Everything You Need to Know About Cloning z/VM 6.2 and 6.3 Systems

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Agenda

- Background
- Changes in z/VM 6.2 and 6.3
- Tasks you still need to do
- "Easy" approach
- Cloning a non-SSI system
- Disk labels
- Cloning an SSI cluster

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CP Utilities and Terminology

- Stand-Alone Program Loader, a.k.a. **SAPL**
  - The utility program that actually loads CP or another stand-alone program into your LPAR or virtual machine
- Stand-Alone Loader Creation Utility, a.k.a. **SALIPL**
  - The utility that writes the SAPL utility, along with your parameters and comments, on a DASD volume
  - You've probably used the module under CMS
  - There is also a stand-alone version
    - Can be loaded from a (virtual) reader, tape, or via SAPL!
- DASD Dump Restore utility a.k.a. **DDR**
  - Utility for copying disks, if you don't have or can't use flashcopy
  - It is both a CMS command and a stand-alone utility, loadable via SAPL

- Terminology – All these mean the same thing in this presentation
  - Node id, System id, Member name, System name

The way you used to do it .. (6.1 and older)

- DDR or Flashcopy the source disks to the target

- Define a 2nd level or other isolated environment to bring up the new VM
  - Or, somehow worry about duplicate labels

- IPL (override console if needed)

- Change labels if necessary
  - How to do this is discussed later

- Fix any other node identifiers, real addresses, etc.
  - These seem to hide all over the place.

- Move 2nd level system to LPAR (if that is your goal)
  - or, just use it!

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What has changed?

- CP owned volumes can now have a system owner defined
    - Required on members in SSI clusters
    - Optional on non-SSI systems
        - but written by default during a non-SSI installation
    - Owner identifies the SSI cluster name and member name
        - SSI cluster name of "NOSSI" means the volume is not part of an SSI cluster
        - Special owner name of "NOSYS" means either:
            - SSI cluster volumes not tied to 1 SSI member
            - No ownership information on the volume

- The IPL parms in the Stand-alone Program Loader (SAPL) specify the real device address of the common volume
    - Used to find the SYSTEM CONFIG file

```
---------------------------------------------IPL PARAMETERS--
fn=SYSTEM ft=CONFIG pdnum=1 pdvol=7001
```

- VMSES/E (service commands and inventory) keep track of the system identifier

Cloning tasks that haven't changed

- Changing disk labels
  - The process is still the same
- System identifier may appear in several places
  - SYSTEM CONFIG
  - SYSTEM NETID S
  - DIRMAINT customization
  - TCPIP configuration
  - etc. (RSCS, RACF, names files, Perfkit config, <insert more here!>)
- Any reference to a real device
  - SYSTEM CONFIG
  - Directory
  - Execs (AUTOLOG1 or 2 system setup, others)
  - RACF (real device control, if used)
- Other SYSTEM CONFIG updates
  - Macprefix – important if using "Ethernet" or "layer 2" network connections

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How to make the task easier

- Some parts of z/VM can select their configuration based on system identifier, CPU id, or LPAR name.
  - SYSTEM CONFIG (CPU id or LPAR name to set system identifier)
  - SYSTEM NETID on 190 disk (select by CPU id)
  - TCPIP
    - Select profile based on System id
    - Qualify lines in TCPIP DATA based on System id

- SAPL allows you to select a different system configuration file when you load CP
  - "FN=" IPL parameter

- Customizing or creating customized copies of these files before you clone allows you to bring up the new system more easily.

System configuration example

- Add qualifiers to statements or blocks of statements

```
System_Identifier LPAR LPARV1    VMSYSA
System_Identifier LPAR LPARV2    VMSYSB
System_Identifier_Default        ZVMV6R20

VMSYSA:  System_Residence,
    Checkpoint  Volid M01R01    From CYL 21  For 9 ,
    Warmstart   Volid M01R01    From CYL 30  For 9
VMSYSB:  System_Residence,
    Checkpoint  Volid M02R01    From CYL 21  For 9 ,
    Warmstart   Volid M02R01    From CYL 30  For 9

VMSYSA:  Begin
    CP_Owned   Slot  10  M01S01
    CP_Owned   Slot  11  M01S02
VMSYSA:  End

VMSYSB:  Begin
    CP_Owned   Slot  10  M02S01
    CP_Owned   Slot  11  M02S02
VMSYSB:  End
```

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Do I really have to play by the new rules?

- Can I configure 6.2 or 6.3 so that it is as easy to clone as earlier releases? Is there a "short-cut"?
    - Yes, as long as your system is non-SSI
    - And, you understand that you have changed your system to a non-standard configuration!
- Steps:
    - Move SYSTEM CONFIG from PMAINT CF0 to MAINT CF1
        - This is where it used to be
        - Note: Some service commands expect to find it on PMAINT CF0!
    - Remove the IPL parms in SAPL. CP doesn't need overrides to find the config file.
        - On MAINT6xx, run:

                    SALIPL 123 (EXTENT 1
    - Remove all ownership information from your CP owned volumes. Use CPFMTXA:
        - CPFMTXA 123 M01RES OWNER NONE
        - You must do this for all the CP owned volumes.

- Now you can copy your system using DDR or flashcopy

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Short-cut method, continued

- When you Load or IPL the copied system:
  - May need to override console on SAPL screen
    - add CONS=*nnnn* as an IPL parameter
    - Or – define in the loadparm as CONS*nnnn*

  - May want to specify a different config file on SAPL
    - add FN=*name* as an IPL parameter
    - ..assuming you created this file before the copy!

  - May want to force the IPL prompt so you can specify a "WARM NOAUTOLOG" start-up
    - add the IPL parameter PROMPT

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SAPL screen with overrides

```
STAND ALONE PROGRAM LOADER: z/VM VERSION 6 RELEASE 2.0

DEVICE NUMBER:    7000      MINIDISK OFFSET:   39      EXTENT:  1

MODULE NAME:    CPLOAD      LOAD ORIGIN:      1000
-----------------------------------IPL PARAMETERS--------------------------------
FN=CLONE cons=4064 prompt_



-------------------------------------COMMENTS------------------------------------



----------------------------------------------------------------------------------



9= FILELIST  10= LOAD  11= TOGGLE EXTENT/OFFSET
```

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Short-cut method, continued

After the system is up:

- Fix the system id if the system didn't select the correct one automatically
  - Change SYSTEM CONFIG
  - Update TCPIP and other configurations

- Change labels, if needed

- One thing you still need to do:
  - Change the system id in the VMSES/E files
    - On MAINT6xx, run:
    - VMFUPDAT SYSPINV SYSTEM *new_sys_id old_sys_id*

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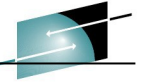
But short-cuts aren't allowed!

Clone a non-SSI 6.2 or 6.3 system

- OK, the short-cut is not allowed...and certainly not recommended!

- I'm assuming the new system has a different system identifier, via:
  - Copied SYSTEM CONFIG with different identifier selected
  - Selected from CPU id or LPAR name
  - Fall back to System_Identifier_Default setting

- CP owned volume ownership <u>must</u> be changed after copying and before IPL
  - Otherwise you will be most likely missing spool and page volumes!
  - But note! <u>Only</u> CP owned volumes need this
    - No allocation or ownership is read from user volumes

- How do you do this?
  - Use CPFMTXA from a z/VM 6.2+ system that can write on the volumes
  - Use stand-alone ICKDSF

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Using CPFMTXA

- CPFMTXA is a CP utility exec that invokes ICKDSF
  - Easier to use than ICKDSF (at least I think so!)

- Runs under CMS

- Options to format, allocate, relabel, and update owner
- Note: If you format cylinder 0, you wipe out the existing label, allocation, and ownership
  - Better to just change the attributes you must change

- Using CPFMTXA:
  - Syntax to update ownership:
    - CPFMTXA *vdev label* OWNER NOSSI.*newsysid*
    - The *label* must match the existing disk label
  - Syntax to write a new label:
    - CPFMTXA *vdev newlabel* LABEL

Using stand-alone ICKDSF

- Device Support Facilities (ICKDSF) can be loaded in the LPAR using the Stand-alone Program Loader (SAPL)

- Once it is up, you can change ownership information or volume labels
    - See example following this page

- Use this DSF command to change the owner
    - CPVOL OWNER UNIT(*rdev*) VFY(*label*) NOSSI SYSNAME(*sysid*)

- Use this DSF command to change a label:
    - CPVOL LABEL UNIT(*rdev*) VFY(*oldlabel*) VOLID(*newlabel*)

- Reply "U" to the prompt to actually make the update:
    - ICK003D REPLY U TO ALTER VOLUME *rdev* CONTENTS, ELSE T
    - U

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Loading stand-alone ICKDSF

Specify ICKSADSF as the module name to load, press PF10

```
STAND ALONE PROGRAM LOADER: z/VM VERSION 6 RELEASE 2.0

DEVICE NUMBER:    7000      MINIDISK OFFSET:    39      EXTENT:  1

MODULE NAME:      ICKSADSF   LOAD ORIGIN:       1000

-------------------------------------IPL PARAMETERS--------------------------------------


-------------------------------------COMMENTS--------------------------------------




-------------------------------------------------------------------------------------



9= FILELIST  10= LOAD  11= TOGGLE EXTENT/OFFSET
```

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Using stand-alone ICKDSF

Clear the screen, then enter ICKDSF commands

```
ICK005E DEFINE INPUT DEVICE, REPLY 'DDDD,CUU' OR 'CONSOLE'
ENTER INPUT/COMMAND:
CONSOLE  ←
ICK006E DEFINE OUTPUT DEVICE, REPLY 'DDDD,CUU' OR 'CONSOLE'
ENTER INPUT/COMMAND:
CONSOLE  ←
ICKDSF - SA/XA/ESA   DEVICE SUPPORT FACILITIES 17.0L            TIME: 19:59:54
        08/07/13      PAGE    1

ENTER INPUT/COMMAND:
 CPVOL OWNER UNIT(7001) VFY(M01P01) NOSSI SYSNAME(VMSYSB)   ←
ICK00700I DEVICE INFORMATION FOR 7001 IS CURRENTLY AS FOLLOWS:
          PHYSICAL DEVICE = 3390
          STORAGE CONTROLLER = 3990
          STORAGE CONTROL DESCRIPTOR = E9
          DEVICE DESCRIPTOR = 0C
          ADDITIONAL DEVICE INFORMATION = 4A001F3C
          TRKS/CYL = 15, # PRIMARY CYLS = 100
ICK04000I DEVICE IS IN SIMPLEX STATE
ICK00703I DEVICE IS OPERATED AS A MINIDISK
ICK00091I 7001 NED=002107.900.IBM.75.0000000AKAZ1

_                                              CLEAR SCREEN WHEN READY
```

Other stand-alone utilities

- On your CP parm disk (where CPLOAD MODULE is located, MAINT CF1) there are 3 stand-alone utilities:

  - **ICKSADSF MODULE** (we just talked about)

  - **DDR MODULE**
    - Run the DASD Dump Restore program
    - Can be used to clone disks with z/VM down

  - **SALIPL MODULE**
    - Create or update SAPL on a CP formatted DASD
    - Can be used to update default IPL parameters

- All of them are loaded the same way using SAPL

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IPL parameter "pdvol=rdev"

- The SYSTEM CONFIG file is now on PMAINT CF0
    - This is the first PARM disk on the common volume
        - This is not your IPL volume!
        - It is not CPACCESSed in SYSTEM CONFIG

- The stand-alone program loader, by default, specifies IPL parameters to find SYSTEM CONFIG
    - `fn=SYSTEM ft=CONFIG pdnum=1 pdvol=`*rdev*
    - You must correct this address – if you don't:
        - HCPARM6724W Requested parm disk volume is invalid.
        - CP entered; disabled wait PSW 00020000 00000000 00000000 00006724
    - You may also specify the console and "prompt", if needed

- Use SALIPL to update (stand alone loader creation utility)
    - On MAINT6xx, enter:

SALIPL 123 (extent 1 iplparms fn=SYSTEM ft=CONFIG pdnum=1 pdvol=*newrdev*

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Cloning non-SSI, after you IPL the clone

- Do the other normal updates:

  - Update the system id in VMSES/E:
    - Logon to MAINT6xx
    - VMFUPDAT SYSPINV SYSTEM *new_sys_id old_sys_id*
    - Note: The updated *z/VM CP Planning and Administration* document has a new chapter on renaming a system and/or changing labels. That chapter does not use the VMFUPDAT command to update the SES files, but has you use XEDIT to modify the SES inventory files. You can use either method to update the VMSES files.

  - Update the TCPIP configuration

  - If you IPLed with a renamed system config file, correct the name on the common parm disk

  - etc.

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Update the CRR server LU name

- Note: This is not mentioned in older versions of the *z/VM CP Planning and Administration Guide* when you clone a system to create a new SSI member.

- The Coordinated Resource Recovery (CRR) server should have a unique LU name
    - This is the VMSERVR user id, filepool name is VMSYSR:
    - Install sets LU name to the system identifier
    - Can be any name, but must be unique if multiple systems are connected (such as an SSI cluster)
    - To fix: Log on to VMSERVR
        - Enter STOP NOBACKUP
        - Edit VMSERVR DMSPARMS
        - Change LU parameter and FILE the changes
        - Run FILESERV CRRLOG 306 307
        - IPL CMS and disconnect with #CP DISC
    - See the LU name by entering Q RESOURCE

```
Resource: .VMSYSA  Type: Global  Owning Userid: VMSERVR
```
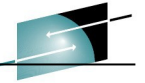
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Disk labels

M01RES
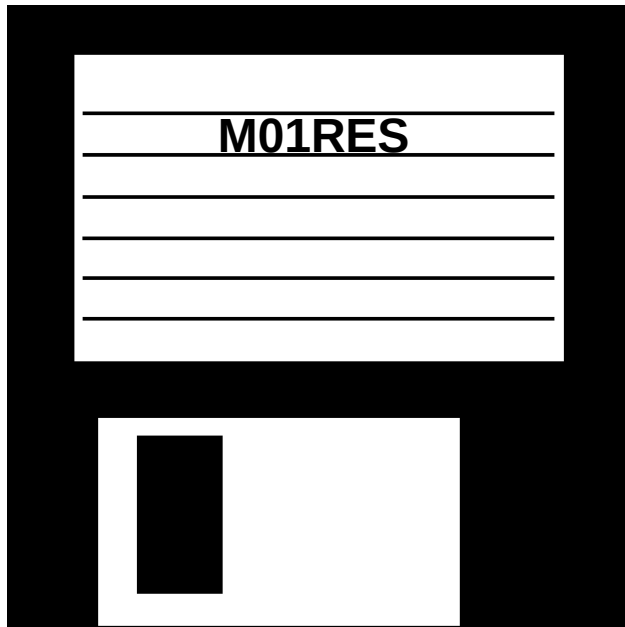
What about duplicate disk labels?

If you've ever cloned a system, you may have seen this:

```
11:26:53 HCPZCO6718I Using parm disk 1 on volume VMCOM1 (device 1001).
11:26:53 HCPZCO6718I Parm disk resides on cylinders 1 through 120.
11:26:53
11:26:53 HCPIIS954I DASD 2004 VOLID M01P01 IS A DUPLICATE OF DASD 1004
11:26:53 HCPIIS954I DASD 2003 VOLID M01S01 IS A DUPLICATE OF DASD 1003
11:26:53 HCPIIS954I DASD 2002 VOLID 630RL1 IS A DUPLICATE OF DASD 1002
11:26:53 HCPIIS954I DASD 2001 VOLID VMCOM1 IS A DUPLICATE OF DASD 1001
11:26:53 HCPIIS954I DASD 2000 VOLID M01RES IS A DUPLICATE OF DASD 1000
11:26:53 Start ((Warm|Force|COLD|CLEAN) (DRain) (DIsable)  (NODIRect)
11:26:53        (NOAUTOlog)) or (SHUTDOWN)
```

- z/VM uses the labeled disk with the lower device address
- If the higher device is the correct one, don't start up your system!
- How do you fix this?

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Avoiding duplicate labels

- Your choices:
  - Bring up new system second level so you can change labels
  - Remove devices with duplicate labels from the LPAR
  - Ignore devices with duplicate labels in your SYSTEM CONFIG
    - Devices statement, using either
      - Offline_at_IPL
      - Sensed_but_offline
    - **Sensed_but_offline** is preferred, because the device is sensed (CP will know it is a DASD) but left offline.

  - On z/VM 6.3, use the new support for specifying device numbers:
    - `CP_Owned Slot` *nn volid* `RDEV` *rdev*
    - `User_Volume_RDEV` *volid* `RDEV` *rdev*
    - Example on the next page

  - Config changes require you to modify or copy your SYSTEM CONFIG before you clone the system.

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New z/VM 6.3 RDEV support

- My SYSTEM CONFIG statements:

```
CP_Owned   Slot   1  M01RES   RDEV 1000
CP_Owned   Slot   5  VMCOM1   RDEV 1001
CP_Owned   Slot  10  M01S01   RDEV 1003
CP_Owned   Slot 255  M01P01   RDEV 1004
User_Volume_RDEV       630RL1  RDEV 1002
```

- CP will still issue a message if it detects a duplicate label, but you now know for sure which device it is using:

```
HCPIIS291I DASD 2004 VOLID M01P01 NOT ATTACHED, USING RDEV 1004 M01P01
HCPIIS291I DASD 2003 VOLID M01S01 NOT ATTACHED, USING RDEV 1003 M01S01
HCPIIS291I DASD 2001 VOLID VMCOM1 NOT ATTACHED, USING RDEV 1001 VMCOM1
HCPIIS291I DASD 2002 VOLID 630RL1 NOT ATTACHED, USING RDEV 1002 630RL1
HCPIIS954I DASD 2000 VOLID M01RES IS A DUPLICATE OF DASD 1000
```

  - APAR VM65386 changes this message. (This APAR is on 6303RSU, service level 1401.) The old version was:

```
HCPIIS291I DASD 2001 VOLID VMCOM1 DOES NOT MATCH DEVICE 1001 VMCOM1
```

  - 1000 is my IPL device. Duplicates of it have always been ignored.
    - This is why message 954I is issued instead of message 291I

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z/VM 6.3 RDEV support, another test

- My SYSTEM CONFIG statements:
  ```
  CP_Owned    Slot   1   M01RES   RDEV 1000
  CP_Owned    Slot   5   VMCOM1   RDEV 1001
  CP_Owned    Slot  10   M01S01   RDEV 1003
  CP_Owned    Slot 255   M01P01   RDEV 1004
  User_Volume_RDEV       630RL1   RDEV 1002
  ```

- Test with the duplicate volumes at 020x instead of 200x

  - i.e. we must ignore the lower address this time
  ```
  HCPIIS291I DASD 0204 VOLID M01P01 NOT ATTACHED, USING RDEV 1004 M01P01
  HCPIIS291I DASD 0202 VOLID 630RL1 NOT ATTACHED, USING RDEV 1002 630RL1
  HCPIIS291I DASD 0203 VOLID M01S01 NOT ATTACHED, USING RDEV 1003 M01S01
  HCPIIS291I DASD 0201 VOLID VMCOM1 NOT ATTACHED, USING RDEV 1001 VMCOM1
  HCPIIS954I DASD 0200 VOLID M01RES IS A DUPLICATE OF DASD 1000
  ```

  - VM still has the correct volumes owned or attached to system:
  ```
  Q DASD
  DASD 1000 CP OWNED   M01RES    90
  DASD 1001 CP OWNED   VMCOM1    12
  DASD 1002 CP SYSTEM  630RL1     5
  DASD 1003 CP OWNED   M01S01     0
  DASD 1004 CP OWNED   M01P01     0
  ```

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Changing volume labels

- Some things to know about DASD labels
  - Labels appear in SYSTEM CONFIG and the directory
  - SYSTEM CONFIG is only read when CP is initializing
  - Labels are only read when DASD is attached to the system
- So – updating labels can be done on a live system if you do it in a specific order

  - Suggestion:
    - Update a copy of your SYSTEM CONFIG and run CPSYNTAX on it
    - Update a copy of your USER DIRECT
      - Change mdisk statements and the DIRECTORY statement
      - Use DIRECTXA with (EDIT option to syntax check!
      - Run DISKMAP EXEC or DIRMAP and check its output
    - Change the real labels (more on this on next page)
    - Replace your SYSTEM CONFIG with the copy
    - Replace your USER DIRECT with the copy
    - DIRECTXA USER DIRECT
    - SHUTDOWN REIPL

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Changing labels on a live system

- For example, after you've IPLed your cloned system

- The problem:
  - Any tool, such as CPFMTXA, operates on a virtual address
  - Devices in use by the system can't be attached to a user
  - You need a virtual device that lets you write on cylinder 0

- Solutions
  - Define a "0-END" minidisk or use an existing one
    - such as MAINT 122-124, MAINT6xx 131-133, PMAINT 141-142, etc.
  - Use DEFINE MDISK to dynamically create a minidisk
    - Requires the user id to have OPTION DEVMAINT
    - MAINT and MAINT6xx do not have this by default!
  - Use another system that can attach the volumes

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Cloning an SSI cluster
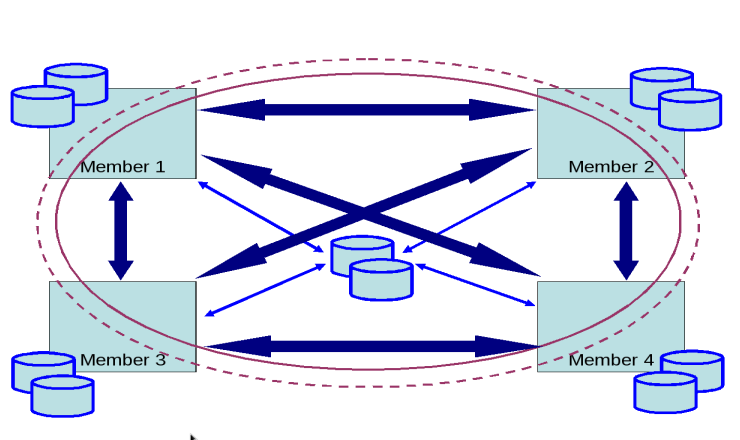
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Cloning an SSI cluster

- SSI cluster has member names and the SSI cluster name:

  - Written to the PDR (Persistent Data Record) on the common volume

  - In the ownership information on CP owned volumes
    - This is required for SSI!

  - Defined in SYSTEM CONFIG

  - Member names are in the user directory

- You must change this information before you IPL the cloned system the first time
  - so you really need to bring it up second level the first time or have another 6.2+ VM system available
  - Prep work with SYSTEM CONFIG and the directory before you clone is required!

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Before you clone SSI ..

- On PMAINT CF0: Copy SYSTEM CONFIG to CLONE CONFIG
    - Edit CLONE CONFIG and change LPAR names, system names, SSI cluster name, macprefix, etc.
    - Change real addresses. Make sure the real CTC addresses on your ISLINK statements are correct for each LPAR and system!
    - You could even change labels if you're brave enough to change everything at once
    - Be sure to run CPSYNTAX with the LPAR option for all LPAR names!

- Get a copy of the user directory and put it on your "work" VM system or the first level system.
    - a "work" system is another z/VM system (6.2 or 6.3) that can write on SSI cluster's CP owned volumes

- Now you can clone your SSI
    - I recommend all systems are shut down first!

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Update your cloned SSI CP owned disks

- Re-write the PDR on the cloned common volume
    - The FORMSSI command is found on PMAINT 551
    - ATTACH 1001 *
    - FORMSSI CREATE 1001 *newssi*
        - If all systems were down when you cloned disks, this works.
          If a system was up, you may need to add the FORCE option.

- Update ownership information on all CP owned volumes
    - ATTACH 1000 *
    - CPFMTXA 1000 M01RES OWNER *newssi.newsys*
    - Change labels now also if you're one of the brave ones
        - CPFMTXA 1000 M02RES LABEL
    - Note that the common volume is not owned by a system:
        - CPFMTXA 1001 VMCOM1 OWNER *newssi*.NOSYS
    - Also: all CP owned volumes <u>must</u> have the SSI cluster name.
        - You can't use NOSSI!

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Update the IPL parms

- You could do this after you IPL
  - Just override the incorrect parms
  - Write out the changes after the system is up

- All RES disks will use the same parms

- It is easy to do now while you have disks attached:

SALIPL 1000 (extent 1 iplparms FN=SYSTEM FT=CONFIG pdnum=1 pdvol=*rdev*

- We will still have to override the IPL parms on our first IPL.

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Directory updates

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- You must have a copy of the source directory from the system you are cloning.
  - It doesn't matter if you're using Dirmaint or not

- Edit this file
  - Change names on the BUILD ON statements to the new names
  - If you are also changing labels now, change them
    - DIRECTORY statement
      - DIRECTORY SSI 123 *label1 label2 label3*
    - Minidisk statements
      - MDISK 123 3390 0 END *label1* MR

- Check your work
  - Use DIRECTXA with the EDIT option to syntax check the directory
    - DIRECTXA CLONE DIRECT A (EDIT
  - Use a utility such as DISKMAP or DIRMAP to make sure you didn't incorrectly change a label
    - Look at the output to make sure only correct labels are there

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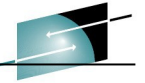
Write out the updated directory

- Note that the directory must be written on <u>each</u> res disk

- The directory typically specifies address "123" to write the directory
    - This is on the DIRECTORY statement
    - The label of the RES disk must match a label on this statement
    - Make sure you don't update the wrong RES disk!
        - DET 123
        - ATTACH 1000 * 123
        - DIRECTXA CLONE DIRECT
        - DET 123

    - Do this for each member of the cloned SSI cluster
    - DIRECTXA will end with return code 5 – this is normal
        - The directory written out was not the active directory on your current system

IPL the first member of your SSI

- Specify a LOADPARM of your console
  - We need to override IPL parms

- Override the file name with CLONE

- Add parameters
  - "prompt" to force the IPL prompts
  - "cons=rdev" if needed to force the console

```
----------------------------------------IPL PARAMETERS----------
FN=CLONE FT=CONFIG pdnum=1 pdvol=1001 prompt cons=4000
```

- Press PF10 to load

Initial start up

- Specify start-up options of FORCE NOAUTOLOG
  - WARM will give message
    - HCPWRM9200E System recovery failure; configuration error.
  - This may depend on if you changed labels or not.

- Go find your list of the usual things to fix on a cloned system
  - Get the directory source file you used to write the directory
    - Put on PMAINT 2CC or wherever you normally keep it
    - If using Dirmaint:
      - Rename to USER INPUT
      - Put on DIRMAINT 1DF
      - ERASE USER DIRECT from that disk
      - Start up DIRMAINT
  - Don't forget to:
    - Rename CLONE CONFIG on PMAINT CF0 to SYSTEM CONFIG
    - Run VMFUPDAT SYSPINV on MAINT6xx
    - Update SAPL if you didn't before

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Final thoughts

- The service filepool (usually VMPSFS) is a global resource. If your cloned systems will be connected via ISFC, you may need to change this resource name.

- If you're using DIRMAINT and change labels, the EXTENT CONTROL file has to be updated also.

- If you're using Perfkit, some history files use the system id as a file name. You may want to clean up the files that have the old system name.

- A z/VM 6.2 system that is being managed by the Unified Resource Manager must not be cloned or IPLed in multiple LPARs. Unpredictable things can happen! See this link for more information.

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The End

Thank you for listening!

Session 16470

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Complete your session evaluations online at www.SHARE.org/Seattle-Eval

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Everything you need to know about cloning
z/VM 6.2 and 6.3 systems

Additional information

- How to use Flashcopy on z/VM

- How to use DDR

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How to use Flashcopy on z/VM

- FLASHCOPY is a CP command, but you specify virtual addresses to copy. So, the disks to be copied (from or to) must be either attached to your user id or a minidisk defined that allows reading the entire source disk and writing the entire target disk.

    – FLASHCOPY requires privilege class B
    – Your storage system must have the flashcopy feature in order for you to use this command. z/VM does not simulate the flashcopy function if the feature is not available.

- Syntax for copying an entire disk:
    – CP FLASHCOPY *vdev1* 0 END TO *vdev2* 0 END
    – *vdev1* is the source device
    – *vdev2* is the target device
    – You can add "LABEL *newlabel*" at the end of the command to also change the label on the target device.

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How to use DDR

- The DDR utility can be run as a CMS command or started as a stand-alone program. Here are the DDR commands used to copy an entire disk.

    - SYSPRINT CONS
        - Send all program output to the console (a printer is the default!)
    - INPUT *dev1* DASD *volid1*
    - OUTPUT *dev2* DASD SCRTCH
        - Input device is *dev1* with label volid1
        - Output device is *dev2* and the current label is ignored
        - In a virtual machine, *dev1* and *dev2* are virtual addresses
        - As a stand-alone program in an LPAR, *dev1* and *dev2* are real addresses
    - COPY ALL
        - Copy the entire volume

    - You may enter additional INPUT, OUTPUT and COPY commands to DDR or press enter on a blank line to end DDR.

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