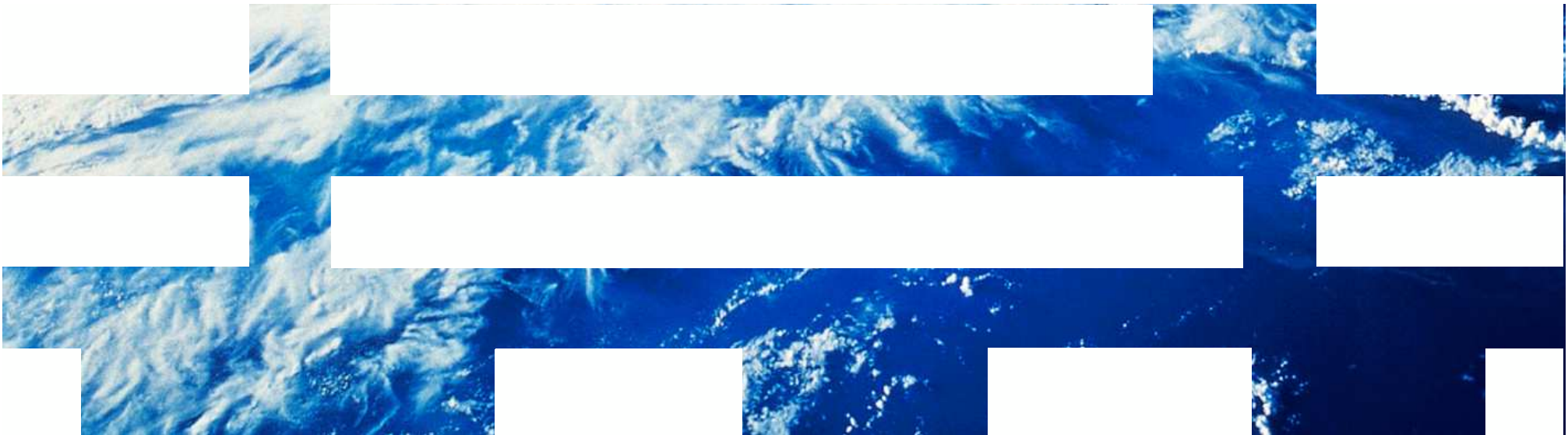John Franciscovich – IBM
August 2010

IBM

Configuring, Customizing and Modifying
Your z/VM System

SHARE – Boston, MA

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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
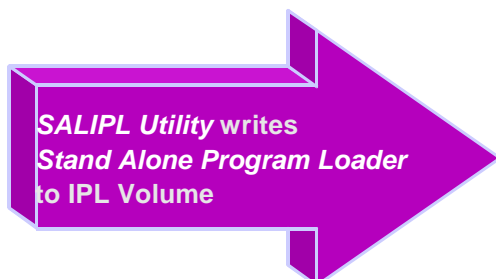
- ▶ Add, change, delete
  - – CHPID
  - – CNTLUNIT
  - – IODEVICE

- ▶ Manage I/O definitions for all LPARs on a processor

- ▶ Commands based on hardware requirements
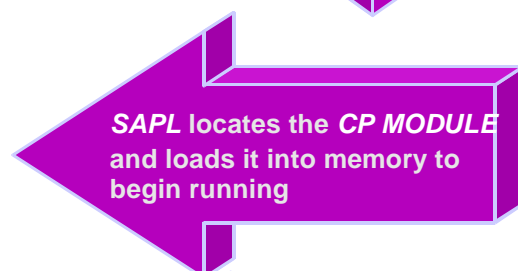
Modify the software view of I/O definitions

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

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

610RES

SAPL

PARM Disk (MAINT's CF1)
- CP MODULE
- Configuration Files
  - SYSTEM CONFIG
  - LOGO CONFIG
- LOGO Files
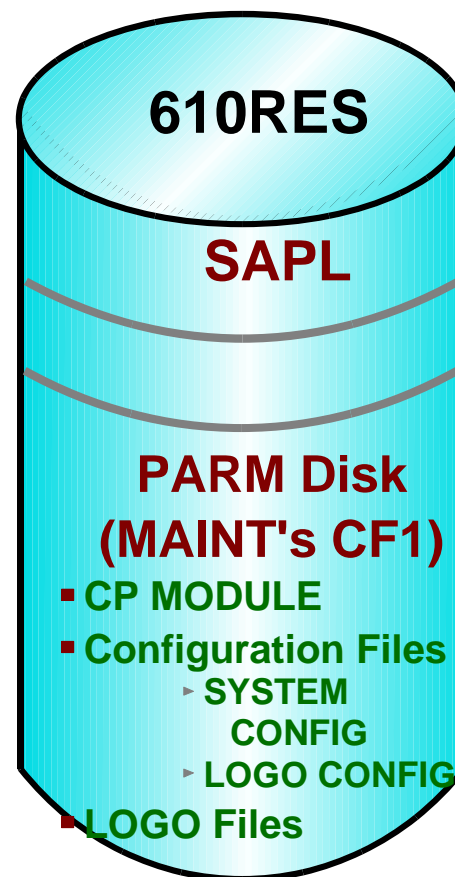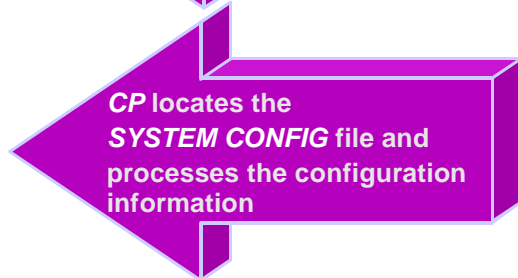
The PARM Disk

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

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
      ```

Statement of Direction – z/VM Single System Image New PARM and IPL Disk Layout

Member 1

IPL

System disks - One set per member

M01RES
- MAINT CF1 CPLOAD
- Warm start Checkpoint
- Object Directory
- MAINT 190 / 193
- MAINT 19D / 19E

M01P01 Paging

M01S01 Spool

Cluster-wide disks One set per cluster

VMCOM1
- PDR
- CF0 CONFIG
- 41D
- Source Directory

vrmRL1
- MAINTvrm 490 / 493
- MAINTvrm 51D
- MAINTvrm CF2

Release disks One set per release per cluster

Member 2

IPL

M02RES
- MAINT CF1 CPLOAD
- Warm start Checkpoint
- Object Directory
- MAINT 190 / 193
- MAINT 19D / 19E

M02P01 Paging

M02S01 Spool

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 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

```
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


```
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)

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 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 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 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)

```
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:

```
/****************************************************/
/*                                  SYSRES   VOLUME       */
/****************************************************/
CP_Owned    Slot    1  xxxRES


/****************************************************/
/*                                  * Reserved for IBM Use  */
/****************************************************/
CP_Owned    Slot    5  xxvol1


/****************************************************/
/*                                  DUMP & SPOOL VOLUMES */
/* Dump and spool volumes begin with slot 10 and are        */
/* assigned in ascending order                              */
/****************************************************/
CP_Owned    Slot   10  xxxS01


/****************************************************/
/*                                  PAGE & TDISK VOLUMES */
/* To avoid interference with spool volumes and to         */
/* automatically have all unused slots defined as          */
/* "Reserved", begin with slot 255 and assign them in      */
/* descending order.                                       */
/****************************************************/
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:

- ► 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 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 2009-03-08 at 02:00:00 to EDT
Timezone_boundary on 2009-11-01 at 02:00:00 to EST
Timezone_boundary on 2010-03-14 at 02:00:00 to EDT
Timezone_boundary on 2010-11-07 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

Thanks!

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