A CLONING METHODOLOGY FOR Z/VM SSI CLUSTERS

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OVERVIEW

❑ Why, What & How of VM Cloning
  ➢ Why cloning?
  ➢ What are we cloning?
  ➢ How are we cloning?
❑ Our Mainframe Environment
❑ Naming Conventions & Standards
❑ Cloning Configuration
❑ Preparing for Cloning
❑ Overview of the Cloning Process
❑ The Cloning Process – Start to Finish
❑ Post IPL Actions Following Cloning
❑ Live Demo: Cloning a new member of an SSI cluster
❑ Summary: What's next…

WHY, WHAT & HOW OF CLONING: **WHY?**

Why Cloning?

❑ Cloning Maintains Standard VM Configurations

➢ By cloning an existing VM configuration, the same standards are applied to the new cloned configuration

❑ Cloning Simplifies Complexity

➢ The introduction of SSI clusters brought more complexity to the VM environment

➢ Cloning now involves much more than just copying DASD volumes

➢ Complexity is simplified by using an automated cloning process

❑ Cloning Saves Time & Avoids Errors

➢ An automated cloning process saves time

➢ Trying to clone an SSI Cluster manually can be very error prone

WHY, WHAT & HOW OF CLONING: WHAT?

Cloning What?

❑ Cloning z/VM SSI Cluster Configurations

❑ What are the VM SSI cloning scenarios?

    1) Clone a new member of an existing SSI cluster

        ➢ Only need to clone member-specific DASD (NOT Shared DASD)

    2) Clone a new SSI cluster from an existing SSI cluster

        ➢ Clone both shared & member-specific DASD

❑ Why clone a new SSI cluster?

    ➢ You need more than 1 VM SSI, i.e. Prod & Test VM SSI's

    ➢ Replace an existing VM SSI with a new VM SSI configuration

        o To upgrade the VM version, change naming conventions, etc.

WHY, WHAT & HOW OF CLONING: HOW?

Cloning How?

❑ How is VM SSI cloning accomplished?

1) Establish standards that supports multiple SSI systems
   ➢ Naming standards & conventions for the SSI Cluster
   ➢ Naming conventions for the VM DASD volsers

2) Establish a "Base" system as the prototype -or- use an existing system – your choice

3) Develop an automated cloning procedure
   ➢ Cloning processes based on standard, available VM facilities, i.e. Rexx, Pipes, DDR, Flashcopy (if you have it – we don't!), etc.
   ➢ Using standard VM commands & utilities, such as CPFMTXA, FORMSSI, etc.

OUR MAINFRAME ENVIRONMENTS & Z/VM

Our Mainframe Environments

❑ Running multiple OS systems: z/VM + Linux on Z, z/TPF & z/OS
  ➢ With 4 different Operating Systems (OS), good naming conventions are essential
  ➢ z/OS sees all VM DASD during IPL & does NOT tolerate duplicate volsers, so VM volsers MUST be unique (even though VM can handle duplicate volsers)

Our z/VM Environments

❑ We have multiple VM environments, both SSI & Non-SSI
  ➢ VM Security: Using VM:Secure in all of our VM systems
  ➢ VM Directory Management: Also using VM:Secure in all of our VM systems
  ➢ Using both Shared File System (SFS) & Minidisks in our configurations
  ➢ SSI cloning process was developed using z/VM 7.1.0
    o We used cloning to upgrade an old VM SSI cluster version to 7.1.0
    o Also using cloning for changing existing 7.1 SSI's to a new configuration

CLONING NAMING CONVENTIONS/STANDARDS

❑ Conventions/Standards For SSI Cloning
  ➢ Establish a naming standard for <u>Member Name</u>
    o Member Name is the new name for System ID (SYSID)
  ➢ **New:** Establish a naming standard for <u>SSI Name</u>
    o SSI Name is new for SSI Clusters
  ➢ Convention: Use SSI Name as prefix for Member Name
    o SSI Name is 1-8 Alphanumerics, but limit to 6 chars as a prefix
    o If SSI Name=**PRDSSI**, then Member Names=**PRDSSI**<u>A1</u>, etc.
  ➢ Establish naming standard to keep VM system volsers unique
    o Should allow for Shared vs Member-specific DASD volumes
    o DASD volsers are only 1-6 alphanumerics, a naming challenge!

CLONING NAMING CONVENTIONS/STANDARDS

❑ Example: Naming Standard For SSI Name & Member Name
   ➢ Naming Standard - **SSI Name**
      o Using 6-char SSI Name so it can also be Member Name prefix
   ➢ SSI Name Format: **envSSI**, where:
      o **env** = 3-char environment name, i.e. PRD for Production, DEV for Development, TST for Testing, etc.
      o **SSI** = 3-char literal to indicate an SSI Cluster
   ➢ Naming Standard – **Member Name** *aka System ID*
      o Using 8 alphanumerics with SSI Name as 6-char prefix
   ➢ Member Name Format: **envSSIxn,** where:
      o **envSSI** = SSI Name format (described above)
      o **x** = 1 alphabetic character for Member ID, range: A, B, C, D
      o **n** = 1 numeric suffix, range: 1 or 2 (default=1)

CLONING NAMING CONVENTIONS/STANDARDS

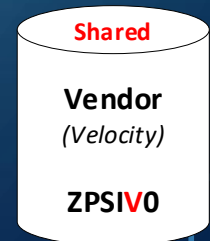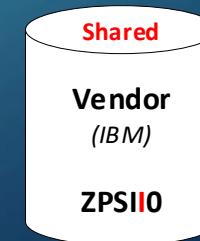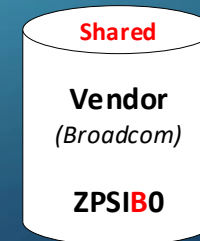❑ Example: Naming Standard For SSI System DASD Volsers
- ➢ Volser Format: **vectsn**, where volser is split into 3-char prefix & suffix
- ➢ **vec** = 3-Char Common Volser Prefix, where:
  - o **v** = z/VM Prefix: **Z** (only z/VM volsers start with "**Z**")
  - o **e** = Environment ID: **P**(rod), **D**(ev), **T**(est), etc.
  - o **c** = Category ID: **S**(hared Volumes), **A-D**(Member Volumes)
    - • If **c**=**S**, then **tsn** suffix is for Shared SSI volsers
    - • If **c**=**A-D**, then **tsn** suffix is for Member-Specific volsers
- ➢ **tsn** = 3-Char Volser Suffix, where:
  - o **t** = Type ID: Varies depending on Category (**c**=**S** or **c**=**A-D**)
  - o **s** = Subtype ID: Further defines Type and varies
  - o **n** = Numeric ID: Hex number (0-F)

CLONING NAMING CONVENTIONS/STANDARDS
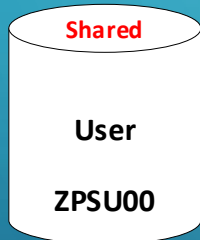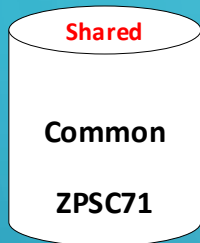
❑ Example: Naming Standard For SSI System DASD Volsers (Continued)

➢ **Shared SSI** Volsers (**c**=**S**), where **tsn** 3-Char suffix is as follows:

- ○ **t** = Type ID: **C**(ommon), **R**(elease), **U**(ser), **I**(SV)
  - If **t**=**C**/**R**, then **C**ommon & **R**elease Volume format is: **tvr**, where:
    - ▪ **t** = **C**(ommon), **R**(elease)
    - ▪ **vr** = z/VM Version & Release, i.e. if z/VM 7.1.0, then **vr**=**71**
  - If **t**=**U**, then User Volume format is: **Unn**, where:
    - ▪ **t** = **U**(ser)
    - ▪ **nn** = 00-FF
  - If **t**=**I**, then ISV Volume format: **Isn**, where:
    - ▪ **t** = **I**(sv)
    - ▪ **s** = **B**(roadcom), **I**(BM), **V**(elocity)
    - ▪ **n** = 0-F

Shared

Common

ZPSC71

Shared

User

ZPSU00

Shared

Release

ZPSR71

Shared

Vendor
(Broadcom)

ZPSI**B**0

Shared

Vendor
(IBM)

ZPSI**I**0

Shared

Vendor
(Velocity)

ZPSI**V**0

CLONING NAMING CONVENTIONS/STANDARDS

❑ Example: Naming Standard For SSI System DASD Volsers (Continued)

➢ **Member-Specific** Volsers (**c**=**A**-**D**), where **tsn** 3-Char suffix is as follows:

○ **t** = Type ID: **R**(esidence), **S**(pool), **P**(age), **T**(disk), **U**(ser), **I**(SV)

• If **t**=**R**, then Residence Volume format is: **tvr**, where:

▪ **t** = **R**(esidence)

▪ **vr** = z/VM Version & Release, i.e. if z/VM 7.1.0, then **vr**=**71**

• If **t**=**S**, then Spool & Dump Volume format is: **tsn**, where:

• **t** = **S**(pool)

• **s** = **D**(ump), **n**(0-F)

• **n** = **0-F**

• If **t**=**P/T/U**, then Page, T-Disk & User Volume format is: **tnn**, where:

▪ **t** = **P**(age), **T**(disk), **U**(ser)

▪ **nn** = **00-FF**

Member A

SysRes

ZPAR71

Member A

Spool

ZPAS00

Member A

Dump

ZPASD0

Member A

Page

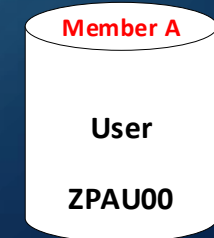ZPAP00

Member A

T-Disk

ZPAT00

Member A

User

ZPAU00

CLONING NAMING CONVENTIONS/STANDARDS

❑ Example: Naming Standard For SSI System DASD Volsers (Continued)

➤ **Member-Specific** Volsers (**c**=**A**-**D**), where **tsn** 3-Char suffix is as follows:

○ **t** = Type ID: **R**(esidence), **S**(pool), **P**(age), **T**(disk), **U**(ser), **I**(SV)

• If **t**=**I**, then ISV Volume format: **Isn,** where:

▪ **t** = **I**(sv)

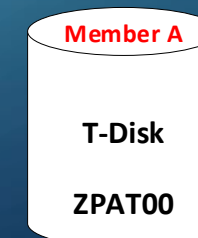▪ **s** = **B**(roadcom), **I**(BM), **V**(elocity), etc.
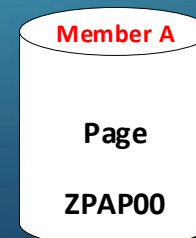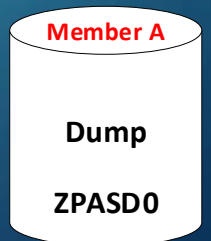
▪ **n** = **0**-**F**
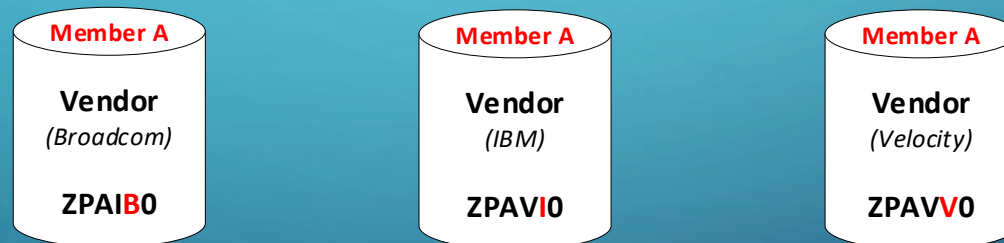
OUR VM CLONING CONFIGURATION

❑ SSI DASD volumes are either SSI Shared or Member-specific
  ➢ Shared volumes are mostly read-only (R/O) – 1 R/W, others R/O
  ➢ Member-specific volumes are R/W & not shared with other members

❑ SSI Cloning is based on IBM shipped configuration plus:
  ➢ Using separate User DASD volumes (shared & member level)
  ➢ Using separate ISV DASD volumes (shared & member level)
    • ISV = **I**ndependent **S**oftware **V**endor
  ➢ Using separate T-Disk DASD volumes (member level)
    • T-Disk = **T**emporary-**Disk** space aka temporary minidisks
  ➢ Using separate Dump (Spool) DASD volumes (member level)
    • Spool Dump Volume = dedicated spool space used for dumps only

OUR VM CLONING CONFIGURATION

❑ IBM Shipped DASD Configuration based on z/VM 7.1.0

Shared Common Shipped 710COM	**Shared** Release Shipped 710REL

Member A SysRes Shipped 710RES	**Member A** Spool Shipped 710SPL	**Member A** Page Shipped 710PAG
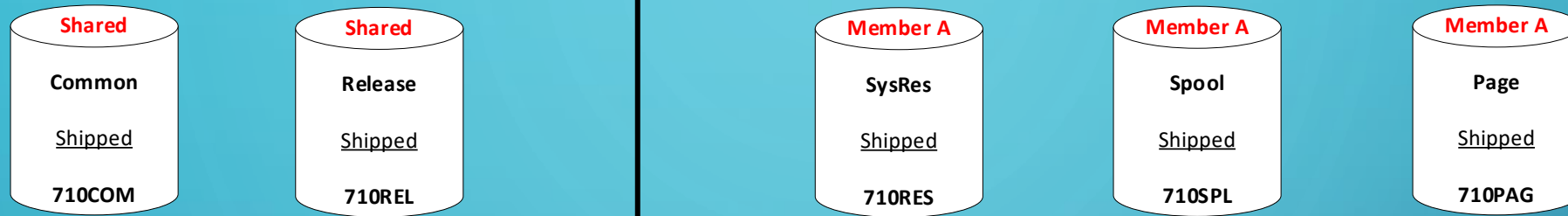
❑ Additional DASD Added to Configuration

Shared User Added 71SUSR	**Shared** Vendor *(Broadcom)* Added 71SV**B**0

Member A User Added 71MUSR	**Member A** Dump Added 71MDMP	**Member A** T-Disk Added 710TDK

Shared Vendor *(IBM)* Added 71SV**I**0	**Shared** Vendor *(Velocity)* Added 71SV**V**0

Member A Vendor *(Broadcom)* Added 71MV**B**0	**Member A** Vendor *(IBM)* Added 71MV**I**0	**Member A** Vendor *(Velocity)* Added 71MV**V**0
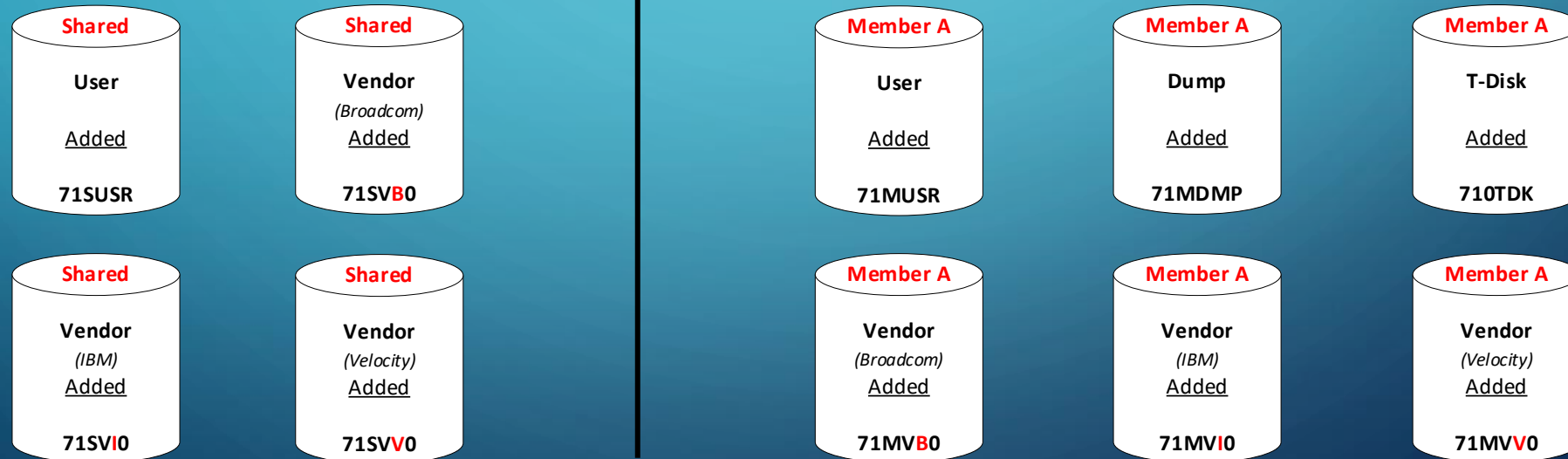
PREPARATION FOR CLONING

❑ Setup a cloning virtual machine called: VMCLONER
  ➢ Make sure it has the same authorities as MAINT:
    o Dir Option: DEVMAINT (Allows SET MDISK to work)
    o Dir Option: LNKNOPAS (Allows linking w/o password)
    o Other Dir Options: MAINTCCW, LNKE, LNKS
  ➢ VMCLONER has 2 functions:
    o To clone a new VM system (SSI Cluster or SSI Member)
    o To IPL a VM system, which is known as running a 2nd level VM system
      • Allows you to test a new VM system after it is cloned

PREPARATION FOR CLONING

❑ Created Rexx programs for Cloning & 2nd level IPL

➢ 3 Rexx programs accomplish Cloning & IPL processing

1) CLONESSI – Performs step 1 of a 2-step process

- Reads input file that contains details for new target system
- Creates a Rexx program based on SSI Name & Member being cloned
  - Format: SSI**envM**, where:
    - ❖ **Env** = SSI Name prefix, i.e. If SSI Name=PRDSSI, then Env=PRD
    - ❖ **M** = Member ID, i.e. A, B, C or D
  - For example: If SSI Name=PRDSSI & Member=B, then SSI**PRD**B

2) Rexx program created by CLONESSI (SSIenvM)

- Verify created Rexx program is using proper DASD, then execute

3) IPLVM – Performs a 2nd level IPL of the cloned system

- After cloning a new system, define in IPLVM input file, then can IPL it

PREPARATION FOR CLONING

❑ Two Cloning Options Are Available

➢ Both cloning options use the Active Mode of cloning

o Active Mode means the source volumes used for cloning are from the VM system that you are logged onto

o The other mode is static, which means that the source volumes used for cloning are for an inactive (non-running) VM system (this option is NOT available for CLONESSI)

1. Cloning Option 1: Clone a new member of the active SSI cluster

o This option creates another member of the SSI cluster that you are logged onto

o Only Member-Specific volumes are cloned

2. Cloning Option 2: Clone a full SSI cluster from the active SSI cluster

o This option creates a completely new SSI cluster from the existing cluster that you are logged onto

o Both Shared and Member-Specific volumes are cloned

PREPARATION FOR CLONING - LIMITATIONS

❑ Limitations of the Cloning Process

➢ Spool Volume(s)

o New Spool Volumes Are Formatted & Empty, so…

o DCSS & NSS segments must be recreated after cloning

o The cloning process recreates DCSS & NSS segments included with VM ☺

o <u>BUT NO</u> DCSS & NSS segments provided by Vendors or created by you, so you must recreate them yourself after cloning ! ☹

• Follow vendor install instructions to re-create their DCSS & NSS segments

• Follow your own procedures to re-create your own DCSS & NSS segments

OVERVIEW OF THE VM SSI CLONING PROCESS

❑ VM SSI Cloning Steps That Are Performed

1) Cloning from Source to Target DASD volumes – Depends…

   a) Some DASD volumes are always copied
      ➢ Common/PDR, Release, Residence
      ➢ Common/PDR & Release volumes may NOT be copied – See below

   b) Some DASD volumes are always formatted
      ➢ Page (PAGE), Spool & Spool Dump (SPOL), T-Disk (TDSK)

   c) Some DASD volumes are either copied or formatted – Depends…
      ➢ If Adding, then Format: User (PERM), Vendor (PERM)
      ➢ If Existing, then Copy: User, Vendor

   d) IF ONLY cloning a new member of an SSI cluster, then…
      ➢ Shared volumes are NOT copied:
         o Do NOT copy: Common, Release, Shared User & Vendor

OVERVIEW OF THE VM SSI CLONING PROCESS

❑ VM SSI Cloning Steps That Are Performed (Continued)

2) IF a full SSI cluster was cloned, then a new Persistent Data Record (PDR) must be created on the cloned <u>Common</u> volume, else <u>SKIP THIS</u>

   a) The FORMSSI command is used to create a new PDR

   ➢ Cmd: FORMSSI CREATE <u>address</u> PRDSSI (FORCE

   b) The FORMSSI command can also Verify that the new PDR was created

   ➢ Cmd: FORMSSI DISPLAY <u>address</u>

3) Update the ownership information on all CP-owned volumes

   a) The CPFMTXA command is used to update ownership information

   ➢ Cmd: CPFMTXA *addr volser* OWNER *ssiname membername*

   ➢ For example, update Residence volume for VM 7.1 Prod SSI Member A

   ➢ Cmd: CPFMTXA ***1234 ZPAR71*** OWNER **PRDSSI PRDSSIA1**

   b) Update Shared volumes (ONLY if Full clone): Common, Release

   c) Update Member volumes: Residence, Spool, Page, T-Disk

OVERVIEW OF THE VM SSI CLONING PROCESS

❑ VM SSI Cloning Steps That Are Performed (Continued)

4) Update SYSTEM CONFIG file on PMAINT CF0 Parm Disk

    a) Convention: Create a new SYSTEM CONFIG file based on the new SSI Name, i.e. if SSI Name = PRDSSI, then file = PRDSSI CONFIG (to avoid name conflicts)

    b) Edit the new file: XEDIT PRDSSI CONFIG

    c) If full SSI was cloned, then must perform the following:

       ➢ Update SSI Name

       ➢ Update shared volsers: Common, Release

    d) Update member volsers: SysRes, Spool, Page, Dump, T-Disk

    e) Add any User & Vendor volsers

    f) Update Inter-System Links (ISLinks) – CTC Member connections

       ➢ Needed for cloning a new member, otherwise can do later

OVERVIEW OF THE VM SSI CLONING PROCESS

❑ VM SSI Cloning Steps That Are Performed (Continued)

5) Update VM Directory on new member SysRes volume

a) If using a directory manager, i.e. DIRMAINT, VM:Secure, etc., then follow their procedure to create a source file of the VM directory.

b) Convention: Use file name = SSI Name, i.e. if SSI Name is PRDSSI, name source file: PRDSSI DIRECT (to avoid name conflicts).

c) Convention: The PMAINT 2CC minidisk is the location for the VM directory source file after installing the IBM shipped configuration, so using that for the source directory location.

d) XEdit & update the VM directory source file with the new volsers that were cloned (change volsers from source to target names).

OVERVIEW OF THE VM SSI CLONING PROCESS

❑ VM SSI Cloning Steps That Are Performed (Continued)

   5) Update VM Directory on new member SysRes volume (Continued)

      e) Attach new member SysRes volume to your userid as virtual 123

      f) Use the DIRECTXA command to check for errors

         ➢ Cmd: DIRECTXA PRDSSI DIRECT A1 (EDIT

      g) Use the DIRECTXA command to update the DRCT area of the SysRes volume

         ➢ Cmd: DIRECTXA PRDSSI DIRECT A1

         ➢ RC=5 is expected, means: *The directory written out was not the active directory on your current system* (This is OK)

      h) Detach 123 from your userid

FILE UPDATES NEEDED BEFORE IPLING A CLONED SSI

❑ Two Key Files Must Be Modified After Cloning A New System
  ➢ SYSTEM CONFIG (Located On PMAINT's Parm Disk CF0)
  ➢ USER DIRECT (Shipped On PMAINT's 2CC Minidisk)

Process From IPL To Logon

LPAR: **IPL Load/Clear** *addr*
\/
SAPL
(Stand Alone Program Load)
\/
CPLOAD
(MAINT Parm Disk CF1)
\/
SYSTEM CONFIG
(PMAINT Parm Disk CF0)
\/
Logon *userid*
(CP => DIR Blocks)

Common/PDR (Shared)

Parm Disk (PMAINT CF0)

Directory Source (PMAINT 2CC)

SysRes (Member x)

Dir Blocks (DRCT)

Parm Disks (CF1, CF3)

SAPL

PMaint's CF0 Minidisk Contains SYSTEM CONFIG, Which Is Used At IPL Time

PMaint's 2CC Minidisk Contains VM Directory Source (USER DIRECT)

Dir Blocks Contain VM Directory In A Format Used By CP & Used During Logon

Parm Disk CF1 Contains CPLOAD Module, Which Is Loaded At IPL Time

SAPL (Stand Alone Program Loader) Loads CPLOAD From CF1 Parm Disk

OVERVIEW OF THE VM SSI CLONING PROCESS

❏ VM SSI Cloning Steps That Are Performed (Continued)

6. Update SAPL on the new SysRes volume
   a) SAPL = Stand-Alone Program Load
   b) Executes a Rexx program called SAPL to update the Stand-Alone Program Load options for the new system

7. Cloning Process Complete – Ready to IPL New System 2nd Level
   a) Update file: ALTVOLS LIST - Add Volume Information for New System
   b) Update file: ALTOSAS LIST - Add OSA & IP Information (if known)
   c) Update file: IPLVM EXEC   - Add IPL Option for New System
   d) Execute IPLVM exec

THE CLONING PROCESS…

❑ The Cloning Process – From Start To Finish…
1) First, logon to the VMCLONER userid (you set it up, right?)
2) Next, execute the CLONESSI Rexx program: **CLONESSI**
3) First, it looks for a CLONSESSI DEFAULTS file and if found, will ask if you want to edit it – you can edit (and change it) or skip it and use existing defaults.
4) Next, it looks for the input file, i.e. CLONESSI INPUT
5) If found, it asks if you want to edit it (and make changes)
6) If the INPUT file is not found, then it will create one and enter XEDIT
7) Edit the INPUT file to specify (or change if not 1st time):
   ➢ The SSI prefix (SSIPfx), i.e. the 3-char environment ID (required)
   ➢ The Member ID to be cloned (Member), i.e. A, B, C, D (required)

THE CLONING PROCESS…

❑ The Cloning Process – From Start To Finish…

7) Edit the INPUT file to specify (or change if not 1st time): (Continued)

> ➤ Specify target (Tgt) addresses & formats for shared DASD
> ➤ Specify target (Tgt) addresses & formats for member DASD
> ➤ Specify target (Tgt) volsers if NOT following naming conventions
> ➤ After verifying and updating (if needed), save & exit: FILE

8) Next, it reads and processes the DEFAULTS & INPUT files

9) It determines if cloning a new member or a full SSI cluster based on INPUT file specifications and display a message of its analysis…

THE CLONING PROCESS – START TO FINISH…

❑ The Cloning Process – From Start To Finish…

10) It determines if cloning a new member or a full SSI cluster based on INPUT file specifications and displays a message of it's analysis…

```
               Source   =Clone=>   Target
              --------             --------
SSI Name:     DEVSSI  >=======>   DEVSSI
MemberID:        A    >=======>      B
              -----------------------------

> Source & Target SSI Names Are Equal,
> And Source & Target Member IDs Are NOT Equal,
> Therefore, Assuming That A [New Member] Is Being Cloned
> For The SAME SSI Cluster (Cloning ONLY Member Volumes)

===> Continue? Y or N (ENTER=Y)
```

THE CLONING PROCESS…

❑ The Cloning Process – From Start To Finish…

11) Pressing the ENTER key allows processing to continue to completion

12) The log file that is created (CLONESSI LOGFILE) is displayed (XEDIT)

  ➢ Review processing results, checking for any anomalies

  ➢ Check the bottom of the log for Next Steps & the Rexx program that has been created, i.e. if **DEV**elopment Member **B**, then program name is: SSI**DEV**B

  ➢ Exit the LOGFILE, i.e. Enter: QQUIT or press PF3 key

13) After verifying the correct DASD, execute the created Rexx program

THE CLONING PROCESS…

❑ The Cloning Process – From Start To Finish…

14) The following steps are executed by the created Rexx program:

1. Verifies the Target DASD volumes are correct
2. Clips the Target DASD Volsers
3. Define Source MDisks so they can be copied
4. Attach Target DASD to your userid (VMCLONER, right?)
5. Copy data from Source DASD to Target DASD
6. Format DASD volumes that are not copied
7. If cloning shared DASD, create new PDR on cloned Common
8. Update Ownership information for new CP-Owned DASD
9. Make copy of SYSTEM CONFIG & update it for new system
10. Make copy of USER DIRECT & update it for new system
11. Update DRCT on new SysRes from new User Direct source via DIRECTXA
12. Update SAPL on new SysRes volume

THE CLONING PROCESS…

❑ The Cloning Process – From Start To Finish…

15) Once the created Rexx program completes execution, run IPLVM

➢ The IPLVM Rexx program allows you to easily run another VM system "2nd Level"

➢ The IPLVM program defines terminals so you can dial into the VMCLONER userid locally to logon and check your new system

➢ TCP/IP access is also possible – see information included in the cloning package for details

POST IPL ACTIONS FOLLOWING CLONING

❑ Post IPL Actions for New Cloned System

1. After IPLing your new SSI member, some actions need to be taken
2. Update the VMSES/E System-Level Product Inventory Table
   - ➢ Changes member names from source to target names
   - ➢ Logon to MAINTvrm (if VM 7.1 then MAINT710)
   - ➢ Issue 1 command for each member, so if old member names are OLDSSIA1, OLDSSIB1 & OLDSSIC1 and new member names are NEWSSIA1, NEWSSIB1 & NEWSSIC1, then issue:
   - ➢ Cmd: VMFUPDAT SYSPINV SYSTEM NEWSSIA1 OLDSSIA1
   - ➢ Cmd: VMFUPDAT SYSPINV SYSTEM NEWSSIB1 OLDSSIB1
   - ➢ Cmd: VMFUPDAT SYSPINV SYSTEM NEWSSIC1 OLDSSIC1

POST IPL ACTIONS FOLLOWING CLONING

❑ Post IPL Actions for New Cloned System

   3.   Update the CRR Server LU Name (VMSERVR)

      ➢   Change LUNAME = new member name

      ➢   Logon to VMSERVR

      ➢   Cmd: STOP

      ➢   Cmd: FILEL * * A

      ➢   Cmd: XEDIT VMSERVR DMSPARMS A

      ➢   Update: LUNAME parameter

      ➢   For example, if old member name was OLDSSIA1 and new member name is NEWSSIB1, then change LUNAME <u>OLDSSIA1</u> to LUNAME <u>NEWSSIB1</u>

      ➢   Cmd: FILE

      ➢   Cmd: FILESERV CRRLOG 306 307

      ➢   Cmd: PROFILE

      ➢   Cmd: #CP DISC

POST IPL ACTIONS FOLLOWING CLONING

❑ Post IPL Actions for New Cloned System (Continued)

4. Manually Start the SFS Servers

  ➢ Cmd: XAUTOLOG VMSERVS

  ➢ Cmd: XAUTOLOG VMSERVU

  ➢ Cmd: XAUTOLOG VMSERVR

  ➢ Cmd: XAUTOLOG VMSERVP

POST IPL ACTIONS FOLLOWING CLONING

❑ Post IPL Actions for New Cloned System (Continued)

5. Re-Build the IBM DCSS and NSS segments
   ➢ DCSS = Discontiguous Saved Segments
   ➢ NSS = Named Saved Systems
   ➢ Logon to MAINTvrm (if VM 7.1 then MAINT710)
   ➢ Cmd: PUT2PROD SAVECMS
   ➢ Cmd: PUT2PROD SEGMENTS ALL
   ➢ Cmd: SERVICE GCS BLDNUC
   ➢ Cmd: PUT2PROD

6. Start AUTOLOG1 To Start Up All Of The SVMs
   ➢ Cmd: XAUTOLOG AUTOLOG1
   ➢ If you use AUTOLOG2, then Cmd: XAUTOLOG AUTOLOG2

POST IPL ACTIONS FOLLOWING CLONING

❑ Post IPL Actions for New Cloned System (Continued)

7. If using a Directory Manager, i.e. DIRMAINT, VM:Secure, etc., then follow procedure to synchronize the VM Directory with the PRDSSI DIRECT source file for the new system

8. Re-build Any ISV (Vendor) DCSS & NSS Segments

LIVE DEMO

❑ Demonstraion: Cloning a new member of an SSI cluster

➢ Source: The SSI Cluster that we are cloning from
- o Environment: Development
- o SSI Name: DEVSSI
- o Member: A

➢ Target: The SSI Member that we are creating
- o Environment: Development
- o SSI Name: DEVSSI
- o Member: **B**

SUMMARY: WHAT'S NEXT…

❑ Where Do We Go From Here?
  ➢ Bit of a rough start, but it's getting there…

❑ Some Improvements That Are Currently Under Way:
  ➢ Developing ISPF-like panels for querying system information and entering/updating cloning criteria
  ➢ Automate more (all?) of the post IPL actions
  ➢ Add ability to clone Non-SSI VM systems

❑ Plan to submit cloning package to the VM Workshop so you can give it a try if you want.

QUESTIONS?

➢ Any Questions…?

➢ If not, then happy cloning!