

# Configuring, Customizing, and Modifying Your z/VM System

SHARE – Anaheim, CA  
Session 8452



# Trademarks

**The following are trademarks of the International Business Machines Corporation in the United States, other countries, or both.**

z/VM® z10™ z/Architecture® zEnterprise™

Not all common law marks used by IBM are listed on this page. Failure of a mark to appear does not mean that IBM does not use the mark nor does it mean that the product is not actively marketed or is not significant within its relevant market.

Those trademarks followed by ® are registered trademarks of IBM in the United States; all others are trademarks or common law marks of IBM in the United States.

For a complete list of IBM Trademarks, see [www.ibm.com/legal/copytrade.shtml](http://www.ibm.com/legal/copytrade.shtml):

**The following are trademarks or registered trademarks of other companies.**

Adobe, the Adobe logo, PostScript, and the PostScript logo are either registered trademarks or trademarks of Adobe Systems Incorporated in the United States, and/or other countries.

Cell Broadband Engine is a trademark of Sony Computer Entertainment, Inc. in the United States, other countries, or both and is used under license therefrom.

Java and all Java-based trademarks are trademarks of Sun Microsystems, Inc. in the United States, other countries, or both.

Microsoft, Windows, Windows NT, and the Windows logo are trademarks of Microsoft Corporation in the United States, other countries, or both.

Intel, Intel logo, Intel Inside, Intel Inside logo, Intel Centrino, Intel Centrino logo, Celeron, Intel Xeon, Intel SpeedStep, Itanium, and Pentium are trademarks or registered trademarks of Intel Corporation or its subsidiaries in the United States and other countries.

UNIX is a registered trademark of The Open Group in the United States and other countries.

Linux is a registered trademark of Linus Torvalds in the United States, other countries, or both.

ITIL is a registered trademark, and a registered community trademark of the Office of Government Commerce, and is registered in the U.S. Patent and Trademark Office.

IT Infrastructure Library is a registered trademark of the Central Computer and Telecommunications Agency, which is now part of the Office of Government Commerce.

\* All other products may be trademarks or registered trademarks of their respective companies.

## Notes:

Performance is in Internal Throughput Rate (ITR) ratio based on measurements and projections using standard IBM benchmarks in a controlled environment. The actual throughput that any user will experience will vary depending upon considerations such as the amount of multiprogramming in the user's job stream, the I/O configuration, the storage configuration, and the workload processed. Therefore, no assurance can be given that an individual user will achieve throughput improvements equivalent to the performance ratios stated here.

IBM hardware products are manufactured from new parts, or new and serviceable used parts. Regardless, our warranty terms apply.

All customer examples cited or described in this presentation are presented as illustrations of the manner in which some customers have used IBM products and the results they may have achieved. Actual environmental costs and performance characteristics will vary depending on individual customer configurations and conditions.

This publication was produced in the United States. IBM may not offer the products, services or features discussed in this document in other countries, and the information may be subject to change without notice. Consult your local IBM business contact for information on the product or services available in your area.

All statements regarding IBM's future direction and intent are subject to change or withdrawal without notice, and represent goals and objectives only.

Information about non-IBM products is obtained from the manufacturers of those products or their published announcements. IBM has not tested those products and cannot confirm the performance, compatibility, or any other claims related to non-IBM products. Questions on the capabilities of non-IBM products should be addressed to the suppliers of those products.

Prices subject to change without notice. Contact your IBM representative or Business Partner for the most current pricing in your geography.

# Disclaimer

The information contained in this document is not intended to be an assertion of future action by IBM. The use of this information or the implementation of any of these techniques is a customer responsibility and depends on the customer's ability to evaluate and integrate them into the operational environment. While each item may have been reviewed by IBM for accuracy in a specific situation, there is no guarantee that the same or similar results will be obtained elsewhere. Customers attempting to adopt these techniques to their own environment do so at their own risk.

In this presentation, any references made to an IBM licensed program are not intended to state or imply that only IBM's licensed program may be used; any functionally equivalent program may be used instead.

Any performance data contained in this presentation was determined in a controlled environment and, therefore, the results which may be obtained in other operating environments may vary significantly. Users of this presentation should verify the applicable data for their specific environment.

It is possible that this material may contain reference to, or information about, IBM products (machines and programs), programming, or services that are not announced in your country. Such references or information must not be construed to mean that IBM intends to announce such IBM products, programming or services in your country.

Any feedback that you give IBM regarding this presentation will be treated as non-confidential information. IBM reserves the right to use this information in any form.

# 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

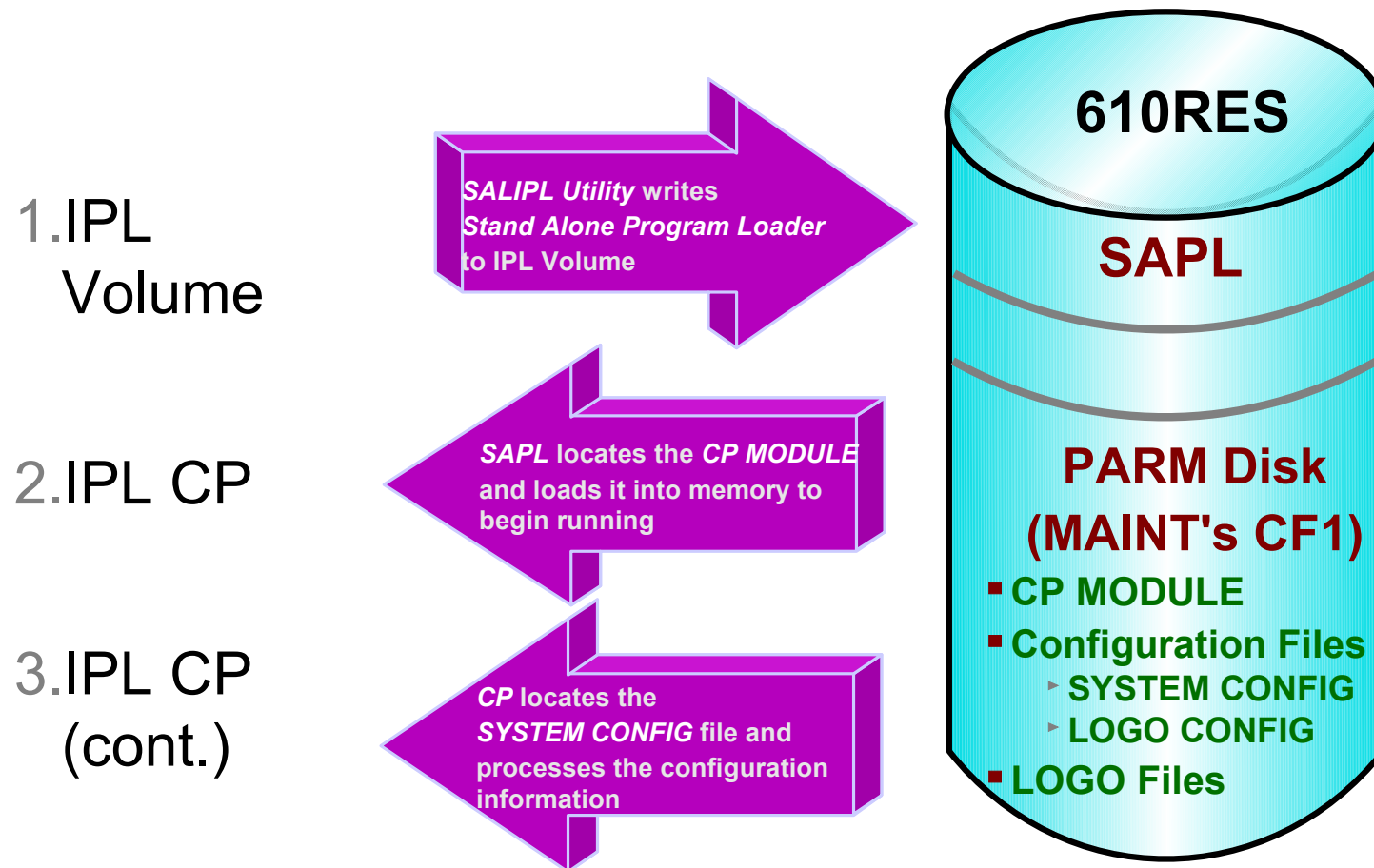
### *Stand Alone Program Loader*

- ▶ 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)...



## 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)

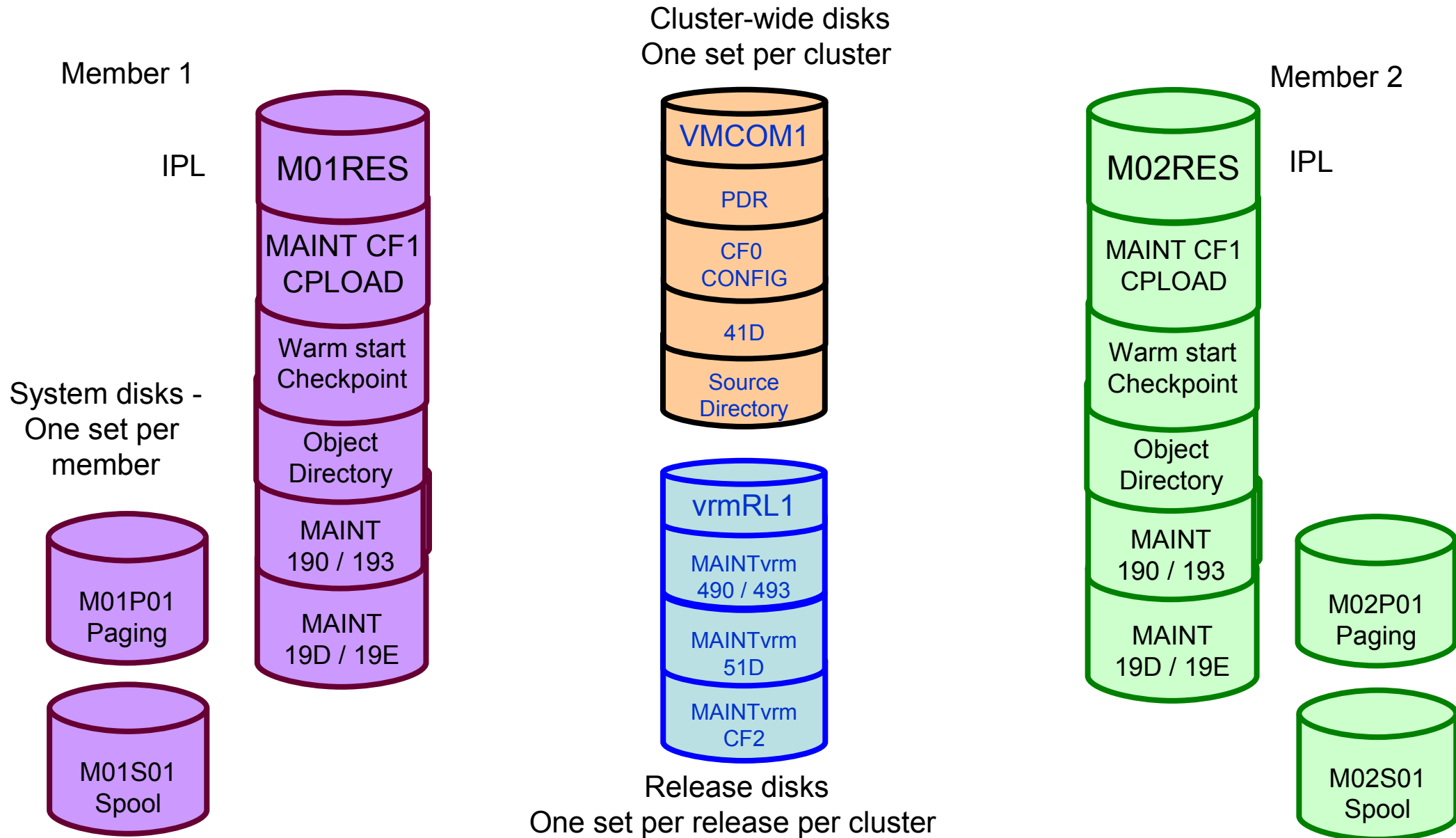
*Usually on the IPL volume*

- ▶ 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



## 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 LOADPARAM option*
- *Allows all saved SAPL settings to be changed*

▶ **IPL 123 LOADPARAM 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 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
    - CPOWNERD
    - (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
```

```
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
- ▶ valid

*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)

<b>Drain</b>	<b>DASD</b>	<b>0700-07ff</b>	<b>All</b>
<b>Start</b>	<b>DASD</b>	<b>0700</b>	<b>Links</b>
<b>Start</b>	<b>Volid</b>	<b>SYSPG1</b>	<b>Page</b>

### 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

<b>Start</b>	<b>DASD</b>	<b>0700-07ff</b>	<b>All</b>
<b>Start</b>	<b>DASD</b>	<b>0800</b>	<b>Spool</b>
<b>Start</b>	<b>Volid</b>	<b>SYSPG1</b>	<b>Page</b>

# 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 vold 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 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 VIRTCPU= 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 VIRTCPU= 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.

# 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

```

THIS IS JAF1's z/VM TEST LOGO SYSTEM

                / VV          VVV MM          MM
               / VV          VVV  MMM         MMM
              / VV          VVV  MMMM        MMMM
             / VV  VVV      MM MM MM MM
            / VV  VVV      MM  MMM  MM
           / VVVVV        MM  M   MM
          / VVV          MM          MM
         / V            MM          MM

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
```

# New Logo

```

THIS IS JAF1's z/VM SHARE SYSTEM

          / VV          VVV MM          MM
         / VV          VVV  MMM          MMM
        / VV          VVV  MMMM          MMMM
       / VV  VVV      MM  MM  MM  MM
      / VV  VVV      MM  MMM  MM
     / VVVVV        MM   M   MM
    / VVV          MM          MM
   / V            MM          MM

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 LOADPARAM 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\_ACGroup 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!

*Contact Information:*

John Franciscovich  
IBM  
z/VM Development  
Endicott, NY

[francisj@us.ibm.com](mailto:francisj@us.ibm.com)