Configuring, Customizing and Modifying Your VM System

SHARE
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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
   - **SALIPL Utility** writes **Stand Alone Program Loader** to **IPL Volume**

2. IPL CP
   - **SAPL** locates the **CP MODULE** and loads it into memory to begin running

3. IPL CP (cont.)
   - **CP** locates the **SYSTEM CONFIG** file and processes the configuration information

**540RES**

**SAPL**

**PARM Disk (MAINT's CF1)**
- **CP MODULE**
- **Configuration Files**
  - SYSTEM CONFIG
  - LOGO CONFIG
- **LOGO Files**
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;
```
SAAPL Panel

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

```plaintext
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

------------------------------- COMMENTS -------------------------------------
Use the CPNEW module to IPL the newest release of z/VM

9 = FILELIST 10 = LOAD 11 = TOGGLE EXTENT/OFFSET
```
SAPL Filelist Example

<table>
<thead>
<tr>
<th>FILENAME</th>
<th>FILETYPE</th>
<th>FORMAT</th>
<th>LRECL</th>
<th>RECORDS</th>
<th>BLOCKS</th>
<th>DATE</th>
<th>TIME</th>
</tr>
</thead>
<tbody>
<tr>
<td>SYSZVM</td>
<td>CONFIG</td>
<td>F</td>
<td>80</td>
<td>206</td>
<td>5</td>
<td>2009/02/22</td>
<td>11:32:03</td>
</tr>
<tr>
<td>SYSTEM</td>
<td>CONFIG</td>
<td>F</td>
<td>80</td>
<td>206</td>
<td>5</td>
<td>2009/02/21</td>
<td>23:37:01</td>
</tr>
<tr>
<td>CPNEW</td>
<td>SMALLMAP</td>
<td>V</td>
<td>39</td>
<td>2286</td>
<td>23</td>
<td>2009/02/21</td>
<td>23:19:10</td>
</tr>
<tr>
<td>CPNEW</td>
<td>MODULE</td>
<td>V</td>
<td>65535</td>
<td>222</td>
<td>3533</td>
<td>2009/02/21</td>
<td>23:19:10</td>
</tr>
<tr>
<td>CPLOAD</td>
<td>MODULE</td>
<td>V</td>
<td>65535</td>
<td>222</td>
<td>3533</td>
<td>2009/02/21</td>
<td>23:18:52</td>
</tr>
<tr>
<td>CPLOAD</td>
<td>SMALLMAP</td>
<td>V</td>
<td>39</td>
<td>2286</td>
<td>23</td>
<td>2009/02/21</td>
<td>23:18:45</td>
</tr>
<tr>
<td>LASTING</td>
<td>GLOBALV</td>
<td>V</td>
<td>22</td>
<td>4</td>
<td>1</td>
<td>2009/02/21</td>
<td>23:18:30</td>
</tr>
<tr>
<td>SYSNOCSE</td>
<td>CONFIG</td>
<td>F</td>
<td>80</td>
<td>207</td>
<td>5</td>
<td>2007/02/04</td>
<td>12:47:29</td>
</tr>
<tr>
<td>INPTAREA</td>
<td>SAMPLE</td>
<td>F</td>
<td>78</td>
<td>6</td>
<td>1</td>
<td>2005/06/17</td>
<td>16:28:42</td>
</tr>
<tr>
<td>LOGO</td>
<td>CONFIG</td>
<td>F</td>
<td>80</td>
<td>35</td>
<td>1</td>
<td>2005/06/17</td>
<td>16:28:33</td>
</tr>
<tr>
<td>ONMESS</td>
<td>SHARE</td>
<td>F</td>
<td>78</td>
<td>1</td>
<td>1</td>
<td>2004/02/06</td>
<td>15:15:06</td>
</tr>
<tr>
<td>ONMESS</td>
<td>LOGO</td>
<td>F</td>
<td>78</td>
<td>1</td>
<td>1</td>
<td>2004/02/06</td>
<td>15:15:06</td>
</tr>
<tr>
<td>ONMESS</td>
<td>SAMPLE</td>
<td>F</td>
<td>78</td>
<td>1</td>
<td>1</td>
<td>2004/02/04</td>
<td>14:11:54</td>
</tr>
<tr>
<td>JAF1RDEV</td>
<td>CONFIG</td>
<td>F</td>
<td>80</td>
<td>76</td>
<td>2</td>
<td>2003/06/10</td>
<td>14:29:23</td>
</tr>
<tr>
<td>JAF1CSE</td>
<td>CONFIG</td>
<td>F</td>
<td>80</td>
<td>36</td>
<td>1</td>
<td>2002/12/05</td>
<td>11:11:39</td>
</tr>
<tr>
<td>MINIMUM</td>
<td>LOGO</td>
<td>F</td>
<td>78</td>
<td>16</td>
<td>1</td>
<td>2001/08/17</td>
<td>15:26:04</td>
</tr>
<tr>
<td>PRINTSEP</td>
<td>LOGO</td>
<td>F</td>
<td>49</td>
<td>16</td>
<td>1</td>
<td>2001/08/17</td>
<td>15:25:49</td>
</tr>
</tbody>
</table>

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

```bash
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 \textit{SHUTDOWN} and \textit{FORCE} commands to limit usage

- Requires privilege class A

```
MODIFY COMMAND SHUTDOWN PRIVCLASS Z

MODIFY COMMAND FORCE PRIVCLASS Z
```

---

**Q CPCMDS SHUTDOWN**

- Command: \texttt{SHUTDOWN}
- Status: Enabled
- Not Silent
- IBM Class: A
- PrivClasses: Z
- CMDBK Address: 00E9DFA0
- Entry Point: HCPSHUTD

---

**Q CPCMDS FORCE**

- Command: \texttt{FORCE}
- Status: Enabled
- Not Silent
- IBM Class: A
- PrivClasses: Z
- CMDBK Address: 00E9BF40
- 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.Ownered 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

```plaintext
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
- valid

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)

<table>
<thead>
<tr>
<th>Drain</th>
<th>DASD</th>
<th>0700-07ff</th>
<th>All</th>
</tr>
</thead>
<tbody>
<tr>
<td>Start</td>
<td>DASD</td>
<td>0700</td>
<td>Links</td>
</tr>
<tr>
<td>Start</td>
<td>Valid</td>
<td>SYSPG1</td>
<td>Page</td>
</tr>
</tbody>
</table>

**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)

<table>
<thead>
<tr>
<th>Start</th>
<th>DASD</th>
<th>0700-07ff</th>
<th>All</th>
</tr>
</thead>
<tbody>
<tr>
<td>Start</td>
<td>DASD</td>
<td>0800</td>
<td>Spool</td>
</tr>
<tr>
<td>Start</td>
<td>Valid</td>
<td>SYSPG1</td>
<td>Page</td>
</tr>
</tbody>
</table>
1. Define reserved slots in CP_Owned list in config file

<table>
<thead>
<tr>
<th>CP_Owned</th>
<th>Slot</th>
<th>Vol-ID</th>
<th>Rdev</th>
<th>Type</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>CP_Owned</td>
<td>1</td>
<td>JF1RES</td>
<td>0A40</td>
<td>Own</td>
<td>Online and attached</td>
</tr>
<tr>
<td>CP_Owned</td>
<td>2</td>
<td>SPOOL0</td>
<td>0780</td>
<td>Own</td>
<td>Online and attached</td>
</tr>
<tr>
<td>CP_Owned</td>
<td>3</td>
<td>MDSP0</td>
<td>0880</td>
<td>Own</td>
<td>Online and attached</td>
</tr>
<tr>
<td>CP_Owned</td>
<td>4</td>
<td>------</td>
<td>----</td>
<td>----</td>
<td>Reserved</td>
</tr>
<tr>
<td>CP_Owned</td>
<td>5</td>
<td>------</td>
<td>----</td>
<td>----</td>
<td>Reserved</td>
</tr>
</tbody>
</table>

2. Query CP_Owned list for available slots

   query cpowned
   
<table>
<thead>
<tr>
<th>Slot</th>
<th>Vol-ID</th>
<th>Rdev</th>
<th>Type</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>JF1RES</td>
<td>0A40</td>
<td>Own</td>
<td>Online and attached</td>
</tr>
<tr>
<td>2</td>
<td>SPOOL0</td>
<td>0780</td>
<td>Own</td>
<td>Online and attached</td>
</tr>
<tr>
<td>3</td>
<td>MDSP0</td>
<td>0880</td>
<td>Own</td>
<td>Online and attached</td>
</tr>
<tr>
<td>4</td>
<td>------</td>
<td>----</td>
<td>----</td>
<td>Reserved</td>
</tr>
<tr>
<td>5</td>
<td>------</td>
<td>----</td>
<td>----</td>
<td>Reserved</td>
</tr>
</tbody>
</table>
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

<table>
<thead>
<tr>
<th>Slot</th>
<th>Vol-ID</th>
<th>Rdev</th>
<th>Type</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>JF1RES</td>
<td>0A40</td>
<td>Own</td>
<td>Online and attached</td>
</tr>
<tr>
<td>2</td>
<td>SPOOL0</td>
<td>0780</td>
<td>Own</td>
<td>Online and attached</td>
</tr>
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<td>----</td>
<td>-----</td>
<td>Reserved</td>
</tr>
</tbody>
</table>
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 TOTAL =000500 INUSE=000000 AVAIL=000000, DR
   
   PAGE TOTAL =000500 INUSE=000000 AVAIL=000000, DR
   
   SPOOL TOTAL =000500 INUSE=000000 AVAIL=000000, 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*

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

/*---------------------------------------------*
  * 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 Definitions                             *
  *---------------------------------------------*/

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

THIS IS JAF1's z/VM TEST LOGO SYSTEM

built on IBM Virtualization Technology

Fill in your USERID and PASSWORD and press ENTER
(Your password will not appear when you type it)
USERID ==> -
PASSWORD ==> -
COMMAND ==> RUNNING: JOHN1
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

<table>
<thead>
<tr>
<th>Status</th>
<th>VM_Read</th>
<th>'VM READ '</th>
</tr>
</thead>
<tbody>
<tr>
<td>CP_Read</td>
<td>'CP READ '</td>
<td></td>
</tr>
<tr>
<td>Running</td>
<td>'GLIDING '</td>
<td></td>
</tr>
</tbody>
</table>

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 loginfo logo config
```
New Logo

THIS IS JAF1's z/VM SHARE SYSTEM

built on IBM Virtualization Technology

Fill in your USERID and PASSWORD and press ENTER
(Your password will not appear when you type it)
USERID ===> GLIDING
PASSWORD ===> JOHNI
COMMAND ===>
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_ACIng group 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**
- nnnnnnn
  - 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