Configuring, Customizing and Modifying Your VM System (Without an IPL)

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 class restructure
- 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
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

530RES

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

*Allows SAPL defaults to be altered*
- Module name
- Load origin address
- Location of CMS minidisk containing load module

*IPL parameters may be specified*

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

```
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 520RES
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 2.0

DEVICE NUMBER: 0123   MINIDISK OFFSET: 00000000   EXTENT: 1

MODULE NAME: CPNEW   LOAD ORIGIN: 1000

------------------------------------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><em>STAND ALONE PROGRAM LOADER: z/VM VERSION 5 RELEASE 2.0</em></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>FILENAME</strong></td>
<td><strong>FILETYPE</strong></td>
</tr>
<tr>
<td>PARM</td>
<td>DISK1</td>
</tr>
<tr>
<td>CPNEW</td>
<td>MODULE</td>
</tr>
<tr>
<td>SYSZVM</td>
<td>CONFIG</td>
</tr>
<tr>
<td>CPLOAD</td>
<td>MODULE</td>
</tr>
<tr>
<td>LASTING</td>
<td>GLOBALV</td>
</tr>
<tr>
<td>DV</td>
<td>CONFIG</td>
</tr>
<tr>
<td>INPTAREA</td>
<td>SAMPLE</td>
</tr>
<tr>
<td>LOGO</td>
<td>CONFIG</td>
</tr>
<tr>
<td>VM72ND</td>
<td>CONFIG</td>
</tr>
<tr>
<td>GDLVM7</td>
<td>CONFIG</td>
</tr>
<tr>
<td>SYSTEM</td>
<td>CONFIG</td>
</tr>
<tr>
<td>ONMESS</td>
<td>SHARE</td>
</tr>
<tr>
<td>ONMESS</td>
<td>LOGO</td>
</tr>
<tr>
<td>ONMESS</td>
<td>SAMPLE</td>
</tr>
<tr>
<td>SYSCNOCSE</td>
<td>CONFIG</td>
</tr>
<tr>
<td>JAF1RDEV</td>
<td>CONFIG</td>
</tr>
<tr>
<td>JAF1CSE</td>
<td>CONFIG</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**
"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 2.0

DEVICE NUMBER: 0123  MINIDISK OFFSET: 00000000  EXTENT: 1

MODULE NAME: CPNEW  LOAD ORIGIN: 1000

-------------------------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
- number of command retrieve buffers
- default terminal characters- owned disk volumes
- ...

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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

```sql
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

```plaintext
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: HCPSSHUTD

Q CPCMDS FORCE
Command: 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 OWNed statement**
- Define disk areas that contain system areas
  - Page
  - Spool
  - TDISK
  - DRCT
- Reserved slots can/should be defined for adding volumes
  - Slots 6-20 reserved in z/VM 5.2.0 sample config file
  - Slots 7-20 reserved in z/VM 5.3.0 sample config file

**DEFINE CPOWNed command**
- Define new entries or change existing entries in CP-Owned list

**Example:**

```
CP_Owned  Slot   1  VMRES1
CP_Owned  Slot   2  VMSPL1
CP_Owned  Slot   3  VMPAG1
CP_Owned  Slot   4  RESERVED
```
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)

  ```
  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 | type | 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 CPNEW
     CP_Owned Slot 5 RESERVED

4. Define new volume to active system
   - (in same slot as config file)
     define cpowned slot 4 cpnew

5. 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 CPNEW 0980 Own Online and attached
 5 ------ ---- ----- Reserved
Dynamically Deleting a CP Owned Volume...

1. **Stop all CP activity on the volume**
   
   `drain valid cpnew all`

2. **Determine when volume is no longer being used**
   
   `q alloc CPNEW`

   ```
   DASD 0980 CPNEW 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 980 offline`

<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>CPNEW</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 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   Active: 0     MAXCONN: 100
PERSISTENT  UNRESTRICTED  MFS: 16384   ACCOUNTING: OFF
```
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 Active: 0 MAXCONN: INFINITE
 PERSISTENT RESTRICTED NONROUTER MFS: 8192 ACCOUNTING: OFF
 State: Controller not available
 CONTROLLER: * IPTIMEOUT: 5 QUEUESTORAGE: 8
 PORTNAME: JFSW1 RDEV: FD00
 Authorized userids:
   SYSTEM VLAN: ANY
```
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 2007-03-11 at 02:00:00 to EDT
Timezone Boundary on 2007-11-04 at 02:00:00 to EST
Timezone_boundary on 2008-03-09 at 02:00:00 to EDT
Timezone_boundary on 2008-11-02 at 02:00:00 to EST
```

**Changing timezone on an active system**

```
q time
TIME IS 16:22:35 EST FRIDAY 02/15/08
CONNECT= 00:01:21 VIRTCP= 000:00.04 TOTCPU= 000:00.07

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

```
q time
TIME IS 17:22:51 EDT FRIDAY 02/15/08
CONNECT= 00:01:37 VIRTCP= 000:00.04 TOTCPU= 000:00.07
```
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

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
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 ===> GLIDINGJOHN1
More Configuration File Statements
Conditional Statements/Imbeds

*Conditional Statements are based on System_Identifier labels*

```plaintext
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 class overrides
  - 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
Guest LAN and Virtual Switch Attributes

**VMLAN Statement**

- Set limits for the number of Guest LANs and z/VM Virtual Switches
  - Range 0-1024
  - Default for each type is INFINITE
- Set default accounting states
- Example:

```
VMLAN Limit Persistent 20 Transient INFINITE
VMLAN Accounting USER ON

q vmlan
VMLAN maintenance level:
  Latest Service: VM63261
VMLAN MAC address assignment:
  MACADDR Prefix: 020000
VMLAN default accounting status:
  SYSTEM Accounting: OFF    USER Accounting: ON
VMLAN general activity:
  PERSISTENT Limit: 20   Current: 2
  TRANSIENT Limit: INFINITE   Current: 0
```
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