



z/VM 6.3 Upgrade Installation 17517

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Agenda

- New installation option with z/VM 6.3
- What are the objectives
- What is different
- Planning
- Stage 1
- Stage 2
- Finish Upgrade Installation
- Mixed Clusters
- APARs and Notes
- Summary

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New Installation Option with z/VM 6.3



- Upgrade Installation
 - Documented in Part 5 of the z/VM 6.3 Installation Guide (GC24-6246-01)
 - Only applies to upgrading from z/VM 6.2
 - Traditional methods apply for migrations from z/VM 5.4 or z/VM 6.1.
 - Restrictions
 - Must not have changed identity/subconfig definitions with user entries for all entries in the initial directory shipped by IBM for z/VM 6.2
 - Must not have changed IBM supplied USER or IDENTITY names
 - Must not have changed IBM supplied minidisk addresses
 - Must not have moved IBM supplied minidisks to different virtual machine definitions
 - Must not have changed the default values in VMSESE PROFILE or VMFINS DEFAULTS

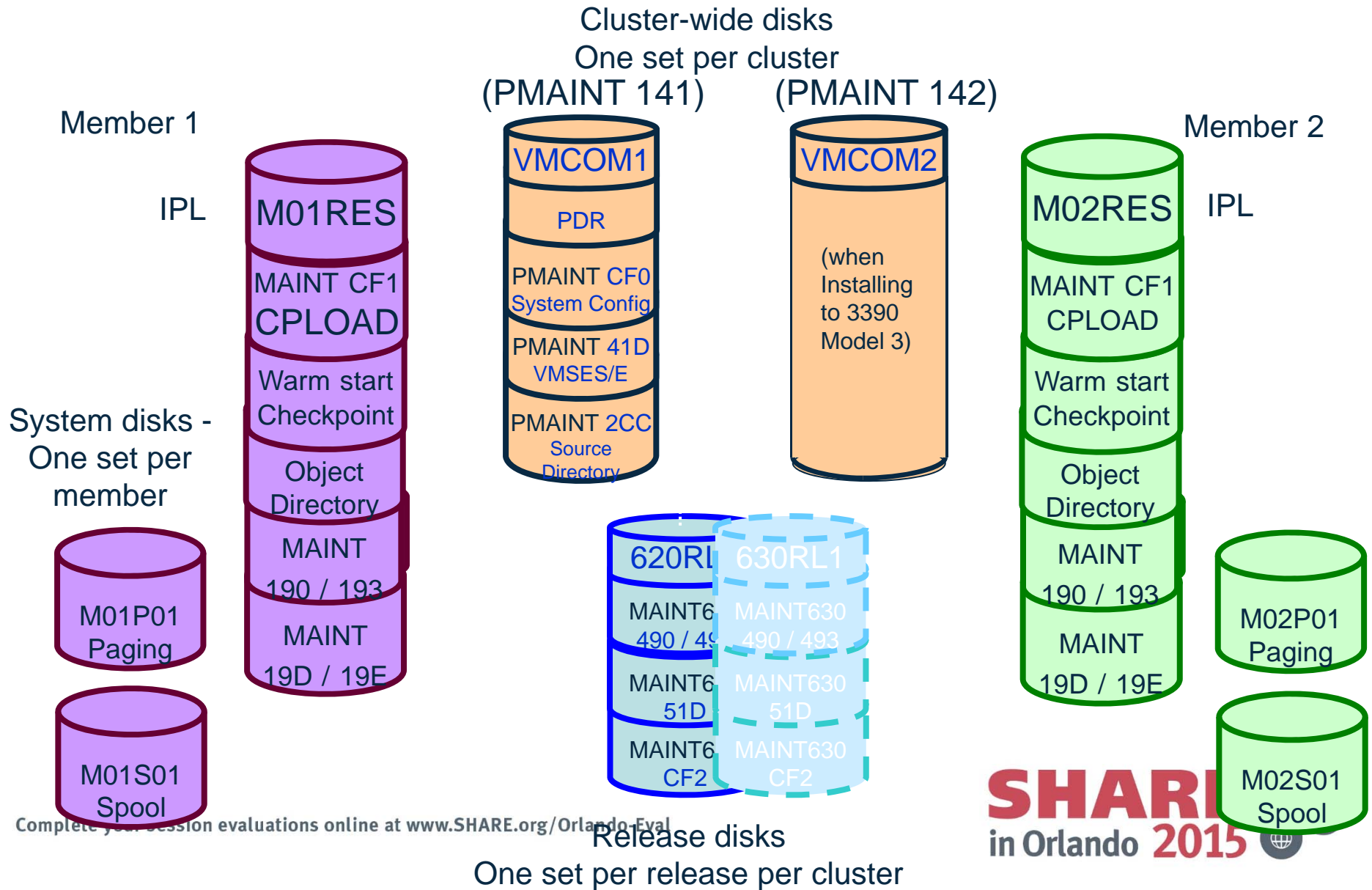
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Objectives of Upgrade Installation

- Upgrade a z/VM 6.2 system with minimal impact to the current running system.
 - No manual merge of directories
 - Add new userids to current system
 - Upgrade files on existing disks under VMSES control
 - Flag local modifications for review and customized files
- Support upgrading single members of an SSI cluster
- Support upgrading non-SSI systems
- Support notion of mixed SSI clusters
 - Where individual members of the cluster are at different levels

DASD Volumes and Minidisks



What is Different?



Traditional Migration

- New release installed on separate volumes
- Users and Data from current running system migrated to system running new release
- IPL from new volumes
- Keep old system around for backout

Upgrade Installation

- Install new release as temporary work system second level
- Move new level of code to current system with minimal impact
- Support upgrade of single member in a cluster
- Create system backup for reversing upgrade

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Workflow



- Plan and prepare
- Backup current system
- Install z/VM 6.3 work system from MIGMAINT userid
- Generate the stage1 changes file
- Execute stage1 changes
- Finish stage1 changes
 - This may involve reworking local modifications and reviewing the user directory, and ESM
- Backup current system again
- Generate the stage2 changes file
- Execute the stage2 changes
- Review SYSTEM CONFIG, USER DIRECT, and Upgrade Warning File
- Shutdown and IPL the upgraded system or member

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Planning

- Select installation media type. Supported types are:
 - Tape
 - Physical DVD
 - FTP server with access to content of DVD
 - CMS-formatted minidisk
- Review and Comply with Requirements
 - General
 - Hardware
 - System Software
 - MIGMAINT
 - DVD Installation
 - Other System Requirements such as SFS space, directory and security managers

Planning (cont)

- Complete Worksheets
 - Backup current system before beginning and before Stage2
 - Note location of DVD content (ftp server information, CMS minidisk address)
 - Edit user directory, or use a directory manager?
 - Security manager active?
 - Name and location of SYSTEM CONFIG file
 - Products loaded into VMPSFS filepool?
 - DASD type and model for work system
 - FBA – 5 volumes if each is over 9.5, 6 volumes if each is under 9.5G
 - 3390-03 – 10 volumes (9 if all products loaded to SFS)
 - 3390-09 – 6 volumes
 - Additional member specific space on current (6.2) system
 - New space must be allocated on same device type as used to install 6.2 system
 - 3390 – need total of 6,682 cylinders of space
 - FBA – need total of 9,622,080 FBA blocks of space
 - Space used for ZHCP, XCAT, and SMAPI worker machines (VSMGUARD, VSMWORK1, VSMWORK2, VSMWORK3)

Planning (cont)



- Complete Worksheets (cont).
 - Allocate additional common space
 - Must allocate additional space on DASD type used for original z/VM 6.2 system
 - Only allocate this additional space for first member to be upgraded in a cluster
 - Make sure additional common space available to all members of cluster
 - 3390 – need 731 additional cylinders on a common volume
 - FBA – need 1,052,640 additional FBA blocks on a common volume
 - Allocate this additional space on a volume that will be considered common if upgrading a non-SSI system (in anticipation of future conversion to SSI).

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Preparation

- On your existing z/VM 6.2 system
 - Make sure directory manager will allow MIGMAINT to make changes without specifying a password
 - For DIRMAINT ALLOW_ASUSER_NOPASS_FROM= MIGMAINT
 - Make sure directory manager will support disk cleanup and disk operations
 - For DIRMAINT this is DISK_CLEANUP= YES and DATAMOVE_MACHINE= DATAMOVE * *
 - Make sure MIGMAINT is authorized to use directory manager
 - For DIRMAINT this is done by adding MIGMAINT to AUTHFOR CONTROL for both 140A and 150A command sets and ADGHMOPS classes.
 - Make sure MIGMAINT is able to link the MAINT620 4CC minidisk if installing from DVD
 - Make sure all of the new volumes created during installation of the work system and the new space added to the z/VM 6.2 system is available for automatic minidisk allocation within your directory manager
 - For DIRMAINT this is done by adding REGION statements in EXTENT CONTROL for all volumes
 - Make sure directory manager excludes MAINT630 013* overlap minidisks from free space calculations.
 - For DIRMAINT this is done by adding MAINT630 013* to EXCLUDE section of EXTENT CONTROL
 - Format, label, allocate and attach to the z/VM 6.2 system volumes designated as additional space allocated to current system

Work System



- Load the install tools (instpipe along with pipe commands to load 2222 and DVDPRIME to load 24CC and 2CF0)
- Run INSTPLAN with dvd or tape and (UPGRADE
- Upgrade installation panels will be displayed
 - Different from the normal instplan panels
 - Display current z/VM 6.2 information
 - Prompt for license agreement for previously installed optional features that require 6.3 license also
 - Prompt for DASD type and size for installation of work system (DASD type will match DASD type for system being upgraded, e.g. 3390).
 - Specify location of SYSTEM CONFIG, how directory is maintained, and whether RACF or a different security manager is used
 - Specify labels and addresses for z/VM 6.3 work system
 - Specify label of DASD to be used for allocation of additional space on current system
 - Note: these volumes should be attached to the z/VM 6.2 system prior to proceeding)
- Attach DASD devices to be used for the z/VM 6.3 system to MIGMAINT
- Execute INSTALL command

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Stage 1



- When the work system has been completely installed, the INSTALL EXEC will end
 - Your work system is still running within the MIGMAINT userid
 - Enter the CP Shutdown command to shutdown the work system
 - Enter IPL CMS to restore the CMS environment to MIGMAINT
 - The work system now exists on the DASD devices attached to MIGMAINT
- The upgrade process is automated and coordinated by a new EXEC named INSTUPGR
- INSTUPGR is used to generate a table of tasks to complete
- INSTUPGR may be used to execute the tasks, or you may choose to manually execute the tasks in the table by hand.
- At each stage, the PRIME option is used to instruct INSTUPGR to generate a table of tasks.
- Tables are written to MIGMAINT's 2CF0 minidisk
- Warnings issued by INSTUPGR while building the stage1 table will be displayed and written to \$STAGE1\$ \$WRNFILE on MIGMAINT's 2CF0 minidisk
 - Review any warnings and resolve the problems before continuing
- Errors that occur are written to the INSTUPGR \$CONSLOG on MIGMAINT's 2CF0 minidisk.
 - If errors occur consult this file and resolve any errors before continuing

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Stage 1 (Cont)



- The stage1 changes add new maintenance userids and updated versions of service and installation userids to your system
- Changes include:
 - Attaching the new release disks to the current system (630RL1 and 630RL2 if 3390-03)
 - Updating SYSTEM CONFIG to automatically attach these new volumes to the system during IPL
 - Add MAINT630 to the directory, and update links defined in the MAINT subconfig for this system to link to the new MAINT630 disks
 - Add 6VMPTK30, 6VMRAC30, 6VMRSC30, 6VMTCP30, and 6VMDIR30
 - DDR minidisks for new 6VMDIR30 to the additional space volume designated during INSTPLAN
 - Update LINKs for current service machines to the new install and service userids (for example PERFSVM linking to 6VMPTK30 instead of 6VMPTK20)
 - Enable 6VMDIR30 on z/VM 6.2 system
 - Add enable records to SYSTEM CONFIG file
 - Add ZHCP and XCAT to current system
 - Add new minidisks and update directory entries for SMAPI Worker Servers along with other SMAPI environment changes
 - Enroll MAINT630 as ADMIN in shared filepool servers

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Stage 1 (Cont.)



- The stage 1 table is named \$STAGE1\$ \$TABLE\$ and it is stored on MIGMAINT's 2CF0
 - The table is an ordered list of actions to be taken against the current system.
 - Each entry is described by comments such that the change can be manually performed
- Execute the stage1 changes
 - Use INSTUPGR with the COMMIT option
 - INSTUPGR will generate a back out file that will allow you to reverse these changes
 - If a directory manager is being used that provides an exit to work with the IBM upgrade code the exit will be called to perform directory functions.
 - INSTUPGR is able to change the user direct file if you do not use a directory manager
 - Manually update your system with the stage1 changes
 - You must perform the changes in the order specified in the stage1 table
 - You will not have an automated back out capability
 - You must edit the stage1 table to mark each change as completed when you finish each change
 - Combination of automatic and manual changes
 - Perform the manual changes first and update the stage1 table
 - Run INSTUPGR with COMMIT to complete all changes not marked finished
 - Be careful of dependencies when following this path

Stage 1 (Cont.)

- All stage1 changes must be successfully completed before moving to Stage2.
- After completing all stage1 changes manually:
 - Run INSTUPGR stage1 (commit done)
- Post stage1 directory considerations
 - Updating a member of a cluster and directory manager is not used
 - Bring changed directory online to all cluster members with DIRECTXA command
 - Run DIRECTXA on all cluster members if directory manager did not provide an exit for INSTUPGR
 - For non-SSI, or one member SSI cluster, or first member of an SSI cluster
 - Copy configured DIRMAINT files from 6VMDIR20 to 6VMDIR30 (491, 492, 11F, and 41F).
 - Copy DVHPROFA DIRMSAT * files from 6VMDIR20 491 and 492 to 6VMDIR30 491 and 492
 - Make sure new userids such as MAINT630 are in AUTHFOR CONTROL if needed
 - Recycle all DIRMAINT servers (i.e. DIRMAINT, DIRMSATx, DATAMOVE, DATAMOVx) to begin using the 6.3 DIRMAINT code.

Stage1 (Cont.)



- Post stage1 ESM considerations
 - Only applies if you are running an ESM
 - If running ESM perform these steps prior to preceding DIRMAINT copy steps.
 - Ensure MAINT630 is authorized to:
 - Link to any minidisk on the system without a password
 - Perform security authorizations on behalf of other users
 - Perform all SFS admin functions
 - Define to ESM new userids added to directory
 - ZHCP, XCAT, MAINT630, 6VMDIR30, 6VMPTK30, 6VMRAC30, 6VMRSC30, 6VMTCP30
 - Make sure that the userids above have same disk access as the corresponding z/VM 6.2 userids.
 - Make sure userids such as RACMAINT, TCPMAINT, DIRMAINT, and MAINT are authorized to link to the new userid minidisks above instead of the 6.2 counterparts
 - Review table of indirect links in the z/VM 6.3 Installation Guide Chapter 25 to ensure that necessary ESM changes are made.
 - If your ESM manages SFS administrator authorizations make sure that MAINT630 and the SMAPI workers are authorized as admins for VMPSFS, VMSYS, VMSYSR, and VMSYSU
 - If your ESM manages CP command authorizations and access to other CP resources
 - Ensure that MAINT630 and the 6VMxxx30 userids are properly authorized

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Stage1 (Cont.)



- Rework local modifications
 - This step is not required for the 2nd – 4th member of an SSI cluster to be upgraded
 - Local modifications to components were copied to 6.3 service disks
 - 6.3 VM SYSLMOD table was updated with the local modifications copied to the 6.3 service disks
 - Review and update status of each local modification
 - This step must be performed from MAINT630
 - Use VMFUPDAT SYSLMOD
 - To see if any local modifications need rework
 - To mark local modifications as complete when reworked

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Stage2



- The changes implemented in stage2 might affect your production workload
 - Best to stop your production workload
 - Also logoff PERFSVM and other users of MONDCSS
 - Backup the system prior to executing stage2
 - SFS servers should still be running along with directory manager and or security manager servers
- Stage2 moves the new release code into production
 - Replaces content on minidisks such as 190, 193, etc.
- Back out of stage2 requires restoring system backup
- INSTUPGR stage2 (prime)
 - Creates the \$STAGE2\$ \$TABLE\$
 - Table resides on MIGMAINT's 2CF0
 - Warnings placed in \$STAGE2\$ \$WRNFILE on MIGMAINT's 2CF0
 - Errors placed in INSTUPGR \$CONSLOG on MIGMAINT's 2CF0

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Stage2 (Cont.)



- Move and copy mdisks for 6MVHCD20 to new common volume
- Delete DHCPD, LPSERVE
- Erase 6.2 content from minidisks with VMFERASE, then VMFCOPY from 6.3 minidisks
 - 190, 193, 19E, 19D
 - Copy from 6.3 alternate minidisks
- Erase 6.2 content from TCPMAINT 591, 592 and copy from 6VMTCP30 491 and 492
- Erase 6.2 content from PERFSVM 201 and copy from 6VMPTK30 200
- Copy customized files for VMSES, CP, DVF, REXX, AVS, GCS, TSAF, CMS, TCPIP, RSCS, DIRM, RACF, PERFKIT
 - If file has been customized copy new 6.3 file to new name on target alternate minidisk
 - For example copy 6.3 sample file to 6.2 TCPMAINT 491
- Copy updated VMSES inventory files
- VMFINS BUILD (SERVICED)
 - REXX, CMs, CP, GCS, DVF, AVS, TSAF, TCPIP, RSCS, DIRM, RACF, PERFTK
- BLDNUC
 - CMS, GCS, CP, RACF
- PUT2PROD
- PUT2PROD SEGMENTS ALL

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Stage2 (Cont.)



- Implement stage2 changes
- Automatically
 - INSTUPGR stage2 (COMMIT)
- Manually
 - Follow implementation steps written as comments in stage2 table
 - Order of items in table must be followed
 - Update table items when complete
- Manual and Automatic
 - Manually implement some tasks in table
 - Must follow order of table
 - INSTUPGR stage2 (COMMIT to automatically process all entries not marked complete)

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Finish Upgrade Installation

- Directory
 - If upgrading a member of an SSI cluster make sure directory is put online on all other members
 - Verify definitions added to directory comply with your local standards (i.e. minidisk passwords, etc)
- SYSTEM CONFIG
 - Review changes under “Upgrade Statements” comment at end of file
 - User_Volume statements
 - Product enable records
 - Make sure new volumes added to the 6.2 system before upgrade began are in appropriate User_Volume statement
 - New volumes for xCAT and zHCP
 - New common volume for 6VMDIR30
- \$WRNFILE Messages
 - Created on MIGMAINT 2CF0 minidisk by INSTUPGR
 - Edevice warnings
 - Customizable file warnings
 - Warnings for parts residing on PMAINT 551

Finish Upgrade Installation (Cont).

- Delete obsolete saved segments
 - helpseg
 - nslameng
 - These were shipped with 6.2 and are no longer used
 - Use `purge nss name helpseg` and `purge nss name nlsameng` commands
- Shutdown and IPL upgraded system
 - If running ESM other than RACF consult vendor documentation prior to shutdown for any special requirements before IPLing
 - If using RACF
 - Test disks updated with new level of code
 - On IPL bring up test RACF/VM server (RACMAINT)
 - Move updated code to production RACF server
- Use MIGR51D for licensed products that are not preinstalled on the system DDR
 - E.g. High Level Assembler
 - System software inventory files not updated for these products
 - Involves also merging segmap information and rebuilding segments

Finish Upgrade Installation (Cont).



- Change default passwords for new virtual machine definitions added to directory
- If you have created stand alone dump in the past it will need to be recreated
 - Create a tape using the z/VM 6.3 program
 - Use the new utility SDINST to dump to DASD
 - Previous release stand alone dump should not be used with z/VM 6.3
- Review links in directory for non-IBM virtual machines that might link to release specific minidisks
 - E.G. links to 6VMPTK20 200 and 29D for perfkit usage
- Review new program directories for any additional configuration steps needed for new levels of the enabled pre-installed features
- Return work volumes to DASD pool
- If DIRMAINT is used disable old level (i.e. 6VMDIR20)
 - If this is first member of an SSI cluster consider manually moving the 630 level of DIRMAINT help files to other members not yet upgraded
- Create final backup of system

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Remove Old Release

- Only do this step if upgraded non-SSI 6.2 system or completed upgrading last member of an SSI cluster
- Remove old release level userids no longer used on the 6.3 system
 - MAINT620, 6VMDIR20, 6VMPTK20, 6VMRAC20, 6VMRSC20, 6VMTCP20
 - Do not delete 6VMLEN20 or 6VMHCD20 these continue to be used in the 6.3 system
 - Remove from the user directory and shared filepool servers (if applicable)
- When old release volumes no longer contain minidisks they can be returned to DASD pool
- Update SYSTEM CONFIG
 - Remove product enable records for old pre-installed features no longer used
 - 6VMPTK20, 6VMRAC20, 6VMRSC20
 - Set old features to DISABLED on the system
 - Note: DIRMAINT (if used) was already disabled

Life In a Mixed Release Cluster

- Need to make sure that common utilities are at the highest release level in the cluster
 - Utilities maintained on PMAINT 550/551 mdisks
- Install new service on z/VM 6.2 members to support highest release level processing
 - VM65317 - VMSES
 - UM34006 – not currently on any RSU
 - <http://www.vm.ibm.com/service/tips/vm65317.pdf> (for pubs changes)
 - VM65318 - CP
 - UM34029 – on RSU 1302
 - VM65319 - CMS
 - UM34030 – on RSU 1302
 - VM65320 – RACF VM
 - UV61196 – not currently on any RSU

z/VM 6.3 Upgrade Installation APARs and PSP Notes



- VM65297 – closed on RSU 1301
 - Problems with DVHSAPI (the Dirmaint synchronous programming interface) hanging on purge of identity and subconfig.
- VM65384 – closed on RSU 1302
 - Problem with instupgr stage2 (prime processing. Invalid data detected in the SYSSUF file. Problem involves parsing lines properly in the SYSSUF file.
- Installation media has been refreshed to include 6302 RSU which includes the fixes above and other important fixes for upgrade installation
 - Orders fulfilled after 9/6/13 will receive the refreshed media
 - Use Shopz to reorder your media if you received it prior to 9/6/13

z/VM 6.3 Upgrade Installation APARs and PSP Notes (Cont.)



- PSP Upgrade ZVM630 subset CP section Installation Information contains important notes for upgrade installation
 - Corrections to Installation Guide
 - Use VMFERASE and VMFCOPY to copy files from 6VMRAC30 505 to 6VMRACF30 305 instead of DDR
 - If have ESM perform Chapter 25 Step 2 before Step 1
 - Correction to problem with RACF files on the MAINT 19E
 - Manually copy LOHCOST SAMPROF from MAINT630 493 to LOHCOST 191 as PROFILE EXEC
 - Shutdown LOHCOST with: signal shutdown lohcost within 2

Summary



- SSI clusters with more than one member represent a challenge for upgrading using traditional methods
- New Upgrade Installation path provides capability to upgrade an existing member of a cluster
 - Minimal disruption to existing system
 - Ensures that cluster wide utilities and directory manager are at new release level for entire cluster
- Upgrade Installation path provides a quick and easy method of upgrading non-SSI and single member SSI clusters as well
- Upgrade Installation currently only applies to upgrading z/VM 6.2 systems to z/VM 6.3.
- Minimal downtime of production workload

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