# Configuring, Customizing and Modifying Your VM System

SHARE
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IBM Systems

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# Topics

- *The Basics*
- *Using the Stand Alone Program Loader*
- *Defining and Modifying the System Configuration*
  - Configuration File Statements and CP Commands
- *Logos*
- *More Configuration File Statements*

# Configuring z/VM:
# The Basics

# CP Configurability

*Change system-wide definitions and defaults without IPL*

- timezone
- system operator
- log messages
- security features
- paging and spooling areas
- command privilege classes
- CP Exits and extensions to CP such as user Diagnose codes

*Change definitions without rebuilding the system*

- Checkpoint and Warmstart locations and size
- Size of CP Trace Table

*Add new devices without an IPL*

- no need to update configuration files

# Dynamic I/O Configuration

*Modify the hardware I/O definitions (IOCDS) without an outage*

- Add, change, delete
  - CHPID
  - CNTLUNIT
  - IODEVICE
- Manage I/O definitions for all LPARs on a processor
- Commands based on hardware requirements

*Modify the software view of I/O definitions*

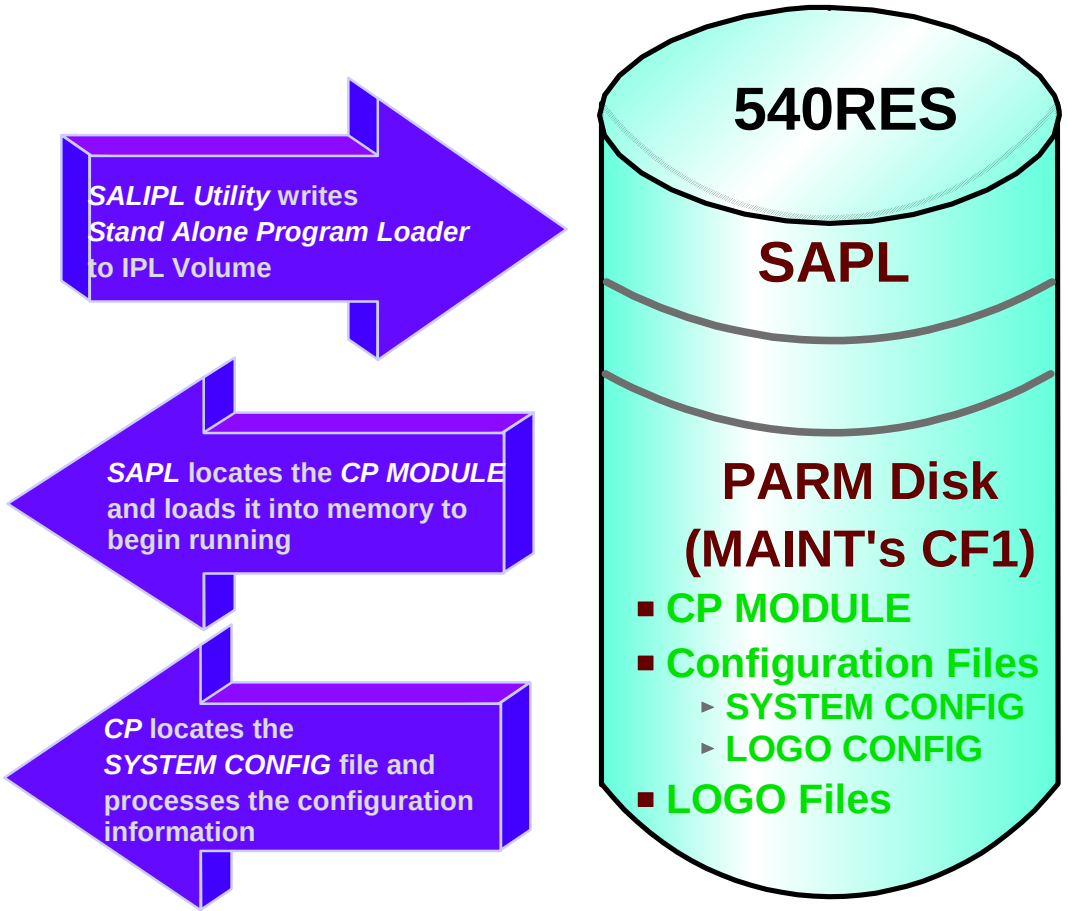
- Reset I/O control blocks
  - Devices that do not support Sense commands
  - Clear control blocks of devices with errors

*Session 9134 - Dynamically Managing Hardware I/O Configuration Using VM*

- Tuesday, 3:00 - Room 12B

# CP Configurability - The Big Picture

1. Set up IPL Volume
2. IPL CP
3. IPL CP (cont.)



# The PARM Disk

*A CMS-formatted disk that CP uses during initialization*

- Default PARM disks:
  - MAINT CF1 (Primary)
  - MAINT CF2 (Test)
  - MAINT CF3 (Backup)

*Usually on the IPL volume*

- Multiple PARM extents may be defined on the IPL and other volumes
- IPLPARMS may be used to locate the PARM disk by
  - Address of device containing PARM disk
  - Cylinder offset
  - Number of PARM extent

*Contains*

- System and logo configuration files
- CP module to be IPLed (usually)

# The PARM Disk...

- *PARM disks may be accessed by CP after IPL*
  - CP_ACCESS statement in system configuration file
  - CPACCESS command
  - CPRELEASE command releases disk accessed by CP
- *Files may be cached by CP to reduce I/O to parm disk*
  - CPCACHE command for specific files
  - List in file CPCACHE FILES
    - Read into storage when parm disk is CPACCESSed
    - Sample:

```
*           CONFIG
*           LOGMS*
*           LOGO
INPTAREA    DEFAULT
```

# Changing Files on a CPACCESSed Disk

*To change files on a CPACCESSed disk:*

1. QUERY CPDISKS
   - Determine what mode CP is accessing the disk
2. CPRELEASE fm
   - Release the disk from CP
3. LINK/ACCESS the disk in R/W mode
4. Update files as required
   - Logo Files
   - Configuration Files
5. RELEASE/DETACH disk
6. LINK to disk in R/O mode
7. CPACCESS owner vdev fm mode
   - CP will read updated files

# Using the Stand Alone Program Loader

# Stand Alone Program Loader (SAPL)

*Loads CP module from IPL disk*

- Can be used to load programs other than your default CP module
  - DDR Stand-alone DDR
  - DIRECTXA Stand-alone DIRECTXA
  - ICKSADSF Stand-alone ICKDSF

*Allows you to specify or modify*

- IPL information
  - CP module location (minidisk extent or offset)
  - CP MODULE name
- IPL parameters
  - Console address
  - PARM disk location
  - System configuration filename and filetype
  - Whether to PROMPT for date/time and warm/cold start
  - Amount of available real memory to be used by CP

# SALIPL Utility

*Writes SAPL to cylinder zero of IPL volume (default)*

- Starting on block 5 of FBA volume

*Saves default IPL information and parameters*

*Allows SAPL defaults to be altered*

- CP load module name
- Location of CMS minidisk containing load module

*Up to 4 lines of operator instructions may be specified*

# SALIPL Utility...

*Default SALIPL command (issued during z/VM installation):*

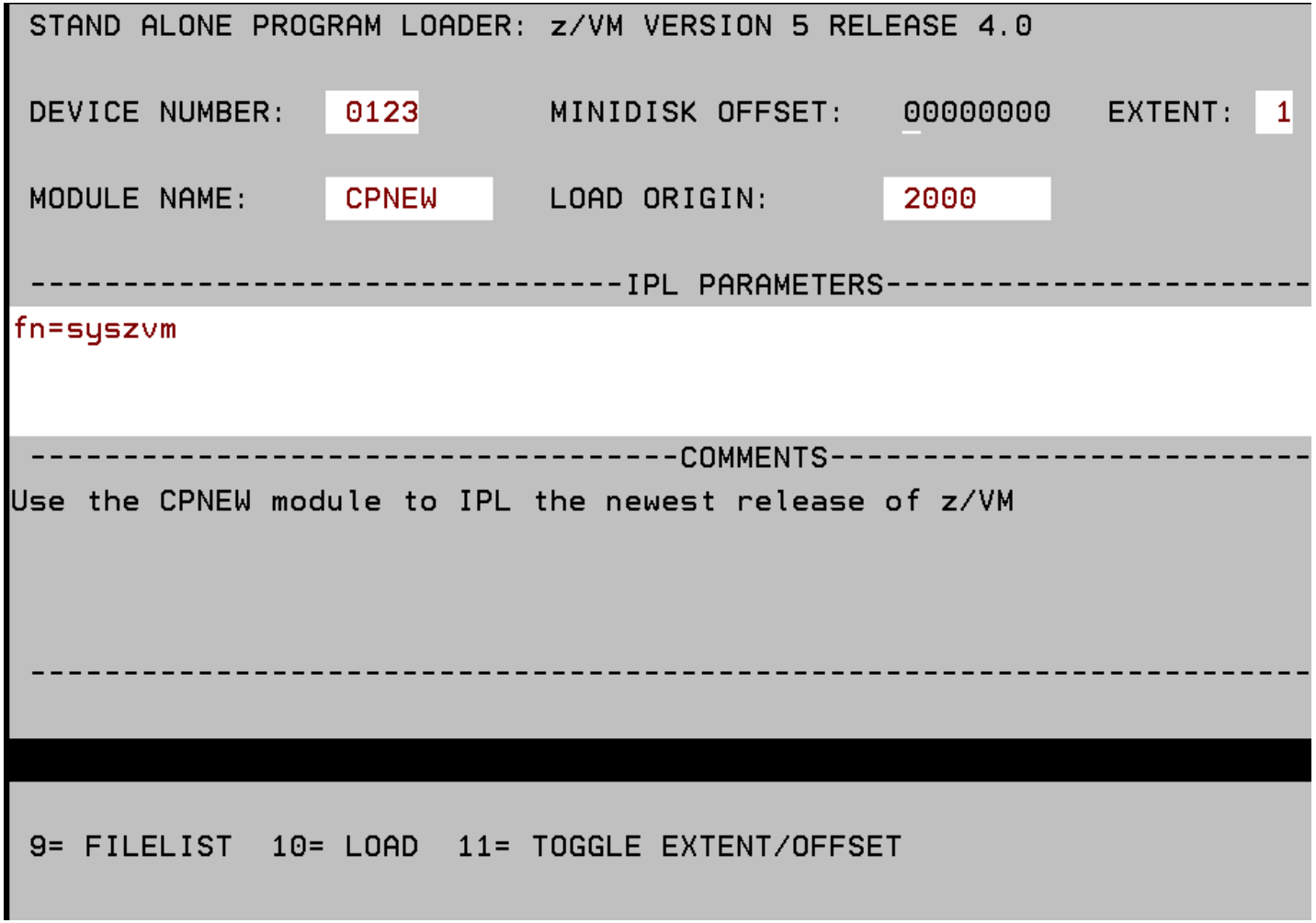
```
salipl 123 (extent 1 origin 2000
```

*A more interesting example:*

```
salipl 123 (extent 1 module cpnew comments ? iplparms fn=syszvm
HCPSAL6803I ENTER UP TO 4 LINES OF COMMENTS
Use the CPNEW module to IPL the newest release of z/VM

HCPSAL6798I VOLUME ID IS 540RES
HCPSAL6797I MINIDISK VOLID AT OFFSET 5 IS IPLDSK
Ready;
```

# SAPL Panel

- *May be displayed using LOADPARM option*
- *Allows all saved SAPL settings to be changed*
  - IPL 123 LOADPARM 0009



# SAPL Filelist Example

```
STAND ALONE PROGRAM LOADER: z/VM VERSION 5 RELEASE 4.0
FILENAME FILETYPE FORMAT LRECL    RECORDS     BLOCKS    DATE       TIME
SYSZVM   CONFIG   F          80        206          5 2009/02/22 11:32:03
SYSTEM   CONFIG   F          80        206          5 2009/02/21 23:37:01
CPNEW    SMALLMAP V          39       2286         23 2009/02/21 23:19:10
CPNEW    MODULE   V       65535        222       3533 2009/02/21 23:19:10
CPLOAD   MODULE   V       65535        222       3533 2009/02/21 23:18:52
CPLOAD   SMALLMAP V          39       2286         23 2009/02/21 23:18:45
LASTING  GLOBALV  V          22          4          1 2009/02/21 23:18:30
SYSNOCSE CONFIG   F          80        207          5 2007/02/04 12:47:29
INPTAREA SAMPLE   F          78          6          1 2005/06/17 16:28:42
LOGO     CONFIG   F          80         35          1 2005/06/17 16:28:33
ONMESS   SHARE    F          78          1          1 2004/02/06 15:15:06
ONMESS   LOGO     F          78          1          1 2004/02/06 15:15:06
ONMESS   SAMPLE   F          78          1          1 2004/02/04 14:11:54
JAF1RDEV CONFIG   F          80         76          2 2003/06/10 14:29:23
JAF1CSE  CONFIG   F          80         36          1 2002/12/05 11:11:39
MINIMUM  LOGO     F          78         16          1 2001/08/17 15:26:04
PRINTSEP LOGO     F          49         16          1 2001/08/17 15:25:49
3=QUIT  4=SORT(TYPE)  5=SORT(DATE)  6=SORT(NAME)  7=BACK  8=FORWARD  11=SELECT
```

# IPLing z/VM from a SCSI Disk

*SCSI disks emulated as 9336 Model 20 FBA DASD*

- Larger emulated sizes supported (up to 381 GB)

*All disks containing IPL information must be on same WWPN and LUN*

- IPL (FCP) Device (where SAPL is)
- SYSRES disk (where CP module is)
- Parm Disk (where system configuration file is)

*SAPL contains small SCSI device driver*

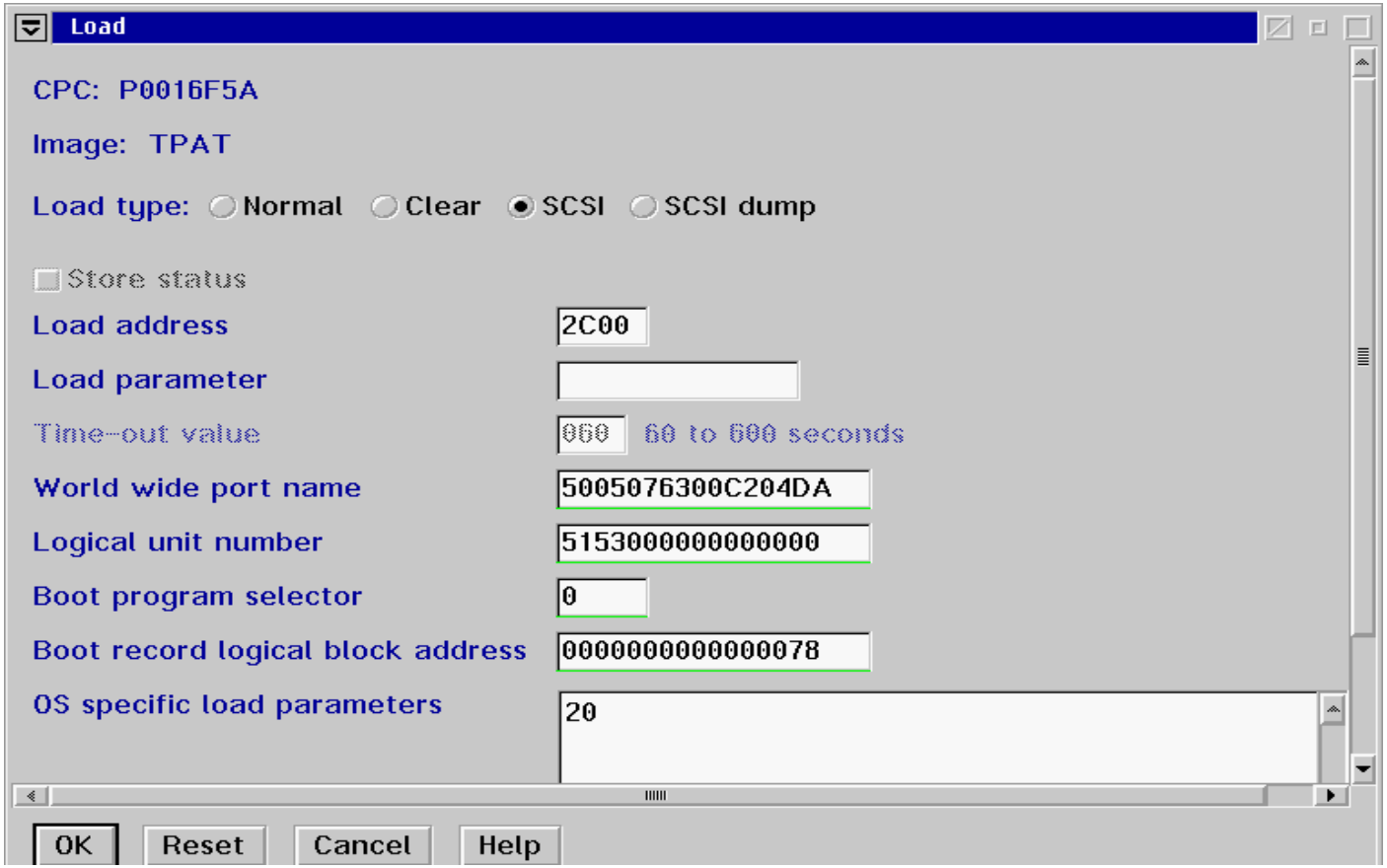
- Loads CP module from SCSI disk

*CP uses SCSI device driver to*

- Initialize PARM disk
- Read system configuration file

# IPLing z/VM from a SCSI Disk...

- *SAPL is loaded by the machine loader*
- *SCSI-specific parameters specified on Hardware Management Console*



# IPLing z/VM from a SCSI Disk...

*"PDVOL= addr" IPL parameter is required*

- Defines emulated FBA address of SCSI IPL Device to CP
- Should ***NOT*** match address of any real devices
  - Error message; real device is ignored by CP
- May be specified on SALIPL command or SAPL panel

```
salipl 123 (extent 1 module cpnew comments ? iplparms fn=syszvm pdvol=555
```

```
STAND ALONE PROGRAM LOADER: z/VM VERSION 5 RELEASE 4.0

DEVICE NUMBER:   0123       MINIDISK OFFSET:   00000000   EXTENT:  1

MODULE NAME:     CPNEW      LOAD ORIGIN:       2000

--------------------------------IPL PARAMETERS---------------------------
fn=syszvm pdvol=555



---------------------------------COMMENTS--------------------------------
```

# Defining and Modifying the System Configuration

# The System Configuration File

*CMS file which resides on the PARM disk*

- Default name/type is SYSTEM CONFIG

*Defines characteristics of z/VM system at IPL time*

- System definition parameters
- Device definitions when:
  - Characteristics other than defaults need to be defined for specific device(s)
  - A device does not respond to sense ID commands
  - Handling of a specific device at IPL time is other than default

# The System Configuration File...

*Defines system-wide options*

- which devices to bring online at IPL time
- which timezone to select
- whether to autolog special user IDs
- whether to automatically do a specified type of IPL
- system owned disk volumes
  - CP
  - User
- etc...

# CPSYNTAX Utility

*Checks syntax of system configuration file statements*

- Includes imbedded files if on the same disk as base file

*Does not check configuration logic or integrity*

*Consists of 2 files*

- CPSYNTAX EXEC
- CPSYNCHK MODULE

*Recommend ALWAYS running after changing configuration file*

- Remove errors that may keep your system from completing IPL

# Dynamically Changing Your CP Configuration

- *CP commands change characteristics defined by configuration file statements*
  - DEFINE/QUERY
    - CPOWNED
    - (spooling device)
    - TIMEZONE
  - SET/QUERY
    - LAN
    - PROMPT
    - RDEVICE
    - EDEVICE
    - TIMEZONE
    - RETRIEVE
    - VSWITCH
  - START/DRAIN DASD

# Configuration Statements and CP Commands

# RDEVICE Statement

*Tell CP what kind of devices are at specific addresses*

- Unit Record
  - Printers, Card punches/readers
- Communication controllers and line adapters
- DASD
- Graphic display devices
- Special devices
- Tape units
- Unsupported devices

*Use:*

- To define characteristics of specific devices
  - Alter default characteristics
- When devices can't be sensed

# SET RDEVICE Command

*Modify an active system's definition of specific device(s)*

- Add devices to configuration
- Remove devices from configuration
- Modify definition of specific device(s)
- Change the type of device at a specific address

*Devices must be varied offline before they can be changed*

# Changing a CP Command Definition

## *MODIFY COMMAND / CMD Statement*

- Change privilege class(es) of a command
- Change entry point that processes a command
- Suppress responses for ATTACH, DETACH, GIVE commands

```
MODIFY Command LOCATE IBMclass C Privclasses G

QUERY CPCMDS LOCATE
Command: LOCATE
     Status:         Enabled    Not Silent
     IBM Class:      C          PrivClasses: G
     CMDBK Address:  00E9C6B0   Entry Point: HCPCFDLO
Command: ------------
     Status:         Enabled    Not Silent
     IBM Class:      C          PrivClasses: C
     CMDBK Address:  01200780   Entry Point: HCPCFDLO
Command: LOCATE
     Status:         Enabled    Not Silent
     IBM Class:      E          PrivClasses: E
     CMDBK Address:  00E9C720   Entry Point: HCPCFDLO
```

## *MODIFY COMMAND / CMD Command*

- Change same attributes of CP commands on active system

# Privilege Classes

*A user's privilege class(es) are defined in the directory*

```
USER OPERATOR U 32M 2047M ABCDEG
USER U1       U 32M 32M   G
```

*User is given directory privilege classes at LOGON*

```
QUERY PRIVCLASS OPERATOR
Privilege classes for user OPERATOR
        Currently: ABCDEG
        Directory: ABCDEG
The privilege classes are not locked against changes.

QUERY PRIVCLASS U1
Privilege classes for user U1
        Currently: G
        Directory: G
The privilege classes are not locked against changes.
```

# Privilege Classes...

*SET PRIVCLASS command can be used to change a logged on user's privilege classes*

- Self (Any privilege class)
  - Can set to privilege classes allowed in directory
- Others (Privilege class C)
  - Can set any privilege classes

```
SET PRIVCLASS OPERATOR -E
Privilege classes for user OPERATOR
        Currently: ABCDG
        Directory: ABCDEG
The privilege classes are not locked against changes.

SET PRIVCLASS U1 +CD
Privilege classes for user U1
        Currently: CDG
        Directory: G
The privilege classes are not locked against changes.
```

*Requires SET_PRIVCLASS to be enabled on FEATURES statement in system configuration file*

# Modifying Commands and Privilege Classes - Example

*Modify SHUTDOWN and FORCE commands to limit usage*

- Requires privilege class A

```
MODIFY COMMAND SHUTDOWN PRIVCLASS Z

MODIFY COMMAND FORCE    PRIVCLASS Z

Q CPCMDS SHUTDOWN
 Command: SHUTDOWN
   Status:         Enabled    Not Silent
   IBM Class:      A          PrivClasses: Z
   CMDBK Address: 00E9DFA0    Entry Point: HCPSHUTD
 Command: ------------
   Status:         Enabled    Not Silent
   IBM Class:      A          PrivClasses: A
   CMDBK Address: 01169A88    Entry Point: HCPSHUTD

Q CPCMDS FORCE
Command: FORCE
  Status:         Enabled    Not Silent
  IBM Class:      A          PrivClasses: Z
  CMDBK Address: 00E9BF40    Entry Point: HCPUSOFL
Command: ------------
  Status:         Enabled    Not Silent
  IBM Class:      A          PrivClasses: A
  CMDBK Address: 01169768    Entry Point: HCPUSOFL
```

# Modifying Commands and Privilege Classes - Example...

*Allow only user OPERZ to issue SHUTDOWN and FORCE when needed*

*From user OPERZ:*

```
QUERY PRIVCLASS
Privilege classes for user OPERZ
        Currently: AG
        Directory: AG
The privilege classes are not locked against changes.

FORCE U1
Unknown CP/CMS command
```

*From user with Class C privilege:*

```
SET PRIVCLASS OPERZ +Z
Privilege classes for user OPERZ
        Currently: AGZ
        Directory: AG
The privilege classes are not locked against changes.
```

*From user OPERZ:*

```
FORCE U1
USER DSC   LOGOFF AS  U1       USERS = 2     FORCED BY OPERZ
```

# Defining Disk Areas for CP System Use

## *CP_OWNed statement*

- Define disk areas that contain system areas
  - Page, Spool, TDISK, DRCT
- Up to 255 slots may be defined
- RESERVED slots should be defined
  - Allow volumes to be added dynamically
  - ***HINT:*** Gaps in specified slot numbers result in RESERVED slots
- Default CP_OWNED statements for z/VM 5.4.0

```
CP_Owned   Slot   1  540RES
CP_Owned   Slot   2  540SPL
CP_Owned   Slot   3  540PAG
CP_Owned   Slot   4  540W01
CP_Owned   Slot   5  540W02
CP_Owned   Slot   6  540W03
CP_Owned   Slot   7  RESERVED
CP_Owned   Slot   8  RESERVED
             .
             .
CP_Owned   Slot  20  RESERVED
```

## *DEFINE CPOWNed command*

- Define new entries or change existing entries in CP-Owned list

# Stop and Start use of CP-Owned Space

*DRAIN/START (Disk) statements and commands*

- Stop and start the following on CP-owned disk volumes:
  - writing pages
  - allowing links to minidisks
  - allocating spool space
  - allocating TDisk space

*Specify by*

- rdev
- rdev range
- volid

*Existing data and allocations remain on DRAINed volumes*

# DRAIN/START (Disk) Statements...Examples

*Example #1 - Have CP:*

- Stop all operations on all DASD between X'0700' and X'07FF',
- Allow users to link to minidisks on DASD X'0700', and
- Ensure that CP can write pages to the CP-owned paging pack (SYSPG1)

```
Drain  DASD   0700-07ff     All
Start  DASD   0700          Links
Start  Volid  SYSPG1        Page
```

*Example #2 - Have CP start allowing:*

- All new operations on all DASD between X'0700' and X'07FF',
- SPOOLing on DASD at real device number X'0800'
- Paging on volume SYSPG1 (previously defined on a CP_OWNED statement)

```
Start  DASD   0700-07ff     All
Start  DASD   0800          Spool
Start  Volid  SYSPG1        Page
```

# Dynamically Adding a CP Owned Volume

1. *Define reserved slots in CP_Owned list in config file*

```
CP_Owned   Slot   1  JF1RES
CP_Owned   Slot   2  SPOOL0
CP_Owned   Slot   3  MDSP0
CP_Owned   Slot   4  RESERVED
CP_Owned   Slot   5  RESERVED
```

2. *Query CP_Owned list for available slots*

```
query cpowned
 Slot  Vol-ID      Rdev    ype     Status
    1  JF1RES     0A40    Own      Online and attached
    2  SPOOL0     0780    Own      Online and attached
    3  MDSP0      0880    Own      Online and attached
    4  ------     ----    -----    Reserved
    5  ------     ----    -----    Reserved
```

# Dynamically Adding a CP Owned Volume..

3. *Replace a reserved entry in the config file with the new volume*
   - For next IPL

```
CP_Owned   Slot   1  JF1RES
CP_Owned   Slot   2  SPOOL0
CP_Owned   Slot   3  MDSP0
CP_Owned   Slot   4  NEWVOL
CP_Owned   Slot   5  RESERVED
```

4. *CPFMTXA to format and allocate new volume*
5. *Define new volume to active system*
   - (in same slot as config file)

```
define cpowned slot 4 newvol
```

6. *Attach new volume to system*

```
att 980 system

query cpowned
Slot  Vol-ID     Rdev     Type    Status
  1   JF1RES    0A40     Own     Online and attached
  2   SPOOL0    0780     Own     Online and attached
  3   MDSP0     0880     Own     Online and attached
  4   NEWVOL    0980     Own     Online and attached
  5   ------     ----     -----    Reserved
```

# Dynamically Deleting a CP Owned Volume...

1. *Stop all CP activity on the volume*

   drain volid newvol all

2. *Determine when volume is no longer being used*

   q alloc NEWVOL

   DASD 0980 NEWVOL 3380 CKD-CKD (UNITS IN CYLINDERS)
   TDISK TOTA L=000500 INUSE=000000 AVAIL=000000, DR
   PAGE TOTAL =000500 INUSE=000000 AVAIL=000000, DR
   SPOOL TOTAL=000500 INUSE=000000 AVAIL=000005, DR
   DRCT TOTAL =000025 INUSE=000000 AVAIL=000000

3. *Detach volume from system and vary offline*

   det 980 system
   vary offline 980

| Slot | Vol-ID | Rdev | Type | Status |
|---|---|---|---|---|
| 1 | JF1RES | 0A40 | Own | Online and attached |
| 2 | SPOOL0 | 0780 | Own | Online and attached |
| 3 | MDSP0 | 0880 | Own | Online and attached |
| 4 | NEWVOL | ---- | Own | Offline |
| 5 | ------ | ---- | ----- | Reserved |

# Removing Spool File Data from a DRAINed Volume

1. *Issue DRAIN DASD command to stop new allocations*

2. *Use SPFPACK from VM Download Library to locate spool files which have information on the volume*
   - http://www.vm.ibm.com/download/
   - http://www.vm.ibm.com/download/packages/

3. *Dump those files to tape and purge from system*
   - SPXTAPE DUMP with PURGE option

4. *Reload files from tape; space will be allocated on non-DRAINed volumes*
   - SPXTAPE LOAD

# Defining and Modifying Guest LANs

*DEFINE LAN statement*

- Creates a persistent Guest LAN segment at IPL time
  - Owner can be system or a user

*MODIFY LAN statement*

- Modify some characteristics of an existing guest LAN

*DEFINE LAN command*

- Add a guest LAN to a running system
  - Transient (default) or persistent

*SET LAN command*

- Modify some characteristics of an existing guest LAN

*Example:*

```
DEFINE LAN JFLAN1 Ownerid SYSTEM Maxconn 100 Accounting OFF

q lan details
LAN SYSTEM JFLAN1      Type: HIPERS  Connected: 0    Maxconn: 100
PERSISTENT  UNRESTRICTED  IP      MFS: 16384      Accounting: OFF
  IPTimeout: 5
```

# Defining and Modifying Virtual Switches

*DEFINE VSWITCH statement*

- Creates a CP system owned switch (z/VM Virtual Switch) at IPL

*MODIFY VSWITCH statement*

- Modify some characteristics of a previously defined virtual switch

*DEFINE VSWITCH command*

- Add a virtual switch to a running system

*SET VSWITCH command*

- Modify some characteristics of an existing virtual switch

*Example:*

```
DEFINE VSWITCH JFSW1 RDEV FD00

q vswitch details

VSWITCH SYSTEM JFSW1    Type: VSWITCH Connected: 0    Maxconn: INFINITE
  PERSISTENT  RESTRICTED    NONROUTER                 Accounting: OFF
  VLAN Unaware
  MAC address: 02-00-00-00-00-01
  State: Defined
  IPTimeout: 5         QueueStorage: 8
  RDEV: FD00.P00            Controller: NONE
```

# Defining and Changing Timezones

*TimeZone_Definition statements*

- Tell CP how to set the local time relative to the hardware clock

*DEFINE TIMEZONE command*

- Define new timezone or change existing timezone definition

*TimeZone_Boundary statements*

- Tell CP which previously defined TimeZone should be active at IPL.
  - Must be at least one boundary with a date/time prior to the IPL time or CP will default to the hardware clock date/time
  - Does not cause the time zone of a running system to be changed

*SET TIMEZONE command*

- Change a running system's active time zone definition and offset

# Defining and Changing Timezones...Example

## *Configuration File statements*

```
TimeZone_Definition EST West 05.00.00
TimeZone_Definition EDT West 04.00.00

Timezone_boundary on 2008-03-09 at 02:00:00 to EDT
Timezone_boundary on 2008-11-02 at 02:00:00 to EST
Timezone_boundary on 2009-03-08 at 02:00:00 to EDT
Timezone_boundary on 2009-11-01 at 02:00:00 to EST
```

## *Changing timezone on an active system*

```
q time
TIME IS 12:40:06 EST SUNDAY 02/22/09
CONNECT= 00:32:45 VIRTCPU= 000:00.03 TOTCPU= 000:00.06

set timezone edt
HCPTZN6759I The time zone has changed to EDT.

q time
TIME IS 13:40:18 EDT SUNDAY 02/22/09
CONNECT= 00:32:57 VIRTCPU= 000:00.03 TOTCPU= 000:00.06
```

# Logos

# Logo Configuration Files

*LOGO CONFIG (default name/type)*

- Specify information about logos for terminals and printers
- Specify text for status area of terminals

*Logos may be selected based on criteria*

- Screen size
- Device address
- The ID of the virtual machine creating a logical device.
- The ID of the VTAM service machine (VSM) managing a terminal session

*You can alter:*

- The format of the input area for user IDs, passwords, and commands
- The contents of the online message at the top of the screen
- The contents of the status areas, such as CP READ, VM READ, and so forth.

# Logo Configuration File: Example

```
/*****************************************************************/
/*                  Logo Configuration File                      */
/*****************************************************************/
/*---------------------------*
 *  Status Area Definition   *
 *---------------------------*/
 Status VM_Read       'VM READ '   ,
        CP_Read       'CP READ '   ,
        Running       'RUNNING '   ,
        More          'MORE... '   ,
        Hold          'HOLDING '   ,
        Not_Accepted  'NOT ACCEPTED'
/*---------------------------*
 *  Online Message Definition *
 *---------------------------*/
   Online_Message     ONMESS LOGO

/*-----------------------------*
 * Logo Definifions             *
 *-----------------------------*/
   Choose_Logo Default          LOCAL   LOGO
   Choose_Logo Local            LOCAL   LOGO
   Choose_Logo Ldev             LDEV    LOGO
   Choose_Logo VSM_VMid         VTAM  SNA  LOGO
   Choose_Logo Print_Separator  PRINTSEP LOGO
   Choose_Logo Minimum          DEFAULT LOGO
   Input_Area  INPTAREA         SAMPLE
```

# Logo Files

*Logo files can be updated dynamically*

- Located on a CPACCESSed PARM disk
- CPACCESS the disk to cause CP to re-read the files
- Changes activated with CP commands
  - CP REFRESH LOGOINFO filename CONFIG
  - CP REFRESH LOGOVSM user-id

*DRAWLOGO tool supplied to help in drawing LOGO files*

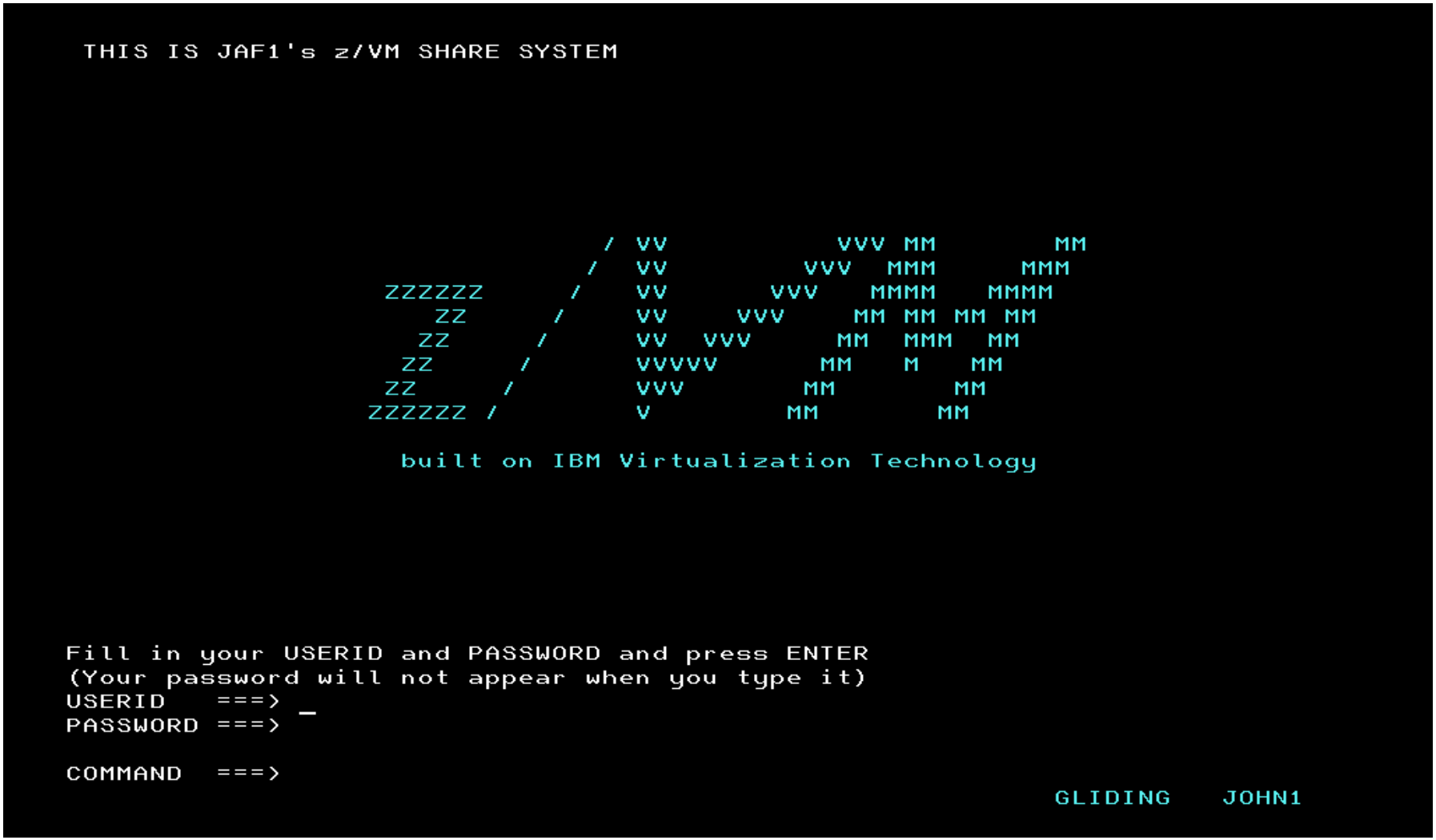
- Located on MAINT 2C2 disk
  - DRAWLOGO SAMPEXEC
  - X$DRWL$X SAMPXEDI

# Changing Logo Information

# Update Logo Configuration File

```
cprelease a
16:25:28 CPRELEASE request for disk A scheduled.
16:25:28 HCPZAC6730I CPRELEASE request for disk A completed.

link maint 1000 1000 mr u

acc 1000 z

x logo config z
     Status  VM_Read        'VM READ '    ,
             CP_Read        'CP READ '    ,
             Running        'GLIDING '    ,

      Online_Message     ONMESS SHARE

rel z (det
16:29:17 DASD 1000 DETACHED

cpaccess maint 1000 a
16:29:23 CPACCESS request for mode A scheduled.

16:29:23 HCPZAC6732I CPACCESS request for MAINT's 1000 in mode A complete

cp refresh logoinfo logo config
```

# New Logo



# More Configuration File Statements

# Conditional Statements/Imbeds

*Conditional Statements are based on System_Identifier labels*

```
System_Identifier 2064 012345 MYVM1
System_Identifier_Default     MYVM2

MYVM1: Operator_Consoles    0C00 0C01
MYVM2: Operator_Consoles    1C00 1C01

MYVM1: MYVM2: Features ,
 Enable ,
  Auto_Warm_IPL
```

*Imbeds allow statements to be included from other files*

- Useful for sections common to multiple systems
  - Command privilege class modification
  - User diagnose

# DEVICES Statement

*Tell CP how to handle specified devices at initialization*

- Whether to:
  - Accept
  - Allow dynamic changes
  - Initialize at IPL
  - Measure subchannels
  - Assign tape drive to system
  - Use sense ID information to define device
  - Share dasd between operating systems
  - Throttle I/O rate

# Consoles Statement

*Operator_Consoles tell CP where to try to display IPL messages*

- Console addresses
  - Integrated 3270 Console (SYSTEM_3270)
  - Locally attached 3270-type displays
  - System Console (SYSTEM_CONSOLE)
- Must have 3270 to display SAPL screen
  - Enter device number in LOADPARM on processor console
- If no devices in the list are functional, IPL Wait State 1010

*Emergency_Message_Consoles tell CP where to display critical messages such as ABEND and RESTART*

- Include most IPL consoles (*except* SYSTEM_3270)
- Also include System Programmer consoles

*Example:*

```
MYVM1:  Operator_Consoles             SYSTEM_3270 0C00 0E00
MYVM1:  Emergency_Message_Consoles    0C00 0E00 1234

MYVM2:  Operator_Consoles             0D00 0F00
MYVM2:  Emergency_Message_Consoles    0D00 0F00 1235
```

# FEATURES Statement

*Set system attributes at system initialization time*

- IPL Attributes
  - AUTO_WARM_IPL
  - PROMPT...
    - AFTER_RESTart
    - AFTER_SHUTDOWN_REIPL
    - AFTER_POWERoff
- Authorize users system-wide to use certain functions
  - SET_DYNamic_i/o, SET_DYNamic_io
  - SET_DEVices
  - SET_PRIVclass

# FEATURES Statement...

*Tell CP whether, and how, to activate certain system functions*

- CPCHECKING
  - ABEND
  - VMSTOP
- CLEAR_TDisk at initialization
- LOGMSG_FROM_File
  - SHOW_ACCount Yes/No
  - SHOW_ACIgroup Yes/No
  - SHOW_Userid Yes/No
- NEW_DEVices_initialized_when_added
- THROTTLE_ALL

# FEATURES Statement...

*Misc. system and user functions*

- Number of MAXusers (or NOLimit)
- PASSWORDS_ON_CMDS
  - AUTOLog Yes/No
  - LINK Yes/No
  - LOGon Yes/No
- Number of RETRieve buffers per user
  - DEFault
  - MAXimum
- VDISK/VDSK installation default limits
  - Syslim
  - Userlim
  - Infinite

# FEATURES Statement...Automatic IPL

*AUTO_IPL features*

- AUTO_IPL
- AUTO_IPL_AFTER_RESTart
- AUTO_IPL_AFTER_SHUTDOWN_REIPL

*All types of IPL may be specified for each AUTO_IPL feature*

- CLEAN
- COLD
- FORCE
- WARM

*IPL Options may also be specified*

- NOENABLE
- DRAIN
- NOAUTOLOG
- NODIRECT

# FEATURES Statement...Misc.

*IPL_MESSAGES*

- tell CP whether or not to display IPL messages or prompts

*DISCONNECT_TIMEOUT*

- nnnnnn
  - Sets interval between a forced disconnect and its logoff to specified number of minutes
- OFF
  - Disables automatic logoff

# Summary

# Summary

*VM's configurability support allows changes to be made while system remains up and running*

- No source code changes
- No compiles/assemblies
- Re-IPL not necessary in most cases

*Additional information:*

- z/VM CP Planning and Administration
- z/VM Dynamic I/O Configuration Planning and Administration
- z/VM CP Command and Utility Reference
- z/VM System Operation
- z/VM CP Exit Customization