

# z/OS Introduction and Workshop

## Unix System Services

















# Unit objectives

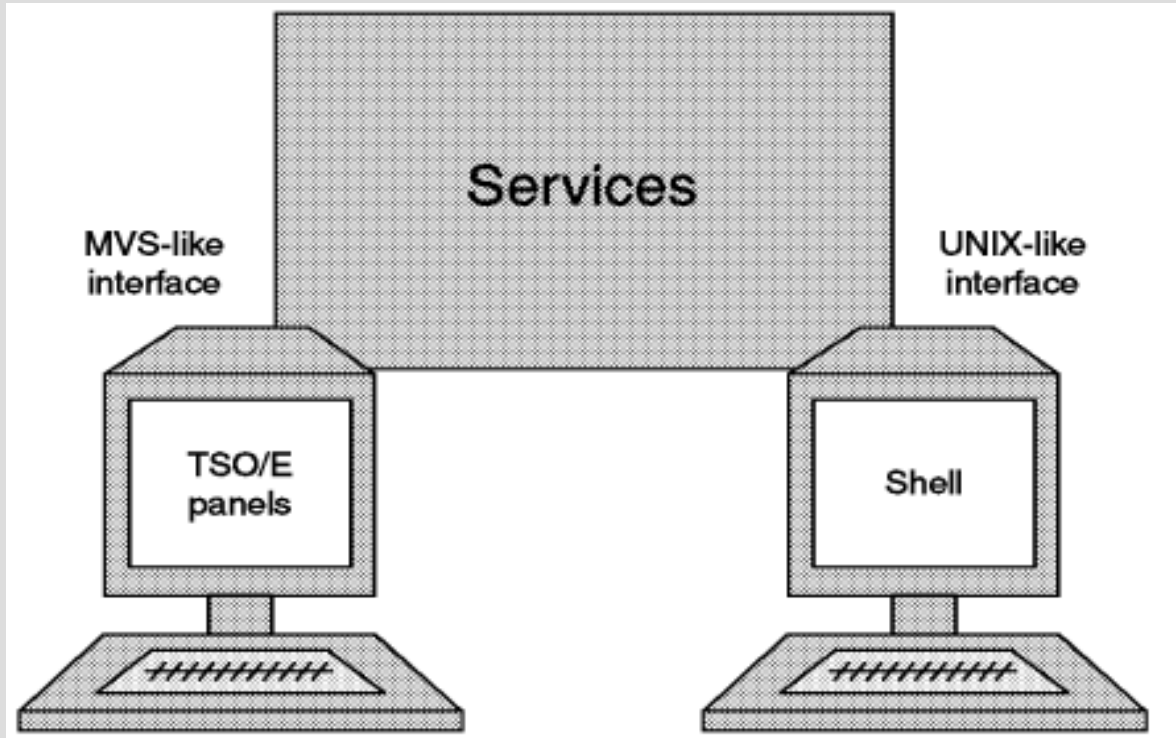
After completing this unit, you should be able to:

- Understand Unix System Services is a base 'element'
- Understand z/OS uses both MVS and Unix simultaneously
- Understand z/OS is an open operating system capable of web enabling all applications
- Understand z/OS differences between MVS data sets and Unix files
- Understand executable programs can be stored in MVS data sets or Unix files
- Understand data can be stored in MVS data sets or Unix files
- Understand z/OS programs can simultaneously access MVS data sets and Unix files
- Recognize the Unix System Services 3 character component identifier

# Unix System Services - Comparisons

<u>MVS Environment</u>		<u>Activity</u>		<u>Shell Environment</u>
CLIST & REXX (TSO)		Programming for Everyday Tasks		Shell Scripts & REXX
ISPF		Editing		ed, vi
SDSF		Job Control		ps, jobs, kill
Submit Job (TSO)		Background Job		Command &
Compilers, LINK		Programming		c89, make, ar
TSO Test Inspect		Debugging		dbx
DFSMSHsm ISPF		Data Management		tar, cpio, pax

# Unix System Services – ISHELL, OMVS, TELNET



# Unix System Services

z/OS UNIX System Services is tightly integrated into the operating system and a key element of IBM open and distributed computing strategy.

CICS, IMS, Db2 Java Runtime, MQSeries, Communications Server all use z/OS UNIX.

z/OS UNIX applications can communicate with Db2, CICS, IMS, and MQSeries.

z/OS UNIX is built for the enterprise where you can prioritize workloads for high performance when running with a mixed workload.

z/OS UNIX has a hierarchical file system familiar to UNIX users.

Applications can work with data in both UNIX hierarchical file systems and traditional MVS data sets

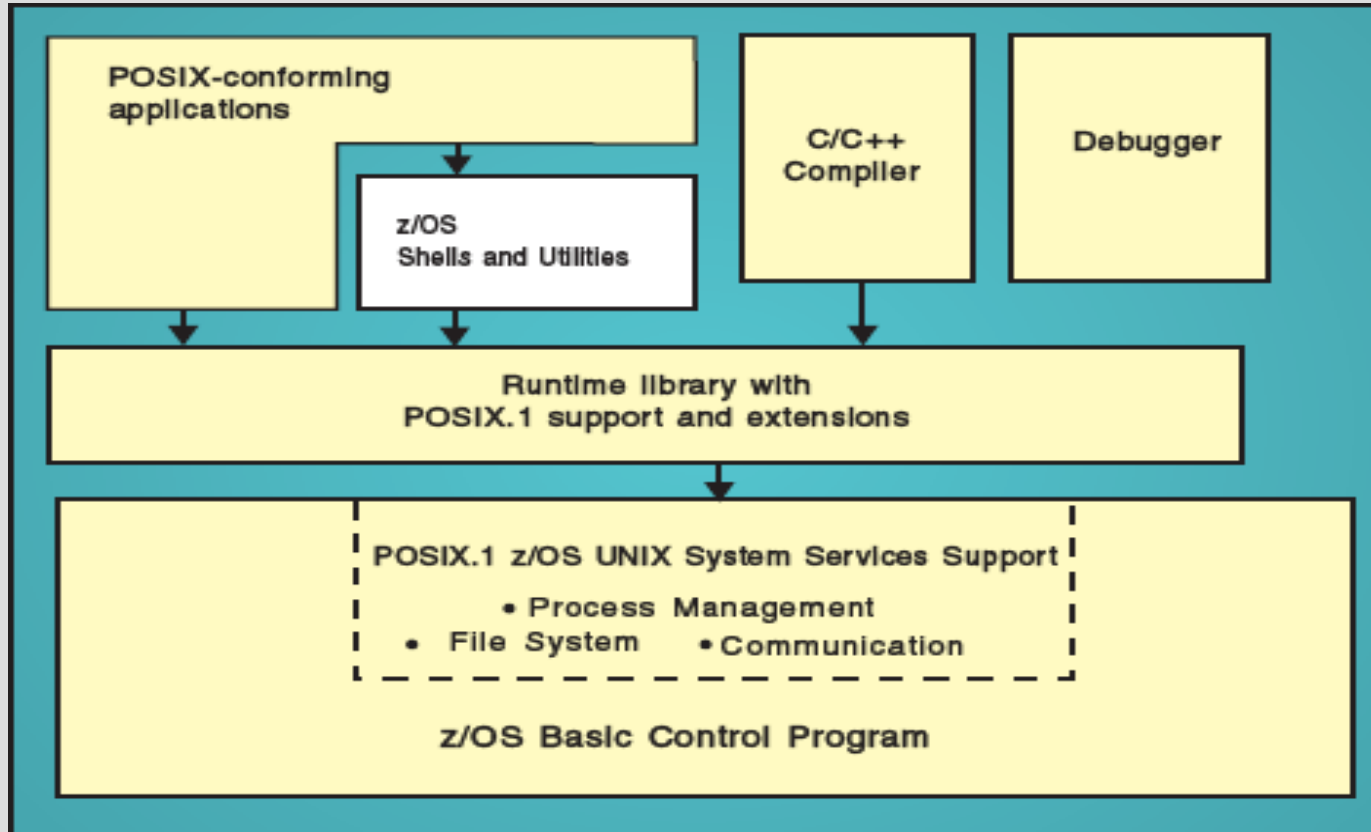
# Unix System Services - tightly integrated within z/OS BCP

The kernel is part of the BCP element of z/OS; it sends instructions to the processor, schedules work, manages I/O, and tracks processes, open files, and shared memory, among other things. Other parts of the operating system or applications request the kernel's services using assembler callable services (called syscalls). No work gets done in z/OS UNIX without involving the kernel.

A common misconception is that application programmers have a choice of either running UNIX programs that use UNIX services and file systems or running MVS programs that use MVS services and MVS data sets. You do not have to choose between z/OS UNIX and MVS.

There is no wall between UNIX and MVS and there are no "sides"; you do not run "on the UNIX side" or "the MVS side". z/OS is a powerful blend of UNIX System Services and MVS.

# Unix System Services



# UNIX System Services – File Systems

z/OS UNIX System Services (z/OS UNIX) allows z/OS to access UNIX files.

A z/OS UNIX file system is hierarchical and byte-oriented.

Files in the UNIX file system are sequential files and are accessed as byte streams.

UNIX files and traditional z/OS data sets can reside on the same DASD volume.



# Unix System Services – File Systems

A physical file system (PFS) controls access to data.

PFSs receive and act upon requests to read and write files that they control.  
The format of these requests is defined by the PFS interface.

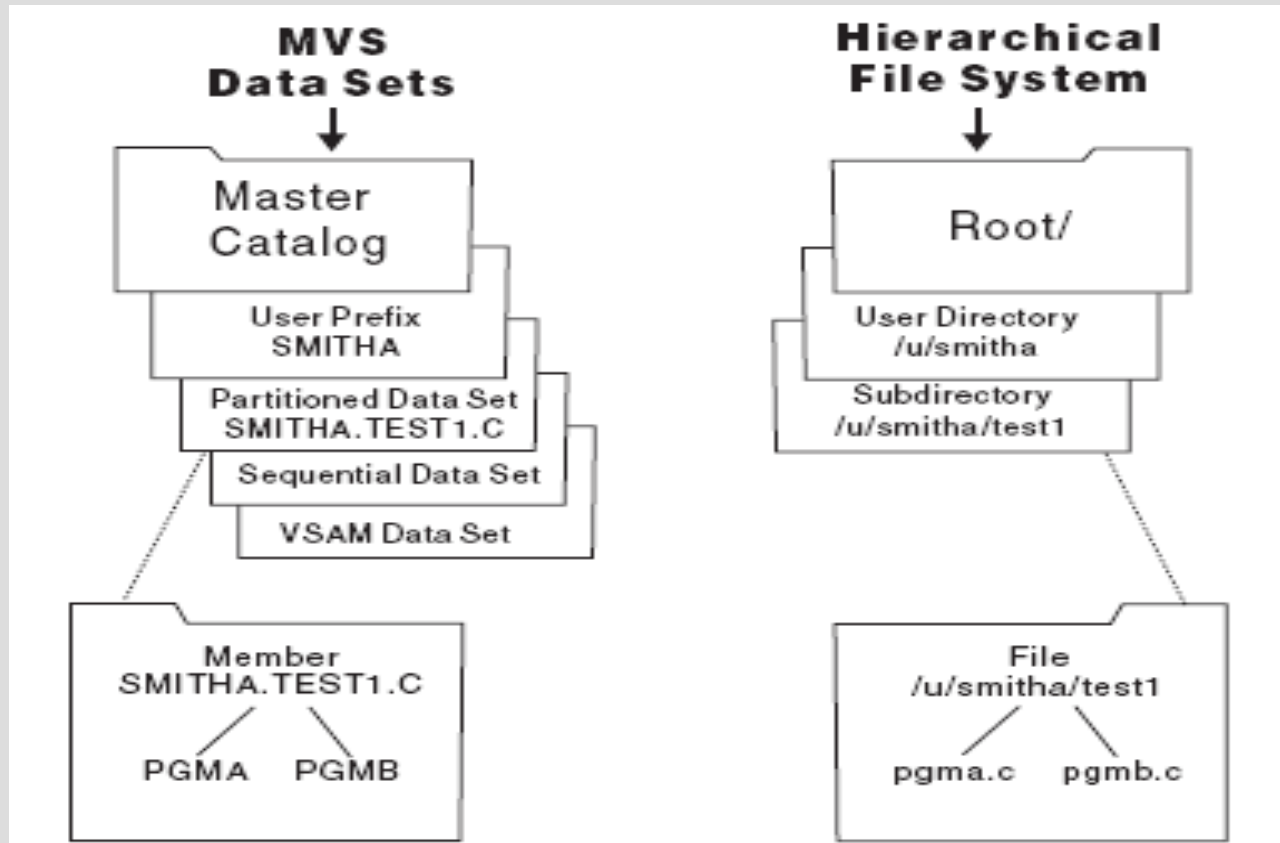
PFSs include pipes, sockets, the Network File System client, and the following UNIX file systems:

HFS - Hierarchical File System (special data set type HFS) → **do not use**

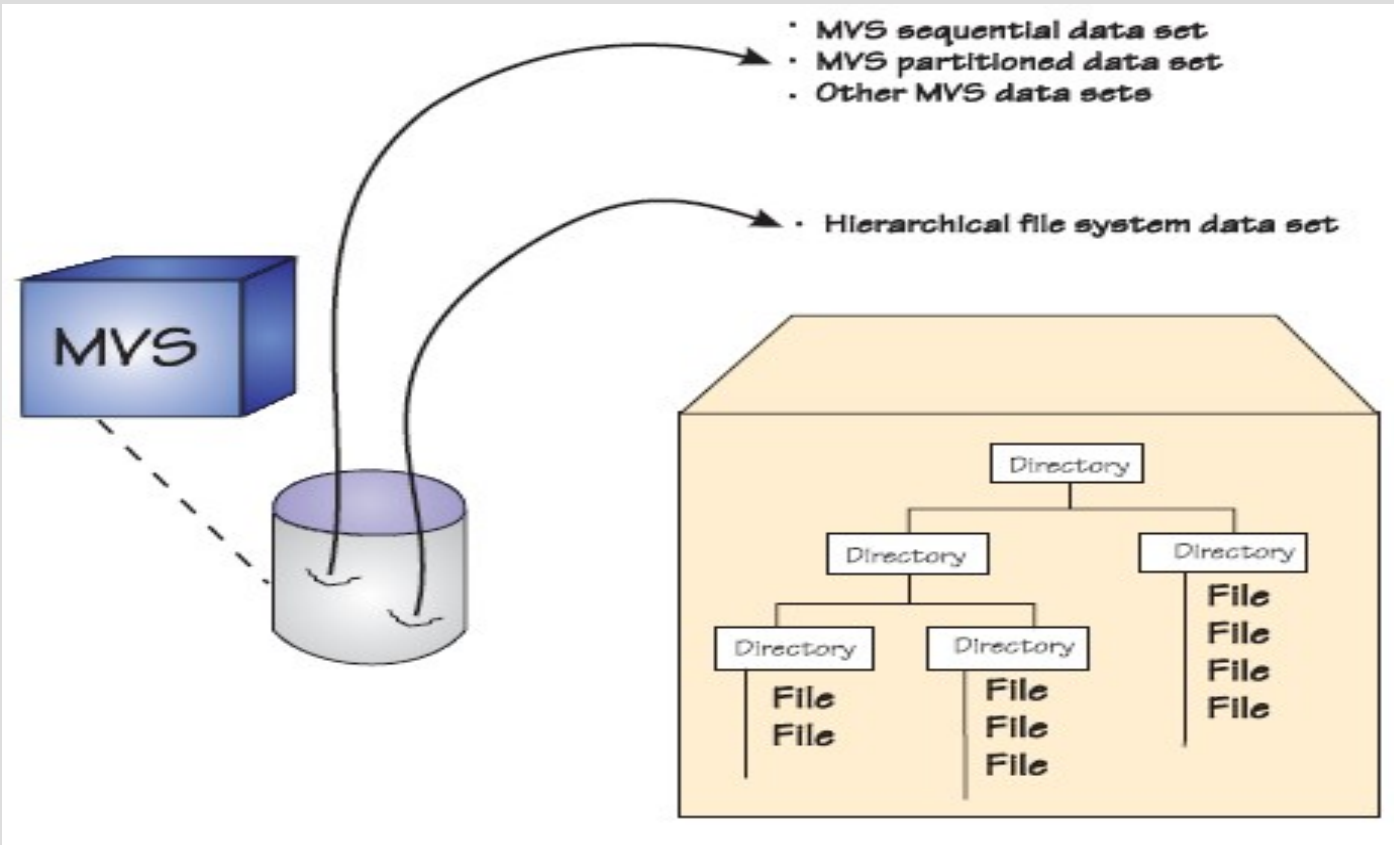
zFS - zSeries File System (VSAM formatted by utility to be unix file system)

TFS - Temporary File System

# Unix System Services – File Systems



# Unix System Services – File Systems



# JCL to create Unix filesystem

```
//DEFINE      EXEC PGM=IDCAMS
//SYSPRINT   DD SYSOUT=*
//SYSINDD *
    DEFINE CLUSTER(NAME(ZOS.UNIX.USER) LINEAR -
    SHAREOPTIONS(2) VOLUMES(VPWRKC) CYL(3000))
// IF RC = 0 THEN
//FORMAT     EXEC PGM=IOEAGFMT,REGION=0M,
// PARM=('-aggregate ZOS.UNIX.USER -compat')
//SYSPRINT   DD SYSOUT=*
//STDOUT    DD SYSOUT=*
//STDERR    DD SYSOUT=*
//SYSUDUMP   DD DUMMY
//CEEDUMP   DD DUMMY
// ELSE
// ENDIF
```

# JCL to mount Unix filesystem

```
//MOUNT      EXEC PGM=IKJEFT01
//SYSPRINT   DD SYSOUT=*
//SYSTSPRT   DD SYSOUT=*
//SYSTEM     DD DUMMY
//SYSTSIN    DD *
    MKDIR '/u/zos/zfs'
    MOUNT FILESYSTEM('ZOS.UNIX.USER') -
          TYPE(ZFS) MODE(RDWR) -
          MOUNTPOINT('/u/zos/zfs')
```

/\*

# Unix System Services – Data Sets with Unix Filesystems

```
Class - svscmvx
File Edit View Communication Actions Window Help
Menu Options View Utilities Compilers Help
DSLIST - Data Sets Matching OMVS Row 1 of 26
Command ==> _____ Scroll ==> PAGE
Command - Enter "/" to select action
-----Dsorg Recfm Lrecl Blksz-----
OMVS
OMVS.SVSCPLEX.ROOT
OMVS.SVSCPLEX.ROOT.ZFS VS
OMVS.SVSCPLEX.ROOT.ZFS.DATA VS ? ? ?
OMVS.S0W1.DEV
OMVS.S0W1.DEV.ZFS VS
OMVS.S0W1.DEV.ZFS.DATA VS ? ? ?
OMVS.S0W1.ETC
OMVS.S0W1.ETC.ZFS VS
OMVS.S0W1.ETC.ZFS.DATA VS ? ? ?
OMVS.S0W1.HFS
OMVS.S0W1.SYSTEM.ZFS VS
OMVS.S0W1.SYSTEM.ZFS.DATA VS ? ? ?
OMVS.S0W1.TMP HFS U 0 0
OMVS.S0W1.VAR
OMVS.S0W1.VAR.ZFS VS
OMVS.S0W1.VAR.ZFS.DATA VS ? ? ?
OMVS.S0W1.VARWBEM
OMVS.S0W1.VARWBEM.ZFS VS
OMVS.S0W1.VARWBEM.ZFS.DATA VS ? ? ?
OMVS.USERS HFS U 0 0
OMVS.USER.MAIL HFS U 0 0
OMVS.VERSYSB.VERSION.HFS HFS U 0 0
OMVS.VERSYSB.VERSION.ZFS VS
OMVS.VERSYSB.VERSION.ZFS.DATA VS ? ? ?
```

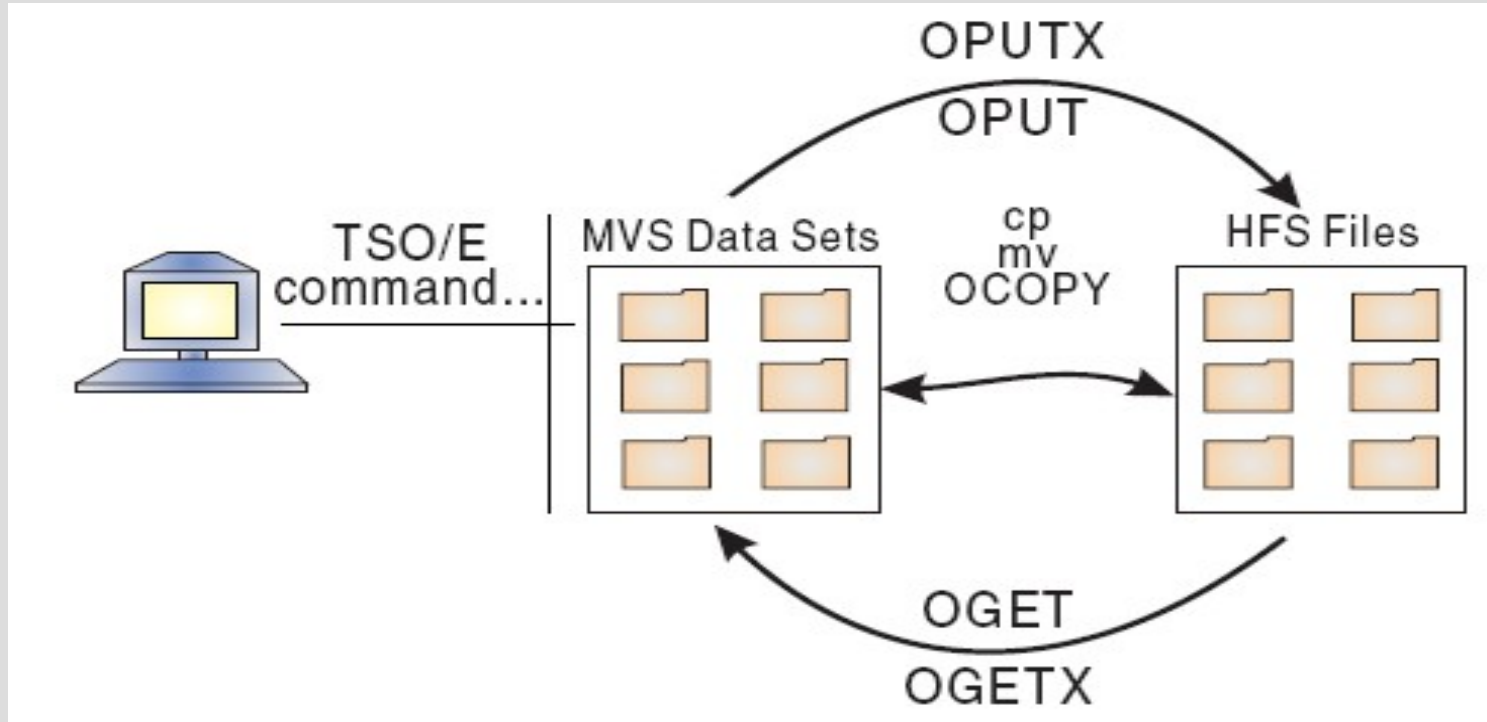
MA a

Connected to remote server/host 204.90.115.184 using lu/pool TCP00014 and port 623

# Unix System Services – D OMVS,F display mounted files

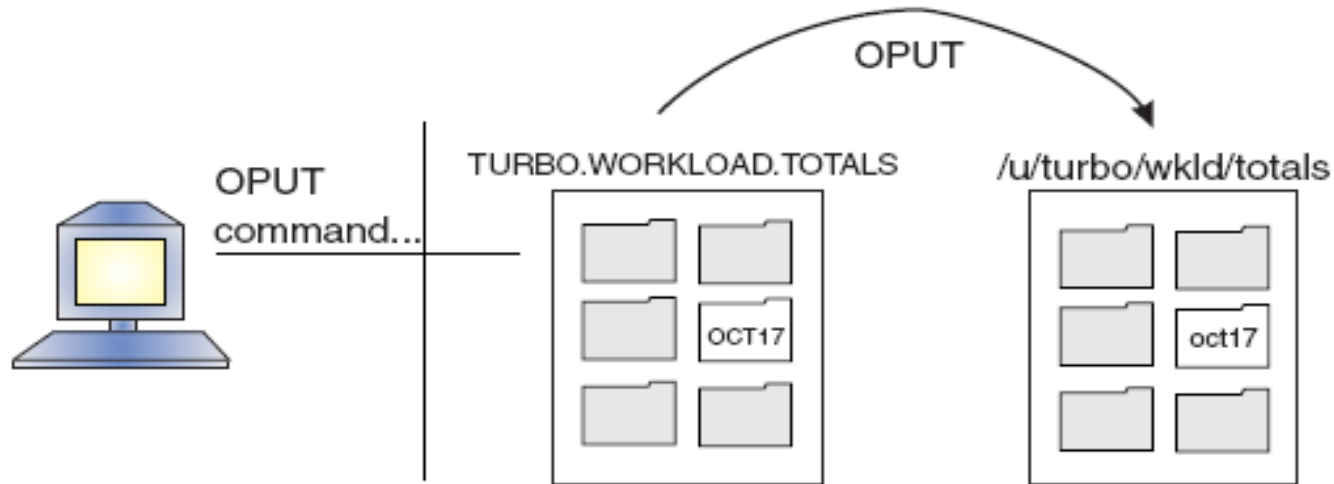
```
Class - svscmvx
File Edit View Communication Actions Window Help
Display Filter View Print Options Help
-----
SDSF SYSLOG      546.102 S0W1 S0W1 02/23/2008 0W      714      COLUMNS  51 130
COMMAND INPUT ==> -                               SCROLL   ==> CSR
0290 D OMVS,F
0090 BPX0045I 10.14.59 DISPLAY OMVS 459
0090 OMVS      000E ACTIVE                          OMVS=(OM,FS,SV,MS,61,65)
0090 TYPENAME  DEVICE -----STATUS----- MODE MOUNTED LATCHES
0090 ZFS       50 ACTIVE                               READ  02/17/2008 L=62
0090 NAME=DFH320.ZFS                                16.58.54 Q=0
0090 PATH=/VERYSYB/usr/lpp/cicsts/cicsts32
0090 AGGREGATE NAME=DFH320.ZFS
0090 OWNER=S0W1 AUTOMOVE=Y CLIENT=N
0090 ZFS       48 ACTIVE                               READ  02/17/2008 L=60
0090 NAME=WAS610.SIWOZFS                             16.58.52 Q=0
0090 PATH=/VERYSYB/usr/lpp/zWebSphere_OM
0090 AGGREGATE NAME=WAS610.SIWOZFS
0090 OWNER=S0W1 AUTOMOVE=Y CLIENT=N
0090 ZFS       47 ACTIVE                               READ  02/17/2008 L=59
0090 NAME=WAS610.SBBOZFS                             16.58.51 Q=0
0090 PATH=/VERYSYB/usr/lpp/zWebSphere
0090 AGGREGATE NAME=WAS610.SBBOZFS
0090 OWNER=S0W1 AUTOMOVE=Y CLIENT=N
0090 ZFS       42 ACTIVE                               READ  02/17/2008 L=54
0090 NAME=ESB601.SBSBZFS                             16.58.46 Q=0
0090 PATH=/VERYSYB/usr/lpp/zWESB
0090 AGGREGATE NAME=ESB601.SBSBZFS
0090 OWNER=S0W1 AUTOMOVE=Y CLIENT=N
0090 ZFS       41 ACTIVE                               READ  02/17/2008 L=53
0090 NAME=WPS601.SBPZZFS                             16.58.45 Q=0
0090 PATH=/VERYSYB/usr/lpp/zWPS
0090 AGGREGATE NAME=WPS601.SBPZZFS
MÁ a
Connected to remote server/host 204.90.115.184 using lu/pool TCP00014 and port 623
```

# Unix System Services – MVS Data Sets <> Unix Files





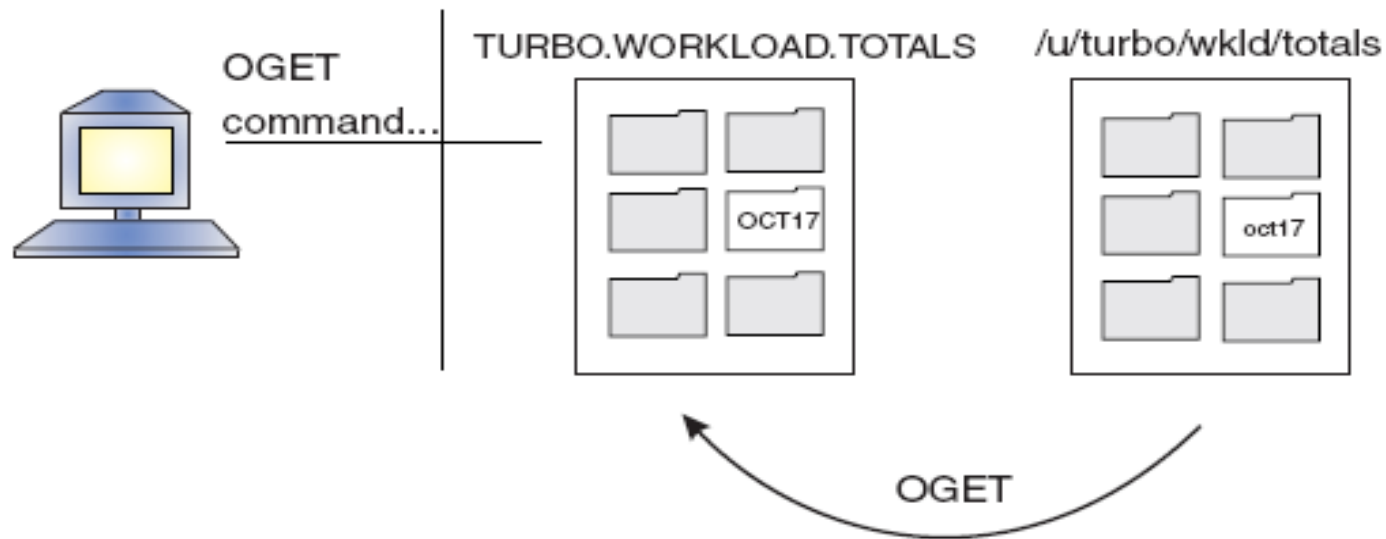
# Unix System Services – MVS Data Sets <> Unix Files



If the user ID TURBO wants to copy a member of a PDSE into a file, TURBO enters the following TSO/E OPUT command:

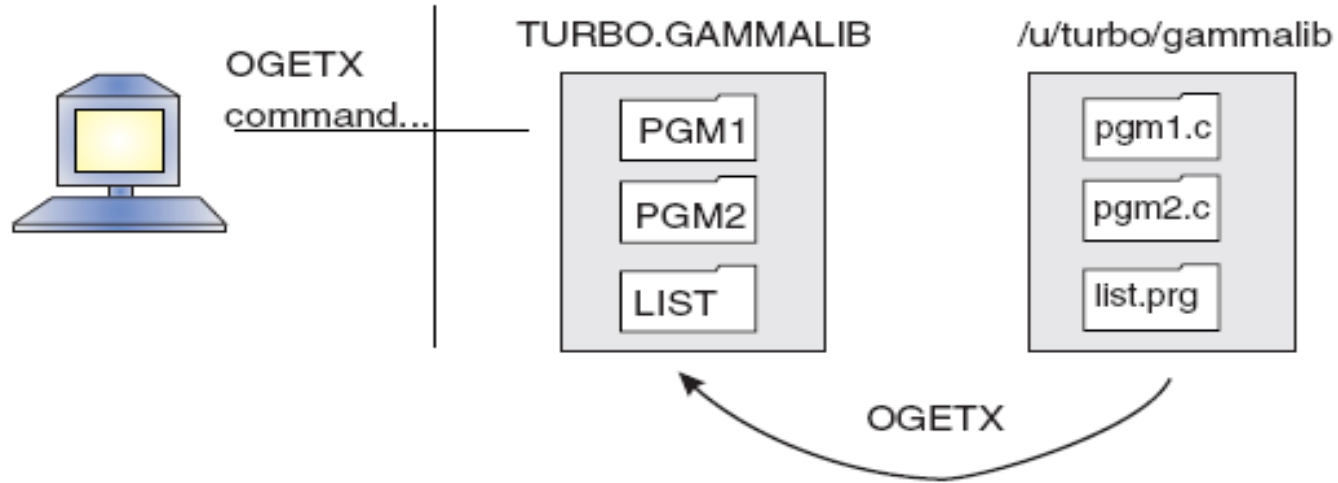
```
OPUT WORKLOAD.TOTALS(OCT17) '/u/turbo/wkld/totals/oct17' TEXT CONVERT(YES)
```

# Unix System Services – MVS Data Sets <> Unix Files



If a person with the user ID TURBO enters the following command:  
OGET '/u/turbo/wkld/totals/oct17' WORKLOAD.TOTALS(OCT17) CONVERT(YES)

# Unix System Services – MVS Data Sets <> Unix Files



User TURBO wants to copy the directory **/u/turbo/gammlib** into the partitioned data set TURBO.GAMMALIB. He issues the command:

```
OGETX /u/turbo/gammlib GAMMALIB LC SUFFIX
```

# Unix System Services – Unix Process display using SDSF

```
Class - svscmvx
File Edit View Communication Actions Window Help
  Display Filter View Print Options Help
-----
SDSF PROCESS DISPLAY S0W1 ALL LINE 1-13 (13)
COMMAND INPUT ==> ps_ SCROLL ==> CSR
PREFIX=* DEST=(ALL) OWNER=* SYSNAME=
NP JOBNAME JobID Status Owner State CPU-Time
BPX0INIT FILE SYS KERNEL WAIT OMVSKERN MF 4.52
INETD1 STC00563 SWAPPED,FILE SYS KERNEL WAIT TCPIP 1FI 0.01
TN3270 STC00565 RUNNING TCPIP 1R 221.04
TN3270 STC00565 RUNNING TCPIP 1R 221.04
TN3270 STC00565 RUNNING TCPIP MR 221.04
TCPIP STC00564 RUNNING TCPIP MR 422.84
FTPSERVE STC00559 SWAPPED,FILE SYS KERNEL WAIT TCPIP 1FI 7.61
CEA FILE SYS KERNEL WAIT STCOPER 1F 0.03
TCPIP STC00564 FILE SYS KERNEL WAIT TCPIP 1F 422.84
TN3270 STC00565 RUNNING TCPIP 1R 221.04
CICSTS32 STC00629 RUNNING STCOPER 1R 16.99
CICSTS32 STC00629 RUNNING STCOPER 1R 16.99
DB9GDIST STC00628 FILE SYS KERNEL WAIT STCOPER MF 0.25
M& a
Connected to remote server/host 204.90.115.184 using lu/pool TCP00014 and port 623
```

# Unix System Services – unix command output

The screenshot shows a terminal window titled "Class - svscmvx" with a menu bar (File, Edit, View, Communication, Actions, Window, Help). The terminal displays the following commands and their outputs:

```
IBMUSER:/u/ibmuser: >ps -ef
  UID          PID     PPID  C    STIME TTY          TIME CMD
OMVSKERN         1         0  -   Feb 17 ?        0:04 BPXPINPR
OMVSKERN 16842754         1  -   Feb 17 ?        0:00 CEAPSRVR
OMVSKERN 16842755         1  -   Feb 17 ?        7:04 EZACFALG
OMVSKERN 16842757         1  -   Feb 17 ?        3:42 EZBTZMST
OMVSKERN   65542         1  -   Feb 17 ?        0:00 /usr/sbin/inetd
OMVSKERN   65543         1  -   Feb 17 ?        3:42 EZBTTSSL
OMVSKERN   65544         1  -   Feb 17 ?        3:42 EZBTMCTL
OMVSKERN   65545         1  -   Feb 17 ?        3:42 EZBTMST
OMVSKERN   65546         1  -   Feb 17 ?        7:04 EZBTCPIP
OMVSKERN   65547         1  -   Feb 17 ?        0:07 FTPD
OMVSKERN 83951754         1  - 13:33:51 ?        0:00 DSNVEUS3
OMVSKERN 50397323         1  - 13:38:48 ?        0:17 DFHKETCB
OMVSKERN 33620108         1  - 13:38:42 ?        0:17 DFHSIP
OMVSKERN   65710         1  - 10:48:25 ?        0:00 OMVS
OMVSKERN   65711         1  - 10:48:25 ttyp0000 0:00 -sh
OMVSKERN 50397360         1  - 10:48:24 ttyp0000 0:00 ps -ef
IBMUSER:/u/ibmuser: >uname -a
z/OS S0W1 09.00 01 2094
IBMUSER:/u/ibmuser: >who -a
Name          ST Line          Time          Idle          PID Hostname / Exit
.             .             system boot   Feb 17 16:59
.             .             run-level 03.19.00 Feb 17 16:59
IBMUSER      + ttyp0000      Feb 23 10:48      .             65711
.             .             ttyp0001     Feb 22 19:15  15:34 67174544 term=0  exit=0
IBMUSER:/u/ibmuser: >
===> man c89_
```

Annotations with arrows point to specific parts of the output:

- "Unix processes" points to the header of the `ps -ef` output.
- "System info" points to the `uname -a` output.
- "User activity" points to the `who -a` output.
- "Manual pages c compiler" points to the `man c89_` command.

At the bottom of the terminal, there is a status bar with the text "RUNNING" and a list of navigation keys: ESC=φ, 1=Help, 2=SubCmd, 3=HelpRetrn, 4=Top, 5=Bottom, 6=TS0, 7=BackScr, 8=Scroll, 9=NextSess, 10=Refresh, 11=FwdRetr, 12=Retrieve. The terminal also shows "Mâ b" and a connection status: "Connected to remote server/host 204.90.115.184 using lu/pool TCP00015 and p".

# z/OS Unix shell

```
Class - svscmvx
File Edit View Communication Actions Window Help
IBMUSER:/u/ibmuser: >env
MAIL=/usr/mail/IBMUSER
_BPX_TERMPATH=OMVS
PATH=/bin:/u/Java14_31/J1.4/bin:.
SHELL=/bin/sh
PS1=$LOGNAME:$PWD: >
COLUMNS=80
_=/bin/env
LOGNAME=IBMUSER
STEPLIB=none
LANG=C
LIBPATH=/lib:/usr/lib:/u/Java14_31/J1.4/bin:.
TERM=dumb
HOME=/u/ibmuser
LINES=28
TZ=CST6CDT
MANPATH=/usr/man/%L
NLSPATH=/usr/lib/nls/msg/%L/%N
IBMUSER:/u/ibmuser: >

===> man c89_

RUNNING
ESC=¢ 1=Help 2=SubCmd 3=HlpRetrn 4=Top 5=Bottom 6=TSO
7=BackScr 8=Scroll 9=NextSess 10=Refresh 11=FwdRetr 12=Retrieve
MA b
Connected to remote server/host 204.90.115.184 using lu/pool TCP00002 and p
```

# z/OS Unix shell

```
Class - svscmvx
File Edit View Communication Actions Window Help
c89 -- Compiler invocation using host environment variables

Format

c89 | cc | c++ | cxx [-+CcEfgOpqrsVv0123]
  [-D name[=value]]... [-U name]...
  [-e function] [-u function]...
  [-W phase,option[,option]...]...
  [-o outfile]
  [-I directory]... [-L directory]...
  [file.C]... [file.i]... [file.c]... [file.s]...
  [file.o]... [file.x]... [file.p]... [file.I]... [file.a]... [-l libname]
...

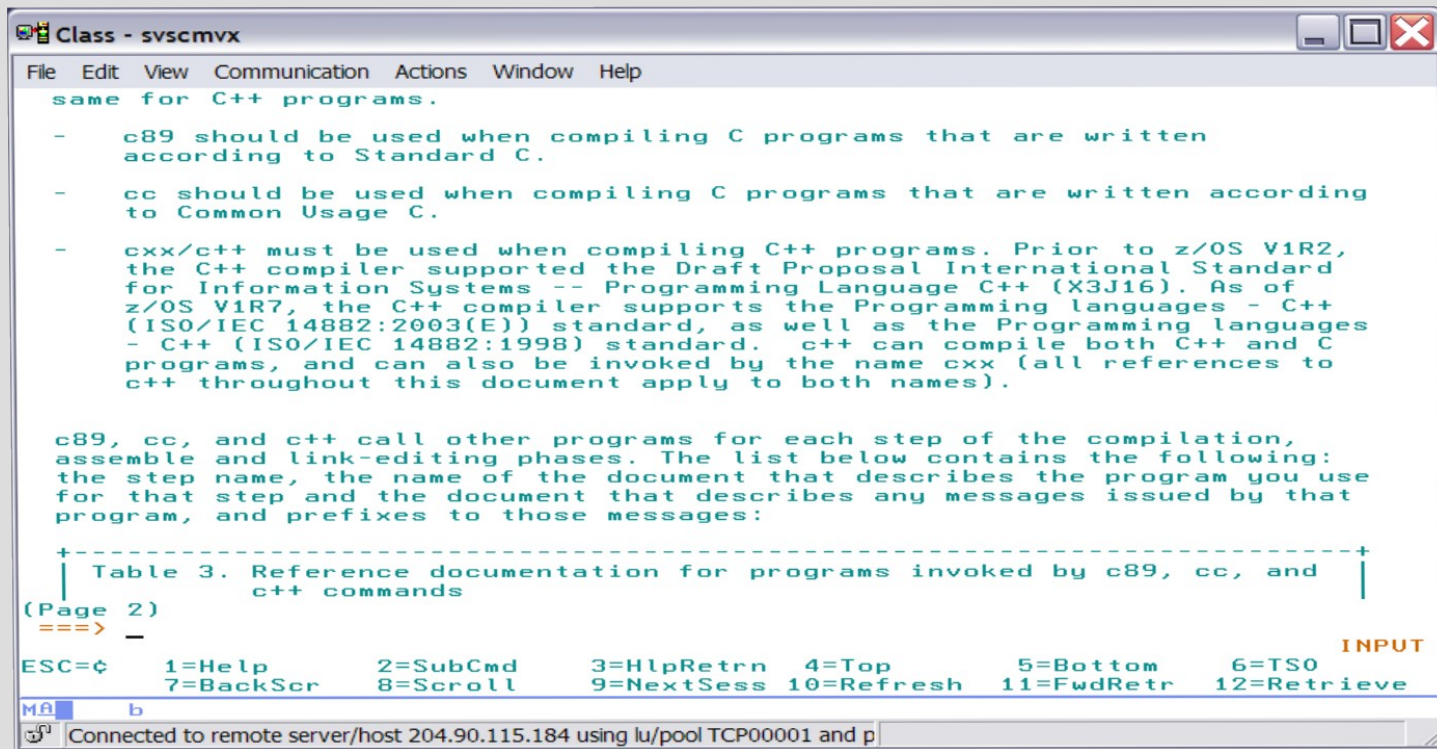
Notes:

1. The I option signifies an uppercase i, not a lowercase L.
2. The c99 command is only supported by the xlc utility. See "xlc --
   Compiler invocation using a customizable configuration file" in
   topic XLC for more information.

Description

c89 and cc compile, assemble, and link-edit C programs; cxx/c++ does the
(Page 1)
===> - INPUT
ESC=␣  1=Help      2=SubCmd      3=HlpRetrn   4=Top        5=Bottom     6=TS0
        7=BackScr   8=Scroll     9=NextSess  10=Refresh   11=FwdRetr   12=Retrieve
M& b
Connected to remote server/host 204.90.115.184 using lu/pool TCP00001 and p
```

# z/OS Unix shell



```
Class - svscmvx
File Edit View Communication Actions Window Help
same for C++ programs.

- c89 should be used when compiling C programs that are written
  according to Standard C.

- cc should be used when compiling C programs that are written according
  to Common Usage C.

- cxx/c++ must be used when compiling C++ programs. Prior to z/OS V1R2,
  the C++ compiler supported the Draft Proposal International Standard
  for Information Systems -- Programming Language C++ (X3J16). As of
  z/OS V1R7, the C++ compiler supports the Programming languages - C++
  (ISO/IEC 14882:2003(E)) standard, as well as the Programming languages
  - C++ (ISO/IEC 14882:1998) standard. c++ can compile both C++ and C
  programs, and can also be invoked by the name cxx (all references to
  c++ throughout this document apply to both names).

c89, cc, and c++ call other programs for each step of the compilation,
assemble and link-editing phases. The list below contains the following:
the step name, the name of the document that describes the program you use
for that step and the document that describes any messages issued by that
program, and prefixes to those messages:

+-----+
| Table 3. Reference documentation for programs invoked by c89, cc, and |
| c++ commands |
+-----+
(Page 2)
===> - INPUT
ESC=¢ 1=Help 2=SubCmd 3=HlpRetrn 4=Top 5=Bottom 6=TSO
7=BackScr 8=Scroll 9=NextSess 10=Refresh 11=FwdRetr 12=Retrieve
MA b
Connected to remote server/host 204.90.115.184 using lu/pool TCP00001 and p
```



# z/OS Unix shell

```
Class - svscmvx
File Edit View Communication Actions Window Help
IBMUSER:/u/ibmuser: >java -version
java version "1.4.2"
Java(TM) 2 Runtime Environment, Standard Edition (build 1.4.2)
Classic VM (build 1.4.2, J2RE 1.4.2 IBM z/OS Persistent Reusable VM build cm142-
20080122 (SR10) (JIT enabled: jitc))
IBMUSER:/u/ibmuser: >javac -help
Usage: javac <options> <source files>
where possible options include:
  -g                Generate all debugging info
  -g:none           Generate no debugging info
  -g:{lines,vars,source}  Generate only some debugging info
  -nowarn           Generate no warnings
  -verbose          Output messages about what the compiler is doing
  -deprecation      Output source locations where deprecated APIs are us
ed
  -classpath <path> Specify where to find user class files
  -sourcepath <path> Specify where to find input source files
  -bootclasspath <path> Override location of bootstrap class files
  -extdirs <dirs>   Override location of installed extensions
  -d <directory>   Specify where to place generated class files
  -encoding <encoding> Specify character encoding used by source files
  -source <release> Provide source compatibility with specified release
  -target <release> Generate class files for specific VM version
  -help            Print a synopsis of standard options

IBMUSER:/u/ibmuser: >

===> -
RUNNING
ESC=φ  1=Help  2=SubCmd  3=HlpRetrn  4=Top  5=Bottom  6=TSO
       7=BackScr  8=Scroll  9=NextSess 10=Refresh 11=FwdRetr 12=Retrieve
M& b
Connected to remote server/host 204.90.115.184 using lu/pool TCP00002 and p
```

# Unix System Services – unix ls command output

```
Lab System
File Edit View Communication Actions Window Help
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you have mail in /usr/mail/ZIBM030.
ZIBM030:/u/zibm030: >cd /web/httpd1/pub
ZIBM030:/web/httpd1/pub: >ls -alEW
total 48
drwxrwxrwx  fff---      2 OMVSKERN IPGROUP    8192 Mar 29 10:50 .
drwxrwxrwx  fff---      3 OMVSKERN IPGROUP    8192 Mar 19 17:31 ..
-rwxrwxrwx  fff--- --s-   1 OMVSKERN IPGROUP    2621 Mar 19 17:31 Frntpage.html
-rw-r--r--  fff--- --s-   1 ZIBM006  IPGROUP         52 Mar 29 10:39 test.html
ZIBM030:/web/httpd1/pub: >

====> _
INPUT
ESC=␣  1=Help      2=SubCmd      3=HlpRetrn   4=Top        5=Bottom     6=TS0
        7=BackScr    8=Scroll      9=NextSess  10=Refresh   11=FwdRetr   12=Retrieve

MA a 29/007
Connected to remote server/host 204.90.115.184 using lu/pool TCP00021 and port 623 PDF Writer (Ghostscript) on Ghostscript1:
```

# Unix System Services – D OMVS,A=ALL

```
Lab System
File Edit View Communication Actions Window Help
  Display Filter View Print Options Help
-----
SDSF SYSLOG 4346.102 S0W1 S0W1 04/27/2007 0W 1722 COLUMNS 51 130
COMMAND INPUT ==> - SCROLL ==> CSR
0290 D OMVS,A=ALL
0090 BPX0040I 11.01.18 DISPLAY OMVS 748
0090 OMVS 000D ACTIVE OMVS=(OM,VN,60,MS,64)
0090 USER JOBNAME ASID PID PPID STATE START CT_SECS
0090 OMVSKERN BPX0INIT 001B 1 0 MF---- 14.11.21 5.957
0090 LATCHWAITPID= 0 CMD=BPXPINPR
0090 SERVER=Init Process AF= 0 MF=00000 TYPE=FILE
0090 TCPIP TCPIP 002F 33619970 1 MR---B 14.12.31 572.541
0090 LATCHWAITPID= 0 CMD=EZBTCPIP
0090 TCPIP INETD1 001E 16842755 1 1FI--- 14.12.28 .016
0090 LATCHWAITPID= 0 CMD=/usr/sbin/inetd
0090 TCPIP TCPIP 002F 50397188 1 1R---B 14.12.35 572.541
0090 LATCHWAITPID= 0 CMD=EZBTSSSL
0090 TCPIP TCPIP 002F 65541 1 1R---B 14.12.35 572.541
0090 LATCHWAITPID= 0 CMD=EZBTMCTL
0090 TCPIP TCPIP 002F 65542 1 1F---B 14.12.35 572.541
0090 LATCHWAITPID= 0 CMD=EZACFALG
0090 TCPIP TCPIP 002F 65543 1 1F---B 14.12.36 572.541
0090 LATCHWAITPID= 0 CMD=EZASASUB
0090 TCPIP TCPIP 002F 65544 1 MR---B 14.12.38 572.541
0090 LATCHWAITPID= 0 CMD=EZBTMST
0090 STCOPER DB8GDIST 0039 33619977 1 MF---B 09.50.15 .082
0090 LATCHWAITPID= 0 CMD=DSNVEUS3
0090 TCPIP FTPSERVE 0020 65546 1 1FI--- 14.12.47 .109
0090 LATCHWAITPID= 0 CMD=FTPD
***** BOTTOM OF DATA *****
MA a 04/021
Connected to remote server/host 204.90.115.184 using lu/pool TCP00021 and port 623
PDF Writer (Ghostscript) on Ghostscript1:
```

# Unix System Services – MVS base component

```
Class - svscmvx
File Edit View Communication Actions Window Help
Display Filter View Print Options Help
-----
SDSF DA SOW1 SOW1 PAG 0 CPU 18 LINE 14-39 (53)
COMMAND INPUT ==> SCROLL ==> CSR
PREFIX=* DEST=(ALL) OWNER=* SYSNAME=
NP JOBNAME CPU% ASID ASIDX EXCP-Cnt CPU-Time SR Status SysName SPag SCP
OMVS 0.08 14 000E 2199 20.13 SOW1 0
IEFSCHAS 0.00 16 0010 63 0.01 SOW1 0
JESXCF 0.04 17 0011 1479 13.53 SOW1 0
ALLOCAS 0.00 18 0012 72 0.03 SOW1 0
IOSAS 0.07 19 0013 504 16.11 SOW1 0
IXGLOGR 0.05 20 0014 173 12.40 SOW1 0
SMS 0.17 21 0015 600720 43.88 SOW1 0
AXR 0.00 22 0016 458 0.06 SOW1 0
CEA 0.00 23 0017 249 0.03 SOW1 0
SMF 0.03 24 0018 523 6.77 SOW1 0
LLA 0.00 25 0019 17085 1.86 SOW1 0
JES2MON 2.62 27 001B 0 645.05 SOW1 0
JES2 0.43 28 001C 458922 113.48 SOW1 0
VLF 0.01 29 001D 412 3.12 SOW1 0
VMCF 0.01 30 001E 25 1.21 SOW1 0
SDSF 0.00 31 001F 388 0.04 SOW1 0
EPWFFST 0.02 32 0020 1998 4.78 SOW1 0
DB9GIRLM 0.96 33 0021 53 39.70 SOW1 0
BPX0INIT 0.02 34 0022 14 4.57 DW SOW1 0
VTAM 0.08 35 0023 5158 20.21 SOW1 0
FTPSEVE 0.00 36 0024 33937 7.61 LW PROT SOW1 0
INETD1 0.00 37 0025 167 0.01 LW PROT SOW1 0
OAM 0.00 38 0026 632 0.03 SOW1 0
RACF 0.01 39 0027 788 3.02 SOW1 0
CATALOG 0.51 40 0028 5977 132.91 SOW1 0
ZFS 0.92 41 0029 336669 62.14 SOW1 0
Mâ b
Connected to remote server/host 204.90.115.184 using lu/pool TCP00015 and p
```

# Unix System Services – Initialization Parameters

```
Class - svscmvx
File Edit View Communication Actions Window Help
Display Filter View Print Options Help
-----
SDSF SYSLOG      546.102 SOW1 SOW1 02/23/2008 0W      1021      COLUMNS  51 130
COMMAND INPUT ==> _                               SCROLL ==> CSR
0290 D OMVS,OPTIONS
0090 BPX0043I 10.20.51 DISPLAY OMVS 467
0090 OMVS      000E ACTIVE      OMVS=(OM,FS,SV,MS,61,65)
0090 CURRENT UNIX CONFIGURATION SETTINGS:
0090 MAXPROCSYS      =      200      MAXPROCUSER      =      100
0090 MAXFILEPROC     =      10000     MAXFILESIZE      = NOLIMIT
0090 MAXCPUPTIME     = 2147483647     MAXUIDS          =      200
0090 MAXPTY          =      256
0090 MAXMAPAREA      =      40960     MAXASSIZE        = 2147483647
0090 MAXTHREADS      =      10000     MAXTHREADTASKS   =      5000
0090 MAXCORESIZE     = 2147483647     MAXSHAREPAGES    =      524288
0090 IPCMSGQBYTES    = 2147483647     IPCMSGQNUM       =      10000
0090 IPCMSGNIDS      =      500
0090 IPCSEMNOPTS     =      25      IPCSEMNSEMS      =      1000
0090 IPCSHMMPAGES    =      25600     IPCSHMNIDS       =      500
0090 IPCSHMNSEGS     =      200     IPCSHMSPAGES     =      262144
0090 SUPERUSER       = OMVSKERN      FORKCOPY         = COW
0090 STEPLIBLIST     =
0090 USERIDALIASTABLE=
0090 PRIORITYPG VALUES: NONE
0090 PRIORITYGOAL VALUES: NONE
0090 MAXQUEUEDSIGS   =      1000     SHRLIBRGNSSIZE  =      67108864
0090 SHRLIBMAXPAGES  =      4096     VERSION          = VERSYSB
0090 SYSCALL COUNTS  = NO
0090 SYSPLEX         = YES      BRM SERVER       = N/A
0090 LIMMSG         = NONE     AUTOCVT          = OFF
0090 RESOLVER PROC   = DEFAULT
0090 AUTHPGMLIST     = NONE
MA a
Connected to remote server/host 204.90.115.184 using lu/pool TCP00014 and port 623
```

# Unix System Services – SYSLOG Messages

BPXF013I FILE SYSTEM OMVS.SVSCPLEX.ROOT

BPXF013I FILE SYSTEM .....

BPXF203I DOMAIN AF\_INET WAS SUCCESSFULLY ACTIVATED.

BPXF203I DOMAIN AF\_UNIX WAS SUCCESSFULLY ACTIVATED.

BPXF224I THE RESOLVER\_PROC, RESOLVER, IS BEING STARTED.

BPXI004I OMVS INITIALIZATION COMPLETE

# Unix System Service Manuals

## z/OS Unix System Services Bookshelf

- Command Reference

- User's Guide

- Programming Tools

## z/OS MVS Bookshelf

- Initialization and Tuning Reference (BPXPRMxx)

# Unit summary

Having completed this unit, you should be able to:

- Understand Unix System Services is a base 'element'
- Understand z/OS uses both MVS and Unix simultaneously
- Understand z/OS is an open operating system capable of web enabling all applications
- Understand z/OS differences between MVS data sets and Unix files
- Understand executable programs can be stored in MVS data sets or Unix files
- Understand data can be stored in MVS data sets or Unix files
- Understand z/OS programs can simultaneously access MVS data sets and Unix files
- Recognize the Unix System Services 3 character component identifier



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