IOF
(Interactive Output Facility)
User's Guide
Release 8G

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1. Introduction

Overview

The Interactive Output Facility (IOF) provides a comprehensive interface to the JES2 subsystem. IOF provides full-screen terminal access and a completely programmable interface to:

- Batch jobs
- JES2 queues
- JES2 devices
- The system log
- The extended MCS console
- Initiators
- Running tasks, TSO users, and jobs
- Alternate machines in a sysplex
- Enclaves
- UNIX processes
- Health Checker
- Workload Manager
- NJE Nodes
- JES2 Spool Volumes
- Job Classes

In addition to providing access to JES2 resources, IOF also offers the following capabilities:

- Email job output in HTML format
- Archive jobs to z/OS data sets
- Review archived jobs in IOF display format
- Scan partitioned data sets
- Browse z/OS data sets with carriage control
- Copy z/OS data sets with carriage control conversion
- Browse an entire PDS
- Browse first member in concatenated libraries

- Print PDS with ISPF stats
- Flatten PDS into sequential data set
- Scan partitioned data set

Few users will use all the features of IOF. Applications programmers may review the jobs they submit, while production control personnel may review a variety of production jobs. Operators may manage output queues and devices such as printers and teleprocessing lines. Systems programmers may review systems tasks, initiators, and offload devices and may write clists or REXX execs to automatically perform any of the above functions.

IOF provides full-screen terminal support in the ISPF, TSO, and CICS environments. Most functions are accomplished by overtyping fields or entering simple commands that are documented on the panel.

In the TSO environment, IOF also runs on line-mode terminals and in TSO batch. It has a full clist and REXX interface to provide programmable access to all the functions that are available to a user at a terminal.

Job Facilities

IOF has extensive facilities to review and manage jobs and sysout data sets. While most users can review only the jobs they submitted, authorized users can manage larger queues of jobs. IOF has panels to display job status and return code summaries. IOF allows you to cancel or release jobs and to modify many job characteristics. A user can browse, release, modify and cancel individual sysout data sets using full-screen facilities.

Device and Initiator Facilities

IOF provides full-screen support for all JES2 controlled devices and initiators. This includes printers, punches, readers, teleprocessing lines, remotes, network devices, and offloaders. All device attributes can be displayed on a full-screen panel and can be modified by authorized users by simply overtyping.

Log Review

The System Log Access and Management (IOF/SLAM) facility provides fast and effective access to the system log. IOF/SLAM builds a comprehensive index to the log data which allows immediate access to any minute in the log. Additionally, important error and exception conditions in the log are indexed to make them easy to detect and review.

System Monitor

The *IOF System Monitor* displays all active address spaces in the system and can be sorted by any display field. Specific types of address spaces can also be requested from a full-screen monitor interface panel. Authorized users can use the monitor as an effective tool for detecting and correcting system errors and bottlenecks.

Extended MCS Console

IOF extended MCS console support gives authorized users the ability to enter MVS and JES2 commands and to see command responses on a scrollable panel.

Programmable JES2 Interface

In the TSO environment, IOF provides a fully programmable interface to the JES2 subsystem. All IOF job, device, initiator, monitor and system log facilities are fully accessible through clists or REXX execs running both interactively and in batch TSO. Several significant clists and execs are distributed with the product and can be used productively by supplying clist parameters.

Multiple CPU Environment

IOF provides many unique features to aid users running in a multiple CPU environment. The Operlog function displays the combined sysplex system log. The MAS display shows the status of each CPU in the complex. The IOF server function allows users to start an IOF session on any CPU in the sysplex.

Health Checker

IOF provides displays and commands to display and manage MVS Health Check reports when running with a system that supports Health Checker.

Miscellaneous Features

IOF provides displays and commands to see and manage enclaves and UNIX processes when running with z/OS systems that support these features. Systems that use workload manager can also display and manage WLM scheduling environments and resources.

Workload Manager

IOF provides displays and commands to control WLM scheduling environments and WLM resources.

Emailing Job Output

IOF provides the ability to email all or part of a job's output in several formats, including HTML. The output can then be reviewed on your PC in a format very similar to reviewing the job on the spool with IOF.

Archiving Batch Jobs

IOF allows you to archive a job's output to a standard z/OS partitioned data set. There is no installation setup or system administration required for users to archive their personal jobs. Users can set up a job to archive itself by adding a simple step to the job.

Users can review archived jobs in the same format as reviewing jobs on the spool with IOF.

Systems staff can also set up automated batch archival runs to perform systematic archival.

Scanning z/OS Partitioned data sets

The ZF command allows you to scan for text strings in z/OS partitioned data sets using any syntax that is valid on a FIND ALL command.

Browsing, Printing, Emailing, or Copying z/OS Data Sets

The ZDS command allows you to browse, print, email, or copy z/OS sequential or partitioned data sets. In addition, this command provides a number of powerful features for dealing with partitioned data sets.

2. Sample Session Reviewing Jobs

Introduction

This chapter leads you through a sample session to demonstrate using IOF for reviewing and controlling your own jobs. Although it describes only a small portion of the functions provided by IOF, this subset allows you to effectively review and manage your own jobs.

IOF makes it easy to review batch jobs. At a glance you can see if your job succeeded. IOF shows exactly where and why the job failed if a problem occurred.

You can cancel, release, and modify your jobs with simple commands. You can quickly and conveniently browse your sysout data before it is printed. IOF displays data on your screen exactly as it would appear on a printed page. IOF lets you change your sysout data set characteristics, such as forms and class, by overtyping the desired field.

This chapter will introduce you to IOF. It takes you through a simple session and shows you how to use many IOF features. Press the **HELP** key on any IOF panel for more information.

Selecting IOF

If you do not already have jobs in the system, submit several batch jobs for use during this session. This first lesson in using IOF will deal only with the jobs you submitted.

Our sample session will begin from the *IOF Option Menu*. You invoke this menu from TSO READY or CICS by entering either **IOF** or **IOF *** depending upon how IOF was installed for your group.

You can also invoke the *IOF Option* Menu directly from the *ISPF Primary Option Menu*.

```
------------------------ ISPF Primary Option Menu -----------------------------
Option ===>

0   Settings       Terminal and user parameters       *************************
1   View           Display source data or listings    * Depending upon your   *
2   Edit           Create or change source data       *                       *
3   Utilities      Perform utility functions          * site's configuration, *
4   Foreground     Interactive language processing    *                       *
5   Batch          Submit job for language processing * this area may contain  *
6   Command        Enter TSO or Workstation commands  *                       *
7   Dialog Test    Perform dialog testing             * identification         *
8   LM Facility    Library administrator functions    *                       *
9   IBM Products   IBM program development products   * information.           *
10  SCLM           SW Configuration Library Manager   *************************
11  Workplace      ISPF Object/Action Workplace
M   More           Additional IBM Products

I   IOF            Interactive Output Facility

Enter X to Terminate using log/list defaults
```

To invoke the *IOF Option Menu* from ISPF enter **I** or **I.** depending upon how IOF was installed for your group.

```
----------------------------- IOF Option Menu ---------------------------------
 COMMAND ===>

 Follow an option with "?" to display its detailed interface panel.

blank - Your jobs        LOG  - Sys Log    ENC  - Enclaves    OPER - Operlog
  I   - Input jobs       SR   - Sys Req    CN   - Console      ZDS  - z/OS Data
  R   - Running jobs     DEV  - Devices    MAS  - MAS Systems  ZF   - Scan PDS
  O   - Output queue     PR   - Printers   PS   - Processes    ARC  - Archive
  J   - Jobs menu        LINE - Lines      WLM  - WLM Support
  H   - Held Groups      INIT - Inits      CHK  - Health Cks   MORE - More Cmds
  M   - System Monitor   OFF  - Offload    JM   - JES2 info
  P   - IOF Profile      SPV  - Spools     JBC  - Job Classes
                         NOD  - Nodes      APPC - APPC menu

 JOBNAMES ===>
                           Enter 1 to 8 generic jobnames above

 SCOPE    ===>            ALL, ME or another user's USERID
 DEST     ===>
                           Enter 1 to 8 destinations above
```

The specific options shown on this panel depend on the functions each user is authorized to use. Most users will not see all the options shown above. To see a list of your jobs, press **ENTER**. You can bypass the *IOF Option Menu* and go directly from ISPF to your list of jobs by entering either **I.** or **I** depending upon how IOF was installed for your group. You can bypass the *IOF Option Menu* from TSO READY or CICS by entering either **IOF** or **IOF ***.

Job List Menu Example

The *IOF Job List Menu* gives you detailed status for all the jobs you submitted on a single display. Let's assume that you have an input job, three running jobs, and some output jobs in the system. As you can see in the

figure below, IOF displays each basic job type in a separate section that shows the most interesting information for that type of job.

```
----------------------------- IOF Job List Menu ------------( 10 )-----------
COMMAND ===>                                             SCROLL ===> SCREEN
------------------------------- Input Jobs -------------------------------
-------JOBNAME--JOBID---ACT-STAT-OWNER----C-POSIT-PRTY-SRVCLASS-QUALIFIER------
_    1 DMSMERG1 J007890    JOB  ISIJER   A   4    9
------------------------------- Running Jobs ------------------------------
-------JOBNAME--JOBID---ACT-STAT-SYID-------CPU-------I/O-STEP-----PROCSTEP-SWP
_    2 MODELGN  J007825         A83B
_    3 QAS311   J006060         B83D     53:03    443.02 QAS311            IN
_    4 TSCDRS   J000777         B83D      :02      1.75 TSCDRS    RBTR     OUT
------------------------------- Output Jobs -------------------------------
-------JOBNAME--JOBID---ACT-STAT-OWNER----DEST/DEVICE-------RECS-HELD-DAY--TIME
_    5 DSMERG0  J004118         ISIJER   NAPLES          48K  19K 008 12:29
_    6 MAKLOAD  J008862         ISIJER   TRIANGLE             12K 018 15:17
_    7 MAKOPTN  J008098         ISIJER   PRINTER1        108      018 14:25
_    8 MAKSRCE  J001929         ISIJER   ISIWPC          421      016 18:12
_    9 PNTSRCE  J008099         ISIJER   R18.PR1        164K      009 14:26
_   10 SALESRUN J008854         ISIJER   LOCAL          4333 466 017 15:59
```

Some information is common to all job types. Note the common fields in the example panel, from left to right:

- Line command area
- Menu number
- Jobname
- Jobid
- Action column (ACT) for command confirmation
- Job status column (STA) that shows exception conditions

Input jobs are grouped together in the Input Jobs section, running jobs are grouped together in the Running Jobs section, and output jobs are displayed in the Output Jobs section. Each section displays the information that is most useful for that type of job.

For input jobs you are most interested in the class, priority, and position in queue. You need to know step, CPU time used, and I/O time used for running jobs. And, you need to know how much output an output job produced. You can scroll right to get additional information about each job on the list.

The *IOF Job List Menu* is normally simpler than this example because you don't usually have all types of jobs in the system at any given time. If there are no jobs of a particular type, that section is not displayed.

Job List Menu Commands

The *IOF Job List Menu* provides comprehensive commands to allow you to manipulate your jobs. It provides commands to select jobs for online review, cancel jobs, modify job characteristics such as class, destination and priority,

and release held data sets. See Chapter 7 for a full list of commands and
functions that are supported on the *IOF Job List Menu*, or enter **HELP**.

Most commands can be entered in the line command area to the left of each
job. Job characteristics can be modified by using the **Tab** key to position the
cursor in the applicable field and overtyping the existing data.

Select Job Example

To demonstrate, let's select the SALESRUN job from the *IOF Job List Menu*
for review. This is the last job on the menu.

To select SALESRUN enter **S** in the line command area as shown on the
menu below.

An alternate way to select SALESRUN is to enter its menu number, **10**, in the
COMMAND area at the top of the screen. This method must be used from
line mode terminals and may save key strokes on a full-screen terminal. See
Chapter 7, Line Commands in the Command Area, for a full description of
command area use.

```
---------------------------- IOF Job List Menu ------------( 10 )-----------
COMMAND ===>                                           SCROLL ===> SCREEN
-------------------------------- Input Jobs --------------------------------
-------JOBNAME--JOBID---ACT-STAT-OWNER----C-POSIT-PRTY-SRVCLASS-QUALIFIER------
_    1 DMSMERG1 J007890     JOB  ISIJER   A   4    9
------------------------------- Running Jobs -------------------------------
-------JOBNAME--JOBID---ACT-STAT-SYID-------CPU-------I/O-STEP-----PROCSTEP-SWP
_    2 MODELGN  J007825          A83B
_    3 QAS311   J006060          B83D     53:03    443.02 QAS311              IN
_    4 TSCDRS   J000777          B83D       :02      1.75 TSCDRS    RBTR     OUT
------------------------------- Output Jobs --------------------------------
-------JOBNAME--JOBID---ACT-STAT-OWNER----DEST/DEVICE-------RECS-HELD-DAY--TIME
_    5 DSMERG0  J004118          ISIJER   NAPLES           48K  19K 008 12:29
_    6 MAKLOAD  J008862          ISIJER   TRIANGLE              12K 018 15:17
_    7 MAKOPTN  J008098          ISIJER   PRINTER1         108      018 14:25
_    8 MAKSRCE  J001929          ISIJER   ISIWPC           421      016 18:12
_    9 PNTSRCE  J008099          ISIJER   R18.PR1          164K     009 14:26
S   10 SALESRUN J008854          ISIJER   LOCAL            4333 466 017 15:59
```

Some of the other job list menu line commands are:

?	Display a function menu of available job commands. When you can't remember the commands, enter a question mark by the job.
B	Browse the entire job as one continuous data set
C	Cancel the job
R	Release all the held data sets of the job.
P	Print the job at your default print destination and sysout class.
ED	Recreate original input job from an output job and edit it (ISPF only).

PC	Show why job is not printing (TSO only).
ARC	Archive the job to a z/OS PDS
SEND	Email the job in HTML format

IOF Job Summary Example

To continue our example, selecting the SALESRUN job produces the *IOF Job Summary*. This panel shows exactly what happened to your job.

```
----------------------------- IOF Job Summary ------------------------------
COMMAND ===>                                              SCROLL ===> CURSOR
--JOBNAME--JOBID----STATUS---RAN/RECEIVED------DAY-------DEST------------------
  SALESRUN J008882  OUTPUT    12:45   9/06/2017 YESTERDAY TRIANGLE
--RC--PGM--------STEP-----PRSTEP---PROC-----COMMENTS------------------------
   0  SR1203E   EDIT     PREPARE  SA01A
   0  COMPRE    SORT     PREPARE  SA01A
ABND  SR1203P   WEEKLY   PRINT    SA02A     ABEND SYSTEM=B37 USER=0000
   *  SR1335P   MONTHLY  PRINT    SA02A     NOT EXECUTED
--------DDNAME---STEP-----PRSTEP---STAT-ACT-C-GRP-D-SIZE-U-DEST---------------
_    1  LOG      *                         A   1      23 L TRIANGLE
_    2  JCL      *                         A   1      93 L TRIANGLE
_    3  MESSAGES *                         A   1     245 L TRIANGLE
_    4  SYSPRINT EDIT     PREPARE          A   1    3282 L TRIANGLE
_    5  SYSPRINT SORT     PREPARE          A   1       5 L TRIANGLE
_    6  SYSPRINT WEEKLY   PRINT            A   1     15K L TRIANGLE
_    7  SALESMEN WEEKLY   PRINT            A   1    4167 L TRIANGLE
_    8  SUMMARY  MONTHLY  PRINT     DONE   A
```

The *IOF Job Summary* panel has three sections:

- The **Job Information Section** at the top of the screen gives you basic information about your job. For example, it shows that SALESRUN was run yesterday at 12:45.
- The **Step Information Section** in the middle contains one line for each job step in your job. In this case, SALESRUN had four steps.
- The **Data Set Section** at the bottom has one line for each sysout data set the job produced. SALESRUN has 8 sysout data sets, each of which is completely described by it's line on the display.

It is easy to see in the example above that the EDIT and SORT steps completed normally with return code 0 (RC column). The WEEKLY step abended with code B37 in program SR1203P. The MONTHLY step was not run because of the abend.

All sysout data sets for the job are displayed in the data set section at the bottom. Both held and non-held data sets can be selected for browse directly from this panel. Data set characteristics easily can be modified by overtyping. Additional data set characteristics can be seen by scrolling right, or by requesting a data set function menu.

In many cases this is all you need to see to determine how a job ran. For example, you may not need to browse any sysout data sets if all return codes are good.

IOF Job Summary Commands

The *IOF Job Summary* provides a comprehensive set of commands for reviewing and modifying sysout data sets. You can browse sysout data, release individual held data sets, cancel and modify held sysout data sets and output groups, and modify output characteristics such as destination and forms. See Chapter 8 for a full description of the commands and functions that are supported on the *IOF Job Summary*.

Data set line commands can be entered in the line command area to the left of each data set, and attributes can be changed by simply overtyping on the menu.

Selecting a Data Set for Browse Example

To demonstrate, we will select the REGIONS report from the WEEKLY PRINT step. This is the sixth data set on the menu as shown by the menu number.

Enter **S** in the line command area to the left of SYSPRINT WEEKLY PRINT to select it for browse. An alternate way to select this data set is to enter its menu number, **6**, in the command area.

```
------------------------------ IOF Job Summary -------------------------------
COMMAND ===>                                                SCROLL ===> CURSOR
--JOBNAME--JOBID----STATUS---RAN/RECEIVED------DAY-------DEST------------------
  SALESRUN J008882  OUTPUT   12:45   9/06/2017 YESTERDAY TRIANGLE
--RC--PGM--------STEP-----PRSTEP---PROC-----COMMENTS--------------------------
    0  SR1203E    EDIT     PREPARE  SA01A
    0  COMPRE     SORT     PREPARE  SA01A
 ABND  SR1203P    WEEKLY   PRINT    SA02A    ABEND SYSTEM=B37 USER=0000
    *  SR1335P    MONTHLY  PRINT    SA02A    NOT EXECUTED
--------DDNAME---STEP-----PRSTEP---STAT-ACT-C-GRP-D-SIZE-U-DEST
  _    1  LOG       *                       A   1      23 L TRIANGLE
  _    2  JCL       *                       A   1      93 L TRIANGLE
  _    3  MESSAGES  *                       A   1     245 L TRIANGLE
  _    4  SYSPRINT EDIT     PREPARE         A   1    3282 L TRIANGLE
  _    5  SYSPRINT SORT     PREPARE         A   1       5 L TRIANGLE
  S    6  SYSPRINT WEEKLY   PRINT           A   1     15K L TRIANGLE
  _    7  SALESMEN WEEKLY   PRINT           A   1    4167 L TRIANGLE
  _    8  SUMMARY  MONTHLY  PRINT    DONE   A
```

IOF Job Summary commands are fully documented in Chapter 8. Some of the other available line commands are:

?	Display a function menu for the data set. When you are in doubt or can't remember the available commands, enter a question mark for assistance.
C	Cancel a held data set.

M	Display a menu showing all data set attributes that can be modified.
R	Release a held data set.
P	Print an exact copy of the data set.
ED	Edit a temporary copy of the data set with the ISPF editor.
SEND	Email the data set.

Browse Example

Let's continue our example by showing the IOF *Browse* panel that would be produced by selecting the SYSPRINT WEEKLY PRINT data set on the *IOF Job Summary*.

```
BROWSE - SYSPRINT WEEKLY     PRINT      - Page 1     Line 1        Cols 1-80
COMMAND ===>                                         SCROLL ===> CURSOR
******************************* TOP OF DATA ********************************
                      Weekly Sales Report Summary                   Page 1
                      Week Ending Septemper 6, 2017


        Region               Office                    Total Sales

        New England          Boston                    221,433.97
        New England          Hartford                   34,977.00

        New England          ** Total **               256,410.97


        New York             Albany                     45,932.44
        New York             Buffalo                    23,439.19
        New York             New York                1,434,912.56
        New York             Rochester                  72,545.14
        New York             Syracuse                   33,167.99

        New York             ** Total **             1,608,997.32

```

The IOF *Browse* screen looks much like an ISPF browse screen. The top line shows the ddname (SYSPRINT), step and procstep names (WEEKLY PRINT), and current page number, line number, and columns (page 1, line 1, cols 1-80).

The data set is displayed next. You can use the **UP**, **DOWN**, **LEFT**, **RIGHT** and **FIND** commands to position within the data set. These commands are on your standard PF keys.

Visual Fidelity

IOF *Browse* presents the data on the screen as it would appear on a printed page. In the example above, note the blank lines that were produced by printer control sequences.

IOF *Browse* honors printed page boundaries. You can scroll up or down to a particular printed page, or to a specific line on a page. See Chapter 9 for a full description of IOF *Browse* features.

Ending the Browse

Press **END** to return to the *IOF Job Summary*, or **RETURN** to return to the *IOF Job List Menu*. Remember that you can cancel, modify, copy, and release held data sets from the *IOF Job Summary*, and you can select other data sets for browse. From the *IOF Job List Menu* you can cancel, print, or modify jobs, and you can select other jobs for review.

Summary of Sample Session

This sample session has quickly demonstrated how to review the jobs you submitted. You have seen examples of:

- The *IOF Job List Menu* of all your jobs
  - Shows job status
  - All types of jobs (input, running, output)
  - Allows cancel, modification, print, and select for review
- The *IOF Job Summary* for a specific job
  - Return codes for each step
  - All sysout data sets listed
  - Allows data set cancel, modification, release and select for browse
- IOF *Browse*
  - Display and commands much like ISPF browse
  - Page orientation so screen looks like printed page

This brief introduction illustrated how easily and quickly you can review your jobs using IOF. A few of the most frequently used features were explained. Together with the IOF **HELP** facility, this introduction should enable you to use IOF immediately to review your jobs.

Quick Trainer

IOF Quick Trainer can be invoked from any IOF panel by entering the **QT** command. Quick trainer displays tutorial panels that are tailored to each individual user. The displays can easily be printed to produce a tailored quick reference guide.

Help

All IOF panels have one or more associated help panels to describe the data being displayed on the panel, the available commands, and overtypeable fields. Help is requested by entering the **HELP** command, which is associated with PF keys 1 and 13 by default. To get more information about the currently displayed panel, simply enter **HELP**.

Every error message produced by IOF has a short form and a long form. The short form of the message normally is displayed at the top of the screen when an error is encountered. If you enter **HELP** in response to the short form of a message, the long form of the message will be displayed. Entering **HELP** a second time will invoke help for the panel currently being displayed.

Logical Line Delimiter

The period (**.**) is treated as a logical line delimiter by all IOF panels except when used in a **FIND** command string. Multiple IOF commands can be entered on the same input line if they are separated by a period (**.**). To append another IOF command after a **FIND** string, you must leave a blank after the find string and before the logical line delimiter.

Program Function Keys

IOF allows an independent definition of program function keys from other ISPF functions. The initial IOF PF key values are copied from your ISPF default PF key definitions, but they can be changed to be different from the ISPF definitions. Each PF key can be associated with any character string by selecting option **0** from the *IOF Profile Menu*. Multiple commands, separated by a logical line delimiter, can be assigned to a PF Key.

Note that different profile data sets are used when running IOF from ISPF, CICS, and TSO READY. If you run IOF from more than one environment and want to modify PF key definitions, you will have to make the modification in each environment.

Default PF key settings are:

```
1 and 13   HELP        7 and 19   UP
3 and 15   END         8 and 20   DOWN
4 and 16   RETURN     10 and 22   LEFT
5 and 17   RFIND      11 and 23   RIGHT
```

IOF Jump Function

Note that your installation may have enabled *IOF Option Menu* commands on all IOF panels. If so, you can enter *IOF Option Menu* options on any IOF panel without the jump character.

If your installation has not enabled IOF Option Menu commands on all panels, then the slash character (*I*) can be used as a jump character by IOF and is honored on all IOF panels. Entering a slash by itself displays the *IOF Option Menu*. A slash followed by an option results in a direct jump to the specified option.

Example

/M   *(Direct jump to the IOF System Monitor Display from any IOF screen. In most systems, the jump character is no longer required.)*

See Chapter 4 for a description of the available options on the *IOF Option Menu.*

EVERY Command

In the TSO environment the **EVERY** command can be entered on any dynamic IOF panel in order to provide an updated panel on a periodic basis. This command requires specific authorization by your installation.

Syntax

```
EVERY   n [command]
```

n. Number of seconds between panel refresh.

command. The optional additional command to be issued each time the period completes. For example, when browsing an open sysout data set for a running job, you might want to enter:

```
E  5  D  M
```

to cause the display to go to the bottom of the data set every five seconds. Dynamic updating can be terminated by pressing **ATTENTION**.

ENABLE Command

IOF can modify or cancel many jobs, groups, data sets and devices with a single command when menu numbers are used. For example from the *IOF Job List Menu*, it is possible to cancel the first fifty jobs on the menu by entering **1-50 C** in the command area.

This feature is so powerful that IOF has a built in limit of 100 elements that can be processed by a single command. This prevents canceling all jobs in the system by a single command. The **ENABLE** command can be used to override this limit on a specific panel. To invoke the override, enter **ENABLE** followed by the requested limit.

VERSION Command

The **VERSION** command can be entered from any IOF panel to display the current IOF version. While the version is being displayed, pressing **HELP** will display the current IOF generation date. Enter **VERSION ALL** to display a menu that lists the version of IOF and the IOF libraries being used.

WHO Command

The **WHO** command can be entered from any IOF panel to display information about the current IOF session.

TSO Command

The **TSO** command can be entered from any IOF/TSO panel to issue a TSO command. Enter **TSO** followed by the desired TSO command with all its parms. This command is not available to IOF/CICS.

TS Command

The **TS** command is an improved version of the TSO command when running under ISPF. **TS** with no parms displays a panel much like ISPF's option 6. The last 32 commands issued are saved and can be re-selected for execution. Saved commands can be edited and deleted directly from the display area.

MVS Command

The **MVS** command displays a panel that allows MVS and JES2 commands with a maximum length of 120 characters to be entered. The last 32 commands issued on this panel are saved, much like ISPF's option 6, and can be selected and be re-issued from the panel.

The **"#"** command, when issued with no parms, is an alternate way to invoke the MVS dialog on most systems.

Command responses can be viewed in SYSLOG, or from an extended MVS console. When invoked while viewing SYSLOG, the default response location is SYSLOG. When invoked from an extended console, the default response location is the IOF console.

CAPTURE Command

The **CAPTURE** command allows you to capture the currently displayed IOF screen or the entire IOF panel. The output can be in plain text or HTML format (suitable for display on a web page). The copy is written to an IOF snap target set (see Chapter 16). The CAPTURE will begin at the top left corner of the currently displayed IOF panel. So, if the panel has been scrolled down or to the right, the CAPTURE will exclude rows above the top of screen row and fields to the left of the fields currently being displayed.

Entering **CAPTURE** with no parms will guide you through the process. By default, only the currently displayed rows and columns will be shown. To capture all rows and columns of the panel enter:

    CAPTURE ALL

To capture a specific number of rows and columns:

    CAPTURE ROWS(128) COLS(512)

Capturing a Panel in HTML Format (at the terminal)

To capture panel data in HTML format, you must set up the snap target data set before issuing the **CAPTURE** command. Specifying "html" in the new CONVERT field on the **SD**, **SU**, and **SS** panels allows you to request that the snapped data be converted to a file that can be displayed by a web browser.

This option will enclose the output in simple HTML header and trailer records and map any potential html codes in the output to transparent html equivalents.

To capture panel data to a disk data set:

```
SD          (display the SD panel for specifying a disk
             snap target)
"html"      (value in the "Convert" field)
ENTER       (allocate and open the snap target data set)
CAPTURE …   (capture panel in html format)
SNAPCLOS    (close the snap target data set)
```

Capturing a Panel in html Format (in a REXX exec)

A REXX exec can specify the new CONVERT parm on the **SS**, **SD**, and **SU** commands to set up a snap target data set in HTML format. To capture panel data to a disk data set:

```
SD DSN(…) … CONVERT(HTML)
CAPTURE …
SNAPCLOS
```

The CONVERT(HTML) parm encloses the output in simple HTML header and trailer records and maps any potential html codes in the output to transparent html equivalents. If the REXX exec wishes to control the HTML header and trailer information it can omit the CONVERT parm and supply its own HTML header and trailer records:

```
SD  DSN(…)   …              (no CONVERT parm)
SNAPTEXT CHAR html-header-codes
SNAPTEXT CHAR html-header-codes
…
CAPTURE  …   HTMLTEXT
SNAPTEXT CHAR html-trailer-codes
SNAPTEXT CHAR html-trailer-codes
…
SNAPCLOS
```

The HTMLTEXT parm on the **CAPTURE** command will cause CAPTURE to map any potential HTML codes in the panel display to transparent HTML equivalents.

By default all of the attribute characters from the displayed screen will be converted to blanks when the screen is written to the target data set. You can ask that the attribute characters be preserved and converted to single characters of your choice by specifying:

```
OUTLOW(char)        Output low intensity attributes
                    converted to this character
OUTHIGH(char)       Output high intensity attributes
                    converted to this character
INPLOW(char)        Input low intensity attributes
                    converted to this character
INPHIGH(char)       Input high intensity attributes
                    converted to this character
```

In the parms above, "char" may be specified as a single displayable character or two characters of EBCDIC hex (i.e., "E7).

4. IOF Option Menu

Description

The *IOF Option Menu* provides a simple way to request special IOF functions. Remember, by default IOF displays a list of the jobs you submitted. However, you may have reasons to review other jobs or to use other IOF facilities. The *IOF Option Menu* displays the first level of IOF options and allows more specialized option panels to be displayed.

Invoking the IOF Option Menu

To invoke the *IOF Option Menu* from your *ISPF Primary Option Menu*, enter **I** or **I.** depending upon how IOF was installed for your group.

```
------------------------- ISPF Primary Option Menu ----------------------------
Option ===>

0  Settings      Terminal and user parameters       ************************
1  View          Display source data or listings    * Depending upon your   *
2  Edit          Create or change source data       *                       *
3  Utilities     Perform utility functions          * site's configuration, *
4  Foreground    Interactive language processing    *                       *
5  Batch         Submit job for language processing * this area may contain *
6  Command       Enter TSO or Workstation commands  *                       *
7  Dialog Test   Perform dialog testing             * identification        *
8  LM Facility   Library administrator functions    *                       *
9  IBM Products  IBM program development products   * information.          *
10 SCLM          SW Configuration Library Manager   ************************
11 Workplace     ISPF Object/Action Workplace
M  More          Additional IBM Products

I  IOF           Interactive Output Facility

Enter X to Terminate using log/list defaults
```

The *IOF Option Menu* can be invoked from TSO READY, CICS, or from ISPF's Option 6 by entering **IOF** or **IOF*** depending upon how IOF was installed for your group. The *IOF Option Menu* normally should not be invoked from a line mode terminal, a clist, or REXX exec.

```
------------------------- IOF Option Menu --------------------------
COMMAND ===>

Follow an option with "?" to display its detailed interface panel.

blank - Your jobs        LOG  - Sys Log    ENC  - Enclaves     OPER - Operlog
  I   - Input jobs       SR   - Sys Req    CN   - Console      ZDS  - z/OS Data
  R   - Running jobs     DEV  - Devices    MAS  - MAS Systems  ZF   - Scan PDS
  O   - Output queue     PR   - Printers   PS   - Processes    ARC  - Archive
  J   - Jobs menu        LINE - Lines      WLM  - WLM Support
  H   - Held Groups      INIT - Inits      CHK  - Health Cks   MORE - More Cmds
  M   - System Monitor   OFF  - Offload    JM   - JES2 info
  P   - IOF Profile      SPV  - Spools     JBC  - Job Classes
                         NOD  - Nodes      APPC - APPC menu

JOBNAMES ===>
                            Enter 1 to 8 generic jobnames above

SCOPE    ===>               ALL, ME or another user's USERID
DEST     ===>
                            Enter 1 to 8 destinations above
```

IOF Option Menu Description

The *IOF Option Menu* is tailored to each individual user.   Users see only the options they are authorized to use. The full *IOF Option Menu* with all options is shown above. Most users will not see all the options shown above.

The *IOF Option Menu* has a command area at the top followed by a description of the primary options. Parameters can be entered in the parameter fields at the bottom of the screen. The example menu shown above has all options displayed. Since users will only be shown the options they are authorized to use, many users will see an abbreviated version of this menu.

Command Area Options

Most of the options are self explanatory. Here is additional information about some of the options:

P	Customize IOF operation with profile values
NEW	Display new features of latest release
QT	Quick trainer to ease transition to IOF
ARC	Display previously archived jobs
ZDS	Browse, print, email, or copy z/OS data sets
ZF	Scan z/OS partitioned data sets
MORE	Display a sub-menu of additional commands

You may not see all the options shown on the sample option menu above. Only the options you are permitted to use will be shown on your menu.

Entering Options on other IOF Panels

If your installation has enabled IOF Option Menu commands on all IOF panels, you can enter any Option Menu option on any IOF panel. Otherwise, you may enter Option Menu options on other IOF panels by preceding them with the IOF jump character (/).

Parameter Fields

The three parameter fields at the bottom of the panel are used in conjunction with the command area option. The three fields listed on this menu are the parameters that will be needed most often.

Jobnames Selection Field

```
     JOBNAMES ===>   CICSMAIN   PROD*   ++SAS*
                                  Enter 1 to 8 generic jobnames above
```

One to eight job names can be specified in the JOBNAMES fields. Only jobs or output groups that match one of the names will be displayed. IOF uses the plus character (**+**) to represent a single-character wildcard which can be placed in any position within the job name. The asterisk (*****), referred to as a wildcard terminator, is used as a multi-character wildcard for characters at the end of a job name. The example above will restrict the display to:

- The CICSMAIN job, and
- Job names beginning with the characters PROD, and
- Job names with SAS in the third through fifth positions.

Scope Selection Field

```
SCOPE        ===> SMITH       userid  - Another user's jobs  ME  -Just your jobs
                              GROUP    - Your IOF group       ALL -All jobs
                              groupid - Another IOF group
```

The SCOPE field is used to control the scope of an IOF session. The default scope depends on the values entered in the command and parameter fields. If the command area is blank and no other parameter fields are specified, the default scope is ME which displays only your jobs. Specifying JOBNAMES changes the default scope to ALL and displays all jobs that match the job names entered.

Another user's USERID can be specified in SCOPE, as shown in the above example. If you are authorized, a menu of that user's jobs will be displayed. Depending upon the IOF options selected by your installation, you may be able to specify an IOF group name in the SCOPE field, or the word GROUP, to display all jobs in your group.

Dest Selection Field

```
    DEST    ===>  NAPLES  R77
                                  Enter 1 to 8 destinations above
```

The DEST field limits the display of jobs, groups, or devices to those associated with one of the specified destinations. Destination names, node numbers and remote numbers can be specified. The example above requests the destinations NAPLES and remote 77.

Specialized Option Menus

Additional options and parameter fields can be specified on specialized option menus that are available for each command area option. A specialized menu can be requested by following those options with a question mark (**?**). For example, to display the *System Monitor Option Menu*, enter **M?** in the command area.

The specialized option menus are self explanatory, easy to use, and have help available.

SAVEPROF Command

The **SAVEPROF** command saves a copy of option menu selection fields in your profile data set. Any time that option menu is displayed, it's fields are initialized to the saved value. For example, if you normally need to review only jobs with job names beginning PROD or BKUP, then set **PROD* BKUP*** in the JOBNAMES field, and enter **SAVEPROF** in the command area of the *IOF Option Menu*.

The **SAVEPROF** command is available on all IOF option menus. The JOBNAMES, SCOPE and DEST fields are saved in common profile variables for all option menus (except the *Device Option Menu*), so that specifying values for these fields on any option menu causes the value to be set in any other option menu you may display.

All other fields are unique to each option menu and only apply if that option menu is displayed. For example, specifying a CLASSES field value on the

Input Jobs Selection Menu only has meaning when you display that menu. If you display input jobs without going through that menu, the classes specification is ignored.

IOF Jump Function

All option menu parm fields are reset to their profile value by the IOF JUMP command. Slash (/) is an abbreviation for JUMP on most systems.

Option Parameters

Many of the options that can be entered in the command area also have positional parameters. There are two types of positional parameters. The first type parameter is entered immediately adjacent to the command, while the second type parameter is entered after an intervening space.

For example, the **I** option allows one or more input classes immediately adjacent to the command. It also allows **H** for held jobs, or **NH** for non-held jobs as the second type parameter. Entering **Iabt H** as an option means input the held jobs on classes A, B, and T.

The table below describes the positional parameters accepted by specific options:

Option	Type 1 Parameter	Type 2 Parameter
I	input classes	"H" for held, "NH" for non-held
J	none	jobname
R	none	"J" for Jobs, "T", "S", or "ALL"
H	held classes	jobname
O	none	none
G	output classes	forms
PR	printer number	none
D	none	device name or device type
M	none	monitor parm
INIT	initiator range	initiator range
LOG	none	sysid, old, oper, syslog
Q	none	none
P	none	none

Several additional options that are not documented on the panel can be entered on the *IOF Option Menu* or following a slash (*I*) on any menu:

Parm	Description
CUR	Select the current TSO session
JOBnnnnnn	Select job number nnnnnn
TSUnnnnnn	Select TSO session with number nnnnnn
STCnnnnnn	Select STC number nnnnnn
DA	Alias for the "M" option
ST	Alias for the "blank" option
REMOTEn	Display remote n devices

PREFIX, SUFFIX, OWNER, and DEST Commands

The **PREFIX** command can be used from any IOF panel to initialize the JOBNAMES field of the *IOF Option Menu*. One to eight generic job names can be specified as parameters. **PREFIX** with no parameters resets JOBNAMES to null.

The **SUFFIX** command also can be used from any IOF panel to initialize the JOBNAMES field of the *IOF Option Menu* to cause selection of jobs based on a job name suffix. The command **SUFFIX X** will cause selection of all job names that end in X. The command **SUFFIX 9*** will cause selection of all job names that contain a 9 in any position.

The **OWNER** command can be used from any IOF panel to initialize the SCOPE field of the *IOF Option Menu* to a specific userid or IOF group name. This has the same effect as setting SCOPE on the *IOF Option Menu* and then entering the **SAVEPROF** command.

The **DEST** command can be used from any IOF panel to initialize the DEST field of the *IOF Option Menu* to one to eight destinations. This has the same effect as setting one or more destinations on the *IOF Option Menu* and then entering the **SAVEPROF** command.

Remember that **PREFIX**, **SUFFIX**, **OWNER** and **DEST** operands are saved in the profile. These profile variables will affect all future IOF sessions until you change them with another **PREFIX**, **SUFFIX**, **OWNER**, or **DEST** command.

PSAVE, PRESTORE and PLIST Commands

The **PSAVE** command must be issued on the *IOF Option Menu*. It saves the values of PREFIX, OWNER and DEST in the user's profile. A one character parm is required on the **PSAVE** command. Letters A-Z and numerals 0-9 may be used as the parm. This provides 36 separate slots for saving PREFIX, OWNER and DEST values.

The **PRESTORE** command can be issued on any IOF panel to restore the values of PREFIX, OWNER and DEST from the profile. The one character value specified on PSAVE is used as a parm. **PRESTORE** with no parms resets PREFIX, OWNER and DEST to null values.

The **PLIST** command displays the all the variables saved with PSAVE.

5. The IOF Command

Introduction

Any combination of options that can be requested through the *IOF Option Menu* (or one of its sub-menus) can also be requested directly using the **IOF** command. The **IOF** command can be entered in any environment in which normal TSO commands or CICS transactions are accepted. It is the only way to start up an IOF session when running from a line-mode terminal, a TSO clist, or REXX exec. The **IOF** command also can be entered from any IOF panel to start a new IOF session.

Syntax

The general syntax for the IOF command follows.

Syntax

```
IOF        jobname/*
           [SCOPE(scope)]
           [DEST(dest)]
           [CLASS(classes)]
           [JOBNAME(jobname-list)]
           [JOBID(job-id)]
           [INPUT/OUTPUT/RUNNING/GROUP/DEVICE/MONITOR
            /QUEUE/MAS]
           [SELECT(criteria-name)]
           [TYPE(ENCLAVE/PROCESS/SCHENV/SCHRES/CHECK
           /JOBCLASS/VOLUME/NODE)]
           [VALUE(comp-value)]
           [FROMNODE(JES2-node)]
           [TONODE(JES2-node)]
           [DEVICE(device-list)]
           [DEVDEST(device-dest)]
           [MYJOBS/ALLJOBS]
           [SORT(sort-name)]
           [APPC]
           [CURRENT]
           [CLIST]
           [JOBLIST]
           [OPTMENU]
```

jobname/*. Specifies the generic name of the job or jobs that are to be selected for review. An asterisk (*****) means that you don't want to request a specific job name but do have other operands following the asterisk.

A plus (**+**) in the job name means exactly one arbitrary character. An asterisk (*****) as the last character means zero or more arbitrary characters. For example a job name of **AB+D*** would match any job name that begins with AB and has D as its fourth character.

You can also specify **jobname(job-id)** if you want to select a specific job based on job name and id.

```
IOF   PAYROLL(J2381)
```

SCOPE(scope). Indicates that you do not want the default scope for this IOF session. To see another user's jobs, specify the userid in the SCOPE parm.

```
IOF  *  SCOPE(SMITHJ)
```

To see the jobs associated with your user group, specify GROUP.

```
IOF  *  SCOPE(GROUP)
```

To see the jobs associated with another group, specify the name of the other group.

```
IOF  *  SCOPE(MANUF)
```

DEST(dest-ids). Specifies that this IOF session should be limited to only those jobs (or output groups) with a destination that matches one of these destinations. Up to eight can be requested, and must be separated by either a space or a comma.

CLASS(classes). Specifies that this IOF session should be limited based on the input class of jobs or the output class of output groups. Up to eight input/output classes may be requested. Multiple classes are requested without delimiting blanks.

```
IOF  *  CLASS(AGR)
```

JOBNAME(jobname-list). Specifies up to eight generic job names for this session, separated by blanks.

JOBID(job-id). Specifies the JES2 job identifier for a job to be reviewed.

INPUT. Specifies that only input jobs are to be displayed on the *IOF Job List Menu*.

OUTPUT. Specifies that only output jobs are to be displayed on the *IOF Job List Menu*.

RUNNING. Specifies that only running jobs are to be displayed on the *IOF Job List Menu*.

GROUP. Specifies that the *IOF Output Group Display* should be invoked to display output groups.

DEVICE. Specifies that the *IOF Device Options Menu* should be displayed. From this menu you can request a display of any JES2 devices. You also can request a specific device directly from the IOF command.

```
IOF  *  DEVICE(PRT1)
```

MONITOR. Specifies that the *IOF System Monitor* panel should be displayed. You also can request specific types of address spaces to be monitored. For example you could request,

```
IOF  *  MONITOR(OTSU)
```

to see only TSO users.

QUEUE. Requests a display of the input job queue statistics.

MAS. Specifies the display of *IOF JES2 System Display*.

SELECT(criteria-name). Specifies the name of a selection criteria that is to be applied when selecting jobs for the *IOF Job List Menu* or output groups for the *IOF Output Group Display*. The **VALUE** operand (see below) can be used as a parm to the **SELECT** routine. For example you could request,

```
IOF  *  SELECT(SIZE)  VALUE(100)
```

which would select only jobs with more than 100 track groups.

You can specify as many **SELECT** clauses as you want on an IOF command, but the **VALUE** for each clause must immediately follow the **SELECT** operand.

Each type of display has its own valid SELECT routines.

For jobs:

Name	Description
SIZE	Only jobs with more track groups than **VALUE**
HELD	Only jobs that are held by the operator

STC	Only started tasks
TSU	Only TSO users
JOB	Only jobs
HELDOUT	Only jobs with held output
BUSY	Only jobs that are busy printing
SYSID	Only jobs running on system id matching **VALUE**
XMIT	Only jobs on the transmit queue
SYSLOG	Only the running SYSLOG task

For output groups:

Name	Description
FORMS	Groups with **FORMS** matching **VALUE**
UCS	Groups with **UCS** matching **VALUE**
WTRID	Groups with **WTRID** matching **VALUE**
FCB	Groups with **FCB** matching **VALUE**
FLASH	Groups with **FLASH** matching **VALUE**
BUSY	Groups busy on a printer
SYSID	Groups with system affinity matching **VALUE**
HARDCOPY	Only groups on hard copy queue
TRANSMIT	Only groups on transmit queue
NONHELD	Only groups with **OUTDISP=WRITE** or **OUTDISP=PURGE**
HELD	Only groups with **OUTDISP=HOLD**, **OUTDISP=KEEP**, or **OUTDISP=LEAVE**
OPERHOLD	Only groups held by operator
USIDDEST	Only groups with userid-type destination
DAYSOLD	Groups more days old than **VALUE**
WTRIDANY	Groups with any writer id
MAILID	Groups that are mail for **VALUE** userid
SIZE	Groups with more records than **VALUE**

VALUE(comp-value). Specifies a comparison value for the preceding **SELECT** operand. You can specify as many **SELECT** clauses as you want on the IOF command, but the **VALUE** for a **SELECT** clause must immediately follow the **SELECT** operand.

```
IOF  *   SELECT(FORMS) VALUE(WHITE)  SELECT(WTRID)
         VALUE(JSMITH)
```

FROMNODE(JES2-node). Select only jobs that were submitted from this JES2 node.

TONODE(JES2-node). Select only jobs that are to be printed at this node.

XEQNODE(JES2-node). Select only jobs that are to execute at this node.

DEVICE(device-list) Select only the JES2 devices specified here.

DEVDEST(device-dest). Select only devices that are associated with one of these destinations (up to eight).

MYJOBS. Requests that this session be restricted to your jobs. This operand would normally only be entered if you are an authorized user (OPERATOR authority, etc.), and you are trying to look at some subset of your own jobs. For authorized users, if you request **DEST**, **CLASS**, or other restricting criteria it is assumed that you want to see all jobs (or output groups) in the system that match the criteria.

This is a way for you to request restricting criteria and also restrict the display to only your jobs.

ALLJOBS. Requests that all jobs be considered for this session, even if **DEST**, **SCOPE** or other restricting criteria have been specified.

SORT(sort-name). Specifies the name of the sort algorithm to be used to order the list of jobs, output groups, or devices. Each type of display has its own set of valid sort algorithms:

For jobs:

Name	Description
blank	Job id within job name
INVNULL	Inverse order on queue
DEST	Destination
NULL	Order on queue
JOB#	Job number
SIZE	Number of track groups
AGE	Inverse date/time of output

For output groups

Name	Description
blank	Order on queue
SIZE	Number of records
FORMS	Output forms
UCS	Output UCS
FCB	Output FCB

WTRID	Writer id
FLASH	Flash
INVNULL	Inverse order on queue

TYPE(sessiontype). Initiate a special type IOF session. Supported types are **ENCLAVE**, **PROCESS, SCHENC, SCHRES, CHECK, JOBCLASS, VOLUME** and **NODE**.

APPC. If **GROUP** is also specified, only output groups generated by APPC transactions will be selected. If **MONITOR** is also specified, then only active APPC sessions will be displayed.

CURRENT. Selects the current user's TSO session (or batch job) for review.

CLIST. Specifies that this IOF command is coming from a TSO clist and that IOF should read subsequent input from the clist. See Chapter 18 for more information about running IOF from a clist.

JOBLIST. Requests that the IOF session should be positioned to the *IOF Job List Menu* (or *Output Group Display* or *Device List Display*) for clist applications. In several cases, like selecting a specific job by name, IOF will go directly through the *IOF Job List Menu* to the *IOF Job Summary* if there is only one matching job.

When you are writing a clist, you need to know exactly which panel will display as a result of the IOF command. The **JOBLIST** operand allows you to force IOF to always stop on the *IOF Job List Menu*, the *Output Group Display*, or the *Device List Menu*.

OPTMENU. If specified, all other parms are ignored, and the *IOF Option Menu* is displayed. This parm is useful in clist and REXX applications.

IOFNEST Command

The **IOFNEST** command is used to nest a new IOF session under the current session. **IOFNEST** has all the same parameters and syntax as the IOF command.

NESTEXIT Command

The **NESTEXIT** command terminates a nested IOF session and returns to the original IOF session.

6. Setting Profile Options

Introduction

The *IOF Profile Menu* is used to set global profile variables for your IOF sessions. From this menu you can:

- Assign unique IOF PF Key sequences.
- Set terminal characteristics.
- Specify your default sysout class and printer destination.
- Save your name and output delivery instructions to insure that any printed output produced from your IOF session will be properly identified and marked for delivery to you.

IOF maintains a unique profile for each environment from which it can be invoked. If you run IOF from ISPF, CICS, and TSO READY, you must set your profile variables in each of these environments.

The *IOF Profile Menu* is invoked by option **P** on the *IOF Option Menu* or by entering **/P** from any IOF panel.

```
---------------------------- IOF Profile Menu -------------------------
 COMMAND ===>

      0  - Specify Program Function Key Options

      1  - Specify IOF user profile options

      2  - Specify default characteristics for sysout snap data sets

      3  - Specify default characteristics for disk snap data sets

      4  - Specify default characteristics for z/OS Unix snap files

      5  - Specify print attributes to be set for TSO session

      6  - Specify screen field attributes (ISPF only)

      7  - Specify log, console, and MVS command options
```

Setting Profile Values with a Command

In addition to using the *Profile Option Menu*, any of the IOF profile values also may be set using the **SETPVAR** command:

```
          SETPVAR      variable-name      value
```

The **SETPVAR** command can be issued from any IOF screen and will set the requested profile variable. The names of some IOF profile variables are:

Name	Usage
DFLBANNR	Print banner for spun sysouts (CICS only)
DFLCLASS	Default release/print/snap class
DFLCOND	Condense option for browse
DFLCOMP	Compress option for browse
DFLFINDL	Find limit
DFLLINCT	Line count value for sysouts spun by IOF
DFLNAME	User name for sysouts spun by IOF
DFLPF1,...,24	Program Function Key 1,...,24
DFLPRINT	Default print dest for IOF session
DFLROOM	Room name for sysouts spun by IOF
DFLTITLE	Report title for print banner
DFLNAME1	Name for print banner delivery instructions
DFLADDR1	Line 1 of print delivery address
DFLADDR2	Line 2 of print delivery address
DFLADDR3	Line 3 of print delivery address
DFLADDR4	Line 4 of print delivery address
DFLDEPT	Department for print delivery instructions
DFLBLDG	Building for print delivery instructions
DFLROOM1	Room name for print delivery instructions
DFLNOFT1	Notify this user when print completes
DFLNOTF2	Notify this user when print completes
DFLNOTF3	Notify this user when print completes
DFLNOTF4	Notify this user when print completes
DFLUSLB1	User library for PAGEDEF's and FORMDEF's
DFLUSLB2	User library for PAGEDEF's and FORMDEF's
DFLUSLB3	User library for PAGEDEF's and FORMDEF's
DFLUSLB4	User library for PAGEDEF's and FORMDEF's
DFLUSLB5	User library for PAGEDEF's and FORMDEF's
DFLUSLB6	User library for PAGEDEF's and FORMDEF's
DFLUSLB7	User library for PAGEDEF's and FORMDEF's
DFLUSLB8	User library for PAGEDEF's and FORMDEF's
DFLSCROL	Default scroll amount
OPTDEST	Destination for DEST command
OPTJOBN	Job name for PREFIX command

OPTSCOP	Owner id for OWNER command	
OPTSORT	Sort	

The **SETPVAR** command can be used to assign values to any variable name. In many cases, IOF options can be overridden by setting a profile value to an options variable name.

Assigning Local and Temporary Variables

The **SETLVAR** command assigns a value to a local variable. The syntax is identical to the **SETPVAR** command. Local variables exist for the duration of the IOF session only. Local variables are used by clists and REXX execs to define a temporary condition, such as the IOF **TRAC**E on/off switch.

The **SETTVAR** command assigns a value to a temporary variable that is anchored to the current IOF panel. Temporary variables are automatically deleted as soon as the current panel is terminated. Syntax is identical to the **SETPVAR** command.

Deleting Profile and Local Variables

The **DELPVAR** command deletes a profile variable. **DELLVAR** deletes a local variable.

Syntax

```
DELPVAR/DELLVAR        variable
```

Examples

```
DELPVAR     GRPfPANEL
DELLVAR     CANVERFY
```

Displaying IOF Variables

The **DVAR** command is used to display IOF variables. **DVAR** will display options, session, system, profile, and local and temporary variables. **DVAR** with no parms displays an option menu to allow selection of variable types for display. To display a specific IOF variable, follow the **DVAR** command with the variable name. Specify **PROFILE** to display a list of all session IOF profile variables.

Syntax

```
DVAR    [variable/PROFILE]
```

Examples

```
DVAR
DVAR        ACFTYPE
DVAR        PROFILE
```

Customizing IOF Panels

The column arrangement for most IOF list panels can be modified by each user by using the **ARRANGE**, **CUT** and **PASTE** commands. Modifications are saved in the user's profile, and remain in effect until reset. An abbreviated description of these commands is included with each panel on which they are valid. A more complete description is included here. The complete syntax is not needed by most end users but may be needed by clists and REXX execs.

The easiest way to modify a panel is to enter the **CUT** command, and point the cursor to the field to be removed from the panel. Several fields can be cut in succession. Then, use the **PASTE** command with the cursor pointed to the place the previously cut fields will be inserted.

Each section on an IOF panel must be modified separately. For example, moving the OWNER field on the **Input Jobs Section** of the *IOF Job List Menu* has no effect on the **Output Jobs Section** format.

CUT Command

Use the **CUT** command to remove fields from a panel. Removed fields can be pasted back at a different position. If not pasted, cut fields are eliminated from the panel.

Syntax

```
CUT   [field]
```

  field. The name of the field to be cut. If not specified, the field pointed to by the cursor is cut.

PASTE Command

Use the **PASTE** command to designate where previously cut fields should be inserted in the panel.

Syntax

```
PASTE    [BEFORE/AFTER/FIRST/LAST]    [field]
```

  BEFORE. Paste before the designated field; default parameter.

  AFTER. Paste after the designated field.

  FIRST. Moves field to the first scrollable position.

LAST. Moves field to the far right of the display.

field. The name of the pointer field. If not specified, then the previously cut fields are pasted relative to the current cursor position.

ARRANGE Command

The **ARRANGE** command provides the most complete method of modifying a panel format. Both the cut and paste operation optionally can be done at one time using **ARRANGE**. In addition, it can be used to delete any previously defined panel modifications from the user's profile.

Syntax

```
ARRANGE    [field1]    [FIRST/LAST/BEFORE/AFTER]
           [field2]    [DEFAULT]    [$TEMP]
```

field1. The name of the field to be moved. This is an optional parameter. An alternate method of specifying field1 is to place the cursor on the desired field.

FIRST. Moves field1 to the first scrollable position.

LAST. Moves field1 to the far right of the display.

BEFORE. Moves field1 in front of field2.

AFTER. Moves field1 after field2.

field2. The name of the target field.

DEFAULT. Resets the display for the current section to the default column arrangement.

$TEMP. Defines all subsequent **ARRANGE**, **CUT** and **PASTE** commands entered on the current panel as temporary and does not save them in the user's profile. The temporary arrangement ends on exit from the current IOF panel. **ARRANGE $TEMP** is primarily used in IOF clists to set temporary displays for a specific purpose.

Examples

```
ARRANGE    DEFAULT
ARRANGE    COMMENTS    FIRST
ARRANGE    FORMS       AFTER       DEST
ARRANGE    $TEMP
```

ALTVIEW Command

The **ALTVIEW** command offers a way to cause pre-defined alternate views of a panel to be displayed. Each time the **ALTVIEW** command is entered, the next available view is displayed. The original view is displayed after the last available view. The selected alternate view is saved in the user's profile. Currently, only the output jobs section of the *IOF Job List Menu* has alternate views defined, but alternate views may be defined for additional panels in future releases of IOF.

Summary

The *IOF Profile Menu* and **SETPVAR** command can be used to set several options for all your IOF sessions. The importance of specific options will be seen later in this guide.

The **CUT**, **PASTE** and **ARRANGE** commands can be used on all IOF list displays to customize the panel display. The modified display format is saved in the user's profile.

7. Job List Menu

Description

The *IOF Job List Menu* displays a list of jobs. It is invoked from one of its submenus, from the *IOF Option Menu*, or directly from the IOF command. By default only the jobs that a user submitted are displayed. However, it also can be set to display many other job lists. Options **I**, **R**, **O**, and **J**, on the *IOF Option Menu* are used to request lists of specific job types. Also, lists of jobs by destination, group, or other criteria can be displayed.

```
--------------------------- IOF Job List Menu ------------( 10 )-----------
COMMAND ===>                                           SCROLL ===> SCREEN
-------------------------------- Input Jobs --------------------------------
-------JOBNAME--JOBID---ACT-STAT-OWNER----C-POSIT-PRTY-SRVCLASS-QUALIFIER------
_    1 DMSMERG1 J007890     JOB   ISIJER   A   4       9
------------------------------- Running Jobs -------------------------------
-------JOBNAME--JOBID---ACT-STAT-SYID-------CPU-------I/O-STEP-----PROCSTEP-SWP
_    2 MODELGN  J007825         A83B
_    3 QAS311   J006060         B83D      53:03    443.02 QAS311            IN
_    4 TSCDRS   J000777         B83D        :02      1.75 TSCDRS   RBTR    OUT
------------------------------- Output Jobs --------------------------------
-------JOBNAME--JOBID---ACT-STAT-OWNER----DEST/DEVICE-------RECS-HELD-DAY--TIME
_    5 DSMERG0  J004118         ISIJER    NAPLES          48K  19K 008 12:29
_    6 MAKLOAD  J008862         ISIJER    TRIANGLE             12K 018 15:17
_    7 MAKOPTN  J008098         ISIJER    PRINTER1        108      018 14:25
_    8 MAKSRCE  J001929         ISIJER    ISIWPC          421      016 18:12
_    9 PNTSRCE  J008099         ISIJER    R18.PR1         164K     009 14:26
_   10 SALESRUN J008854         ISIJER    LOCAL.<IP>      4333 466 017 15:59
```

Sections and Fields

The *IOF Job List Menu* is organized by sections. Each section displays a different job type so that the most appropriate information for each is shown. Additionally, each section is named and can be used in commands.

The vertical columns of data are called fields. Each field has a field heading (title) and a field name. Where possible, field names are identical to the field heading. For example, **JOBNAME** and **JOBID** are field names that match the field heading. Some field headings are abbreviated or expanded from the field name. For example, the **CLASS** field has a heading of **C**. Fields and section information is available in the panel's **HELP**.

Several fields on the *IOF Job List Menu* are common to all sections. From the left:

- Line command area for entering line commands
- Menu number used for entering line commands in the primary command area
- JOBNAME and JOBID of the job
- Action Column (ACT) that displays the last successful action done to the job
- Status Column (STAT) that shows why a job is held or other status information.

The remaining fields on the panel vary according to the section shown. Thus, the most appropriate data for each job type can be displayed. Additional fields can be seen by scrolling right.

Input Jobs Section

Input jobs, if any, are displayed first on the *IOF Job List Menu*.

```
--------------------------- IOF Job List Menu ------------( 10 )-----------
COMMAND ===>                                               SCROLL ===> SCREEN
--------------------------------- Input Jobs --------------------------------
-------JOBNAME--JOBID---ACT-STAT-OWNER----C-POSIT-PRTY-SRVCLASS-QUALIFIER------
_     1 DMSMERG1 J007890     JOB  ISIJER   A    4     9
```

The **Input Job Section** in the sample menu shows that:

- There is one input job named **DMSMERG1**
- The jobid is **J007890**
- DMSMERG1 is on **job hold** as indicated in the status column. (The **TYPRUN=HOLD** job statement parameter will cause the job to be held.)
- Input class of the job is **A**
- DMSMERG1 is on the class **A** queue in the fourth (**4**) position
- Input priority is **9**

Running Jobs Section

Running jobs, if any, are displayed next.

```
--------------------------- IOF Job List Menu ------------( 10 )-----------
COMMAND ===>                                                SCROLL ===> SCREEN
------------------------------ Running Jobs ---------------------------------
-------JOBNAME--JOBID---ACT-STAT-SYID-------CPU-------I/O-STEP-----PROCSTEP-SWP
_     2 MODELGN  J007825          A83B
_     3 QAS311   J006060          B83D     53:03     443.02 QAS311          IN
_     4 TSCDRS   J000777          B83D       :02       1.75 TSCDRS   RBTR   OUT
```

The sample running jobs menu shows:

- There are three jobs currently running, one on system **A83B** and two on system **B83D**
- **MODELGN** is running on system **A83B** which is another member of the shared spool system.
- **QAS311** has used **53** minutes **03** seconds CPU time, **443.02** I/O seconds and is currently swapped **IN**.
- **TSCDRS** has used **02** seconds CPU, **1.75** I/O seconds, and is swapped **OUT**.

Output Jobs Section

Output jobs, if any, are displayed next.

```
--------------------------- IOF Job List Menu ------------( 10 )-----------
COMMAND ===>                                                SCROLL ===> SCREEN
------------------------------ Output Jobs ----------------------------------
-------JOBNAME--JOBID---ACT-STAT-OWNER----DEST/DEVICE-------RECS-HELD-DAY--TIME
_     5 DSMERG0  J004118        ISIJER    NAPLES           48K  19K 008 12:29
_     6 MAKLOAD  J008862        ISIJER    TRIANGLE              12K 018 15:17
_     7 MAKOPTN  J008098        ISIJER    PRINTER1         108      018 14:25
_     8 MAKSRCE  J001929        ISIJER    ISIWPC           421      016 18:12
_     9 PNTSRCE  J008099        ISIJER    R18.PR1          164K     009 14:26
_    10 SALESRUN J008854        ISIJER    LOCAL.<IP>      4333  466 017 15:59
```

The sample menu of output jobs shows that:

- Six output jobs are displayed
- The destination of each job (**NAPLES, TRIANGLE, ISIWPC, LOCAL**)
- **MAKOPTN** is currently printing on **PRINTER1** and has **108** records left to print.
- **PNTSRCE** is printing on **R18.PR1** and has about **164,000** records left to print.
- **SALESRUN** has **4333** held data sets and was run on the **17**th day of the year at **15:59**.

The **DEST/DEVICE** column normally shows a destination. If the job is busy printing, the device name is shown instead.

The **DAY** and **TIME** fields are highlighted if the job ran today and are non-blank only if the job has at least one output group. Each output group is time stamped, and the earliest group time stamp is displayed in this field.

Other Job List Menu Sections

There are several additional sections on the *IOF Job List Menu* that will be displayed when needed. You may occasionally see jobs queued for transmission to another node, or jobs queued to be purged from the system. See the Appendix for directions on accessing **HELP** for field and section information.

Line Commands

Subject to restrictions that may be imposed by your installation, the following line commands can be executed on the *IOF Job List Menu*:

SD	Display SD panel and then snap job to that target data set and closes it
SS	Display SD panel and then snap job to that target data set and closes it
SU	Display SU panel and then snap job to that target data set and closes it
SNAPJOB	Calls IOFSNAPJ to create a "send" job data set versus sending it to a specified location
?	Display function menu for a job. When in doubt about available commands, use the question mark to get assistance.
S	Select job for review by the *IOF Job Summary*.
B	Browse entire job as one continuous data set. Skip the job summary.
SQ	Select large jobs quickly to display the data sets on the *IOF Job Summary* but skip the display of steps.
C	Cancel job. Output jobs are purged; running jobs go to output.
PU	Purge the job from the queue.
PR	Print job at the user's default print destination and sysout class. The job's held data sets, if any, are released to the default sysout class and the destination for the job is set to your default print destination. The default print destination and class are set in the IOF profile by using option **1** on the *IOF Profile Menu*. See Chapter 6 for information on setting profile options.
R	Release held data sets to class specified in your profile determined by option **1** on the *IOF Profile Menu*. See Chapter 6 for information on setting profile options.

V	View the job using a saved index. See Chapter 9, Save Internal Browse Index.
H	Hold job.
A	Release a held job.
RES	Restart a running job.
PC	Print check. Determine why job output will not print (TSO only).
ED	Edit the job. Rebuild the original job in a temporary data set and enter the ISPF editor (ISPF only).
SUBmit	Rebuild and resubmit the original job.
M	Modify job attributes (or overtype with new attributes)
CMT	Add a 1 to 40 character comment to the comments field. This command is normally entered with a menu number on the command line and is primarily designed for clist or REXX use.
CDUMP	Cancel a running job with a dump.
X	Exclude job from the *IOF Job List Menu*.
N	Snap a copy of entire job. In a REXX exec you can snap the entire job in HTML text format by using the menu number for the job: "3 snap htmltext". This indicates that the job's data is to be displayed by a web browser. This option does not supply any HTML header or trailer information, but it does prevent any text strings in the job's data from being interpreted as HTML commands. See **Snapping in HTML Format** in Chapter 16 for more HTML features.
SS,SD,SU	One step commands to set up the snap target data set and snap the job's output.
HDR	Add a block header to the target snap data set. The **JOBNAME** and **JOBID** are formatted into block characters.
AT	Start a server session on the system where a running job currently is executing.
SJ	Start job immediately (WLM GOAL mode only).
SEND	Send this job via email. Note that this command requires that the IOF Send facility be activated at your site. Enter **HELP** on the SEND interface menu for a complete description of sending jobs.
ARC	Archive this job to a z/OS partitioned data set. Enter **HELP** on the archive interface panel for a description of the archive facility.

```
---------------------------- IOF Job List Menu -------------( 3 )-----------
COMMAND ===>                                           SCROLL ===> SCREEN
------------------------------ Running Jobs ------------------------------
-------JOBNAME--JOBID---ACT-STAT-SYID-------CPU-------I/O-STEP-----PROCSTEP-SWP
C    1 MODELGN  J007825         A83B
_    2 QAS311   J006060         B83D      53:03     443.02 QAS311           IN
S    3 TSCDRS   J000777         B83D        :02       1.75 TSCDRS   RBTR    OUT
```

Line commands are normally entered in the line command area to the left of
the job. The example above shows that the first job (**MODELGN**) has been
cancelled (**C**) and the third job (**TSCDRS**) has been selected (**S**) for review.

Overtyping Job Characteristics

Job characteristics can be modified simply by overtyping on the menu.

```
---------------------------- IOF Job List Menu -------------( 3 )-----------
COMMAND ===>                                           SCROLL ===> SCREEN
------------------------------ Input Jobs --------------------------------
-------JOBNAME--JOBID---ACT-STAT-OWNER----C-POSIT-PRTY-SRVCLASS-QUALIFIER------
_    1 DMSMERG1 J007890    JOB ISIJER    A    4      9
------------------------------ Output Jobs -------------------------------
-------JOBNAME--JOBID---ACT-STAT-OWNER----DEST/DEVICE-------RECS-HELD-DAY--TIME
_    2 DSMERG0  J004118         ISIJER    NAPLES            48K  19K 008 12:29
P    3 MAKLOAD  J008862         ISIJER    LOCAL                  12K 018 15:17
```

Modifications can be done in conjunction with any of the commands. In the
example above, the third job (**MAKLOAD**) is being printed (**P**) to an explicit
destination of **LOCAL**.

Scroll right to see the additional overtypeable job characteristics.

Line Commands in the Command Area

Optionally, line commands can be entered in the command area at the top of
the screen. This method may be faster and save key strokes for certain
commands. It is the only way to enter line commands from line mode
terminals, from batch TSO, and from IOF clists.

```
---------------------------- IOF Job List Menu -------------( 5 )-----------
COMMAND ===> 1-3 5 C                                   SCROLL ===> SCREEN
------------------------------ Output Jobs -------------------------------
-------JOBNAME--JOBID---ACT-STAT-OWNER----DEST/DEVICE-------RECS-HELD-DAY--TIME
_    1 DSMERG0  J004118         ISIJER    NAPLES            48K  19K 008 12:29
_    2 MAKLOAD  J008862         ISIJER    TRIANGLE               12K 018 15:17
_    3 MAKSRCE  J001929         ISIJER    ISIWPC            421      016 18:12
_    4 PNTSRCE  J008099         ISIJER    R18.PR1          164K      009 14:26
_    5 SALESRUN J008854         ISIJER    LOCAL.<IP>       4333  466 017 15:59
```

Line commands in the command area begin with a job menu number or list of menu numbers. This identifies the job(s) for which the command will be executed. The line command in the above example **cancels** jobs **1 through 3** and **5**.

To select a job, enter its menu number in the command area. For example, entering **5** in the command area would select **SALESRUN** for review.

Parms for Line Commands in the Command Area

Job characteristics also can be modified from the command area. To modify a job, follow the **M** command with the name of the field to be modified and the new value as a parameter. For example, to change the destination of the MAKSRCE job in the menu above to LOCAL, enter:

```
3    M     DEST(LOCAL)
```

in the command area.

The following modification operands can be used with the commands:

Operand	Function
CLASS(c)	Set job input class to c.
PRTY(p)	Set job priority to p.
DEST(route)	Set job destination to the route code.
XEQ(node)	Set the execution node name for an input job.
SYSID(sid1,...,n)	Set the system id to a list of system ids.
IND(YES/NO)	Add or remove JES2 independent mode to the job.
PERFORM(g)	Set the performance group of a running job to g (WLM Compat mode).
SRVCLASS(c)	Set the service class of an input or running job to c (WLM Goal mode).
NEWCLASS(c)	Set new class for released held output.
QUIESCED(YES/NO)	Set WLM goal mode quiesced state.

Primary Commands

The *IOF Job List Menu* provides comprehensive commands to manipulate the list of jobs. Primary commands which apply to the whole job list must be entered in the command area at the top of the screen.

Establish SEND Command Defaults

Enter the **SEND** command to establish default email addresses and data formats for future SEND line commands. Note that this command requires that the **SEND** function has been activated at your site.

Display Archived Jobs

Enter the **ARChive** command to display jobs that were previously archived with the **ARC** line command.

Exclude Job from List

Exclude jobs from the menu based on a display field meeting a specified condition. **EXCLUDE** with no parameters resets all previous exclusions. **EXCL ALL** excludes all items from the list.

Syntax

```
EXCLude    fieldname  operator   string

           ALL
```

---

fieldname. The display field name. Field names are normally the same as the field heading. See the Appendix for detailed information on using **HELP** to determine field names.

operator. Comparison operator. Valid operators are **EQ**, **NE**, **LT**, **GT**, **CT** (containing), **NC** (not containing), **BG** (beginning), and **NB** (not beginning).

string. The string to be compared against. The string can be enclosed in single quotes.

ALL. Exclude all jobs.

Examples

```
EXCLUDE    JOBNAME    EQ    TEST
EXCL       JOBID      BG    S
EXCL       DAYSOLD    LT    3      (Requires EXTEND)
EXCL       SECTION    NE    INPUT
EXCL              (Removes all previous exclusions)
EXCL       ALL
EXCL       USERNAME   NE    'J SMITH'
```

Unexclude Jobs from List

Return excluded jobs to the menu based on display field meeting a specified condition.

Syntax

```
UNEXcl  fieldname     operator    string
```

> **fieldname**. The display field name. Field names are normally the same as the field heading. See the Appendix for detailed information on using **HELP** to determine field names.
>
> **operator**. Comparison operator. Valid operators are **EQ**, **NE**, **LT**, **GT**, **CT** (containing), **NC** (not containing), **BG** (beginning), and **NB** (not beginning).
>
> **string**. The string to be compared against. The string can be enclosed in single quotes.

Sort Job List

Sort the list of jobs on one to four display fields within section. Sort with no parameters will display a sort assist panel if the cursor remains in the COMMAND input area. Sort without parms with the cursor pointing to a panel field does an ascending sort on that field. The specified sort criteria is saved in the user's profile, unless an initial sort was also specified on the *IOF Option Menu*.

Syntax

```
SORT    field1 [A/D]    [field2 A/D]  [field3 A/D]
        [field4 A/D]

        OFF
```

> **field1**. Display field on which to sort. See the Appendix for detailed information on using **HELP** to determine field names, or enter the **FIELD** command with the cursor pointing to a field to determine the field name.
>
> **A**. Sort in ascending sequence. This is the default for the first sort field.   **A** or **D** must be specified for other sort fields.
>
> **D**. Sort in descending order.
>
> **field2**, **field3**, **field4**. Optional additional sort fields.

OFF. Disable sorting on this panel.

Examples

```
SORT  DATE  D  TIME  D
SORT  CPUTIME  D  (Applies to running jobs only)
SORT  JOBNAME  A  JOBID  A
SORT  OFF
```

Determine a Panel Field Name

Determine the official field name of a displayed field on the panel.

Syntax

FIELD

Point the cursor to the field whose field name is to be determined.
When running under ISPF, a popup window will be displayed. From
TSO or CICS, the field name will be displayed in the short error
message area to the right of the top line on the screen.

Find a Job

Find a job in the job list.

Syntax

```
FIND    string  [FIRST/LAST/NEXT/PREV}
        [SECTION(sectionname)]
        [FIELD(fieldname)]
```

string. The string to be found.

FIRST/LAST/NEXT/PREV. Find the first, last, next or previous
occurrence.

sectionname. Limit the search to the specific section. Use **HELP** to
determine the specific field names.

fieldname. Search the specified field. The default field is
JOBNAME. Use the **FIELD** command with the cursor pointing to a
field on the panel to determine the fieldname, or use **HELP**.

Examples

```
FIND  PAYROLL                (Find a jobname PAYROLL)
FIND  J08862  FIELD(JOBID)   (Find jobid J08862)
FIND  OUTPUT  LAST           (Find last jobname OUTPUT)
```

Up and Down

Scroll the *IOF Job List Menu* up or down.

```
Down/Up [nnn/Max/Section]
```

nnn. Number of rows to scroll up or down.

Max. Scroll to the top or bottom of the menu.

Section. Scroll up to the previous section or down to the next section in the menu.

Right and Left

Scroll the menu to the right or left.

```
RIght/Left  [nnn/Max]
```

nnn. Number of characters to scroll right or left.

Max. Scroll to the right or left margin.

Display Extended Information

Display additional information about each job in the list to the far right of the display. The added information is not resident in the system queue and must be read from disk. Because of this additional overhead, this command may be restricted at your installation.

Information such as job submission time stamp, user name, account number, job execution time stamp, and job age is displayed when extend is on.

```
EXTEND   [ON/OFF]
```

ON/OFF. Enable or disable extend. **ON** is default if neither **ON** nor **OFF** is specified.

Lock the List

The current list of jobs is locked and not updated as long as lock is active. This command can be used before the **EXTEND** command is used to reduce overhead, and is quite useful in clists and REXX execs to allow working with a fixed list of jobs.

Syntax

```
LOCK
```

Unlock the List

The current list of jobs is unlocked and refreshed.

Syntax

```
UNLOCK
```

Refresh the List

This command causes the list of jobs to be refreshed even if the display is currently locked. This command is normally useful only in IOF clists and REXX execs.

Syntax

```
REFRESH
```

Remove Spun Data Sets

Jobs selected after this command has been entered will have no dynamically allocated sysout data sets displayed on the *IOF Job Summary*. Entering this command before selecting a job with a large number of dynamically allocated (spun) sysout data sets can significantly reduce the delay in producing the *IOF Job Summary*.

Syntax

```
NOSPUN
```

Include Spun Data Sets

This is used to turn off the **NOSPUN** option set by the **NOSPUN** command.

Syntax

```
SPUN
```

Remove All But System Data Sets

Jobs selected after this command has been entered will have only the system sysout data sets displayed on the *IOF Job Summary*.

Syntax

NODATA

Include All Data Sets

This command is used to turn off the **NODATA** option.

Syntax

DATA

Define Target Sysout for SNAP (SS)

Defines a sysout target data set for SNAP. See Chapter 16 for a complete description of operands on the **SS** command. If **SS** is entered with no operands, an interface option panel is displayed to assist in defining the target sysout data set.

Syntax

SS

Note that when the **SS** command is entered on the *IOF Job List Menu*, the target data set remains open until it is explicitly closed with a **SNAPCLOS** command, another **SS, SD,** or **SU** command, or until the IOF session is terminated.

Define Target MVS Data Set (SD)

Define an MVS target snap data set. Any non-VSAM data set can be defined as the target data set. See Chapter 16 for a complete description of operands that can be entered on the **SD** command. If **SD** is entered with no operands, an interface panel is displayed to assist in defining the target MVS data set.

Syntax

SD

Note that when the **SD** command is entered on the *IOF Job List Menu*, the target data set remains open until it is explicitly closed with a **SNAPCLOS** command, another **SD, SS,** or **SU** command, or until the IOF session is terminated.

Define Target UNIX File (SU)

Defines a UNIX file as the snap target. See Chapter 16 for a complete description of operands that can be entered on the **SU** command. When **SU** is entered with no parameters, an interface panel is displayed to allow specification of UNIX file parameters.

Syntax

SU

Note that when the **SU** command is entered on the *IOF Job List Menu*, the target data set remains open until it is explicitly closed with a **SNAPCLOS** command, another **SU, SS,** or **SD** command, or until the IOF session is terminated.

Close the Target Snap Data Set

Explicitly close a target snap data set that was previously opened on the *IOF Job List Menu*. Note that the snap data set will automatically be closed when the IOF session is terminated.

Syntax

SNAPCLOS

Add a Block Header to the Target Snap Data Set

Explodes text to block letters and writes them to the previously defined target snap data set.

See Chapter 16 for a complete description of the **SNAPHDR** command.

Add Text to the Target Snap Data Set

Adds carriage control and text to the target snap data set.

See Chapter 16 for a complete description of the **SNAPTEXT** command.

Rearranging Columns on the Panel

See Chapter 6 for a description of the **CUT**, **PASTE**, and **ARRANGE** commands to customize the panel display format.

Determine Return and Abend Codes of all Jobs in the List

Analyze all jobs in the job list to determine the highest return code or abend code. Save the date and time the job ran, the highest code and its stepname,

and the total record count of the job in the COMMENTS field. This command is not available under CICS.

Syntax

```
RC [Cur] [Nozero] [SA] [SD]
```

Cur. If specified, then only current jobs (those that ran yesterday or today) will be analyzed.

Nozero. If specified, then all jobs that have zero return code in all steps will be excluded from the display.

SA. Sort the display in ascending date/time sequence.

SD. Sort the display in descending date/time sequence.

Examples

```
RC
RC    C    N    SA
```

Send Job via Email

Define email addresses to be used by the **SEND** command for individual jobs and data sets. Note that this command requires that the IOF SEND function has been activated at this site.

Syntax

SEND

Filter the display of running jobs by SYSID

For running jobs, limit the display to only those jobs running on a specific SYSID in a MAS system.

Syntax

```
SYSID  ssss
```

Ssss. SYSID of the system to be displayed or null to remove the SYSID filter.

8. IOF Job Summary

Description

The *IOF Job Summary* analyzes a job and displays detailed job information in a simple format. It shows the return codes for each step of the job and lists all the sysout data sets associated with the job. Data sets can be selected for browse, cancelled, modified or released from the *IOF Job Summary*.

The *IOF Job Summary* is displayed by selecting a job from either the *IOF Job List Menu* or the *IOF Output Group Display*. It also will be displayed directly if you request a specific job name and only one job by that name exists in the system. A specific job name can be requested on the JOBNAMES field of the *IOF Option Menu*, or by specifying **I.jobname** from the *ISPF Primary Option Menu*.

```
----------------------------- IOF Job Summary -------------------------------
COMMAND ===>                                              SCROLL ===> CURSOR
--JOBNAME--JOBID----STATUS---RAN/RECEIVED------DAY-------DEST-----------------
  SALESRUN J008882  OUTPUT   12:45   9/06/2017 YESTERDAY TRIANGLE
--RC--PGM--------STEP-----PRSTEP---PROC-----COMMENTS-------------------------
   0  SR1203E   EDIT     PREPARE  SA01A
   0  COMPRE    SORT     PREPARE  SA01A
ABND  SR1203P   WEEKLY   PRINT    SA02A    ABEND SYSTEM=B37 USER=0000
   *  SR1335P   MONTHLY  PRINT    SA02A    NOT EXECUTED
--------DDNAME---STEP-----PRSTEP---STAT-ACT-C-GRP-D-SIZE-U-DEST---------------
_     1 LOG      *                         A   1     23 L TRIANGLE
_     2 JCL      *                         A   1     93 L TRIANGLE
_     3 MESSAGES *                         A   1    245 L TRIANGLE
_     4 SYSPRINT EDIT     PREPARE          A   1   3282 L TRIANGLE
_     5 SYSPRINT SORT     PREPARE          A   1      5 L TRIANGLE
_     6 SYSPRINT WEEKLY   PRINT            A   1    15K L TRIANGLE
_     7 SALESMEN WEEKLY   PRINT            A   1   4167 L TRIANGLE
_     8 SUMMARY  MONTHLY  PRINT     DONE   A
```

Sections and Fields

The *IOF Job Summary* has three sections, each of which displays several fields of data. Both sections and fields have names that are used in some of the panel commands described below. Field names are generally identical to the field heading or title. In some cases this is not possible. For example, in

the data set section, the CLASS field has a field heading of **C** in order to keep the column on the screen as small as possible.

Job Information Section

The job information section at the top of the panel displays basic job information.

```
----------------------------- IOF Job Summary -----------------------------
COMMAND ===>                                                SCROLL ===> CURSOR
--JOBNAME--JOBID----STATUS---RAN/RECEIVED------DAY-------DEST-----------------
  SALESRUN J008882  OUTPUT   12:45   9/06/2017 YESTERDAY TRIANGLE
```

Additional job information can be displayed by scrolling right. The user name from the job statement, notify userid, account number, and various time stamps are available to the right.

Step Section

The Step Section has one line for each job step that summarizes exactly what happened during the step.

```
----------------------------- IOF Job Summary -----------------------------
COMMAND ===>                                                SCROLL ===> SCREEN

--RC--PGM--------STEP-----PRSTEP---PROC-----COMMENTS-------------------------
   0  SR1203E    EDIT     PREPARE  SA01A
   0  COMPRE     SORT     PREPARE  SA01A
ABND  SR1203P    WEEKLY   PRINT    SA02A    ABEND SYSTEM=B37 USER=0000
   *  SR1335P    MONTHLY  PRINT    SA02A    NOT EXECUTED
```

The step section has fields for the return code (**RC**), program name, step name, procedure step name, procedure, and comments. IOF analyzes the job in detail in order to produce this unique summary of the job. The job in the sample panel above has four steps. The first two steps ran with a zero return code as indicated by the 0 in the RC field. The third step abended with return code B37. The fourth step was NOT EXECUTED (*), probably because the third step abended.

Data Set Section

The data set section has one line for each sysout data set associated with the job.

```
------------------------------ IOF Job Summary ------------------------------
COMMAND ===>                                                SCROLL ===> SCREEN

--------DDNAME---STEP-----PRSTEP---STAT-ACT-C-GRP-D-SIZE-U-DEST---------------
_    1  LOG       *                       A   1      23 L TRIANGLE
_    2  JCL       *                       A   1      93 L TRIANGLE
_    3  MESSAGES  *                       A   1     245 L TRIANGLE
_    4  SYSPRINT  EDIT     PREPARE        A   1    3282 L TRIANGLE
_    5  SYSPRINT  SORT     PREPARE        A   1       5 L TRIANGLE
_    6  SYSPRINT  WEEKLY   PRINT          A   1     15K L TRIANGLE
_    7  SALESMEN  WEEKLY   PRINT          A   1    4167 L TRIANGLE
_    8  SUMMARY   MONTHLY  PRINT    DONE  A
```

The following fields are initially displayed in the data set section. Additional data set information can be displayed by scrolling right.

- Command area for entering data set commands
- Data set menu number
- DDNAME of the data set
- Step name and procedure step name
- Status field (STAT)
  - DONE means the data set has already printed or been cancelled
  - HELD for held sysout data sets
  - BUSY if the data set is currently being printed
  - CUR if the data set was interrupted while being printed
- Action field (ACT) to display the latest action on the data set
  - SEL means the data set was selected for browse
  - CAN means the data set was cancelled
  - MOD means one or more data set characteristics were modified. Modification is normally done by overtyping the current characteristic
  - REL means the held data set was released
  - SNP means the data set was snapped
- Class field (C) that shows the current sysout class of the data set
- Output group (GRP) indicates the group number to which the data set belongs.
- Output disposition field (D) that displays the current output disposition for the output group to which the data set belongs (JES2 4.1.0 and later).
  - W means OUTDISP=WRITE
  - H means OUTDISP=HOLD
  - K means OUTDISP=KEEP
  - L means OUTDISP=LEAVE
  - P means OUTDISP=PURGE
- Size field to show the number of print lines, pages or cards
- Units field (U) to indicate lines (L) or pages (P).
- Destination field (DEST) to show data set destination.

Data Set Line Commands

The following line commands can be entered for a data set on the *IOF Job Summary* subject to restrictions that may be imposed by your local installation:

?   Display function menu for the data set. When in doubt about available commands, use the question mark to get assistance.

S   Select data set for browse.

B   Select data set for browse.

R   Release held data set.

C   Cancel held sysout data set.

N   Snap a copy of the data set to SNAP target data set. In a REXX exec, you can snap the sysout data set in HTML format by using the menu number for the data set: "3 snap * htmltext". This indicates that this sysout data is to be displayed by a web browser. This option does not provide any HTML header or trailer information, but it does prevent any text string in the sysout data from being interpreted as HTML commands. See *Snapping in HTML Format* in Chapter 16 for more HTML features.

SS,SD,SU One step commands to set up the snap target data set and snap the job's output.

P   Print an exact copy of the data set.

M   Display a menu showing all data set attributes that can be modified.

F   Produce graphic display of page-mode sysout using GDDM from a terminal with graphics capability. This function is not available when running IOF under CICS.

X   Exclude the data set from the *IOF Job Summary*.

ED   Edit a temporary copy of the data set with the ISPF editor (ISPF only)

SUBmit   Rebuild and resubmit a copy of the original job (ISPF only).

BI   Build a data set index (TSO only).

LIST   List the data set to line mode terminals and TSO batch.

SS   Establish a snap target data set whose attributes match this data set.

ALLOC   Allocate the sysout data set to a file name. See *The ALLOC Line Command* section below for a complete description.

HDR   Add block headers to the previously defined target snap data set. The JOBNAME and JOBID; SYSOUT CLASS and DESTINATION; and DDNAME, STEP and PROCSTEP are formatted into block headers.

SB	Select data set for browse with the ISPF browse function. This option is useful when the output contains double-byte characters (DBCS).	
COMP	Compare the data set to another sysout or disk data set. The other data set can be in the same or a different job. Follow the popup window instructions.	
SEND	Send this sysout data set via email. Note that this command requires that the IOF SEND function has been activated at your site. Enter **HELP** on the **SEND** interface panel for a complete description of sending sysout data sets,	

The following line commands can be entered for a data set but will affect all the sysout data sets in the same output group with the data set. The **GRP** display column indicates which data sets belong to the same group.

CG	Cancel entire output group
MG	Modify attributes of all sysouts in group
PC	Print check to determine why the group will not print (TSO only)
RG	Release all sysouts in held output group
H	Set OUTDISP=HOLD for all sysouts in this output group
W	Set OUTDISP=WRITE for all sysouts in group
K	Set OUTDISP=KEEP for all sysouts in group
L	Set OUTDISP=LEAVE for all sysouts in group

Most of the commands above have a specific interface menu that describes the options for that particular command. To invoke the interface menu for a particular command follow the command name with a question mark (**?**). For example, **P?** will produce a panel specifically designed to help you print a copy of a data set.

Data set commands can be entered in the data set command area to the left of each data set. The example below shows the SYSPRINT data set being selected for browse with an **S** in the data set command area.

```
----------------------------- IOF Job Summary -------------------------------
COMMAND ===>                                              SCROLL ===> SCREEN
--JOBNAME--JOBID----STATUS---RAN/RECEIVED------DAY-------DEST-----------------
  TESTIT   J003681  OUTPUT   12:25   9/21/2017 YESTERDAY TRIANGLE
--RC--PGM--------STEP-----PRSTEP---PROC-----COMMENTS-------------------------
   0  IEBCOPY    STEP1    LOAD      UPLOAD
--------DDNAME---STEP-----PRSTEP---STAT-ACT-C-GRP-D-SIZE-U-DEST---------------
_    1  LOG      *                 HELD      X         12 L
_    2  JCL      *                 HELD      X         15 L
_    3  MESSAGES *                 HELD      X         23 L
S    4  SYSPRINT STEP1    LOAD     HELD      X        387 L LOCAL
```

Overtyping Data Set Characteristics

Data set characteristics can be modified by overtyping the desired new value on the *IOF Job Summary*.

To see all the attributes that can be modified for a data set, enter **M** in the data set command area and press **ENTER**.

Line Commands in the Command Area

Line commands also can be entered in the command area at the top of the screen. This is the only way to enter line commands from line mode terminals, from batch TSO, and from IOF clists. It may also be more convenient and faster from a full-screen terminal in certain cases.

The data set menu number, or list of menu numbers if the command is to apply to multiple data sets, is entered first to identify the data set(s). This is followed by the command and any optional parameters. For example, entering **1-3 C** causes data sets 1 through 3 to be cancelled.

Select is the default command. Therefore, a data set can be browsed by entering it's menu number in the command area. This is often much faster than tabbing down to the bottom of the screen to enter a **SELECT** command.

Data set characteristics can also be modified from the command area. To modify a data set, follow the command with the name of the field to be modified as a keyword and the new value as the keyword parameter. For example, the command:

```
1-3 7 9 R  CLASS(A)   FORMS(WHITE)     DEST(LOCAL)
```

causes data sets 1,2,3,7 and 9 to be released to class A with WHITE forms, and routed to the LOCAL printer. See *Chapter 15* for a full list of data set characteristics that can be used in conjunction with data set commands.

The ALLOC Line Command

The **ALLOC** line command allocates the sysout data set to a file name (DDNAME) of your choice. The data set remains allocated after the IOF session terminates until an explicit **FREE FILE** command is executed. The sysout data can be read by any MVS access method. **ALLOC** requires at least one parm, so it must be issued from the command area. See Chapter 18 for an example of using the **ALLOC** statement in a clist. **ALLOC** has keyword parms for **DDNAME**, **LRECL**, **RECFM** and **BLKSIZE**. The **DDNAME** parm is required.

Examples

```
5       ALLOC DDNAME(SYSUT1)
7       ALLOC DDNAME(INPUT)     LRECL(132)
```

Primary Commands

The *IOF Job Summary* primary commands are used to manage the data displayed on the panel. Primary commands must be entered in the command area at the top of the screen.

Send Job to an Email Address

Send the current job to an email address.

Syntax

```
SEND ALL/JESDS/NODATA   HTML/TXT
```

The default is to send the entire job in HTML format with an *IOF Job Summary* as the prefix. Enter **HELP** on the SEND interface menu for a complete description of sending job output with email. Note that this function requires that the IOF SEND function has been activated at your site.

Browse Entire Job

Browse all the data sets of the job as one contiguous data set.

Syntax

```
Browse
```

Exclude Steps or Data Sets from Display

Exclude steps or data sets from the menu based on a display field meeting a specified condition. **EXCLUDE** with no parameters reverses all previous exclude commands on the panel.

Syntax

```
EXCLude [fieldname operator string]
```

fieldname. The display field name. Field names are normally the same as the field heading. See the Appendix for detailed information on using **HELP** to determine field names.

operator. Comparison operator. Valid operators are **EQ**, **NE**, **LT**, **GT**, **CT** (containing), **NC** (not containing), **BG** (beginning), and **NB** (not beginning).

string. The string to be compared against. The string can be enclosed in single quotes.

```
EXCLUDE RC EQ  0        (Remove steps with zero return
                         code)
EXCL STEP NE PLI        (Keep steps and sysouts with PLI
                         step name)
EXCL CLASS NE A         (Exclude data sets not on class
                         A)
EXCL                    (Removes all previous exclude
                         commands)
```

Unexclude Steps or Data Sets from Display

Return excluded steps or data sets to the menu based on a display field meeting a specified condition.

Syntax

```
UNEXcl  [fieldname operator string]
```

fieldname. The display field name. Field names are normally the same as the field heading. See the Appendix for detailed information on using **HELP** to determine field names.

operator. Comparison operator. Valid operators are **EQ**, **NE**, **LT**, **GT**, **CT** (containing), **NC** (not containing), **BG** (beginning), and **NB** (not beginning).

string. The string against which the comparison will be made. The string can be enclosed in single quotes.

Refresh the Display

Update the *IOF Job Summary* display. If the job being reviewed is currently running or is currently being printed, the fields displayed are updated to indicate the latest status.

Syntax

```
REFresh
```

Display SYSIN Data Sets

Display system input data sets on the panel. Input data sets are not normally displayed unless the job is on input.

Syntax

```
INPUT   [ON/OFF]
```

ON. Enable input data set display. On is default.

OFF. Disable input data set display.

Define Target Sysout for SNAP (SS)

Define a sysout target data set for **SNAP**. See Chapter 16 for a complete description of operands on the **SS** command. If **SS** is entered with no operands, an interface option panel is displayed to assist in defining the target sysout data set.

Syntax

SS

Note that when the **SS** command is entered on the *IOF Job Summary*, the target data set remains open until it is explicitly closed with a **SNAPCLOS** command, another **SS, SD,** or **SU** command, or until the IOF session is terminated.

Define Target MVS Data Set (SD)

Define an MVS target snap data set. Any non-VSAM data set can be defined as the target data set. See Chapter 16 for a complete description of operands that can be entered on the **SD** command. If **SD** is entered with no operands, an interface panel is displayed to assist in defining the target MVS data set.

Syntax

SD

Note that when the **SD** command is entered on the *IOF Job Summary*, the target data set remains open until it is explicitly closed with a **SNAPCLOS** command, another **SD, SS,** or **SU** command, or until the IOF session is terminated.

Define Target UNIX File (SU)

Defines a UNIX file as the snap target. See Chapter 16 for a complete description of operands that can be entered on the **SU** command. When **SU** is entered with no parameters, an interface panel is displayed to allow specification of UNIX file parameters.

Syntax

SU

Note that when the **SU** command is entered on the *IOF Job Summary*, the
target data set remains open until it is explicitly closed with a **SNAPCLOS**
command, another **SU, SS,** or **SD** command, or until the IOF session is
terminated.

Snap Entire Job to Target

Snap all the sysout data sets of the job to the target output data set.

Syntax

```
SNAP [HTMLTEXT}
```

> **HTMLTEXT**. The job's sysout data is to be displayed by a web
> browser. Prevents any text strings in the data from being interpreted
> as HTML commands. See ***Snapping in HTML Format*** in Chapter 16
> for mote HTML features.

Close the Target Snap Data Set

Explicitly close a target snap data set. Note that the snap data set will
automatically be closed when the *Job Summary* for the job is terminated.

Syntax

```
SNAPCLOS
```

Edit the Original Job

Edit the job. Rebuild the original job in a temporary data set and enter the
ISPF editor (ISPF only). SYSIN data sets are merged into their original
positions. The temporary data set can be submitted. The editor **REPLACE** or
CREATE commands must be used to save a permanent copy of the rebuilt
job.

Syntax

```
EDit
```

Note that if the installation has **EDIT** in the ISPF command table, the syntax
will be: **>ED**.

Resubmit the Original Job

Rebuild and resubmit a copy of the original job without changes (ISPF only).

Syntax

```
SUBmit
```

Determine Why Job Output Will Not Print

Check to determine why all output groups of the job will not print. Note that this command produces output for each output group of the job, and can produce multiple screens of information for large jobs. The **PC** command is not available under CICS.

> ### *Syntax*
>
> `PChk`

Display Internal Text Data Set

Display the internal text data set on the *IOF Job Summary*.

> ### *Syntax*
>
> `INTTEXT`

View Sysout Data Using a Saved Index

If a **SAVEINDX** command has previously been entered under browse for this job, the **VIEW** command can be used to restart the browse session using the index saved by the **SAVEINDX** command.

> ### *Syntax*
>
> `VIEW      [*DSNAME(dsname)]`

DSNAME(dsname). The data set name specified in the **SAVEINDX** command when the index was saved. The **VIEW** command does not need a **DSNAME** operand if the index was saved with any of the following names:

```
userid.jobname.jobid.IOFINDEX
userid.jobname..IOFINDEX
sysiof.jobname.jobid.IOFINDEX
sysiof.jobname.IOFINDEX
owner.jobname.jobid.IOFINDEX
owner.jobname.IOFINDEX
```

where:

- userid is the prefix of the user entering the **VIEW** command.
- jobname is the name of the job being viewed.
- jobid is the job number of the job being viewed.
- sysiof is an installation defined prefix, normally **SYSIOF**.
- owner is the owner of the job.

Examples

```
VIEW
V
V     *     DSN('SMITHJ.MONTHLY.IOFINDEX')
```

Return to Job List

Return to the *IOF Job List Menu* and optionally cancel the job or release it for print.

Syntax

```
RETurn   [Cancel/PRint]
```

Cancel. Cancel the job before returning.

PRint. Release the held data sets of the job to the default sysout class and route the job to the default sysout destination. Note that the **PR** and **C** commands can be entered in the command area, and the **RETURN** PF Key can be pressed to print or cancel the current job.

Display Null Spun Sysout Data Sets

IOF does not display null spun sysout data sets on the *IOF Job Summary* by default. This command causes null data sets that have already printed or been cancelled to be displayed.

Syntax

```
SHOWNULL
```

Send the Whole Job via Email

Package and send the whole job via email. Note that this command requires that XMTIP be installed at this site.

Syntax

```
SEND
```

Add a Block Header to the Target Snap Data Set

Explodes text to block letters and writes it to the previously defined target snap data set.

See Chapter 16 for a complete description of the **SNAPHDR** command.

Add Text to the Target Snap Data Set

Adds carriage control and text to the target snap data set.

See Chapter 16 for a complete description of the **SNAPTEXT** command.

Rearranging Columns on the Panel

See Chapter 6 for a description of the **CUT**, **PASTE**, and **ARRANGE** commands to customize the panel display format.

Saving and Restoring Exclude Status of Data Sets

Use the **SAVEEXCL** command in a REXX exec to save a record of the currently excluded sysout data sets on the *Job Summary*. Use the **RESTEXCXL** command to later restore the excluded status of the sysout data sets to the state when the last **SAVEEXCL** was issued.

Using these commands, a REXX exec can issue a **SAVEEXCL** command to save the current status, unexclude all sysouts for special processing, and then restore the *Job Summary* display to its state when the exec was first invoked.

9. Browse

Overview

The IOF *Browse* panel is used to review sysout data sets. It can be invoked from the *IOF Job Summary* display for a sysout data set or from the *IOF Job List Menu* for an entire job. IOF *Browse* is very similar to ISPF Browse, and most of the commands are identical to ISPF Browse commands.

The IOF *Browse* panel displays data that was generated to be printed. Printed data contains printer control information such as top-of-form and blank line skips. Printed position is typically described with page and line numbers.

IOF *Browse* preserves the page orientation of line mode sysout data. Printer control characters are honored so that data is presented on the screen as it would appear on paper. IOF keeps track of the page and line number where each record is destined to be printed and displays this information on the *Browse* panel.

```
BROWSE - SYSPRINT WEEKLY        PRINT    - Page 1       Line 1         Cols 1-80
 COMMAND ===>                                                 SCROLL ===> CURSOR
 ******************************** TOP OF DATA *********************************
                       Weekly Sales Report Summary                     Page 1
                       Week Ending September 22, 2017


      Region                  Office                       Total Sales

      New England             Boston                        221,433.97
      New England             Hartford                       34,977.00

      New England             ** Total **                   256,410.97


      New York                Albany                         45,932.44
      New York                Buffalo                        23,439.19
      New York                New York                    1,434,912.56
      New York                Rochester                      72,545.14
      New York                Syracuse                       33,167.99

      New York                ** Total **                 1,608,997.32
```

The top line of the IOF *Browse* panel shows:

- The ddname of the data set being browsed
- The step name and procedure step name of the data set being browsed
- The printed page number
- The line number on the page
- The columns being displayed

Browse Scroll Types

Because of the page orientation of the data being browsed, IOF scroll types are slightly different than ISPF types. The IOF scroll types are:

- **CURSOR**   Scroll to the cursor position like ISPF browse.
- **SCREEN**   Scroll one screen, like ISPF browse PAGE type.
- **HALF**   Scroll half a screen like ISPF browse.
- **PAGE**   Scroll a printed page.
- **DATA**   Scroll one screen, minus one row, like ISPF.

IOF scroll types can be set temporarily in the SCROLL field at the top of the browse screen. To permanently set a scroll type in the IOF profile for use across IOF sessions, it must be set in the *User Profile Options* panel as discussed in Chapter 6.

Primary Commands

The basic IOF *Browse* primary commands are identical to ISPF browse commands. IOF *Browse* does have some additional facilities and small differences that are noted below.

Up or Down

Scroll the browse window up or down. The **Up** and **Down** commands are normally associated with PF Keys 7 and 8, or 19 and 20.

Syntax

```
Up/Down    [nnn]    [Max/Pages/Lines/RECords/DS]
```

nnn. Number of rows, printed pages, lines, records or data sets to scroll up or down. If not specified then scroll will be based on the current scroll type.

Max. Scroll up to the top of the data set or down to the bottom.

Pages. Scroll the specified number of printed pages.

Lines. Scroll the specified number of lines. Note that scrolling by lines will not scroll past the current printed page boundary unless you scroll by more than the current screen size.

RECords. Scroll the specified number of records without regard to page boundaries.

DS. Scroll up or down the specified number of data sets.

Examples

```
UP    MAX         (or  U M  to go to top of data set)
D     3     DS    (skip down three data sets)
D     50    P     (skip down 50 printed pages)
```

Top or Bottom

Scroll to the top or bottom of the data being browsed.

Syntax

```
TOP/BOTtom
```

Right or Left

Scroll the browse window right and left.

Syntax

```
RIght / LEft [ nnn / Max ]
```

nnn. The number of columns to scroll.

Max. Scroll to the right or left margin.

Select Next Data Set in Job

Skip to the next data set in the job. This is identical to **DOWN 1 DS**.

Syntax

```
NExt
```

Select Previous Data Set in Job

Skip to the previous data set in the job. This is identical to **UP 1 DS**.

```
PREVious
```

Skip Directly to Specific Page, Line, Record, or Data Set

Skip directly to a specific page, or a specific line on the current page, or a specific record or a specific data set.

Syntax

```
Page/LINe/RECord/SEGment    nnn
```

nnn. The page number, line number on the page, record number, or segment (data set).

Examples
```
P20         (jump to page 20)
LIN47       (jump to line 47 on the current page)
```

Define a Label

Establish a label (or IOF index entry).

Syntax

```
.label   [comments]
```

comments. Optional comments that will appear in the data index.

Locate a Previously Defined Label

Reposition to a previously defined label.

Syntax

```
Locate   label
```

label. The name of a previously identified label.

Find a String

Find a string in the data set. Find is like ISPF find with two significant exceptions. The **ALL** operand of **FIND** produces the *IOF Find All Menu* panel

of all detected occurrences, and IOF find is limited by the find limit value that controls the number of records that will be searched with an individual **FIND** command.

Syntax

```
Find    string  [FIRST/LAST/NEXT/PREV ]
        [WORD/PREFIX/SUFFIX]
        [ALL]
        [beg-col  [end-col]
```

> **string**. The string to be found which can be specified as:
> - any number of alphanumeric characters
> - 'quoted string which can contain blanks'
> - "double quoted string which can contain quotes"
> - X'hex string'
> - C'case sensitive text string'
> - P'picture string' (like ISPF)
>
> **FIRST/LAST/NEXT/PREV**. Find the first, last, next or previous occurrence of the string in the data set.
>
> **WORD/PREFIX/SUFFIX**. The string must be delimited on both ends if **WORD**, the left if **PREFIX**, and the right if **SUFFIX**. Acceptable delimiter characters are: left margin, right margin, space and the special characters comma, period, open parenthesis, close parenthesis, quote and double quote.
>
> **ALL**. All occurrences of the string should be found and displayed on the IOF Find All Menu. See *The Find All Menu* section below for more information about **FIND ALL**.
>
> **beg-col**. The column number to begin the search.
>
> **end-col**. The column number to end the search.

Repeat Find

Repeat the last find command. **RFIND** is normally stored on PF Key 5 or PF Key 17.

Syntax

```
RFIND
```

Return to Previous Location

Return to the screen where the last **FIND** command was entered. Multiple
FINDBACK commands can be entered to back up from nested **FIND**
commands**.**

Syntax

FINDBACK

Set a Find Limit

Limit the find command to a specified number of records. The find limit value
is stored in the profile for use in subsequent IOF sessions.

Syntax

`FINDLIM nnn`

> **nnn**. The number of records to be searched on a find command
> before the **FINDLI**M error condition is raised. The find can be
> continued from the point it was interrupted by entering the **RFIND**
> command.

Repeat Find in Next Data Set

Repeat the last find command in the next data set.

Syntax

`NF`

Repeat Find in Previous Data Set

Repeat the last find command in the previous data set.

Syntax

`PRF`

Snap Data to Target Data Set

Snap a copy of part or all of the current data set to a target data set. The
target output data set can be explicitly defined by an **SD, SS,** or **SU**
command, or can be defaulted.

```
SNAP      [nnn [Lines/Pages/Records] ]
          [ ALL ]   [HTMLTEXT]
```

nnn. The number of lines or pages to copy, beginning at the top of the current screen. If nnn is not specified, then the data displayed on the current screen is copied.

Lines. Snap nnn lines or until the bottom of the page, whichever comes first. If condense is on, then ignore the check for bottom of page.

Pages. Snap nnn printed pages.

Records. Snap nnn records, ignoring printed page boundaries. Records is the default if neither lines, pages nor records is specified.

ALL. Snap entire data set.

HTMLTEXT. This is data that is to be displayed by a web browser. This option does not supply any HTML header or trailer information, but it does prevent any text strings in the data from being interpreted as HTML commands. See *Snapping in HTML Format* in Chapter 16 for more HTML features.

Define a Sysout Snap Target Data Set (SS)

Explicitly define a sysout target data set for snap.

Syntax

```
SS       [sysout characteristics]
```

[sysout characteristics]. Any valid sysout characteristics may be specified directly on the **SS** command. If no parameters are specified then an **SS** interface panel is displayed to assist in defining the desired sysout characteristics. See Chapter 16 for more information about **SS**.

Note that when the **SS** command is entered in *Browse*, the target data set remains open until it is explicitly closed with a **SNAPCLOS** command, another **SS, SD,** or **SU** command, or until the IOF session is terminated.

Define an MVS Snap Target Data Set (SD)

Explicitly define a non-VSAM MVS target data set for snap.

Syntax

```
SD        [MVS data set characteristics]
```

> **[MVS data set characteristics]**. Any valid non-VSAM characteristics can be specified directly on the **SD** command. If no parameters are specified, then an **SD** interface panel is displayed to assist in defining the desired data set characteristics. for more information about **SD**.

Note that when the **SD** command is entered in *Browse*, the target data set remains open until it is explicitly closed with a **SNAPCLOS** command, another **SD, SS,** or **SU** command, or until the IOF session is terminated.

Define Target UNIX File (SU)

Defines a UNIX file as the snap target. for a complete description of operands that can be entered on the **SU** command. When **SU** is entered with no parameters, an interface panel is displayed to allow specification of UNIX file parameters.

Syntax

SU

Note that when the **SU** command is entered in *Browse*, the target data set remains open until it is explicitly closed with a **SNAPCLOS** command, another **SU, SS,** or **SD** command, or until the IOF session is terminated.

Close the Target Snap Data Set

Explicitly close a target snap data set. Note that the snap data set will automatically be closed when the *IOF Job Summary* for the job is terminated.

Syntax

SNAPCLOS

Edit All or Part of a Sysout Data Set

Copy all or part of the data set being browsed to a temporary data set and invoke the ISPF editor to edit the copy (ISPF only). The editor **CREATE** or **REPLACE** command can be used to save the edited copy.

Syntax

```
Edit    [nnn]
```

nnn. Number of records to edit beginning at the top of the current screen. If not specified, then the whole data set being browsed will be edited if sufficient temporary space is available.

Request Horizontal Compression

Enable or disable horizontal compression. When compress is on, multiple blank spaces are removed from each displayed line so that more data can be displayed on each row of the screen.

Syntax

```
COMPRESS    [ON/OFF]
```

ON. Enable horizontal compression.

OFF. Disable horizontal compression.

Request Vertical Compression

Enable or disable vertical compression. IOF printed page orientation is disabled when vertical compression is requested.

Syntax

```
CONDENSE    [ON/OFF]
```

ON. Enable vertical compression and disable IOF page orientation.

OFF. Disable vertical compression.

Display Columns Heading

Display a columns heading line on the screen.

Syntax

```
COLS
```

Remove Columns Heading

Remove columns heading line from the screen.

Syntax

`RESET`

Line Folding

Enable or disable line folding. When line folding is enabled, each line of output is folded at the right boundary of the screen and displayed as two lines.

Syntax

`FOLD     [ON/OFF]`

ON. Enable line folding.

OFF. Disable line folding.

Hexadecimal Display

Enable or disable hexadecimal display mode.

Syntax

`HEX       [ON/OFF]`

ON. Enable hexadecimal display mode.

OFF. Disable hexadecimal display mode.

Display Carriage Control

Enable or disable the display of printer carriage control information.

Syntax

`DISPLAY     [CC/NOCC]`

CC. Enable display of printer carriage control characters.

NOCC. Disable printer carriage control character display.

Note that the carriage control specification is saved in the user's profile.

Lookup Text in BookManager or Other Reference System

Pass the word under the cursor to the IBM **BookManager** (or other text reference system) for lookup. This is normally used to lookup error messages. IOF isolates the word under the cursor and passes it to the text reference system as a parm. This command is available only under ISPF. It will not function from TSO READY or IOF/CICS.

Syntax

```
TEXTREF
```

Set Text Reference Shelf Name

Define the personal bookshelf name to be used by the **TEXTREF** command when the system default shelf name is not wanted.

Syntax

```
SHELF shelf_name
```

> **shelf_name**. The bookshelf name to be used. The name is saved in the user's profile.

Add a Block Header to the Target Snap Data Set

Explodes text to block letters and writes it to the previously defined target snap data set. <u>See Chapter 16</u> for a complete description of the **SNAPHDR** command.

Add Text to the Target Snap Data Set

Adds carriage control and text to the target snap data set. <u>See Chapter 16</u> for a complete description of the **SNAPTEXT** command.

Build a Customized Index

Build a customized index to the data set being browsed. Special indexing facilities are available for assembler listings, SYSUDUMP data sets, and CICS transaction dumps. When running under ISPF, a full-screen panel is presented to assist in defining the way the data should be indexed. The **BI** command is not available under IOF/CICS.

Syntax

```
BI
```

Save Internal Browse Index

Save the internal browse index into a disk data set. The saved index can be used later to restart this browse session.

You may have noticed that once you have read to the bottom of a large sysout data set you can then very quickly position to any point, no matter how large the data set. This is because the internal browse index contains pointers to all sysout data that has already been referenced in this browse session.

The internal browse index also contains any **LOCATE** symbols that you have defined during the browse session. The **SAVEINDX (SI)** command allows you to save all of that information in a disk data set so that you can easily restart the browse session later with all of the saved index information.

Once you have entered an **SI** command, you can terminate your browse session and go on about your business. At any time later you can enter **V** beside the same job on the *IOF Job List Menu*, and your old browse session will be restarted with all of the saved index information.

You will be able to immediately position to any location in the sysout data set, and you will have available any **LOCATE** symbols that you defined in the previous browse session.

The easiest way to use save index is to enter the **SI** command with no operands.

Syntax

```
SaveIndex          [DA (index-dsn)]

                   [CMD ('command-string')]

                   [VOL (volume)]

                   [UNIT (unit)]
```

DA(index-dsn). Explicit index data set name. If no data set name is specified, a default data set name of jobname.jobid. IOFINDEX is used with your data set prefix as the high level. Jobname and jobid are taken from the job for which the index is being saved.

CMD('command-string'). String of IOF commands that should be issued whenever the browse session is restarted with a **VIEW** command.

VOL(vol). Volume Serial.

UNIT(unit). I/O unit Type.

```
SI
SI    CMD('INDEX')
SI    DA(WORK.IOFINDEX)
SI    DA('SYSIOF.CICS.STC01255.IOFINDEX')  CMD('D M.RI
      10')
```

Display IOF Indices

Display an IOF data index or list of indices. Indices must have previously been built by the label command or a define index command. See *Indexing Tutorial* section below for a tutorial of IOF indexing facilities.

Syntax

```
INDex [ /indexname ]
```

> **/indexname**. If specified, then only the named index will be displayed. If not specified and multiple indices are present, the *IOF Data Indices Menu* listing all indices will be displayed.

Define an IOF Data Index

Define an index. See *Indexing Tutorial* section below for a full description of IOF data indexing.

Syntax

```
DEFINDEX   /indexname       [title]
```

> **/indexname**. The one to eight character index name. You place entries in this index by specifying this name in **DEFENTRY** commands.

> **title**. The index description for display on the *IOF Data Indices Menu* (maximum of 50 characters).

Examples

```
DEFINDEX   /DEPT      Departmental Report Index
DEFINDEX   /SALES     Sales report index by region and
                      state
```

Define an Entry in an IOF Data Index

Define an index entry. This command associates a label with the sysout record that is currently displayed on the top of the screen and adds the label to one or more previously defined indices.

Syntax

```
DEFENTRY   [label]     /index1
           [/index2]
           [description]
```

---

label. One to eight character index label name to be associated with the current sysout record. This label can subsequently be used on **LOCATE** commands.

/index1. The name of an index to which this entry is to be added. This name should match the name of a previously defined index. See *Define an IOF Data Index* above for more information.

/index2. Another index name. A maximum of eight index names can be included. The entry will be added to each of the named indices.

description. The 1-to-8 character index entry description that will be displayed in the data index.

Examples

```
DEFENTRY   /DEPT  Purchasing Department
DEFENTRY   calif  /sales/calif State of California
           Summary
```

Define a Field

Define a field for use in defined conditions, and as a variable in **DEFENTRY** or **SETVAR** statements. This command will primarily be used in IOF clists and execs. See Chapter 18 for a full description of IOF clist and REXX facilities.

```
DEFFLD     fldname   COLS (begcol*/endcol)
           COLS (b2*/e2) ... COLS (bn*/en)
```

fldname. The name of the field being defined.

COLS(begcol*/endcol). The beginning and ending column number for the segment of each sysout record that is to be associated with this field name. If an asterisk (*) is specified as the end column, the end column is assumed to be the right margin.

Multiple column definitions may be included in a field definition.

Examples

```
DEFFLD     MSGNBR  COLS(57 63)
DEFFLD     C_10_AND_72  COLS(10 10)  COLS(72 72)
```

Several fields are pre-defined and always available for use:

```
LINENUM    The current line number on the page.
PAGENUM    The current page number.
RECDNUM    The current record number.
RECDLEN    The length of the current record.
```

Define a Condition

Define a **SCAN** condition. This command will primarily be used by IOF clists and execs. See Chapter 18 for a full description of IOF clist and REXX facilities.

Syntax

```
DEFCON   name     condition
```

name. The condition name that will be referenced in **SCAN** commands.

Condition. Describes a logical comparison that is to be done against the sysout records being scanned by the **SCAN** command. The condition can compare specific fields (ranges of columns) from sysout records to constant data. For example, the condition:

```
    COLS(15 19)  EQ    'SMITH'
```

would be true for any sysout record which contained the string SMITH in columns 15 through 19. Since the DEFFLD command can define

field names as ranges of columns, the same condition could also look like:

```
USERNAME      EQ    'SMITH'
```

where USERNAME is a field that has been defined with a **DEFFLD** command:

```
DEFFLD    USERNAME    COLS(15 19)
```

In addition to **EQ** for equal, the following comparison operators are supported by **DEFCON**:

EQ	Equal
NE	Not equal
LT	Less than
GT	Greater than
LE	Less than or equal to
GE	Greater than or equal to
CT	Contains
NC	Does not contain

The logical operators **AND**, **OR**, and **NOT** can be used to combine simple comparisons to form a more complex condition:

```
USERNAME EQ 'SMITH'  OR  USERNAME EQ 'JONES'
```

This condition would be true for a sysout record if columns 15 through 19 of the record contained either SMITH or JONES.

The predefined fields LINENUM, PAGENUM, RECDNUM, and RECDLEN also can be used:

```
DEFFLD DEPTNAME COLS(5 13)
DEFCON DEPTBRK DEPTNAME EQ 'Personnel' AND   +
               LINENUM EQ 2
```

Parentheses can be used to group comparisons together as shown below.

```
(COLS(1 3) EQ 'ABC' AND  COLS(4 5) EQ 'YZ') OR +
(COLS(8 9) EQ 'QQ' AND  COLS(25 48) NC 'ERROR')
```

Thus, a condition can be a simple comparison or a very complex combination of many comparisons.

Scan for Defined Conditions

Scan the sysout data set for defined conditions. This command will primarily be used by IOFclists and execs. See Chapter 18 for a full description of IOF programmable facilities.

The **SCAN** command begins with the record that is currently displayed on the top of the screen and continues until it finds a record that satisfies one of the specified conditions. If the end of the data set is reached before any condition is satisfied, a return code of 255 will be returned.

A return code of 254 will be displayed if the end of the data set is reached, but the data set is still being written by a running job.

Syntax

```
SCAN     [nnn  RECords/Pages]     ACTIVE
         /UNTIL(conditions)/
         /FOR condition/
         /EXIT(rc)/
```

nnn RECORDS/PAGES. Limit the scan to nnn records or pages. If nnn records are scanned without satisfying one of the conditions, return with return code 253.

ACTIVE. Scan using all active conditions. All defined conditions that have an active "on condition" will be used for the scan, and the actions defined in the corresponding **ONCOND** statements are taken whenever a condition is satisfied. See *Specifying Action when Condition is Satisfied* section below for more information. The scan command will then resume and continue uninterrupted unless a **SCAN EXIT** command is executed in an **ONCOND** block.

UNTIL(conditions). A list of up to 250 condition names. **SCAN** will search for all of the named conditions. When a specific condition is satisfied, it will display a return code that is the number of the condition (from left to right) in the list of conditions.

FOR condition. Scan for an explicitly defined condition. This scan option is designed to be used by a user at the terminal. It provides a comprehensive and more powerful version of the **FIND** command.

EXIT(rc). Terminate **SCAN ACTIVE** with return code rc. This option is used only from within an **ONCOND** block to terminate a **SCAN ACTIVE** loop. Normally, **SCAN** will continue a **SCAN ACTIVE** with the next sysout record after an **ONCOND** block is executed. This

option allows you to terminate a **SCAN ACTIVE** loop based upon some condition being satisfied.

Note that if a **SCAN** command is entered with no parms, then the previous **SCAN** command is resumed from the next logical record.

Examples

```
SCAN ACTIVE
SCAN 8000 RECORDS UNTIL(DEPT SUMMARY)
SCAN 30 PAGES FOR COLS(30 50) CT 'Bingo'
```

Specifying Action When Condition is Satisfied

Define the actions (an **ONCOND** block) that will take place when a **SCAN ACTIVE** condition is satisfied. Several **ONCOND** statements can be specified for each defined condition.

Syntax

```
ONCOND      *condition      command
```

condition. The name of a specific condition from a **DEFCON** command.

*. An asterisk represents the last condition that was defined.

command. Any of the IOF commands **DEFINDEX**, **DEFENTRY**, **SETVAR**, **UP**, **DOWN**, **DOWNCTRL**, **SCAN** (including **SCAN EXIT**), **#** (MVS command), or **$** (JES2 command) and all the acceptable parameters to any one of these commands.

Example

Define an index entry that contains the error type from columns 60 to 77 whenever the word ERROR is found in columns 20 through 40. Also, send a message to user SUPVSR1 that the error was found.

```
DEFFLD   ERRFLD  COLS(20 40)
DEFFLD   ERRTYPE COLS(60 77)
DEFCON   ERROR   ERRFLD  CT 'ERROR'
ONCOND   * DEFENTRY  /ERRS Error of type: %ERRTYPE
ONCOND   * # SE 'Error detected in system',U=(SUPVSR1)
```

Assign a Value to a Variable

Assign a value to an internal IOF variable. The variable can then be referenced in **DEFCON**, **DEFENTRY**, **DEFINDEX** and other **SETVAR** statements. This command is particularly useful when these commands are used in **ONCOND** statements.

Syntax

```
SETVAR  variable      value
```

variable. The name of the variable to be set to a value. This variable may not be a name that has been previously defined with a **DEFFLD** command. The variable will be implicitly defined by setting it with a **SETVAR** command.

value. The value to be assigned to the variable. Value can be a constant, or the contents of a previously defined field from the current line being browsed. A constant value is specified by enclosing the value in single quotes. The contents of a field is specified by a percent sign (**%**) followed by the field name.

Examples

```
SETVAR  NAME   'JOHN SMITH'
DEFFLD  DEPT   COLS(20 40)
SETVAR  DEPTNAME %DEPT   (Cols 20-40 from current line)
SETVAR  CURRPAGE %PAGENUM   (Current page number)
```

Stack a Command When Condition is Satisfied

Only the **DEFINDEX**, **DEFENTRY**, and **SETVAR** commands are scanned for variable substitution in ONCOND statements. The **STACKCMD** command is used in an **ONCOND** statement to execute any IOF command with variable substitution.

Syntax

```
STACKCMD iof-command
```

Example

```
ONCOND  *   STACKCMD   DOWN   %AMOUNT
```

Set a Condition Active or Inactive

Make a condition active or inactive.

Syntax

```
SETCOND    */condition/(condlist)
           ACTIVE/INACTIVE/PUSH/POP
```

*. Set the condition that was most recently defined.

condition. Name of condition to be set.

(condlist). List of condition names to be set.

ACTIVE. Set condition(s) active.

INACTIVE. Set condition(s) inactive.

PUSH. Push down current active/inactive status.

POP. Pop up previously pushed status.

Example

Set the last previously defined condition inactive.

```
SETCOND  *  INACTIVE
```

Display Action Messages

Display the current system action messages at the bottom of the current browse display. Entering **ACTION** with no operands will terminate the action message display.

Syntax

```
ACTION  [n1,n2,...]
        [ALL/MVS/USER/ DEFAULT]
        [DISABLE/ENABLE/INITIAL]
```

---

n1,n2,... List of route codes for which messages are to be displayed.

ALL. Show messages with route codes 1 through 28.

MVS. Show messages with route codes 1 through 12.

USER. Show messages with route codes 13 through 28.

DEFAULT. Show default route codes from user's IOF group definition.

DISABLE. Shut down action display but leave all current options in place so that action processing can be restarted with an **ACTION ENABLE** command.

ENABLE. Restart action processing that has been suspended with an **ACTION DISABLE** command.

INITIAL. If this is the first time the **ACTION** command has been entered during this IOF session, start up action processing with the options from the user's IOF group definition. Otherwise, start up the action processing using the current options in effect.

Define the Browse Title

Specify the format of the title display row for IOF browse. The format is defined as a skeleton that can contain constant data and/or variable data about the data set being browsed. The title definition will remain in effect for the remainder of the current browse session.

Syntax

```
TITLEDEF   'title-data'
```

title-data. The data to be displayed. Variable names must be preceded by the percent (**%**) character. Any variables defined by a **TITLEVAR** statement can be included in the title. The following built-in variable names also are available:

Name	Len	Description
JOBNAME	8	Name of job being browsed
JOBID	8	Job id of job being browsed
DDNAME	8	DD name of data set being browsed
STEPNAME	8	Step name of data set
PROCSTEP	8	Procstep name of data set
DSKEY	4	JES2 data set key for data set
POS	37	Page/line if not CONDENSE mode Record number if in CONDENSE mode
COL	12	Current columns being displayed
CL1	3	Low column number being displayed
CL2	3	High column number being displayed
PAGE	6	Current page number
LINE	7	Current line number on the page
RECORD	7	Current record number
MSG		Position indicator for short messages

Example
```
TITLEDEF '---Status Report-----%MSG%POS----'
```

Define a Title Variable

Assign the value of any clist or REXX variable to a title variable.

```
TITLEVAR ttlvar( ttllen ) &clvar
```

ttlvar. Title variable name.

ttllen. Title variable length.

clvar. The clist variable whose value is to be assigned to the title variable.

The Find All Menu

The *IOF Find All Menu* panel is displayed when the **ALL** operand of the **FIND** command is specified. It displays a menu of all the occurrences of the find string and allows you to re-enter browse at a specific occurrence of the string.

Entering the menu number for an occurrence will cause the *IOF Find All Menu* to return to browse with the current line pointer set to the selected occurrence.

After returning to Browse from the *IOF Find All Menu*, you can re-enter the *IOF Find All Menu* by hitting the **RFIND** key. The IOF *Find All Menu* will then display the current screen full of occurrences and allow you to select another occurrence.

You can scroll up and down through the list of occurrences using the normal scrolling keys.

From the *IOF Find All Menu*, enter **NF** (for Next Find) to restart the Find All process in the next sysout data set. **PRF** will restart the Find All in the previous sysout data set.

FIND ALL when browsing an entire PDS

When browsing an entire "flattened" partitioned data set with the ZDS command, the **FIND ALL** command will display a special menu of the found occurrences that allows you to nest to the specific member containing an occurrence.

See the chapter *Browsing, Printing, Emailing, and Copying z/OS Data Sets* for more information about the ZDS command.

Indexing Tutorial

IOF indexing facilities enhance the ability to browse data interactively. Indexing reduces the time required to access specific pages or lines, and it provides pointers to data that may need to be accessed frequently.

IOF automatically builds an internal index to each page of data when the data is first browsed. The internal index is used to allow subsequent immediate repositioning to any page.

User defined labels are also saved in the index so the labeled positions can later be quickly redisplayed with the **LOCATE** command. Defining a label with the label command (**.**) is the most direct way to define an IOF data index. Labels can be referenced with the **LOCATE** command just as in ISPF Browse. IOF also provides the **INDEX** command which displays all defined labels in the *IOF Data Index* menu. Labels can be selected from the index menu as an alternative to using the **LOCATE** command.

Assume that when browsing a report, an error condition is found and labeled by entering **.ERR1** in the command area at the top of the browse screen. Later, a second error is labeled **.ERR2**, and the start of the summary report for the Chicago region is labeled **.CHICAGO**. Entering **INDEX** (or **IND**) produces the *IOF Data Index* for these entries.

```
--------------------------------- IOF DATA INDEX ----------------------------
COMMAND ===>                                                  SCROLL ===> SCREEN
-----------------------------------------------------------------------------
_      1    ERR1
_      2    ERR2
_      3    CHICAGO
```

Labels can be selected from the data index by entering **S** in the action area to the left of the item or by entering the label's menu number in the command area. Selecting a label causes immediate re-entry into *Browse* to the line where the label was defined, just as entering a **LOCATE** command with the label name would do.

IOF also allows comments to be included on the **LABEL** command. If comments are included, they are displayed in the *IOF Data Index* instead of the label name. Entries are selected as before. In the example above, the labels could have been defined with comments:

```
.err1 Error 1, missing address field
.err2 Error 2, wrong region
.chicago Chicago summary report
```

In that case, entering IND would produce the following display:

```
------------------------------- IOF DATA INDEX ----------------------------
COMMAND ===>                                              SCROLL ===> SCREEN
---------------------------------------------------------------------------
_      1    Error 1, missing address field
_      2    Error 2, wrong region
_      3    Chicago summary report
```

Adding comments to labels is very useful when many items are being indexed or when the index will be used by another person. Sophisticated index entries can be built automatically with IOF clists for specific applications.

The **DEFENTR**Y command is a more formal way of defining labels. **DEFENTRY** is essentially an alias for the **LABEL** command. It provides better documentation when coded in clists and execs.

Multiple Indices

IOF allows more than one index to sysout data. Each index can be displayed independently, or the indices can be merged and displayed together. This capability allows sophisticated indices to be developed for important sysout data.

To establish multiple indices, use a **DEFINDEX** command to define each index before any index entries are created with **DEFENTRY** commands. **DEFENTRY** commands then specifically name the index (or indices) to which they are adding an entry.

Let's assume that we have a large report that is organized by city offices within state divisions. We will build an index that makes it easy to find specific states or specific cities within a state in this report.

For reasons of brevity, our example will only deal with two states. But in practice a report would normally have many more divisions and subdivisions. We first will define an index for each state:

```
    DEFINDEX  /CALIF  California Division
    DEFINDEX  /TEXAS  Texas Division
```

In IOF *Browse*, perform the following steps:

- Position to the first record in the section of the report for San Francisco, California.

- To add a pointer to the California index for this record, enter:
```
        DEFENTRY  /CALIF  San Francisco Office
```

- Position to the first record for Los Angeles and enter:
```
        DEFENTRY  /CALIF  Los Angeles Office
```

- Position to the first record for San Diego and enter:

  ```
  DEFENTRY  /CALIF  San Diego Office
  ```

- Position to the first record for Houston, Texas and enter:

  ```
  DEFENTRY  /TEXAS  Houston Office
  ```

- Position to the first record for Dallas and enter:

  ```
  DEFENTRY  /TEXAS  Dallas Office
  ```

We now have added entries to both the California and Texas indices. Of course, these commands would normally be executed from an IOF clist that creates the indices and saves them for later reference by other users. See *Saving the Index* section below for more information.

Once these indices have been created, enter **INDEX** to see the *IOF Data Indices* menu.

```
------------------------------- IOF DATA INDEX ----------------------------
COMMAND ===>                                              SCROLL ===> SCREEN
---------NAME------COUNT---DESCRIPTION ------------------------------------
_    1   CALIF          3   California Division
_    2   TEXAS          2   Texas Division
```

Each index that was defined by a **DEFINDEX** command will be described by a row on this menu. You can see that there are three index entries in the California index and two entries in the Texas index.

To see the California index place a **S** beside it on the menu.

```
------------------------------- IOF DATA INDEX ----------------------------
COMMAND ===>                                              SCROLL ===> SCREEN
--------------------------------------------------------------------------
_      1    San Francisco Office
_      2    Los Angeles Office
_      3    San Diego Office
```

This is the *IOF Data Index* for the California offices. To see the section of the report for Los Angeles, place an **S** in the line command area. You will enter IOF *Browse* at the record corresponding to that index entry, which you will remember from above was the first record in the Los Angeles section of the report.

Once in *Browse* you can use any browse features to reposition within the report or find character strings. When you press **END**, you will return to the *IOF Data Index* for California, where you can select another index entry or press **END** again to return to the *IOF Data Indices* menu.

An indexed item can also be snapped by using the **N** line command on the *IOF Data Index* menu. In the example above, entering the **N** line command for the Los Angeles Office entry causes the data from that entry through the next indexed entry (San Diego Office) to be snapped.

We have created a two level index for this report that allows you to go directly to the section of the report for a particular city. If you wanted to select the Texas index directly without going through the *IOF Data Indices* menu, from the command line in *Browse* enter:

```
IND   /TEXAS
```

This would produce the Texas index directly without needing to display the *IOF Data Indices* menu. You can select more than one index at a time from the *IOF Data Indices* menu. Place an **S** beside multiple indices and press **ENTER**. The selected indices will be merged and displayed as a single *IOF Data Index* panel.

Saving the Index

IOF indices normally survive only for the duration of a browse session. When the browse is ended, all the indices are lost. Indices can be saved for use in subsequent browse sessions with the **SAVEINDX** command.

SAVEINDX allocates and writes all IOF indices to an MVS sequential data set. The default data set name is:

```
prefix.jobname.jobid.IOFINDEX
```

where prefix is the user's data set prefix, jobname and jobid are the name and id of the job being browsed, and IOFINDEX is an installation definable suffix. See the **SAVEINDX** command description for parameters in the above section, ***Save Internal Browse Index***.

Using a Previously Saved Index

The **VIEW** command is used to cause a previously saved index to be fetched. Enter **V** beside a job on the *IOF Job List Menu* or **V** in the command area of the *IOF Job Summary* to restart a browse session with a saved index.

A batch job can build an index to one or more of its own sysout data sets and save the index for later interactive viewing. Several sample indexing clist applications are available in the IOF clist library for use as a guide in developing index applications.

Scan Overview

The **SCAN** command is an extension of the **FIND** command. **FIND** can only search for exact matches, but **SCAN** can perform very complex comparisons.

SCAN can also search for up to 250 independent conditions on one pass of the data.

Scan For an Explicitly Defined Condition

The **SCAN FOR** option is the simplest form of the scan command. It is probably the only form that will normally be used directly by a user at a terminal. It can be used to search for a compound condition. For example, **SCAN** can find a line that has Europe in columns 1 through 6 without France in the rest of the line with the command:

```
SCAN FOR COLS(1 6) EQ 'Europe' AND COLS(7 *) NC 'France'
```

More complicated scan commands are difficult to enter in the command area from a terminal. The define field (**DEFFLD**) and define condition (**DEFCON**) commands can be used to simplify scan statements.

Scan Until One of Several Conditions is Satisfied

The full power of **SCAN** can be realized only when it is used in clists and execs. Sophisticated compound conditions can be defined, and multiple conditions can be scanned on a single pass of the data. Index entries can be established based on the data found by **SCAN**.

The **SCAN UNTIL** option scans for a maximum of 250 conditions. When a matching condition is found, the return code indicates which of the conditions was found. Return code 1 means the first condition was found, return code 2 means the second was found, and so forth. Return code 253 means the scan limit was reached without finding a match. Return code 254 means that a soft end-of-file was encountered, and return code 255 means that a hard end-of-file was encountered. See the *Scan for Defined Conditions* section above for more information. The **UNTIL** option of scan would normally only be used from a clist or exec which would interpret the return code.

For example, assume you are scanning a report that has many lines of detailed entries, separated by subtotals and department totals. You might define two conditions:

```
DEFCON  SUBTOTAL  COLS(12 20) EQ 'SUB-TOTAL'
DEFCON  DEPTOTAL  COLS(10 33) EQ '*** DEPARTMENT TOTAL ***'
```

You could then scan for both conditions at once with:

```
SCAN UNTIL(SUBTOTAL DEPTOTAL)
```

If you enter this scan command from a terminal, the found condition will be positioned to the top of the screen. If the scan command is issued from a clist, it sets a return code in clist variable &LASTCC to indicate which condition was detected. Return code 1 indicates that condition SUBTOTAL was detected, and return code 2 indicates DEPTOTAL. Return codes 253, 254 and 255 indicate scan limit or end-of-file.

You can resume the **SCAN UNTIL** or **SCAN ACTIVE** from the current line by entering **SCAN** with no operands to find the next occurrence of one of the two defined conditions.

Scan for All Active Conditions

Using the **ACTIVE** option of **SCAN** allows you to scan a complete data set, performing specified actions when individual conditions are satisfied. With this option the **SCAN** command does not terminate when a condition is satisfied. It executes the commands in the **ONCOND** block for that condition and then continues the scan. See the *Scan for Defined Conditions* section above for more information on the **ONCOND** command.

SCAN ACTIVE will use all conditions that have been defined with **DEFCON** commands and have not been set inactive. See the *Scan for Defined Conditions* section above for more information on the **SETCOND** command. You would normally define each condition with a **DEFCON** command, followed by its **ONCOND** block. Then, **SCAN ACTIVE** would scan the entire data set.

SCAN ACTIVE is the most efficient way to use **SCAN** from a clist or exec. The **SLAMDEF** clist in the distributed IOF clist library provides an excellent example of using the **ACTIVE** option of **SCAN**. Many different **ONCOND** options are demonstrated in this clist. Variable data from the next or preceding lines is assigned using the **SETVAR** command. This information along with variable information from the current line is used in defining index entries.

The IOF$BI1A, IOF$BI1B, and IOF$BI1C clists in the IOF clist library provide additional examples of **SCAN ACTIVE**.

10. Operations Functions

Overview

IOF provides a complete interface to the JES2 subsystem. The prior chapters of this guide have been concerned primarily with reviewing and managing jobs. JES2 also manages and controls systems resources such as printers and network devices, and IOF provides functions to assist in managing these resources. These functions are generally considered to be operations functions, and may have little or no use for end users of the system.

Operations functions include:

- Output group support. See Chapter 11.

- Full-screen device support for all JES2 devices. See Chapter 12.
    - Printers and punches
    - NJE and RJE lines
    - Offload devices
    - Remote terminals
    - Readers

- Initiator display. See Chapter 12.

- System console and active system log review. See Chapter 13.
    - Immediate access to any time-of-day
    - Indices of important exception conditions
    - Personal scrollable console
    - OPERLOG scan facility

- System monitor facilities. See Chapter 14.
    - Display of running address spaces
    - Many selection criteria and sort options

- Managing your sysplex with IOF. See Chapter 21.
    - Display systems in MAS complex
    - IOF servers on other CPUs in sysplex

Requesting Operations Functions

Operations functions are selected from the *IOF Option Menu.*

```
----------------------------- IOF Option Menu -----------------------------
 COMMAND ===>

 Follow an option with "?" to display its detailed interface panel.

 blank - Your jobs        LOG  - Sys Log   ENC  - Enclaves     OPER - Operlog
  I   - Input jobs        SR   - Sys Req   CN   - Console      ZDS  - z/OS Data
  R   - Running jobs      DEV  - Devices   MAS  - MAS Systems  ZF   - Scan PDS
  O   - Output queue      PR   - Printers  PS   - Processes    ARC  - Archive
  J   - Jobs menu         LINE - Lines     WLM  - WLM Support
  H   - Held Groups       INIT - Inits     CHK  - Health Cks   MORE - More Cmds
  M   - System Monitor    OFF  - Offload   JM   - JES2 info
  P   - IOF Profile       SPV  - Spools    JBC  - Job Classes
                          NOD  - Nodes     APPC - APPC menu


 JOBNAMES ===>
                             Enter 1 to 8 generic jobnames above

 SCOPE    ===>               ALL, ME or another user's USERID
 DEST     ===>
                             Enter 1 to 8 destinations above
```

Functions for which you do not have authorization may be missing from your
panel.

Access Control

The local installation must specifically permit the use of most operations
functions to users. End users will normally be permitted to review output
associated with jobs they own, but not be permitted to use other functions.

A user may be designated as the operator of a printer that is located near by,
and therefore, may be permitted to display and control only that printer. Many
users may be permitted to review the system log or initiators. Computer
room operators will likely be permitted to control many devices attached to
the system.

11. Output Groups

Introduction

JES2 collects job output together in units called output groups. An output group is the smallest unit of work that can be selected by a printer. All sysout data in an output group has common sysout characteristics like forms, class, and destination. A job may have many groups if it has data sets with many different types of sysout characteristics.

Groups made up of held data sets are considered to be held groups. But, individual data sets that are members of a held group can be controlled and modified independently until the group is released.

Output Group Display Option

The **G** option on the *IOF Option Menu* is used to produce the *IOF Output Group Display*. By default, all groups in the system are displayed to authorized users when the **G** option is selected. The JOBNAMES, SCOPE, and DEST fields on the option menu can be used to limit the groups displayed to specific job names, owners, or destinations.

You can go directly to the *IOF Output Group Display* from any IOF screen by entering **G**. And, you can request several group selection options directly after the **G** option.

```
Option      Effect
Gab         Only groups of class A or B
G white     Only groups with output forms of WHITE
G@          Only groups to be sent to another node
```

Additional selection criteria for groups can be specified by entering **G?** to display the *IOF Output Group Selection Menu*.

```
---------------------- IOF Output Group Selection Menu ----------------------
COMMAND ===>

        O - Held by operator    B - Busy                U - Userid dest
        W - Has a writer id     X - Another node        A - APPC output
                                                        PS - UNIX output
CLASSES  ===>                    1 to 16 sysout classes
FORMS    ===>
                                 Enter 1 to 8 forms above
DEST     ===>
                                 Enter 1 to 8 destinations above
SIZE     ===>                    Only groups with more records than this
DAYSOLD  ===>                    Only groups older than this number of days
JOBNAME  ===>
                                 Enter 1 to 8 generic jobnames above
SCOPE    ===>                    Restrict display to:
                                    ME      - Just your output groups
                                    userid  - Another user's output groups
                                    GROUP   - Your IOF group's max scope
                                    groupid - Another IOF group's max scope
SORT     ===>                    Sort order for output display:
                                    SIZE, FORMS, WTRID, UCS, FCB, FLASH
WTRID    ===>                    External writer id
```

In addition to the JOBNAMES, SCOPE, and DEST fields, this selection menu
has several additional selection criteria for output groups. FORMS, CLASS,
and WTRID are particularly useful selection criteria for output groups.

The selection panel is self-explanatory. The options at the top work together
with the fields at the bottom as they do on other IOF option menus.

The **U** option selects groups that have an extended destination specification
that includes a userid. The **A** option selects groups that are output from
APPC transactions. Once you have selected the desired options, you will be
presented with the *IOF Output Group Display*.

```
------------------------- IOF Output Group Display ---------( 6 )------------
COMMAND ===>                                             SCROLL ===> CURSOR
------------------(  LINES:    2757  PAGES:        73 )-------------------
----------------------------- HARD COPY GROUPS ------------------------------
-------JOBNAME--JOBID---ACT-STAT-ODISP-C-DEST/DEVICE-------FORMS----SIZE-LEFT-U
_    1 M@BASO   J004449           WRITE A TRIANGLE                896       L
_    2 CMPRLOAD J000382           WRITE A TRIANGLE                246       L
_    3 CMPRLOAD J000386           WRITE A TRIANGLE                 58       L
_    4 PDDX6D   J002735           WRITE A TRIANGLE                 73       P
_    5 CMPRLOAD J000387           KEEP  A TRIANGLE                401       L
_    6 M@IOFO   J004454           WRITE A TRIANGLE               1156       L
```

Line Commands

Subject to restrictions that may be imposed by your installation, the following
line commands can be executed on the *IOF Output Group Display*:

?	Display function menu for group. When in doubt about available commands, use the question mark to get assistance.
S	Select group for review by the *IOF Job Summary*.
B	Browse entire group as one continuous data set. Skip the job summary.
C	Cancel the group.
M	Display menu showing all modifiable group attributes. Attributes are documented in Chapter 15.
V	View a group using a saved index. See Chapter 9, *Saving the Index*, for more information.
PC	Determine why group will not print (not available under IOF/CICS).
PROF	Change the destination and delivery instructions for this group to the values contained in the user's profile. Enter option **P** from the *IOF Option Menu* to display/set profile values.
R	Release held output group.
W	Set OUTDISP=WRITE for group.
K	Set OUTDISP=KEEP for group.
L	Set OUTDISP=LEAVE for group.
H	Set OUTDISP=HOLD for group.
OPER	Place group on operator hold.
N	Snap a copy of entire group. In a REXX exec you can snap the entire group in HTML text format by using the menu number for the job: "3 snap htmltext". This indicates that the group's data is to be displayed by a web browser. This option does not supply any HTML header or trailer information, but it does prevent any text strings in the group's data from being interpreted as HTML commands. See **Snapping in HTML Format** in Chapter 16 for more HTML features.
A	Release group from operator hold.
SS,SD,SU	One step commands to set up the snap target data set and snap the job's output.
X	Exclude group from the *IOF Output Group Display*.
HDR	Add a block header to the target snap data set. The JOBNAME and JOBID and OUTPUT CLASS and DESTINATION are formatted into block characters.
SEND	Send the output group via email. Note that this function requires that the IOF Send function has been activated at your site. Enter **HELP** on the SEND interface menu for a complete description of sending job output.

ARC   Archive this output group to a z/OS partitioned data set. Enter **HELP** on the archive interface menu for a description of the archive facility.

Overtyping Group Characteristics

Output group characteristics can be modified by overtyping the appropriate field on the screen.

Output Group Commands in the Command Area

Output group commands can optionally be entered in the command area at the top of the screen. This method may be faster and save key strokes on full-screen terminals. It is the only way to enter group commands from line mode terminals, from batch TSO, and from IOF clists.

Group commands in the command area begin with a group menu number or list of menu numbers. This identifies the group(s) for which the command will be executed. The menu number(s) are followed by the command and then any optional parameters. For example, to cancel the third and fifth through twelfth groups, enter:

```
3     5-12    C
```

Modifying Output Group Characteristics from the Command Area

Output group characteristics can also be modified from the command area. To modify a group, simply follow the command with the name of the field to be modified and the new value as a parameter. For example, to change the FORMS of the third group on the menu to INVOICE, enter in the command area:

```
3    M     FORMS(INVOICE)
```

See Chapter 15 for a complete description of the attributes that can be modified for output groups.

Primary Commands

The *IOF Output Group Display* provides comprehensive commands to manipulate the list of groups and individual groups in the list. Primary commands, which apply to the whole list, must be entered in the command area at the top of the screen.

Exclude Groups from Display

Exclude groups from the menu based on some display field meeting a specified condition. **EXCLude** with no parameters removes all previous exclude commands.

```
EXCLude    fieldname  operator   string
```

> **fieldname**. The display field name. Field names are normally the same as the field heading. See the Appendix for detailed information on using **HELP** to determine field names.
>
> **operator**. Comparison operator. Valid operators are **EQ**, **NE**, **LT**, **GT**, **CT** (containing), **NC** (not containing), **BG** (beginning), and **NB** (not beginning).
>
> **string**. The string to be compared against.

Examples

```
EXCLUDE  JOBNAME  BG  SYS
EXCL  WTRID  EQ      (Excludes groups with no writer id)
EXCL  CLASS  LT  G
EXCL                (Resets all Excludes)
```

Unexclude Groups from List

Return excluded groups to the menu based on display field meeting a specified condition.

Syntax

```
UNEXcl    fieldname  operator   string
```

> **fieldname**. The display field name. Field names are normally the same as the field heading. See the Appendix for detailed information on using **HELP** to determine field names.
>
> **operator**. Comparison operator. Valid operators are **EQ**, **NE**, **LT**, **GT**, **CT** (containing), **NC** (not containing), **BG** (beginning), and **NB** (not beginning).

string. The string to be compared against. The string can be enclosed in single quotes.

Sort the List of Groups

Sort the list of groups based on a displayed field. **SORT** with no parameters and the cursor in the COMMAND input area causes a sort assist panel to be displayed. **SORT** with no parms and the cursor pointing to a panel field does an ascending sort on that field. The sort values are saved in the user's profile unless an initial sort was specified on the *IOF Option Menu*.

Syntax

```
SORT    field1
        [A/D]
        [field2 A/D]
        [field3 A/D]
        [field4 A/D]
        OFF
```

---

field1. Display field on which to sort. See the Appendix for detailed information on using **HELP** to determine field names, or enter the **FIELD** command with the cursor pointing to a field to determine the field name.

A. Sort in ascending sequence. This is the default for the first sort field. **A** or **D** must be specified for other sort fields.

D. Sort in descending order.

field2, field3, field4. Optional additional sort fields.

OFF. Disable sorting on this panel.

Examples
```
SORT    DEST
SORT    CLASS   A   FORMS   A   RECORDS   D
SORT    (cursor point to jobname)
SORT    (cursor in COMMAND area)
SORT    OFF
```

Determine a Panel Field Name

Determine the official field name of a displayed field on the panel.

```
FIELD
```

> Point the cursor to the field whose field name is to be determined. When running under ISPF, a popup window will be displayed. From TSO or CICS, the field name will be displayed in the short error message area to the right of the top line on the screen.

Find a Group

Find a specific group in the group display.

Syntax

```
FIND    string  [FIRST/LAST/NEXT/PREV}
                [SECTION(sectionname)]
                [FIELD(fieldname)]
```

> **string**. The string to be found.
>
> **FIRST/LAST/NEXT/PREV**. Find the first, last, next or previous occurrence.
>
> **sectionname**. Limit the search to the specific section. Use **HELP** to determine the specific field names.
>
> **fieldname.** Search the specified field. The default field is **JOBNAME.** Use the **FIELD** command with the cursor pointing to a field on the panel to determine the fieldname, or use **HELP**.

Examples

```
FIND PAYROLL                 (Find a group with a
                             jobname PAYROLL)
FIND J08862 FIELD(JOBID)     (Find a group with jobid
                             J08862)
FIND BOSTON FIELD(DEST) LAST (Find the last group
                             with destination BOSTON)
```

Up and Down

Scroll the *IOF Output Group Display* up or down.

Syntax

```
Down/Up    [nnn/Max/Section]
```

nnn. Number of rows to scroll up or down.

Max. Scroll to the top or bottom of the menu.

Section. Scroll up to the previous section or down to the next section in the menu.

Right and Left

Scroll the menu to the left or right.

Syntax

```
Right/Left        [nnn/Max]
```

nnn. Number of columns to scroll right or left.

Max. Scroll to the right or left margin.

Display Extended Information

Display additional information about each group in the list to the far right of the display. The added information is not resident in the system's main memory and must be read from disk. Because of this additional overhead, this command may be restricted at your installation.

Information such as job submission time stamp, user name, account number, job execution time stamp, and job age is displayed when **EXTEND** is on.

Syntax

```
EXTEND        [ON/OFF]
```

ON/OFF. Enable or disable extend. **ON** is default if neither is specified.

Lock the Group Display

The current list of groups is locked and not updated as long as lock is active. This command can be used before the **EXTEND** command to reduce overhead, and is quite useful in clists to allow working with a fixed list of groups.

Syntax

```
LOCK
```

Unlock the Group Display

The current list of groups is unlocked and refreshed.

Syntax

```
UNLOCK
```

Refresh the Group Display

Causes the list of groups to be refreshed even if the display is currently locked. This command is normally useful only in IOF clists.

Syntax

```
REFresh
```

Define Target Sysout for SNAP (SS)

Define a sysout target data set for **SNAP**.

Syntax

```
SS
```

See Chapter 16 for a complete description of operands that can be entered on the **SS** command. If **SS** is entered with no operands, an interface option panel is displayed to assist in defining the target sysout data set.

Note that when the **SS** command is entered on the *IOF Output Group Display*, the target data set remains open until it is explicitly closed with a **SNAPCLOS** command, another **SS, SD,** or **SU** command, or until the IOF session is terminated.

Define Target MVS Data Set (SD)

Define an MVS target snap data set. Any non-VSAM data set can be defined as the target data set.

Syntax

```
SD
```

See Chapter 16 for a complete description of operands that can be entered on the **SD** command. If **SD** is entered with no operands, an interface option panel is displayed to assist in defining the target sysout data set.

Note that when the **SD** command is entered on the *IOF Output Group Display*, the target data set remains open until it is explicitly closed with a **SNAPCLOS** command, another **SD, SS,** or **SU** command, or until the IOF session is terminated.

Define Target UNIX File (SU)

Defines a UNIX file as the snap target. When **SU** is entered with no parameters, an interface panel is displayed to allow specification of UNIX file parameters.

Syntax

SU

See Chapter 16 for a complete description of operands that can be entered on the **SU** command. If **SU** is entered with no operands, an interface option panel is displayed to assist in defining the target sysout data set.

Note that when the **SU** command is entered on the *IOF Output Group Display*, the target data set remains open until it is explicitly closed with a **SNAPCLOS** command, another **SU, SS,** or **SD** command, or until the IOF session is terminated.

Close the Target Snap Data Set

Explicitly close a target snap data set that was previously opened on the *IOF Output Group Display*. Note that the snap data set will be closed automatically when the IOF session is terminated.

Syntax

SNAPCLOS

Add a Block Header to the Target Snap Data Set

Explodes text to block letters and writes it to the previously defined target snap data set.

See Chapter 16 for a complete description of the **SNAPHDR** command.

Add Text to the Target Snap Data Set

Adds carriage control and text to the target snap data set.

See Chapter 16 for a complete description of the **SNAPTEX**T command.

Rearranging Columns on the Panel

See Chapter 6, *Customizing IOF Panels*, for a description of the **CUT**, **PASTE**, and **ARRANGE** commands to customize the panel display format.

12. JES2 Device and Initiator Panels

Introduction

IOF provides full-screen device support for all JES2 devices and initiators. This feature is primarily designed for use by operators and may not be allowed to all users. These options may not appear on the *IOF Option Menu* for some users who are not authorized to use them.

Invoking the Device Options Menu

From the *IOF Option Menu*, the **D** option displays the *IOF Device Options Menu*. It can also be displayed by entering **/D** from any IOF panel. This menu is used by operators to specify exactly which device(s) they wish to control.

```
---------------------------- IOF Device Options Menu----------------------------
COMMAND ===>

 LPR - Local Printers        PR  - All Printers          RJL - RJE Lines
 LPU - Local Punches         PU  - All Punches           NJL - NJE Lines
 LRD - Local Readers         PPU - All Printers/Punches  UNL - Unallocated Lines
 RPR - Remote Printers       RJE - Remote Work Stations  LNE - All Lines
 RPU - Remote Punches        NJE - NJE Devices           All - All Devices
 RRD - Remote Readers        OFF - Offload Devices       INIT - Initiators


 Enter 1 to 16 specific device names separated by spaces.  Rnn means all
 devices for remote nn.  Example:  PRT1, R23, R12.PR1, LNE5, L21.JR1, INIT10

DEVICES ==>
        ==>
        ==>

 Enter 1 to 16 destinations. Only devices associated with these destinations
 will be listed.  Example:  LOCAL, RALEIGH, NAPLES, R5, R23, N10

  DEST  ==>
        ==>
        ==>
```

One or more device names can be entered in the DEVICES field to specify exactly which devices are to be displayed. Classes of devices, such as printers or lines, can also be selected, as can devices associated with specific destinations. Many operators control only a limited set of devices. Specific devices can be made the default for a specific operator by entering the **SAVEPROF** command with the device names filled in the DEVICES field.

Now, assume that **LPR** is entered in the command area to display all local printers as shown in the display below.

```
-------------------------- IOF-Device-List-Display -----------( 2 )-----------
COMMAND ===>                                                SCROLL ===> CURSOR
-------------------------- Local Printers/Punches --------------------------
-------DEVICE-----ACT--STATUS----JOBNAME--JOBID-------SIZE------LEFT-UNITS------
_    1 PRT1             ACTIVE   M13GEN   J001435   12035       5479 LINES
_    2 PRT2             INACTIVE
```

This is the *IOF Device List Display* for local printers. It shows the status of each device, and the name and size of the active job if any. You can enter line commands in the line command area for each device. You can shift right several times to see additional information about each device in the list.

Device Detail Menus

Device detail panels let you see all attributes of a device on a single panel. Applicable commands are documented on the panel. Device attributes can be modified by authorized users by simply overtyping the applicable field directly on the panel. Of course, the same commands and overtyping capabilities exist on the *IOF Device List Display* shown before, but most of the attributes require shifting right one or more times to see.

To see all attributes of the device on a single screen, enter **?** in its action area. This produces a detail menu for the device. Assume you entered **?** in the action area for PRT1 on the panel above to produce the printer detail menu shown below.

```
------------ IOF Printer/Punch Detail Display --- (Screen 1 of 2) -------------
COMMAND ===>

  ST - Start        Z - Halt       FWD n - Fwd space n    DG - Display Group
   P - Stop      INTE - Interrupt    B n - Backspace n    DQ - Display Queue
 RES - Restart   CAN - Cancel        N   - Repeat        DQR - Ready Queue

DEVICE-----ACT--STATUS----JOBNAME--JOBID--------SIZE------LEFT-UNITS-LASTFORM--
PRT1       STR  ACTIVE    M13GEN   J001435    176499    166845 LINES STD

FORMS     ===> STD

CLASS     ===> AJ              WTRID ===>            BURST     ===>
LIM       ===> 501-*           PLIM  ===>            PAUSE     ===> N
RANGE     ===> J1-999999       JOB   ===>            SEPDS     ===> N
MODE      ===>                 FSS   ===>            SEP       ===> Y
FLASH     ===>                 NPRO  ===>            MARK      ===>
FCB       ===> 6               UCS   ===> XN         MODIFY    ===>
DEVFCB    ===>                 SETUP ===> HALT       PRESELCT  ===>
COPYMARK  ===>                 TRANS ===> DEFAULT    SEPCHARS  ===>
PRMODE    ===> LINE

ROUTECDE ===> LOCAL
```

Device detail panels are available for all JES2 devices. The allowable commands for the device are listed at the top of the panel. Device characteristics fields are listed at the bottom of the panel. Device commands can be entered either on the *IOF Device Detail Panel* or on the *IOF Device List Panel*. Device characteristics can be modified by overtyping on either panel. Printers have so many characteristics that they will not all fit on one panel, so seldom used parameters are shown on an additional display that can be displayed by entering **DOWN**.

Operators who are responsible for a large number of devices will prefer to begin with a *IOF Device List Display* and occasionally select a specific device for detailed display. Operators who are responsible for only one or two printers will probably only use the detail display.

Other Device List Examples

All JES2 devices can be displayed on the *IOF Device List Display*. A display of both NJE and RJE LINES is shown below.

```
------------------------- IOF Device List Display ----------( 6 )------------
COMMAND ===>                                               SCROLL ===> CURSOR
---------------------------------- Lines ------------------------------------
-------DEVICE-----ACT--STATUS----TYPE-CONNECTED-UNIT-MONITOR-TRACE-DISC--------
_      1 LNE1          ACTIVE    NJE  BOSTON    SNA    N      N
_      2 LNE2          ACTIVE    RJE  RMT2      SNA    N      N
_      3 LNE3          DRAINED             SNA    N      N
_      4 LNE4          ACTIVE                   BSC    N      N
_      5 LNE5          ACTIVE    RJE  RMT23     SNA    N      N
_      6 LNE6          ACTIVE    NJE  CHICAGO   SNA    N      N
```

Line Commands

As with all IOF menus, line commands can be entered in the action area to the left of specific devices. Also, the device menu number(s) followed by the command can be entered in the command area. For example, LNE3 on the sample menu above can be started by simply entering **ST** in it's action area or by entering **3 ST** in the command area. All six lines can be drained by entering **1-6 P** in the command area.

Specific device commands vary by device type and the version of JES2 being run but are fully documented on the *Device Detail Panels* for the different types of devices. Some of the most common device commands are:

?	Display the *Device Detail Panel* for this type of device or initiator.
S	Display the *Device Detail Panel*.
ST	Start the device or initiator.
P	Drain the device or initiator.

RES   Restart some devices.

X   Exclude the device or initiator from the display.

DQ   Display the queue of work routed to the device (TSO only).

DQR   Display the ready queue of work routed to the device. The ready queue meets all selection criteria for the device (TSO only).

Parameters on Device Commands in the Command Area

All of the options and parms that are available on the *Device Detail Menus* are also available directly on the *Device List Menu.* This can be very useful for invoking device commands in an IOF clist or for performing device functions from a line-mode terminal.

Operand	Equivalent JES2 parm	Description
ASIS(Y/N)	A=Y/N	Send extraneous ejects
AUTLgn(Y/N)	A=Y/N	Auto logon
AUTH(n)	A=n	Command authority
Burst(YES/NO)	B=Y/N	Burst
CHR1(table)	X1=table	Character table 1
X1(table)	X1=table	Character table 1
CHR2(table)	X2=table	Character table 2
X2(table)	X2=table	Character table 2
CHR3(table)	X3=table	Character table 3
X3(table)	X3=table	Character table 3
CHR4(table)	X4=table	Character table 4
X4(table)	X4=table	Character table 4
CKPTLINE(nn)	CKPTLINE=nn	Checkpoint lines
CKPTMODE(mode)	CKPTMODE=mode	Checkpoint mode
CKPTPAGE(nn)	CKPTPAGE=nn	Checkpoint pages
CKPTSEC(nn)	CKPTSEC=nn	Checkpoint seconds
CLass(classes)	Q=classes	Sysout classes
Q(classes)	Q=classes	Sysout classes
COMpact(table)	Z=table	Compaction table
COPYMARK(value)	COPYMARK=value	Increment copy marks
Z(table)	COPYMART=value	Increment copy marks
CREATOR(userid)	CREATOR=userid	W S Creator Userid

Operand	Equivalent JES2 parm	Description
DEVFCB(fcb)	DEVFCB=fcb	Default FCB
DISC(Q/I)	D=Q/I	Disconnect
DISCIntv(nn)	D=nnn	Disc. interval
DISP(disp)	DISP=disp	Offload disposition
DS(select)	DS=select	Held data set select
DSName(dsn)	DSN=dsn	Offload dsname
EJECT(Y/N)	EJECT=Y/N	Page eject at RJE start
FCB(fcb)	C=fcb	Forms control
FLAsh(flash)	O=flash	Flash value
FLUSH(Y/N)	FLUSH=Y/N	Blank card at end of DS
Forms(forms)	F=forms	Forms value
FSS(name)	FSS=name	FSS name
HELd(select)	H=select	Held job select
HOLd(Y/N)	H=Y/N	Hold status
INITClas(classes)	On $TI cmd	Initiator classes
IClass(classes)	On $TI cmd	Initiator classes
JOB(job)	JOBNAME=job	Job name select
JOBClass(classes)	CL=classes	Offload classes
LABEL(type)	LABEL=type	Label type
LIMit(nn)	LIM=nn	Record limits
MArk(Y/N)	M=Y/N	Mark
MForm(T/J/M)	MFORM=T/J/M	Message Format
MOD(mods)	MOD=mods	Upload modifications
MODE(mode)	MODE=mode	Control mode
MODIfy(copymod)	Y=copymod	Copymod
MONitor(Y/N)	E=Y/N	Monitor status
MSGclass(c)	Q=class	Reader msg class
NOTify(notify)	NOTIFY=notify	Notify option
NPRo(value)	NPRO=value	Non-process runout
OFFUnit(type,n)	UNIT=(type,n)	Offload unit type
UNIT(type,n)	UNIT=(type,n)	Offload unit type
OUTDISP(disp)	OUTDISP=disp	Output disposition

Operand	Equivalent JES2 parm	Description
PAUse(Y/N)	P=Y/N	Pause option
PLIMit(nn)	PLIM=nn	Page limit
PRDest(dest)	P=dest	Reader print dest
PRESELCT(val)	PRESELCT=val	FSS preselect value
PRMode	PRMODE=mode	Process mode
PMD(mode)	PRMODE=mode	Process mode
PROTect(Y/N)	PROTECT=Y/N	Protection option
PUDest(dest)	U=dest	Reader punch dest
RAnge(range)	RANGE=range	Range
RETPD(period)	RETPD=period	Retention period
ROUtecde(dests)	R=dests	Print Punch dests
DEST(dests)	R=dests	Print Punch dests
SEP(value)	S=value	Job separators
SEPCHARS(CURRENT/ DEFAULT)	SEPCHARS=CURRENT/ DEFAULT	Data set separator
SEPDs(value)	SEPDS=value	Data set separator
SETUP(value)	SETUP=value	Setup value
SPacing(n)	K=n	Spacing
CC(spacing)	K=n	Spacing
K(spacing)	K=n	Spacing
SYSAff(sysid)	S=sysid	System affinity
SYSRdr(sysid)	S=sysid	System affinity
SYSID(sysid)	SYS=sysid	Affinity (offload)
SYSOff(sysid)	SYS=sysid	Affinity (offload)
TRace(I N)	TR=I N	Trace status
TRANS(Y/N DEFAULT)	TRANS=Y/N DEFAULT	Translate chars
UCS(ucs)	T=ucs	UCS value
UNIT=cua/SNA	UNIT=cua/SNA	Hex unit addr or SNA
VOLS(nn)	VOLS=nn	Offload volume count
VOLUmes(vols)	VOLUME=vols	Spool volumes
WS(criteria)	WS=criteria	Work select
WTRid(writer)	W=writer	External writer name
XEQDest(node)	X=node	Reader xeq node

Primary Commands

The *Device List Menu* has several primary commands to manipulate the list of devices and individual devices on the list. Primary commands must be entered in the command area.

Exclude Devices from List

Exclude devices or initiators from the menu based on some display field meeting a specified condition. Exclude with no parameters resets all previous excludes.

Syntax

```
EXCLude    fieldname  operator    string
```

fieldname. The display field name. Field names are normally the same as the field heading. See the Appendix for detailed information on using **HELP** to determine field names.

operator. Comparison operator. Valid operators are **EQ**, **NE**, **LT**, **GT**, **CT** (containing), **NC** (not containing), **BG** (beginning), and **N**B (not beginning).

string. The string to be compared against. If string is omitted, a blank string is assumed. The string can be enclosed in single quotes.

Examples
```
EXCLUDE  STATUS  NE  ACTIVE
EXCL  DEVICE  BG  PUN
EXCL  SECTION  NE LINE
```

Unexclude Devices from List

Return excluded devices to the menu based on a display field meeting a specified condition.

Syntax

```
UNEXcl    fieldname  operator    string
```

fieldname. The display field name. Field names are normally the same as the field heading. See the Appendix for detailed information on using **HELP** to determine field names.

operator. Comparison operator. Valid operators are **EQ**, **NE**, **LT**, **GT**, **CT** (containing), **NC** (not containing), **BG** (beginning), and **N**B (not beginning).

string. The string to be compared against. If string is omitted, a blank string is assumed. The string can be enclosed in single quotes.

Sort Device List

Sort the list of devices or initiators based on a display field. Devices or initiators are sorted within their original device section.

Syntax

```
SORT    field1  [A/D]
        [field2  A/D]
        [field3  A/D]
        [field4  A/D]
        OFF
```

field1. Display field on which to sort. See the Appendix for detailed information on using **HELP** to determine field names, or enter the **FIELD** command with the cursor pointing to a field to determine the field name.

A. Sort in ascending sequence. This is the default for the first sort field. **A** or **D** must be specified for other sort fields.

D. Sort in descending order.

field2, field3, field4. Optional additional sort fields.

OFF. Disable sorting on this panel.

Examples

```
SORT    DEVICE  A   STATUS  D
SORT    SIZE    D
SORT    OFF
```

Determine a Panel Field Name

Determine the official field name of a displayed field on the panel.

```
FIELD
```
___

Point the cursor to the field whose field name is to be determined. When running under ISPF, a popup window will be displayed. From TSO or CICS, the field name will be displayed in the short error message area to the right of the top line on the screen.

Find a Device

Find a specific device in the device list.

Syntax

```
FIND    string  [FIRST/LAST/NEXT/PREV}
                [SECTION(sectionname)]
                [FIELD(fieldname)]
```
___

string. The string to be found.

FIRST/LAST/NEXT/PREV. Find the first, last, next or previous occurrence.

sectionname. Limit the search to the specific section. Use **HELP** to determine the specific field names.

fieldname. Search the specified field. The default field is **DEVICE.** Use the **FIELD** command with the cursor pointing to a field on the panel to determine the fieldname, or use **HELP**.

Examples
```
FIND R12.PR1
FIND MIAMI FIELD(CONNECT)
```

Up and Down

Scroll the *Device List Menu* up or down.

Syntax

```
Down/Up    [nnn/Max/Section]
```
___

nnn. Number of rows to scroll up or down.

Max. Scroll to the top or bottom of the menu.

Section. Scroll up to the previous section or down to the next section in the menu. Each device type is located in a different section.

Right and Left

Scroll the menu to the left or right.

Syntax

```
Right/Left       [nnn/Max]
```

nnn. Number of columns to scroll right or left.

Max. Scroll to the right or left margin.

Rearranging Columns on the Panel

See Chapter 6, *Customizing IOF Panels*, for a description of the **CUT**, **PASTE**, and **ARRANGE** commands to customize the panel display format.

13. System Log, Operlog, and Extended MCS Console

System Log or Operlog

Each MVS system has a System Log (SYSLOG) where various messages are kept. Sysplex systems optionally have an operator log (OPERLOG) which combines log data from all systems in the sysplex. When OPERLOG is active on the sysplex, the installation also may choose to run SYSLOG on one or more of the MVS systems that make up the sysplex. Or, they may elect to disable SYSLOG entirely.

IOF provides two ways to access system log data. The **LOG** command is configured by your installation to access either the current day's system log or the current day's operlog. The **OPERLOG** command can be used to access operlog data independent of the way that the **LOG** command is configured.

Operlog Command

The **OPERLOG** command allows you to browse multiple days of OPERLOG data even if the IOF LOG command is configured to access SYSLOG data. The data being browsed will not have the normal index provided by the LOG command. Enter **HELP** on the OPERLOG interface menu for information about the IOF OPERLOG features.

Syntax

```
OPERLOG
```

Log Command

The option, **LOG**, on the *IOF Option Menu* is used to request access to the log. If your installation is running OPERLOG and has selected that it be displayed by default, the combined OPERLOG will be displayed. Otherwise, the SYSLOG will be displayed.

The **LOG** command has several options that can be entered as parms. If both SYSLOG and OPERLOG are active on your system, you can request access to the type of log you prefer. You also can request access to the log for a single system id. If your installation uses IOF to manage old logs, you can request access to old or archived logs.

```
LOG          [Operlog/Syslog/sysid/OLD/ARCH]
```

O or **OPER**. Displays the Operlog.

S or **SYSLOG**. Displays the System Log.

sysid. Displays a specified system id.

OLD. Displays a menu of old logs if your installation makes memo copies of old logs.

ARCH. Displays a menu of archived logs if your installation uses IOF procedures to archive old logs.

Examples

```
LOG   O                    (Displays Operlog)
LOG   IPO9                 (Displays log for sysid IPO9)
LOG   ARCH                 (Displays menu of archived logs)
LOG   S   SYS8             (Displays syslog for SYS8)
```

Using the Log Option Menu

The *IOF Log Option Menu* is a full-screen panel that can be used to specify log options. To access the panel enter **LOG?** on the *IOF Option Menu* or from any other IOF panel if global commands are enabled.

```
---------------------------- IOF Log Option Menu -----------------------------
COMMAND ===>

blank - Display default running log. (SYSLOG or OPERLOG).
 OLD  - Display a menu of recent logs.  Requires SLAMMEMO be run.
 ARCH - Display ISPF menu of archived logs. Requires SLAMARCH be run.
  S   - Display the running SYSLOG
  O   - Display the running OPERLOG

SYSID  ===>            System id of active or archived log

ACTION ===>            Active system log action message display type
                        blank  Your group default action type
                        OFF    Don't display action messages
                        MVS    Display message route codes 1-12
                        USER   Display message route codes 13-28
                        ALL    Display message route codes 1-28

Select an option and press ENTER
```

Locating a Specific Time of Day

Once you have invoked IOF browse of the log with the L option, you can go directly to any time of day with the **LOCATE** command. Beginning with release 8E, it is also possible to locate a specific second by entering the time in hhmmss or hh:mm:ss form.

```
LOG   1245        Positions to 12:45 PM
LOG   0715        Positions to 07:15 AM
LOG   093530      Positions to 09:35:30 AM
```

Printing Parts of the Log

The **SNAPTIME** command snaps parts of the log to an IOF snap target data set. After defining the target data set with the **SS** or **SD** command, enter

```
SNAPTIME   0945  1015
```

to snap the system log between the times of 09:45 and 10:15. The **SNAPTIME** command is not available under IOF/CICS.

The IOF Log Index

Many important system events are continuously monitored and indexed by the IOF Indexing Task. Each event is classified into a particular category and then added to the index for that type of event. After invoking IOF Browse for the log with the **LOG** option, enter **INDEX** to display a menu of the types of events that have been indexed.

```
---------------------------- IOF DATA INDICES ----------------------------------
COMMAND ===>                                                   SCROLL ===> SCREEN
--------NAME------COUNT--DESCRIPTION---------------------------------------------
_    1  #            2  LOG for  97256 from 23:59
_    2  DEVICE      23  Device errors
_    3  ENQ         12  MVS enqueued data sets
_    4  ERROR        1  System errors
_    5  JES2         0  Jes2 errors and events
S    6  MISC        39  Miscellaneous events of interest
_    7  97256        1  Monday (Enter "L hhmm" to go to specific minute)
_    8  97257      956  Tuesday (Enter "L hhmm" to go to specific minute)
```

This menu quickly shows you that you have had 23 device errors today, 12 enqueued data sets, and 39 miscellaneous errors. One minute (23:59) was indexed yesterday (Monday), and 956 minutes have been indexed today (Tuesday). You can position to 12:43 this afternoon by entering **LOG 1243**.

Indices can be selected for display from the *IOF Data Indices* menu. One or more specific indices can be displayed by entering **S** in the action area(s) or by entering the menu number(s) in the command area. The miscellaneous index from the display above can be selected by entering **6** in the command area.

```
------------------------------ IOF DATA INDEX ------------------------------
COMMAND ===>                                                SCROLL ===> SCREEN
----------------------------------------------------------------------------
_      22   97257 12:45 LLA Refreshed
_      23   97257 14:09 Device 1DC pending offline
_      24   97257 14:10 Device 1DC varied offline
_      25   97257 15:44 ISIJER   symptom dump SYSTEM=0C4
_      26   97257 16:06 LLA Refreshed
_      27   97257 16:19 ISIJWO   symptom dump SYSTEM=0C4
_      28   97257 16:21 NETLGDLY symptom dump SYSTEM=213
_      29   97257 17:06 Device 581 pending offline
_      30   97257 17:07 Device 581 varied offline
_      31   97257 20:17 TRC6450A symptom dump SYSTEM=0C4
_      32   97257 20:20 TRC6450A symptom dump SYSTEM=0C4
_      33   97257 21:39 TS0108A  symptom dump SYSTEM=80A
```

Part of the miscellaneous data index is shown above. It points directly to several conditions that may need to be investigated. An index entry may be selected to cause direct entry into browse at the point where the exception condition occurred by entering **S** in the action area, or by entering the item's menu number in the command area.

Remember that the Log Index is read when the **LOG** command is entered and is not read again until you enter another **LOG** command. To get to the bottom of the log after being in browse for a few minutes, it is better to enter another **LOG** command than to enter **DOWN MAX**. To update the log display continuously, enter **E5 D M** (every 5 seconds refresh the screen and go down max). Press **ATTENTION** to break out of automatic update mode. Note that the **EVERY** command is not available when running IOF from CICS.

Previous Logs

Your installation may choose to keep one or more days of log data online for easy access. If so, the old logs can be accessed by entering **LOG?** on any IOF panel and following the directions for access. You also can jump directly to an old log display by entering **LOG OLD**.

Previous Operlogs

If your installation runs operlog, optionally you can skip to the menu of old logs and access directly a specific old operlog. The command **LOG O -1** requests access to yesterday's operlog. Similarly, **LOG O -2** requests access to the operlog that is two days old.

Archived Logs

Your installation may choose to archive old log data. If so, these can be accessed by entering **LOG ARCH** on any IOF panel and selecting an old log for browse from the menu.

SYSID Command

The **SYSID** command can be used to save your default syslog system id in the profile.

Syntax

```
SYSID    sid
```

      sid. The system id of the syslog you normally wish to review.

Display System Messages Awaiting Replies

Enter the **DR** command from any IOF screen to display the current list of system messages which are awaiting a response from the system operator.

Syntax

```
DR        [n1,n2,...]   [ALL/MVS/USER]   [EVENTUAL]
```

      n1,n2,... List of route codes for which messages are to be displayed.

      ALL. Show messages with route codes 1 through 28.

      MVS. Show messages with route codes 1 through 12.

      USER. Show messages with route codes 13 through 28.

      EVENTUAL. Also show eventual action messages.

Display System Requests

Enter the **SR** command from any IOF panel to display outstanding System Requests, including action messages and WTORs. Action messages can be deleted, and replies to WTORs can be entered as line commands directly on the displayed panel.

Entering MVS and JES2 Commands

Authorized users can enter MVS and JES2 commands from any IOF panel. The JES2 command character is a dollar sign (**$**). The MVS command character is a number sign (**#**) on most IOF systems, but may be a slash (**/**) if your IOF system is installed in SDSF compatibility mode.

To issue a JES2 command, enter **$** followed by the JES2 command. To issue an MVS command, enter **#** (or **/** if your IOF is installed in SDSF compatibility mode) followed by the MVS command. For example:

```
$DSPOOL,ALL
#D  T
/D  T            (in compatibility mode)
```

The **<** command is a special way to issue MVS commands and to see the response in the system log. The MVS command following **<** is issued, found in the system log, and presented so you can easily see its output. You would normally use the MCS Extended Console to enter commands, but you alternately can enter the **<** command. This command is not available under IOF/CICS.

The MVS command with no parms, or **#** or **<** with no parms, displays a special command assist panel that permits entering long MVS and JES2 commands. The last 32 commands issued can be re-selected from the old command display at the bottom of this display.

Extended MCS Console

IOF provides full-screen support for the extended MCS console feature. Proper authority is required to use the extended console feature and to issue MVS and JES2 commands.

The *IOF Extended MCS Console* is a special browse panel that captures and displays commands and messages from a private extended MCS console. Commands that have been issued from a console panel in the current IOF session, and responses to those commands, are displayed by default. Standard browse features are available to the extended console. For example, **FIND**, **SNAP** and scrolling work as in any IOF browse session. The **END** command exits to the IOF panel from which the extended console was invoked.

MVS commands can be entered with no prefix character on the extended console panel.

There are a few ambiguous commands which could be valid both as panel commands and MVS commands. For example, **D M** is the MVS **DISPLAY MACHINE** command and the panel **DOWN MAX** command. This problem is solved by requiring that DOWN not be abbreviated. The MVS command character can also be used to eliminate ambiguities.

Invoking the Extended Console

Entering an MVS or JES2 command on any IOF panel automatically initializes an extended MCS console and displays the IOF console panel. The **CONSOLE** command can also be used from any IOF panel to explicitly initialize an extended MCS console.

```
CONSOLE/CN          [NAME(cons_name)]
```

cons_name. The name of the extended console if you wish to explicitly name it. The default console name is your userid followed by one or more digits.

Examples
```
CONSOLE
CN   NAME(SPGMR)
      or enter a MVS or JES2 command
```

Disabling Automatic Console Invocation

The **AUTOCON** command can be entered from any IOF panel to disable automatic invocation of the extended console when an MVS or JES2 command is issued. The automatic console status is saved in your profile and remains set until changed by another **AUTOCON** command. When **AUTOCON OFF** is in effect, the **CONSOLE** command must be used to invoke the extended console.

Syntax

```
AUTOCON     [ON/OFF]
```

ON. Enable automatic console invocation.

OFF. Disable automatic console invocation.

Setting Automatic Command Routing

The **AUTOROUT** command can be entered from any IOF panel to specify that all explicit MVS and JES2 commands entered by the user from IOF be routed to a designated system in the sysplex. The sysid is saved in the profile, but is not validated by IOF. **AUTOROUT** reverts to the **OFF** status when the IOF session is terminated.

Syntax

```
AUTOROUT [ON/OFF] [sysid]
```

ON. Enable automatic routing. **ON** is the default if neither **ON** nor **OFF** is specified.

OFF. Disable automatic routing.

sysid. System id of the system to which commands will be automatically routed.

Examples

```
AUTOROUT   IPO9        (Enable autorout to system IPO9)
AUTOROUT   OFF         (Disable autorout)
AUTOROUT   ON          (Re-enable autorout)
```

Note that **AUTOROUT** is not required to send commands to a specific MVS system. The MVS **ROUTE** command can also be used. For example, the following command will issue a JES2 command on system IPO9 to display the SPOOL:

```
#RO  IPO9,$DSPOOL,ALL
```

Controlling the Extended Console Message Format

The format of messages displayed on the extended console can be controlled with the **MFORM** command. The **MFORM** status is saved in the profile. **MFORM** with no parms resets to the default format.

Syntax

```
MFORM       [T]   [S]   [J]   [M]
```

    T. Display time stamp on all messages

    S. Display the system id on all messages

    J. Display the job name on applicable messages

    M. Display message text only

Examples

```
MFORM   T
MFORM   JTS
MFORM
```

Controlling Active Extended MCS Console Route Codes

Extended consoles normally display only messages that are explicitly routed to them. The **ROUTCDE** command can be used to have specific MVS route codes automatically displayed at the currently active extended console. MVS route codes revert to the default value for the console when the current extended console is terminated. The MCS extended console is normally

terminated when the console panel is terminated but can be kept active with the **CNSKEEP** command.

```
ROUTcde    [NONE/ALL]    [ADD]    [DEL]    [codes]
```

NONE. Revert to no route codes. This is the default if no parms are entered.

ALL. Enable all route codes.

ADD. Add the codes listed in the codes parm.

DEL. Delete the codes listed in the codes parm.

CODES. One or more MVS route code numbers or range of numbers. The codes will be added if the **ADD** parm is present, deleted if the **DEL** parm is present, or set if neither is present.

Examples

```
ROUTDCE    ALL
ROUT       1,3,7-10
ROUT       ADD 2,5
ROUT       NONE
```

Control Automatic Console Scrolling

Use the **CNSCROLL** command to control automatic scrolling when a command is entered on the MCS extended console.

Syntax

```
CNSCROLL [ON/OFF]
```

Leave Console Active

The extended MCS console is normally terminated when you leave the console panel. To leave the console active enter the **CNSKEEP** command before exiting the console panel.

Syntax

```
CNSKEEP
```

Display Extended Console Status

The **DC** command can be issued from the extended console panel to display the status of the extended console.

Syntax

```
DC
```

Clearing the Extended Console

The **CLEAR** command can be issued from the extended console panel to clear all existing commands and messages. An automatic clear command is done each time IOF is terminated.

Syntax

```
CLear
```

Entering Long Commands (ISPF Only)

The LONG command can be issued from the extended console to display an ISPF panel that allows entering very long MVS or JES2 commands. The last 32 commands are saved in the user's profile and easily can be selected to be re-entered.

Syntax

```
LONG or #
```

Defining Extended Console Initialization Commands

A maximum of nine commands can be saved in the profile to be automatically executed every time the IOF extended console is initialized. Extended console commands, IOF browse commands, MVS commands or JES2 commands can be saved.

Syntax

```
CNSICMD    nbr   command    [DELETE]
```

nbr. The command number (1 to 9) to be defined.

command. The IOF, MVS, or JES2 command to be issued.

DELETE. Delete all 9 previously saved initialization commands.

Examples

```
CNSICMD    DELETE
CNSICMD    1   ROUTCDE 1,3,5-9
CNSICMD    2   $DSPOOL,ALL
CNSIDMD    3   EVERY 5 DOWN MAX
```

Displaying the System Monitor Panel

The *IOF System Monitor* can be invoked by authorized users by entering **M**:
The *System Monitor Option Menu* is also available to assist in selecting the
specific categories of address spaces to be monitored. It can be displayed by
entering **M?** from any IOF panel.

Line Commands

The following line commands can be entered in the action area to the left of
any displayed address space. These commands can also be entered in the
command area at the top of the screen when preceded by the menu number
of the address space. The commands are:

?	Display function menu for an address space. When in doubt about available commands, use the question mark to get assistance.
S	Select the address space for review with the *IOF Job Summary*. Note that only address spaces that are running under JES2 can be selected. Non-selectable address spaces will not have a JOBID field displayed.
C	Cancel the address space.
X	Exclude the address space from the menu.
H	Hold the batch job running in the address space.
E	Restart the address space.
M	Modify address space attributes (or overtype with new attributes.
CDUMP	Cancel a running job with a dump.
EDIT	Edit the running job.
SUB	Submit a new copy of the job.

Parms for Line Commands in the Command Area

Job characteristics also can be modified from the command area. To modify
a job, follow the **M** command with the name of the field to be modified and a

new value as a parameter. For example, to change the service class of job on the menu to BKGR, enter:

```
3  M  SRVCLASS(BKGR)
```

in the command area.

The following modification operands can be used with the commands:

Operand	Function
DEST(route)	Set job destination to the route code.
PERFORM(g)	Set the performance group of running job to g (WLM COMPAT mode).
SRVCLASS(c)	Set the service class of an input or running job to c (WLM GOAL mode).
QUIESCED(YES/NO)	Set WLM GOAL mode quiesced state.

Primary Commands

The *IOF System Monitor* provides comprehensive commands to manipulate the list of address spaces. Primary commands, which apply to the whole list, must be entered in the command area at the top of the screen.

Start Automatic Display Update

In the TSO environment, the **EVERY** command can be used to begin automatically updating the monitor display at a specific interval.

Syntax

```
Every sss
```

      sss. The automatic update interval in seconds.

The keyboard will be locked while automatic updating is in effect. Pressing **ATTENTION** on the terminal is required to break out of automatic update mode.

Exclude Address Spaces from the List

Exclude address spaces from the menu based on some display field meeting a specified condition. **EXCLUDE** with no operands nullifies all previous exclude commands.

```
EXCLude    fieldname  operator    string
```

fieldname. The display field name. See the Appendix for detailed information on using **HELP** to determine field names.

operator. Comparison operator. Valid operators are **EQ**, **NE**, **LT**, **GT**, **CT** (containing), **NC** (not containing), **BG** (beginning), and **NB** (not beginning).

string. The string against which the comparison will be made. If string is not specified, the comparison is done against a null field. The string can be enclosed in single quotes.

Examples

```
EXCLUDE    JOBNAME  EQ  INIT
EXCL       JOBID    BG  S
EXCL       REAL     LT  500
EXCL       (Negates all previous exclude commands)
```

Unexclude Address Spaces from the List

Return excluded address spaces to the menu based on a display field meeting a specified condition.

Syntax

```
UNEXcl     fieldname  operator    string
```

fieldname. The display field name. See the Appendix for detailed information on using **HELP** to determine field names.

operator. Comparison operator. Valid operators are **EQ**, **NE**, **LT**, **GT**, **CT** (containing), **NC** (not containing), **BG** (beginning), and **NB** (not beginning).

string. The string against which the comparison will be made. If string is not specified, the comparison is done against a null field. The string can be enclosed in single quotes.

Sort the List

Sort the list of address spaces based on a displayed field. **SORT** with no operands reverts to the default sort order.

```
SORT     field1  [A/D]
         [field2  A/D]
         [field3  A/D]
         [field4  A/D]
         OFF
```

field1. Display field on which to sort. See the Appendix for detailed information on using **HELP** to determine field names, or enter the **FIELD** command with the cursor pointing to a field to determine the field name.

A. Sort in ascending sequence. This is the default for the first sort field. **A** or **D** must be specified for other sort fields.

D. Sort in descending order.

field2, field3, field4. Optional additional sort fields.

OFF. Disable sorting on this panel.

Examples

```
SORT     CPURATE   D
SORT     REAL
```

Determine a Panel Field Name

Determine the official field name of a displayed field on the panel.

Syntax

FIELD

Point the cursor to the field whose field name is to be determined. When running under ISPF, a popup window will be displayed. From TSO or CICS, the field name will be displayed in the short error message area to the right of the top line on the screen.

Find an Address Space

Find an address space in the list.

```
FIND      string   [FIELD(fieldname)]
```

string. The string to be found.

fieldname. Use the **FIELD** command to determine the name of the field under the cursor, or see the Appendix for detailed information on using **HELP** to determine field names.

Examples
```
FIND    CICS
FIND    J08862   FIELD(jobid)
```

Up and Down

Scroll the *System Monitor* display up or down.

Syntax

```
Down/Up     [nnn/Max]
```

nnn. Number of rows to scroll up or down.

Max. Scroll to the top or bottom of the menu.

Right and Left

Scroll the menu to the left or right.

Syntax

```
Right/Left      [nnn/Max]
```

nnn. Number of columns to scroll right or left.

Max. Scroll to the right or left margin.

Display Extended Information

Display additional information about each address space in the list to the far right of the display. The added information is not resident in memory and must be read from disk. Therefore, this command may be restricted at your installation.

Information such as job submission time stamp, user name, account number, job execution time stamp, and job age is displayed when extend is on.

Syntax

EXTEND   [ON/OFF]

ON/OFF. Enable or disable extend. **ON** is default if neither **ON** nor **OFF** is specified.

15. Modifiable Sysout Attributes

There are several IOF functions that allow you to specify sysout attributes for a sysout data set or output group. The table below describes all of the sysout attributes supported by IOF and indicates which IOF functions allow each attribute.

The **Type** column below indicates which functions allow that attribute. A **P** in the Type column for an attribute means that it is allowed in the data set print command from *IOF Job Summary* and in the **SS** command. The **SS** command allows you to establish print attributes for subsequent SNAP requests.

A **M** in the Type column means that the attribute can be used in the held data set modify function from the *IOF Job Summary*. The held data set function (**M** on *IOF Job Summary*) can only be used for sysouts that indicate HELD in their STATUS column.

A **G** in the Type column means that the attribute can be used in the output group modify function (**M** on the *IOF Output Group Display*) and in the output group modify function (**MG** on the *IOF Job Summary*). The **MG** function for *IOF Job Summary* is only supported for data sets that have a value displayed in their GRP field.

Attribute	Type	Description
ADDR1(address)	P,G	1st line of addr. for banner
ADDR2(address)	P,G	2nd line of addr. for banner
ADDR3(address)	P,G	3rd line of addr. for banner
ADDR4(address)	P,G	4th line of addr. for banner
BUILDING(name) BLDG(name)	P,G	Building name for print banner
Burst(Y/N)	P,M	Burst option for 3800 printers
CC(A/M/NONE)	P	Carriage control (SS command only)
CHARS(tables) X(tables)	P,M	Character tables (up to 4)
CKPTLNS(nn) E(nnn)	P,M	Lines in logical checkpt page
CKPTPGS(nn) P(nn)	P,M	Logical pages between checkpts

Attribute	Type	Description
CLass(class)	P,M,G	Sysout class
COMSETUP	P,G	Specifies options for microfiche printers
CONTROL(option)	P,G	PROGRAM/SINGLE/DOUBLE/TRIPLE
COPIES(nn) N(nn)	P,M	Copies to be printed
COPYG(groups) G(Groups)	P,M	Copy groups for 3800 printer
DATACK(option)	P,G	BLOCK/UNBLOCK/BLKCHAR/BLKPOS
DEPT(name)	P,G	Dept. name for print banner
Dest(dest)	P,M,G	Destination for data. Note that there is room to specify a full IP dest
DISP(disposition)	P,G	Output disposition (WRITE/KEEP/HOLD)
DPAGELBL(Y/N)	P,G	DPAGELBL option
FCB(fcb)	P,M,G	FCB value
FLash(flash)	P,M,G	Flash value
FLASHC(nn) O(nn)	P,M	Number of copies to be flashed
FORMDEF(spec)	P,G	Form definition
FORMLEN(length)	P,G	Length of print form
Forms(forms)	P,M,G	Output forms value
Index(offset)	P,M	Right offset for 3211 printer
Lindex(nn)	P,M	Left offset for 3211 printer
LINEct(nn) K(nn)	P,M	Lines to print per page
MODIFY(module) Y(module)	P,M	Copy modification module
Modtrc(index)	P,M	Index into CHARS tables
NAME(name)	P,G	Name for print banner
NOTIFY1(userid)	P,G	Notify user(s) when printed
NOTIFY2(userid)	P,G	Notify user(s) when printed
NOTIFY2(userid)	P,G	Notify user(s) when printed
NOTIFY4(userid)	P,G	Notify user(s) when printed
OUTBIN	P,G	Specifies the output bin
OUTNAME(ddname)	P	Pre-allocated target (SS command only)
PAGEDEF(spec)	P,G	Page definition
PIMSG(Y/N)	P,G	PSF printer messages wanted

Attribute	Type	Description
PIMSG#(nn)	P,G	Number of messages
PRMODE(mode)	P,M,G	Processing mode
PRTERROR	P,G	IP dest; action on print error
PRTOPTNS	P,G	IP dest; printer options
PRTQUEUE	P,G	IP dest; print queue ID
PRTY	P	Priority
RETAINS	P,G	IP dest; OK retention period
RETAINF	P,G	IP dest; fail retention period
RETRYL	P,G	IP dest; retry limit count
RETRYT	P,G	IP dest; retry time interval
ROOM(name)	P,G	Room name for print banner
SYSAREA(Y/N)	P,G	Reserve area for messages
TITLE(title)	P,G	Title for print banner
TRC(Y/N)	P,G	Table reference chars
UCS(ucs) (T(UCS)	P,M,G	Universal character set
USERDT01…16	P,M,G	Userdata fields
USERLIB1(dsname)	P,G	User libraries for formats
USERLIB2(dsname)	P,G	User libraries for formats
USERLIB3(dsname)	P,G	User libraries for formats
USERLIB4(dsname)	P,G	User libraries for formats
USERLIB5(dsname)	P,G	User libraries for formats
USERLIB6(dsname)	P,G	User libraries for formats
USERLIB7(dsname)	P,G	User libraries for formats
USERLIB8(dsname)	P,G	User libraries for formats
Wtrid(writer)	P,M,G	External writer name
Z	P,M	Compaction table name

16. Snap Target Data Sets

Introduction

The SNAP function of the *IOF Job Summary* and *Browse* panels causes sysout data records to be copied to an external (target) data set. You can specify a target SNAP data set by entering an **SS, SD** or **SU** command before requesting any SNAP operations, or you can take the default target.

Default SNAP Target Data Set

If a SNAP function is requested and no target data set has been specified, the default target data set will be a spun sysout data set with your default class and print destination. See Chapter 6 for instructions on setting your default class and print destination on the *IOF User Profile Options* panel.

If you want to change any of the attributes of the spun sysout data set, or if you want to snap data to tape, disk or a UNIX file, enter an **SS**, **SD** or **SU** command issuing the **SNAP** command.

Closing or Changing the SNAP Target Data Set

The SNAP target can be explicitly closed by the **SNAPCLOS** command or by another **SS**, **SD** or **SU** command. It also will be implicitly closed and freed under the following conditions:

- If the **SS**, **SD** or **SU** command was entered in the *IOF Job List Menu*, *Output Group Display*, or *System Monitor*, the target data set is implicitly closed when the IOF session is terminated. Output from several jobs can be snapped to the same target data set.

- The default target data set and target data sets defined by an **SS**, **SD** or **SU** command on the *IOF Job Summary* or *Browse* panels are implicitly closed when the *IOF Job Summary* for the job is terminated. Output from several sysout data sets of a job can be snapped to the same target data set.

Specifying a Spun Sysout Target Data Set (SS)

The **SS** command is used to explicitly specify a sysout target data set. If you know that you want to snap to a sysout target data set but are unsure about the attributes (destination, class, etc.), enter the **SS** command with no operands. This will display the *Snap to Sysout Data Set* interface panel that will help you set up the right attributes for your target sysout data set.

```
---------------- Snap to Sysout Data Set --- (Screen 1 of 6) ----------------
COMMAND
     Blank - Open SNAP data set and return
     Down  - Display panel with more SNAP attributes

CLASS    ===>                        Sysout class
DEST     ===>

OUTDISP  ===>                        Output disposition (WRITE/KEEP/HOLD)
CONVERT  ===>                        Conversion format (html)
CC       ===>                        Carriage control   (A/M/NONE/HTML/ASCII)
OPTCD    ===>                        "J" for 3800 printers
PAGEDEF  ===>            FORMDEF ===>              FORMS ===>

TITLE    ===>
NAME     ===>
ROOM     ===>
BUILDING ===>
DEPT     ===>
ADDRESS  ===>
         ===>
         ===>
         ===>
```

Note that the most common sysout data set attributes are displayed on the first panel, but that you can scroll down to display additional sysout attributes.

```
---------------- Snap to Sysout Data Set --- (Screen 2 of 6) ----------------
COMMAND ===>
                                        Job: ISIJFW1(T002430)
     Blank - Open SNAP data set and return
     Down  - Display panel with more SNAP attributes
     Up    - Display panel with more SNAP attributes

OUTNAME ===>                   Pre-allocated OUTPUT statement name

COPIES  ===>              UCS     ===>         FCB     ===>

NOTIFY  ===>              INDEX   ===>         LINDEX  ===>
        ===>              CKPTPGS ===>         CKPTLNS ===>
        ===>              BURST   ===>         PRMODE  ===>
        ===>              FLASHC  ===>         Z       ===>

PRTY    ===>              OUTBIN  ===>         COMSET  ===>
WTRID   ===>              LINECT  ===>         FLASH   ===>
MODTRC  ===>              CHARS   ===>
MODIFY  ===>              COPYG   ===>
```

The interface panels can be bypassed if you know the specific sysout attributes you want. This is the easiest way to specify sysout characteristics when running from a clist or exec. To specify sysout target data set attributes, enter the **SS** command followed by the attributes. For example:

```
SS  COPIES(4)  DEST(LOCAL)  CLASS(X)
```

See Chapter 15 for a complete description of all valid sysout attributes.

Specifying an MVS Target Data Set

The **SD** command is used to explicitly specify a non-VSAM MVS target data set for SNAP. This includes MVS disk and tape output data sets. If the **SD** command is entered with no parameters, the *IOF Snap Data Set Options* interface panel is displayed to assist in allocating the target data set.

```
------------------------- IOF Snap Data Set Options ------------------------
COMMAND ===>

  DSNAME         ===> ASCHINT.IOFLIST

  RECFM          ===> VBA             Record format
  LRECL          ===> 255             Logical record length
  BLKSIZE        ===> 3600            Block size
  CONVERT        ===>                 Convert to format (html)

  PRIMARY        ===> 20              Primary allocation   (in tracks)
  SECONDARY      ===> 20              Secondary allocation (in tracks)
  UNIT           ===>                 Unit name
  VOLUME SER.    ===>                 Volume serial
  STORCLAS       ===>                 SMS storage class
  MGMTCLAS       ===>                 SMS management class
  DATACLAS       ===>                 SMS data class

  Special CC     ===>                 Special carriage control (HTML/ASCII)
  MOD (Y or N)   ===>                 Append data to end of existing data set
  PACK(Y or N)   ===>                 Pack data using ISPF method

  LABEL          ===>                 Tape data set label type
  DATASET NO.    ===>                 Tape data set sequence number
```

Note that the default data set name is jobname.IOFLIST. You can change the default name by selecting the **P** option and then selecting option **3**. The data set name, including a fully qualified name enclosed in single quotes, can be specified by overtyping. You can also specify a member of a partitioned data set by including the member name in parenthesis with the data set name.

The specified (or defaulted) data set will automatically be created if it does not already exist. See ***Record Structure for MVS Target Data Sets*** below for a discussion of default DCB attributes and how to change them.

All the displayed data set attributes can be overtyped on the panel. The default values can be set on option **P.5**. To append SNAP data to the end of an existing data set, specify **YES** in the MOD field. IOF will not specify

LRECL, BLKSIZE, or RECFM if Y is specified for MOD. This means that specifying MOD for a data set that has never been written into can cause unpredictable results.

Note that your userid must be granted mount authority before you can SNAP to a tape data set.

Specifying a Unix File Target

The **SU** command is used to explicitly define a UNIX file as the snap target. Enter **SU** with no parameters to display the *IOF Snap to z/OS Unix File* interface panel.

```
------------------------ IOF Snap to z/OS Unix File ------------------------
COMMAND ===>
                                                   Job: BTSO(J409822)
PATH        ===> /u/usr9322/

FILE        ===> BTSO.IOFLIST

CONVERT     ===>               Convert to format (html)

OVERWRITE   ===> Yes           OK to write into existing file (Yes/No)

APPEND      ===> No            Append snapped data to end of file (Yes/No)

MODE        ===> SIRWXU

FILEDATA    ===> Text          Data format (Text/Binary)

RECFM       ===> V             Record format (F or V)
LRECL       ===> 255           Logical record length
CC          ===> A             Carriage control (A/M/NONE/HTML/ASCII)

   Set defaults for this panel by entering "P" on the IOF Option Menu.
```

Note that the default file name is jobname.IOFLIST. You can change the default name and all other default values on the panel by selecting the **P** option and then selecting option **4**. All fields on the panel can be changed by overtyping. The UNIX file will automatically be created if it does not already exist.

Specifying a Client Target Snap Data Set

When running on an IOF server, the **SC** command is used to define a target snap data set on the client. To define a sysout target snap data set on the client, enter **SC** followed by an **SS** command. To define a MVS target snap data set, enter **SC** followed by an **SD** command. To define a Unix file target, enter **SS** followed by an **SU** command.

Examples:
```
SC SS CLASS (A)
SC SD DA (MYTARGET)
```

Record Structure for MVS Target Data Sets

The default record format for disk and tape target data sets is an installation parameter. It is displayed when you enter the **SD** commands with no parms. You can override these defaults on the *IOF Snap Data Set Options* panel, or with the **RECFM**, **LRECL**, and **BLKSIZ**E operands of the **SD** command. Specifying an **LRECL** value shorter than the maximum record length being snapped will cause truncation of records which are longer than the **LREC**L value.

The panel and the **SD** command support all valid combinations of the **RECFM** characters **V**, **F**, **B**, **U**, **A**, and **M**. Note that you can specify either ASA or machine print control characters. If you specify a different type of print control character from the original data being snapped, IOF automatically converts the snapped output to the specified type.

The *IOF Snap Data Set Options* interface panel can be bypassed if you know the specific data set attributes you want. This is the easiest way to specify data set attributes when running from a clist. Enter the **SD** command followed by the desired attributes:

Parameter	Description
DSNAME(data.set.name)	data set name
TRACKS(prim sec)	primary and secondary space
RECFM(fmt)	record format
LRECL(len)	logical record length
BLKSIZE(len)	block size
VOLUME(volser)	tape or disk volser
UNIT(unittype)	unit type
MSVGP(mss-unittype)	MSS unit type
MOD	add to an existing data set
LABEL(NL/SL/NSL/SUL/BLP,LTM/AL/AUL)	tape label type
DISP(WRITE/HOLD/KEEP/LEAVE)	output data set disposition
POS(n)	tape file number
STORCLAS(class)	storage class
MGMTCLAS(class)	management class
DATACLAS(class)	data class
SUBTASK(YES/NO)	do I/O on subtask; less efficient but better error messages
DCB(YES/NO)	use existing DCB parms
PACK	save in ISPF packed format

Snapping from an MVS Data Set

A REXX exec can use the **SNAPDD** command to copy data into the current snap target from any allocated MVS data set based on the DD name:

SNAPDD   ddname [base 64] [htmltext]

The htmltext parm indicates that this data is to be displayed by a web browser. This option does not supply any HTML header or trailer information, but it does prevent any text strings in the data from being interpreted as HTML commands.

The base64 parm causes the data to be converted into a base 64 data format suitable for transmitting binary data to a PC.

Deferring Disposition of Sysout Snap Target

In REXX execs it can be useful to create a sysout snap target data set, and later decide to delete it if errors are encountered in the process. To accomplish this, an exec can specify the **DONTFREE** parm on the **SS** command that defines the sysout snap target. This will prevent the eventual **SNAPCLOS** function from freeing the sysout data set.

Example

```
Address IOF
"SS …DONTFREE"
"TSICOPY NAME(SNAPDDMM) FROM(SESSION) TO(REXX)"
Various SNAP commands…
SNAPCLOSE
```

To free the sysout data set and keep it:

```
Address TSO "FREE FILE("snapddnm")
```

To free the sysout data set and delete it:

```
Address TSO "FREE FILE("snapddnm") DELETE
```

Attributes for Open Snap Target Data Sets

In some cases it is useful for REXX execs to obtain information about a snap target data set that has already been opened. There are session attributes that can be fetched with the **TSICOPY** command.

Syntax

```
TSICOPY NAME(attr) FROM(SESSION) TO(REXX)
```

Some of the attributes that can be used are:

```
SNAPDDNM   DD name of snap target data set
SNAPTYPE   Type of snap target (SS/SD/SU/SC)
```

```
SNAPCTYP    If SNAPTYPE is SC, this is type of actual
            snap on client
SNAPRTYP    SS or SD (whether client or local)
SNAPLREC    LRECL of snap data
SNAPBLKS    BLKSIZE of snap target
SNAP$REC    # of records in latest snap
SNAPRECF    Record format (F/V/U)
SNAPCC      Carriage control (NONE/ASA/MCH)
SNAP$BYT    # of bytes in latest snap
SNAP$MAX    Max lrecl in latest snap
SNAP#REC    Total records in snap target
SNAP#BYT    Total bytes in snap target
SNAP#MAX    Max lrecl in snap target
```

Snapping in HTML Format

To snap data in a format that can be displayed by a web browser, specify "html" in the CONVERT field of the **SS**, **SD**, or **SU** interface panel before snapping the data. An exec can specify "CONVERT(HTML)" on a **SS**, **SD**, or **SU** command before snapping data to create data in HTML format.

This option will enclose the output in simple HTML header and trailer records, convert any sysout carriage control to HTML format, and map any potential HTML codes in the output to transparent HTML equivalents.

If an exec is designed to create its own HTML header and trailer information, it would not use the **CONVERT** parm. After establishing a snap target with a normal **SS**, **SD**, or **SU** command, the exec would use **SNAPTEXT** commands to insert the desired HTML codes. Then, it should append the HTMLTEXT parm to all snap commands to prevent any text strings in the snapped data from being interpreted as HTML codes.

To imbed an HTML web page into a non-HTML data set, use the **SS**, **SD**, or **SU** command to establish a normal snap target.   Then, snap any desired non-HTML data. To imbed an HTML format web page:

```
SNAPCNVT html
…snap any desired data for a web page…
SNAPCNVT
```

This will treat the data snapped between the two **SNAPCNVT** commands as though CONVERT(html) had been specified on the original **SS**, **SD**, or **SU** command. Note that data snapped after the second (null) **SNAPCNVT** command will once again be treated as non-HTML output.

Simulating Carriage Control

You can map sysout data containing carriage control into a format that is acceptable to other display environments.

Specify **HTML** in the CC field of the SS, SD, SU interface panels or specify **CC(html)** on the **SS**, **SD**, or **SU** commands to map sysout carriage control into a format that is acceptable to a web browser.

Specify **ASCII** in the CC field of the SS, SD, or SU interface panels or specify **CC(ascii)** on the **SS**, **SD**, or **SU** commands to map sysout carriage control into a format that is acceptable to a PC text browser.

For even more detailed control, a REXX exec can explicitly specify the text strings to be used to simulate line feeds and form feeds in the output snap target data set. To accomplish this, the exec can specify the following on an **SS**, **SD**, or **SU** command:

```
CC(TEXT)  FF(form-feed-string/skip-count)  LF(line-feed-string)
```

or

```
CC(TEXT) FFHEX(form-feed-string) LFHEX(line-feed-string)
```

Scope of Snap Target Data Set

By default, a snap target data set will remain active and open until the panel that opened it terminates. You can nest to lower level panels and snap into the same target data set, but the snap data set will be closed and freed when you exit the panel where it was originally opened. To exercise complete control over the scope of a snap target data set, specify:

```
SCOPE(GLOBAL)
```

on the **SS**, **SD**, or **SU** command. The snap target will remain active and open until explicitly closed with a **SNAPCLOS** command or another **SS**, **SD**, or **SU** command is entered.

Inserting Text Records into a SNAP Data Set

The **SNAPTEXT** command can be used by a REXX exec to insert text strings into the currently open snap target data set.

Syntax

```
SNAPTEXT    [BUILD]

            [ASA(asa-ctl)/MACHINE(mac-ctl)]

            [CHAR line-of-text/HEX hex-data]

            [HTMLTEXT CHAR line-of-text
```
___

> **BUILD**.   This optional parm is used only when a complex text record is being created using multiple **SNAPTEXT** commands. The text from

multiple SNAPTEXT BUILD commands is concatenated into a single record which is written when a SNAPTEXT command is entered with no parms.

asa-ctl. The optional ASA carriage control character.

mac-ctl. The optional machine carriage control character in hexadecimal.

CHAR. Specifies that character header data follows.

line-of-text. The string of character data to be added to the snap target data set.

HEX. Specifies that hexadecimal header data follows.

hex-data. The string of hexadecimal data to be added to the snap target data set.

HTMLTEXT. This is data that is to be displayed by a web browser. This option does not supply any HTML header or trailer information, but it does prevent any text strings in the data from being interpreted as HTML commands.

Examples

```
SNAPTEXT ASA(1) CHAR    (Example header at top of form)
SNAPTEXT MACHINE(8B) CHAR    (Machine control example
                                 header)
SNAPTEXT CHAR           (This data will be printed on
                            the next line)
SNAPTEXT BUILD ASA(1)
SNAPTEXT BUILD HEX 7B3EF2
SNAPTEXT BUILD CHAR     (Character part of a complex
                           header)
SNAPTEXT
```

Note that **SNAPTEXT** with no parms causes the accumulated data record created with the previous **SNAPTEXT BUILD** commands to be written.

Block Headers

It may be useful to add block headers to snap target data sets. Block headers are particularly useful for defining data separators when preparing output for microfilm or CD rom.

The **SNAPHDR** command utilizes **SNAPTEXT** to produce block headers in the snap target data set. Three block header formats are supported, and it is relatively easy to add additional local formats.

```
SNAPHDR     [1/2/3]     [SLANT]     header-text
```

1/2/3. Optionally specifies the block header format.

1. Specifies the default block header format of 7 lines by 5 characters wide.

2. Specifies a block header 7 lines by 7 characters wide.

3. Specifies a block header 13 lines by a proportional width.

SLANT. If specified, causes the block letters to be slanted.

header-text. The text to be blocked. Note that the number of characters that can be written to the output line is a function of the header format and the line width. The header text will be truncated when it will not fit on the snap target output line. Lower case characters are exploded to upper case.

Examples

```
SNAPHDR 1  FRIDAY 21 FEB 1997
SNAPHDR 2  SLANT   SALARIED PAYROLL
SNAPHDR 3  JANUARY
```

17. Holding Jobs to be Reviewed with IOF

Holding the Sysout Data Sets

To prevent a job from being selected and printed before you have a chance to review it with IOF, you can hold all of the sysout data sets for the job. You can then use the **PRINT** function under the *IOF Job List Menu* to release all of the data sets for printing. You may also selectively release and cancel the sysout data sets individually with the **RELEASE** and **CANCEL** functions under the *IOF Job Summary*.

To hold a sysout data set, you can either specify **HOLD=YES** on the **DD** statement for the data set or specify a held sysout class. Check with your technical support or user services staff to find out which sysout classes are held at your installation. In order to hold the system messages, output JCL, and job console log data sets you must specify a held sysout class in the **MSGCLAS**S parameter of the JOB statement.

Specifying **sysout=*** for a sysout data set causes the class for the data set to be determined from the MSGCLASS value. Specifying **sysout=*** for all of your sysout data sets in a job allows you to completely control the hold status for all of the data sets with the **MSGCLASS** parameter of the JOB statement.

Including a /*ROUTE Statement

As an alternative to holding sysout data sets, you can simply route the printed (and possibly punched) output for your job to a JES2 destination that does not actually correspond to a real JES2 remote terminal. Contact your technical support staff to find out the name of a destination that can be used for this purpose. Include a **/*ROUTE** statement in your job to establish the dummy destination:

```
/*ROUTE      PRINT  FETCH
```

Note that FETCH is just an example of a destination that might be established by your technical support staff for this purpose.

The job will not be selected for printing; therefore, it will be available for review with IOF.

After reviewing a job's output with IOF, you can cause it to be printed at your default print destination by using the **PRINT** function under the *IOF Job List Menu* (or the **PRIN**T operand of the **RETURN** or **EXIT** commands).

To establish a default print destination, enter **P.1** on the *IOF Option Menu*. This will display the *User Profile Menu*, which will allow you to specify a default print destination.

18. IOF REXX and Clist Interface

Introduction

Everything that a user at a terminal can do with IOF can be done using a REXX exec or TSO clist. All fields that are displayed on the terminal can be assigned to REXX or clist variables. Standard REXX and clist facilities can then be used to process the variables.

IOF execs must reside in an exec or clist library that is part of the TSO or batch TSO session's SYSEXEC or SYSPROC concatenation. IOF clists must reside in a clist library that is part of the SYSPROC concatenation. Execs and clists can be invoked under IOF, or they can invoke IOF. Clists and REXX execs are not available when running IOF under CICS.

Distributed Clists and Execs

Several useful clists and execs are distributed in the IOF clist library. Not only do the distributed clists and execs provide valuable extensions to the product, but they are the best guides to learning how to write your own exec/clist.

Member $INDEX in the distributed IOF clist library lists all the clists and execs that are included in the distribution. All member names that begin IOF$ are clists or execs that are invoked by IOF commands to perform a documented function.

The following clists and execs are of particular interest because of the extended IOF function they provide.

IOFWTR Clist

IOFWTR is a very flexible external writer clist. It normally is run as a TSO batch job to retrieve output from the system and write it to designated output data set(s). Output can be selected based on many criteria, such as job name, destination, sysout class, forms, writer, user name, age, or account number.

Designation of the target is also very flexible. For example, data can be copied to output MVS data sets with data set names that are a function of the original job name, date and/or time the job was run, sysout class, etc.

IOFWTR will only operate on the jobs that the submitter has authority to review. Normal users can use it to manage only their own data, while systems personnel can use it to manage all output in the system.

The **IOFWTR** parameters are fully documented in the comments in the clist. Review the clist to learn how to use it.

OUTQUE Clist

The **OUTQUE** clist reports and manages the JES2 output queue. It is normally run from TSO batch. It can select output jobs based on job name, destination, size, age, user name, and many other criteria. **OUTQUE** always produces an output report of the selected jobs, and additionally can cancel, route, or otherwise modify selected jobs.

OUTQUE parameters are fully documented in the comments in the clist. Review the clist to learn how to use it.

IOFSETUP Clist

This exec displays the volume serial numbers from **/*SETUP** statements in the COMMENTS field of the *IOF Job List Menu*. It finds all **/*SETUP** statements in all INPUT jobs that are on HOLD. From the *IOF Job List Menu*, enter **%IOFSETUP** to have the setup volume serial numbers of all input jobs in the list displayed.

IOFSEND Cataloged Procedure

The **IOFSEND** procedure can be used in batch TSO to send the output of the currently running batch job via email. All or part of the job can be attached to the email. This procedure is particularly useful to notify users via email of job failures.

The **IOFSEND** procedure runs the **IOFSNDME** REXX exec as a job step in batch TSO. It notifies a user by email that a job has run and optionally attaches the job's output. The **IOFSEND** procedure should be added to a procedure library to simplify running the **IOFSNDME** REXX exec in batch TSO. The procedure has three keyword parameters:

TO=	SENDTO email address
FROM=	Optional FROM email address
DATA=null	Attach only the *IOF Job Summary*
DATA=JESDS	Add the jobs log, JCL, and messages data set to attachment
DATA=ALL	Add all of the jobs SYSOUT data set to attachment

The SYSIN data set can be used to specify additional parameters and to allow sending the job output via FTP.

For a full description of the **IOFSEND** batch procedure enter **SEND** on the *IOF Job List* and then press the **HELP** key.

Writing Your Own IOF Execs and Clists

IOF execs and clists perform the same steps that would be performed using a terminal with a few exceptions. The major difference is that IOF produces no output while an exec or clist has control. The data that would be displayed on the panel can be accessed by REXX or clist commands. The exec/clist may produce its own output using REXX/clist commands. If IOF is active when the exec/clist completes execution, the IOF panel will be displayed.

To write an exec or clist, first determine the steps that would be required to perform a function from the terminal. Then, execute those same steps from within the exec or clist to do the same function. The distributed execs and clists can be used as a guide.

IOF REXX Environment

IOF establishes its own REXX environment when an exec is started from IOF. However, the default addressing environment is not changed. An "ADDRESS IOF" REXX command must be issued before REXX can execute IOF subcommands. See examples of addressing the IOF environment in the distributed execs.

IOF sets the SOURCE parse string user token (9th token) value to "IOF" to allow an exec to verify that the IOF environment is in effect. The following example checks the current environment:

```
parse source . . . . . . . . environ
if environ = 'IOF' then say "Environment is IOF"
```

Invoking an Exec/Clist under IOF

In order for a clist to be invoked from within IOF it must be stored as a member of a clist library that is allocated to the DD name SYSPROC in your TSO session. REXX execs can reside in a SYSPROC file or optionally can reside in a SYSEXEC file.

The percent (**%**) IOF subcommand invokes an exec or clist. The name of the exec or clist immediately follows the percent.

For example, assume the exec/clist CHKJOBS will analyze the jobs on the current *IOF Job List Menu* for bad return codes and produce an output report to a sysout data set. It has an optional class parameter that can be used to specify the sysout class of the output report. To invoke CHKJOBS with sysout class C from the *IOF Job List Menu*, enter in the command area:

```
    %CHKJOBS      CLASS(C)
```

IOF will automatically enter exec/clist mode and read subsequent command
input from the exec/clist instead of the terminal. REXX execs that are
invoked under IOF are initialized in the IOF environment. IOF will display no
data to the terminal until the exec/clist terminates, at which time the then-
current IOF screen will be displayed.

Exec/clists can also be invoked as line commands by preceding the exec/clist
name with **%** in the line action area. When an exec/clist is invoked as a line
command, IOF automatically adds a MENU(nnn) keyword parm to the line
command that was entered to indicate the menu number of the item on which
the line command was issued. For example, entering **%TSTLC** as a line
command on the third item in an IOF list causes the exec/clist to be invoked
by:

```
    %TSTLC      MENU(3)
```

The exec/clist can use the menu parm to process the line item for which the
command was issued. See the IOF$ED1 clist for an example of using the
MENU keyword.

Please note that a REXX exec cannot be invoked from an IOF clist.

Invoking IOF from within an Exec

When an IOF command is issued from a REXX exec, control is transferred
directly to IOF and the exec loses control. The example below shows how an
exec can invoke IOF and then reinvoke itself under IOF to execute IOF
subcommands.

```
/*   Rexx multi-environment example              */
/*   Determine exec name and environment          */

parse source . . myname . . . . . myenv .

/*   If not IOF environment, re-invoke the exec    */
/*   under IOF                                     */

if myenv \= 'IOF' then do

/*   push the IOF command including any parms.  In */
/*   this example there are no parms.              */

    push "IOF *.%"myname
    exit                    /* exit the initial exec */
    end

/*   If IOF environment, process IOF subcommands    */
```

```
else do
    address IOF
    ... exec and IOF statements
    ...
    exit
    end
```

Invoking IOF from within a Clist

From a clist, append the CLIST operand to the IOF command. The CLIST operand causes the following changes in the way IOF operates:

- IOF will read subsequent command input from the clist instead of the terminal until the clist is empty or an error arises that causes it to terminate.
- IOF will display no data to the terminal while the clist has control.
- The current IOF panel will be displayed on the screen when the clist terminates.

A single clist can invoke IOF from TSO ready, issue IOF subcommands, and return to TSO. The **OUTQU**E clist in the distribution clist is a good example of this technique.

Setting REXX/Clist and ISPF Dialog Variables

IOF panels are organized into sections and fields. Within a panel section, each row of the display has several fields of data displayed in columns. For example, the jobname field (column) contains the name of the job being displayed on each row of the display.

Each display field has a field name that can normally be easily determined from the field heading. For example, JOBNAME is the heading on the column of job names on the *IOF Job List Menu*; it is also the name of the job name field. Some field headings are abbreviated (such as ACT for ACTION) to make them fit on the display. In this case the field name will normally be the entire word (ACTION). For field headings that are two words (such as DATE TIME) the field name will normally be the two words concatenated without the intervening blank (DATETIME). See the Appendix for detailed information on using **HELP** to determine field names.

TSICOPY Command

The **TSICOPY** command is used to assign data from IOF panel fields to REXX, clist and ISPF dialog variables. All IOF fields on all IOF panels can be accessed with **TSICOPY**. The IOF field name becomes the default REXX, clist or dialog variable name that is set with **TSICOPY**.

TSICOPY operates on the top row of the current IOF display panel by default. Remember that a field is a column of information, and that each row can have a different value in the column. The **UP**, **DOWN**, **DOWNCTRL**, **FIND** and other screen positioning commands can be used to position a particular row to the top of the current display panel. **TSICOPY** also can move data between REXX/clist and dialog variables, or from rows other than the top row.

Syntax

```
TSICOPY     NAME(names)  TO(CLIST/REXX/DIALOG)

            [FROM(CLIST/REXX/DIALOG/SESSION/LOCAL/
                  PROFILE/OPTIONS/LIST)]

            [SECTION(section-name)]

            [ROW(row-number)]

            [VARNAME(alt-varname)]
```

NAME(names). One to eight field names separated by blanks.

TO(REXX/CLIST/DIALOG). The type of variable that will be set.

FROM(CLIST/REXX/DIALOG/SESSION/LOCAL/PROFILE/ OPTIONS/LIST). Optional parm that specifies where data is taken from. When this parm is not present, data is copied from the current display panel. **CLIST**, **REXX** and **DIALOG** specify the type of variable. **SESSION**, **LOCAL**, **PROFILE**, and **OPTIONS** are used to fetch IOF generation parms. **LIST** fetches from **LOCAL**, **PROFILE**, **SESSION** and **OPTIONS** in that order.

SECTION(section-name). The optional name of the IOF section from which data will be copied. Section names are documented in **HELP** for the panel. A special section name of **PANEL** is used to assign non-display type information, and will be discussed in more detail later.

ROW(row-number). The row number in the section specified above from which field variables should be copied if the top row is not desired.

VARNAME(alt-varname). The name of the destination variable(s). By default the destination variable names are the same as the **NAME** variables. When **VARNAME** is specified, one destination name must be specified for each **NAME** variable.

To copy the name of the job that is currently at the top of the *IOF Job List Menu* into the exec/clist variable **JOBNAME**, use the following statement in an exec/clist:

```
TSICOPY NAME(JOBNAME) TO(CLIST/REXX)
```

After the execution of this statement, the variable **JOBNAME** will contain the name of the job that is currently at the top of the *IOF Job List Menu*. The **NAME** operand of the **TSICOPY** command can specify the name of any display field that is defined for that job. See the Appendix for detailed information on using **HELP** to determine field names.

Multiple fields can be copied with a single **TSICOPY** command by specifying up to eight different names in the **NAME** operand, separated by blanks. Copying multiple fields with a single **TSICOPY** command is much more efficient than individual commands.

The name of the variable that is set is the same as the name of the field from which the data was copied unless a **VARNAME** parm also is specified. Although the above example is for the *IOF Job List Menu*, the **TSICOPY** command is also supported for all IOF display panels.

TSICOPY also can be used to copy REXX/clist variables to identically named dialog variables. For example, to copy the JOBNAME REXX variable to the JOBNAME dialog variable:

```
TSICOPY NAME(JOBNAME) FROM(REXX)  TO(DIALOG)
```

Dialog variables can also be copied to REXX/clist variables. To copy the dialog JOBNAME variable into the clist JOBN variable:

```
TSICOPY  NAME(JOBNAME) FROM(DIALOG) TO(CLIST)
VARNAME(JOBN)
```

To copy data from other than the top display row in a menu, use the **SECTION** and **ROW** operands to specify the section and row number of the menu item from which the display field is to be copied. For example, to copy the JOBNAME field of the third job in the OUTPUT section of the *IOF Job List Menu* into a REXX variable:

```
TSICOPY  NAME(JOBNAME)  SECTION(OUTPUT)  ROW(3)
TO(REXX)
```

If the section name specified in the **SECTION** operand is found but the row number specified is too large, a return code of 8 will be set but the clist will not be terminated.

This means that you can use the **SECTION** and **ROW** operands to loop through the display items in a particular section of a display and check the return code after the **TSICOPY** command to tell when you have completed the section. You must always examine the return code from a **TSICOPY** command with the **SECTION** and **ROW** operands to avoid having your exec or clist enter an endless program loop.

TSICOPY Line Command

The **TSICOPY** line command is available on the *IOF Job List Menu*, *Job Summary*, *Output Group Display*, *Monitor* and *Device List Menu* to permit capturing data from a specific line on the display. The display is not repositioned to the line from which data is copied.

Syntax

```
menu    TSICOPY      NAME(field-names)

             TO(CLIST/REXX/DIALOG)
```

> **menu**. The menu number of the item to copy from.
>
> **NAME(field-names)**. One to eight IOF field names separated by blanks. The field names must all be present on the current IOF display panel. See the Appendix for detailed information on using **HELP** to determine field names.
>
> **TO(REXX/CLIST/DIALOG)**. The type of variable that will be set.

Section PANEL Variable Names

If you specify **SECTION(PANEL)** on the **TSICOPY** command, the **NAME** operand is used to request information that is specific to the current IOF panel. For example, for any IOF panel to return the **HELP** name for the current panel to the clist variable **HELP**:

```
   TSICOPY    NAME(HELP)  SECTION(PANEL) TO(CLIST)
```

The following field names are valid when **SECTION(PANEL)** is specified in the **TSICOPY** command:

Variable	Contents
HELP	HELP member name for current panel
SECTION	Section name for menu item at top of screen
MESSAGE	Long message text for last error raised
ROWS	Total number of rows on the current panel
SECTROWS	Total number of rows in the current section
OPERCMD	MVS modify command operand value, or 'STOP' if an MVS stop command was issued
DEFENTY#	Total number of DEFENTRY commands for this browse session.

Under the IOF *Browse* panel, the following additional variables can be accessed when **SECTION(PANEL)** is specified.

Variable	Contents
JOBNAME	Name of job in which data set is being browsed
JOBID	JES2 jobid of job being browsed
STEP	Name of step in which data set is being browsed
PROCSTEP	Procedure step name
PROC	Name of procedure
DDNAME	DD name of data set being browsed
CURRENT	Text of data record currently on top of screen
NEXT	Text of data record currently on top of screen (then scroll down 1 record)
PAGE#	Page number of record on top of screen
LINE#	Line number on page of record on top of screen
REC#	Record number of record on top of screen
FINDCOL	Column number of last found string (0 if none)
SEGMENT	Current segment number
COL1	Column displayed at left margin
COL2	Column displayed a right margin
CSRROW	Row number of current cursor
CSRCOL	Column number of current cursor

Session and Options Variables

Many attributes of the current IOF user's session can be retrieved by using **FROM(SESSION)** parm on the **TSICOPY** command. **FROM(OPTIONS)** is used to retrieve options variables. Session and options variable names can be displayed using the **DVAR** command from any IOF panel.

Panel Names

The **PANNAME** command can be entered on any IOF panel to display the name of the IOF panel. **TSICOPY** also can be used to copy the **HELP** name from **SECTION(PANEL)** in order to determine the panel name. Some of the more commonly used panel names are:

Panel Name	Description
BROWZE	Browse display panel
CATMNU	Data Indices Menu
CNSBRZ	Console browse
DEVDSP	Device List Menu
DVINI	Initiator detail panel
DVLNE	Line detail menu
DVNJD	NJE device detail menu
DVODV	Offload device detail menu
DVOJR	Offload job receiver
DVOJT	Offload job transmitter
DVOSR	Offload sysout receiver
DVOST	Offload sysout transmitter
DVPPU	Print/punch detail menu
DVRDR	Reader detail menu
DVRMT	Remote detail menu
FNDALL	FIND ALL panel
HELP	HELP panel
INPUTQ	Input Queue Summary Display
JOBSUM	Job Summary Display
JOEDSP	IOF Output Group Display
JQEDSP	IOF Job List
MASDSP	IOF MAS Display
MONITR	System Monitor panel
NDXMNU	Data Index Menu
OPTOPT	IOF Option Menu
OPTUS1	Alternate Option Menu
SDPANL	"SD" panel for SNAP data set attributes

Invoking ISPF Functions under IOF

When running under ISPF, full ISPF dialog services can be invoked from within an IOF exec/clist.

TSIEXEC Command

The **TSIEXEC** command is used to invoke an ISPF dialog service from within an IOF exec/clist. The ISPF function will be executed just as though it had been invoked via **ISPEXEC** in a normal ISPF exec/clist. **TSIEXEC** requires that IOF be running under ISPF.

Syntax

```
TSIEXEC any-ISPEXEC-function
```

Any **ISPEXEC** function can be used as a parameter.

Controlling Error Conditions in IOF Clists

If the CLIST operand of IOF is specified on an IOF command in a clist, or if a clist is invoked with the **%** command under IOF, the clist is completely controlled by IOF. This means that IOF must control whether the clist should terminate in case of error. For example, to allow a clist to continue even if there is an error:

```
NOFLUSH
```

To restore the default value (terminate the clist in case of error):

```
FLUSH
```

Scrolling Through Displays with an IOF Exec/Clist

For IOF display menus, like the *IOF Job List Menu* and *IOF Job Summary* displays, you can create an exec/clist to examine each item (row) on the display and then conditionally perform some function against selected items.

DOWNCTRL Command

The **DOWNCTRL** command scrolls the current IOF panel down one row unless currently positioned to the bottom. It never flushes the exec/clist; instead, it sets a return code that can be checked by the exec/clist.

Syntax

```
DOWNCTRL
```

Return codes are:

- **0** - Display scrolled down one line successfully
- **4** - Display scrolled down to the next section of the same IOF panel.
- **8** - Display was not scrolled because it was currently at the bottom.

Scrolling by Number of Rows on the Panel

There are several different approaches that can be used to scroll through a display menu. The first approach determines the number of rows on the display, and then steps through this number of rows. The example clist below shows how to use this approach to scan through all the jobs of the *IOF Job List Menu*.

```
CONTROL    END(ENDO)
LOCK                                 /* Keep display static  */
TSICOPY NAME(ROWS) SECTION(PANEL) TO(CLIST) /* Number rows */
SET &CURROW  =  1                    /* Start with 1st row    */
DO WHILE &CURROW LE &ROWS            /* Process all rows      */
  TSICOPY NAME(JOBNAME JOBID) TO(CLIST) /*Top job on menu*/
  WRITE &JOBNAME &JOBID              /*Just write variables*/
  ...  do whatever processing is desired
  DOWNCTRL                           /*Down to next job    */
  SET CURROW = &CURROW + 1           /*Step row count       */
  ENDO
UNLOCK                               /*Unlock the display  */
```

An alternate way to accomplish this same task is to use the menu number of each row on the "line mode" **TSICOPY** command. The clist below accomplishes the exact same objective as the one above.

```
CONTROL    END(ENDO)
LOCK                                 /* Keep display static  */
TSICOPY NAME(ROWS) SECTION(PANEL) TO(CLIST) /* Number rows */
DO CURROW = 1 to &ROWS              /* Process all rows      */
  /* Get JOBNAME and JOBID for the current row          */
  &CURROW TSICOPY NAME(JOBNAME JOBID) TO(CLIST)
  WRITE &JOBNAME &JOBID             /*Write variables        */
  ...  do whatever processing is desired
  ENDO
UNLOCK                               /*Unlock the display  */
```

Scrolling by Checking DOWNCTRL Return Code

The second approach to scrolling through a display menu is to check the return code from the **DOWNCTRL** command. The **DOWNCTRL** command scrolls the display down by one row but will not terminate the clist even if there are no more rows. You can use the return code from the **DOWNCTRL** command to tell when you have reached the end of the display menu. A sample CLIST using the **DOWNCTRL** command:

```
CONTROL    END(ENDO)
LOCK            /*  Lock the display                        */

/*   Begin loop through the job list                        */

DO  WHILE   &LASTCC LT 8

   /* Copy display fields for current job to CLIST       */
   /* variables.                                          */

   TSICOPY  NAME(MENU  JOBNAME  ...)  TO(CLIST)
```

```
                /* Analyze current job; optionally perform a function,*/
                /* using the CLIST variables set by TSICOPY command    */
                ...
                /* Move next job to top of screen                      */
                DOWNCTRL
                ENDO
        UNLOCK                  /*  Unlock the display                 */
```

Reviewing the execs and clists in the distributed IOF clist library will show you additional techniques for scrolling through lists of jobs, groups, and data sets.

In an IOF exec/clist you will normally want to perform some IOF function against certain display items (rows) in the list, based upon your analysis of the items.

To select the top display element on the current screen for a command use the menu selection character (*****). For example, to cancel the job that is currently displayed on the top of the *IOF Job List Menu*:

```
    *    CANCEL
```

You can also perform functions against specific display rows in an IOF exec/clist by using the menu number for the display row, which can be easily obtained with the **TSICOPY** command. For example, the following sequence illustrates how to use the menu number for a job to cancel the job in a clist:

```
    TSICOPY   NAME(MENU JOBNAME ...)  TO(CLIST)
    /*   Perform analysis to determine if CANCEL is needed*/
    ...
    /*   Assume CANCEL is needed                               */
    &MENU   CANCEL                     /* Cancel the job*     */
```

Invoking a TSO Command from an IOF Exec/Clist

To invoke a TSO command in an IOF exec/clist, prefix the command with TSO. For example:

```
    TSO   ALLOCATE   FILE(OUTPUT)   DA(TARGET)   SHR
```

Reading the Spool with a User Program

IOF allows you to read any sysout data set directly from the spool with your own program. The IOF data set **ALLOC** command can be used on the *IOF Job Summary* to allocate the spool data set for later use by other programs.

To allocate a specific sysout data set on the IOF Job Summary:

```
    3    ALLOC        DDNAME(INPUT)
```

where INPUT above is the DD name that you want to associate with the sysout data set. Then, you can use the TSO command option (described above) to invoke your own program to read DD name INPUT, or you can

terminate the IOF session and invoke a program directly. The IOF allocation remains in effect until it is freed with a TSO **FREE** command.

Sysout data set characteristics such as LRECL, RECFM, and DSORG can be specified on the **ALLOC** command if needed.

Pausing in an IOF Exec/Clist

In many applications it is useful to pause for a few seconds (or minutes) and then resume execution. The **PAUSE** command allows you to pause and then determine why the pause was terminated.

Syntax

```
PAUSE    nnnn    [NOFLUSH]
```

nnnn. The time interval, in .01 seconds, to pause.

NOFLUSH. IOF should not terminate the exec/clist if **PAUSE** ends with a non- zero return code.

PAUSE. Gives a return code in variable LASTCC for clists, and in variable rc for execs. The meaningful return codes are:

0. Normal completion of time interval

1307. Console operator has sent a command to this clist with the MVS **MODIF**Y or **STOP** command. See *Receiving Operator Command in an IOF Exec/Clist* below.

1308. The terminal user pressed attention.

PAUSE with the **NOFLUSH** option lets you process the return code to decide what to do next. Or, you can leave off the **NOFLUSH** operand, in which case the clist will simply terminate in the case of attention or an operator command.

Receiving Operator Commands in an IOF Exec/Clist

It is very useful in IOF exec/clist applications, like an external writer, to allow the system console operator to communicate with the application. The **OPERCMD** command is used to enable operator communication with an IOF exec/clist via the MVS **MODIFY** and **STOP** commands.

Syntax

```
OPERCMD    ENABLE/DISABLE
```

ENABLE. Enable operator commands.

DISABLE. Disable operator commands.

After **OPERCMD ENABLE** has been issued by the application, operator **STOP** and **MODIFY** command operands are passed to the application. If the application is currently in a **PAUSE**, the pause command will be terminated with a return code of 1307.

To retrieve the operator's command, the exec/clist may issue a **TSICOPY** command to copy the command string into the REXX/clist variable named **OPERCMD**:

```
TSICOPY     NAME(OPERCMD)  SECTION(PANEL)  TO(CLIST)
```

The value will be STOP if the MVS **STOP** command was issued. The value will be null if no command has been entered. You can use this **TSICOPY** to check for an operator command at any point in your clist. Note that you will only receive the 1307 return code described above if your clist is in a **PAUSE** command at the time the operator command is entered.

Special Features for the Browse Panel

As described in **Section PANEL Variable Names** above, several special variables are available for assignment with the **TSICOPY SECTION(PANEL)** command from the IOF *Browse* panel.

The **DOWNCTRL** command can be used in *Browse* to scroll down by one record. If there are no more records in the data set, **DOWNCTRL** will end with a return code of 8 and the clist will not be terminated.

The **TSIINDEX** command has exactly the same syntax as the **FIND** command in *Browse*. It differs from the **FIND** command in that:

- Only the record that is currently on the top of the screen is searched for the **FIND** string.
- The normal **FIND** pointers remain undisturbed.
- &LASTCC is set to the column number of the found string (0 if no string found).
- The exec/clist will never be flushed as a result of a **TSIINDEX** command.

Features of Specific Panels

The **SECTION(PANEL)** feature of the **TSICOPY** command is supported by all panels. The **ROW** operand of the **TSICOPY** command is supported only on the *IOF Job List Menu*, *Output Group Display*, *Device List*, *System Monitor,* and *Job Summary* panels. The **DOWNCTRL** command is supported only for the *IOF Job List Menu, Output Group Display*, *Job Summary*, *Device List*, *System Monitor*, and *Browse* panels.

Creating IOF Error Messages in an Exec/Clist

IOF exec/clist applications often need to present error and informational messages to the IOF user as standard short and long messages. The **TSIMSG** command can be used to construct and display variable short and long messages.

Syntax

```
TSIMSG      [INFO/LONG]    'short msg'    'long msg'
```

INFO. This is optional and defines an informational message. The long message is displayed immediately and the message is defined to be informational rather then an error message. The audible alarm is not sounded.

LONG. This is optional and specifies that the long message should be displayed immediately for the error message being defined. The audible alarm is sounded.

short msg. This is required and defines the text for the short message to be displayed in the short message area at the top of the screen.

long msg. This is required, and defines the text for the long message to be displayed in the long message area at the top of the screen when requested by entering the **HELP** key.

Examples:

```
TSIMSG  'No More'  'There are no more elements'
TSIMSG  INFO  'View'  'Enter the "V" line command'
```

From a REXX exec, to include the variable "class" in the error message:

```
ADDRESS IOF
"TSIMSG  'No"class"'' 'No class"class "on queue'"
```

Snap Features

There are a number of **SNAP** functions that are specifically designed for use in a clist or exec. See Chapter 16 for a more detailed description of many **SNAP** features.

The following features are helpful when creating data sets that are intended to be browsed with a web browser:

```
convert(html) on SS, SD, and SU commands to create an
              HTML document
snapcnvt command to imbed an HTML document in a non-HTML
              document
htmltext parm on N Job List line command (see Line
              Commands in Chapter 7)
htmltext parm on N Job Summary line command (see Line
              Commands in the Command Area in Chapter 8)
htmltext parm on SNAP Job Summary primary command (see
              Snap Entire Job to Target in Chapter 8)
htmltext parm on browse SNAP command (see Snap Data to
              Target Data Set in Chapter 9)
htmltext parm on SNAPDD global command (see Snapping
              from an MVS Data Set in Chapter 16)
htmltext parm on CAPTURE command (see Capture Command in
              Chapter 3)
CC(html) parm on SS, SD, and SU commands (see Simulating
              Carriage Control in Chapter 16)
```

Additionally, the **CC(TEXT)**, **FF**, **FFHEX**, **LF**, and **LFHEX** parms on the **SS**, **SD**, and **SU** commands are useful for creating arbitrary carriage control simulation in the target data set (see *Simulating Carriage Control* in Chapter 16).

A number of attributes of the current snap target data set are available to REXX execs and clists as IOF session attributes (see *Attributes for Open Snap Target Data Sets* in Chapter 16).

A REXX exec can convert a binary MVS data set into base 64 format using the **BASE64** parm of the **SNAPDD** command (see *Snapping from an MVS Data Set* in Chapter 16).

A REXX exec can control how long a snap target data set should remain active by using the **SCOPE** parm on the **SS**, **SD**, or **SU** commands (see *Scope of Snap Target Data Set* in Chapter 16).

Setting Step Return Code in a Batch Exec/Clist

To terminate an IOF REXX exec or clist that is running under TSO batch and set the step return code for the TSO batch job step:

```
EXITCODE  nnn
```

If the statement that invoked the IOF exec/clist is the last statement in the SYSTSIN input data set, the step return code will be set to "nnn".

Checking and Freeing MVS Allocations

To see if a DD name is currently allocated:

```
Address IOF
checkdd     ddname
```

A return code of **0** indicates that the DD name is currently allocated.

The **CHECKDD** command also stores the fully qualified allocated data set name (without quotes) and possible member name into IOF temporary variables that can be accessed by:

```
"TSICOPY NAME(CHKDDDSN CHKDDMEM)  FROM(TEMP) TO(REXX)"
```

To free a DD name if it is currently allocated:

```
Address IOF
freedd      ddname
```

IOF Job Summary Features

See *Saving and Restoring Exclude Status of Data Sets* in Chapter 8 for information about preserving the exclude status of sysout data sets on the *Job Summary* while processing its display rows in a REXX exec.

Capturing Display Screens

A REXX exec or clist can capture an exact copy of any IOF display screen by issuing a **CAPTURE** command. See *CAPTURE Command* in Chapter 3 for more information.

The TSO version of IOF will operate under TSO in background (batch) mode. You may need to consult your technical support staff to see which IOF functions are authorized for you when you are running IOF in TSO background.

Any TSO user or background job is normally granted the authority to look at its own output by using the **CURRENT** operand of IOF. For example:

```
IOF   *   CURRENT
```

would invoke the *IOF Job Summary* and display the TSO user or background job that is currently running the IOF command. This means that an IOF step can be added to the end of a batch job to perform conditional routing and disposition, based upon return codes from the previous steps.

If your installation does not provide a cataloged procedure for running TSO in background mode, the following statements can be used to execute TSO commands in the background:

```
//  EXEC  PGM=IKJEFT01
//SYSTSPRT  DD   SYSOUT=A
//SYSPROC   DD   DISP=SHR,DSN=iof.clist.library
//SYSHELP   DD   DISP=SHR,DSN=iof.help.library
//SYSTSIN   DD   *
... TSO Commands ...
```

20. IOF Error Messages

Error Numbers

Each error condition in IOF is associated with a unique error number. Each error number has a short message and a long message. The short message is displayed in the short message area at the top of the panel. The long message is displayed by entering **HELP** while a short message is being displayed.

Error numbers can be very useful in clists and REXX execs. If an IOF error occurs in an IOF clist, the clist variable &LASTCC will be set to the corresponding error number. The REXX rc variable is set to the error number.

Warning Command

The IOF **WARNING** command can be used from any IOF panel to display both the short and the long message associated with an error number. This command is also useful within REXX execs and clists to cause a message to be displayed after the exec or clist terminates.

Syntax

```
WARNING error#
```

error#. The IOF error number to be displayed.

Assigning the Long Error Message to a REXX or Clist Variable

The long error message can be assigned to a clist or REXX variable with the following statement:

```
TSICOPY  NAME(MESSAGE) TO(CLIST/REXX) SECTION(PANEL)
```

It is often useful to display to the REXX or clist application the specific error message that would have been displayed to the terminal when an error occurs.

21. Exploiting IOF in a Multiple CPU Environment

Introduction

Many MVS sites utilize multiple machines in the complex to distribute function and workload. Users of such systems are not usually explicitly aware of the topology of the system. The JES2 multiple access spool facility and MVS sysplex function are two examples of software that connect several machines into a common environment.

Most IOF functions can be executed from any CPU in a complex. For example, any job on the JES2 output queue can be selected and reviewed by IOF from any CPU in the JES2 multiple access spool complex. However, some IOF functions must be executed on a specific CPU. Some examples are:

- Device displays must be executed on the CPU to which the device(s) are attached.
- Each system has it's own set of initiators, and thus a unique set of initiator displays.
- Current performance information such as CPU and I/O time used for running tasks must be gathered on the CPU on which the task is running.
- Sysout data written by a running job but not yet written to the spool can be browsed only on the CPU on which the job is running.

MAS Command

The **MAS** command on the *IOF Option Menu* displays the status of each machine attached to the local Multiple Access Spool (MAS) system. The MAS display is most useful to operators and systems programmers responsible for operation and tuning of the MAS complex.

IOF Servers

An IOF server is a task that provides IOF function to an IOF client session running on another CPU. Each site can optionally have one or more IOF servers running on each MVS CPU. IOF servers provide IOF services to users on other CPUs through IOF client sessions.

IOF Client

An IOF client session communicates with an IOF server to perform IOF functions on a remote CPU. An interactive IOF session becomes a client when the **AT** command is entered. **AT** starts an IOF server session on another CPU. In the future IOF client sessions may also be possible from OS/2, Windows, UNIX or other platforms.

When an interactive IOF client session displays a panel that was built by an IOF server, the left part of the top line of the display indicates the system name of the server system. The example panel shown below was produced by an IOF server on system T91F. Note that CPU and I/O time used is displayed for jobs running on another CPU.

```
-< System T91F >-------------- IOF Job List Menu -------------( 10 )-----------
-
COMMAND ===>                                                SCROLL ===> SCREEN
----------------------------- Running Jobs -----------------------------
-------JOBNAME--JOBID---ACT-STA-SYID-------CPU-------I/O-STEP-----PROCSTEP-SWP
_    1 MODEL    J005551            T91F     12:23   303.17  STEP17            IN
_    2 QAS311   J006060            T91F     53:03   443.02  QAS311            IN
_    3 TSCDRS   J006157            T91F      1:02     1.75  TSCDRS    RBTR    OUT
```

AT Primary Command

The **AT** primary command is used to start a server session on another CPU. **AT** can be entered on any IOF panel to initiate a nested IOF session at the remote site.

Once an IOF server session is initiated, subsequent IOF commands are processed by the server. IOF displays are returned to the client session that initiated the server session. To exit from a server session, enter the **END** command repeatedly, or enter **/X** to jump to the IOF exit command. Exiting from the server session causes control to be returned to the IOF client session at the point where the remote session was initiated.

AT? is used to determine the names and alias names of remote CPUs that support the server function. The display will include the system id (SYSID) of the remote cpu. Typically, the numbers 1 through n (where n is the highest system number) are used as aliases for the names.

Syntax

```
AT        cpu-name/alias      function
```

cpu-name/alias. The name or alias of the remote server system.

function. Any IOF command or option that can be entered on the *IOF Primary Option Menu*.

<u>*Examples*</u>

```
AT?              (Determine remote server names)
AT 2             (Go to the IOF Option Menu on remote 2)
AT IPO9 PR       (IOF printer display on IPO9)
AT 4 M           (IOF Monitor display on remote 4)
AT 2 %CHKOUT     (Invoke the %CHKOUT REXX exec on remote 2)
```

AT Line Command for Running Jobs

The **AT** line command on the *IOF Job List Menu* for a running job starts a server session on the CPU where the job is running. The *IOF Job List Menu* displays the current CPU and I/O time for the running job.

The job can be selected and browsed just as it would be on your original system. Additionally, the sysout data set buffers that have not been written yet to the spool also can be browsed.

AT Line Command on the MAS Display

The **AT** line command on the IOF MAS display starts a server session on the selected system and produces the MAS display.

Remote Print Check (PC) Command

The IOF print check (**PC**) command determines why output will not print by checking sysout characteristics against JES2 printer setup. When printers are attached to a single remote CPU running an IOF server, **PC** automatically uses the server to check printer status.

When printers are attached to more than one CPU, the name of the remote system must be entered as a parm to the **PC** command. To enter a system name, enter PC name as a line command to the left of the item if the name is no more then four characters. If the name is five or more characters, enter menu PC name in the command input area where menu is the menu number of the item to be checked.

Log Function on Remote Systems

The **LOG** option on the *IOF Option Menu* can be used to display the system log for alternate systems. The sysid of the alternate system can be specified on the **LOG** command to browse the syslog for that system from the spool data. For example, **LOG 3090** causes the syslog for sysid 3090 to be

browsed. This method does not permit browsing the latest syslog data that is still resident in buffers, however, unless sysid 3090 is the current system.

An alternate way to browse syslog for 3090 is to enter **AT 3090 LOG**. This starts a server session on the 3090 system and browses the log from that system. Using this method the latest syslog data can be displayed.

Device and Initiator Commands on Remote Systems

To display and control devices and initiators on a remote system 4, enter **AT 4 D**. *The Device Option Menu* from system 4 will be displayed. The specific devices or initiators can be displayed from this option menu.

You alternately can enter, **AT 4 INIT**, to display initiators or **AT 4 PR** to display printers attached to system 4.

22. Miscellaneous Displays

Introduction

The functions described in this chapter are designed to be used by systems and management personnel.   These functions are generally not available to other IOF users and will not appear on the *IOF Option Menu* for most users.

Enclaves Display

Description

The *IOF Enclave Display* presents a list of active enclaves on the system. Enter the **ENC** command or add the **TYPE(ENCLAVES)** parameter to the IOF command to invoke the panel.

An enclave is an independently managed transaction that can span multiple address spaces. It is managed separately from the address spaces in which it runs. Most enclaves exist for only fractions of a second. The *IOF Enclave Display* lists longer running active enclaves and allows limited control of individual enclaves.

```
--------------------------- IOF Enclave Display -----------( 5 )-----------
 COMMAND ===>                                                SCROLL ===> CURSOR
 -------TOKEN-----------ACTION--ACTIVE-SUBTYPE-SRVCLASS-PER-RPTCLASS-RESGROUP--
 _    1 2000000001              NO    JES    BATLOW    1
 _    2 2400000002              NO    JES    BATMED    1
 _    3 2800000003      RSM     NO    JES    BATMED    1
 _    4 2C00000004              NO    JES    BATMED    1
 _    5 3000000005      QUI     NO    JES    BATMED    1
```

Scroll right to see additional fields. Enter **HELP** (PF key 1) for a description of all the fields on the *IOF Enclaves Display.*

Line Commands

The following line commands can be entered in the action area to the left of any displayed enclave. These commands also can be entered in the command area at the top of the screen when preceded by the menu number of the enclave. The commands are:

S	Select the enclave for a more detailed display of enclave information.
Q	Quiesce the enclave.
R	Resume a quiesced enclave.
X	Exclude the enclave from the displayed list.

Primary Commands

The *IOF Enclaves Display* provides comprehensive commands to manipulate the list of enclaves. Primary commands which apply to the whole list must be entered in the command area at the top of the screen.

The primary commands listed below can be used on the *IOF Enclaves Display*. The specific use and syntax of these commands are described in the ***Primary Commands*** section of Chapter 7.

Supported primary commands are:

- **SORT**   Sort the list of enclaves
- **EXCLUDE, UNEXCL**   Exclude or unexclude enclaves from the list
- **FIND**   Find an enclave
- **FIELD**   Determine field name of field under cursor
- **CUT, PASTE, ARRANGE**   Rearrange columns on the panel
- **RIGHT, LEFT**   Horizontal scroll
- **UP, DOWN**   Vertical scroll
- **LOCK, UNLOCK**   Lock or unlock the list
- **SS, SD, SU,SNAPCLOS**   Define snap target data set, or close

JES2 Monitor Display

The *IOF JES2 Monitor Display* lists monitored JES2 resources and percent utilization of each resource. It is invoked by the **RM** option. Resources that are more than eighty percent utilized are highlighted. This panel requires z/OS V1R4 or later systems.

```
------------------------ IOF JES2 Monitor Display ---------------------
COMMAND ===>

    RESOURCE   LIMIT    USAGE  PERCENT      LOW    HIGH   AVERAGE
    BERT       21000      268      1.2      268     268       268
    BSCB          10        0        0        0       0         0
    BUFX         400        0        0        0       0         0
    CKVR          17        0        0        0       0         0
    CMBS        1000        0        0        0       0         0
    CMDS         999        0        0        0       0         0
    ICES         999       10      1.0       10      10        10
    JNUM       20000     3123     15.6     3123    3123      3123
    JOES       20000     6385     31.9     6385    6385      6385
    JQES       10000     4558     45.5     4558    4558      4558
    LBUF         100        0        0        0       0         0
    NHBS         100        0        0        0       0         0
    SMFB          53        0        0        0       0         0
    TGS        16690    14211     85.1    14211   14212     14212
    TTAB           3        0        0        0       0         0
    VTMB          46        1      2.1        1       1         1
       Note:  Fields that exceed the 80% threshold are highlighted

       ENTER  - Refresh the display         END  - exit
```

This release of IOF provides no commands on the *IOF JES2 Monitor Display.*

UNIX Process Display

Description

The *IOF UNIX Process Display* lists active UNIX systems processes. It is
invoked by entering the **PS** command, or by adding the **TYPE(PROCESS)**
parameter to the IOF command.

```
------------------------- IOF UNIX Process Display ---------( 25 )-----------
COMMAND ===>                                            SCROLL ===> CURSOR
-------JOBNAME--ACT-STATE 2 (EXPANDED)---STATE--------CPU--------PID-------PPID
_    1 BPXOINIT    File sys kernel wait MFI      777.69         1         0
_    2 FTPD1       File sys kernel wait 1FI        0.99  16842768         1
_    3 HTTPD1      Other kernel wait    HK     38009.05     65540         1
_    4 INETD4      File sys kernel wait 1FI        0.33  16842765         1
_    5 NFSC        Sleeping             1S        40.55     65554         1
_    6 NFSC        MsgQ receive wait    1A        40.55     65555         1
_    7 NFSC        MsgQ receive wait    1A        40.55     65556         1
_    8 NFSC        Running              1R        40.55  16842758         1
_    9 NFSC        Running              1R        40.55  16842766         1
_   10 NFSC        MsgQ receive wait    1A        40.55  16842769         1
_   11 NFSC        Other kernel wait    1K        40.55  33619980         1
_   12 NFSS        Running              MR       159.12     65539         1
_   13 PORTMAP     File sys kernel wait 1FI        0.46  33619983         1
_   14 TCPIP       Running              MR     63113.20     65538         1
_   15 TCPIP       File sys kernel wait 1F     63113.20     65545         1
_   16 TCPIP       File sys kernel wait 1F     63113.20     65546         1
_   17 TCPIP       Running              MR     63113.20     65547         1
```

Scroll right to see additional fields. Enter **HELP** (PF key 1) for a description
of all the fields on the *IOF UNIX Process Display.*

Line Commands

The following line commands can be entered in the action area to the left of any displayed enclave. These commands can also be entered in the command area at the top of the screen when preceded by the menu number of the enclave. The commands are:

S	Select the process for additional information.
D	Show a more detailed display.
T	Display process threads.
M	Display the task on the *IOF System Monitor*.
KT	Kill the process.
KF	Force kill the process when **KT** does not work.
KS	Super kill the process when **KF** does not work.
C	Cancel the address space where the process is running. Cancel displays a confirmation panel unless the unabbreviated **CANCEL** command is entered.
X	Exclude the process from the displayed list.

Primary Commands

The *IOF UNIX Process Display* provides comprehensive commands to manipulate the list of processes. Primary commands which apply to the whole list must be entered in the command area at the top of the screen.

The primary commands listed below can be used on the *IOF UNIX Process Display*. The specific use and syntax of these commands is described in the ***Primary Commands*** section of Chapter 7.

Supported primary commands are:

- **SORT** — Sort the list of processes
- **EXCLUDE, UNEXCL** — Exclude or unexclude processes
- **FIND** — Find a process
- **FIELD** — Determine field name of field under cursor
- **CUT, PASTE, ARRANGE** — Rearrange columns on the panel
- **RIGHT, LEFT** — Horizontal scroll
- **UP, DOWN** — Vertical scroll
- **LOCK, UNLOCK** — Lock or unlock the list
- **SS, SD, SU, SNAPCLOS** — Define snap target data set, or close

System Requests Panel

Description

The *IOF Systems Request Panel* displays outstanding WTORs and active console messages. It allows replying to WTORs or clearing console messages. This panel is invoked by entering the **SR** command.

```
-------------------- IOF System Requests Panel ----------------- Row 1 of 16
COMMAND ===>                                              Scroll===> PAGE

   R.... - Reply to WTOR      C - Clear message       / - Detailed Display

   Sysname ===> *              Job ===> *              Type ===> *  (R/I/E/C)
                                                                   < More >
Command--System---Job------Message------------------------------------------
_____    S390     VTAM     R ISTEXC200 - DYN COMMANDS MAY BE ENTERED
_           S390     JES2     I $HASP050 JES2 RESOURCE SHORTAGE OF TGS - 85% UTIL
_           S390              I SAFNTRCP: GWA ADDR=00C2B000 -  ASM: 03/08/00 19.4
_           S390     BACKTHU  E IEF234E K 0560,T00064,PVT,BAC KTHU,DOIT
_           S390     BACKWED  E IEC502E K 0560,T00063,SL,BACK THU,DOIT,TSIOPER.DU
_           S390     BACKTUE  E IEC502E K 0563,T00062,SL,BACK THU,DOIT,TSIOPER.DU
_           S390     BACKMON  E IEC502E K 0561,T00061,SL,BACK THU,DOIT,TSIOPER.DU
_           S390     IPR1332  E IEC502E K 0560,T00060,SL,BACK SAVT,S499,TSIPRODC
_           S390     DNLMMPI  E IEC502E K 0564,T00059,SL,BACK DUMPT,,TSIOPER.DU
_           S390              C IFB081I LOGREC DATA SET IS FULL,20.10.52,
```

Line Commands

R....	Reply to an outstanding WTOR. A one to seven character reply can be included after the **R** as the reply. When longer replies are required, use the **/** line command.
C	Clear an active console message
/	Display a popup window to show the full WTOR or message. A 120 character reply input area is provided for WTORs.

Primary Commands

DOWN	Scroll the display down.
UP	Scroll the display up.

Health Checker

Description

The IBM Health Checker is a generalized facility for dynamically analyzing the health and status of both IBM system components and software systems from other vendors. The Health Checker allows the customer to prioritize exception events and provides status alerts for the more serious exceptions.

The *IOF Health Checker Display* is invoked by entering the **CHK** command on the *IOF Option Menu.* All defined system checks are displayed.

```
------------------------ IOF Health Checker Display ---------( 18 )-----------
COMMAND ===>                                                SCROLL ===> CURSOR
-------NAME--------------------ACT-OWNER----STATE-----------STATUS-----------
_      1 SDUMP_AUTO_ALLOCATION      IBMSDUMP ACTIVE(ENABLED)  ABEND
_      2 SDUMP_AVAILABLE            IBMSDUMP ACTIVE(ENABLED)  SUCCESSFUL
_      3 XCF_CDS_SEPARATION         IBMXCF   ACTIVE(ENABLED)  EXCEPTION-NONE
_      4 XCF_CF_CONNECTIVITY        IBMXCF   ACTIVE(DISABLED) ENV N/A
_      5 XCF_CF_STR_EXCLLIST        IBMXCF   ACTIVE(ENABLED)  SUCCESSFUL
_      6 XCF_CF_STR_PREFLIST        IBMXCF   ACTIVE(ENABLED)  SUCCESSFUL
_      7 XCF_CLEANUP_VALUE          IBMXCF   ACTIVE(DISABLED) ENV N/A
_      8 XCF_DEFAULT_MAXMSG         IBMXCF   ACTIVE(ENABLED)  EXCEPTION-NONE
_      9 XCF_FDI                    IBMXCF   ACTIVE(DISABLED) ENV N/A
_     10 XCF_MAXMSG_NUMBUF_RATIO    IBMXCF   ACTIVE(DISABLED) ENV N/A
_     11 XCF_SFM_ACTIVE             IBMXCF   ACTIVE(DISABLED) ENV N/A
_     12 XCF_SIG_CONNECTIVITY       IBMXCF   ACTIVE(DISABLED) ENV N/A
_     13 XCF_SIG_PATH_SEPARATION    IBMXCF   ACTIVE(DISABLED) ENV N/A
_     14 XCF_SIG_STR_SIZE           IBMXCF   ACTIVE(DISABLED) ENV N/A
_     15 XCF_SYSPLEX_CDS_CAPACITY   IBMXCF   ACTIVE(ENABLED)  SUCCESSFUL
_     16 XCF_TCLASS_CLASSLEN        IBMXCF   ACTIVE(ENABLED)  EXCEPTION-MEDIUM
_     17 XCF_TCLASS_CONNECTIVITY    IBMXCF   ACTIVE(DISABLED) ENV N/A
_     18 XCF_TCLASS_HAS_UNDESIG     IBMXCF   DELETED
```

Line Commands

The following line commands can be entered in the action area to the left of any displayed check. These commands can also be entered in the command area at the top of the screen when preceded by the menu number of the enclave. The commands are:

A	Activate the check
DEACT	Deactivate the check
DEL	Delete the check
R	Run the check
REF	Refresh the check
U	Clear all categories for the check
D	Display detail panel
DL	Display long format
DS	Display status
DP	Display policy
DPO	Display outdated policy
S	Browse check results
SB	Browse check results with ISPF
ED	Edit check results with ISPF
SN	Snap check results to target data set

Primary Commands

The *IOF Health Checker Display* provides comprehensive commands to manipulate the list of checks. Primary commands which apply to the whole list must be entered in the command area at the top of the screen. The primary commands listed below can be used on the *IOF Health Checker Display*. The specific use and syntax of these commands is described in the **Primary Commands** section of Chapter 7.

Supported primary commands are:

- **SORT**   Sort the list of checks
- **EXCLUDE, UNEXCL**   Exclude or unexclude checks
- **FIND**   Find a check
- **FIELD**   Determine field name of field under cursor
- **CUT, PASTE, ARRANGE**   Rearrange columns on the panel
- **RIGHT, LEFT**   Horizontal scroll
- **UP, DOWN**   Vertical scroll
- **LOCK, UNLOCK**   Lock or unlock the list
- **SS, SD, SU, SNAPCLOS**   Define snap target data set, or close

WLM Scheduling Environments

Scheduling environments are part of the Resource Affinity Scheduling facility of IBM's Workload Manager. A scheduling environment is a list of abstract resource names along with a required state (On or Off) for each resource. A scheduling environment is considered "available" on a particular system when each of the named resources in the list is in the required state on that system.

The **WLM** command displays the *Workload Manager Option Menu*. The **S** option displays the *IOF Scheduling Environment Display.* Enter **WLM S** to skip the *Workload Manager Option Menu* and jump directly to the scheduling environment display.

```
-------------------- IOF Scheduling Environment Display -----( 10 )-----------
  COMMAND ===>                                              SCROLL ===> CURSOR
     Systems: MAS
  -------NAME----------ACT-DESCRIPTION-------------SYSTEMS--------------------
  _    1 CICS_NIGHT       Night shift CICS
  _    2 CICS_PRIME       Prime shift CICS        SYSA      SYSC
  _    3 DB2_NIGHT        Night shift DB2
  _    4 DB2_PRIME        Prime shift DB2         SYSA
  _    5 NO_CICS          CICS Down
  _    6 NO_DB2           DB2 Down
  _    7 SCHENVA          Scheduling environment A SYSC
  _    8 SCHENVB          Scheduling environment B
  _    9 SCHENV1          Scheduling environment 1 SYSA     SYSC
  _   10 SCHENV2          Scheduling environment 2
```

Line Commands

The following line commands can be entered in the action area to the left of
any displayed environment. These commands can also be entered in the
command area at the top of the screen when preceded by the menu number.
The commands are:

D	Produce a detailed display of the scheduling environment
JOBS	Display all jobs which require the scheduling environment
RES	Display all resources required by the scheduling environment

Primary Commands

The *WLM Scheduling Environment Display* provides comprehensive
commands to manipulate the list of environments. Primary commands which
apply to the entire list must be entered in the command area at the top of the
screen. The primary commands listed below can be used. The specific use
and syntax of these commands is described in the ***Primary Commands
section of Chapter 7***.

Supported primary commands are:

- **SORT** — Sort the list of environments
- **EXCLUDE, UNEXCL** — Exclude or unexclude environments
- **FIND** — Find an environment
- **FIELD** — Determine field name of field under cursor
- **CUT, PASTE, ARRANGE** — Rearrange columns on the panel
- **RIGHT, LEFT** — Horizontal scroll
- **UP, DOWN** — Vertical scroll
- **LOCK, UNLOCK** — Lock or unlock the list
- **SS, SD, SU, SNAPCLOS** — Define snap target data set, or close

WLM Resources

The **R** option on the *Workload Manager Option Menu* is used to display a list of all WLM resources defined to the system. Entering **WLM R** jumps directly to the resources display.

```
---------------- IOF Scheduling Environment Resources Display ( 15 )----------
COMMAND ===>                                              SCROLL ===> CURSOR
     Systems: MAS
  -------NAME----------ACT SYSA       SYSC      -COMMENTS----------------------
  _    1 CICSA              ON         ON
  _    2 DAYTIME            ON         ON
  _    3 DB2A               ON         ON
  _    4 NIGHT              RESET
  _    5 NOPER              OFF        OFF
  _    6 RESA               RESET      RESET
  _    7 RESB               RESET      RESET
  _    8 RESC               RESET      RESET
  _    9 RESD               RESET      RESET
  _   10 RESOURCE_1         ON         OFF
  _   11 RESOURCE_2         ON         OFF
  _   12 RESOURCE_3         OFF        ON
  _   13 RESOURCE_4         OFF        OFF
  _   14 SYSTEM             ON         OFF
  _   15 UNREF1             RESET      RESET
```

Line Commands

The following line commands can be entered in the action area to the left of any displayed resource. These commands can also be entered in the command area at the top of the screen when preceded by the menu number.

The commands are:

D	Produce a detailed display of a resource
T	Set the status to ON, OFF, or RESET as overtyped for each system (or just overtype the status)

Primary Commands

The *WLM Resources Display* provides comprehensive commands to manage the list of resources. Primary commands which apply to the entire list must be entered in the command area at the top of the screen. The primary commands listed below can be used. The specific use and syntax of these commands is described in the ***Primary Commands* section of Chapter 7**.

Supported primary commands are:

- **SORT**   Sort the list of resources
- **EXCLUDE, UNEXCL**   Exclude or unexclude resources
- **FIND**   Find a resource
- **FIELD**   Determine field name of field under cursor

- **CUT, PASTE, ARRANGE**   Rearrange columns on the panel
- **RIGHT, LEFT**   Horizontal scroll
- **UP, DOWN**   Vertical scroll
- **LOCK, UNLOCK**   Lock or unlock the list
- **SS,SD,SU,SNAPCLOS**   Define snap target data set, or close

Job Class Display

The IOF Job Class Display displays all job classes defined to JES2 by the JOBCLASS initialization statements. It is invoked by entering the **JBC** option. Job class attributes can be changed by overtyping on the panel.

```
-------------------------- IOF Job Class Display -----------( 38 )-----------
COMMAND ===>                                               SCROLL ===> CURSOR
-------CLS-ACT-STATE---MODE-WAITING-RUNNING-HOLDING-OUTDISP-------QHELD-HOLD---
_    1 A        NOTHELD JES                     11 (,)           NO    NO
_    2 B        HELD    JES                        (,)           YES   NO
_    3 C        NOTHELD JES                        (,)           NO    NO
_    4 D        HELD    JES                        (,)           YES   NO
_    5 E        NOTHELD JES                        (,)           NO    NO
_    6 F        NOTHELD JES                        (,)           NO    NO
_    7 G        NOTHELD JES                        (,)           NO    NO
_    8 H        NOTHELD JES                        (,)           NO    NO
_    9 I        NOTHELD JES                        (WRITE,HOLD)  NO    NO
_   10 J        NOTHELD JES                        (,)           NO    NO
_   11 K        NOTHELD JES       2            47 (,)           NO    NO
_   12 L        NOTHELD JES                        (,)           NO    NO
_   13 M        NOTHELD JES                        (,)           NO    NO
_   14 N        NOTHELD JES                        (,)           NO    NO
_   15 O        NOTHELD JES                        (,)           NO    NO
_   16 P        NOTHELD JES                        (,)           NO    NO
_   17 Q        NOTHELD WLM                        (,)           NO    NO
_   18 R        NOTHELD WLM                        (,)           NO    NO
_   19 S        NOTHELD JES                        (,)           NO    NO
_   20 STC                            45           (PURGE,HOLD)
_   21 T        NOTHELD JES                        (,)           NO    NO
_   22 TSU                            11           (PURGE,HOLD)
_   23 U        NOTHELD JES                        (,)           NO    NO
_   24 V        NOTHELD JES                        (,)           NO    NO
_   25 W        NOTHELD JES                        (,)           NO    NO
_   26 X        NOTHELD JES                        (,)           NO    NO
_   27 Y        NOTHELD JES                        (,)           NO    NO
_   28 Z        NOTHELD JES                        (,)           NO    NO
_   29 0        NOTHELD JES                        (,)           NO    NO
_   30 1        NOTHELD JES                        (,)           NO    YES
_   31 2        NOTHELD JES                        (,)           NO    NO
_   32 3        NOTHELD JES                        (,)           NO    NO
_   33 4        NOTHELD JES                        (,)           NO    NO
_   34 5        NOTHELD JES                        (,)           NO    NO
_   35 6        NOTHELD JES                        (,)           NO    NO
_   36 7        NOTHELD JES                        (,)           NO    NO
_   37 8        NOTHELD JES                        (,)           NO    NO
_   38 9        NOTHELD JES                        (,)           NO    NO
```

Line Commands

S	Select a class to display the *Job Class Detail Panel*
JOBS	Display all input and running jobs queued to the job class

Primary Commands

The *IOF Job Class Display* provides comprehensive commands to manipulate the list of checks. Primary commands which apply to the whole list must be entered in the command area at the top of the screen. The primary commands listed below can be used on the *IOF Job Class Display*. The specific use and syntax of these commands is described in the **Primary Commands** section of Chapter 7.

Supported primary commands are:

- **SORT**   Sort the list of classes
- **EXCLUDE, UNEXCL**   Exclude or unexclude classes
- **FIND**   Find a class
- **FIELD**   Determine field name of field under cursor
- **CUT, PASTE, ARRANGE**   Rearrange columns on the panel
- **RIGHT, LEFT**   Horizontal scroll
- **UP, DOWN**   Vertical scroll
- **LOCK, UNLOCK**   Lock or unlock the list
- **SS,SD,SU,SNAPCLOS**   Define snap target data set, or close

Spool Volume Display

The *IOF Spool Volume Display* shows the characteristics of each of the JES2 spool volumes in use in the MAS. It is invoked by entering the **SPV** command.

```
------------------------- IOF Spool Volume Display ----------( 1 )------------
COMMAND ===>                                                 SCROLL ===> CURSOR
-------VOLUME-ACT-STATE----PCT-TGNUM--USED-COMMAND-SYAFF-EXT-LOWTRACK-HIGHTRAK-
_    1 SPOOL1      ACTIVE    94 16690 15802           ANY   0 0000000F 0000C3A4
_    2 SPOOL2      ACTIVE    92 16690 15354           ANY   0 0000000F 0000C3A4
_    3 SPOOL3      ACTIVE    88  8345  7343           ANY   0 0000000F 000061D9
```

Line Commands

S	Display the Spool Volume Detail Display for the volume
DL	Display the long form of the JES2 $DSPOOL command for the volume
JOBS	Display a Job List Menu of all jobs that allocate any space on the volume
DRAIN	Drain the volume
START	Start the volume
HALT	Halt the volume

> **DRAINCAN**   Drain the volume and cancel any jobs residing on the
> volume

Primary Commands

The *IOF Spool Volume Display* provides comprehensive commands to
manipulate the list of checks. Primary commands which apply to the whole
list must be entered in the command area at the top of the screen. The
primary commands listed below can be used on the *IOF Spool Volume
Display*. The specific use and syntax of these commands is described in the
Primary Commands section of Chapter 7.

Supported primary commands are:

- **SORT**   Sort the list of volumes
- **EXCLUDE, UNEXCL**   Exclude or unexclude volumes
- **FIND**   Find a volume
- **FIELD**   Determine field name of field under cursor
- **CUT, PASTE, ARRANGE**   Rearrange columns on the panel
- **RIGHT, LEFT**   Horizontal scroll
- **UP, DOWN**   Vertical scroll
- **LOCK, UNLOCK**   Lock or unlock the list
- **SS,SD,SU,SNAPCLOS**   Define snap target data set, or close

NJE Nodes Display

The *IOF NJE Nodes Display* provides all the NJE nodes defined to JES2. It
is invoked by entering the **SPV** command.

```
---------------------------- IOF NJE Node Display ----------( 2 )-------------
COMMAND ===>                                              SCROLL ===>  CURSOR
-------NUMBER-ACT-NAME-----STATUS---------------AUTHORITY--------TRANS--------
_    1     1     TRISYS   OWNNODE            (D=Y,J=Y,N=N,S=Y) JOBS
_    2     2     TAMPA    CONNECTED          (D=Y,J=Y,N=N,S=Y) JOBS
_    3     3     BOSTON   CONNECTED          (D=Y,J=Y,N=N,S=Y) JOBS
_    4     4     NAPLES   CONNECTED          (D=Y,J=Y,N=N,S=Y) JOBS
_    5     5     DENVER   CONNECTED          (D=Y,J=Y,N=N,S=Y) JOBS
_    6     6     DALLAS   UNCONNECTED        (D=Y,J=Y,N=N,S=Y) JOBS
_    7     7     NEWYORK  CONNECTED          (D=Y,J=Y,N=N,S=Y) JOBS
_    8     8     N8       UNCONNECTED        (D=Y,J=Y,N=N,S=Y) JOBS
_    9     9     N9       UNCONNECTED        (D=Y,J=Y,N=N,S=Y) JOBS
_   10    10     N10      UNCONNECTED        (D=Y,J=Y,N=N,S=Y) JOBS
_   11    11     N11      UNCONNECTED        (D=Y,J=Y,N=N,S=Y) JOBS
```

Line Commands

S	Select the node for the *NJE Nodes Detail Display*
ST	Start the node
DL	Display node status in the log
DC	Display connect information for the node
DP	Display path information for the node

Primary Commands

The *IOF NJE Nodes Display* provides comprehensive commands to manipulate the list of checks. Primary commands which apply to the whole list must be entered in the command area at the top of the screen. The primary commands listed below can be used on the *IOF NJE Nodes Display*. The specific use and syntax of these commands is described in the ***Primary Commands*** section of Chapter 7.

Supported primary commands are:

- **SORT**   Sort the list of volumes
- **EXCLUDE,UNEXCL**   Exclude or unexclude volumes
- **FIND**   Find a volume
- **FIELD**   Determine field name of field under cursor
- **CUT, PASTE, ARRANGE**   Rearrange columns on the panel
- **RIGHT, LEFT**   Horizontal scroll
- **UP, DOWN**   Vertical scroll
- **LOCK,UNLOCK**   Lock or unlock the list
- **SS,SD,SU,SNAPCLOS**   Define snap target data set, or close

IOF Mail Facility

You can use the **IOFMAIL** command to send emails or download data sets or HFS files using the IOF mail facility. There are several ways to invoke IOFMAIL under ISPF, depending upon how IOF was installed at your site,

You can always enter the IOFMAIL command from any IOF display when running under ISPF.

In most cases you should also be able to enter the IOFMAIL command on any ISPF panel. If that doesn't work for you, then you should be able to enter "TSO IOFMAIL".

The IOFMAIL command under ISPF will display the IOFMAIL prompt panel, from which you can create an email message or download a data set.

To download a specific data set:

```
IOFMAIL data-set-name
```

Enter the **IOFXMIT** command under ISPF edit to download the data set currently being edited. Use **IOFMAIL** as a line command on ISPF 3.4 to download the selected data set.

You can call the IOFMAIL exec from another exec to send emails or download data sets as part of other applications.   The IOFMAIL exec can be called from an exec running under ISPF, TSO READY, or TSO batch. You can also use the IOFMAIL cataloged procedure to send emails or download data sets from a batch job.

Invoke **IOFMAIL** under ISPF and then press **HELP** to see a complete description of the IOF mail capabilities. Note that usage of IOF mail requires that your site has activated the IOF mail facility.

IOF Send Facility

The IOF **SEND** command, which is designed to be used when IOF is running under ISPF, uses email to download job output. Entering a SEND command will display an interface panel for performing the send function.   The default download format is HTML and begins with an IOF Job Summary where individual sysouts can be selected just as with the online IOF Job Summary.

The **SEND** command can be entered:

- As a line command on the *IOF Job List* to send a job's output (see *Line Commands* in Chapter 7).

- As a line command on the *IOF Output Group Display* to send an output group (see *Line Commands* in Chapter 11).

- As a primary command on the *IOF Job Summary* to send the current job (see *Send the Whole Job via Email* in Chapter 8),

- As a line command on the *IOF Job Summary* to send an individual sysout data set (see *Data Set Line Commands* in Chapter 8).

- On any other IOF panel to set defaults for the **SEND** command.

You can call the IOFSEND exec from another exec running under IOF to download job output as part of other applications. You can also use the IOFSEND cataloged procedure in a batch job to notify that the job has completed or download the job's output.

Enter **SEND** on any IOF display (under ISPF) and then press **HELP** to see a complete description of the IOF send capabilities. Note that usage of IOF send requires that your site has activated the IOF send facility.

24. IOF Job Archival Made Simple (IOF/JAMS)

Introduction

The IOF Job Archival Made Simple (IOF/JAMS) facility provides the ability to save JES2 jobs into z/OS data sets in a way that they can easily be retrieved for browsing or printing. Browsing an archived job looks very much like browsing a job in IOF, including a Job Summary display that lets you browse or print individual sysout data sets.

By adding a simple job step at the end, jobs can be set up to automatically archive themselves. This requires no setup or assistance from the technical staff. The original job will be left on the spool for normal review and disposition.

You can also manually archive jobs directly from IOF menus with no setup or assistance. In addition, IOF/JAMS offers a classical bulk archival function. Systems staff can set up bulk archival runs to offload multiple jobs based on very flexible selection criteria.

As part of the archival process you can specify a disposition for each job that is archived. After archival, jobs can be cancelled, modified for a subsequent output processor, or just left on the spool for a later disposition.

This is all accomplished without a complex data base system to keep track of the jobs. This simplicity is achieved by archiving each JES2 job into a separate z/OS data set with a name that makes it easy to go back and find the job. The archive data sets can also be tersed to reduce the disk storage required.

The IOF/JAMS system is very simple because it requires no complex data base, proprietary data format, or specialized security protocols. A user can archive a job if they have IOF access to browse it. A user can review or delete an archived job if they have the appropriate security system access to the archive data set for that job.

Archiving Jobs

There are three different ways that jobs can be archived:

- A job can automatically archive itself
- Jobs can be manually archived from IOF displays
- Automated bulk archival can archive selected jobs

After describing the structure of the archive data set names, each of these archival methods will be described in detail.

Archive Data Set Names

You specify PREFIX, CATEGORY, and SUFFIX values to control the names of the archive data sets to be created. The archive data set naming structure requires 20 of the data set name characters, so the PREFIX, CATEGORY, and SUFFIX strings must have a total length of no more than 24 characters. The data set names have the general format:

```
PREFIX.CATEGORY.jobname.datetime.SUFFIX
```

The jobname and datetime fields are automatically supplied by the archival system.

- The PREFIX value is required and can be more than one level.
- The SUFFIX value is required and must be exactly one level.
- The CATEGORY value is optional and can be very useful in creating groups of related jobs.

To display archived jobs you just specify the same PREFIX, CATEGORY, and SUFFIX values that were used to archive them.

For bulk archive runs, some installations may wish to have a centralized archival process and always use the same PREFIX and SUFFIX for all archival runs. However, it is very simple to create separate groups of archived jobs by using different categories when archiving those jobs.

The most important thing to remember is that you have complete flexibility in specifying PREFIX, CATEGORY, and SUFFIX, with the exception that a PREFIX string and a SUFFIX string are required.

Having a Job Archive Itself

Since the IOF/JAMS archival process just creates a z/OS data set, you can add a simple job step to the end of any job to cause the job to archive itself:

```
//ARCHIVE  EXEC  IOFARCME
```

This example assumes that you have set up the IOFARCME procedure to use the current job's owner as the PREFIX value and a default SUFFIX value (like "IOFJOB"). The job will be archived to a z/OS data set and the original job will be left on the spool for normal review and disposition.

The IOFARCME procedure would normally be set up to allow default values to be overridden:

```
//ARCHIVE   EXEC   IOFARCME,PREFIX=USMITHJ,SUFFIX=IOFJOB
```

For more flexibility, the IOFARCME procedure can also support an input parms data set:

```
//ARCHIVE   EXEC   IOFARCME,PREFIX=USMITHJ,SUFFIX=IOFJOB
//ARCPARMS  DD   *
PREFIX   USMITHJ
SUFFIX   IOFJOB
CATEGORY   SMPE21
UNIT ...
VOLUME ...
STORCLAS   ...
MGMTCLAS ...
DATACLAS ...
SYSOUTS
SELECT   JESDS     (archive only system data sets)
SELECT   NODATA    (archive only an IOF Job Summary)
SELECT   DONE      (try and archive even deleted sysouts)
```

Sample IOFARCME Cataloged Procedures

Since the IOFARCME procedure can be much simpler for z/OS 1.13 and later, two sample procedures are described.

For z/OS 1.13 and later

To use this procedure, fill in the IOF clist library name at DD SYSPROC and specify your default values at DD SYSIN. You can optionally create a separate data set and point to that data set with the SYSIN DD statement

See below for information about the defaults data set.

```
//IOFARCME PROC   PREFIX=,SUFFIX=,CATEGORY=
//ARCHME    EXEC   PGM=IKJEFT1B,PARM=('IOFBLKAR SELECT(CURRENT)',
//       'PREFIX(&PREFIX) SUFFIX(&SUFFIX) CATEGORY(&CATEGORY)')
//SYSTSPRT DD   SYSOUT=*
//REPORT    DD   SYSOUT=*
//SYSTSIN   DD   DUMMY
//SYSPROC   DD   DISP=SHR,DSN= clist.library        (your IOF clist
//SYSIN  DD *                                        library)
* Specify your default archival parms here
//*    User can override defaults by adding DD name ARCPARMS
//       DD   DDNAME=ARCPARMS
//       PEND
```

Before z/OS 1.13

To use this proc, fill in the IOF clist library name at DD SYSPROC. Then, create a separate data set containing your default values and point to that data set with the SYSIN DD statement.

See below for information about the defaults data set.

```
//IOFARCME PROC  PREFIX=,SUFFIX=,CATEGORY=
//ARCHME    EXEC  PGM=IKJEFT1B,PARM=('IOFBLKAR SELECT(CURRENT)',
//      'PREFIX(&PREFIX) SUFFIX(&SUFFIX) CATEGORY(&CATEGORY)')
//SYSTSPRT DD  SYSOUT=*
//REPORT   DD  SYSOUT=*
//SYSTSIN  DD  DUMMY
//SYSPROC  DD  DISP=SHR,DSN= clist.library        (your iof clist
//*   Default parms are defined by data at DD name SYSIN  library)
//SYSIN DD DISP=SHR,DSN= defaults.data.set
//*   User can override defaults by adding DD name ARCPARMS
//       DD   DDNAME=ARCPARMS
//       PEND
```

IOFARCME Defaults Data Set

Specify your default values for the IOFARCME procedure in the defaults data set. Here are some default values that can be specified:

```
PREFIX  &OWNER       Sets default PREFIX to archived job's owner
*                    (Omit PREFIX statement to
                     require PREFIX on EXEC)
SUFFIX  IOFJOB       Sets a fixed value for default SUFFIX
TERSE                Compress archived data sets withIBM's TERSE
*               (TERSE is somewhat slower but compresses the data)
*  Optionally specify default media placement for archive datasets
UNIT ...
VOLUME ...
STORCLAS ...
MGMTCLAS ...
DATACLAS ...
```

Manual Archival from IOF Displays

You can manually archive jobs from IOF displays without any previous setup or assistance from your technical staff. If you have IOF access to a job then you can archive it to your own personal data set or any data set that you are allowed to create.

Use the ARCHIVE (ARC) line command on the IOF Job List or Output Group List to manually archive a job or output group.

```
------------------------------ IOF Job List Menu ------------( 7 )------------
 COMMAND ===>                                              SCROLL ===> CURSOR
-------------------------------- Output Jobs ---------------------------------
-------JOBNAME--JOBID---ACT-STAT-OWNER----DEST/DEVICE-------RECS-HELD-DAY--TIME
arc  1 AXJ1027  J816641         ISIJFW   TRIANGLE             21      029  9:28
 _   2 IOFWTR   J816108         ISIJFW   TRISYS              163   14 023 11:18
 _   3 BULKNEW  J813856         ISIJFW   TRISYS             8823      366 10:09
 _   4 BULKCT   J812578         ISIJFW   TRISYS              218      347 11:50
 _   5 BULK     J811004         ISIJFW   TRISYS              230      325 16:34
 _   6 GEN      J808834    JCL  ISIJFW   TRIANGLE             21      305 10:44
 _   7 SASSTAT  J801403         ISIJFW   TRIANGLE            118      343 11:25
```

This will result in the following prompt panel:

```
---------------- Archive Job "AXJ1027"to a z/OS Data Set -----------------
 COMMAND ===>

    HELP - Display information about IOF archival

 Prefix  ===> USMITHJ           Prefix for archive data set name
 Catg.   ===>                   Category for this job (prefix extension)
 Suffix  ===> IOFJOB            Suffix for archive data set name
                                (prefix,suffix,catg <= 24 characters)

 Disp    ===>          Disposition after OK archive (CANCEL/RELEASE,...)
 Sysouts ===> ALL      Include these sysouts        (ALL/JESDS)
 Terse   ===> NO       Yes -> Create compressed data set with IBM TERSE
 Done    ===> NO       Yes -> Try and include sysouts marked as "DONE"
 CC      ===> ASA      Carriage control       (ASA/MACHINE/NONE)

 Allocation attributes for archive data set:

 UNIT     ===>          VOLUME   ===>
 STORCLAS ===>          MGMTCLAS ===>          DATACLAS ===>
```

Use this panel to specify the structure for the archive data set name to be
created. When you first display this screen the prefix will be set to your
profile prefix (or userid) and the suffix will be set to IOFJOB. To use these
default values just press ENTER on this panel.

 Simply overtype these values to specify an alternate prefix and/or suffix. You
can use the category (Catg.) field to set up separate categories of archived
jobs. You can control the media placement, format, and contents of the
archive data set using other fields on this panel. You can also specify a
disposition for the job after it is archived (see more information on that
below). Press HELP on this display for more information.

Pressing ENTER on this display will archive the AXJ1027 job.

Reviewing archived jobs

Enter the ARCHIVE (**ARC**) primary command on any IOF panel to display the
interface panel for reviewing archived jobs

```
-------------------- Select Archived Jobs to be Reviewed --------------------
 COMMAND ===>

           HELP - Display info about this panel

  The Prefix, Category, and Suffix fields must match those specified when
  the jobs were archived.

 Jobname ===>                              Generic job name (limits initial list)
                                           (Refine list further on list panel)

 Prefix  ===> USMITHJ                      Prefix for archive data set names

 Catg    ===>                              Job category (prefix extension)
                                           (blank => No category level in dsnames)

 Suffix  ===> IOFJOB                       Suffix for archive data set names
                                           (blank => No suffix level in dsnames)
```

This is where you specify the PREFIX, SUFFIX, and optional CATEGORY for
the archived jobs that you wish to review. You can also optionally specify a
generic job name filter to reduce the size of the initial list.

As you can see, the panel will remember your previous values. Press HELP
on this panel for more detailed information.

Pressing ENTER on this panel will produce a display of the archived jobs:

```
---------------------- Archived Jobs (Prefix: USMITHJ) ----------- Row 1 of 43
 COMMAND ===>                                               Scroll ===> CSR

        SORT - Toggle sort (jobname/date)    HELP - Info about display

    Parms  row below - Only jobs that match these input parms will appear on this
 list
    Filter row below - Overtype a filter column to further refine the ist

  ---Act--Jobname----Year--Mo-Day--Time run--Weekday---Category-Suffix--
 Parms -> *          *     *  *     *         *                   IOFJOB
 Filter-> *          *     *  *     *         *                   IOFJOB
   _       $AT        2011  09 07   12:06:00  Wednesday           IOFJOB
   _       ARCHISI    2012  11 09   08:22:00  Friday              IOFJOB
   s       AXJ1027    2015  02 11   12:06:00  Wednesday           IOFJOB
   _       BATCHTSO   2012  09 27   11:21:00  Thursday            IOFJOB
   _       BULK       2012  11 20   16:34:00  Tuesday             IOFJOB
   _       BULKCT     2012  12 12   11:50:00  wednesday           IOFJOB
   _       BULKGEN    2013  01 08   13:25:00  Tuesday             IOFJOB
   _       BULKIOF    2012  12 31   15:31:00  Monday              IOFJOB
   _       BULKIOF    2012  12 31   13:46:00  Monday              IOFJOB
   _       BULKNEW    2012  12 31   10:09:00  Monday              IOFJOB
   _       BULKSPIN   2013  01 02   09:10:00  wednesday           IOFJOB
   _       BULKTST1   2013  01 09   09:03:00  wednesday           IOFJOB
```

On this panel you can delete archived jobs ("D" line command) or select an
archived job for review ("S" line command). Press HELP on this display to
see a complete description of features and functions. If we select the
AXJ1027 job that we just archived we will see the Archived Job Summary for
the job:

```
-----------------------------Archived Job Summary--------------------------------
-
 COMMAND ===>                                              SCROLL===> CSR
----------------------------- IOF Job Summary --------------------------------
-
 --JOBNAME--JOBID----STATUS---RAN/RECEIVED------DAY-------DEST--------------OWNER-
-
   AXJ1027  J808040  OUTPUT   12:06   5/10/2017 WEDNESDAY TRISYS
USMITHJ
 --RC--PGM--------STEP-----PRSTEP---PROC-----COMMENTS--------------------------
-
   0  IKJEFT1A   TSO     SPF      BATCHSPF
 --------DDNAME---STEP-----PRSTEP---STAT-ACT-C-GRP-D-SIZE-U-DEST----------------
-
 _   1  LOG      *                         A  1 K  18 L TRISYS
 _   2  JCL      *                         A  1 K  44 L TRISYS
 _   3  MESSAGES *                         A  1 K  68 L TRISYS
 _   4  ISPLOG   TSO     SPF               A  1 K   4 L TRISYS
 _   5  SYSTSPRT TSO     SPF               A  1 K   4 L TRISYS
```

As you can see, this display is very similar to the original IOF Job Summary
for the job on the spool. From this display you can browse, print, copy, or
email individual sysout data sets or the entire archived job. You can also use
the EDIT primary command to edit a copy of the original input job. Press
HELP on this display to see a complete list of features and functions.

The Bulk Archiver

The bulk archive application allows you to archive multiple jobs to z/OS data
sets in a single batch run. The jobs to be archived can be selected using
very flexible selection criteria. And, you can even specify which sysout data
sets should be archived for the jobs.

You can optionally specify a disposition for the jobs after they are archived.
The jobs can be cancelled or left on the spool after being marked as not
being eligible for subsequent archive runs. This is completely controlled by
the parms that are specified to the bulk archiver.

You can also request that the bulk archive process be automatically run at
specified time intervals throughout the day.

Here is a sample cataloged procedure for running a bulk archive:

```
//IOFBLKAR   PROC
//   EXEC PGM=IKJEFT1B,REGION=4096K,PARM='IOFBLKAR'
//SYSTSPRT   DD   SYSOUT=A
//SYSPRINT   DD   SYSOUT=A
//REPORT     DD   SYSOUT=A
//SYSPROC    DD   DISP=SHR,DSN=your.iof.clist.library
//SYSTSIN    DD   DUMMY
```

The REPORT data set will contain a detailed description of the action taken.

The SYSTSPRT data set will contain diagnostic information if the TEST
statement is specified.

The SYSPRINT data set will contain a log of any terse activity.

A sample job would look something like this:

```
//BULKARCH  JOB  …
//ARCHIVE   EXEC  IOFBLKAR
//SYSIN     DD  *
```

…statements controlling the bulk archive processing are specified here

Jobs versus Groups for Bulk Archiver

You can choose to archive either jobs (JES2 JQEs) or output groups (JES2 JOEs). The default assumption is that jobs are to be archived, but you can specify the JOBS or GROUPS statement to explicitly choose one or the other. It is important to note that different selection parms are available depending upon whether you are archiving jobs or groups.

Disposition of Archived Jobs for Bulk Archiver

Before describing the detailed control parms for the bulk archiver, it is important to point out that if you run the same bulk archiver parms a second time it will attempt to re-archive the same jobs. That means that you should normally cancel or modify each job after it is archived to prevent re-archival.

You can choose to cancel the jobs after archival or just modify them in some way to make them ineligible for re-archival. Leaving the jobs on the spool may be necessary if you have other sysout processes that also need to be executed.

For example, because of the additional information content in an IOF archival, for certain jobs you may wish to perform and IOF/JAMS archival in addition to your normal report archival process. In that case you can set up the IOF/JAMS selection criteria based on some sysout attribute (class, dest, etc.) and then have IOF/JAMS modify the job (after a successful archival) to the input criteria for your normal report archival system.

The ARCHOK and ARCHERR control parms allow you to specify what you want to do to each job after it is archived.

```
ARCHOK     job-list-line-command
ARCHERR    job-list-line-command
```

The line command specified in the ARCHOK parm will be executed against each job (or output group) after it has been successfully archived. The line command specified in the ARCHERR parm will be executed against each job (or output group) whose archive attempt failed for some reason.

The SETOFF line command on the IOF Job List Menu (and Output Group Display) provides a simple mechanism for marking jobs to prevent re-archival. This approach can be used if you have at least one JES2 offloader

that is never used (consult your JES2 systems programmer). For example, if JES2 offloader 8 is never used you can specify:

```
ARCHOK SETOFF 8
```

This command will mark the job as though it has been offloaded by JES2 offloader 8. This should have no effect on the job other than providing a convenient way to determine that it has already been archived. Note that in order to use the SETOFF line command the job performing the archival run must be authorized to issue JES2 commands under IOF.

You can then add the following statement to the selection parms for each archival run to prevent re-archival of any jobs:

```
EXCLUDE OFFLOADS CT 8
```

This command will exclude any jobs that contain an "8" in the OFFLOADS display column, which will always be present after an "ARCHOK SETOFF 8" command has been executed for a job.

The examples below will describe more information on this topic.

Control Statements for the Bulk Archiver

General Format of Control Statements

Each control statement must begin in column one unless it is a continuation of a previous statement.

Place an asterisk ("*") in column 1 to insert a comment record into the bulk archiver input parms.

Global Control Statements for the Bulk Archiver

You can request multiple archival runs in a single SYSIN data set by specifying a new JOBS or GROUPS statement to start the definition of each run. The parms below will remain in effect for all archive runs in the current SYSIN data set, unless they are re-specified later in the data set.

TRIALRUN	Produce a report of the jobs that would have been archived but do not archive anything or perform any disposition processing. This statement is HIGHLY RECOMMENDED as a way to learn how the selection parms work without accidentally creating unintended consequences.
PREFIX a.b	Prefix for archive data set names
CATEGORY c	Optional category for archive data set names (prefix extension).

SUFFIX d	Suffix for archive data set names (prefix + category + suffix must not be more than 24 characters)
ARCHOK xxx	Disposition for job/group after successful archive (any valid line command on Job/Group List)
ARCHERR xxx	Disposition for job/group if archive failed (any valid line command on Job/Group List)
RETAIN JOBNAMES n	After each job is archived, delete all but the "n" youngest copies of that job name (with the same prefix, category, and suffix).
RETAIN AGE nnn	After each job is archived, delete all archived copies of that job name (with the same prefix, category, and suffix) that are more than "nnn" days old.
TERSE	Use IBM TERSE to reduce required disk space (archival and review will be somewhat slower)
TEST	Display diagnostic information in SYSTSPRT data set
JOBEXIT exec-name	The name of an exec to be executed to select jobs for archival and optionally provide the PREFIX, CATEGORY, and SUFFIX. See *JOBEXIT* section below for more details.

Symbolic Variables for PREFIX, CATEGORY, and SUFFIX

When specifying values for the PREFIX, CATEGORY, and SUFFIX statements, you can use symbolic variables that are to be filled in from each archived job. For example, you can specify:

    CATEGORY &OWNER

This will use the owner of each job as the category field in the job's archive data set name. The available symbolic variables are the same as the SELECT names described for jobs and output groups below.

SELECT and EXCLUDE Statements for the Bulk Archiver

This section describes the general format and function of the SELECT and EXCLUDE statements. Note that jobs and output groups have different sets of field names that can be referenced in SELECT and EXCLUDE statements.

Use the SELECT statement to choose the jobs or groups to be archived. Any jobs or groups not matching the SELECT criteria will be excluded from the archival run.   The SELECT statement has two formats:

    SELECT field comparison-value (SELECT JOBNAME PAY*)

This format allows you to limit the jobs/groups to be archived to those whose "field" value on the Job/Group List matches the comparison value. Note that a single trailing generic is allowed for most fields but some specific fields also allow single character (+) generics. Note also that to specify a null comparison value you must specify two single quotes:

```
SELECT  field   ''
```

The second format for the SELECT statement:

```
SELECT  special_attribute  (SELECT  HELD)
```

This format allows you the limit the jobs/groups to be archived to those which have the specified attribute.

Note that the special attributes are different for jobs and groups and are described in detail below. Note also that some of the SELECT field names have specific generic character usage limitations.

You can also use the EXCLUDE statement to prevent certain jobs or groups from being archived. The EXCLUDE command also has two formats. This simple format will handle the majority of exclude requirements:

```
EXCLUDE  field  comparison_value  (EXCLUDE FORMS XXX*)
```

The "field" can be any valid field name on the IOF Job List (or Output Group List). This will prevent any jobs or groups with a matching field value from being archived. Note that a single trailing generic is allowed.

For more sophisticated requirements, the EXCLUDE command can also specify a comparison operator, but no generics are allowed:

```
EXCLUDE  field comparison_oper  comparison_value
(EXCLUDE OFFLOADS CT 8)
```

The comparison operator can be any operator supported by the EXCLUDE command on the IOF list panels:

```
EQ/NE/GT/LT/GE/LE
CT          Containing
NC          Not containing
BG          Beginning
NB          Not beginning
```

Bulk Archiver Parms Specifically for Archiving Jobs

The bulk archiver can archive either jobs or output groups. Specify a "JOBS" statement to define the beginning of an archive run for archiving jobs:

JOBS

SELECT and EXCLUDE statements can be specified for any fields on the *IOF Job List Menu*.

In addition to the general SELECT statements described above, here are the special SELECT statements available for selecting jobs to be archived:

JOBNAME job1 job2 … Specifies up to 8 generic job name masks, each of which can include both single character (+) generics and a trailing generic(*).

OWNER owner   Specifies a single job owner userid mask, which can include single character (+) generics and a trailing generic(*).

CURRENT   Archive only the currently running job

AGE nnn   Archive only jobs older than the number of days specified.

SIZE nnn   Archive only jobs with at least the number of JES2 track groups specified.

JOB/TSU/STC   Archive only jobs, TSO users, or started tasks

Bulk Archiver Parms Specifically for Archiving Output Groups

Specify a "GROUPS" statement to define the beginning of an archive run for archiving output groups:

GROUPS

SELECT and EXCLUDE statements can be specified for any fields on the IOF Output Group Display.

In addition to the general SELECT statements described above, here are the special SELECT statements available for selecting output groups to be archived:

JOBNAME job1 job2 … Specifies up to 8 generic job name masks, each of which can include single character (+) generics and a trailing generic(*).

OWNER owner   Specifies a single job owning userid mask, which can include single character (+) generics and a trailing generic(*).

CURRENT   Archive only groups for the currently running job

AGE nnn   Archive only groups older than the number of days specified.

RECORDS nnn   Archive only groups with at least the number of records specified.

PAGES nnn   Archive only groups with at least the number of pages specified.

(Note that if you specify both RECORDS and PAGES in the same archival run it will result in only the groups that have BOTH the number of records and the number of pages. Two archival runs would be necessary to handle both cases independently.)

DEST dest1 dest2 …   Up to 16 JES2 destinations.

FORMS form1 form2 …   Archive only groups matching one of the FORMS specified. If a list is specified then no generics are allowed. If a single value is specified then a single trailing generic is allowed.

UCS ucs1 ucs2 …   Archive only groups matching one of the UCS values specified. If a list is specified then no generics are allowed. If a single value is specified then a single trailing generic is allowed.

FCB fcb1 fcb2 …   Archive only groups matching one of the FCB values specified. If a list is specified then no generics are allowed. If a single value is specified then a single trailing generic is allowed.

FLASH fls1 fls2 …   Archive only groups matching one of the FLASH values specified. If a list is specified then no generics are allowed. If a single value is specified then a single trailing generic is allowed.

WTRID wtr1 wtr2 …   Archive only groups matching one of the WTRID values specified. If a list is specified then no generics are allowed. If a single value is specified then a single trailing generic is allowed.

HARDCOPY   Archive only hard copy groups.

HELD   Archive only groups with OUTDISP of HOLD.

NONHELD   Archive only groups that do not have an OUTDISP of HOLD.

UNIX   Archive only groups generated by UNIX processes.

APPC/NOAPPC   Archive only groups created/not created by APPC applications.

JOB/TSU/STC   Archive only groups for jobs, TSO users, or started tasks

Selecting Specific Sysouts for Bulk Archival

Once you have selected the jobs or groups for bulk archival, you can optionally choose to refine the types of sysout data sets that should be

included in the archived copy of each job (or output group). Note that nothing specified in this section will affect the jobs or output groups to be selected for archival. Using these parms you can choose to limit the sysout data sets to be archived for a job AFTER it has been selected for archival. To activate the parms for controlling the sysouts to be included for each job being archived you must first specify:

SYSOUTS

This statement indicates that any following SELECT or EXCLUDE statements apply to the sysouts within each selected job or group.

Once the SYSOUTS statement has been specified, any SELECT and EXCLUDE statements will apply to the sysout data sets on the IOF Job Summary for each archived job or group.   These SELECT and EXCLUDE statements can reference any field found in the sysout display section of the IOF Job Summary. To avoid archiving any sysout data sets of class x:

```
EXCLUDE   CLASS   X
```

In addition there are some special SELECT statements for sysout data sets:

JESDS	Archive only the system data sets for each job/group.
NODATA	Don't archive any sysout data sets. Include only the IOF Job Summary.
DONE	Attempt to archive sysout data sets even if they are marked "DONE" on the IOF Job Summary.

It is important to point out that each SELECT and EXCLUDE statement (for jobs, groups, or sysouts) continues to apply the latest filter to further refine the list. So, if you specify two SELECT statements the resulting list will include only the job/groups/sysouts that satisfy BOTH SELECT statements.

However, for sysouts only, the INCLUDE statement allows you to start from scratch and add back the specific sysouts you would like included. To start from scratch you must specify:

```
SELECT NODATA
```

Then, each INCLUDE statement will add more sysouts to be archived:

```
INCLUDE DDNAME(dd) STEP(step) PRSTEP(prstep) DSKEY(dskey)
```

An example is the simplest way to illustrate the INCLUDE statement. After completing the job (or group) selection statements:

```
SYSOUTS
SELECT   NODATA
INCLUDE   DDNAME(SYSPRINT)   STEP(AUDIT)
INCLUDE   DDNAME(MASTER)   STEP(REPORT)
INCLUDE   DSKEY(117)
```

The archived jobs would contain only the following data sets:

The SYSPRINT data set for the AUDIT step.

The MASTER sysout for the REPORT step.

The sysout whose JES2 data set key is 117.

User Exit for Selecting Jobs (JOBEXIT)

As described above, the JOBEXIT statement allows you to specify a Rexx exec to be invoked for each potential job to be archived:

```
JOBEXIT  exec-name
```

The exec will only be called for jobs (or groups) that satisfy all of the specified selection criteria.

The specified exec will be called with the parm list:

```
call exec-name  prefix/category/suffix
```

where prefix, category, and suffix are the values that were specified in the parms.

The called exec will be running on the IOF Job Summary for the candidate job and can use the IOF TSICOPY command to extract information about the job:

```
address IOF
"TSICOPY  name(owner) section(jobinfo) to(rexx)"
```

The exec should return a result string like this:

```
 return  retcod/prefix/category/suffix
```

where retcode is the return from the exec. A retcode of 0 implies that the job should be archived. Any other retcode will skip the archival of that job. The prefix, category, and suffix values (if returned) will be used to override the values specified in the parms.

Automatically Rerunning Bulk Archiver at a Certain Time Interval

To repeat an archive run after waiting 60 seconds:

```
REPEAT 60
```

This statement can be placed anywhere in the parm data set and the archival job step will pause for 60 seconds after the completion each run and then repeat the same archival process. Note that it is important in this case to either cancel the archived jobs or use something like SETOFF to prevent re-archival of the same jobs.

You can also use the z/OS operator STOP command to stop an archival address space in an orderly fashion. The job step will terminate after the completion of the next job archival.

Media Placement for Bulk Archive Data Sets

You can use the following control statements to manage the media placement for bulk archive data sets:

UNIT	unit-name
VOLUME	volume-serial
STORCLAS	storage-class
MGMTCLAS	management-class
DATACLAS	data-class

Carriage Control for Bulk Archive Data Sets

By default, the archive data sets will be created with ASA carriage control. All sysout data sets will be converted to ASA carriage control as they are written to the data set. However, you can specify:

```
PDSCC  MACHINE/NONE
```

NONE will cause all carriage control to be removed from all archived sysout data sets.

MACHINE will cause all sysout data sets to be converted to machine carriage control.

Purging Archive Data Sets

Use the PURGE parm to define a special data set maintenance run that performs no archival. You can purge archived jobs based on job age or number of versions to be kept. Note that the RETAIN parm is different from PURGE in that it is activated only when a specific job name is archived. The PURGE parm will affect all archive data sets that match the specified prefix, category, suffix, and generic job name.

PURGE JOBNAMES 3	Keep only 3 versions of each job matching the selection criteria.
PURGE AGE 365	Keep only archive data sets for jobs less than 365 days old.

Note that no job archival will take place and the REPEAT parm is not honored. Also, it is important to remember that job name is the only job attribute criteria available for PURGE operations.

It is HIGHLY recommended that you use the TRIALRUN parm to preview any major purge runs that you are considering.

Sample Bulk Archiver Runs

Archive all jobs whose names begin with "PAY" that are older than 90 days. Keep only 3 archive copies of each job that is archived during this run. Prevent re-archival of jobs by using the SETOFF line command to mark each job as "archived".

```
PREFIX  ADMIN.PAYROLL    (or PREFIX ADMIN, CATEGORY
PAYROLL)
SUFFIX  IOFJOB
ARCHOK   SETOFF 8
RETAIN JOBNAMES 3
JOBS
SELECT  JOBNAME  PAY*
SELECT AGE 90
EXCLUDE OFFLOADS CT 8
```

Archive all jobs whose names begin with "PAY" or PROD" that are owned by any user whose userid begins with "TECH". Also, archive only jobs that are larger than 10 JES2 track groups. After a successful archival, cancel each job. For each job that is archived, keep only archive copies that are less than a year old.

```
PREFIX  ADMIN
CATEGORY PAYROLL
SUFFIX  IOFJOB
ARCHOK CANCEL
RETAIN AGE 365
JOBS
SELECT  JOBNAME  PAY*    PROD*
SELECT  OWNER  TECH*
SELECT SIZE 10
```

To run either of the above samples and prevent the archival of any class X sysout data sets, add the following after the job selection statements:

```
SYSOUTS
EXCLUDE  CLASS  X
```

Similarly, to include only class Y sysouts:

```
SYSOUTS
SELECT CLASS Y
```

And, to include only the JES2 system data sets:

```
SYSOUTS
SELECT JESDS
```

Use the same selection criteria as above, but leave the archived jobs on the spool and prevent them from being re-archived by the same criteria. Also,

terse the z/OS archive data sets to reduce disk space consumption. Finally, repeat this archival process after waiting two minutes:

```
PREFIX   ADMIN
CATEGORY PAYROLL
SUFFIX   IOFJOB
ARCHOK   SETOFF 8
TERSE
REPEAT 120
JOBS
SELECT   JOBNAME  PAY*    PROD*
SELECT   OWNER  TECH*
SELECT SIZE 10
EXCLUDE   OFFLOADS CT 8
```

Make a trial run to see which archive data sets would be deleted by the purge selection parms below. Keep only 3 versions of all jobs with names beginning "PAY" or "PROD" whose archive data set names have a prefix of ADMIN, a category of PAYROLL, and a suffix of IOFJOB.

```
TRIALRUN
PREFIX   ADMIN
CATEGORY PAYROLL
SUFFIX   IOFJOB
PURGE   JOBNAMES  3
JOBS
SELECT   JOBNAME  PAY*    PROD*
```

Summary

The IOF/JAMS system is very simple because it requires no complex data base, proprietary data format, or specialized security protocols. A user is allowed to review or delete an archived job if they have the appropriate security system access to the archive data set for that job. The archive data sets can also be browsed directly with ISPF browse (after being untersed, if necessary).

Using IOF/JAMS, it is now easy for:

- Technical staff to set up bulk archival runs

- Technical staff to automatically manage the number of archived versions

- Individual users to archive their own jobs

- Users to review archived jobs

25. *Browsing, Printing, Emailing, and Copying z/OS Data Sets*

Use the **ZDS** command under ISPF, IOF, or TSO READY to invoke the ZDS interface menu.

```
------------------ Browse/Print/Email/Copy z/OS Data Sets ------------------
COMMAND ===>

        HELP  - More info     PRT - Print     SND - Email
        Blank - Browse        CPY - Copy      BRZ - Browse entire PDS

  Data Set Name ===>
                                    (PDS w/o member for member list)

  DD name       ===>                DD for concatenated PDS libraries
  Member        ===>                Browse first instance of this member

  Volume Serial ===>                Volume serial



  HFS file name ===>


Browsing data sets with carriage control:

  Condense      ===> NO             Yes - Ignore carriage spacing   (like ISPF)
                                    No  - Simulate carriage spacing (like IOF)
```

From this menu you can browse, print, email, or copy z/OS sequential or partitioned data sets. Press HELP for more detailed information about the ZDS functions.

In addition to the normal browse, print, and copy functions that you might expect, ZDS provides the following special features:

Browsing z/OS data sets with IOF browse

- Provides visual fidelity when browsing data sets with carriage control
- Browse an entire PDS as a flat file
- Use FIND ALL to display menu of "hits"
- Browse the first occurrence of a member in concatenated libraries

- Use IOF SNAP to print or copy selected portions of data set being browsed
- Use IOF Rexx execs to analyze data

Printing z/OS data sets

- Use your default IOF print attributes (same as SS command)
- Print an entire PDS, optionally including header pages with ISPF stats

Copying z/OS data sets to a sequential data set

- Copy sequential data sets with carriage control conversion
- Flatten PDS to a sequential data set, optionally including headers with ISPF stats
- Flatten PDS to a sequential data set, optionally including IEBUPDTE statements

Emailing z/OS data sets

- Optionally email data sets in html format
- Email an entire PDS, optionally including headers with ISPF stats
- Email an entire PDS, optionally including IEBUPDTE statements

26. Scanning Partitioned Data Sets with the ZF Command

The **ZF** command allows you to scan for occurrences of a string in one or more partitioned data sets. Enter the **ZF** primary command to display the ZF interface panel or use the **ZF** line command on ISPF data set list (like 3.4) just as you might use the **SF** line command.

```
----------------------- Scan Libraries using ZDS --------------------------
COMMAND ===>                                                SCROLL ===> CURSOR

Any parms valid on a FIND ALL command:
       Find All ===>

Fully qualified name without quotes (or select library from list below):
       Library  ===>

   S - Scan one or more libraries from the list below
   C - Copy library to prompt field (modify name to scan new library)
   D - Remove library from list

-------Action---Previously Searched Libraries--------------------------------
_    1
_    2
_    3
_    4
_    5
_    6
_    7
_    8
_    9
_   10
```

To specify the search string, enter a set of FIND parms in the "Find All" field. You can specify any set of parms that are valid on a **FIND ALL** command:

        Find All ===> BLARG 10 20

You can also specify the find parms on the ZF command:

        ZF BLARG 10 20 WORD

To specify the library (or libraries) to be searched, enter the library name in the "Library" field. All libraries specified here will then appear in the "Previously Searched Libraries" list at the bottom of the display.

For a library name appearing in the list of previously searched libraries, use the **S** line command to search that library. Or, you can specify its menu number as a primary command.

You can search multiple libraries for the same string by specifying multiple "S" line commands or multiple menu number in the command area.

Press **HELP** on the ZF interface panel for more information about its options and features.

You can also use the **ZF** line command on ISPF data set display (like 3.4) just as you might use the **SF** line command. However, you can specify any search parms that are valid on a **FIND ALL** command.

All occurrences of the search string in the library are displayed on a list panel:

```
---------------------- Scanning PDS: IOF.IOFT8G1.CLIST ----------------------
COMMAND ===>                                              SCROLL ===> CURSOR

        S - IOF Browse      V - ISPF View       E - ISPF Edit

        Find - Member name or text    Next - Next unique member

-------Member---Act-Record Text----------------------------------------------
_   65 IOF$ARC1     "tsicopy name(outgrp) section(group) to(rexx)"    /**/
_   66    "         'tsicopy name(help) to(rexx) section(panel)'   /**/      ...
_   67    "         'tsicopy name(intrface) to(rexx) from(session)'          ...
_   68    "         par#menu 'tsicopy name(ddname dskey) to(rexx)'           ...
_   69    "         '1 tsicopy name(outgrp) to(rexx)'  /**/                  ...
_   70    "         'tsicopy name(jobname jobid owner ran result dest xeqsid...
_   71    "         'tsicopy',                                               ...
_   72    "         'tsicopy',                                               ...
_   73    "         'tsicopy',                                               ...
_   74    "         'tsicopy',                                               ...
_   75    "         'tsicopy',                                               ...
_   76    "         'tsicopy',                                               ...
_   77    "         'tsicopy name(arc#cmd) from(dialog) to(rexx)'            ...
_   78    "         'tsicopy name(arc#cmd arc#help) from(dialog) to(rexx)'   ...
_   79    "         "TSICOPY name(shortmsg message) section(panel) to(rexx)"...
_   80    "         "TSICOPY NAME(SCRNCOLS) SECTION(PANEL) TO(REXX)"         ...
_   81    "         "tsicopy name(iofsmsg,ioflmsg) to(dialog) from(rexx)"    ...
_   82    "         "tsicopy name(ioflevel) from(session) to(rexx)"          ...
_   83    "         "tsicopy name(arc#cmd) from(dialog) to(rexx)"            ...
_   84    "         "tsicopy name("pvar") from(dialog) to(rexx)"             ...
_   85    "         "tsicopy name(iofsmsg,ioflmsg) to(dialog) from(rexx)"    ...
_   86    "         "tsicopy name(iofsmsg,ioflmsg) to(dialog) from(rexx)"    ...
_   87 IOF$ARS1     "tsicopy name(K0 K1 ROW0) from(temp) to(Rexx)"          ...
_   88    "         "tsicopy name(K2R"iii" ROW"iii") from(temp) to(rexx)"    ...
_   89    "         "tsicopy name(K3R"iii") from(temp) to(rexx)"  /**/       ...
_   90 IOF$AT1       "TSICOPY NAME(ZCMD) TO(REXX) FROM(DIALOG)"              ...
_   91    "          "TSICOPY NAME(ZVERB) FROM(DIALOG) TO(REXX)"             ...
_   92 IOF$AV1     "tsicopy name(help,section) to(rexx) section(panel)"      ...
_   93    "         "tsicopy name(help,section) to(dialog) from(rexx)"       ...
_   94    "            "tsicopy name(viewname) to(rexx) from(local)"         ...
_   95    "            "tsicopy name(@"section") to(rexx) from(profile)"     ...
_   96    "           "tsicopy name(viewname) to(rexx) from(local)"          ...
_   97 IOF$AX1      "TSICOPY NAME(HELP) TO(REXX) SECTION(PANEL)"             ...
_   98    "          menu "TSICOPY NAME(JOBNAME JOBID SYSID CPUTIME) TO(REX...
_   99    "          menu "TSICOPY NAME(NAME) TO(REXX) VARNAME(SYSID)"       ...
```

From this list you can nest to review a specific member using IOF Browse, ISPF view, or ISPF edit. Press **HELP** on this panel for information about its features.

IOF panels are organized into sections and fields. Section and field names are used as operands in the **EXCLUDE**, **UNEXCL**, **FIND**, **LOCATE**, **SORT**, **CUT**, **PASTE** and **ARRANGE** commands as well as in the clist **TSICOPY** command. Where possible, field names are identical to the field heading or title.

Use the **FIELD** command with the cursor pointed to any field on a panel to determine the field name of that field.

Every IOF panel has an associated **HELP** panel with an option to display the section and field names for every section on that panel. To determine field names, position to an IOF panel and press the **HELP** key (by default, the PF1 or PF13 key). Then, select the FORMAT option. Field titles, names and descriptions are shown.

Note that some of the fields listed are JES2 dependent and will be displayed only when running with the appropriate version of JES2. The description field indicates the appropriate level of JES2 for these special cases.