===>

          Comment Display Replies

LOG       Group   MVS              Show *                (F4 for list)
SR                                                       More:     +
MAS       =>  d r,l
JC        =>  f sdsf,refresh,m=01
SE        =>  f sdsf,refresh
RES       =>  f sdsf,d,c
ENC       =>  f sdsf,d
PS        =>  $dq
          =>  $da
END       =>  $sspl(spool2)
          =>  setomvs ipcsmsgqbytes=2g
          =>  d omvs,o
          =>  d omvs
          =>  d prog,lnklst

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

Status area - WAIT



WAIT displays optionally in status area while waiting for command response to be returned

Status area - STORELIMIT



STORELIMIT displays optionally in status area when the //ISFTABL DD is not allocated, and the maximum number of commands alllowed is greater than 50.

Migration & Coexistence Considerations: System Command Improvements

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

Installation: System Command Improvements

- New //ISFTABL DD statement
  - References a PDS or PDSE for new ISPF table
    - Recfm=fb,Lrecl=80,Blksize=27920 (or blksize=0)
    - Estimate space: 500 bytes per command
      - 100 blocks good starting point
  - Used to save slash commands and associated data (group, comment)
  - Optional
    - Needed to save more than 50 commands
    - Default number of saved commands: 1000
    - Maximum number of saved commands: 2000

Overview: UI enhancements

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

Line shortcut command

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

Line shortcut example

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

This line command

is equivalent to

this set of actions

SET ROWNUM command

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

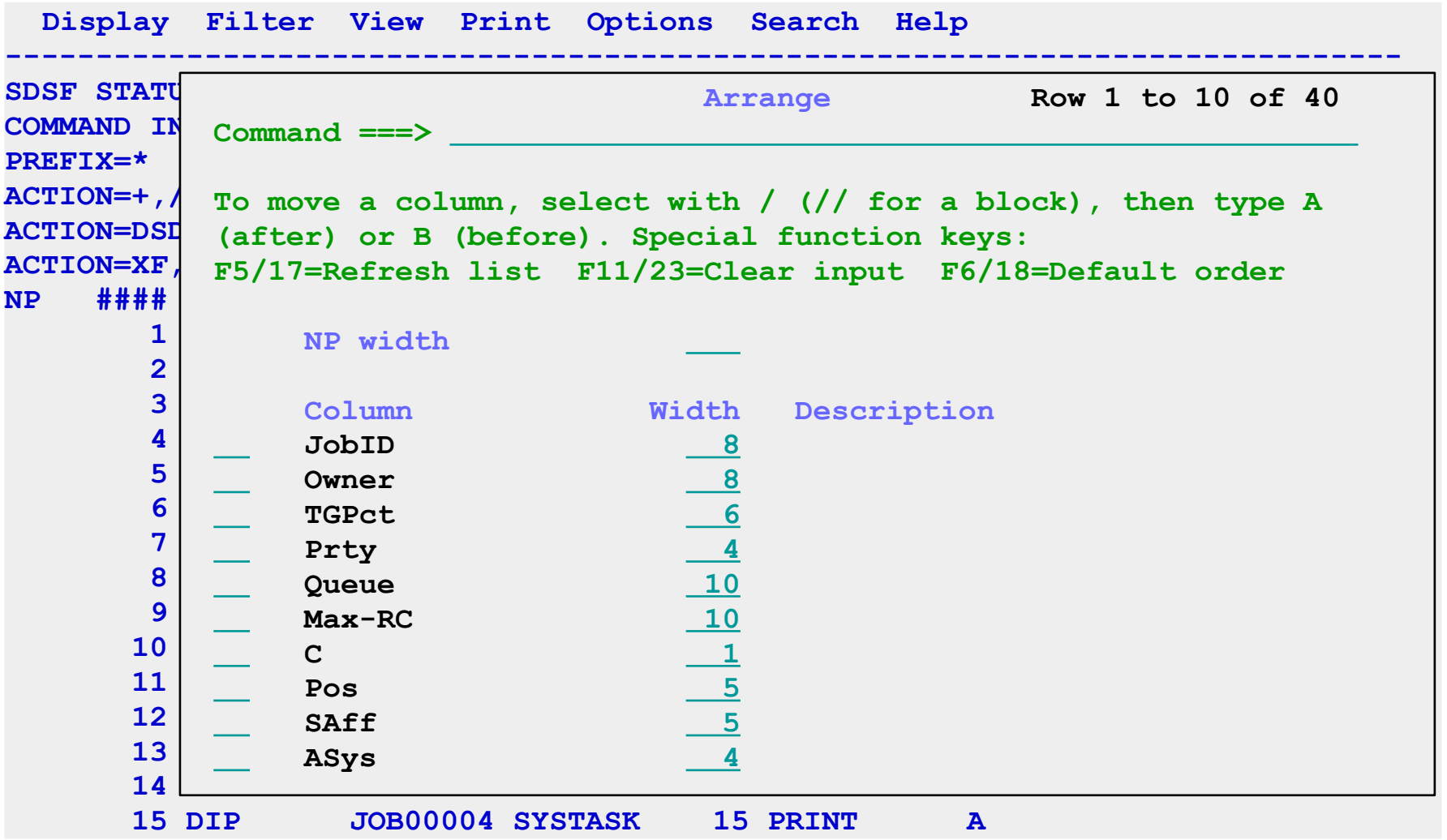
Row numbering

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

NP column width

- Pre-V2R2 – the NP column was a fixed width for each display (usually 4), with a **+** action that expanded the column to a larger fixed width (usually 6)
- NP column can now be expanded to a specified width via **+*nn*** action, where *nn* is a value 4 to 20.
  - This value is temporary and is reset via **RESET** command or leaving the display.
- NP column can be more permanently expanded via the **ARRANGE** command
  - **ARR NP *nn*** – sets the default width of the NP column to nn
  - Also can be set via the ARRANGE popup
  - Each tabular has its own NP width
  - Values are saved in ISPF profile

Arrange popup



Sn (BrowseLocDS) action

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

Overview: Batch Parallelism

- Problem Statement / Need Addressed
  - In z/OS V2R2, JES2 adds support for Dependent Job Control and Job Groups
  - SDSF support is needed for end users to manage the new functionality.
- Solution
  - Two new panels are added:
    - **JG** – Primary panel to display Job Groups
    - **JP** – Secondary panel to display dependencies for a job, or all dependencies within a job group.
  - **ST** (Status) panel can be accessed as a secondary panel from JG to display details about all of the jobs associated with a group.
- Benefit / Value
  - Simplifies management of the new JES2 functionality.

SDSF Main Panel

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

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

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

END    Exit SDSF
```

New JG option to access job group panel

Accessing job group panel

- Protected by **ISFCMD.DSP.JGROUP.*jesx*** SAF profile (READ access required)
- Included by default when ISFPARMS specifies GROUP AUTH(ALL), GROUP AUTH(ALLOPER) or GROUP AUTH(ALLUSER) or includes JG in AUTH list.
- **JG** command allows a single parameter which is one of the following:
  - A group name
  - A pattern to match the group name (FRED*, for example)
- Actions against job groups are protected by JESSPOOL profile, similar to protection of individual jobs
- PREFIX and OWNER filters are honored.
- JES2 only

Job Group Display

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

Each row represents a job group
Columns represent various attributes of the group
Several flavors of actions exist:
- JES Action commands – A, C, H, P, etc.
- JES Display commands – D, DE, DJ, DL, DN, DP
- Browse and Print – S and X
- ST – invokes STATUS as a secondary display
- JP – Invokes new Job Dependency display as a secondary

Status Display (from JG display)

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

Title line indicates secondary from group display

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

Status Display – new columns and actions

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

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

Notable new actions

- DP – Issues new JES2 $DJ,AFT,BEF,CON command
- JP – Access to Job Dependency display

Job Dependency Display (from ST or I display)

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

Displays all dependencies associated with selected job

Selected job is always listed first in BEFORE, AFTER, and CONCURRENT dependencies

Job Dependency Display (from JG display)

```
  Display  Filter  View  Print  Options  Search  Help
------------------------------------------------------------------------------
SDSF DEPENDENCY DISPLAY - GROUP PAYROLL  (G0000043)    LINE 1-7 (7)
COMMAND INPUT ===>                                       SCROLL ===> CSR
PREFIX=*  DEST=(ALL)  OWNER=D96CLW1  SYSNAME=
ACTION=+,//,%,=
NP    JOBNAME  JobID     Dependency DJobName DJobID   Time                When
      JOBB     J0000045 BEFORE     JOBD     J0000047
      JOBC     J0000046 BEFORE     JOBE     J0000048
      JOBA     J0000044 BEFORE     JOBC     J0000046
      JOBA     J0000044 BEFORE     JOBB     J0000045
      JOBG              CONCURRENT JOBF     J0000049
      JOBA     J0000044 CONCURRENT JOBG
      JOBA     J0000044 CONCURRENT JOBF     J0000049
      JOBA     J0000044 HOLDUNTIL                    04/15/2015 17:00:00
      JOBB     J0000045 HOLDUNTIL                    04/15/2015 17:00:00
      JOBC     J0000046 HOLDUNTIL                    04/15/2015 17:00:00
```

Displays all dependencies associated with all jobs in group

Job Dependency Display (from JG display)

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

SELECT command can be used to narrow dependencies to just those for a specific job

Can be used for "missing" jobs as well.

Overview: Job Step Display

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

Job Step Display

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

Job Step Display

```
   Display  Filter  View  Print  Options  Search  Help
-------------------------------------------------------------------------------
SDSF JOB STEP DISPLAY - JOB D96CLW1Z (J0000059)         LINE 1-15 (15)
COMMAND INPUT ===>                                        SCROLL ===> CSR
PREFIX=*  DEST=(ALL)  OWNER=*  SYSNAME=
ACTION=+,//,%,?,=,S,Sn,SB,SE,SJ,X,XC,XD,XDC,XF,XFC,XS,XSC
NP    STEPNAME ProcStep Pgm-Name Step-CC    AbendRsn StepNum SysName
      STEP1             RETCODE  CC 0020                  1 SY1
      STEP2             RETCODE  CC 0000                  2 SY1
      STEP3             RETCODE  CC 0057                  3 SY1
      STEP4             RETCODE  ABEND S0C1 00000001      4 SY1
      STEP5             RETCODE  ABEND S09D 0000FFFF      5 SY1
      STEP6             RETCODE  ABENDU0919 0000FFFF      6 SY1
      STEP7             RETCODE  FLUSH                    7 SY1
      STEP8             RETCODE  FLUSH                    8 SY1
      STEP9             RETCODE  FLUSH                    9 SY1
      STEPA             RETCODE  CC 0000                 10 SY1
      OUTER1   INNER    RETCODE  CC 0000                 11 SY1
      OUTER2            RETCODE  CC 0000                 12 SY1
      INNER             RETCODE  CC 0000                 13 SY1
                        RETCODE  CC 0000                 14 SY1
      SPIN01            SPINLOOP ACTIVE                  15 SY1
```

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

- Starting in z/OS V2R2, JES2 stores some job-related SMF information on spool in a new EVENTLOG dataset
  - The key record for step completion data is SMF 30, subtype 4.
  - SMF 30 subtype 4 data is obtained by accessing ***userid.jobname.jobid*.EVENTLOG.SMFSTEP**
  - If that data is unavailable (there is a JES2 option to disable SMF data collection), a subset of this information can be obtained from ***userid.jobname.jobid*.EVENTLOG.STEPDATA**
  - Both data set views are SAF protected (JESSPOOL)
- SDSF uses SMFSTEP view of EVENTLOG if available
- If SMFSTEP view is not available due to the JES2 **JOBDEF SUP_EVENTLOG_SMF** option, or if SAF Access is not allowed, the STEPDATA view is used instead if available and access is allowed
  - Only 9 of the 29 columns are available if SMF data is not used.

Job Step Display – Columns and Actions

- Columns displayable when STEPDATA is found:

STEPNAME	ProcStep	Pgm-Name	Step-CC	AbendRsn
StepNum	SysName	Step-Begin	Step-End	

- Additional columns displayable when SMF data is available for that job:

Elapsed	CPU-Time	SRB-Time	EXCP-Cnt	Conn
Serv	Workload	Page	Swap	VIO
Swaps	Region	Rgn-Used	MemLimit	Mlim-Used
zIIP-Time	zICP-Time	zIIP-NTime	HiCPU%	HiCPUPgm

- Actions:
  - **S**, **SB**, **SE** (Browse) actions, and **X** (Print) actions show only data sets associated with the selected step
  - **?** (JDS) action displays list of data sets for the selected step
  - **SJ** shows JCL for entire job

Overview: Job detail displays

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

Job Device panel

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

Job Device panel – Columns of interest

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

Job Device Detail Display Example (DD rows)

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

Job Device Detail Display Example (IP rows)

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

(scroll right)

```
    Display  Filter  View  Print  Options  Search  Help
-------------------------------------------------------------------------------
SDSF JOB DEVICE  SY1      ASID 0035 FTPD1    JOB00010  LINE 1-17 (57)
COMMAND INPUT ===>                                        SCROLL ===> CSR
PREFIX=*  DEST=(ALL)  OWNER=*  SYSNAME=*
ACTION=+,//,%,=,DA,DAL,DB,DBL,DC,DN,DNL,DP,DR,DRD,DRDL,DRL,DS
NP   #### NAME              IPAddr                    Port  ApplData
        1 FTPD1            9.56.58.133               63791 EZAFTP0S C D96CLW1
        2 FTPD1            0.0.0.0                      21 EZAFTP0D
```

Job Device Detail Display Example (CF rows)

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

(scroll right)

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

Job Device panel – Actions

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

Job Memory panel

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

Job Memory Display Example

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

Job Delay panel

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

- Message ISF193E is issued if RMF indicates to us that the user does not have access to our RMF data gatherer exit
  - **READ** access to **FACILITY** class profile **ERBSDS.MON3EXIT.ISFRMFXY**
  - **READ** access to **FACILITY** class profile **ERBSDS.MON3DATA**
  -

Job Delay Display Example

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

Job Detail Panels - Security

- **JD**, **JM**, and **JY** actions are protected by SAF profiles
  - JESSPOOL class profile
    - For jobs known to JES, actions are protected by **JESSPOOL** profile ***sysname.userid.jobname.jobid*** (**READ** access)
  - SDSF class profile
    - Each panel has its own profile in **SDSF** class (**READ** access)
    - JD – **ISFDISP.DEVICES.*userid.jobname***
    - JM – **ISFDISP.STORAGE.*userid.jobname***
    - JY – **ISFDISP.DELAY.*userid.jobname***
  - Access is allowed if either profile allows it.

SNAPSHOT command

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

SNAP command output example (SDSF Browse)

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

SNAP command output example (ISPF Edit)

```
SDSF EDIT    *SNAP                                              Columns 00001 00072
Command ===>                                                      Scroll ===> CSR
****** ***************************** Top of Data ********************************
==MSG> -Warning- The UNDO command is not available until you change
==MSG>           your edit profile using the command RECOVERY ON.
000001 JOBNAME  JobID    Owner    Prty Queue      C          Pos       SAff  ASy
000002 MONITOR  JOB00001 JES2       15 EXECUTION                             SY1
000003 D96CLW1  JOB00025 D96CLW1    15 EXECUTION  A                          SY1
000004 SYSLOG   JOB00002 +MASTER+   15 EXECUTION  A                          SY1
000005 HZSPROC  JOB00005 SYSTASK    15 EXECUTION  A                          SY1
000006 PRIMEPSA JOB00006 SYSTASK    15 EXECUTION  A                          SY1
000007 BPXAS    JOB00010 OMVSKERN   15 EXECUTION  A                          SY1
000008 TCPIPALP JOB00011 SYSTASK    15 EXECUTION  A                          SY1
000009 SDSF     JOB00012 SDSF       15 EXECUTION  A                          SY1
000010 TCAS     JOB00013 SYSTASK    15 EXECUTION  A                          SY1
000011 VTAM44   JOB00014 SYSTASK    15 EXECUTION  A                          SY1
000012 RMF      JOB00015 SYSTASK    15 EXECUTION  A                          SY1
000013 BPXAS    JOB00018 OMVSKERN   15 EXECUTION  A                          SY1
000014 RACF     JOB00024 SYSTASK    15 EXECUTION  A                          SY1
000015 BPXAS    JOB00026 OMVSKERN   15 EXECUTION  A                          SY1
000016 RMFGAT   JOB00028 SYSTASK    15 EXECUTION  A                          SY1
000017 READTCP  JOB00003 SYSTASK    15 PRINT      A
000018 DIP      JOB00004 SYSTASK    15 PRINT      A
000019 SYMUPD12 JOB00007 SYSTASK    15 PRINT      A
```

Overview: Rexx enhancements

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

RGEN command

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

RGEN generated exec

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

RGEN EXAMPLE popup

```
 Display  Filter  View  Print  Options  Search  Help
                                  REXX Examples                 Row 1 to 15 of 22
Command ===> ____________________________________________________________________

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

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

Custom Rexx Actions

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

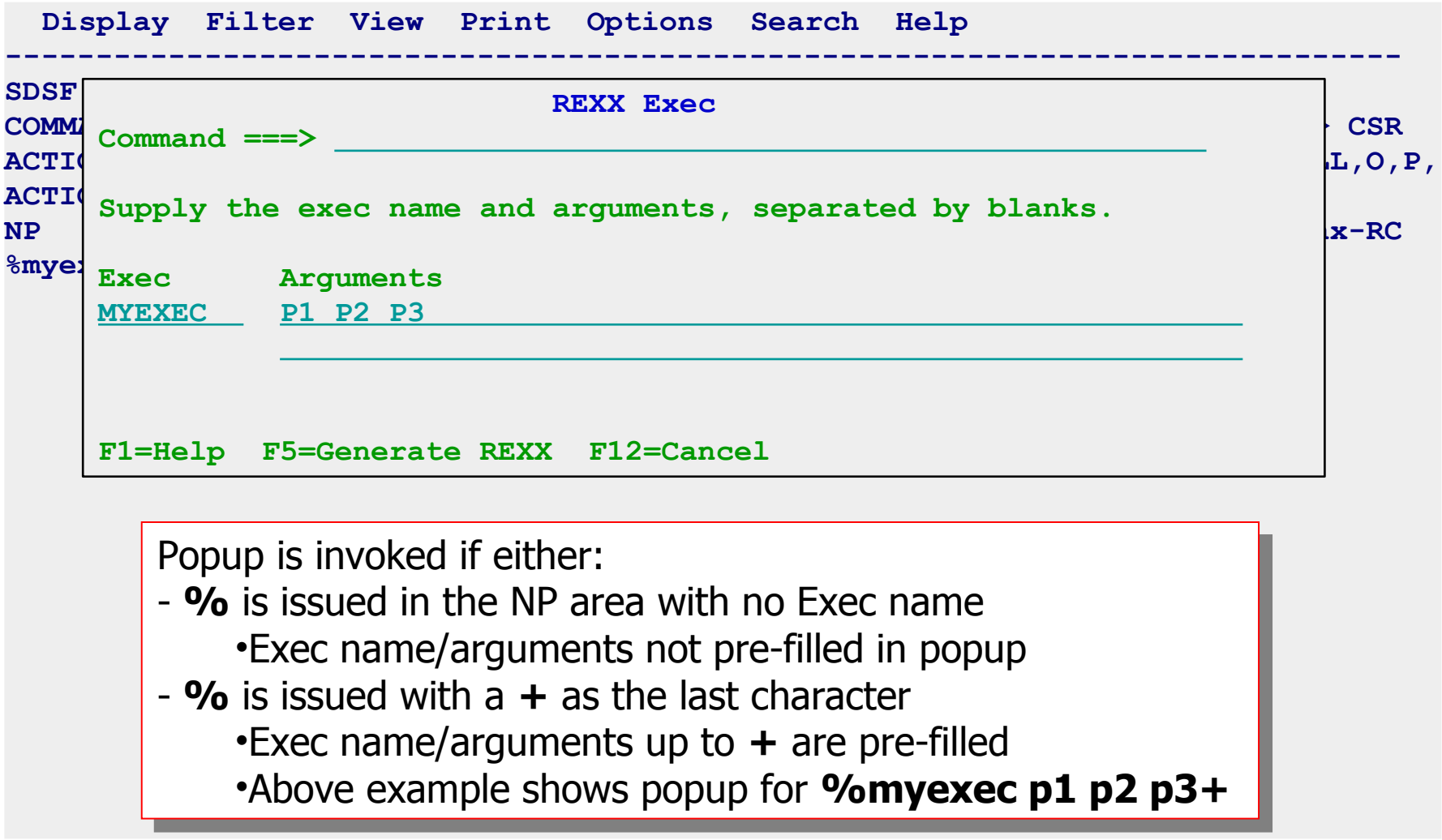
Custom Rexx Action Example

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

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

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

Rexx Action Popup



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

Parameters passed to Rexx Action Exec

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

```
/* REXX */
Parse arg sdsfparms '(' userparms
Parse var sdsfparms curr_panel prim_panel in_token .

…

Address SDSF 'ISFGET' prim_panel "TOKEN('"in_token"')"
```

Accessing current SDSF values from EXEC

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

isfquery() Variables

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

Miscellaneous Rexx Changes

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

New SDSF special variables

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

Rexx Changes – COMPACT mode

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

COMPACT mode example

```
/* REXX */

rc = isfcalls("ON")

Address SDSF 'ISFEXEC ST ( COMPACT PREFIX ST_'
Do ix=1 to st_sdsfrow.0
  Say '***** ROW' ix '*******'
  Do jx=1 to words(st_sdsfocols)      /* For each column */
    w1 = word(st_sdsfocols,jx)        /* Get the column name */
    w2 = word(st_sdsfcolstart,jx)     /* Get the corresponding data start index */
    w3 = word(st_sdsfcollen,jx)       /* Get the corresponding data length */
    w4 = word(st_sdsfcolcount,jx)     /* Get the number of related fields */l
    /* Use substr function to parse the value from sdsfrow variable for row */
    Do kx=1 to w4
      Say w1 '=' substr(st_sdsfrow.ix,w2,w3)
      w2=w2+w3     /* Add the column length to get the next related value */
    End
  End
End


rc = isfcalls("OFF")
```

COMPACT mode example - variable values

st_sdsfocols = "JNAME JOBID OWNERID JPRIO QUEUE JCLASS POS SYSAFF ACTSYS STATUS PRTDEST SECLABEL TGNUM TGPCT ORIGNODE EXECNODE DEVID OFFDEVS RETCODE SRVCLS WLMPOS SCHENV DELAY SSMODE SPIN PHASENAME PHASE JTYPE DELAYRSN JOBCORR ASID ASIDX SYSNAME JOBGROUP JOBGRPID JOBSET JGSTATUS FLUSHACT HOLDUNTIL STARTBY WITH"

st_sdsfcolstart = "1 10 19 28 39 50 59 70 231 240 271 290 299 310 322 331 340 359 375 386 395 406 423 427 432 437 458 469 474 603 636 647 658 667 676 685 694 703 712 735 758"

st_sdsfcollen = "8 8 8 10 10 8 10 5 8 30 18 8 10 11 8 8 18 15 10 8 10 16 3 4 4 20 10 4 128 32 10 10 8 8 8 8 8 8 22 22 8"

st_sdsfcolcount = "1 1 1 1 1 1 1 32 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1"

st_sdsfrow.1 = "IBMUSER TSU00044 IBMUSER 15 EXECUTION
SY1
SY1 LOCAL SYSMULTI 1 0.05 LOCAL
LOCAL 0 NO JES NO
EXECUTING 14 TSU
45 002D SY1”

Miscellaneous changes

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

Migration & Coexistence Considerations

- SDSF V2R2 can coexist with SDSF V1R13 and V2R1
  - Toleration APAR **PI04906** needed to share ISFPRMxx:
    - SDSF V1R13 (HQX7780) - PTF **UI90015**
    - SDSF V2R1 (HQX7790) – PTF **UI90016**
  - Apply these PTFs any time prior to installing SDSF V2R2
- ISPF profiles are compatible
  - Saved arrange, sort, filter, print criteria
  - Saved slash commands
- SDSF/REXX execs will run unchanged in SDSF V2R2
  - Exploitation of new function will preclude exec running on down level SDSF
- SDSF/Java applications will run unchanged in SDSF V2R2

Migration & Coexistence Considerations

- HASPINDX removal
  - HASPINDX no longer used in SDSF V2R2
    - Was used to chronologically order JES2 syslog data sets
  - HASPINDX related keywords in ISFPARMS/ISFPRMxx now obsolete
    - ISFPMAC / OPTIONS keywords ignored:
      - NIDBUF
      - IDBLKS
      - INDEX
      - INDXVOL
  - Verify your logon proc or initial clist does not ALLOC FI(HASPINDX) since no longer used

Migration & Coexistence Considerations

- HASPINDX sharing
  - HASPINDX could be shared between different levels of SDSF
    - For example, SDSF V1R13 and V2R1 could use the same physical data set
    - HASPINDX not used in SDSF V2R2
  - If you are sharing HASPINDX:
    - You can delete data set when all systems are at V2R2 level

Migration & Coexistence Considerations

- Saved slash commands
  - Prior SDSF releases saved 20 last used slash commands
    - These will be visible to SDSF V2R2 as ungrouped commands
  - SDSF V2R2 can save 2000 commands
    - Only the first 20 ungrouped commands will be visible to down level SDSF systems
    - Grouped commands will not be visible to pre-SDSF V2R2 systems

Installation

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

Installation

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

Installation

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

Installation

- New //ISFTABL DD statement
  - References a PDS or PDSE for new ISPF table
    - Recfm=fb,Lrecl=80,Blksize=27920 (or blksize=0)
    - Estimate space: 500 bytes per command
      - 100 blocks good starting point
  - Used to save slash commands and associated data (group, comment)
  - Optional
    - Needed to save more than 50 commands
    - Default number of saved commands: 1000
    - Maximum number of saved commands: 2000

Presentation Summary

- We have discussed the enhancements to SDSF in z/OS V2R2
  - JJExxxx component elimination
  - zIIP exploitation
  - System command improvements
  - Batch Parallelism
  - Job Step display
  - Job Detail displays
  - UI enhancements
  - Rexx enhancements
    - Custom row actions
    - Sample Rexx exec generator
  - Miscellaneous enhancements
- Migration and Installation considerations

Appendix

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