Configuring, Customizing, and Modifying Your z/VM System

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Topics

- *The Basics*
- *Using the Stand Alone Program Loader*
- *Defining and Modifying the System Configuration*
  - Configuration File Statements and CP Command
- *Logos*
- *More Configuration File Statements*
Configuring z/VM:
The Basics
CP Configuration – System Startup (static)

SALIPL Utility
▶ Writes Stand Alone Program Loader to IPL volume

Stand Alone Program Loader
▶ Loads selected version of z/VM Control Program
▶ Determines which configuration disks and files are used

System Configuration File
▶ Defines attributes of z/VM system at IPL time
CP Configuration – System Startup (static)...

1. 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

- PARM Disk (MAINT's CF1)
  - CP MODULE
  - Configuration Files
    - SYSTEM CONFIG
    - LOGO CONFIG
  - LOGO Files
CP Configuration – Running System (dynamic)

Change system-wide definitions and defaults

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

Update system's real device definitions

- Add devices
- Change or clear existing devices
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
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
Statement of Direction – z/VM Single System Image New PARM and IPL Disk Layout

Member 1

IPL

M01RES

MAINT CF1
CPLOAD

Warm start Checkpoint

Object Directory

MAINT 190 / 193

MAINT 19D / 19E

System disks - One set per member

M01P01
Paging

M01S01
Spool

Cluster-wide disks
One set per cluster

VMCOM1

PDR

CF0
CONFIG

41D
Source Directory

Release disks
One set per release per cluster

vrmRL1

MAINTvrm
490 / 493

MAINTvrm
51D

MAINTvrm
CF2

Member 2

IPL

M02RES

MAINT CF1
CPLOAD

Warm start Checkpoint

Object Directory

MAINT 190 / 193

MAINT 19D / 19E

M02P01
Paging

M02S01
Spool

System disks - One set per member

M01P01
Paging

M01S01
Spool

Cluster-wide disks
One set per cluster

VMCOM1

PDR

CF0
CONFIG

41D
Source Directory

Release disks
One set per release per cluster

vrmRL1

MAINTvrm
490 / 493

MAINTvrm
51D

MAINTvrm
CF2

Member 2

IPL

M02RES

MAINT CF1
CPLOAD

Warm start Checkpoint

Object Directory

MAINT 190 / 193

MAINT 19D / 19E

M02P01
Paging

M02S01
Spool

System disks - One set per member

M01P01
Paging

M01S01
Spool

Cluster-wide disks
One set per cluster

VMCOM1

PDR

CF0
CONFIG

41D
Source Directory

Release disks
One set per release per cluster

vrmRL1

MAINTvrm
490 / 493

MAINTvrm
51D

MAINTvrm
CF2
PARM Disk Use after IPL

- **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 CP
  - DDR  Stand-alone DDR
  - DIRECTXA  Stand-alone DIRECTXA
  - ICKSADSF  Stand-alone ICKDSF

**Allows you to specify or modify**
- IPL information
  - Name and location of CP MODULE file
- 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
- IPL device
- PARM disk location

**Up to 4 lines of operator instructions**
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**

```
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>297</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)

**SCSI-specific parameters specified on Hardware Management Console**
"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 the following at IPL time:*
  - System attributes and options
  - Device definitions when:
    - Configuration of device(s) is other than the default for that device type
    - A device does not respond to sense ID commands
    - Handling of specific devices 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 configuration of specific devices
  - Alter defaults
- 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

----------

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

----------

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 volumes 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
  - (similar in z/VM 6.1.0)

```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
Defining Disk Areas for CP System Use...

*_CP_OWNED* “Best Practice” for new system configurations

Recommended to accommodate future growth (z/VM clusters)

Future default (z/VM install) configurations will be similar to the following:

```plaintext
CP_Owned Slot 1  xxxRES

CP_Owned Slot 5  xxvol1

CP_Owned Slot 10 xxxS01

CP_Owned Slot 255 xxxP01
```
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:**
1. Stop all operations on all DASD between X'0700' and X'07FF'
2. Allow users to link to minidisks on DASD X'0700'
3. 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:**
1. All new operations on all DASD between X'0700' and X'07FF'
2. SPOOLing on DASD at real device number X'0800'
3. Paging on volume SYSPG1

```
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
   
<table>
<thead>
<tr>
<th>CP_Owned</th>
<th>Slot</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>CP_Owned</td>
<td>Slot</td>
<td>1</td>
</tr>
<tr>
<td>CP_Owned</td>
<td>Slot</td>
<td>2</td>
</tr>
<tr>
<td>CP_Owned</td>
<td>Slot</td>
<td>3</td>
</tr>
<tr>
<td>CP_Owned</td>
<td>Slot</td>
<td>4</td>
</tr>
<tr>
<td>CP_Owned</td>
<td>Slot</td>
<td>5</td>
</tr>
<tr>
<td>CP_Owned</td>
<td>Slot</td>
<td>1</td>
</tr>
<tr>
<td>CP_Owned</td>
<td>Slot</td>
<td>2</td>
</tr>
<tr>
<td>CP_Owned</td>
<td>Slot</td>
<td>3</td>
</tr>
<tr>
<td>CP_Owned</td>
<td>Slot</td>
<td>4</td>
</tr>
<tr>
<td>CP_Owned</td>
<td>Slot</td>
<td>5</td>
</tr>
<tr>
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</tr>
<tr>
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<td>Slot</td>
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</tr>
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</tr>
<tr>
<td>CP_Owned</td>
<td>Slot</td>
<td>5</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Slot</th>
<th>Vol-ID</th>
<th>Rdev</th>
<th>Type</th>
<th>Status</th>
</tr>
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<td>Online and attached</td>
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<td>0980</td>
<td>Own</td>
<td>Online and attached</td>
</tr>
<tr>
<td>5</td>
<td>-------</td>
<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`

   **Output:**
   
   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=000005, DR
   DRCT TOTAL =000025 INUSE=000000 AVAIL=000000

3. **Detach volume from system and vary offline**
   
   `det 980 system`
   `vary offline 980`

   **Output:**
   
<table>
<thead>
<tr>
<th>Slot</th>
<th>Vol-ID</th>
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<td>0880</td>
<td>Own</td>
<td>Online and attached</td>
</tr>
<tr>
<td>4</td>
<td>NEWVOL</td>
<td>----</td>
<td>Own</td>
<td>Offline</td>
</tr>
<tr>
<td>5</td>
<td>------</td>
<td>----</td>
<td>-----</td>
<td>Reserved</td>
</tr>
</tbody>
</table>
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 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 2010-03-14 at 02:00:00 to EDT
TimeZone_boundary on 2010-11-07 at 02:00:00 to EST
TimeZone_boundary on 2011-03-13 at 02:00:00 to EDT
TimeZone_boundary on 2011-11-06 at 02:00:00 to EST

**Changing timezone on an active system**

q time
TIME IS 17:00:50 EST FRIDAY 2011-02-11
CONNECT= 00:00:23 VIRTCPUs= 000:00.01 TOTCPU= 000:00.06

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

q time
TIME IS 18:01:10 EDT FRIDAY 2011-02-11
CONNECT= 00:00:42 VIRTCPUs= 000:00.01 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.
/*---------------------------------------------*/
/* 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 JAFI'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 JOHNI
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

cmpaccess 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 ===> 
PASSWORD ===> 
COMMAND ===> GLIDING JOHN1
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*
- 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
Thanks!

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