



z/OS Introduction and Workshop

Data Sets

Unit Objectives

After completing this unit, you should be able to:

- Describe data set naming rules
- Describe a partitioned data set
- Describe a sequential data set
- Describe a VSAM data set
- Describe a data set extent
- Describe role of the system catalog and user catalogs
- Describe role of VTOC
- Describe z/OS based Unix filesystems



What is a data set?

Commonly known as a file in unix or linux.

A data set is a collection of logically related data records stored on one disk storage volume or a set of volumes.

A data set can be:

- source program

- library of macros

- file of data records used by a processing program.

You can print a data set or display it on a terminal.

The logical record is the basic unit of information used by a program running on z/OS.



How data is stored in a z/OS system

Data is stored on a disk storage volume, magnetic tape, or optical media.

Programs and system utilities can store and retrieve records either directly or sequentially.

Programs and system utilities use disk volumes for storing data and executable programs, including the operating system itself, and for temporary working storage.

Program and system utilities can use one disk volume for many different data sets, and reallocate or reuse space on the volume.



Data management in z/OS

Data management involves all of the following tasks:

allocation, placement, monitoring, migration, backup, recall, recovery, and deletion.

Disk storage management is done either explicitly or through automated processes (or through a combination of both).

In z/OS, **DFSMS** (**Data Facility Storage Management Subsystem**) is a base component of the operating system and it can be used to automate storage management for data sets.



DASD: Use and terminology

Direct Access Storage Device (DASD) is another name for a disk volume.

DASD volumes are used for storing data and executable programs.

Data sets in a z/OS system are organized on DASD volumes.

A disk drive contains *cylinders*

Cylinders contain *tracks*

Tracks contain data *records*.



Data Sets – Common Types of z/OS Data Sets

Non-VSAM

SEQ	Sequential collection of records referenced by a single data set name
PDS	Partitioned Data Set (aka PO – Partitioned Organization) Consists of a directory and one or more member names
PDS/E	Partitioned Data Set Extended Consists of a directory and one or more member names Increased Functionality, Performance and Reduced Maintenance

VSAM

Increased efficiency and performance beyond non-VSAM

KSDS	Keyed Sequential Data Set
ESDS	Entry Sequential Data Set
RRDS	Relative Record Data Set
LDS	Linear Data Set



Data Set – Space Allocation

How space is specified:

explicitly (JCL, ALLOCATE, SVC99, IDCAMS)

implicitly (DFSMS – Automatic Class Selection, ACS routine)

Non VSAM Data Set characteristics:

Smallest amount of data to be processed is a *logical record*

Records can be grouped into *blocks*

VSAM Data Set characteristics:

Records are stored in *control intervals* (1 exception – LDS)

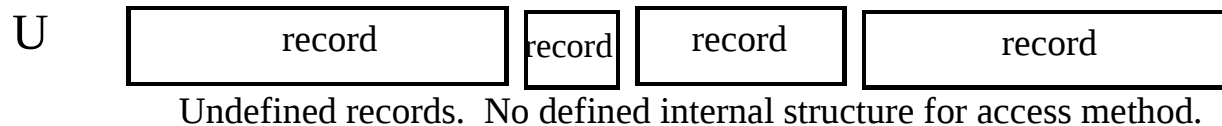
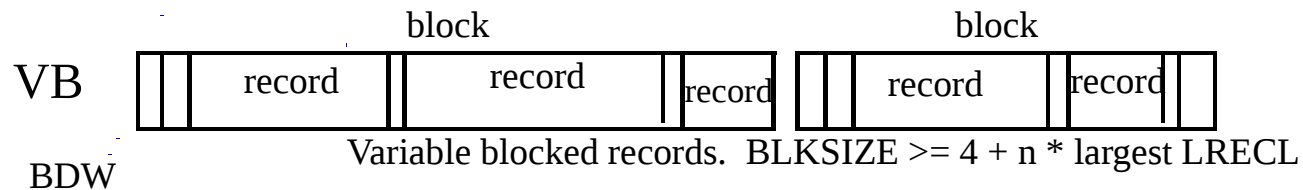
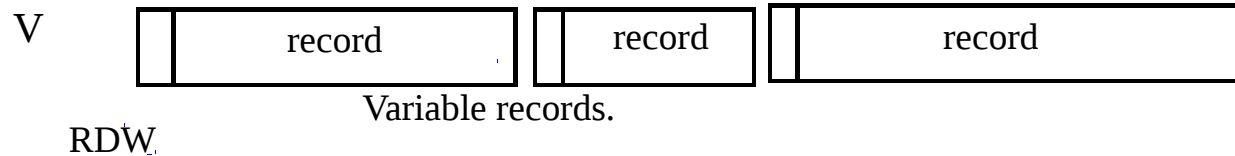
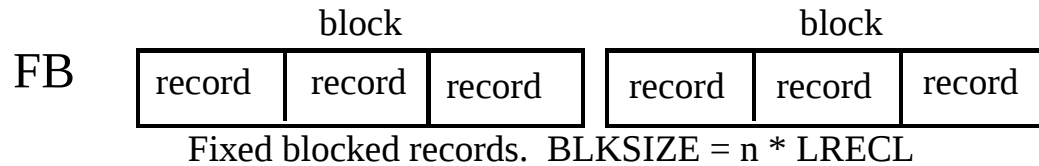
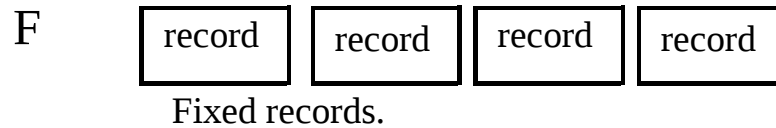
How Data Sets are Created on Disk Storage:

A Data Set is assigned disk space in chunks called *extents*

A *primary* extent is allocated when data set is created.

A *secondary* extent is created/allocated when primary extent is full

Data Set – (non VSAM) data storage attributes



Record and block descriptors words are each 4 bytes long



Data Set – PDS and PDS/E (non VSAM)

PDS data sets:

Simple and efficient way to organize related groups of sequential files.

PDS/E data sets:

Similar to a PDS, but advantages include:

- Space reclaimed automatically when a member is deleted

- Faster directory searches



Data Set Names - VSAM

VSAM data set is accessed by a VSAM virtual data set name called a 'cluster name'.

VSAM cluster name is associated with 1 or more physical data set names.

VSAM ESDS cluster includes a physical DATA component data set name.

VSAM KSDS cluster includes a physical DATA component data set name and a physical INDEX component data set name and optionally a physical ALTERNATE INDEX component



Data Set – VSAM Virtual Storage Access Method

VSAM data sets are formatted differently than non-VSAM data sets.

VSAM data sets are collections of records, grouped into control intervals (CI) with one exception (LDS Linear Data Sets)

The control interval (CI) is a fixed area of storage space in which VSAM stores records.

The control intervals are grouped into contiguous areas of storage called control areas (CA).

To access VSAM data sets, VSAM access method is used

Data Set – VSAM Virtual Storage Access Method

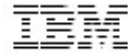
VSAM arranges records by either an 1) index key, or by a 2) relative byte address, or by a 3) relative record number.

The following are the different types of VSAM data sets:

- Key Sequence Data Set (KSDS)
- Entry Sequence Data Set (ESDS)
- Relative Record Data Set (RRDS)
- Linear Data Set (LDS)

A special system utility (**IDCAMS**) is used to define, delete, rename, and copy VSAM data sets.

How Data is Stored and Managed by VSAM

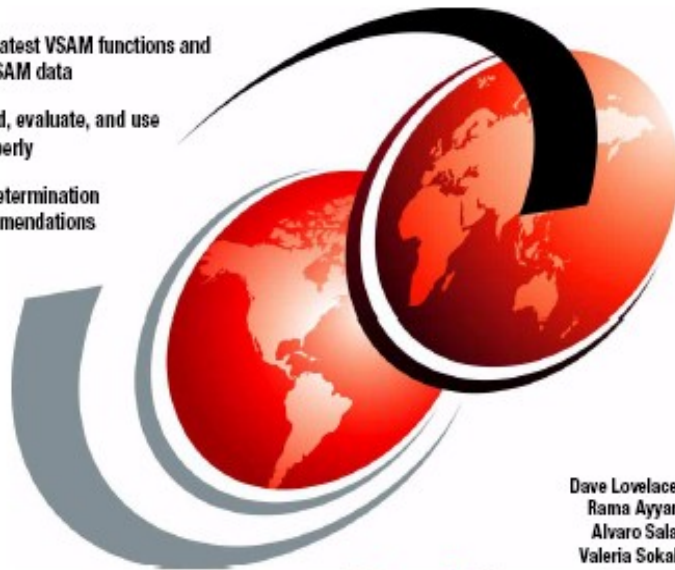


VSAM Demystified

Learn the latest VSAM functions and manage VSAM data

Understand, evaluate, and use VSAM properly

Problem determination and recommendations



Dave Lovelace
Rama Ayyar
Alvaro Sala
Valeria Sokal

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Data Set Names - (DSN)

Each cataloged data set must have an unique name

- Maximum **44** characters

Maximum of **22** name **segments**: level qualifier

- The first name in the left: high level qualifier (HLQ)
- The last name in the right: low level qualifier (LLQ)
- Level **qualifiers** are **separated by** a dot **'.'**

Each level qualifier:

- From 1 up to 8 characters
- The first must be alphabetical (A-Z) or special (@ # \$)
- The 7 remaining: alphabetical, national, numeric (0-9) or hyphen (-)
- Upper case only

Example: ZIBM000.JCL HLQ: ZIBM000 2 qualifiers

Data Set Names - Partitioned Data Set Member Names

Member name of partitioned data set (PDS)

8 characters long

First byte: uppercase alphabetical (A-Z) or special (@ # \$)

7 remaining: alphabetical, special, numeric (0-9)

Data Set Names

```

Lab System
File Edit View Communication Actions Window Help
-----
Menu Utilities Compilers Options Status Help
-----
Option ==> 3.4
ISPF Primary Option Menu
More: +
0 Settings Terminal and user parameters User ID . : ZIBM030
1 View Display source data or listings Time. . . : 13:43
2 Edit Create or change source data Terminal. : 3278
3 Utilities Perform utility functions Screen. . : 1
4 Foreground Interactive language processing Language. : ENGLISH
5 Batch Submit job for language processing Appl ID . : ISR
6 Command Enter TSO or Workstation commands TSO logon : SPFPROCE
7 Dialog Test Perform dialog testing TSO prefix: ZIBM030
8 LM Facility Library administrator functions System ID : S0W1
9 IBM Products IBM program development products MVS acct. : FB3
10 SCLM SW Configuration Library Manager Release . : ISPF 5.6
11 Workplace ISPF Object/Action Workplace

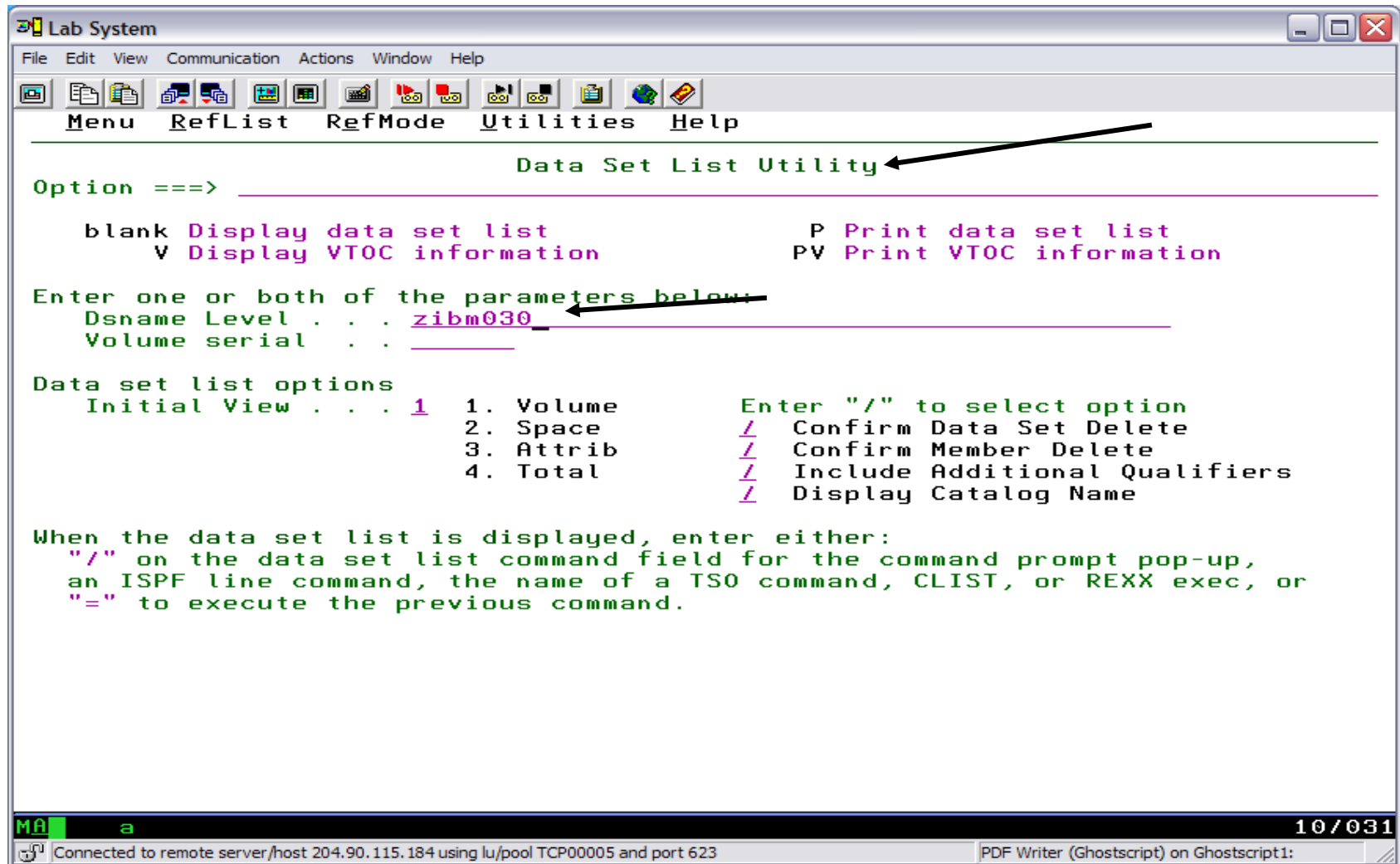
----- Other Install Products -----

SD SDSF System Display and Search Facility
IP IPCS Inter Problem Control Facility
IS ISMF Inter Storage Management Facility
SM SMP/E SMP/E and CBIPO Dialogs
HC HCD HW Configuration Definition Dialog
R RACF Resource Access Control Facility
S DFSORT Data Facility Sort
OE OEDIT OpenEdition MVS Edit files
OB OBROWSE OpenEdition MVS Browse files
OS OSHELL OpenEdition MVS ISPF Shell

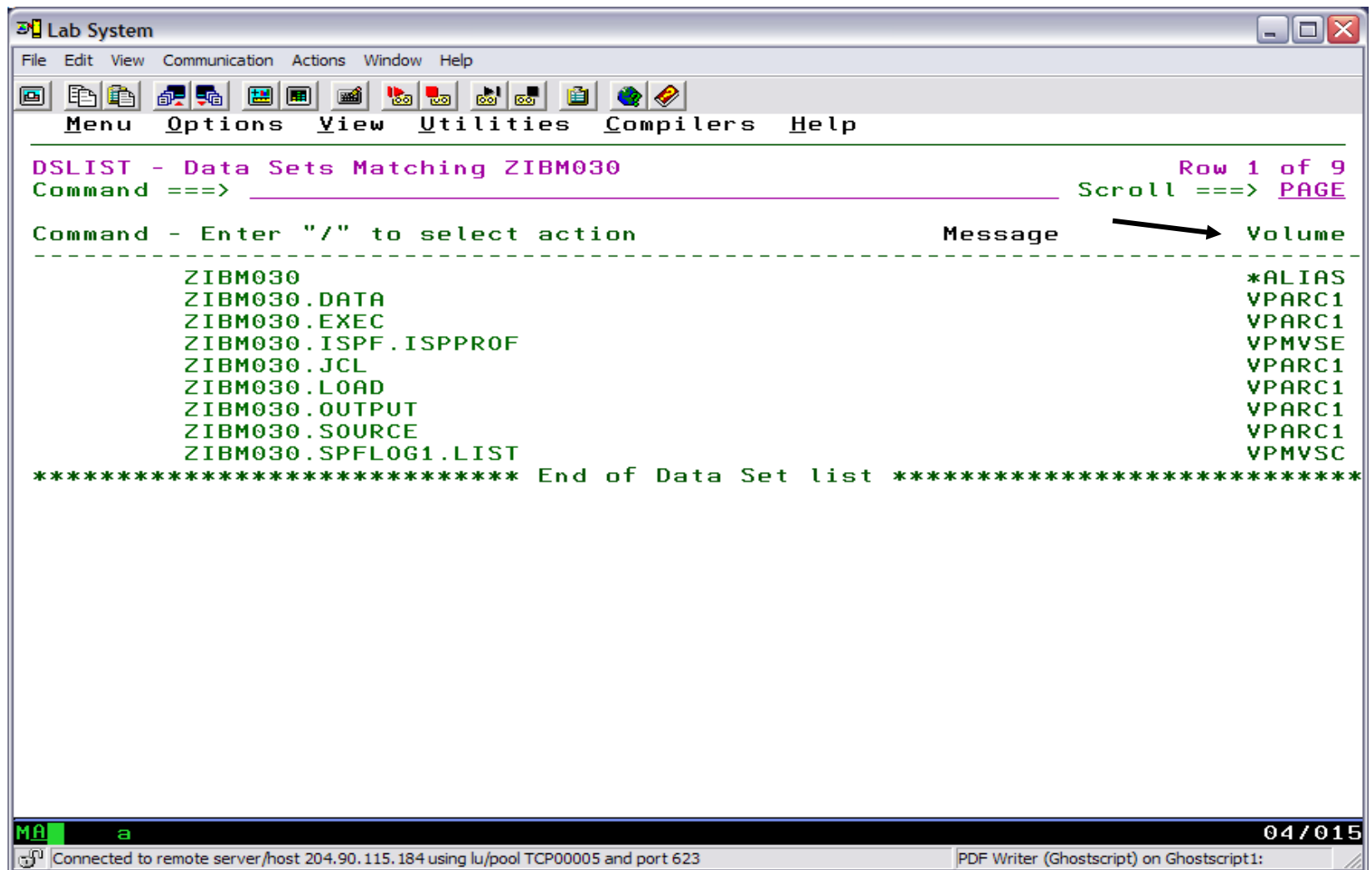
Enter X to Terminate using log/list defaults
MA a 04/017
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PDF Writer (Ghostscript) on Ghostscript1:

```

Data Set Names



Data Set Names



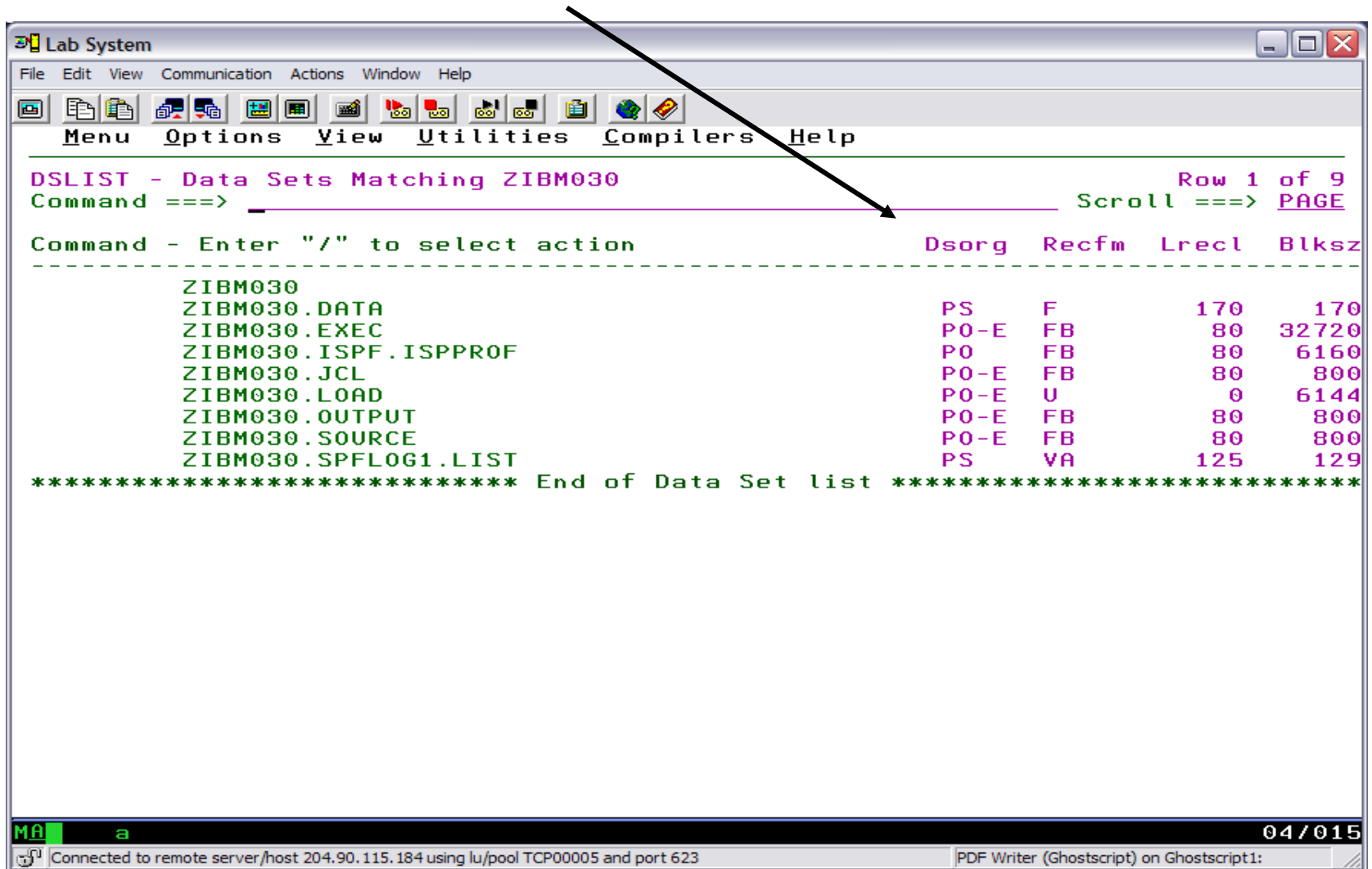
The screenshot shows a window titled "Lab System" with a menu bar (File, Edit, View, Communication, Actions, Window, Help) and a toolbar. Below the toolbar is a menu bar with "Menu", "Options", "View", "Utilities", "Compilers", and "Help". The main display area shows the following text:

```

DSLIST - Data Sets Matching ZIBM030
Command ==> _____ Scroll ==> PAGE
Command - Enter "/" to select action
-----
ZIBM030
ZIBM030.DATA
ZIBM030.EXEC
ZIBM030.ISPF.ISPPROF
ZIBM030.JCL
ZIBM030.LOAD
ZIBM030.OUTPUT
ZIBM030.SOURCE
ZIBM030.SPFL0G1.LIST
***** End of Data Set list *****
  
```

At the top right of the list, it says "Row 1 of 9". An arrow points from the "Message" column header to the "Volume" column header. The status bar at the bottom shows "MA a" on the left, "04/015" on the right, and "Connected to remote server/host 204.90.115.184 using lu/pool TCP00005 and port 623" in the center. A small box on the right says "PDF Writer (Ghostscript) on Ghostscript1:".

Data Set Names - Shift Right (F11)



Lab System

File Edit View Communication Actions Window Help

Menu Options View Utilities Compilers Help

DSLIST - Data Sets Matching ZIBM030 Row 1 of 9
 Command ==> Scroll ==> PAGE

Command - Enter "/" to select action

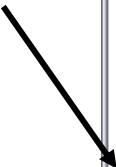
	Dsorg	Recfm	Lrecl	Blksz
ZIBM030				
ZIBM030.DATA	PS	F	170	170
ZIBM030.EXEC	P0-E	FB	80	32720
ZIBM030.ISPF.ISPPROF	P0	FB	80	6160
ZIBM030.JCL	P0-E	FB	80	800
ZIBM030.LOAD	P0-E	U	0	6144
ZIBM030.OUTPUT	P0-E	FB	80	800
ZIBM030.SOURCE	P0-E	FB	80	800
ZIBM030.SPFL0G1.LIST	PS	VA	125	129

***** End of Data Set list *****

MA a 04/015

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Data Set Names - Information



```

Lab System
File Edit View Communication Actions Window Help
Menu Options View Utilities Compilers Help

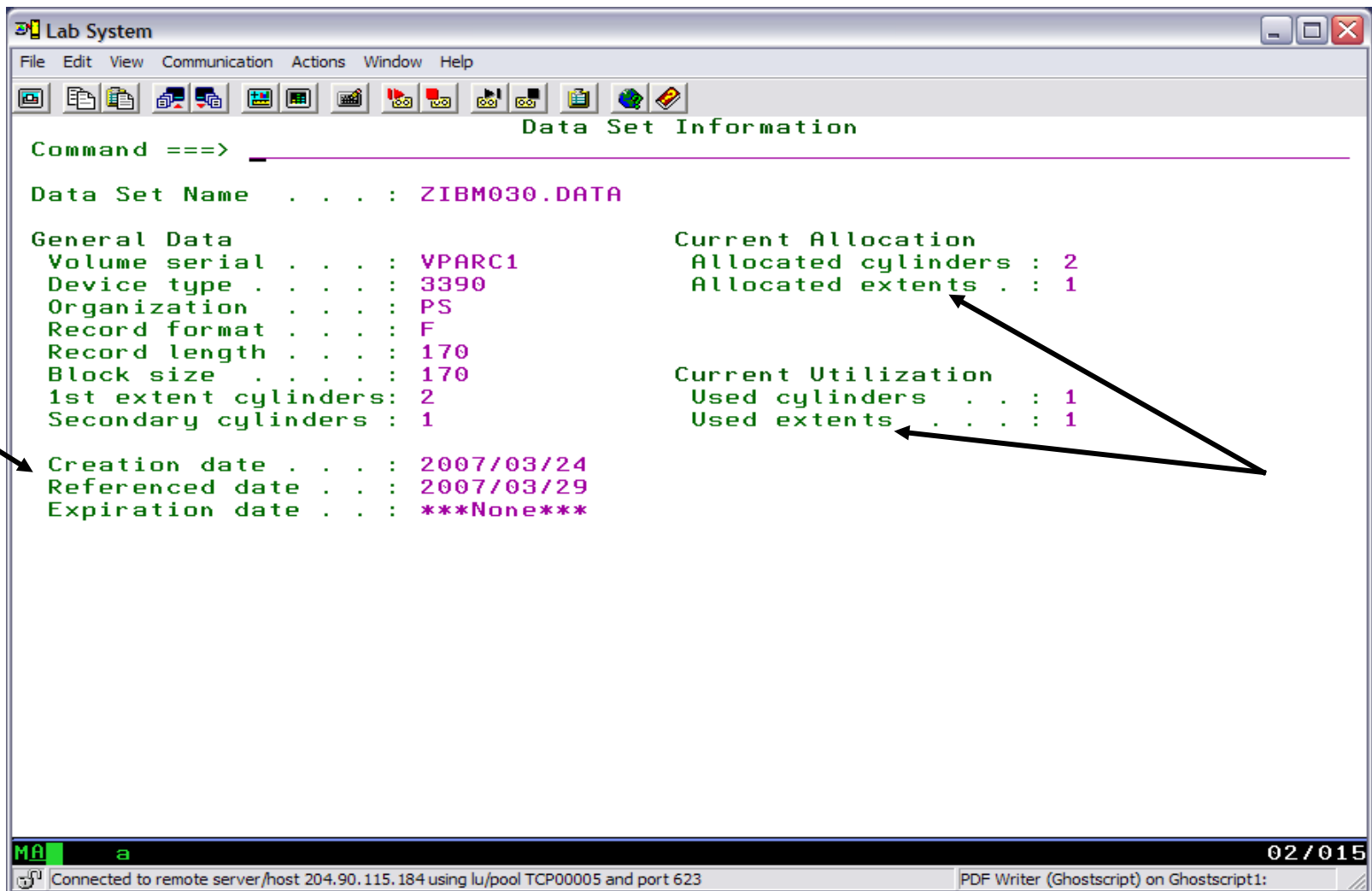
DSLIST - Data Sets Matching ZIBM030                      Row 1 of 9
Command ==> _____ Scroll ==> PAGE

Command - Enter "/" to select action                      Message                      Volume
-----
i_      ZIBM030                                           Info - I                      *ALIAS
        ZIBM030.DATA                                       VPARC1
        ZIBM030.EXEC                                       VPARC1
        ZIBM030.ISPF.ISPPROF                             VPMVSE
        ZIBM030.JCL                                        VPARC1
        ZIBM030.LOAD                                       VPARC1
        ZIBM030.OUTPUT                                    VPARC1
        ZIBM030.SOURCE                                    VPARC1
        ZIBM030.SPFL0G1.LIST                             VPMVSC
***** End of Data Set list *****

MA a 09/003
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```

Data Set Names - Information



```

Lab System
File Edit View Communication Actions Window Help

Data Set Information

Command ==> _____

Data Set Name . . . : ZIBM030.DATA

General Data
Volume serial . . . : VPARC1
Device type . . . . : 3390
Organization . . . . : PS
Record format . . . . : F
Record length . . . . : 170
Block size . . . . . : 170
1st extent cylinders: 2
Secondary cylinders : 1

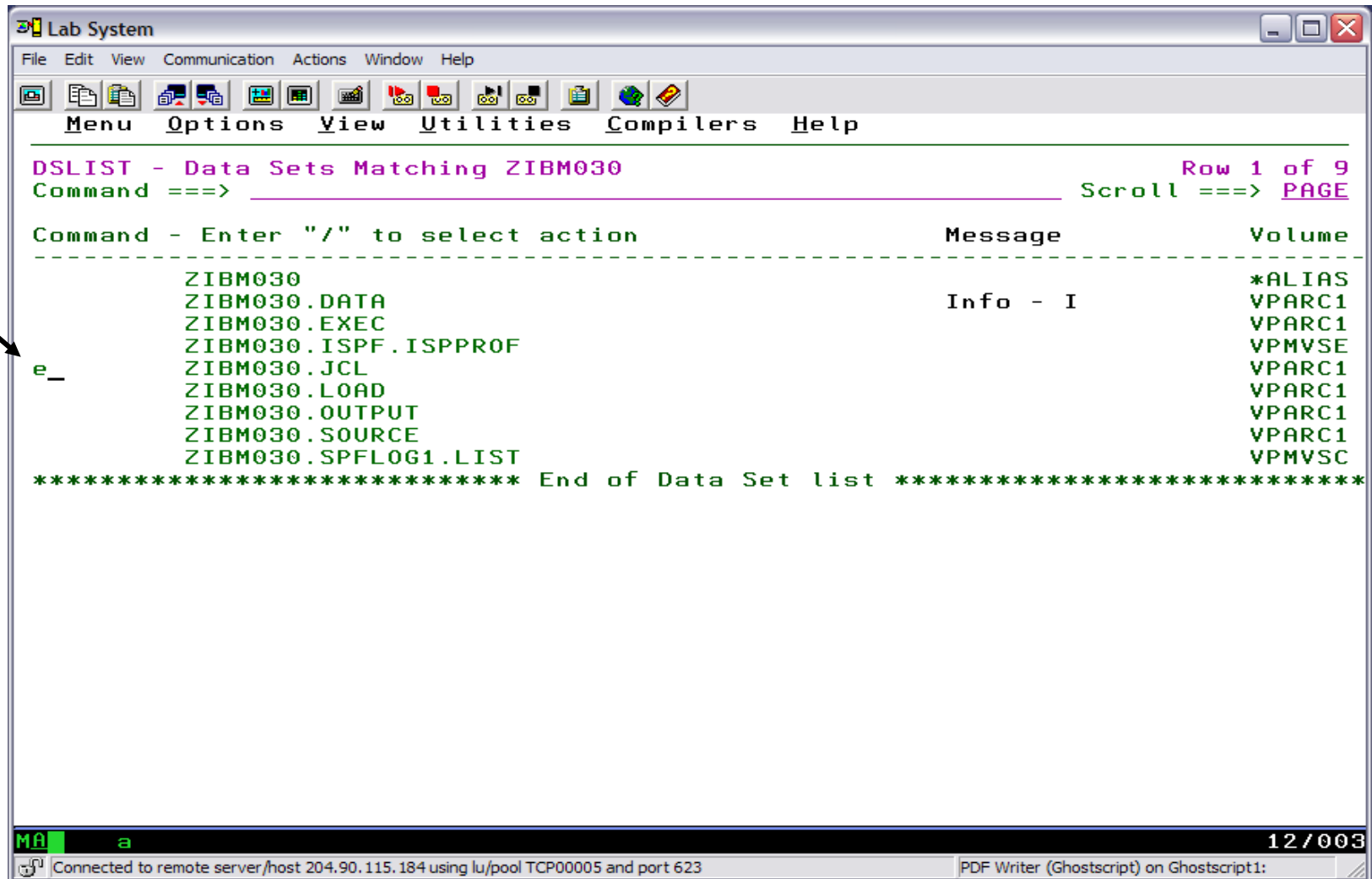
Current Allocation
Allocated cylinders : 2
Allocated extents . : 1

Current Utilization
Used cylinders . . . : 1
Used extents . . . . : 1

Creation date . . . . : 2007/03/24
Referenced date . . . : 2007/03/29
Expiration date . . . : ***None***

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PDF Writer (Ghostscript) on Ghostscript1:
  
```

Data Set Names – Edit a Partitioned Data Set



Lab System

File Edit View Communication Actions Window Help

Menu Options View Utilities Compilers Help

DSLIST - Data Sets Matching ZIBM030 Row 1 of 9
 Command ==> Scroll ==> PAGE

Command - Enter "/" to select action	Message	Volume
ZIBM030		*ALIAS
ZIBM030.DATA	Info - I	VPARC1
ZIBM030.EXEC		VPARC1
ZIBM030.ISPF.ISPPROF		VPMVSE
ZIBM030.JCL		VPARC1
ZIBM030.LOAD		VPARC1
ZIBM030.OUTPUT		VPARC1
ZIBM030.SOURCE		VPARC1
ZIBM030.SPFL0G1.LIST		VPMVSC

***** End of Data Set list *****

MA a 12/003

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Data Set Names – PDS members

Lab System

File Edit View Communication Actions Window Help

Menu Functions Confirm Utilities Help

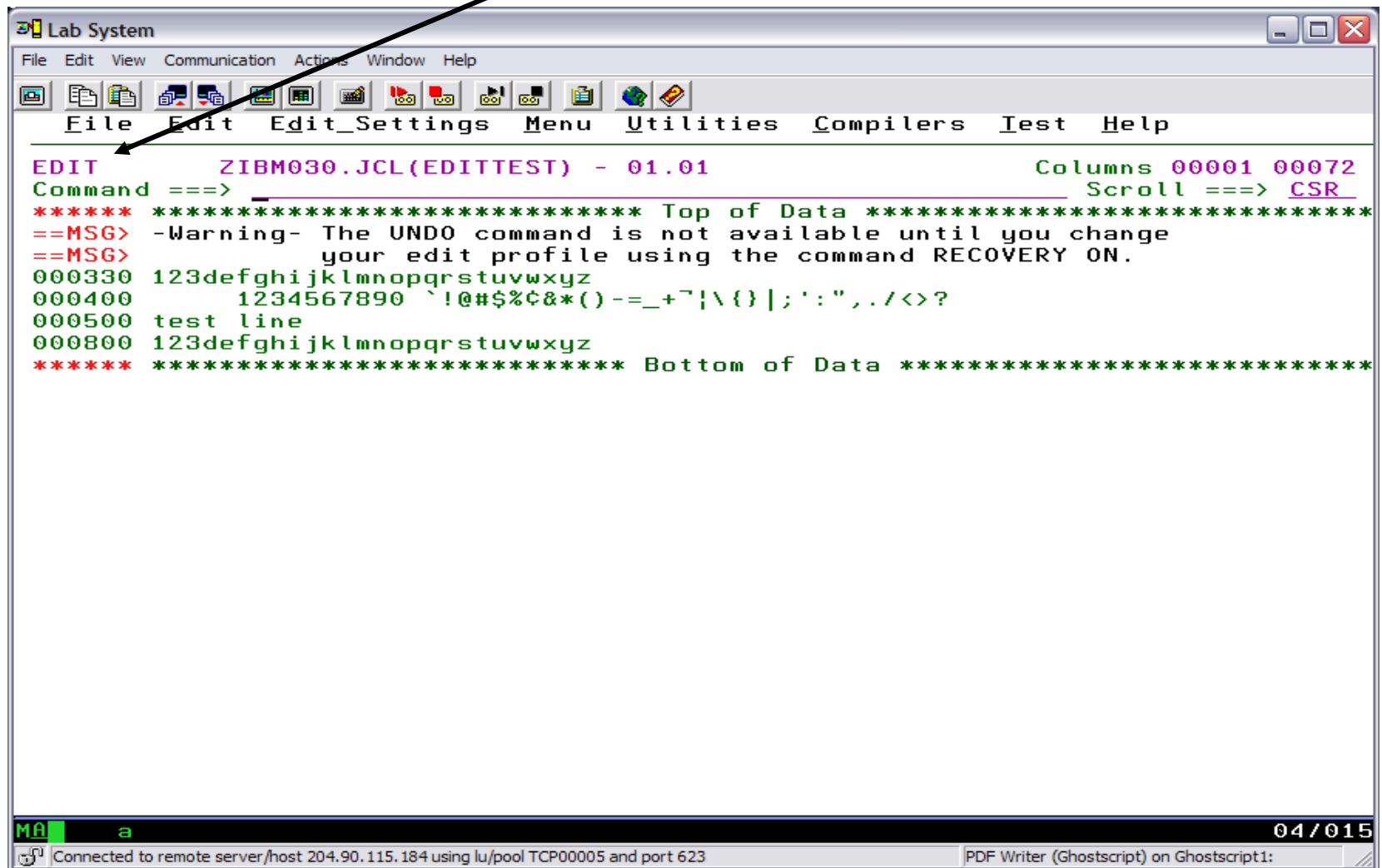
EDIT ZIBM030.JCL Row 00001 of 00023
Command ==> Scroll ==> PAGE

Name	Prompt	Size	Created	Changed	ID
\$README		118	2007/03/24	2007/03/24 17:29:51	IBMUUSER
ALLOC		5	2007/03/24	2007/03/24 17:30:12	IBMUUSER
ASMRUN					
CBL0001J					
CBL0002J					
CBL0003J					
CBL0004J					
CBL0005J					
CBL0006J					
COBOLCL					
COBRUN					
CRUN					
DB2TBLS					
DEFVSAM		16	2007/03/24	2007/03/24 17:32:05	IBMUUSER
EDITTEST		4	2007/04/09	2007/04/09 14:34:54	ZIBM030
LOG1		20	2007/03/24	2007/03/24 17:32:25	IBMUUSER
LOG2					
LOG3		17	2007/03/24	2007/03/24 17:33:03	IBMUUSER
LOG4					
NETRPT		14	2007/03/24	2007/03/24 17:33:53	IBMUUSER
SENDMSG		6	2007/03/24	2007/03/24 17:34:18	IBMUUSER
SQL		35	2007/03/24	2007/03/24 17:34:34	IBMUUSER
SQLJOB					
End					

MA a 20/003

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Data Set Names – Edit mode



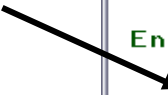
```

Lab System
File Edit View Communication Actions Window Help
File Edit Edit_Settings Menu Utilities Compilers Test Help

EDIT          ZIBM030.JCL(EDITTEST) - 01.01          Columns 00001 00072
Command ==>    Scroll ==> CSR
***** ***** Top of Data *****
==MSG> -Warning- The UNDO command is not available until you change
==MSG>         your edit profile using the command RECOVERY ON.
000330 123defghijklmnopqrstuvwxyz
000400      1234567890 `!@#$%&*()-=+_~\|{}|;':",./<>?
000500 test line
000800 123defghijklmnopqrstuvwxyz
***** ***** Bottom of Data *****

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PDF Writer (Ghostscript) on Ghostscript1:
  
```

Data Set Names – Disk Volume View



```

Lab System
File Edit View Communication Actions Window Help
Menu RefList RefMode Utilities Help

Data Set List Utility

Option ==>

blank Display data set list          P Print data set list
V Display VTOC information            PV Print VTOC information

Enter one or both of the parameters below:
Dsname Level . . .
Volume serial . . vparc1

Data set list options
Initial View . . . 1  1. Volume      Enter "/" to select option
                     2. Space        / Confirm Data Set Delete
                     3. Attrib       / Confirm Member Delete
                     4. Total        / Include Additional Qualifiers
                                   / Display Catalog Name

When the data set list is displayed, enter either:
"/" on the data set list command field for the command prompt pop-up,
an ISPF line command, the name of a TSO command, CLIST, or REXX exec, or
"=" to execute the previous command.

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```



Data Set Names – Disk Volume View

Lab System

File Edit View Communication Actions Window Help

Menu Options View Utilities Compilers Help

DSLIST - Data Sets on volume VPARC1

Command ==> _____

Row 1 of 181
Scroll ==> PAGE

Command - Enter "/" to select action

Message

Volume

ACCOUNTS.DSNDBD.ACCOUNTS.ACCTTS.I0001.A001	VPARC1
ACCOUNTS.DSNDBD.ACCOUNTS.XCLIENT.I0001.A001	VPARC1
COUPLE.ATR.SVSCPLEX.ARCHIVE.A0000000.D	VPARC1
COUPLE.ATR.SVSCPLEX.DELAYED.UR.A0000000.D	VPARC1
COUPLE.ATR.SVSCPLEX.RESTART.A0000000.D	VPARC1
COUPLE.ATR.SVSCPLEX.RESTART.SVSCPLEX.D	VPARC1
COUPLE.ATR.SVSCPLEX.RM.D	VPARC1
DB2CHECK.WORK	VPARC1
IBMUSER.DDIR.D	VPARC1
IBMUSER.DDIR.I	VPARC1
IBMUSER.ISPF.ISPPROF	VPARC1
SYS1.VT0CIX.VPARC1	VPARC1
SYS1.VVDS.VVPARC1	VPARC1
ZIBM001.D	VPARC1
ZIBM001.JCL	VPARC1
ZIBM001.LOAD	VPARC1
ZIBM001.OUTPUT	VPARC1
ZIBM001.SOURCE	VPARC1
ZIBM002.D	VPARC1
ZIBM002.JCL	VPARC1
ZIBM002.LOAD	VPARC1
ZIBM002.OUTPUT	VPARC1
ZIBM002.SOURCE	VPARC1
ZIBM003.D	VPARC1
ZIBM003.ISPF.ISPPROF	VPARC1

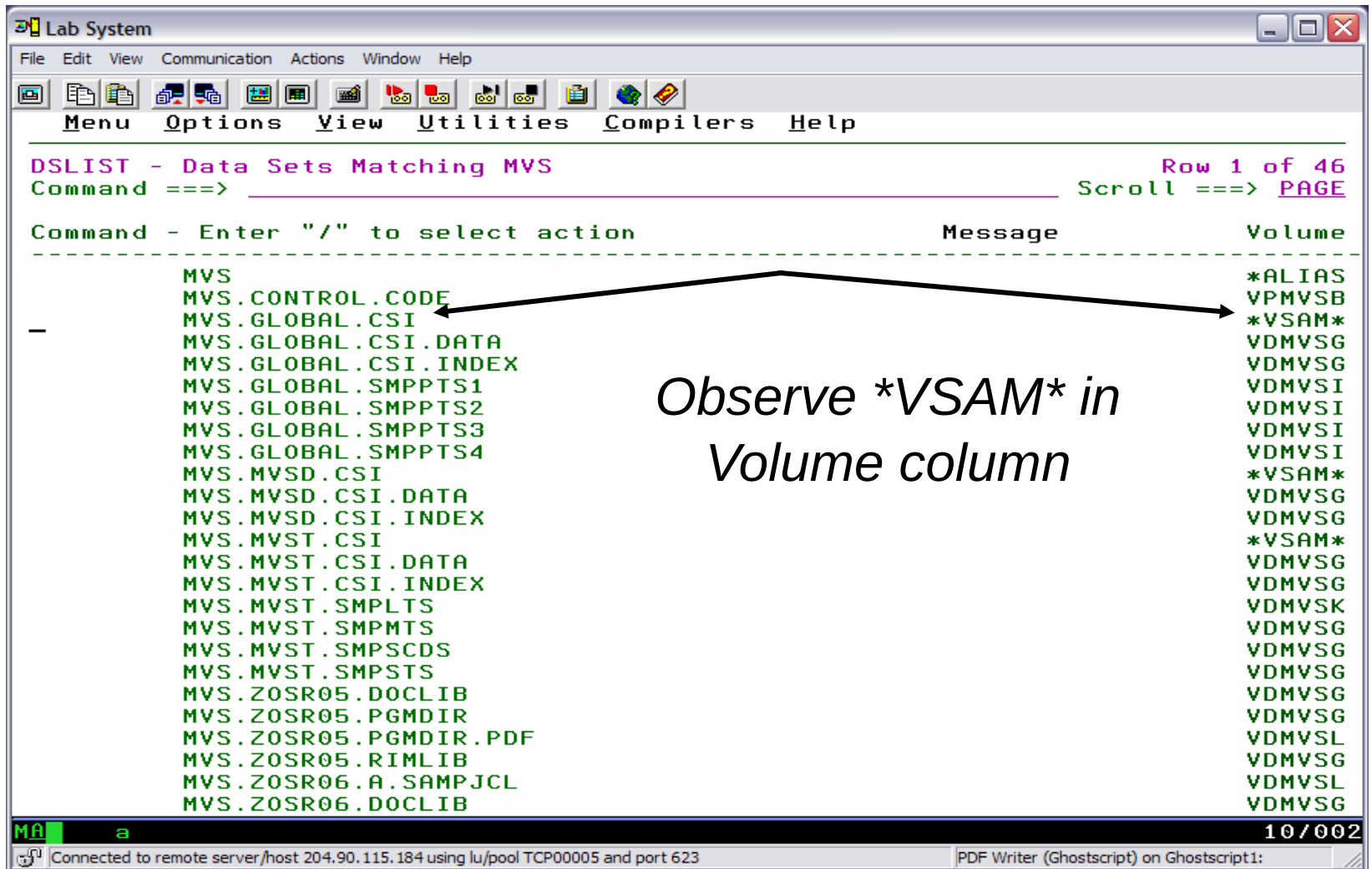
MA a

04/015

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PDF Writer (Ghostscript) on Ghostscript1:

Data Set Names – DSLIST output



Lab System

File Edit View Communication Actions Window Help

Menu Options View Utilities Compilers Help

DSLIST - Data Sets Matching MVS Row 1 of 46
 Command ==> Scroll ==> PAGE

Command - Enter "/" to select action Message Volume

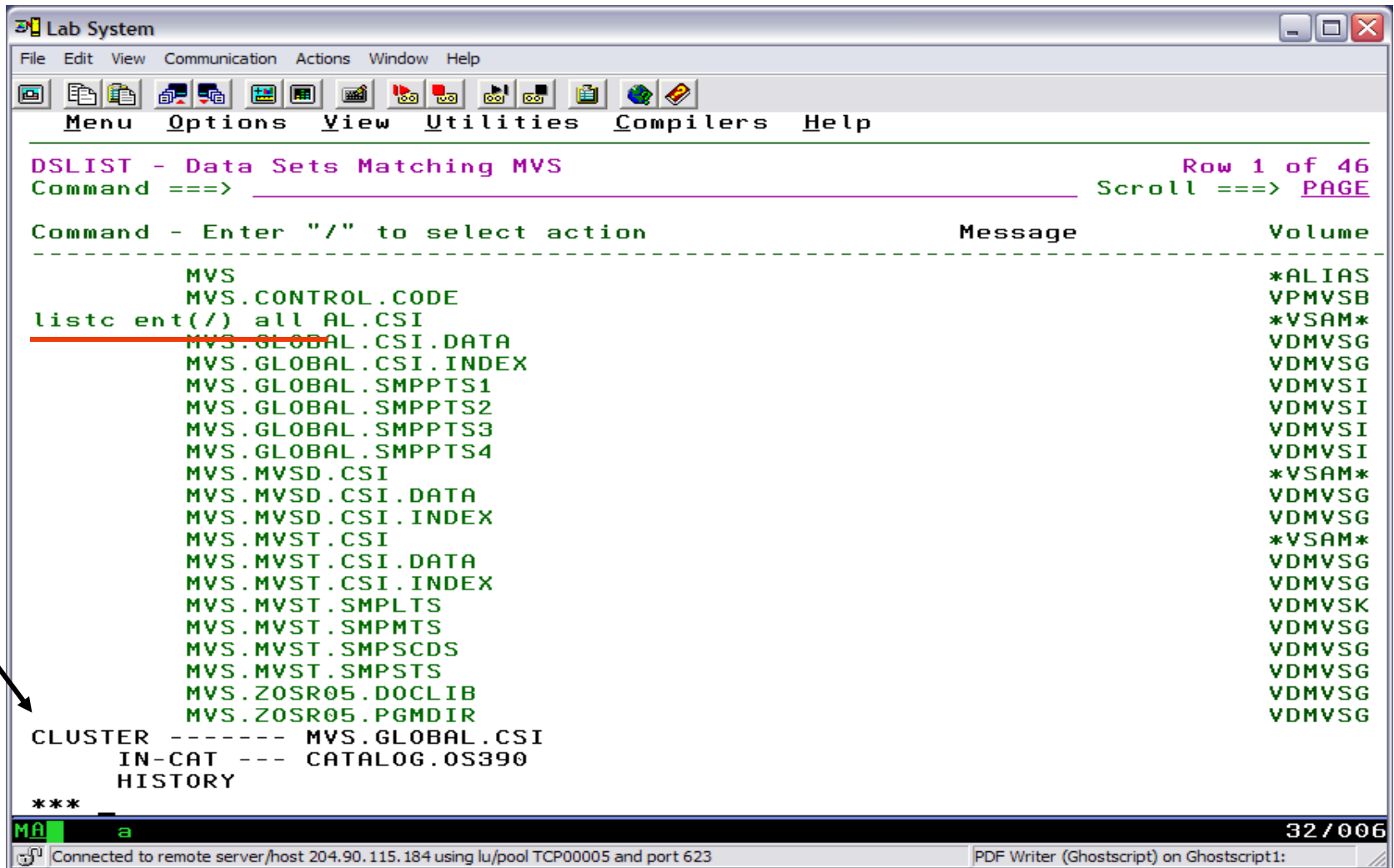
Command	Message	Volume
MVS		*ALIAS
MVS.CONTROL.CODE		VPMVSB
MVS.GLOBAL.CSI		*VSAM*
MVS.GLOBAL.CSI.DATA		VDMVSG
MVS.GLOBAL.CSI.INDEX		VDMVSG
MVS.GLOBAL.SMPPTS1		VDMVSI
MVS.GLOBAL.SMPPTS2		VDMVSI
MVS.GLOBAL.SMPPTS3		VDMVSI
MVS.GLOBAL.SMPPTS4		VDMVSI
MVS.MVSD.CSI		*VSAM*
MVS.MVSD.CSI.DATA		VDMVSG
MVS.MVSD.CSI.INDEX		VDMVSG
MVS.MVST.CSI		*VSAM*
MVS.MVST.CSI.DATA		VDMVSG
MVS.MVST.CSI.INDEX		VDMVSG
MVS.MVST.SMPLTS		VDMVSK
MVS.MVST.SMPMTS		VDMVSG
MVS.MVST.SMPSCDS		VDMVSG
MVS.MVST.SMPSTS		VDMVSG
MVS.ZOSR05.DOCLIB		VDMVSG
MVS.ZOSR05.PGMDIR		VDMVSG
MVS.ZOSR05.PGMDIR.PDF		VDMVSL
MVS.ZOSR05.RIMLIB		VDMVSG
MVS.ZOSR06.A.SAMPJCL		VDMVSL
MVS.ZOSR06.DOCLIB		VDMVSG

MA a 10/002

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Observe *VSAM* in Volume column

Data Set Names – LIST Catalog Entry (LISTC ENT)



Lab System

File Edit View Communication Actions Window Help

Menu Options View Utilities Compilers Help

DSLIS - Data Sets Matching MVS Row 1 of 46
 Command ==> Scroll ==> PAGE

Command - Enter "/" to select action Message Volume

```

MVS
MVS.CONTROL.CODE
listc ent(/) all AL.CSI
MVS.GLOBAL.CSI.DATA
MVS.GLOBAL.CSI.INDEX
MVS.GLOBAL.SMPPTS1
MVS.GLOBAL.SMPPTS2
MVS.GLOBAL.SMPPTS3
MVS.GLOBAL.SMPPTS4
MVS.MVSD.CSI
MVS.MVSD.CSI.DATA
MVS.MVSD.CSI.INDEX
MVS.MVST.CSI
MVS.MVST.CSI.DATA
MVS.MVST.CSI.INDEX
MVS.MVST.SMPPTS
MVS.MVST.SMPPTS
MVS.MVST.SMPSCDS
MVS.MVST.SMPSTS
MVS.ZOSR05.DOCLIB
MVS.ZOSR05.PGMDIR
CLUSTER ----- MVS.GLOBAL.CSI
IN-CAT --- CATALOG.OS390
HISTORY
***

```

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Data Set Names – VSAM Information

```

Lab System
File Edit View Communication Actions Window Help

DATASET-OWNER----- (NULL)      CREATION-----2006.136
RELEASE-----2      EXPIRATION-----0000.000
BWO STATUS----- (NULL)      BWO TIMESTAMP----- (NULL)
BWO----- (NULL)
PROTECTION-PSWD----- (NULL)      RACF----- (NO)
ASSOCIATIONS
  DATA-----MVS.GLOBAL.CSI.DATA
  INDEX-----MVS.GLOBAL.CSI.INDEX
DATA ----- MVS.GLOBAL.CSI.DATA
IN-CAT --- CATALOG.OS390
HISTORY
  DATASET-OWNER----- (NULL)      CREATION-----2006.136
  RELEASE-----2      EXPIRATION-----0000.000
  ACCOUNT-INFO----- (NULL)
  PROTECTION-PSWD----- (NULL)      RACF----- (NO)
  ASSOCIATIONS
    CLUSTER--MVS.GLOBAL.CSI
  ATTRIBUTES
    KEYLEN-----24      AVGLRECL-----24      BUFSPACE-----
-----20480      CFSIZE-----8192
    RKP-----0      MAXLRECL-----143      EXCPEXIT-----
---- (NULL)      CI/CA-----90
    SHROPTNS(2,3)      RECOVERY      UNIQUE      NOERASE      INDEXED
NOWRITECHK      NOIMBED      NOREPLICAT
UNORDERED      NOREUSE      NONSPANNED
STATISTICS (* - VALUE MAY BE INCORRECT)
REC-TOTAL-----19197*      SPLITS-CI-----2734*      EXCPS-----
----202391*
REC-DELETED-----350645*      SPLITS-CA-----28*      EXTENTS-----
-----1
REC-INSERTED-----361608*      FREESPACE-%CI-----10      SYSTEM-TIMESTA

***
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PDF Writer (Ghostscript) on Ghostscript1:

```

Data Set Names – VSAM Information

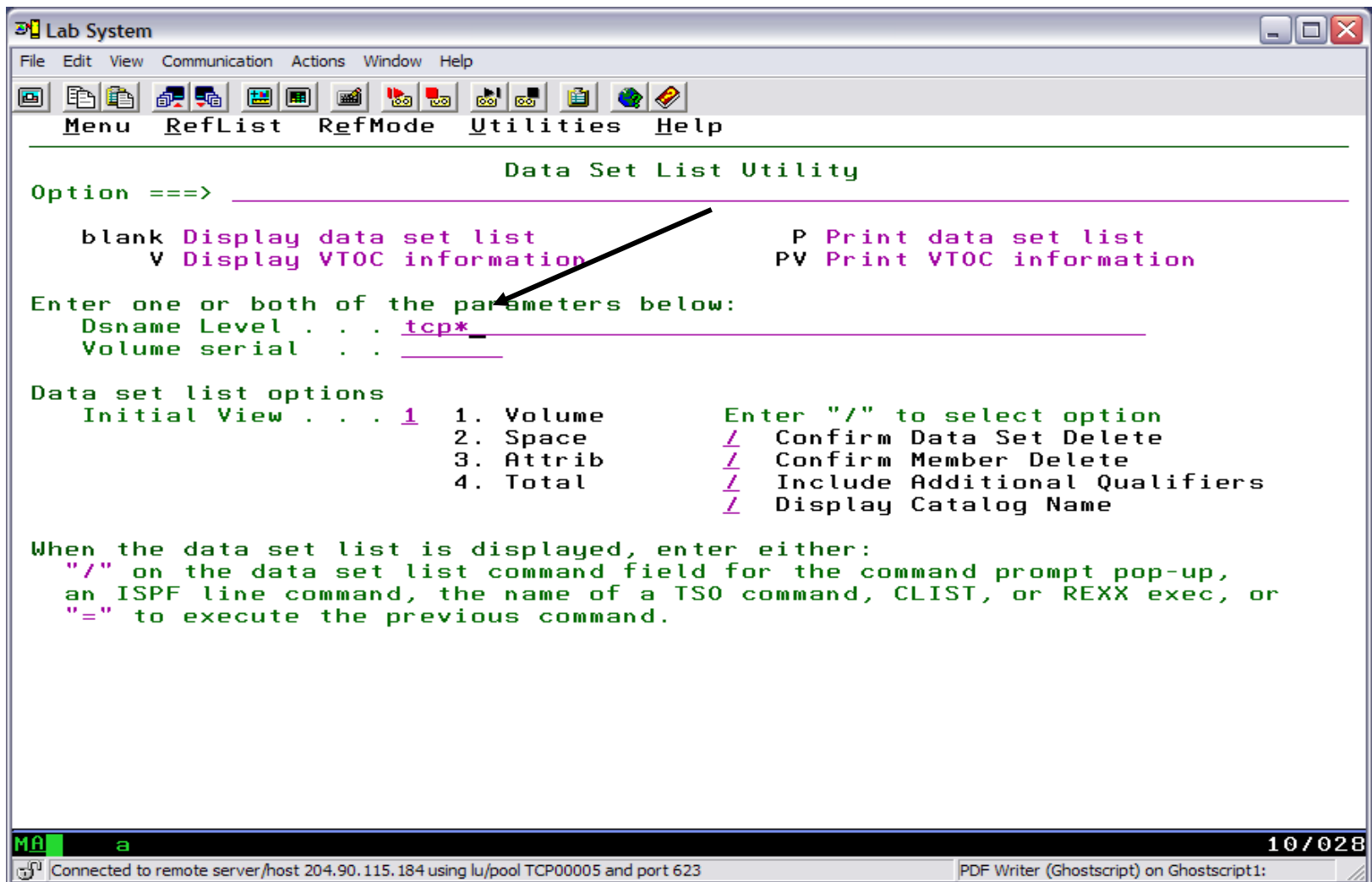
```

Lab System
File Edit View Communication Actions Window Help

MP:
REC-UPDATED-----0*      FREESPACE-%CA-----5      X'C06D366
A06B1A003'
REC-RETRIEVED---14112505*  FREESPC-----45031424*
ALLOCATION
SPACE-TYPE-----CYLINDER  HI-A-RBA-----48660480
SPACE-PRI-----66        HI-U-RBA-----21381120
SPACE-SEC-----5
VOLUME
VOLSER-----VDMVSG        PHYREC-SIZE-----8192      HI-A-RBA-----
--48660480  EXTENT-NUMBER-----1
DEVTYPE-----X'3010200F'  PHYRECS/TRK-----6      HI-U-RBA-----
--21381120  EXTENT-TYPE-----X'00'
VOLFLAG-----PRIME        TRACKS/CA-----15
EXTENTS:
LOW-CCHH-----X'00EE0000'  LOW-RBA-----0          TRACKS-----
-----990
HIGH-CCHH-----X'012F000E'  HIGH-RBA-----48660479
INDEX -----MVS.GLOBAL.CSI.INDEX
IN-CAT --- CATALOG.OS390
HISTORY
DATASET-OWNER----- (NULL)  CREATION-----2006.136
RELEASE-----2          EXPIRATION-----0000.000
PROTECTION-PSWD----- (NULL)  RACF----- (NO)
ASSOCIATIONS
CLUSTER--MVS.GLOBAL.CSI
ATTRIBUTES
KEYLEN-----24          AVGLRECL-----0          BUFSPACE-----
-----0  CFSIZE-----4096
RKP-----0          MAXLRECL-----4089      EXCPEXIT-----
---- (NULL)  CI/CA-----12
***
MA  a  32/006
Connected to remote server/host 204.90.115.184 using lu/pool TCP00005 and port 623
PDF Writer (Ghostscript) on Ghostscript1:

```


Data Set Names – DSLIST wildcards



```

Lab System
File Edit View Communication Actions Window Help
Menu RefList RefMode Utilities Help

Data Set List Utility

Option ==>
blank Display data set list          P Print data set list
V Display VTOC information          PV Print VTOC information

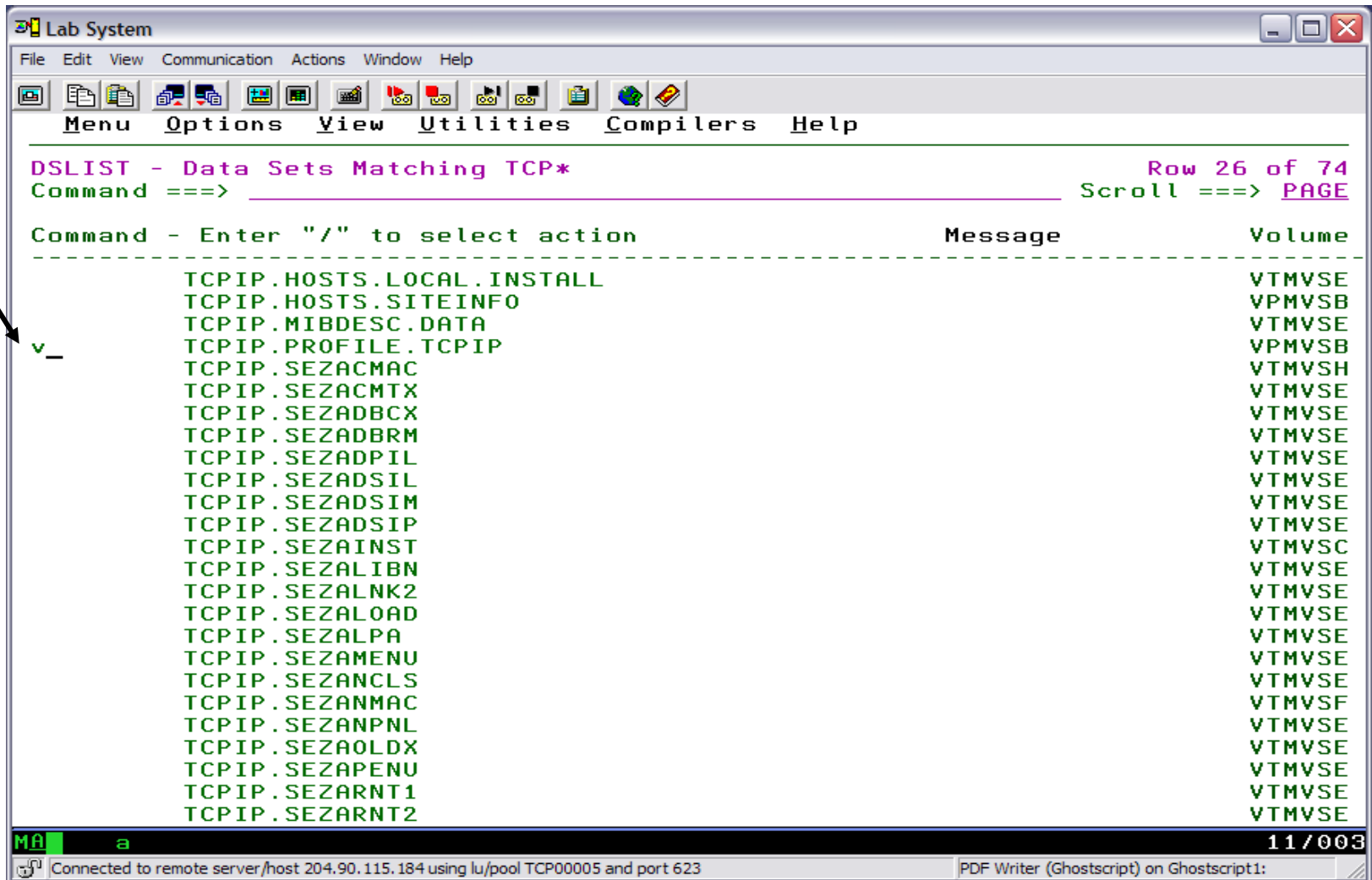
Enter one or both of the parameters below:
Dsname Level . . . tcp*
Volume serial . . .

Data set list options
Initial View . . . 1  1. Volume
                    2. Space
                    3. Attrib
                    4. Total
Enter "/" to select option
/ Confirm Data Set Delete
/ Confirm Member Delete
/ Include Additional Qualifiers
/ Display Catalog Name

When the data set list is displayed, enter either:
"/" on the data set list command field for the command prompt pop-up,
an ISPF line command, the name of a TSO command, CLIST, or REXX exec, or
"=" to execute the previous command.

MA a
10/028
Connected to remote server/host 204.90.115.184 using lu/pool TCP00005 and port 623
PDF Writer (Ghostscript) on Ghostscript1:
  
```

Data Set Names – View mode



Lab System

File Edit View Communication Actions Window Help

Menu Options View Utilities Compilers Help

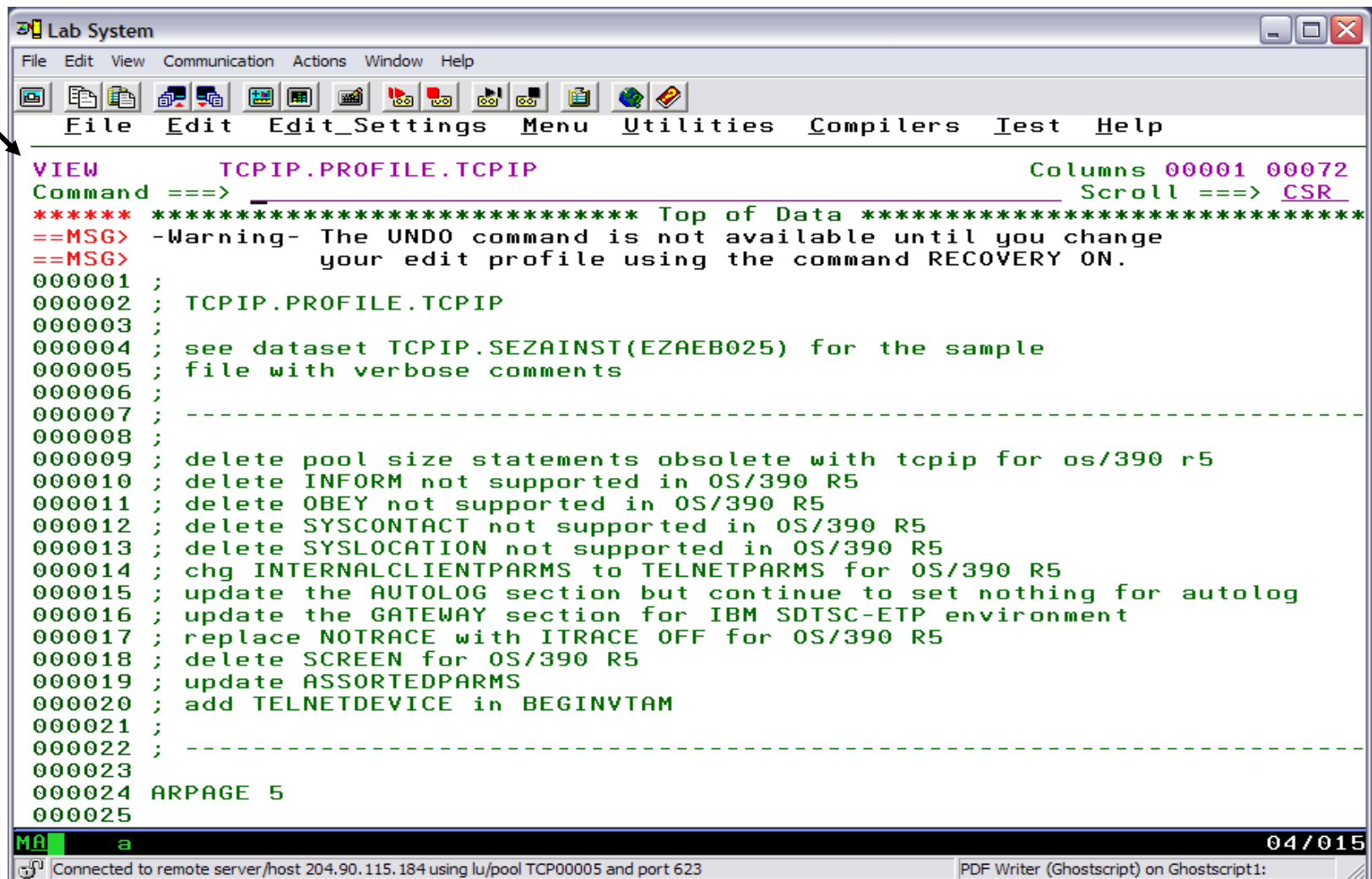
DSLIST - Data Sets Matching TCP* Row 26 of 74
 Command ==> Scroll ==> PAGE

Command - Enter "/" to select action	Message	Volume
TCPIP.HOSTS.LOCAL.INSTALL		VTMVSE
TCPIP.HOSTS.SITEINFO		VPMVSB
TCPIP.MIBDESC.DATA		VTMVSE
TCPIP.PROFILE.TCPIP		VPMVSB
TCPIP.SEZACMAC		VTMVSH
TCPIP.SEZACMTX		VTMVSE
TCPIP.SEZADBCX		VTMVSE
TCPIP.SEZADBRM		VTMVSE
TCPIP.SEZADPIL		VTMVSE
TCPIP.SEZADSIL		VTMVSE
TCPIP.SEZADSIM		VTMVSE
TCPIP.SEZADSIP		VTMVSE
TCPIP.SEZAINST		VTMVSC
TCPIP.SEZALIBN		VTMVSE
TCPIP.SEZALNK2		VTMVSE
TCPIP.SEZALOAD		VTMVSE
TCPIP.SEZALPA		VTMVSE
TCPIP.SEZAMENU		VTMVSE
TCPIP.SEZANCLS		VTMVSE
TCPIP.SEZANMAC		VTMVSE
TCPIP.SEZANPNL		VTMVSE
TCPIP.SEZAOLDX		VTMVSE
TCPIP.SEZAPENU		VTMVSE
TCPIP.SEZARNT1		VTMVSE
TCPIP.SEZARNT2		VTMVSE

MA a 11/003

Connected to remote server /host 204.90.115.184 using lu/pool TCP00005 and port 623 PDF Writer (Ghostscript) on Ghostscript1:

Data Set Names – View mode



```

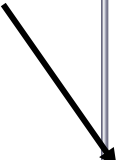
Lab System
File Edit View Communication Actions Window Help
File Edit Edit_Settings Menu Utilities Compilers Test Help

VIEW          TCPIP.PROFILE.TCPIP          Columns 00001 00072
Command ==>          Scroll ==> CSR
***** Top of Data *****
==MSG> -Warning- The UNDO command is not available until you change
==MSG>          your edit profile using the command RECOVERY ON.
000001 ;
000002 ; TCPIP.PROFILE.TCPIP
000003 ;
000004 ; see dataset TCPIP.SEZAINST(EZAEB025) for the sample
000005 ; file with verbose comments
000006 ;
000007 ; -----
000008 ;
000009 ; delete pool size statements obsolete with tcpip for os/390 r5
000010 ; delete INFORM not supported in OS/390 R5
000011 ; delete OBEY not supported in OS/390 R5
000012 ; delete SYSCONTACT not supported in OS/390 R5
000013 ; delete SYSLOCATION not supported in OS/390 R5
000014 ; chg INTERNALCLIENTPARMS to TELNETPARMS for OS/390 R5
000015 ; update the AUTOLOG section but continue to set nothing for autolog
000016 ; update the GATEWAY section for IBM SDTSC-ETP environment
000017 ; replace NOTRACE with ITRACE OFF for OS/390 R5
000018 ; delete SCREEN for OS/390 R5
000019 ; update ASSORTEDPARMS
000020 ; add TELNETDEVICE in BEGINVTAM
000021 ;
000022 ; -----
000023 ;
000024 ARPAGE 5
000025

MA a
04/015
Connected to remote server /host 204.90.115.184 using lu/pool TCP00005 and port 623
PDF Writer (Ghostscript) on Ghostscript1:

```

Data Set Names – DSLIST wildcard help (F1)



```

Lab System
File Edit View Communication Actions Window Help
Tutorial ----- Specifying Dsname Level ----- Tutorial
Command ==> _____ More: +

When Dsname Level is specified, it defines the level qualifiers for the data
set names to be included in the list. Qualifiers can be specified fully,
partially or defaulted. At least one qualifier must be partially specified. A
Dsname Level of '*' or '**' or any combination of '*' and '**' qualifiers is
invalid.

From option 3.4 DSLIST do not enclose Dsname Level in quotes.

From option 11 or DSLIST command, your TSO prefix (if running with PREFIX ON)
will be prefixed as the first qualifier of the Dsname Level if the level is
not quoted.

Data set name qualifiers can be partially specified using asterisks as global
file-name characters and percent signs as placeholders:

* A single asterisk by itself indicates that at least one qualifier is
needed to occupy that position. A single asterisk within a qualifier
indicates that zero or more characters can occupy that position.

** A double asterisk indicates that zero or more qualifiers can occupy
that position. A double asterisk within a qualifier is invalid.

% A single percent sign indicates that any one single alphameric or
national character can occupy that position.

%%... One to eight percent signs can be specified in each qualifier.

The following examples are valid for Dsname Level:

MA a
02/015
Connected to remote server/host 204.90.115.184 using lu/pool TCP00005 and port 623
PDF Writer (Ghostscript) on Ghostscript1:

```

Catalog and VTOC

z/OS uses a catalog and a volume table of contents (VTOC) on each DASD volume to manage the storage and placement of data sets.

A catalog is a data set used to store location information about other data sets.

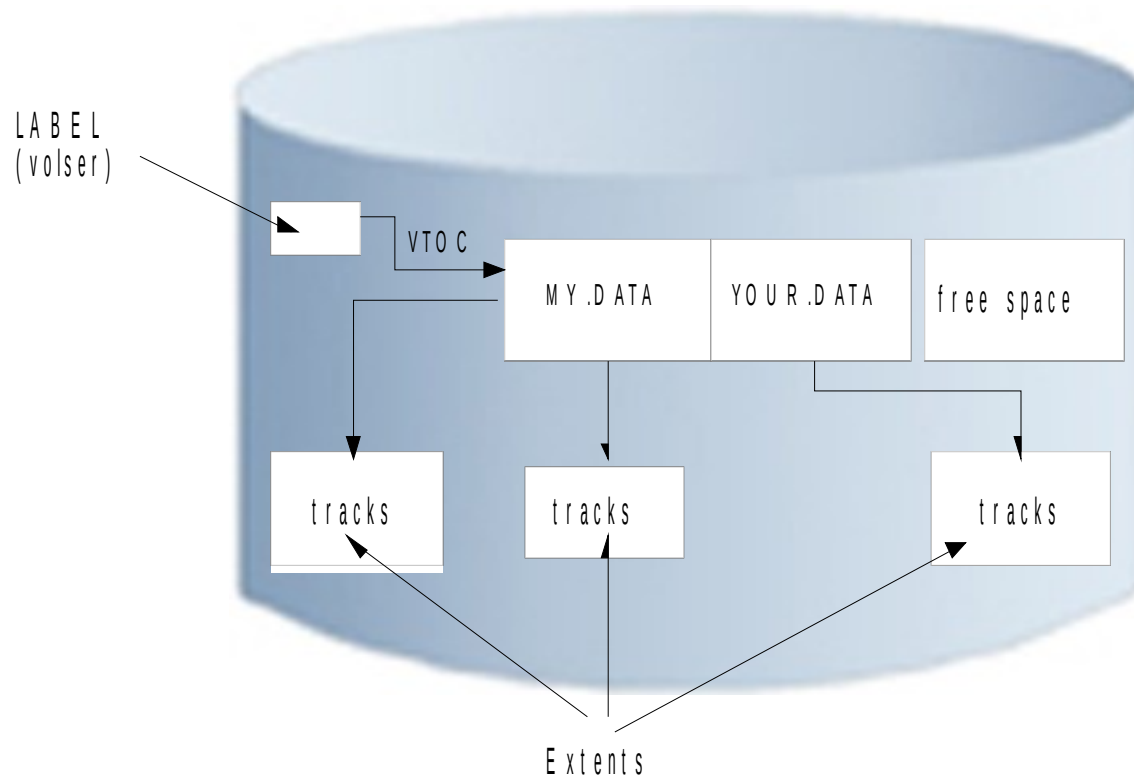
VTOC:

- Lists the data sets on a volume

- Lists the free space on the volume.

***Note:** Another special data set (VSAM Volume Data Set – VVDS) is stored on a disk volume which contains VSAM data sets. The VVDS entries include VSAM Volume Records (VVRs) to relate elements of a VSAM data set name.

VTOC (Volume Table of Contents)





Catalog - What is a z/OS Catalog?

A catalog is a VSAM data set with information about other data sets.

Catalog records associate a data set name with disk or tape volume.

Locating a data set requires:

- Data set name

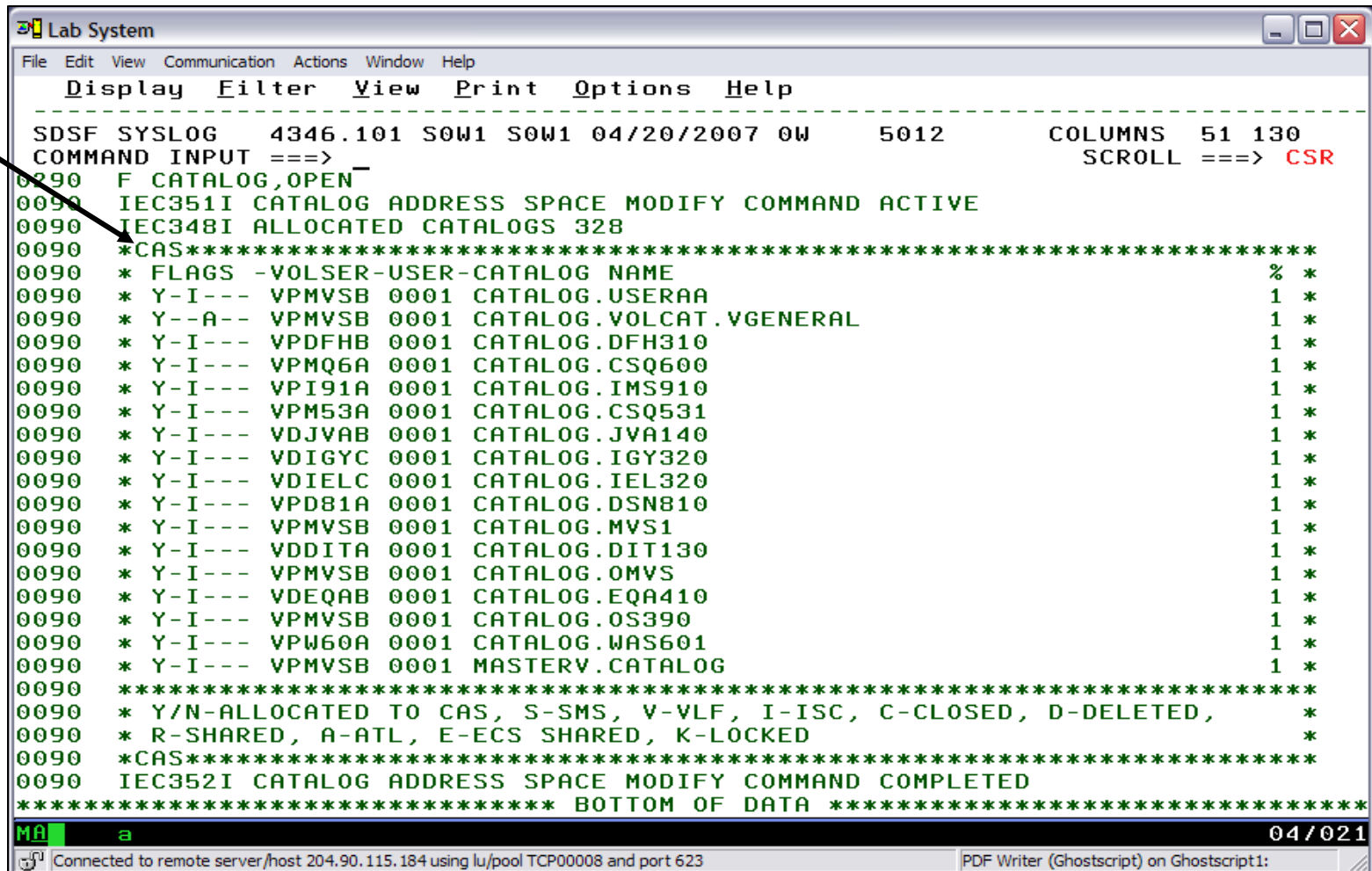
- Volume name

- Unit (volume device type)

Typical z/OS system includes a master catalog and numerous user catalogs.

An 'alias' entry is defined in the master catalog to direct the master catalog to look into a specifically 'related' user catalog for the all data sets names beginning with that 'alias' (aka HLQ) as the first node of the data set name.

Catalog Structure



```

Lab System
File Edit View Communication Actions Window Help
Display Filter View Print Options Help
-----
SDSF SYSLOG 4346.101 SOW1 SOW1 04/20/2007 0W 5012 COLUMNS 51 130
COMMAND INPUT ==>
SCROLL ==> CSR
0090 F CATALOG,OPEN
0090 IEC351I CATALOG ADDRESS SPACE MODIFY COMMAND ACTIVE
0090 IEC348I ALLOCATED CATALOGS 328
0090 *CAS*****
0090 * FLAGS -VOLSER-USER-CATALOG NAME % *
0090 * Y-I--- VPMVSB 0001 CATALOG.USERAA 1 *
0090 * Y--A-- VPMVSB 0001 CATALOG.VOLCAT.VGENERAL 1 *
0090 * Y-I--- VPDFHB 0001 CATALOG.DFH310 1 *
0090 * Y-I--- VPMQ6A 0001 CATALOG.CSQ600 1 *
0090 * Y-I--- VPI91A 0001 CATALOG.IMS910 1 *
0090 * Y-I--- VPM53A 0001 CATALOG.CSQ531 1 *
0090 * Y-I--- VDJVAB 0001 CATALOG.JVA140 1 *
0090 * Y-I--- VDIGYC 0001 CATALOG.IGY320 1 *
0090 * Y-I--- VDIELC 0001 CATALOG.IEL320 1 *
0090 * Y-I--- VPD81A 0001 CATALOG.DSN810 1 *
0090 * Y-I--- VPMVSB 0001 CATALOG.MVS1 1 *
0090 * Y-I--- VDDITA 0001 CATALOG.DIT130 1 *
0090 * Y-I--- VPMVSB 0001 CATALOG.OMVS 1 *
0090 * Y-I--- VDEQAB 0001 CATALOG.EQA410 1 *
0090 * Y-I--- VPMVSB 0001 CATALOG.OS390 1 *
0090 * Y-I--- VPW60A 0001 CATALOG.WAS601 1 *
0090 * Y-I--- VPMVSB 0001 MASTERV.CATALOG 1 *
0090 *****
0090 * Y/N-ALLOCATED TO CAS, S-SMS, V-VLF, I-ISC, C-CLOSED, D-DELETED, *
0090 * R-SHARED, A-ATL, E-ECS SHARED, K-LOCKED *
0090 *CAS*****
0090 IEC352I CATALOG ADDRESS SPACE MODIFY COMMAND COMPLETED
***** BOTTOM OF DATA *****
MA a 04/021
Connected to remote server/host 204.90.115.184 using lu/pool TCP00008 and port 623 PDF Writer (Ghostscript) on Ghostscript1:

```


Catalog Structure

```

Lab System
File Edit View Communication Actions Window Help
Menu Utilities Compilers Options Status Help
-----
ISPF Primary Option Menu
Option ==> 6_
More: +

0 Settings      Terminal and user parameters      User ID . : ZIBM030
1 View          Display source data or listings      Time. . . : 11:20
2 Edit          Create or change source data      Terminal. : 3278
3 Utilities      Perform utility functions          Screen. . : 1
4 Foreground     Interactive language processing     Language. : ENGLISH
5 Batch          Submit job for language processing   Appl ID . : ISR
6 Command        Enter TSO or Workstation commands    TSO logon : SPFPROCE
7 Dialog Test    Perform dialog testing              TSO prefix: ZIBM030
8 LM Facility     Library administrator functions     System ID : S0W1
9 IBM Products   IBM program development products    MVS acct. : FB3
10 SCLM           SW Configuration Library Manager    Release . : ISPF 5.6
11 Workplace     ISPF Object/Action Workplace

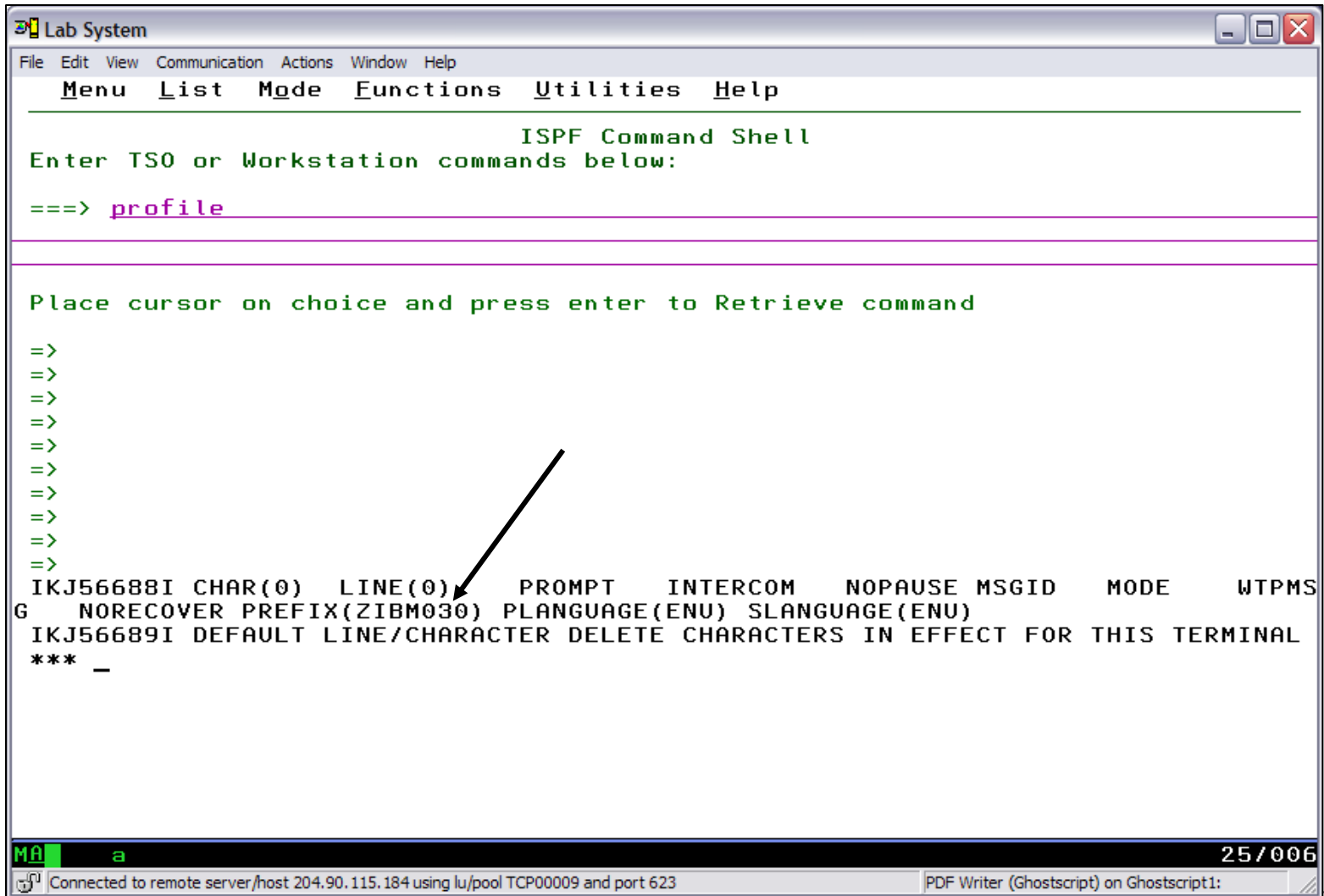
----- Other Install Products -----

SD SDSF          System Display and Search Facility
IP IPCS          Inter Problem Control Facility
IS ISMF          Inter Storage Management Facility
SM SMP/E         SMP/E and CBIPO Dialogs
HC HCD           HW Configuration Definition Dialog
  R RACF          Resource Access Control Facility
  S DFSORT        Data Facility Sort
OE OEDIT         OpenEdition MVS Edit files
OB OBROWSE       OpenEdition MVS Browse files
OS OSHELL        OpenEdition MVS ISPF Shell

Enter X to Terminate using log/list defaults
MA a
04/015
Connected to remote server/host 204.90.115.184 using lu/pool TCP00008 and port 623
PDF Writer (Ghostscript) on Ghostscript1:

```

Catalog Structure



```

Lab System
File Edit View Communication Actions Window Help
Menu List Mode Functions Utilities Help

ISPF Command Shell
Enter TSO or Workstation commands below:

==> profile

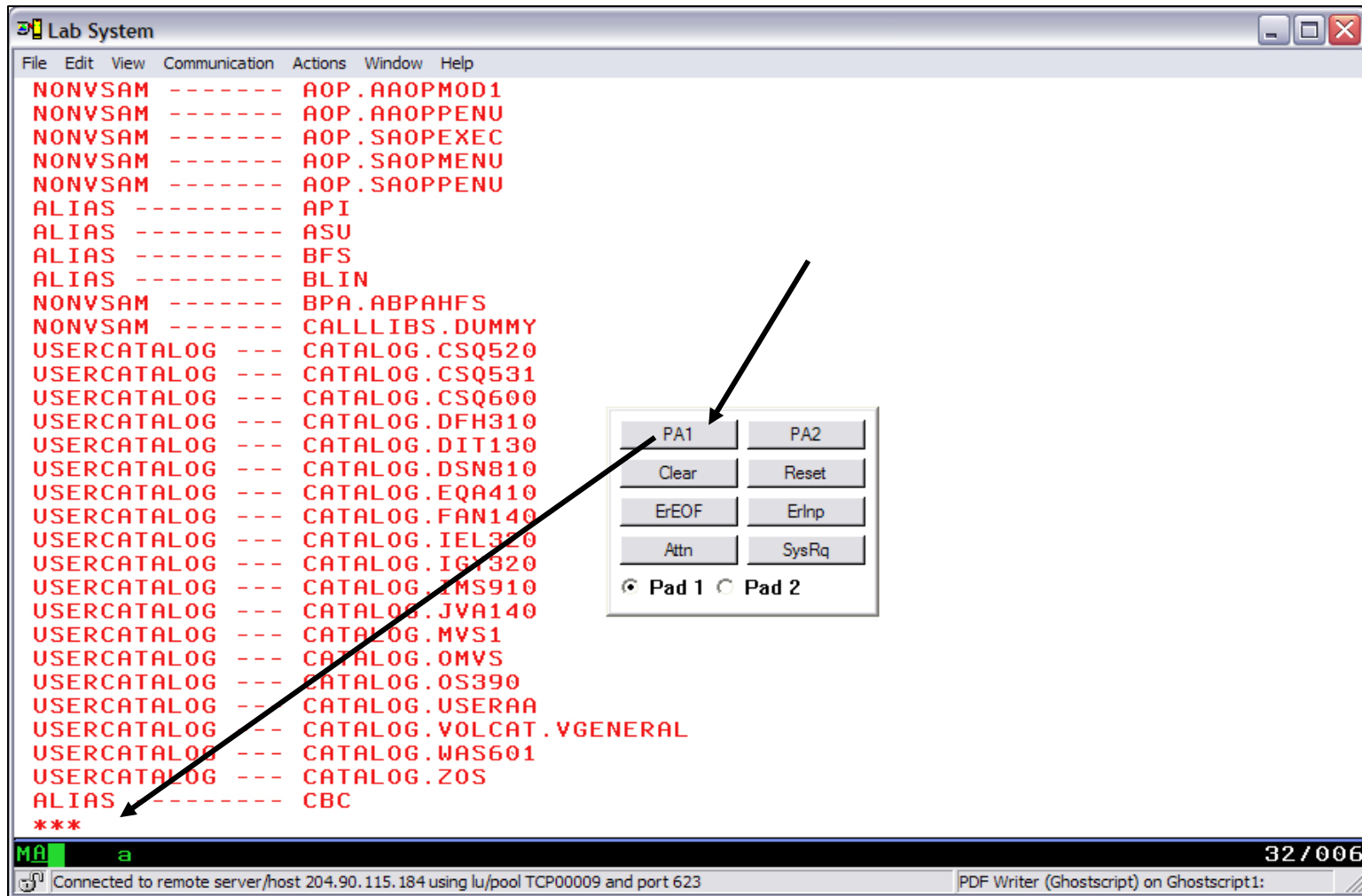
Place cursor on choice and press enter to Retrieve command

=>
=>
=>
=>
=>
=>
=>
=>
=>
=>
=>
IKJ56688I CHAR(0) LINE(0) PROMPT INTERCOM NOPAUSE MSGID MODE WTPMS
G NORECOVER PREFIX(ZIBM030) PLANGUAGE(ENU) SLANGUAGE(ENU)
IKJ56689I DEFAULT LINE/CHARACTER DELETE CHARACTERS IN EFFECT FOR THIS TERMINAL
*** _

MA a 25/006
Connected to remote server/host 204.90.115.184 using lu/pool TCP00009 and port 623
PDF Writer (Ghostscript) on Ghostscript1:

```


Catalog Structure – List Catalog Information



The screenshot shows a window titled "Lab System" with a menu bar (File, Edit, View, Communication, Actions, Window, Help) and a list of catalog information. The list is organized into two columns, with the first column containing catalog names and the second column containing their corresponding paths. The list is as follows:

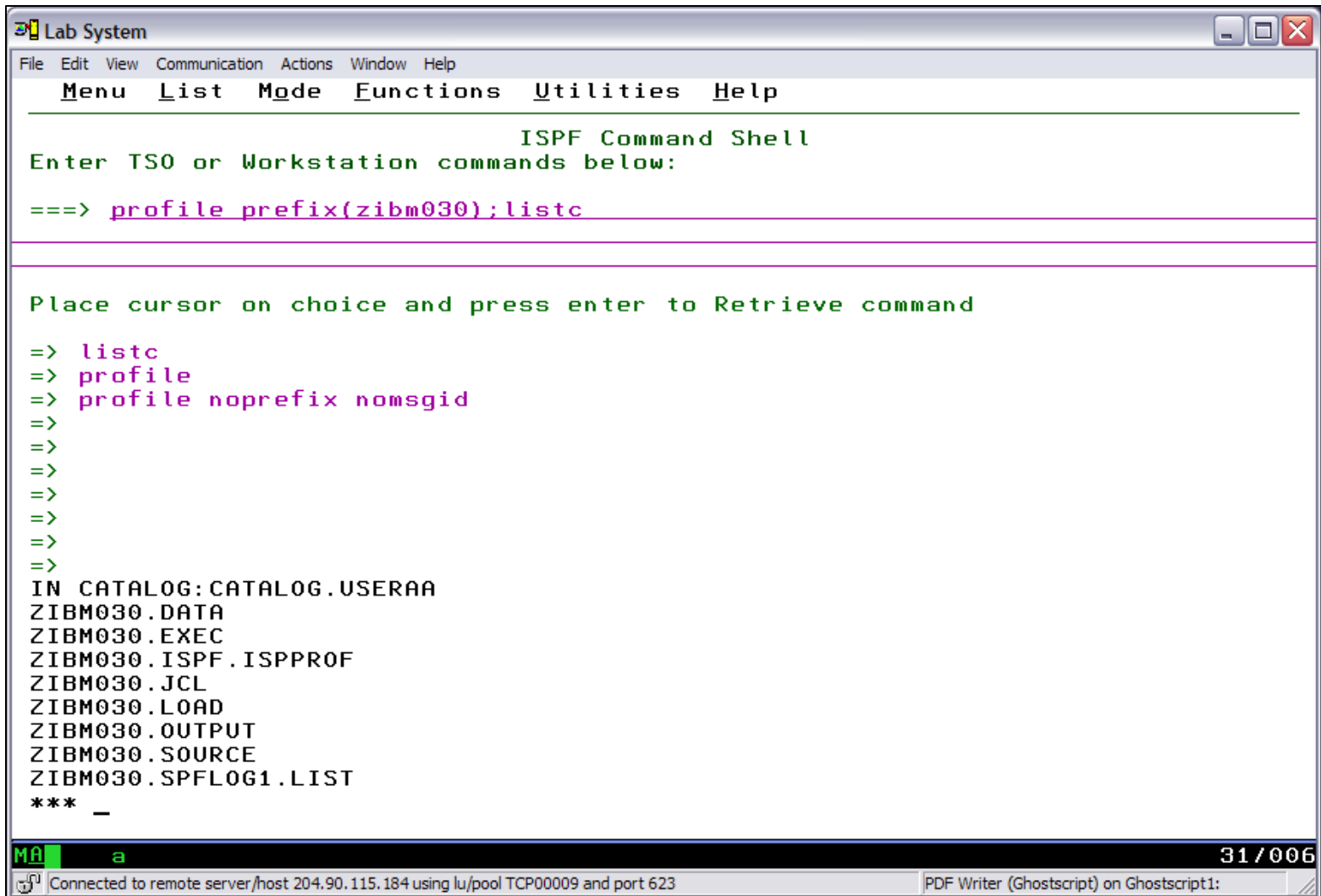
Catalog Name	Path
NONVSAM	----- AOP.AAOPMOD1
NONVSAM	----- AOP.AAOPMENU
NONVSAM	----- AOP.SAOPEXEC
NONVSAM	----- AOP.SAOPMENU
NONVSAM	----- AOP.SAOPMENU
ALIAS	----- API
ALIAS	----- ASU
ALIAS	----- BFS
ALIAS	----- BLIN
NONVSAM	----- BPA.ABPAHFS
NONVSAM	----- CALLLIBS.DUMMY
USERCATALOG	--- CATALOG.CSQ520
USERCATALOG	--- CATALOG.CSQ531
USERCATALOG	--- CATALOG.CSQ600
USERCATALOG	--- CATALOG.DFH310
USERCATALOG	--- CATALOG.DIT130
USERCATALOG	--- CATALOG.DSN810
USERCATALOG	--- CATALOG.EQA410
USERCATALOG	--- CATALOG.FAN140
USERCATALOG	--- CATALOG.IEL320
USERCATALOG	--- CATALOG.IGI320
USERCATALOG	--- CATALOG.IMS910
USERCATALOG	--- CATALOG.JVA140
USERCATALOG	--- CATALOG.MVS1
USERCATALOG	--- CATALOG.OMVS
USERCATALOG	--- CATALOG.OS390
USERCATALOG	--- CATALOG.USERAA
USERCATALOG	--- CATALOG.VOLCAT.VGENERAL
USERCATALOG	--- CATALOG.WAS601
USERCATALOG	--- CATALOG.ZOS
ALIAS	----- CBC

At the bottom of the list, there are three asterisks (***) and a green cursor pointing to the first column. To the right of the list is a control panel with the following buttons:

- PA1
- PA2
- Clear
- Reset
- ErEOF
- ErInp
- Attn
- SysRq
- Pad 1 (selected)
- Pad 2

The status bar at the bottom of the window shows "MA a" on the left, "32/006" on the right, and "Connected to remote server /host 204.90.115.184 using lu/pool TCP00009 and port 623" in the center. The bottom right corner of the status bar indicates "PDF Writer (Ghostscript) on Ghostscript1:".

Catalog Structure – List Catalog Information



```

Lab System
File Edit View Communication Actions Window Help
Menu List Mode Functions Utilities Help

ISPSP Command Shell
Enter TSO or Workstation commands below:

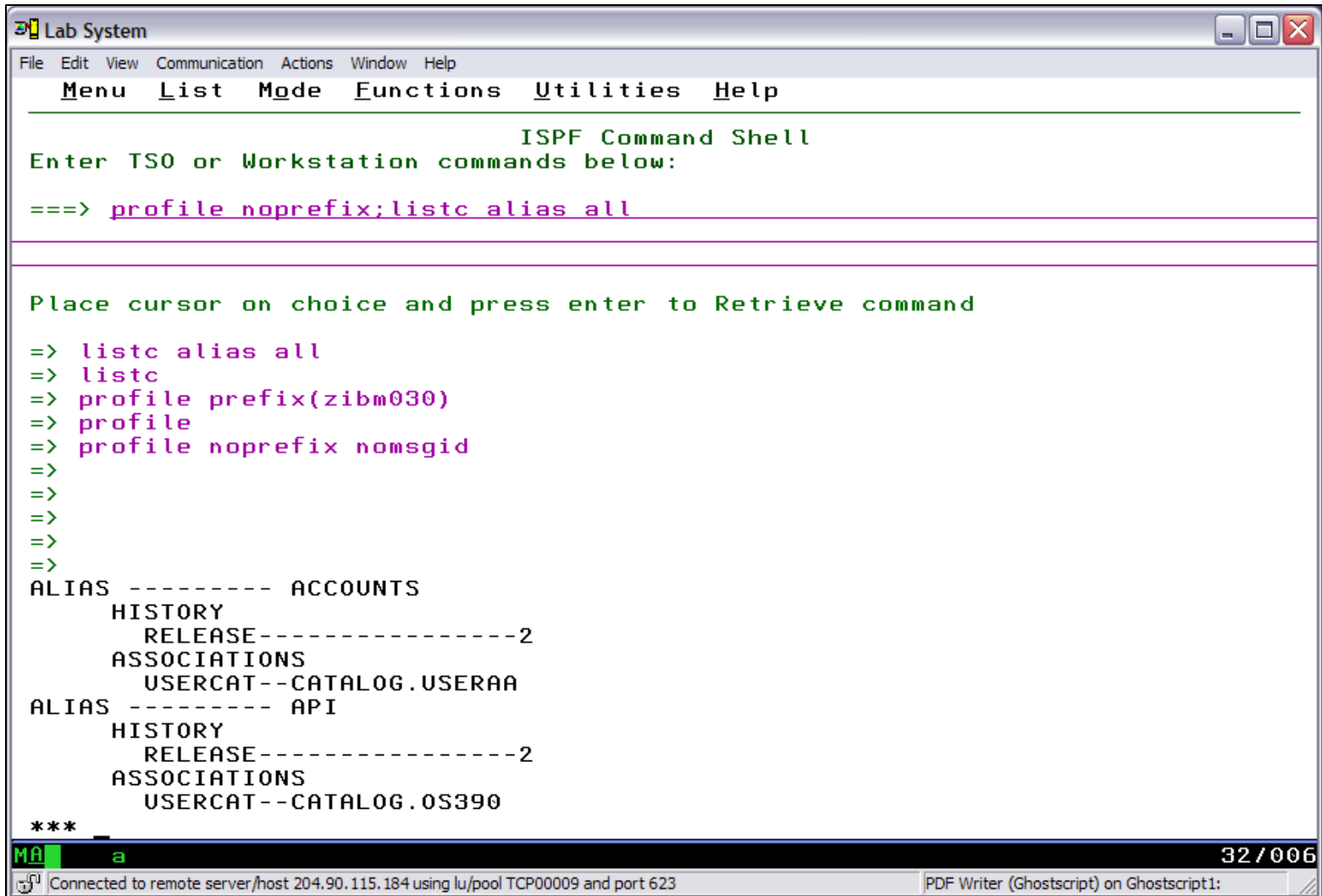
==> profile prefix(zibm030);listc

Place cursor on choice and press enter to Retrieve command

=> listc
=> profile
=> profile noprefix nomsgid
=>
=>
=>
=>
=>
=>
=>
IN CATALOG: CATALOG.USERAA
ZIBM030.DATA
ZIBM030.EXEC
ZIBM030.ISPF.ISPPROF
ZIBM030.JCL
ZIBM030.LOAD
ZIBM030.OUTPUT
ZIBM030.SOURCE
ZIBM030.SPFL0G1.LIST
*** _

MA a 31/006
Connected to remote server/host 204.90.115.184 using lu/pool TCP00009 and port 623 PDF Writer (Ghostscript) on Ghostscript1:
  
```

Catalog Structure – List Catalog Information



```

Lab System
File Edit View Communication Actions Window Help
Menu List Mode Functions Utilities Help

ISPSP Command Shell
Enter TSO or Workstation commands below:

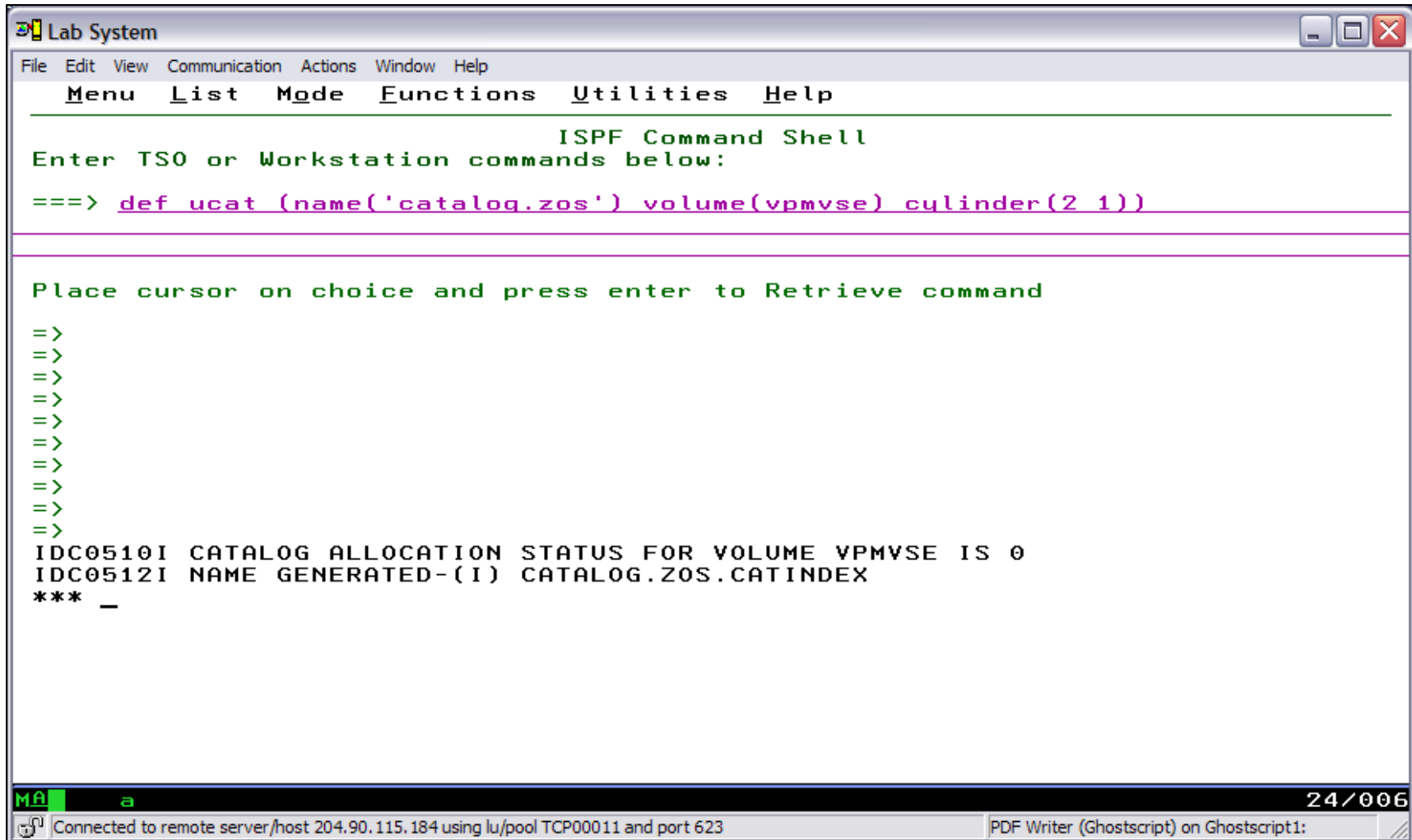
==> profile noprefix;listc alias all

Place cursor on choice and press enter to Retrieve command

=> listc alias all
=> listc
=> profile prefix(zibm030)
=> profile
=> profile noprefix nomsgid
=>
=>
=>
=>
ALIAS ----- ACCOUNTS
      HISTORY
      RELEASE-----2
      ASSOCIATIONS
      USERCAT--CATALOG.USERAA
ALIAS ----- API
      HISTORY
      RELEASE-----2
      ASSOCIATIONS
      USERCAT--CATALOG.OS390

***
MA a
32/006
Connected to remote server/host 204.90.115.184 using lu/pool TCP00009 and port 623
PDF Writer (Ghostscript) on Ghostscript1:
  
```

Catalog Structure – Define a User Catalog



```

Lab System
File Edit View Communication Actions Window Help
Menu List Mode Functions Utilities Help

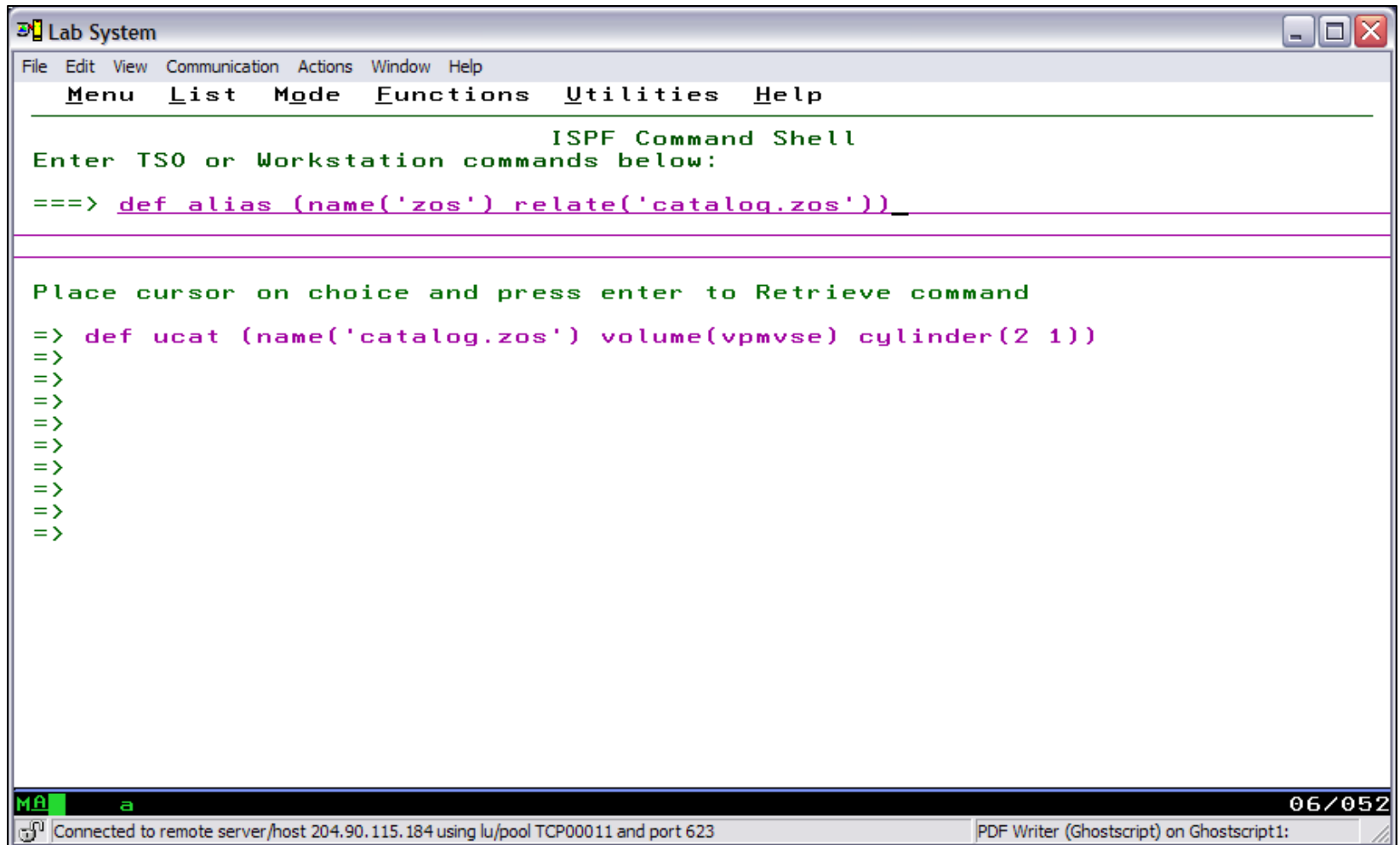
ISPF Command Shell
Enter TSO or Workstation commands below:
==> def ucat (name('catalog.zos') volume(vpmvse) cylinder(2 1))

Place cursor on choice and press enter to Retrieve command
=>
=>
=>
=>
=>
=>
=>
=>
=>
IDC0510I CATALOG ALLOCATION STATUS FOR VOLUME VPMVSE IS 0
IDC0512I NAME GENERATED-(1) CATALOG.ZOS.CATINDEX
*** _

MA a
24/006
Connected to remote server/host 204.90.115.184 using lu/pool TCP00011 and port 623
PDF Writer (Ghostscript) on Ghostscript1:

```

Catalog Structure – Define an Alias in Master Catalog



```

Lab System
File Edit View Communication Actions Window Help
Menu List Mode Functions Utilities Help

ISPF Command Shell
Enter TSO or Workstation commands below:

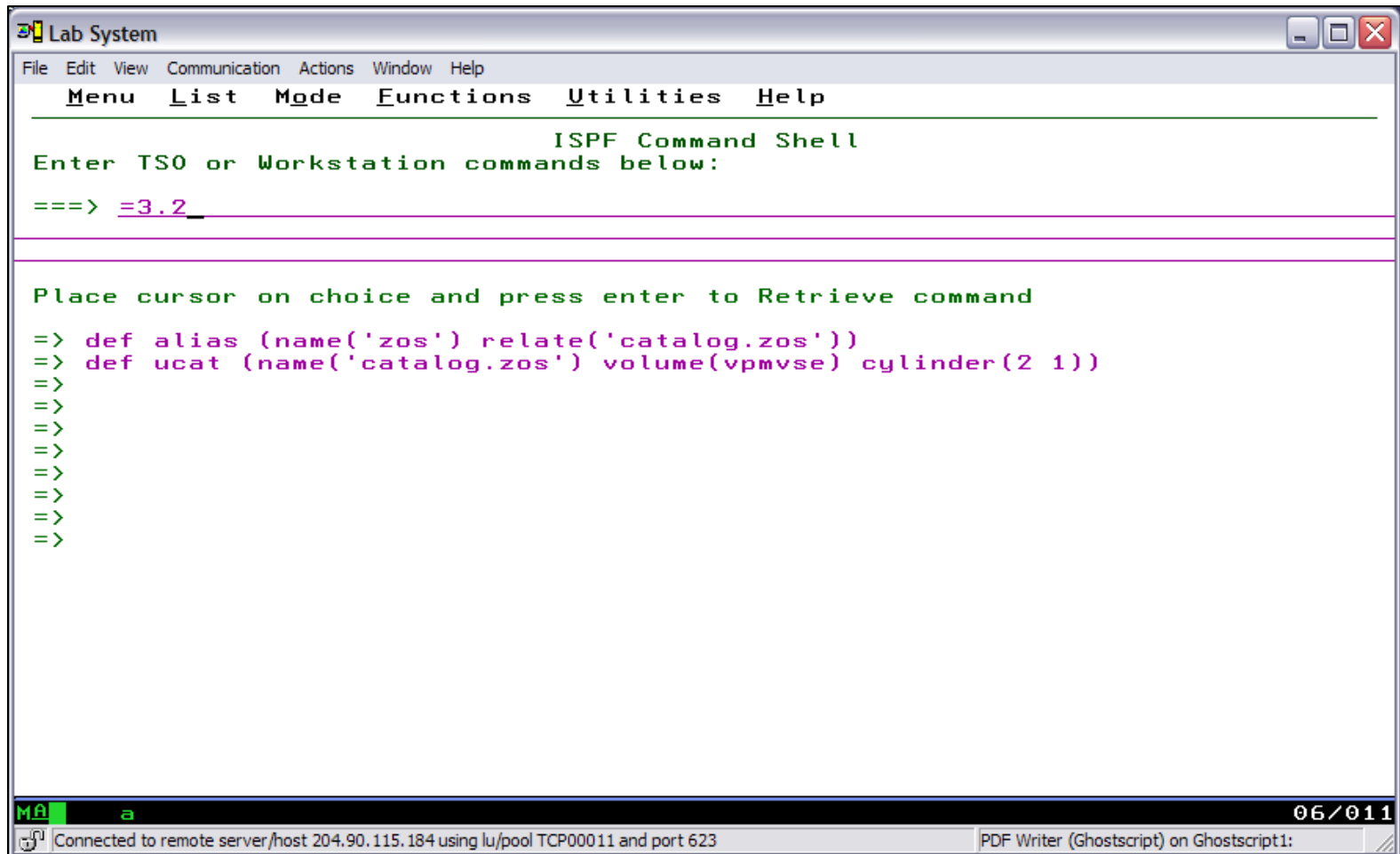
==> def alias (name('zos') relate('catalog.zos'))_

Place cursor on choice and press enter to Retrieve command

=> def ucat (name('catalog.zos') volume(vpmvse) cylinder(2 1))
=>
=>
=>
=>
=>
=>
=>
=>
=>

MA a 06/052
Connected to remote server/host 204.90.115.184 using lu/pool TCP00011 and port 623
PDF Writer (Ghostscript) on Ghostscript1:
  
```


Catalog Structure – ISPF Panel to Allocate Data Set



The screenshot shows a window titled "Lab System" with a menu bar (File, Edit, View, Communication, Actions, Window, Help) and a sub-menu bar (Menu, List, Mode, Functions, Utilities, Help). The main area is titled "ISPF Command Shell" and contains the text "Enter TSO or Workstation commands below:". Below this, a command prompt "===> _=3.2_" is shown. A horizontal line separates this from the next section, which is titled "Place cursor on choice and press enter to Retrieve command". This section contains a list of commands: "=> def alias (name('zos') relate('catalog.zos'))", "=> def ucat (name('catalog.zos') volume(vpmvse) cylinder(2 1))", and several empty lines. At the bottom, a status bar shows "MA a" on the left, "06/011" on the right, and a connection message "Connected to remote server/host 204.90.115.184 using lu/pool TCP00011 and port 623" on the left, and "PDF Writer (Ghostscript) on Ghostscript1:" on the right.

```
Lab System
File Edit View Communication Actions Window Help
Menu List Mode Functions Utilities Help

ISPF Command Shell
Enter TSO or Workstation commands below:

===> _=3.2_

Place cursor on choice and press enter to Retrieve command

=> def alias (name('zos') relate('catalog.zos'))
=> def ucat (name('catalog.zos') volume(vpmvse) cylinder(2 1))
=>
=>
=>
=>
=>
=>
=>
=>

MA a 06/011
Connected to remote server/host 204.90.115.184 using lu/pool TCP00011 and port 623 PDF Writer (Ghostscript) on Ghostscript1:
```

Catalog Structure – Allocate New Data Set

Lab System

File Edit View Communication Actions Window Help

Menu RefList Utilities Help

Option ==> a ← Data Set Utility

A Allocate new data set	C Catalog data set
R Rename entire data set	U Uncatalog data set
D Delete entire data set	S Short data set information
blank Data set information	V VSAM Utilities

ISPF Library:

Project . . . _____	Enter "/" to select option
Group . . . _____	/ Confirm Data Set Delete
Type . . . _____	

Other Partitioned, Sequential or VSAM Data Set:

Data Set Name . . . 'zos.test1	←
Volume Serial . . . vparc1 _	(If not cataloged, required for option "C")

Data Set Password . . . (If password protected)

MA a 18/032

Connected to remote server/host 204.90.115.184 using lu/pool TCP00011 and port 623 PDF Writer (Ghostscript) on Ghostscript1:

Catalog Structure – Allocate New Data Set

Lab System

File Edit View Communication Actions Window Help

Menu RefList Utilities Help

Allocate New Data Set

Command ==> _____

Data Set Name : ZOS.TEST1

Management class . . . : _____ (Blank for default management class)

Storage class : _____ (Blank for default storage class)

Volume serial : VPARC1 (Blank for system default volume) **

Device type : _____ (Generic unit or device address) **

Data class : _____ (Blank for default data class)

Space units : CYLINDER (BLKS, TRKS, CYLS, KB, MB, BYTES or RECORDS)

Average record unit . . : _____ (M, K, or U)

Primary quantity . . . : 1 (In above units)

Secondary quantity . . : 1 (In above units)

Directory blocks . . . : _____ (Zero for sequential data set) *

Record format : fb

Record length : 80

Block size : _____

Data set name type : _____ (LIBRARY, HFS, PDS, or blank) *

Expiration date . . . : _____ (YY/MM/DD, YYYY/MM/DD
YY.DDD, YYYY.DDD in Julian form
DDDD for retention period in days
or blank)

Enter "/" to select option

 Allocate Multiple Volumes

(* Specifying LIBRARY may override zero directory block)

(** Only one of these fields may be specified)

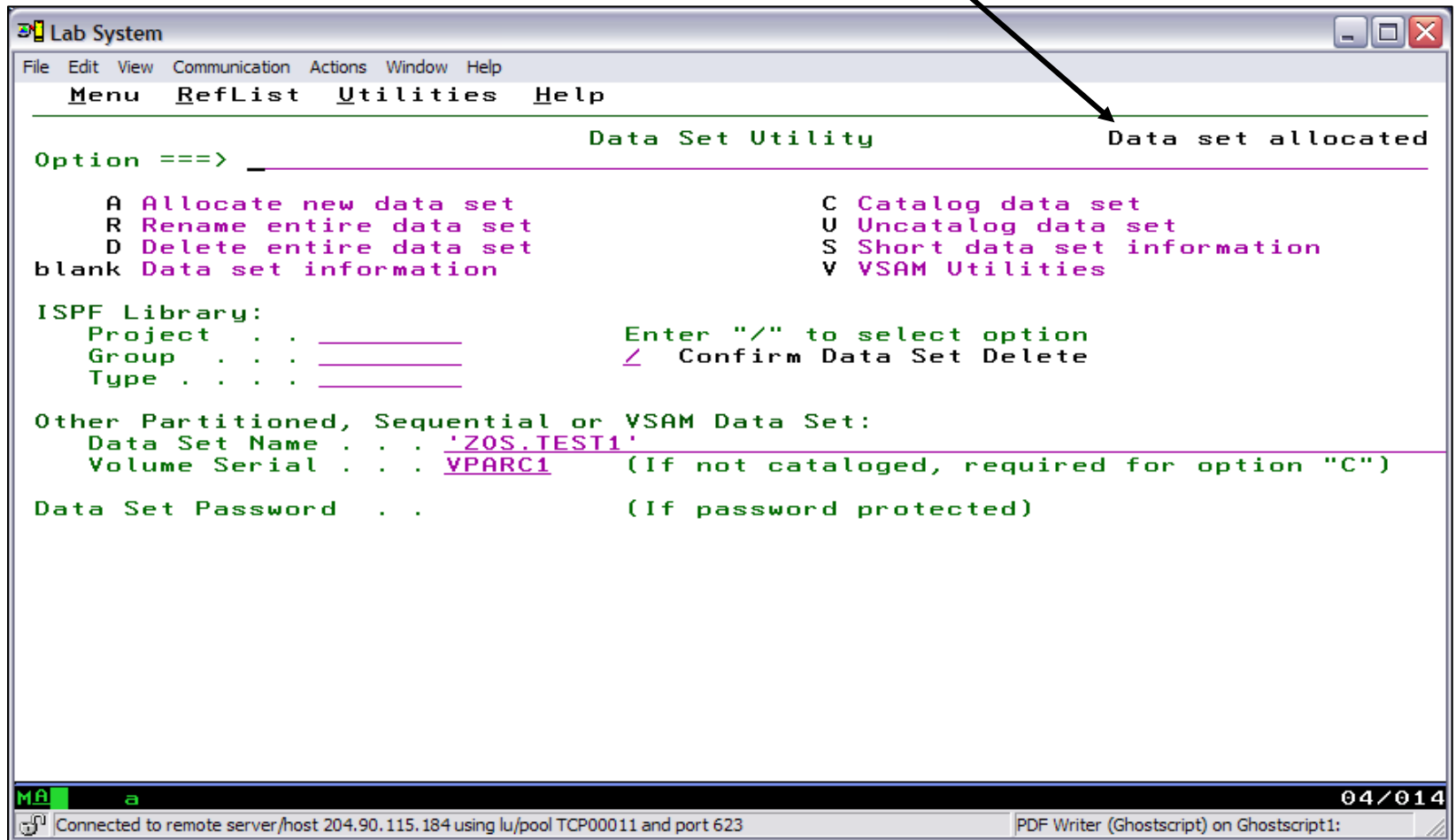
MA a

21/025

Connected to remote server/host 204.90.115.184 using lu/pool TCP00011 and port 623

PDF Writer (Ghostscript) on Ghostscript1:

Catalog Structure – Allocate New Data Set



Lab System

File Edit View Communication Actions Window Help

Menu RefList Utilities Help

Data Set Utility **Data set allocated**

Option ==> _

<p>A Allocate new data set</p> <p>R Rename entire data set</p> <p>D Delete entire data set</p> <p>blank Data set information</p>	<p>C Catalog data set</p> <p>U Uncatalog data set</p> <p>S Short data set information</p> <p>V VSAM Utilities</p>
--	---

ISPF Library:

Project . . . _____

Group . . . _____

Type . . . _____

Enter "/" to select option
/ Confirm Data Set Delete

Other Partitioned, Sequential or VSAM Data Set:

Data Set Name . . . 'ZOS.TEST1'

Volume Serial . . . VPARC1 (If not cataloged, required for option "C")

Data Set Password . . . (If password protected)

MA a 04/014

Connected to remote server/host 204.90.115.184 using lu/pool TCP00011 and port 623 PDF Writer (Ghostscript) on Ghostscript1:

Catalog Structure

Lab System

File Edit View Communication Actions Window Help

Menu RefList Utilities Help

Option ==> a Data Set Utility Data set allocated

A Allocate new data set C Catalog data set
 R Rename entire data set U Uncatalog data set
 D Delete entire data set S Short data set information
 blank Data set information V VSAM Utilities

ISPF Library:
 Project . . . _____
 Group . . . _____
 Type . . . _____

Enter "/" to select option
 / Confirm Data Set Delete

Other Partitioned, Sequential or VSAM Data Set:
 Data Set Name . . . 'ZOS.TEST2'
 Volume Serial . . . vpmvse (If not cataloged, required for option "C")
 Data Set Password . . . (If password protected)

MA a 18/030

Connected to remote server/host 204.90.115.184 using lu/pool TCP00011 and port 623 PDF Writer (Ghostscript) on Ghostscript1:

Catalog Structure

Lab System

File Edit View Communication Actions Window Help

Menu RefList Utilities Help

Allocate New Data Set

Command ==> _____

Data Set Name . . . : ZOS.TEST2

Management class . . . _____ (Blank for default management class)

Storage class . . . _____ (Blank for default storage class)

Volume serial . . . : VPMVSE (Blank for system default volume) **

Device type . . . _____ (Generic unit or device address) **

Data class . . . _____ (Blank for default data class)

Space units . . . : CYLINDER (BLKS, TRKS, CYLS, KB, MB, BYTES or RECORDS)

Average record unit _____ (M, K, or U)

Primary quantity . . : 1 (In above units)

Secondary quantity . : 1 (In above units)

Directory blocks . . : _____ (Zero for sequential data set) *

Record format . . . : FB

Record length . . . : 80

Block size . . . _____

Data set name type : library_ (LIBRARY, HFS, PDS, or blank) *

Expiration date . . . _____ (YY/MM/DD, YYYY/MM/DD
YY.DDD, YYYY.DDD in Julian form
DDDD for retention period in days
or blank)

Enter "/" to select option

_ Allocate Multiple Volumes

(* Specifying LIBRARY may override zero directory block)


(** Only one of these fields may be specified)

MA a 22/032

Connected to remote server/host 204.90.115.184 using lu/pool TCP00011 and port 623

PDF Writer (Ghostscript) on Ghostscript1:

Catalog Structure

 Lab System

File Edit View Communication Actions Window Help

Menu RefList Utilities Help

Option ==> a

Data Set Utility

Data set allocated

A Allocate new data set
 R Rename entire data set
 D Delete entire data set
 blank Data set information

C Catalog data set
 U Uncatalog data set
 S Short data set information
 V VSAM Utilities

ISPF Library:

Project . . .
 Group . . .
 Type . . .

Enter "/" to select option
 / Confirm Data Set Delete

Other Partitioned, Sequential or VSAM Data Set:

Data Set Name . . . 'ZOS.TEST3'
 Volume Serial . . . VPMVSE

(If not cataloged, required for option "C")

Data Set Password . . .

(If password protected)

MA a

17/035

Connected to remote server/host 204.90.115.184 using lu/pool TCP00011 and port 623

PDF Writer (Ghostscript) on Ghostscript1:

Catalog Structure

Lab System

File Edit View Communication Actions Window Help

Menu RefList Utilities Help

Allocate New Data Set

Command ==> _____

Data Set Name : ZOS.TEST3

Management class _____ (Blank for default management class)

Storage class _____ (Blank for default storage class)

Volume serial : VPMVSE (Blank for system default volume) **

Device type _____ (Generic unit or device address) **

Data class _____ (Blank for default data class)

Space units : CYLINDER (BLKS, TRKS, CYLS, KB, MB, BYTES or RECORDS)

Average record unit _____ (M, K, or U)

Primary quantity . . : 1 (In above units)

Secondary quantity . : 1 (In above units)

Directory blocks . . : 10 (Zero for sequential data set) *

Record format . . . : FB

Record length . . . : 80

Block size _____

Data set name type : pds (LIBRARY, HFS, PDS, or blank) *

Expiration date . . . _____ (YY/MM/DD, YYYY/MM/DD
YY.DDD, YYYY.DDD in Julian form
DDDD for retention period in days
or blank)

Enter "/" to select option

_ Allocate Multiple Volumes

(* Specifying LIBRARY may override zero directory block)

(** Only one of these fields may be specified)

MA a

22/032

Connected to remote server/host 204.90.115.184 using lu/pool TCP00011 and port 623

PDF Writer (Ghostscript) on Ghostscript1:

Catalog Structure

```

Lab System
File Edit View Communication Actions Window Help
Menu RefList RefMode Utilities Help

Data Set List Utility

Option ==>

blank Display data set list          P Print data set list
V Display VTOC information            PV Print VTOC information

Enter one or both of the parameters below:
Dsname Level . . . zos
Volume serial . . .

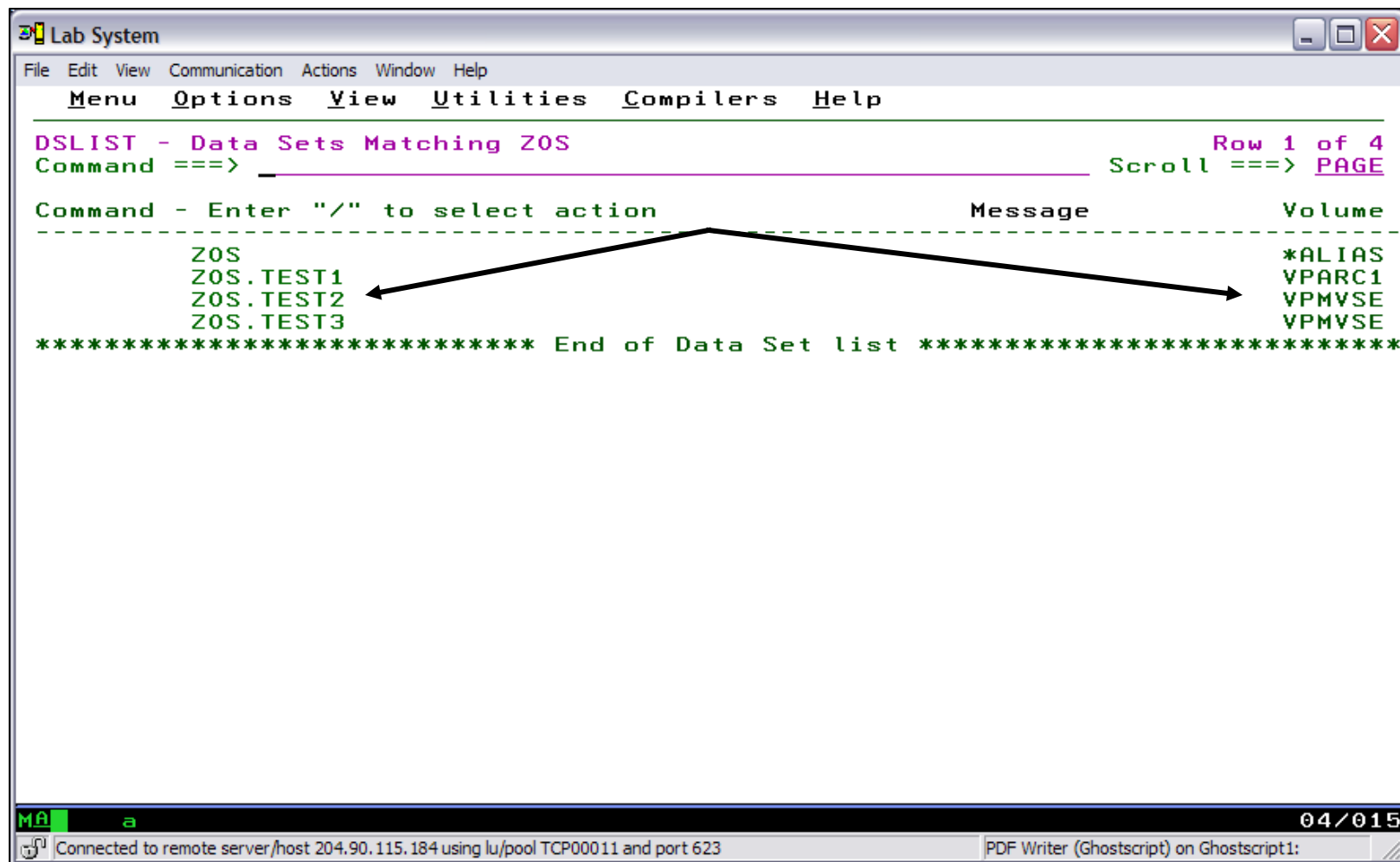
Data set list options
Initial View . . . 1  1. Volume      Enter "/" to select option
                     2. Space        / Confirm Data Set Delete
                     3. Attrib       / Confirm Member Delete
                     4. Total        / Include Additional Qualifiers
                                   / Display Catalog Name

When the data set list is displayed, enter either:
"/" on the data set list command field for the command prompt pop-up,
an ISPF line command, the name of a TSO command, CLIST, or REXX exec, or
"=" to execute the previous command.

MA a 10/033
Connected to remote server/host 204.90.115.184 using lu/pool TCP00011 and port 623 PDF Writer (Ghostscript) on Ghostscript1:

```

Catalog Structure

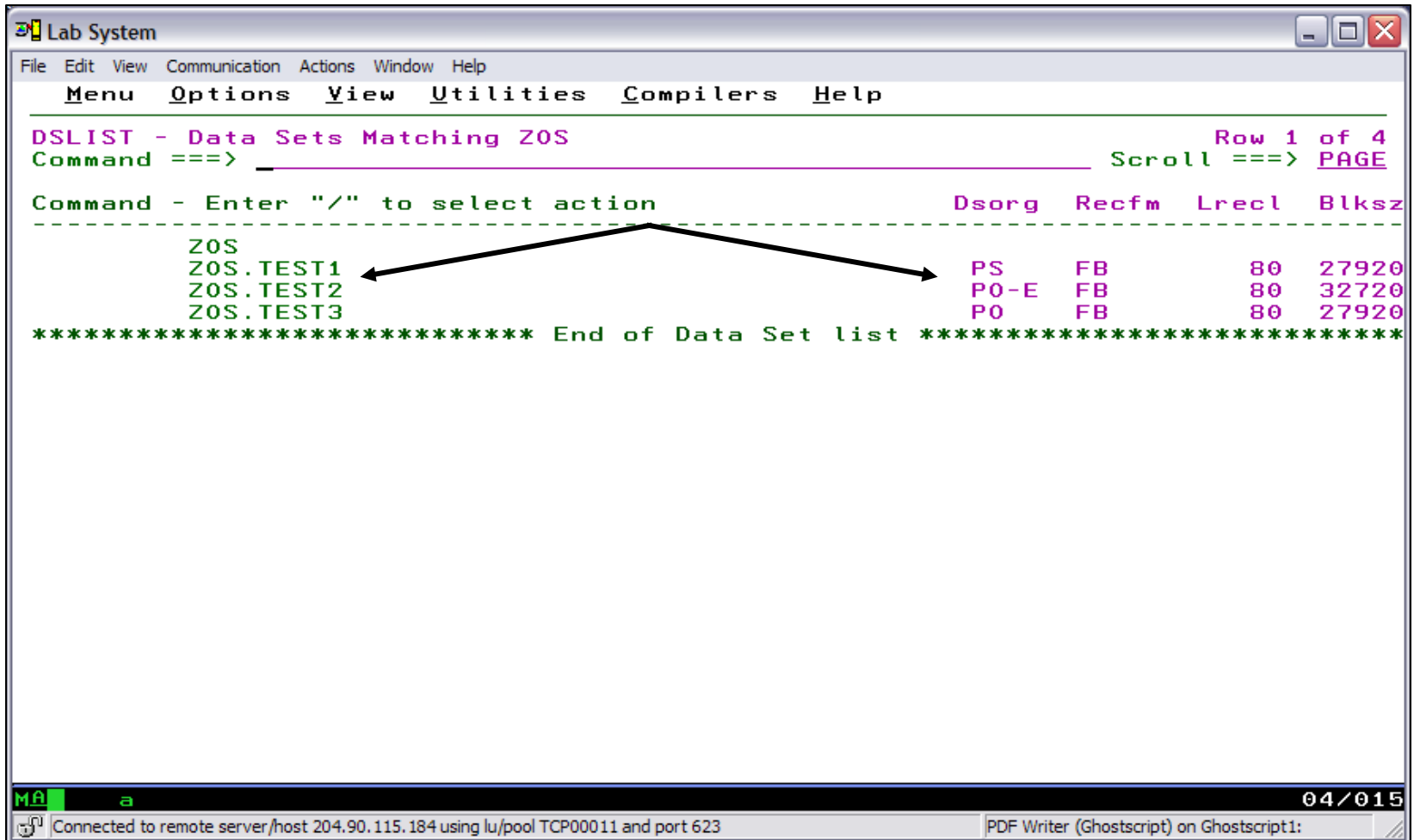


```

Lab System
File Edit View Communication Actions Window Help
Menu Options View Utilities Compilers Help
DSLIST - Data Sets Matching ZOS
Command ==> _ Row 1 of 4 Scroll ==> PAGE
Command - Enter "/" to select action Message Volume
-----
ZOS *ALIAS
ZOS.TEST1 VPARC1
ZOS.TEST2 VPMVSE
ZOS.TEST3 VPMVSE
***** End of Data Set list *****
MA a 04/015
Connected to remote server/host 204.90.115.184 using lu/pool TCP00011 and port 623
PDF Writer (Ghostscript) on Ghostscript1:

```

Catalog Structure



```

Lab System
File Edit View Communication Actions Window Help
  Menu Options View Utilities Compilers Help
DSLIST - Data Sets Matching ZOS
Command ==> _ Scroll ==> PAGE
Command - Enter "/" to select action
-----
ZOS
ZOS.TEST1
ZOS.TEST2
ZOS.TEST3
***** End of Data Set list *****

```

	Dsorg	Recfm	Lrecl	Blksz
ZOS				
ZOS.TEST1	PS	FB	80	27920
ZOS.TEST2	P0-E	FB	80	32720
ZOS.TEST3	P0	FB	80	27920

04/015

Connected to remote server/host 204.90.115.184 using lu/pool TCP00011 and port 623

PDF Writer (Ghostscript) on Ghostscript1:

Catalog Structure

```

Lab System
File Edit View Communication Actions Window Help

READY
listc ent('zos.test1') all
NONVSAM ----- ZOS.TEST1
IN-CAT --- CATALOG.ZOS
HISTORY
DATASET-OWNER----- (NULL)      CREATION-----2007.111
RELEASE-----2          EXPIRATION-----0000.000
VOLUMES
VOLSER-----VPARC1      DEVTYPE-----X'3010200F'    FSEQN-----
-----0
ASSOCIATIONS----- (NULL)
ATTRIBUTES
READY
listc ent('zos')
ALIAS ----- ZOS
IN-CAT --- MASTERY.CATALOG
READY
listc
IN CATALOG:CATALOG.USERAA
ZIBM030.DATA
ZIBM030.EXEC
ZIBM030.ISPF.ISPPROF
ZIBM030.JCL
ZIBM030.LOAD
ZIBM030.OUTPUT
ZIBM030.SOURCE
READY

```

MA a 28/001

Connected to remote server/host 204.90.115.184 using lu/pool TCP00011 and port 623 PDF Writer (Ghostscript) on Ghostscript1:

Catalog Structure – Using Ditto to View VTOC

```

Lab System
File Edit View Communication Actions Window Help
Menu Utilities Compilers Options Status Help
-----
ISPF Primary Option Menu
Option ==> tso profile noprefix;du
More: -
OB OBROWSE      OpenEdition MVS Browse files
OS OSHELL       OpenEdition MVS ISPF Shell
BR READ         BookManager READ/MVS
BB BUILD        BookManager BUILD/MVS
BI READ INDEX   BookManager Index Utility
DA DXT ADMIN    Invoke DXT Administrative Dialogs
DE DXT END USER Invoke DXT End User Dialogs
DU MVS/DITTO    MVS/DITTO Utility
IN INSPECT      INSPECT for C/370 and PL/I
D2 DB2I         Perform DB2 Interactive functions
DM DB2ADM       DB2 Admin Tool
PM DB2PM        DB2 Performance Monitor for DB2 V6
P7 DB2PE        DB2 Performance Expert for DB2 V7
P8 DB2PE        DB2 Performance Expert for DB2 V8
DC DB2DC        DATABASE Data Collection
MQ MQ           MQ 6.0.0 operations and control panels
QM QMF          Query Management Facility for DB2 V6
Q7 QMF          Query Management Facility for DB2 V7
Q8 QMF          Query Management Facility for DB2 V8
QT QMFTOOL      QMF Message Tool
C0 CICS PD/MVS  CICS PD/MVS Online Customization
CP CICS PD/MVS  CICS Problem Determination/MVS
OP OPC/ESA      Operations Planning/Control/ESA
W WLM           Work Load Manager Administration
RS RRS          Resource Recovery Services

User ID . : ZIBM030
Time . . . : 21:10
Terminal . : 3278
Screen . . : 1
Language . : ENGLISH
Appl ID . : ISR
TSO logon : SPFPROCE
TSO prefix: ZIBM030
System ID : S0W1
MVS acct. : FB3
Release . : ISPF 5.6

Enter X to Terminate using log/list defaults
MA a
Connected to remote server/host 204.90.115.184 using lu/pool TCP00011 and port 623
PDF Writer (Ghostscript) on Ghostscript1:
04/037
  
```

Catalog Structure – Using Ditto to View VTOC

```

Lab System
File Edit View Communication Actions Window Help
Process View Options Help

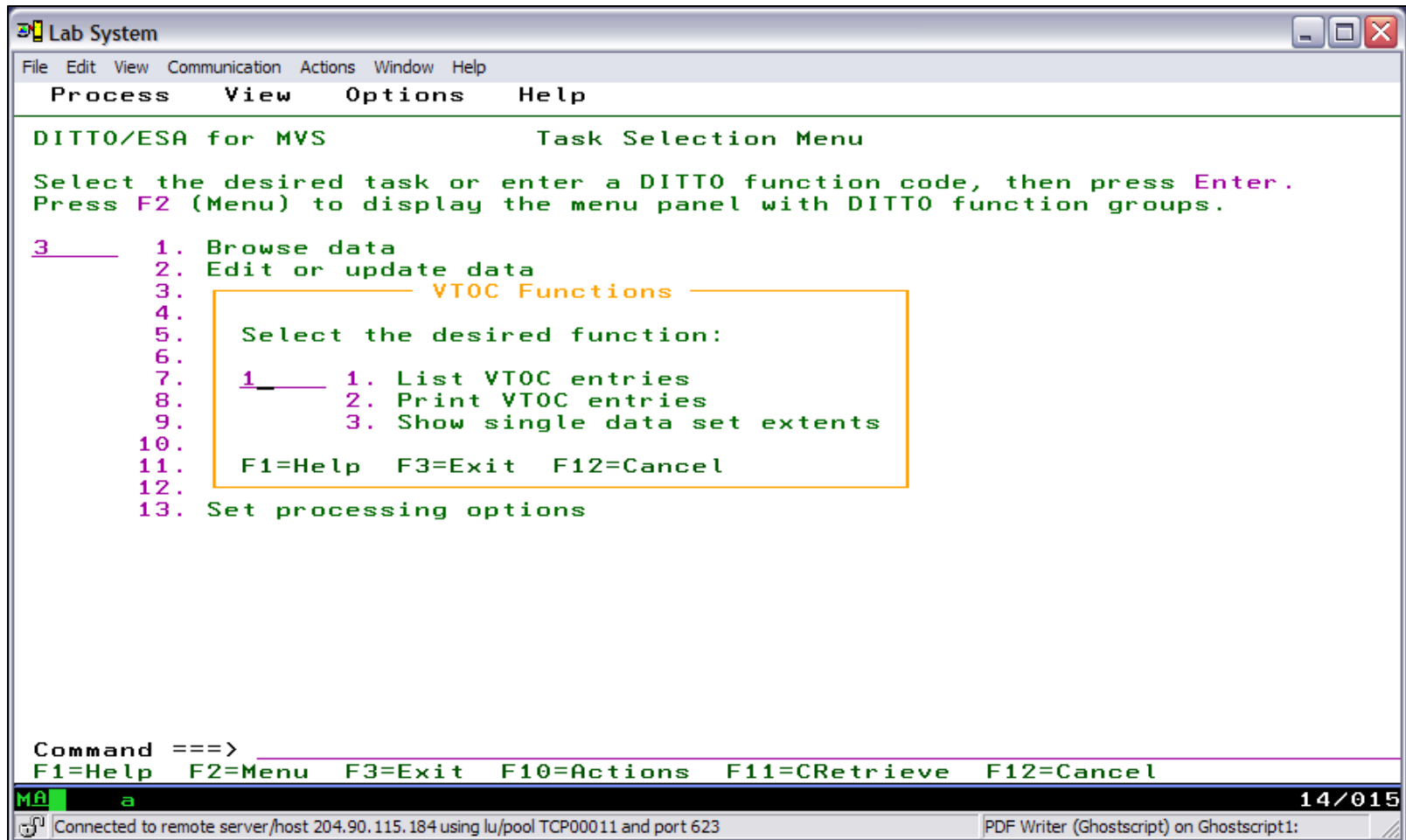
DITTO/ESA for MVS                      Task Selection Menu

Select the desired task or enter a DITTO function code, then press Enter.
Press F2 (Menu) to display the menu panel with DITTO function groups.

3_____ 1. Browse data
          2. Edit or update data
          3. Work with VTOC
          4. Work with catalog entries
          5. Work with OAM objects
          6. Print data
          7. Copy data
          8. Locate data
          9. Change data
         10. Create data
         11. Position a tape
         12. Tape specific functions
         13. Set processing options

Command ==> _____
F1=Help F2=Menu F3=Exit F10=Actions F11=CRetrieve F12=Cancel
MA a 08/003
Connected to remote server/host 204.90.115.184 using lu/pool TCP00011 and port 623 PDF Writer (Ghostscript) on Ghostscript1:
  
```

Catalog Structure – Using Ditto to View VTOC



```

Lab System
File Edit View Communication Actions Window Help
Process View Options Help

DITTO/ESA for MVS          Task Selection Menu

Select the desired task or enter a DITTO function code, then press Enter.
Press F2 (Menu) to display the menu panel with DITTO function groups.

3. 1. Browse data
   2. Edit or update data
   3. VTOC Functions
   4.
   5. Select the desired function:
   6.
   7. 1. List VTOC entries
   8. 2. Print VTOC entries
   9. 3. Show single data set extents
  10.
  11. F1=Help F3=Exit F12=Cancel
  12.
  13. Set processing options

Command ==>
F1=Help F2=Menu F3=Exit F10=Actions F11=CRetrieve F12=Cancel
MA a
Connected to remote server/host 204.90.115.184 using lu/pool TCP00011 and port 623 PDF Writer (Ghostscript) on Ghostscript1: 14/015
  
```

Catalog Structure – Using Ditto to View VTOC

Lab System

File Edit View Communication Actions Window Help

Process View Options Help

DITTO/ESA for MVS DVT - Display VTOC

Input

Volume serial vparc1 _

Data set name ** _____

Sort by NAME _____ specify NAME, EXTENT, DATE, or EDATE

Output _ _____ blank for display or P for printer

Command ==> _____

F1=Help F3=Exit F10=Actions F11=CRetrieve F12=Cancel

MA a 06/030

Connected to remote server/host 204.90.115.184 using lu/pool TCP00011 and port 623 PDF Writer (Ghostscript) on Ghostscript1:

Catalog Structure – Using Ditto to View VTOC

```

Lab System
File Edit View Communication Actions Window Help
Process View Options Help

DITTO/ESA for MVS          DVT - Display VTOC          Line 1 of 199

Unit 0D90 VOLSER VPARC1  3390 with 2000 cyls, 15 trks/cyl, 58786 bytes/trk

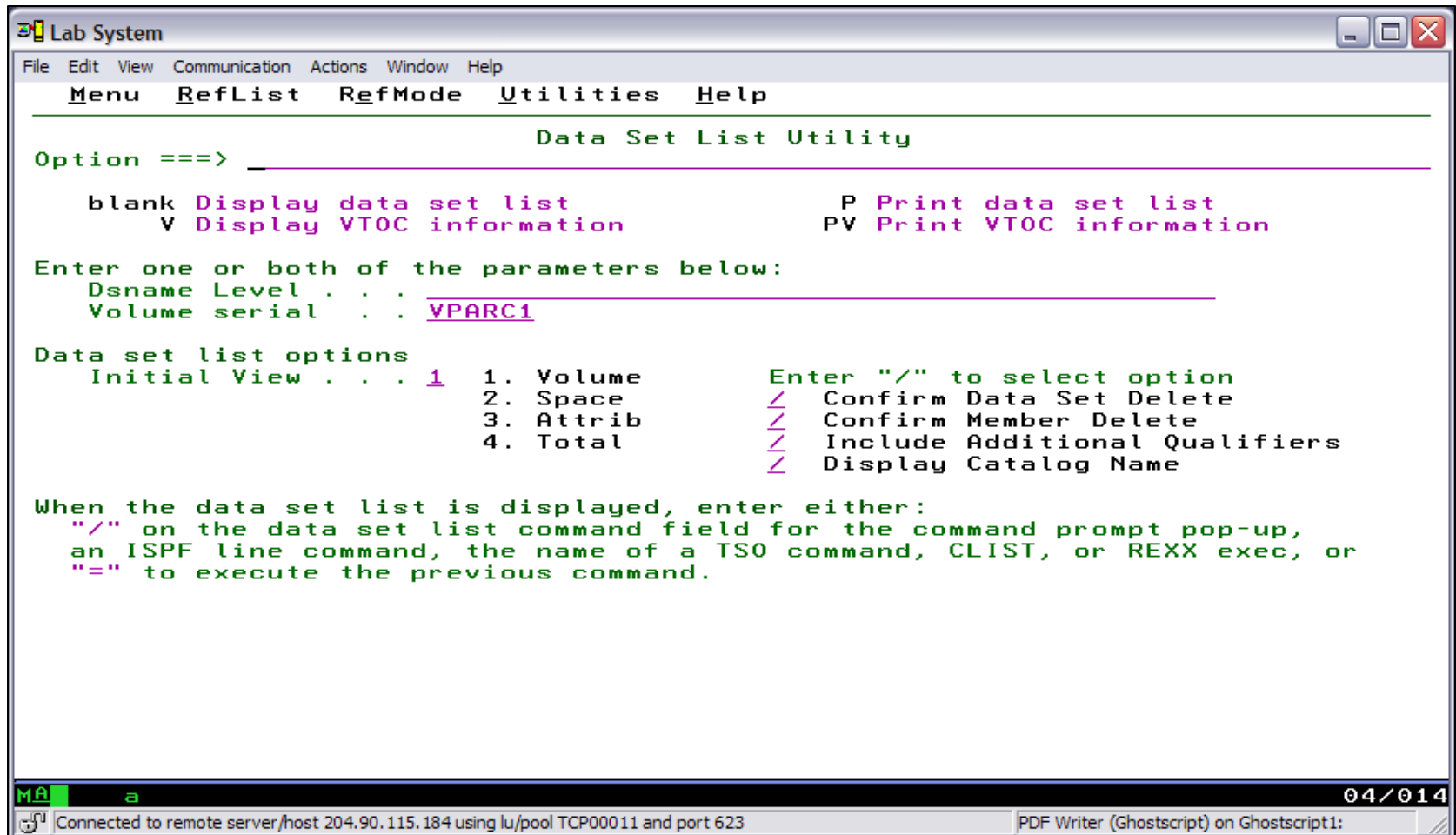
--- Data Set Name --- sorted by NAME --- Ext
1...5...10...15...20...25...30...35...40... seq  Cyl-hd  Cyl-hd  Reltrk,
*** VTOC EXTENT ***
ACCOUNTS.DSNDBD.ACCOUNTS.ACCTTS.I0001.A001      0      0  1      0  5      1,5
-----
1      246  3      246  3      3693,1
2      246  5      246  5      3695,1
3      246  6      246  6      3696,1
4      246  4      246  4      3694,1
ACCOUNTS.DSNDBD.ACCOUNTS.XCLIENT.I0001.A001    0      249  0      249  0      3735,1
BAPPLIC.CATALOG.BACKUP.G0002V00
COUPLE.ATR.SVSCPLEX.ARCHIVE.A0000000.DATA      0      39  0      55 14      585,255
COUPLE.ATR.SVSCPLEX.DELAYED.UR.A0000000.D      0      5  0      21 14      75,255
COUPLE.ATR.SVSCPLEX.RESTART.A0000000.DATA      0      22  0      38 14      330,255
COUPLE.ATR.SVSCPLEX.RESTART.SVSCPLEX.DATA      0      73  0      89 14     1095,255
COUPLE.ATR.SVSCPLEX.RM.DATA.SVSCPLEX.DATA      0      56  0      72 14      840,255
DB2CHECK.WORK                                  0      92  0      93 14     1380,30
IBMUSER.DDIR.D                                0     258  0     260 14     3870,45
IBMUSER.DDIR.I                                0     246  7     246  7     3697,1
IBMUSER.ISPF.ISPPROF                           0      91  0      91  1     1365,2
-----
1      91  2      91  2     1367,1
2      4  14      4  14      74,1
IBMUSER.ZOS.DATA                                0      94  0      95 14     1410,30
IBMUSER.ZOS.SYSLOG                             0     341  0     343 14     5115,45
SYS1.VTOCIX.VPARC1                             0      1  0      1  13      15,14

Command ==>
F1=Help  F2=Browse  F3=Exit  F4=Process  F5=RgtLeft  F6=RFind  F7=Bkwd  F8=Fwd
F10=Actions  F11=CRetrieve  F12=Cancel

MA a
30/015
Connected to remote server/host 204.90.115.184 using lu/pool TCP00011 and port 623
PDF Writer (Ghostscript) on Ghostscript1:

```

Catalog Structure – Using ISPF Data Set List Utility



```

Lab System
File Edit View Communication Actions Window Help
Menu RefList RefMode Utilities Help

Data Set List Utility

Option ==> _____

blank Display data set list          P Print data set list
V Display VTOC information          PV Print VTOC information

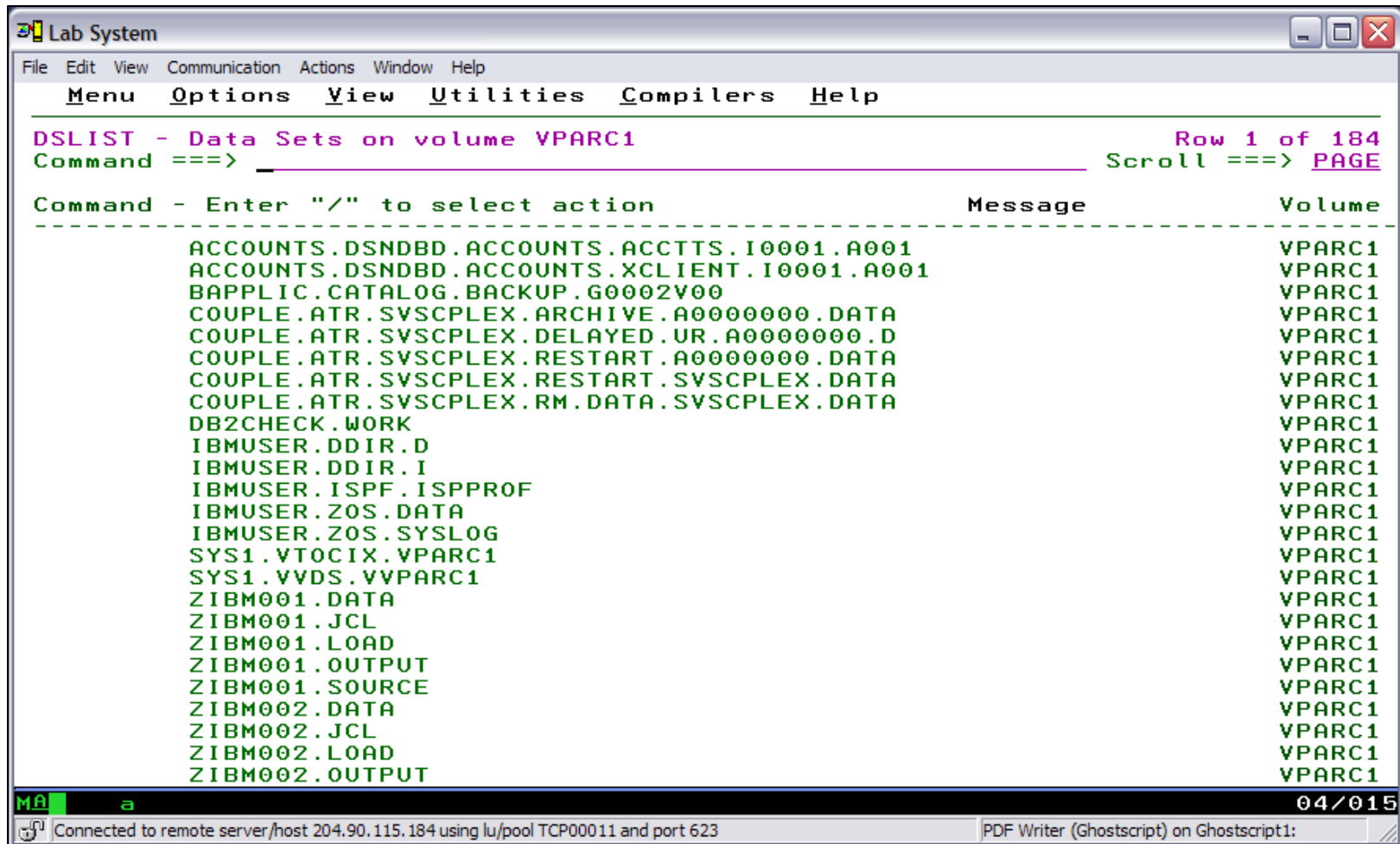
Enter one or both of the parameters below:
Dsname Level . . . _____
Volume serial . . VPARC1

Data set list options
Initial View . . . 1  1. Volume          Enter "/" to select option
                     2. Space           / Confirm Data Set Delete
                     3. Attrib          / Confirm Member Delete
                     4. Total           / Include Additional Qualifiers
                                      / Display Catalog Name

When the data set list is displayed, enter either:
"/" on the data set list command field for the command prompt pop-up,
an ISPF line command, the name of a TSO command, CLIST, or REXX exec, or
"=" to execute the previous command.

MA a 04/014
Connected to remote server/host 204.90.115.184 using lu/pool TCP00011 and port 623
PDF Writer (Ghostscript) on Ghostscript1:
  
```

Catalog Structure – Using ISPF Data Set Utility



The screenshot shows the ISPF Data Set Utility (DSLIST) window. The title bar is "Lab System". The menu bar includes "File", "Edit", "View", "Communication", "Actions", "Window", and "Help". Below the menu bar, there are tabs for "Menu", "Options", "View", "Utilities", "Compilers", and "Help". The main display area shows the following text:

```

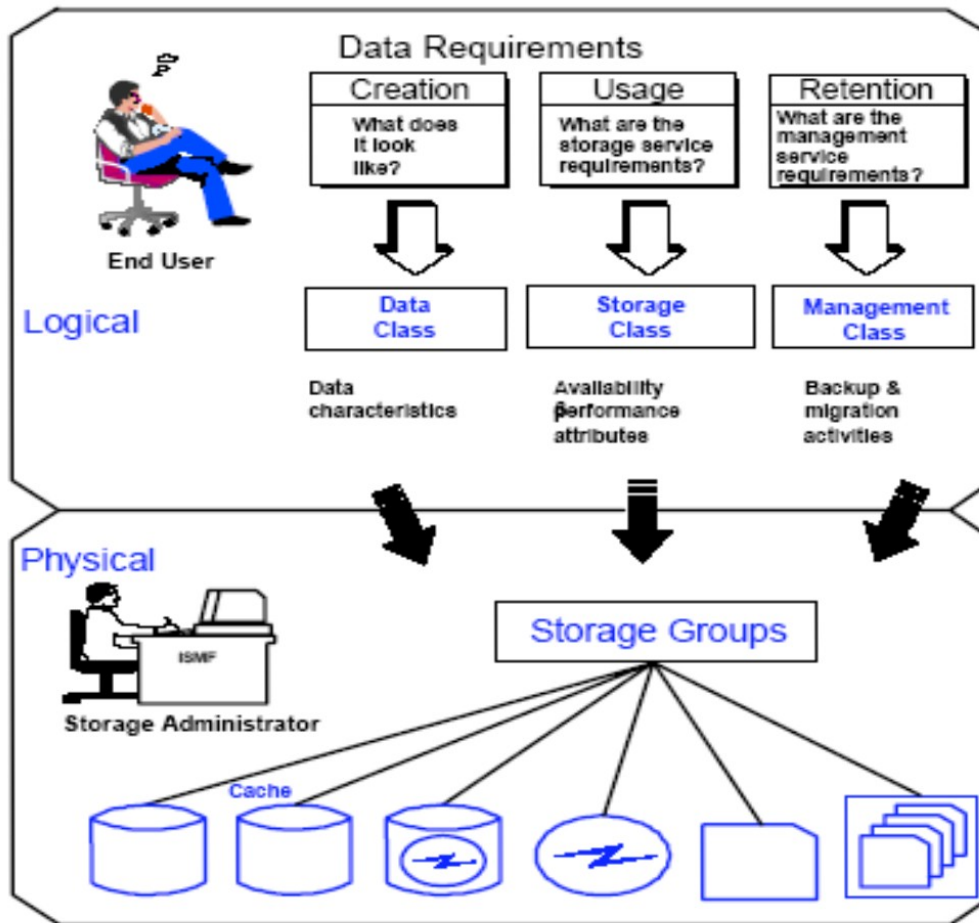
DSLIST - Data Sets on volume VPARC1                                Row 1 of 184
Command ==> _                                                    Scroll ==> PAGE

Command - Enter "/" to select action                                Message                                Volume
-----
ACCOUNTS.DSNDBD.ACCOUNTS.ACCTTS.I0001.A001                        VPARC1
ACCOUNTS.DSNDBD.ACCOUNTS.XCLIENT.I0001.A001                      VPARC1
BAPPLIC.CATALOG.BACKUP.G0002V00                                  VPARC1
COUPLE.ATR.SVSCPLEX.ARCHIVE.A00000000.DATA                       VPARC1
COUPLE.ATR.SVSCPLEX.DELAYED.UR.A00000000.D                      VPARC1
COUPLE.ATR.SVSCPLEX.RESTART.A00000000.DATA                       VPARC1
COUPLE.ATR.SVSCPLEX.RESTART.SVSCPLEX.DATA                       VPARC1
COUPLE.ATR.SVSCPLEX.RM.DATA.SVSCPLEX.DATA                       VPARC1
DB2CHECK.WORK                                                    VPARC1
IBMUSER.DDIR.D                                                    VPARC1
IBMUSER.DDIR.I                                                    VPARC1
IBMUSER.ISPF.ISPPROF                                              VPARC1
IBMUSER.ZOS.DATA                                                  VPARC1
IBMUSER.ZOS.SYSLOG                                                VPARC1
SYS1.VTOCIX.VPARC1                                                VPARC1
SYS1.VVDS.VVPARC1                                                 VPARC1
ZIBM001.DATA                                                       VPARC1
ZIBM001.JCL                                                         VPARC1
ZIBM001.LOAD                                                        VPARC1
ZIBM001.OUTPUT                                                      VPARC1
ZIBM001.SOURCE                                                      VPARC1
ZIBM002.DATA                                                       VPARC1
ZIBM002.JCL                                                         VPARC1
ZIBM002.LOAD                                                        VPARC1
ZIBM002.OUTPUT                                                      VPARC1
  
```

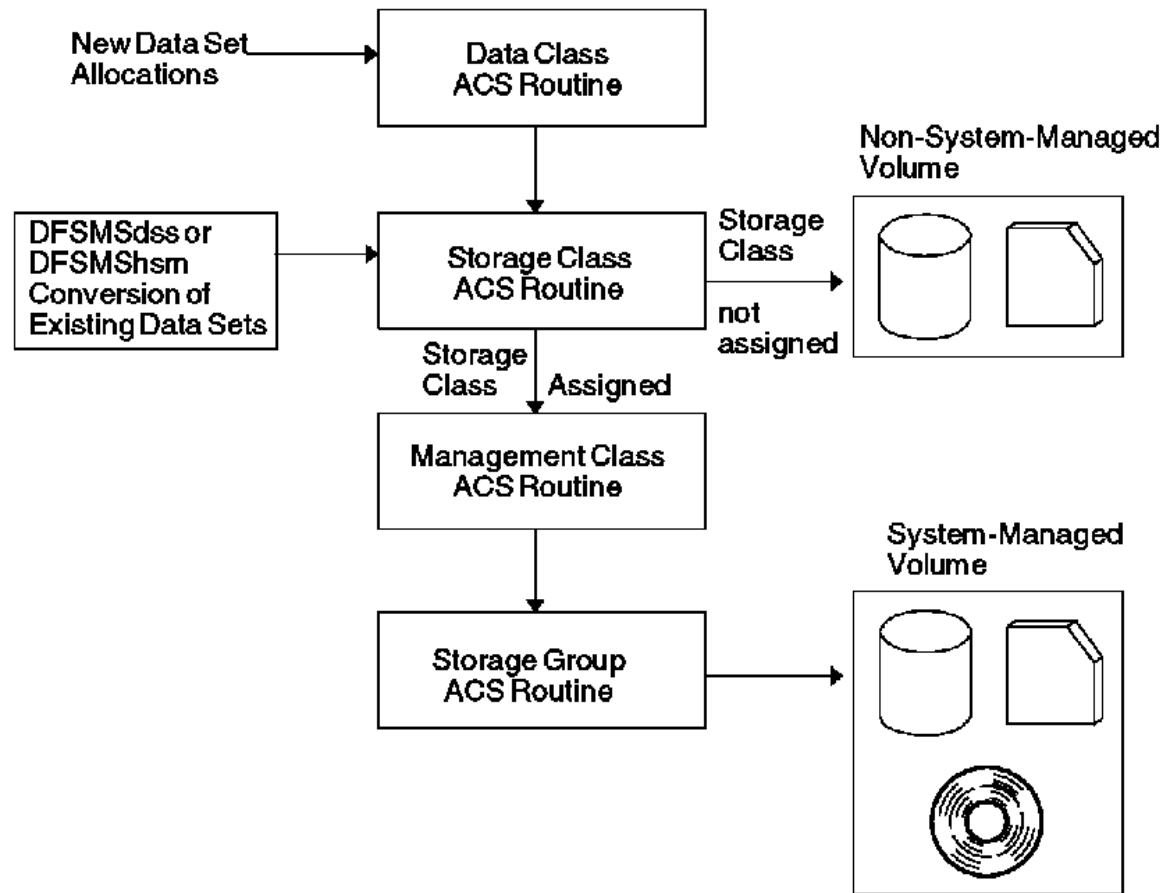
At the bottom of the window, there is a status bar showing "MA a" and "04/015". Below the status bar, there is a connection message: "Connected to remote server/host 204.90.115.184 using lu/pool TCP00011 and port 623". To the right of the connection message, it says "PDF Writer (Ghostscript) on Ghostscript1:".

Data Facility / Storage Management Subsystem (SMS)

What Is DFSMS?



Data Facility / Storage Management Subsystem (SMS)



DFSMSdfp – Automatic Class Selection (ACS) Routine

Automatic Class Selection (ACS) Routine reads submitted JCL, modifies JCL based on coded criteria, then returns control to z/OS for allocation processing.

ACS Routine chronological processing

Data Class > Storage Class > Mgmt Class > Assign Storage Group (device media)

- | | |
|---------------------|---|
| 1) Data Class | assigned when coded criteria is matched |
| 2) Storage Class | assigned when coded criteria is matched |
| 3) Management Class | assigned when coded criteria is matched |
| 4) Storage Group | ACS routine directs allocation to use specific device resources based on assigned 'Class' criteria. |



DFSMSdfp – Automatic Class Selection (ACS) Routine

What JCL DD operands influence the ACS routine?

JCL DD statement coded

- DATACLAS=, MGMTCLAS=, STORCLAS=
- The values would be created by DASD administrator

JCL DD statement DSN= and DISP=

where a data set name standard is established, then
ACS routine assigns JCL DD operands for new data set
allocations based upon DSN=value



DFSMSdfp – Automatic Class Selection (ACS) Routine

Storage Class

The storage class contains the attributes that identify a storage service level to be used by SMS for storage of the data set. It replaces the storage attributes that are specified on the UNIT and VOLUME parameters for non-SMS-managed data sets.

Example Storage Class ACS Routine code syntax:

```
WHEN (&STORCLAS = 'value')  
    SET &STORGRP  = 'value'
```


z/OS Data Facility – Using ISMF

** TSO DGTFMD01

```

Lab System
File Edit View Communication Actions Window Help
Menu Utilities Compilers Options Status Help
-----
ISPF Primary Option Menu
Option ==> is_
More: +

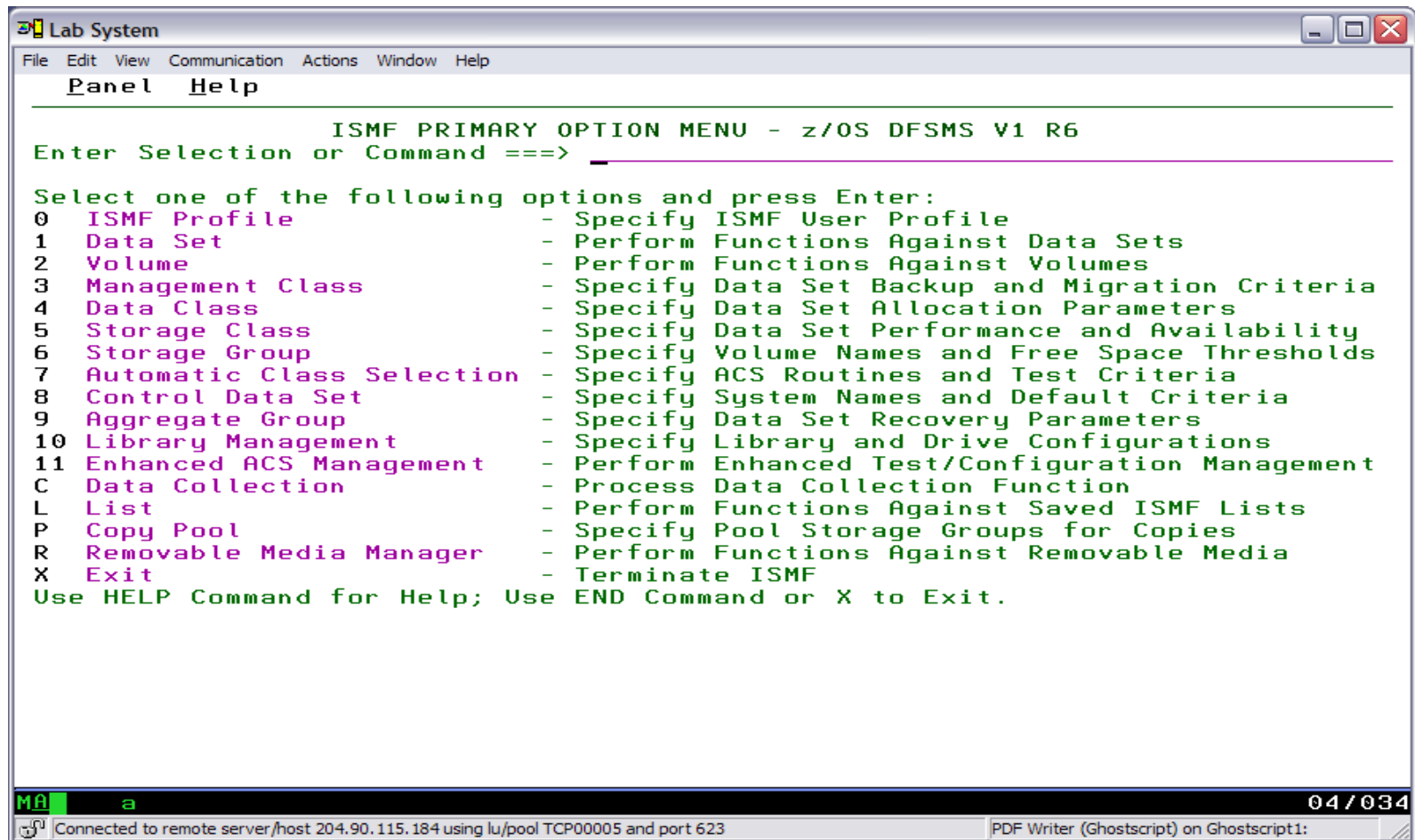
0 Settings      Terminal and user parameters      User ID . : ZIBM030
1 View         Display source data or listings    Time. . . : 14:12
2 Edit         Create or change source data       Terminal. : 3278
3 Utilities     Perform utility functions         Screen. . : 1
4 Foreground   Interactive language processing    Language. : ENGLISH
5 Batch        Submit job for language processing Appl ID . : ISR
6 Command      Enter TSO or Workstation commands   TSO logon : SPFPROCE
7 Dialog Test  Perform dialog testing             TSO prefix: ZIBM030
8 LM Facility  Library administrator functions    System ID : SOW1
9 IBM Products IBM program development products MVS acct. : FB3
10 SCLM        SW Configuration Library Manager Release . : ISPF 5.6
11 Workplace  ISPF Object/Action Workplace

----- Other Install Products -----

SD SDSF        System Display and Search Facility
IP IPCS        Inter Problem Control Facility
IS ISMF        Inter Storage Management Facility
SM SMP/E       SMP/E and CBIPO Dialogs
HC HCD         HW Configuration Definition Dialog
R RACF         Resource Access Control Facility
S DFSORT       Data Facility Sort
OE OEDIT       OpenEdition MVS Edit files
OB OBROWSE     OpenEdition MVS Browse files
OS OSHELL      OpenEdition MVS ISPF Shell

Enter X to Terminate using log/list defaults
MA a
04/016
Connected to remote server/host 204.90.115.184 using lu/pool TCP00005 and port 623
PDF Writer (Ghostscript) on Ghostscript1:
  
```

z/OS Data Facility – Using ISMF



The screenshot shows a terminal window titled "Lab System" with a menu for the ISMF Primary Option Menu. The menu lists various options for managing data sets, volumes, and storage groups. The options are numbered 0 through 11, with additional options C, L, P, R, and X. Each option is followed by a brief description of its function. The terminal also shows a status bar at the bottom indicating the user is connected to a remote server and the date is 04/03/4.

```

Lab System
File Edit View Communication Actions Window Help
Panel Help

ISMF PRIMARY OPTION MENU - z/OS DFSMS V1 R6
Enter Selection or Command ==> _

Select one of the following options and press Enter:
0 ISMF Profile - Specify ISMF User Profile
1 Data Set - Perform Functions Against Data Sets
2 Volume - Perform Functions Against Volumes
3 Management Class - Specify Data Set Backup and Migration Criteria
4 Data Class - Specify Data Set Allocation Parameters
5 Storage Class - Specify Data Set Performance and Availability
6 Storage Group - Specify Volume Names and Free Space Thresholds
7 Automatic Class Selection - Specify ACS Routines and Test Criteria
8 Control Data Set - Specify System Names and Default Criteria
9 Aggregate Group - Specify Data Set Recovery Parameters
10 Library Management - Specify Library and Drive Configurations
11 Enhanced ACS Management - Perform Enhanced Test/Configuration Management
C Data Collection - Process Data Collection Function
L List - Perform Functions Against Saved ISMF Lists
P Copy Pool - Specify Pool Storage Groups for Copies
R Removable Media Manager - Perform Functions Against Removable Media
X Exit - Terminate ISMF
Use HELP Command for Help; Use END Command or X to Exit.

MA a 04/03/4
Connected to remote server/host 204.90.115.184 using lu/pool TCP00005 and port 623 PDF Writer (Ghostscript) on Ghostscript1:
  
```

Key Manuals for z/OS Data Sets, Catalogs & VTOCs

DFSMS Bookshelf

Introduction

Using Data Sets

Implementing System Managed Storage

Managing Catalogs

DFSMSdfp Utilities

DFSMSdfp Advanced Services



Unit summary

Having completed this unit, you should be able to:

- ✓ Describe data set naming rules
- ✓ Describe a partitioned data set
- ✓ Describe a sequential data set
- ✓ Describe a VSAM data set
- ✓ Describe a data set extent
- ✓ Describe role of the system catalog and user catalogs
- ✓ Describe role of VTOC
- ✓ Describe z/OS based Unix filesystems